2006-08 SPECIFICATIONS

Civic (Except Hybrid)

SPECIFICATIONS INDEX

CIVIC SPECIFICATIONS INDEX

System	Specification/Procedure
Air Conditioning	
Service	**AIR CONDITIONING**
Torque	See applicable component in **HEATING/AIR CONDITIONING (EXCEPT HYBRID)** article.
Axle Nut/Hub Nut	
Front	
Except Si	181 N.m (134 ft. lbs.)
Si	245 N.m (180 ft. lbs.)
Rear	64 N.m (47 ft. lbs.)
Battery	**BATTERY (EXCEPT HYBRID)**
Brakes	
Bleeding Sequence	**BRAKE SYSTEM BLEEDING**
Disc Brakes	**BRAKES**
Drum Brakes	**BRAKES**
Torque	See applicable component in **CONVENTIONAL BRAKE COMPONENTS (EXCEPT HYBRID)** article.
Charging	
Generator	
1.8L	**ENGINE ELECTRICAL (R18A1 ENGINE)**
2.0L	**ENGINE ELECTRICAL (K20Z3 ENGINE)**
Torque	
1.8L	See applicable figure in **ALTERNATOR REMOVAL AND INSTALLATION** .
2.0L	See applicable figure in **ALTERNATOR REMOVAL AND INSTALLATION** .
Drive Belts	
Adjustment	
1.8L	**DRIVE BELT INSPECTION**
2.0L	**DRIVE BELT INSPECTION**
Belt Routing	
1.8L	**DRIVE BELT REMOVAL/INSTALLATION**
2.0L	**DRIVE BELT REMOVAL/INSTALLATION**
Engine Cooling	
General Service Specifications	
1.8L	**COOLING SYSTEM (R18A1 ENGINE)**
2.0L	**COOLING SYSTEM (K20Z3 ENGINE)**

Radiator Cap Pressure	93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi)
Thermostat R & I	
1.8L	**THERMOSTAT REPLACEMENT**
2.0L	**THERMOSTAT REPLACEMENT**
Water Pump R & I	
1.8L	**WATER PUMP REPLACEMENT**
2.0L	**WATER PUMP REPLACEMENT**
Engine Mechanical	
Compression	
1.8L	**ENGINE ASSEMBLY (R18A1 ENGINE)**
2.0L	**ENGINE ASSEMBLY (K20Z3 ENGINE)**
Oil Pressure (176°F (80°C)	
1.8L	70 kPa (.7 kgf/cm^2 , 10 psi) @ idle; 340 kPa (3.5 kgf/cm^2 , 50 psi) @ 3000 RPM
2.0L	70 kPa (.7 kgf/cm^2 , 10 psi) @ idle; 300 kPa (3.1 kgf/cm^2 , 44 psi) @ 3000 RPM
Overhaul	See applicable specifications table in **STANDARDS AND SERVICE LIMITS** .
Torque	See applicable component in appropriate ENGINE MECHANICAL article.
Fluid Specifications	See FLUIDS under MAINTENANCE tab.
Flywheel/Flex Plate Torque	
A/T	74 N.m (54 ft. lbs.)
M/T	
5-Speed	103 N.m (75 ft. lbs.)
6-Speed	122 N.m (90 ft. lbs.)
Fuel System	
Pressure Specification	
1.8L	380-430 kPa (3.9-4.4 kgf/cm^2 , 55-63 psi)
2.0L	330-380 kPa (3.4-3.9 kgf/cm^2 , 48-55 psi)
Fuel Pressure Test Procedure	
1.8L	**FUEL PRESSURE TEST**
2.0L	**FUEL PRESSURE TEST**
Ignition	
Firing Order & Cylinder Identification	
1.8L	**ENGINE ELECTRICAL (R18A1 ENGINE)**
2.0L	**ENGINE ELECTRICAL (K20Z3 ENGINE)**
Ignition Wires (Resistance)	NA
Ignition Wires (Routing)	NA
Spark Plug	
Type	

1.8L	NGK: IZFR6K-11S; Denso: SKJ20DR-M11S
2.0L	NGK: IFR7G-11KS; Denso: SK22PR-M11S
Gap	1.0-1.1 mm (.039-.043 in.)
Torque	18 N.m (13 ft. lbs.)
Starting	
Starter	
1.8L	**STARTER PERFORMANCE TEST**
2.0L	**STARTER PERFORMANCE TEST**
Torque	
1.8L	**STARTER REMOVAL AND INSTALLATION**
2.0L	**STARTER REMOVAL AND INSTALLATION**
Wheel Alignment	
Adjustment Specifications	**SUSPENSION**
Torque	
Front	See applicable component in **FRONT SUSPENSION (EXCEPT HYBRID)** article.
Rear	See applicable component in **REAR SUSPENSION (EXCEPT HYBRID)** article.
Wheel & Tire	
Wheel Lug Nut Torque	108 N.m (80 ft. lbs.)

2006-08 ACCESSORIES & EQUIPMENT

Multiplex Control System - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: **Refer to the MULTIPLEX INTEGRATED CONTROL SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.**

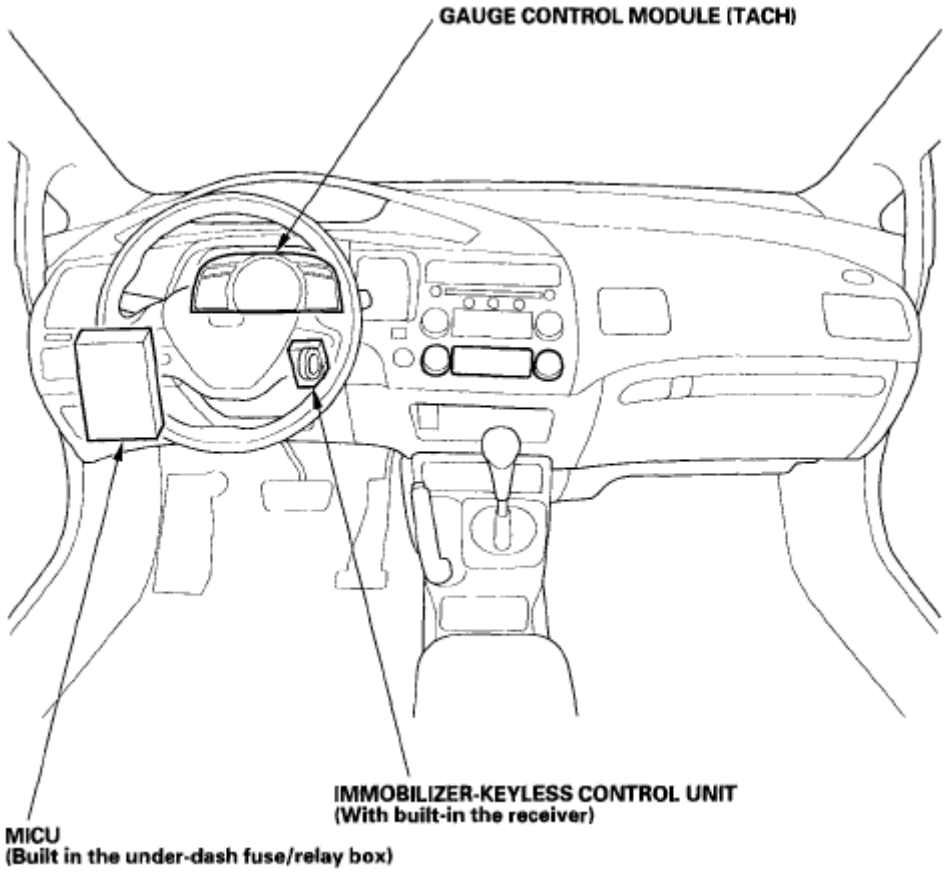


Fig. 1: Locating Multiplex Control System Components

GENERAL TROUBLESHOOTING INFORMATION

TROUBLESHOOTING CAN CIRCUIT RELATED PROBLEMS

NOTE: **Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see GENERAL TROUBLESHOOTING INFORMATION) or F-CAN loss of communication errors first.**

Using the HDS (Preferred method)

1. Go to B-CAN System Diagnosis Test Mode A to check for "Connected units" and DTCs (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

2. If no DTCs are retrieved, go to **B-CAN SYSTEM DIAGNOSIS TEST MODE C** (see) or D (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE D**).

Without HDS (Use only if the HDS is unavailable)

1. Check for communication circuit problems using B-CAN System Diagnostic Test (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE 1 AND TEST MODE 2 (WITHOUT THE HDS)**).
2. Check for DTCs.
3. Sort, and then troubleshoot the DTCs in the order below.
    - 1 Battery voltage DTCs
    - 2 Internal error DTCs
    - 3 Loss of communication DTCs (beginning with the lowest number first; for example, if B1008 and B1011 are retrieved, troubleshoot B1008 first)
    - 4 Signal error DTCs
4. If no DTCs are retrieved, use B-CAN System Diagnostic Test Mode 2 to check all inputs related to failure (see step 10**TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE 1 AND TEST MODE 2 (WITHOUT THE HDS)**).

How to display DTCs on the gauge control module (tach)

While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-controller Area Network) units, will be shown one by one on the odometer display when the communication between the MICU and the gauge control module is normal. To scroll through the DTCs, press the select/reset button.

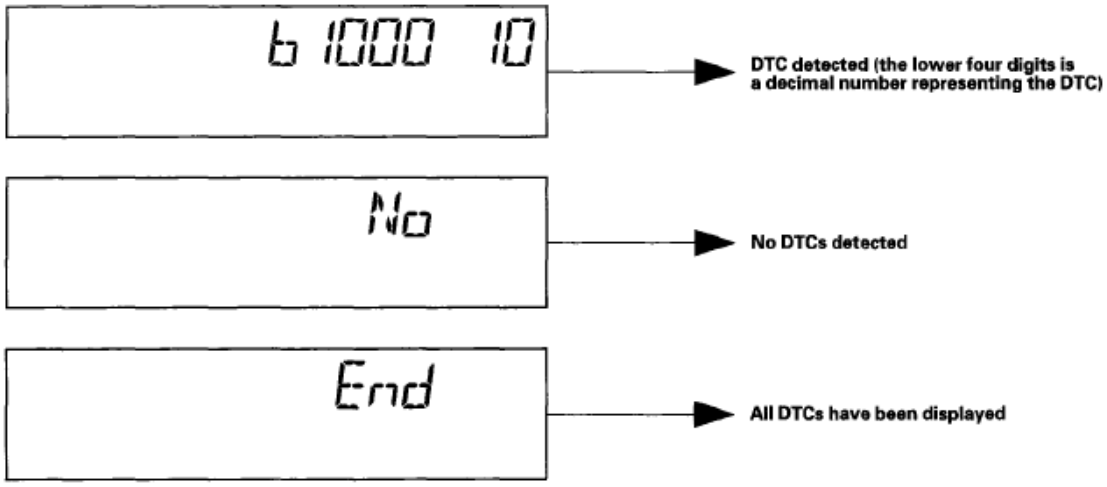


Fig. 2: Identifying Gauge Control Module (Tach)

The unit that has stored the code can be identified by the number shown on the multi-information display.

MICU REFERENCE

MICU	10
Gauge control module	50

How to clear the DTC

While in Test Mode 1, press and hold down the SELECT/RESET button for more than 10 seconds.

Loss of Communication DTC cross-reference chart

When an ECU is unable to communicate with the other ECUs on the CAN circuit, the other control units will set loss of communication DTCs. Use this chart to find the control unit that is not communicating.

1. Find the Transmitting Control Unit that is in the same row as all of the loss of communication DTCs retrieved.
2. Do the input test for the transmitting control unit.

BUS OFF AND INTERNAL ERROR CODES

DTC type	Related Unit		
	MICU	Gauge Control Module	Immobilizer-Keyless Control Unit
BUS OFF	B1000	B1150	B1900
ECU (CPU) Error	B1001		
ECU (EEPROM) Error	B1002	B1152	

RECEIVING UNIT/LOSS OF COMMUNICATION DTC

Transmitting Control Unit	Message	Receiving Unit/Loss of Communication DTC		
		MICU	Gauge Control Module	Immobilizer-Keyless Control Unit
MICU	RM		B1188	
	HLSW		B1155	
	WIPSW		B1156	
	MICU		B1157	
	DOORSW		B1159	
	DRLOCKSW		B1160	B1905
Gauge Control Module	VSP/NE	B1011		
	A/T	B1008		B1906
	CDS (SRS)	B1032		
ECM/PCM	ENG		B1168	
	A/T		B1169	
ABS or VSA Modulator-Control Unit	ABS or VSA		B1170	
EPS Control Unit	EPS		B1183	
SRS	SRS		B1187	

DTC TROUBLESHOOTING INDEX

NOTE: Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see GENERAL TROUBLESHOOTING INFORMATION) or F-CAN loss of communication errors first, then record all DTCs, and sort them by DTC type using the DTC troubleshooting index, then troubleshoot the DTC(s) in this order.

- Battery voltage DTCs
- Internal error DTCs
- Loss of communication DTCs (beginning with the lowest number first; for example, if B1008 and B1011 are retrieved, troubleshoot B1008 first).
- Signal error DTCs

MICU REFERENCE

DTC	Description	DTC type
B1000	Communication bus line error (BUS-OFF)	Loss of communication
B1001	MICU internal error (CPU error)	Internal error
B1002	MICU internal error (EEPROM error)	Internal error
B1008	MICU lost communication with gauge control module (A/T message)	Loss of communication
B1011	MICU lost communication with gauge control module (VSP/NE message)	Loss of communication
B1026	Front passenger's door lock switch LOCK/UNLOCK signal error	Signal error
B1032	MICU lost communication with the SRS unit (CDS message)	Signal error
B1036	IG1 line input error	Signal error
B1077	Windshield wiper (As) signal error	Signal error
DTC B1078	Daytime running lights signal error (Canada)	Signal error
DTC B1079	Daytime running lights signal error (USA)	Signal error
DTC B1127	Driver's door key cylinder switch signal error	Signal error
DTC B1128	Driver's door lock switch signal error	Signal error
DTC B1129	Driver's door lock knob switch signal error	Signal error

GAUGE CONTROL MODULE

DTC	Description	DTC type
B1150	Communication bus line error (BUS-OFF)	Loss of communication
DTC B1152	Gauge control module internal error (EEPROM error)	Internal error
DTC B1155	Gauge control module lost communication with MICU (Headlight switch message)	Loss of communication
DTC B1156	Gauge control module lost communication with MICU	Loss of communication

	(Wiper switch message)	
DTC B1157	Gauge control module lost communication with MICU (MICU message)	Loss of communication
DTC B1159	Gauge control module lost communication with MICU (DOORSW message)	Loss of communication
DTC B1160	Gauge control module lost communication with MICU (DRLOCKSW message)	Loss of communication
DTC B1168	Gauge control module lost communication with ECM/PCM (Engine messages)	Loss of communication
DTC B1169	Gauge control module lost communication with PCM (A/T message)	Loss of communication
DTC B1170	Gauge control module lost communication with ABS modulator-control unit (ABS message)	Loss of communication
DTC B1175	Fuel level sensor (Fuel gauge sending unit) circuit open	Signal error
DTC B1176	Fuel level sensor (Fuel gauge sending unit) circuit short	Signal error
DTC B1177	Battery voltage abnormal	Battery voltage
DTC B1178	F-CAN communication line error	Loss of communication
DTC B1183	Gauge control module lost communication with EPS control unit (EPS message)	Loss of communication
DTC B1187	Gauge control module lost communication with SRS unit (SRS message)	Loss of communication
DTC B1188	Gauge control module lost communication with MICU (RM message)	Loss of communication

IMMOBILIZER-KEYLESS CONTROL UNIT

DTC	Description	DTC type
B1900	Communication bus line error (BUS-OFF)	Loss of communication
DTC B1905	Immobilizer-keyless control unit lost communication with MICU (DRLOCKSW message)	Loss of communication
DTC B1906	Immobilizer-keyless control unit lost communication with gauge control module (A/T message)	Loss of communication
DTC B1925	Ignition key switch signal error	Signal error

SYSTEM DESCRIPTION

MICU CONTROL FUNCTIONS INDEX

The MICU (built into the under-dash fuse/relay box) is one of the B-CAN components. The MICU controls many systems related to the body controller area and a security system, and also works as a gateway to diagnose the other B-CAN connected ECUs with the HDS.

Refer to each system circuit diagram for details.

MICU CONTROL FUNCTIONS

System	Function
Multiplex Control	Sends the switch input signal information to the MICU and outputs the information. The MICU controls the ECUs electric load and communication based upon the information received the B-CAN.
On-Board Diagnosis	The MICU has a gateway function which sends the results of the MICU internal diagnosis and the B-CAN connected ECUs diagnosis to the HDS.
Self-Diagnosis	Test mode 1 diagnoses the communication line between the MICU and B-CAN connected unit. Test mode 2 checks the switch inputs connected to the MICU.
Interior Light (s)	The MICU controls the interior lights ON, OFF and dimming based upon the information of the related switches and/or the B-CAN related information.
Sleep Function	The MICU has a sleep function, which it enters during the power down mode.

The MICU also controls the function of these circuits:

- Entry lights control (map lights and ceiling light)
- Exterior lights control (including the daytime running lights control)
- Horn
- Interlock system
- Key-in reminder
- Keyless entry
- Lights-on reminder
- Power door locks
- Seat belt reminder
- Security alarm
- Turn signal/hazard flasher
- Wiper/washer

BODY CONTROLLER AREA NETWORK (B-CAN) AND FAST CONTROLLER AREA NETWORK (F-CAN)

The body controller area network (B-CAN) and the fast controller area network (F-CAN) share information between multiple electronic control units (ECUs). B-CAN communication moves at a slower speed (33.33 kbps) for convenience related items and for other functions. F-CAN information moves at a faster speed (500 kbps) for "real time" functions such as fuel and emissions data. To allow both systems to share

information, the gauge control module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

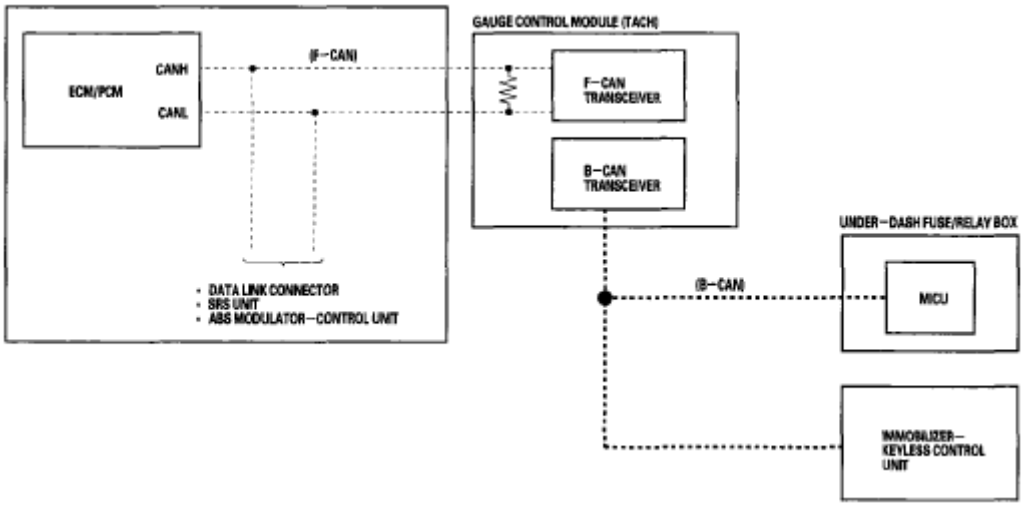


Fig. 3: Body Controller Area Network (B-CAN) And Fast Controller Area Network (F-CAN)

- The single wire method is used between the units not requiring the communication to move at a fast speed.
- Using a single wire method reduces the number of the wires used on the body controller area network.

GATEWAY FUNCTION

The gauge control module (tach) acts as a gateway to allow both systems to share information, the gauge control module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

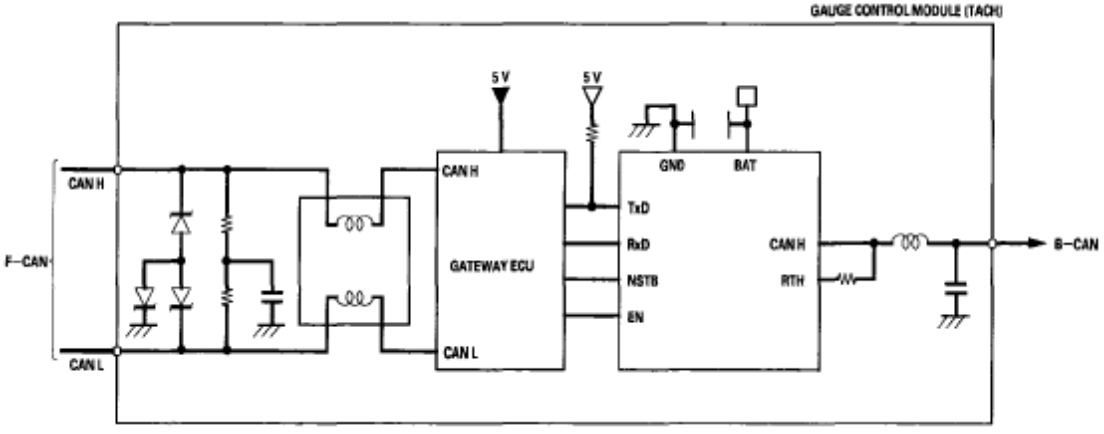


Fig. 4: Identifying Gateway Function

NETWORK "LOSS OF COMMUNICATION" ERROR CHECKING FUNCTION

The ECUs on the CAN circuit send messages to each other. If there are any malfunctions on the network, the odo/trip display on the gauge control module can indicate the error messages by entering the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).

4-DOOR ERROR CODE LIST

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	UART communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and UART communication
Error 23	B-CAN and UART communication
Error 123	F-CAN, B-CAN and UART communication

2-DOOR ERROR CODE LIST

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	F-CAN and B-CAN communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and B-CAN communication
Error 23	F-CAN and B-CAN communication
Error 123	F-CAN and B-CAN communication

NOTE: For further information about Error indication, refer to the gauge control module self-diagnostic function (see SELF-DIAGNOSTIC FUNCTION).

Example: Error 1

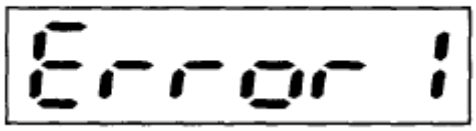


Fig. 5: Identifying Gauge Control Module Indicate Error Messages Display

SELF-DIAGNOSTIC FUNCTION

By connecting the HDS to the data link connector (DLC), the HDS can retrieve the diagnostic results from the MICU via a diagnostic line called K-LINE. The K-LINE is distinguished from the CAN line, and connected to the CAN related ECUs. The MICU is a gateway between the HDS and B-CAN related ECUs, and sends B-CAN diagnostic results to the HDS. When performing a function test with the HDS, the HDS sends an output signal through the K-LINE to the MICU. The MICU either relays the request to another ECU, or commands the function its self.

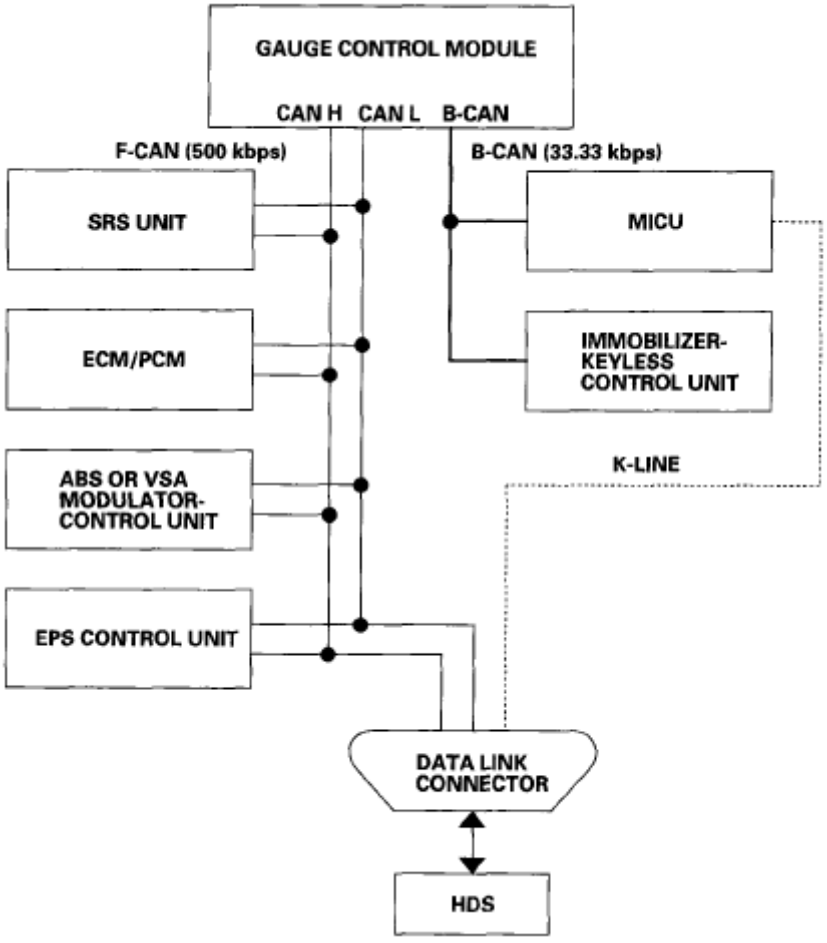


Fig. 6: Identifying Self-Diagnostic Function

WAKE-UP AND SLEEP FUNCTION

The multiplex integrated control system has "wake-up" and "sleep" functions to decrease parasitic draw on the battery when the ignition switch is OFF.

- In the sleep mode, the MICU stops functioning (communication and CPU control) when it is not necessary for the system to operate.
- As soon as any operation is requested (for example, a door is unlocked), the related control unit in the sleep mode immediately wakes up and begins to function.
- When the ignition switch is turned OFF, and the driver's door is opened, then closed, there is a delay about 40 seconds before the control unit goes from the wake-up mode to the sleep mode.
- The sleep mode will not function if any door is opened or if a key is in the ignition.
- The draw is reduced from 200 mA to less than 35 mA when in the sleep mode.

NOTE: Sleep and Wake-up Mode Test (see SLEEP AND WAKE-UP MODE TEST).

FAIL-SAFE FUNCTION

To prevent improper operation, the MICU has a fail-safe function. In the fail-safe mode, the output signal is fixed when any part of the system malfunctions (for example, a faulty control unit or communication line).

Each control unit has a hardware fail-safe function that fixes the output signal when there is a CPU malfunction, and a software fail-safe function that ignores the signal from a malfunctioning control unit, which allows the system to operate normally.

HARDWARE FAIL-SAFE CONTROL

Fail-safe function

When a CPU problem or a abnormal power supply voltage is detected, the MICU moves to the hardware fail-safe mode, and each system output load is set to the pre-programmed fail-safe value.

SOFTWARE FAIL-SAFE CONTROL

When any of the data from the B-CAN circuit cannot be received within a specified time, or an unusual combination of the data is recognized, the MICU moves to the software fail-safe mode. The data that cannot be received is forced to a pre-programmed value.

POWER SUPPLY VOLTAGE MONITORING FUNCTION

The MICU monitors the power supply voltage (back-up voltage). If the voltage goes below 10 V, the MICU sends a MICU message and will not store DTCs.

POWER SUPPLY VOLTAGE MONITORING FUNCTION

	Input	Output
MICU	Battery voltage	MICU*
*: MICU internal circuit		

ENTRY LIGHTS CONTROL SYSTEM

The MICU controls the ceiling light ON/OFF and dimming based upon the input signals from each switch.

ENTRY LIGHTS CONTROL SYSTEM

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch Left rear door switch (4-door) Right rear door switch (4-door) Driver's door lock knob switch (LOCK)	Interior light
B-CAN	Keyless LOCK signal	

LIGHTING SYSTEM (HEADLIGHTS, PARKING LIGHTS, SIDE MARKER LIGHTS, LICENSE PLATE LIGHTS, AND TAILLIGHTS)

The MICU contains the relay circuits of the headlight high/low beam and taillights, and controls the lighting system ON/OFF based upon the input signals from the combination light switch.

LIGHTING SYSTEM (HEADLIGHTS, PARKING LIGHTS, SIDE MARKER LIGHTS, LICENSE PLATE LIGHTS, AND TAILLIGHTS)

	Input	Output
	Headlight OFF switch	Headlights (low beam)

MICU	Headlight ON switch Dimmer switch Combination light switch (parking lights, side marker lights, license plate lights, and taillights) Passing switch	Headlights (high beam) Parking lights Side marker lights License plate lights Taillights

DAYTIME RUNNING LIGHTS

The MICU controls the exterior lights as a daytime running lights based upon the input signals from the each switch.

DAYTIME RUNNING LIGHTS

	Input	Output
MICU	Headlight OFF switch Headlight ON switch Dimmer switch Combination light switch (parking lights, side marker lights, license plate lights, and taillights) Passing switch	Headlights (low beam) Headlights (high beam) Parking lights Slide marker lights License plate lights Taillights
B-CAN	Transmission range switch (P position)	

TURN SIGNAL/HAZARD FLASHER

The MICU controls the turn signal/hazard flasher based upon the input signals from the turn signal and hazard warning switches.

TURN SIGNAL/HAZARD FLASHER

	Input	Output
MICU	IG1 power supply Turn signal switch (left/right) Hazard warning switch	Turn signal lights (left/right)

POWER DOOR LOCKS (VEHICLE SPEED SENSE)

The MICU controls the door lock actuators based upon the B-CAN and input signals.

POWER DOOR LOCKS (VEHICLE SPEED SENSE)

	Input	Output
MICU	IG1 power supply Driver's door switch Front passenger's door switch Left rear door switch (4-door) Right rear door switch (4-door) Trunk lid latch switch Driver's door lock knob switch (UNLOCK) Front passenger's door lock knob switch (UNLOCK)	Door lock (LOCK)

	Left rear door lock knob switch (UNLOCK) (4-door) Right rear door lock knob switch (UNLOCK) (4-door) Transmission range switch (P position)	
B-CAN	Vehicle speed pulse Engine RPM	

POWER DOOR LOCKS (NORMALLY LOCK/UNLOCK OPERATION)

The MICU controls the door lock actuators based upon the input signals of each switch.

POWER DOOR LOCKS (NORMALLY LOCK/UNLOCK OPERATION)

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch Left rear door switch (4-door) Right rear door switch (4-door) Trunk lid latch switch Driver's door lock knob switch (LOCK) Driver's door lock switch (LOCK/UNLOCK) Driver's door key cylinder switch (UNLOCK) Front passenger's door lock switch (LOCK/UNLOCK)	Door lock actuators (LOCK/UNLOCK)

DOOR LOCK RESPONSE OPERATION

The MICU controls the door lock actuators based upon the B-CAN signals.

MICU INPUT/OUTPUT REFERENCE

	Input	Output
B-CAN	Door lock signals	Door lock actuator (LOCK/UNLOCK) Driver's door lock actuator (UNLOCK) Trunk lid release actuator

POWER WINDOW KEY-OFF OPERATION

The MICU controls the power windows key-off operation based upon the input signals.

POWER WINDOW KEY-OFF OPERATION

	Input	Output
MICU	IG1 power supply Driver's door switch Front passenger's door switch	Power window key-off timer

KEYLESS ENTRY SYSTEM

The MICU controls the door lock actuators based upon the input signals of each switch and the B-CAN signals.

KEYLESS ENTRY SYSTEM

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch	Door lock actuator (LOCK/UNLOCK) Driver's door lock actuator (UNLOCK)
	Front passenger's door switch	
	Left rear door switch (4-door)	
	Right rear door switch (4-door)	
	Trunk lid latch switch	
	Driver's door lock knob switch (LOCK/UNLOCK)	
	Driver's door lock switch (LOCK/UNLOCK)	Trunk lid release actuator
	Driver's door key cylinder switch (UNLOCK)	
	Front passenger's door lock switch (LOCK/UNLOCK)	
	Transmission range switch (P position)	
B-CAN	Keyless LOCK signal	

KEYLESS PANIC

The MICU controls the keyless PANIC based upon the B-CAN signals.

KEYLESS PANIC

	Input	Output
B-CAN	Keyless PANIC signal (action, headlight low, parking light and horn)	Headlights (low beam)
		Parking lights
		Side marker lights
		License plate lights
		Taillights

SECURITY ALARM SYSTEM

The MICU controls the lighting system and horn based upon the input signals of each switch and the B-CAN signals.

SECURITY ALARM SYSTEM

	Input	Output
MICU	IG1 power supply Ignition key switch Audio switch Driver's door switch Front passenger's door switch Left rear door switch (4-door) Right rear door switch (4-door)	Horn Headlights Parking lights Side marker lights License plate lights
	Trunk lid latch switch	
	Driver's door key cylinder switch (UNLOCK)	

	Driver's door lock knob switch (UNLOCK)	Taillights
	Front passenger's door lock knob switch (UNLOCK)	
	Left rear door lock knob switch (UNLOCK) (4-door)	
	Right rear door lock knob switch (UNLOCK) (4-door)	
	Trunk key cylinder switch	
	Hood switch	
B-CAN	Keyless LOCK signal Door lock signal	

KEY-IN REMINDER

The MICU controls the door lock actuators based upon the IG1, the driver's door switch, and the driver's door lock knob switch signals.

KEY-IN REMINDER

	Input	Output
MICU	IG1 power supply	Door lock actuator (LOCK/UNLOCK)
	Driver's door switch	Driver's door lock actuator (UNLOCK)
	Driver's door lock knob switch	

KEY INTERLOCK (A/T)

The MICU controls the key interlock solenoid based upon the IG1, the transmission range switch, and the park-pin switch signals.

KEY INTERLOCK (A/T)

	Input	Output
MICU	Ignition switch ACC Transmission range switch (P position) Park-pin switch	Key interlock solenoid

ANSWER BACK RESPONSE OPERATION

The MICU controls the lighting system and horn based upon the B-CAN signals.

ANSWER BACK RESPONSE OPERATION

	Input	Output
B-CAN	Answer back signals (headlight low, horn, parking lights)	Horn Headlights Parking lights Side marker lights License plate lights Taillights

WIPER/WASHER

The MICU controls the wiper motor and the washer motor based upon the IG1 and the wiper/washer switch signals.

WIPER/WASHER

	Input	Output
MICU	IG1 power supply	Wiper motor
	Wiper switch (INT and LO) Wiper switch (LO and HI) Wiper switch (MIST) Washer switch Wiper intermittent speed	Washer motor

COLLISION DETECTION SIGNAL (CDS)

The MICU controls the door lock actuators based upon the IG1 and the B-CAN signals.

COLLISION DETECTION SIGNAL (CDS)

	Input	Output
MICU	IG1 power supply	Door lock (LOCK/UNLOCK)
B-CAN	SRS signal (front, side and rear) Impact sensors	

HDS INPUTS AND COMMANDS

Certain inputs happen so quickly that the HDS cannot update fast enough. Hold the switch that is being tested while monitoring the Data List.

This should give the HDS time to update the signal on the Data List.

Because the HDS software is updated to support the release for newer vehicles it is not uncommon to see system function tests that are not supported.

Make sure that the most current software is loaded.

HDS INPUTS AND COMMANDS (INPUT)

System Menu	Data List	Data List Indication
	Cruise Control Main Switch	OFF/ON
	Cruise Control Set Switch	OFF/ON
	Cruise Control Resume Switch	OFF/ON
	Washer Fluid Level Switch	OFF/ON
	Gauge Select/Reset Switch	OFF/ON
	Parking Brake Switch	OFF/ON
	Brake Fluid Level Switch	OFF/ON
	Illumination Volume Plus Switch	OFF/ON
	Illumination Volume Minus Switch	OFF/ON
	km/h Mile/h Select Switch	OFF/ON
	Fuel Sending Unit Input 1	deg
	Fuel Sending Unit Input 2	VOLTAGE
	ABS Indicator	OFF/ON
	EBD Indicator (Electronic Brake Distribution)	OFF/ON

Gauges	Cruise Control Main Switch Indicator	OFF/ON
	MIL Indicator	OFF/ON
	Washer Fluid Level Indicator (Canada)	OFF/ON
	DRL Indicator	OFF/ON
	Low Oil Pressure Indicator	OFF/ON
	Charging System Indicator	OFF/ON
	Cruise Main Switch ON Indicator	OFF/ON
	Maintenance Minder Indicator	OFF/ON
	High Beam Indicator	OFF/ON
	Parking Light ON Indicator	OFF/ON
	Low Fuel Warning Indicator	OFF/ON
	Security Indicator	OFF/ON
	Fog light Indicator	OFF/ON
	Seat Belt Indicator	OFF/ON
	Speed Indicator (km/h)	0-249 km/h, over 250 km/h, Fail
	Speed Indicator (mile/h)	0-154 mile/h, over 155 mile/h, Fail
	A/T Gear Position Switch (R)	OFF/ON
	A/T Gear Position Switch (P)	OFF/ON
Lighting	Driver's Door Switch	OFF/ON
	Hazard Switch	OFF/ON
	Headlight Switch (OFF)	OFF/ON
	Headlight Switch (PARKING)	OFF/ON
	Headlight Switch (HEADLIGHT)	OFF/ON
	Headlight Switch (High Beam)	OFF/ON
	Headlight Switch (PASSING)	OFF/ON
	Turn Signal Switch (LEFT)	OFF/ON
	Turn Signal Switch (RIGHT)	OFF/ON
	Fog Light Switch	OFF/ON
	Ignition Key Cylinder Light Command	OFF/ON
	Interior Light Command	OFF/ON
	Left Turn Signal Command	OFF/ON
	Right Turn Signal Command	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON
	Fog Light Command	OFF/ON
	DRL Command	OFF/ON
	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON

Door Locks	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
Keyless	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Trunk Lid/Tailgate Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
Wipers	Brake Pedal Position Switch	OFF/ON
	Windshield Wiper Switch (LOW)	OFF/ON
	Windshield Wiper Switch (HIGH)	OFF/ON
	Windshield Wiper Switch (MIST)	OFF/ON
	Windshield Wiper Switch (INT)	OFF/ON
	Windshield Washer Switch	OFF/ON
	Windshield Wiper Motor PARK Switch	OFF/ON
	Intermittent Wiper Dwell Timer	0.0-1.0 kohms/OPEN
	Windshield Wiper Motor HI Command	OFF/ON
	Windshield Wiper Motor LO Command	OFF/ON

	Windshield Washer Motor Command	OFF/ON
Security	Ignition Key Cylinder Switch	OFF/ON
	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Trunk Lid/Tailgate Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Radio Switch	OFF/ON
	Hazard Switch	OFF/ON
	Hood Switch	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Look Switch (LOCK)	OFF/ON
	Driver's Door Look Switch (UNLOCK)	OFF/ON
	Driver's Door Look Knob Switch (LOCK)	OFF/ON
	Driver's Door Look Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
	Security Hazard Signal Command	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON

HDS INPUTS AND COMMANDS (FUNCTION TEST)

System Menu	Data List Indication	Data List and Operation Time
Door	LOCK all doors	Outputs LOCK signal 1 time (0.6 sec) to all doors
	UNLOCK driver's side door	Outputs UNLOCK signal 1 time (0.6 sec) to driver's door
	UNLOCK all doors	Outputs UNLOCK signal 1 time (0.6 sec) to all doors
Lighting	Interior Light Command	Illuminates for 30 seconds.
	LEFT Turn Signal Command	Blinks for 5 seconds.
	RIGHT Turn Signal Command	Blinks for 5 seconds
	Hazard flasher	Blinks turn signal (left and right) for 15 seconds.
	Headlight Command	Operates headlight (low) for 15 seconds.

	Headlight HIGH Beam Command	Operates headlight (high) for 15 seconds.
	Fog Light	Operates a relay of front fog lights for 15 seconds.
	Parking Light Command	Operates small lights for 15 seconds.
Keyless	Trunk Lid/Tailgate Release Command	Unlock trunk
Security	Horn Command	Operates horn for 1 second.
Wipers	Windshield Wiper Motor LOW Command	Operates windshield wiper motor for 5 seconds (low speed).
	Windshield Wiper Motor HIGH Command	Operates windshield wiper motor for 5 seconds (high speed).
	Windshield Washer Command	Operates windshield washer motor for 5 seconds.
Gauges (2-door)	Self Diagnostic Test	-
	Speedometer	0-300 mph
	Tachometer	0-10,000 rpm
	Fuel Level Gauge	0-255 litter
	Engine Temperature Gauge	0-150deg (°C)
	ABS Indicator	Illuminates for 10 seconds.
	EBD Indicator (Electronic Brake Distribution)	Illuminates for 10 seconds.
	Cruise Activation Indicator	Illuminates for 10 seconds.
	MIL Status	Illuminates for 10 seconds.
	Windshield Washer Fluid Level Indicator	Illuminates for 10 seconds.
	Daytime Running Light Indicator (Canada)	Illuminates for 10 seconds.
	Engine Oil Pressure Indicator	Illuminates for 10 seconds.
	Charging System Indicator	Illuminates for 10 seconds.
	Cruise Control Main Switch Indicator	Illuminates for 10 seconds.
	Maintenance Required Indicator	Illuminates for 10 seconds.
	High Beam Indicator	Illuminates for 10 seconds.
	Light On Indicator	Illuminates for 10 seconds.
	Low fuel level Indicator	Illuminates for 10 seconds.
	Security Indicator	Illuminates for 10 seconds.
	Fog Light	Illuminates for 10 seconds.
	Seat Belt Indicator Lamp	Illuminates for 10 seconds.
	Trip Meter	0-9999.9 (mph)
	A/T Gear Position Indicator (P)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (R)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (N)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (D)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (D3)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (2)	Illuminates for 10 seconds.
	A/T Gear Position Indicator (1)	Illuminates for 10 seconds.

	Illumination Brightness Control	(Illuminates for meter panel according) 30-100%
	Key Alarm Chime	Sound alarm for 10 seconds.
	Headlight Alarm Chime	Sound alarm for 10 seconds.
	Seat Belt Reminder Chime	Sound alarm for 10 seconds.
Gauges (4-door)	Self Diagnostic Test	-

TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A

Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see **GENERAL TROUBLESHOOTING INFORMATION** for R18A1 or **GENERAL TROUBLESHOOTING INFORMATION**) or F-CAN loss of communication errors first, then perform this diagnosis if the symptom is related to the B-CAN system.

NOTE: Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures .

1. Compare the symptom with this list of B-CAN related systems:
   - Gauge control module
   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Door-open and trunk-open indicators
   - Horns (security and panic)
   - Chimes (key-in, seat belt, lights-on, and parking brake)
   - Power window/moonroof timer
   - Wiper/washer
   - Security
   - Keyless entry
   - Power door locks
   - Key interlock
   - Dash light brightness

   Is the symptom related to the B-CAN system?

   YES - Go to step 2.

   NO - Go to the system troubleshooting for the system with the symptom.

2. Connect the HDS to the data link connector (A), then turn the ignition switch ON (II).

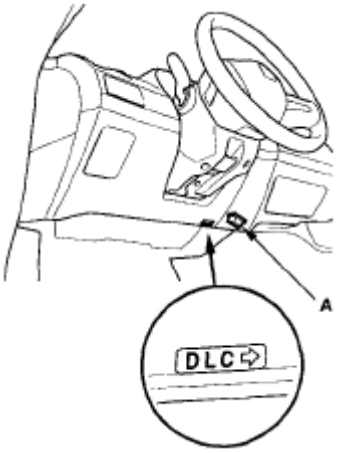


Fig. 7: Connecting HDS To Data Link Connector

3. From the BODY ELECTRICAL menu, select UNIT INFORMATION, and then select CONNECTED UNIT listed to see if the following control units are communicating with the HDS.
   - MICU
   - Gauge control module
   - Immobilizer-keyless control unit

   NOTE:
   - **If a unit is communicating with the HDS, DETECT will be displayed.**
   - **If a unit is not communicating or the vehicle is not equipped, "Not Available" will be displayed.**

   Are all control units communicating with the HDS?

   YES - Go to step 4.

   NO - If any of the control units are not communicating, go to **B-CAN SYSTEM DIAGNOSIS TEST MODE B** . If all units are not communicating or only the MICU is communicating, go to **DTC B1000** .

4. Select the system that has the problem from the BODY ELECTRICAL menu, then select DTCs.

   Are any DTCs indicated?

   YES - Go to step 5.

   NO - If the problem is related to one of the following items, go to **B-CAN SYSTEM DIAGNOSIS TEST MODE C** if the system does not stop or turn off. Go to **TEST MODE D** if the system does not run or turn on.

   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights

- Horn (security and panic)
- Wiper/washer

If the problem is related to one of the following items, go to the troubleshooting for that individual system.

- Gauge control module
- Door-open and trunk-open indicators
- Chimes (key-in, seat belt, lights-on, and parking brake)
- Security
- Keyless entry
- Key interlock
- Dash light brightness
- Audio system
- Navigation (if equipped)

5. Record all DTCs, and sort them by DTC type.
6. Troubleshoot the DTC(s) in this order:

- Battery voltage DTCs.
- Internal error DTCs.
- Loss of communication DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1008 and B1011 are retrieved, begin by troubleshooting B1008).
- Signal error DTCs.

TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE B

Perform this diagnosis if any of the control units are not communicating (Not Available is displayed in the HDS) as found by the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

1. Using the HDS, select the system that has the symptom from the BODY ELECTRICAL menu.
2. Select DTCs, and then check for loss of communication DTCs.

   Are any loss of communication DTCs indicated?

   YES - Go to step 3.

   NO - Replace the MICU.

3. Perform the input test for the unit not communicating with the HDS.

UNIT NOT COMMUNICATING

Unit not communicating
MICU
Gauge control module (tach) (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**)

Immobilizer-keyless control unit (see **IMMOBILIZER-KEYLESS CONTROL UNIT INPUT TEST**)

TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE C

Perform this diagnosis if a component that is controlled by the B-CAN system does not stop or turn off.

NOTE:

- **If the component does not turn on, go to B-CAN SYSTEM DIAGNOSIS TEST MODE D .**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see HDS INPUTS AND COMMANDS).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated?

   YES - Go to B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

   NO - Go to step 2.

2. Turn off the switch that controls the malfunctioning component.
3. Select DATA LIST from the TEST MODE menu, and check the input of the switch that controls the component.

   Does the HDS indicate the switch is OFF?

   YES - Go to step 4.

   NO - Go to step 6.

4. In the DATA LIST, check the output signal of the malfunctioning component.

   Is the output signal OFF?

   YES - Go to step 5.

   NO - Replace the control unit that controls the device that will not turn OFF.

5. Check the relay, if applicable, then check for a short in the wire between the relay and the component, the relay and control unit, or the component and control unit.

   Are the relay and the wire harness OK?

   YES - Replace the control unit that controls the component that will not turn OFF.

NO - Replace the relay or repair the wire harness.

6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

   Is the switch and wire harness OK ?

   YES - Replace the control unit that monitors the switch.

   NO - Replace the switch or repair the wire harness.

TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE D

Perform this diagnosis if a component that is controlled by the B-CAN system does not run or come on.

NOTE:

- **If the component does not turn off or stop, go to B-CAN SYSTEM DIAGNOSIS TEST MODE C .**
- **See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see HDS INPUTS AND COMMANDS).**
- **Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures in this section.**

1. Check the fuse of the malfunctioning output device.

   Is the fuse OK?

   YES - Go to step 2.

   NO - Replace the fuse and recheck.

2. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated?

   YES - Go to B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

   NO - Go to step 3.

3. Turn ON the switch that controls the malfunctioning component.
4. Select DATA LIST from the TEST MODE menu, and check output signal for the malfunctioning component.

   Is there an output signal?

   YES - Go to step 5.

   NO - Go to step 9.

5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

   Are the relay and circuit OK?

   YES - Go to step 6.

   NO - Replace the relay or repair the wire circuit.

6. Perform the function test for the malfunctioning component.

   Does the output device pass the function test?

   YES - Go to step 7.

   NO - Replace the component.

7. With the malfunctioning output device connected, connect a voltmeter between the malfunctioning output device and body ground on the wire that the control unit uses to control the output device circuit.
8. Select MISC. TEST from the TEST MODE menu, and do the forced operation test of the malfunctioning component.

   Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

   YES - Replace the component.

   NO - Replace the control unit that controls the malfunctioning component.

9. Select DATA LIST from the TEST MODE menu, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

   Does the switch input indicated ON when the switch is ON?

   YES - Replace the control unit that controls the malfunctioning component.

   NO - Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

    Is the switch and the wire harness OK?

    YES - Replace the control unit that monitors the switch.

    NO - Replace the switch or repair the wire harness.

TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE 1 AND TEST MODE 2 (WITHOUT THE HDS)

Special Tools Required

MPCS (MCIC) service connector 07WAZ-001010A

TEST MODE 1

Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see **GENERAL TROUBLESHOOTING INFORMATION**) or F-CAN loss of communication errors first, then perform this diagnosis if the HDS is not available.

1. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES - Go to step 2.

   NO - Find and repair the cause of the blown fuse.

2. Remove the left kick panel.
   - 4-door (see **FRONT DOOR SILL AREA - 4-DOOR**)
   - 2-door (see **DOOR SILL AREA - 2-DOOR**)
3. Turn the ignition switch ON (II), and move the ceiling light switch to the middle (door) position.
4. Connect the MPCS service connector (A) to the MCIC socket (B) in the under-dash fuse/relay box.

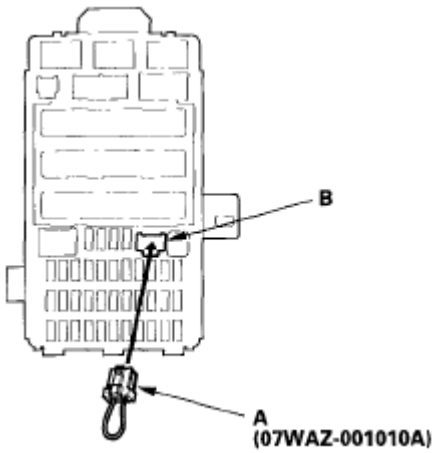


Fig. 8: Connecting MPCS Service Connector To MCIC Socket

5. Wait 5 seconds, and watch the ceiling light. When the ceiling light flashes quickly once, and then goes off the system is in Test Mode 1.
6. Check for B-CAN DTCs indicated by the gauge control module (tach) odometer/trip meter display while still in Test Mode 1. Push the odometer select/reset button to display the next code. After you get to the last code, the display shows END. If no DTCs are stored, the display will read NO.

   Are any DTCs indicated?

   YES - Go to step 7.

NO - Go to step 10.

7. Record all DTCs and sort them.
8. Troubleshoot the DTCs in this order:
   - Battery voltage DTCs
   - Internal error DTCs
   - Loss of communication DTCs (begin with the lowest number first; for example, if B1008 and B1011 are retrieved, troubleshoot B1008 first)
   - Signal error DTCs
9. Clear the DTCs by pressing and holding the select/reset button for about 13 seconds. You will hear a beep to confirm the code have been cleared. Operate the devices that failed, and recheck for codes.

Test Mode 2

10. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5-10 seconds, then re-insert it to enter Mode 2. When the system enters Mode 2, the ceiling light will flash two times quickly and then go off.

NOTE: If the MPCS connector is disconnected for too short or too long of a time, or the ignition switch is turned OFF, the system will return to Test Mode 1.

11. The following tables list the circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the ceiling light will blink once. If the circuit is faulty, there will be no indication.

MICU REFERENCE

Item
Driver's door lock switch (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock knob switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door key cylinder switch (UNLOCK) (1)
Driver's door key cylinder switch (LOCK) (1)
Front passenger's door lock switch (UNLOCK)
Front passenger's door lock switch (LOCK)
Front passenger's door lock knob switch (UNLOCK) (3)
Left rear door lock knob switch (UNLOCK) (4-door) (3)
Right rear door lock knob switch (UNLOCK) (4-door) (3)
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN) (4-door)
Right rear door switch (OPEN) (4-door)
Trunk lid latch switch (OPEN)
Trunk key cylinder switch (UNLOCK) (2)

Audio switch
Windshield wiper HI/LO switch
Windshield wiper INT/LO switch
Windshield wiper MIST switch
Windshield washer switch (ON)
Windshield wiper intermittent dwell time controller
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Hazard warning switch (ON)
Headlight switch (ON)
Headlight switch (OFF)
Lighting switch (ON)
Dimmer switch (ON)
Passing switch (ON)
Hood switch (OPEN) (3)
Transmission range switch (P)
Brake switch (ON)
(1) A second key is necessary to check the key cylinder inputs.Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position. (2) USA LX, EX and Si models (3) With security

Does the ceiling light work properly in all switch positions?

YES - Go to function and input test for the system related to the failure.

NO - Repair the open, short, or replace the faulty switch.

SLEEP AND WAKE-UP MODE TEST

1. Shift to the sleep mode:

   Turn the ignition switch OFF, and remove the key. If the MICU receives no signals from the inputs listed below, it will go into sleep mode in less than 40 seconds.

   Driver's door lock switch (LOCK or UNLOCK)

   Driver's door key cylinder switch (LOCK or UNLOCK)

   Front passenger's door lock switch (LOCK or UNLOCK)

   Trunk lid latch switch (Trunk lid closed)

   Hazard warning switch (OFF)

2. Confirm the sleep mode:

   Check for voltage on the B-CAN communication line (PNK wires); there should be battery voltage in the sleep mode. Check the parasitic draw at the battery while shifting into the sleep mode; amperage should change from about 200 mA to less than 35 mA.

3. Shift to the wake up mode:

When the ignition switch is turned ON (II), the MICU, gauge control module, immobilizer-keyless control unit-receiver, and ECM/PCM wake up at the same time without "talking" to each other through the communication lines. When any switch in the multiplex integrated control system is turned on, it wakes up its related control unit which, in turn, wakes up the other units. After confirming the sleep mode, look in the following table for the switch most related to the problem. Operate that switch and see if its control unit wakes up.

NOTE: If any control unit is faulty and will not wake up, several circuits in the system will malfunction at the same time. In the table, the control unit is followed by a list of the switches and input signals that can wake it up.

Door switches (door open)

Driver's door lock switch (LOCK or UNLOCK)

Driver's door lock knob switch (LOCK or UNLOCK)

Driver's door key cylinder switch (LOCK or UNLOCK)

Front passenger's door lock switch (LOCK or UNLOCK)

Front passenger's door lock knob switch (LOCK or UNLOCK)

Left rear door lock knob switch

Right rear door lock knob switch

Trunk key cylinder switch (UNLOCK)*

Trunk lid latch switch (Trunk lid open)

Hood switch (with security) (hood open)

Hazard warning switch (ON)

Combination light switch (Parking, Headlight, Dimmer, Passing ON)

Ignition key switch (key inserted)

* : USA LX, EX and Si models

CIRCUIT DIAGRAM

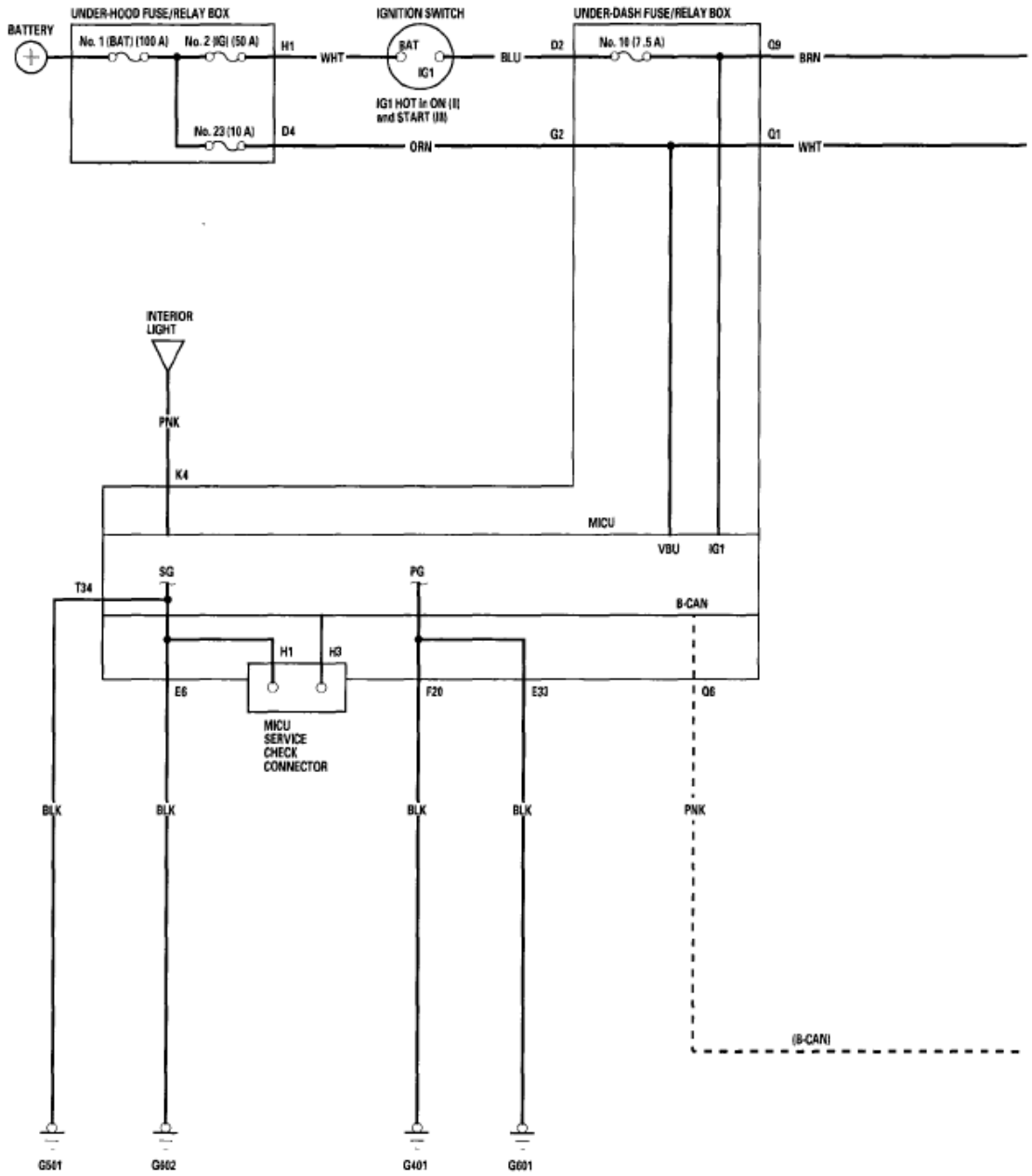


Fig. 9: Multiplex Integrated Control System - Circuit Diagram (1 Of 2)

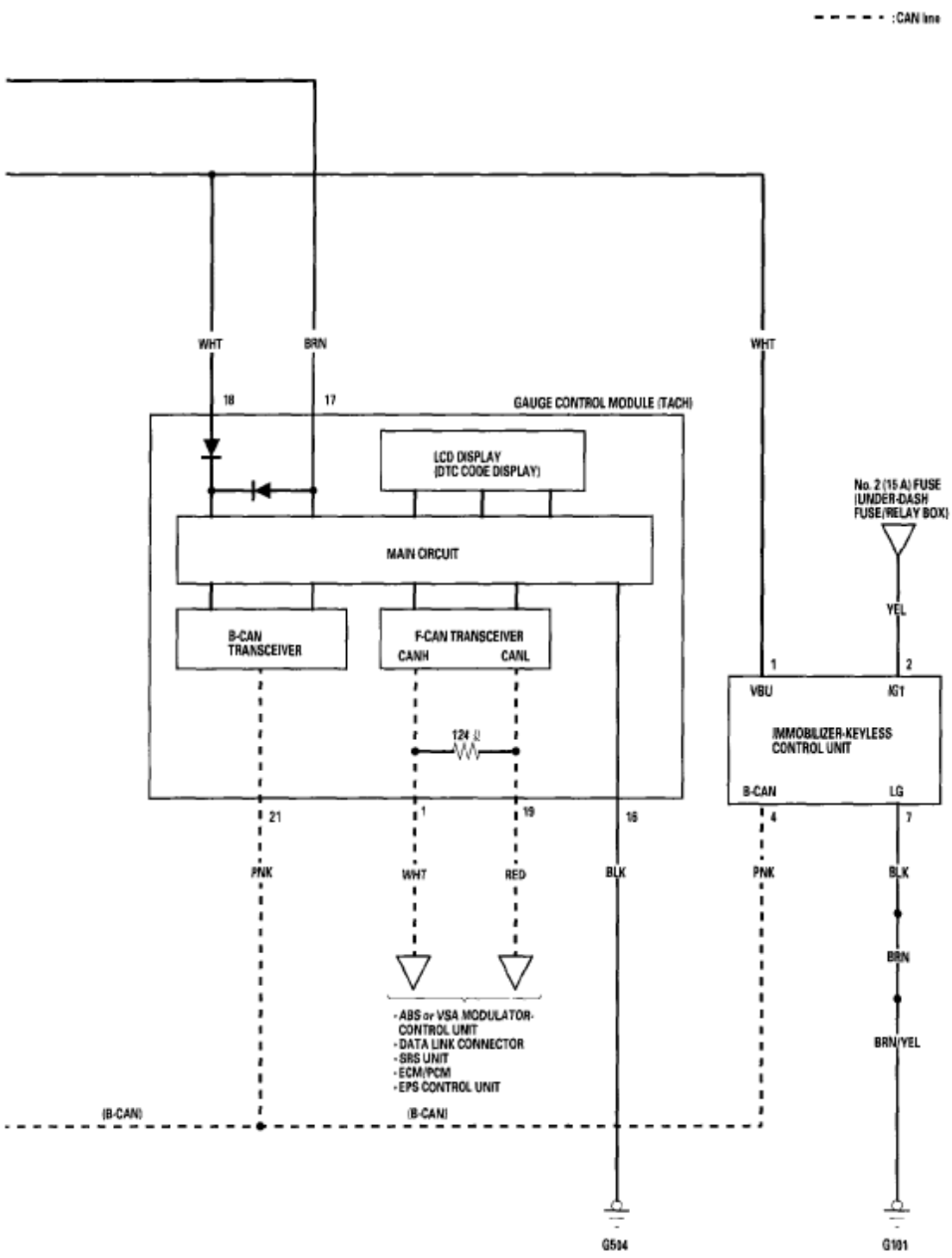


Fig. 10: Multiplex Integrated Control System - Circuit Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC B1000: COMMUNICATION BUS LINE ERROR

NOTE: **If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).**

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1000 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The communication bus line is OK at this time. Check for loose or poor connections, or worn/shorted wires. If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

5. Check for DTCs with the HDS.

   Are DTCs B1008, B1011, and B1032 also indicated with DTC B1000?

   YES - Go to step 6.

   NO - Faulty MICU; replace the under-dash fuse/relay box.

6. Turn the ignition switch OFF.
7. Disconnect the appropriate connector at each control unit in **APPROPRIATE CONNECTOR AT EACH CONTROL UNIT** one at a time. Clear the DTCs, then recheck for DTCs after each unit is disconnected.

   APPROPRIATE CONNECTOR AT EACH CONTROL UNIT

Control Unit	Appropriate Connector
Gauge control module (tach)	36P connector
Immobilizer-keyless control unit	7P connector

   Is DTC B1000 indicated with each individual unit disconnected?

   YES - Go to step 8.

   NO - Replace the control unit that was disconnected and B1000 did not reset.

8. Disconnect all of the appropriate connectors for each of the units in table below.

   APPROPRIATE CONNECTOR AT EACH CONTROL UNIT

Control Unit	Appropriate Connector
Gauge control module (tach)	36P connector
Immobilizer-keyless control unit	7P connector

9. Disconnect the under-dash fuse/relay box connector Q(16P).
10. Check for continuity between the under-dash fuse/relay box connector Q (16P) No. 6 terminal and body ground.

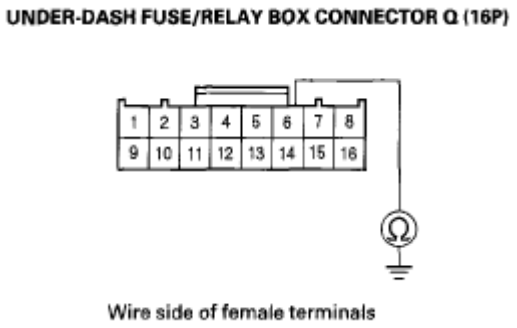


Fig. 11: Checking Continuity Between Under-Dash Fuse/ Relay Box Connector Q (16P) No. 6 Terminal And Body Ground

Is there continuity?

YES - Repair the short to ground in the wire between the under-dash fuse/relay box and the affected control unit.

NO - Go to step 11.

11. Measure the voltage between the under-dash fuse/relay box connector Q (16P) No. 6 terminal and body ground.

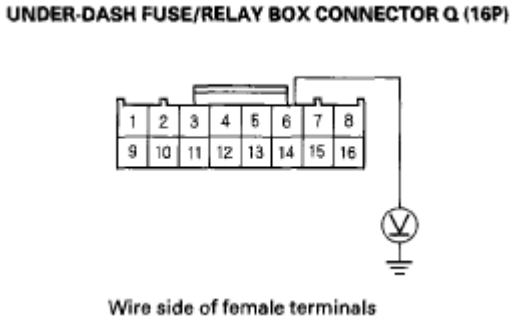


Fig. 12: Checking Voltage Between Under-Dash Fuse/ Relay Box Connector Q (16P) No. 6 Terminal And Body Ground

Is there less than 0.1 V?

YES - Replace the under-dash fuse/relay box. See **UNDER-DASH FUSE/RELAY BOX (ALL EXCEPT HYBRID)** .

NO - Repair a short to power in the wire between the under-dash fuse/relay box and the affected control unit.

DTC B1001: MICU (CPU) ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.

2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Is DTC B1001 indicated?

YES - Faulty MICU; replace the under-dash fuse/relay box.

NO - Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

DTC B1002: MICU (EEPROM) ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Is DTC B1002 indicated?

YES - Faulty MICU; replace the under-dash fuse/relay box.

NO - Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

DTC B1008: MICU LOST COMMUNICATION WITH GAUGE CONTROL MODULE (A/T MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Is DTC B1008 indicated?

YES - Go to step 5.

NO - Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at gauge control module (tach) 36P connector and at the under-dash fuse/relay box

connector Q (16P). If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

5. Check for DTCs with the HDS.

   Are DTCs B1011 and B1032 also indicated with DTC B1008?

   YES - Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open.

   NO - Go to the gauge control module (tach) input test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

DTC B1011: MICU LOST COMMUNICATION WITH GAUGE CONTROL MODULE (VSP/NE MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1011 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at gauge control module (tach) 36P connector and at under-dash fuse/relay box connector Q(16P). If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

5. Check for DTCs with the HDS.

   Are DTCs B1008 and B1032 also indicated with DTC B1011?

   YES - Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open.

   NO - Go to the gauge control module (tach) input test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

DTC B1032: MICU LOST COMMUNICATION WITH THE SRS UNIT (CDS MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1032 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector, and at the under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

5. Check for DTCs with the HDS.

   Are DTCs B1008 and B1011 also indicated with DTC B1032?

   YES - Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open.

   NO - Do the gauge control module (tach) input test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

DTC B1036: IG1 LINE INPUT ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1036 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connection at the gauge control module (tach) 36P connector, and at the under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see **BATTERY TEST**) and the charging system.

5. Check for DTCs with the HDS.

   Is DTC B1008 indicated with DTC B1036?

YES - Troubleshoot the indicated DTC.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for voltage between the gauge control module (tach) 36P connector No. 17 terminal and body ground.

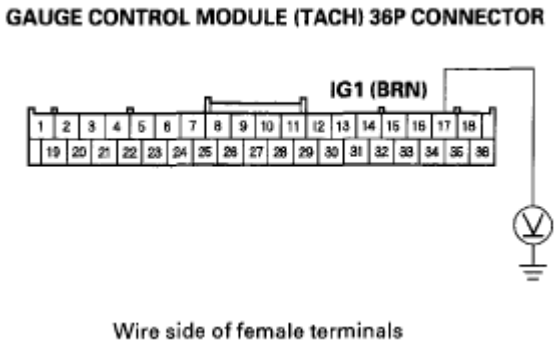


Fig. 13: Checking Voltage Between Gauge Control Module 36P Connector No. 17 Terminal And Body Ground

Is there battery voltage?

YES - Faulty MICU; substitute a known-good under-dash fuse/relay box and recheck.

NO - Check No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the gauge control module (tach), or repair a short in the wire between the under-dash fuse/relay box and the gauge control module (tach).

DTC B1150: COMMUNICATION BUS LINE ERROR (BUS-OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Are DTCs B1001, B1008, B1011, B1032, and or B1900 also indicated with DTC B1150?

YES - Troubleshoot DTC B1000.

NO - If only DTC B1150 is present, replace the gauge control module (tach) assembly. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector, and at the under-dash fuse/relay box

connector Q(16P).

DTC B1900: COMMUNICATION BUS LINE ERROR (BUS-OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Are DTCs B1000, B1008, B1011, B1032, and or B1900 also indicated with DTC B1900?

YES - Troubleshoot DTC B1000.

NO - If only DTC B1900 is present, replace the immobilizer-keyless control unit. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer control unit 7P connector, and at the under-dash fuse/relay box connector Q (16P).

MICU INPUT TEST

1. Before troubleshooting the multiplex integrated control system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, G, K, and T.

NOTE: All connector views are wire side of female terminals.

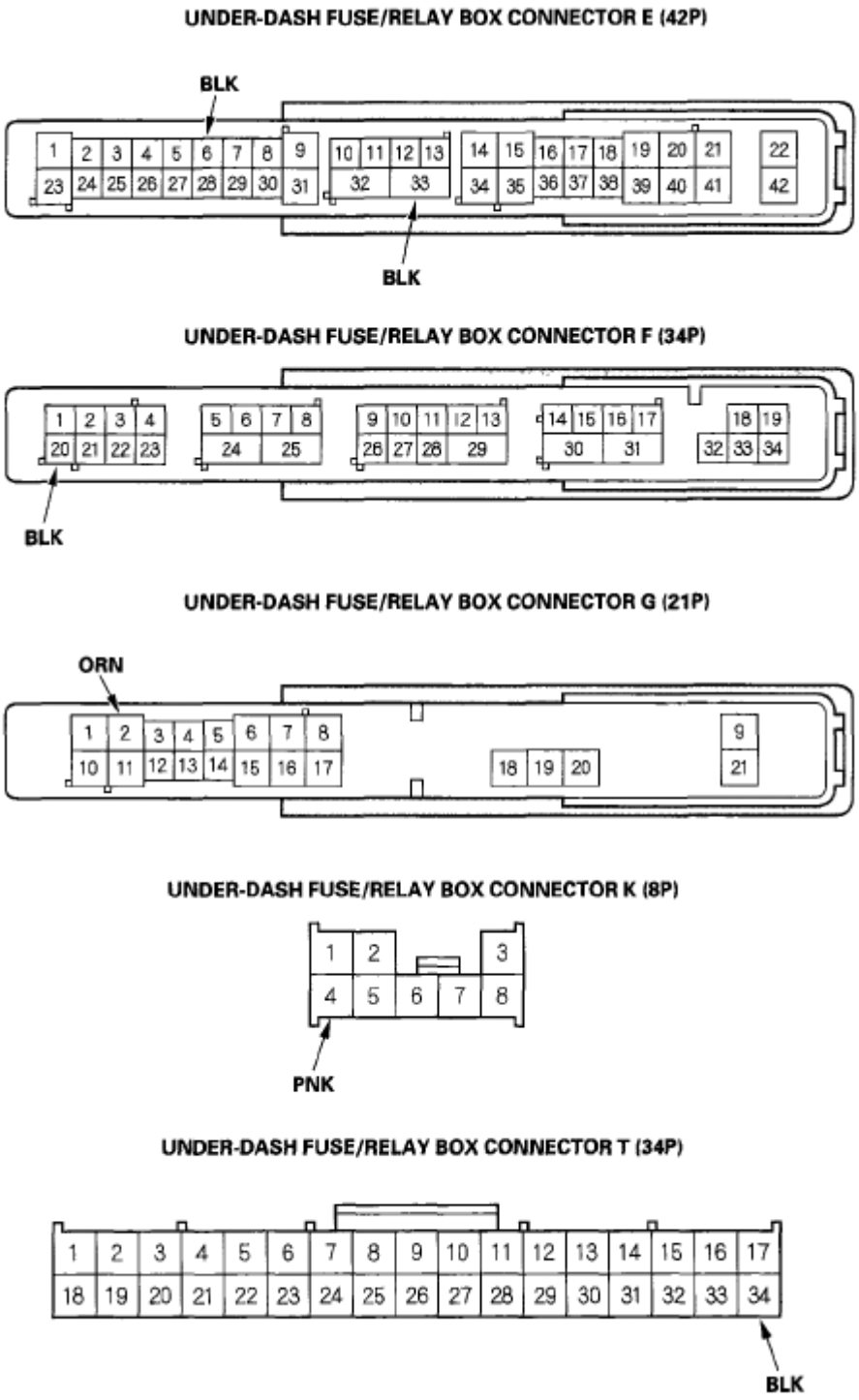


Fig. 14: Identifying Fuse In Under-Dash Fuse/Relay Box

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connector still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

MICU INPUT TEST REFERENCE (CONNECTOR DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
G2	ORN	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
K4	PNK	Under all conditions	Attach to ground: The ceiling light should come on.	• Blown No. 22 (7.5 A) fuse in the under-hood fuse/relay box • Blown bulb(s) • Faulty ceiling light • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

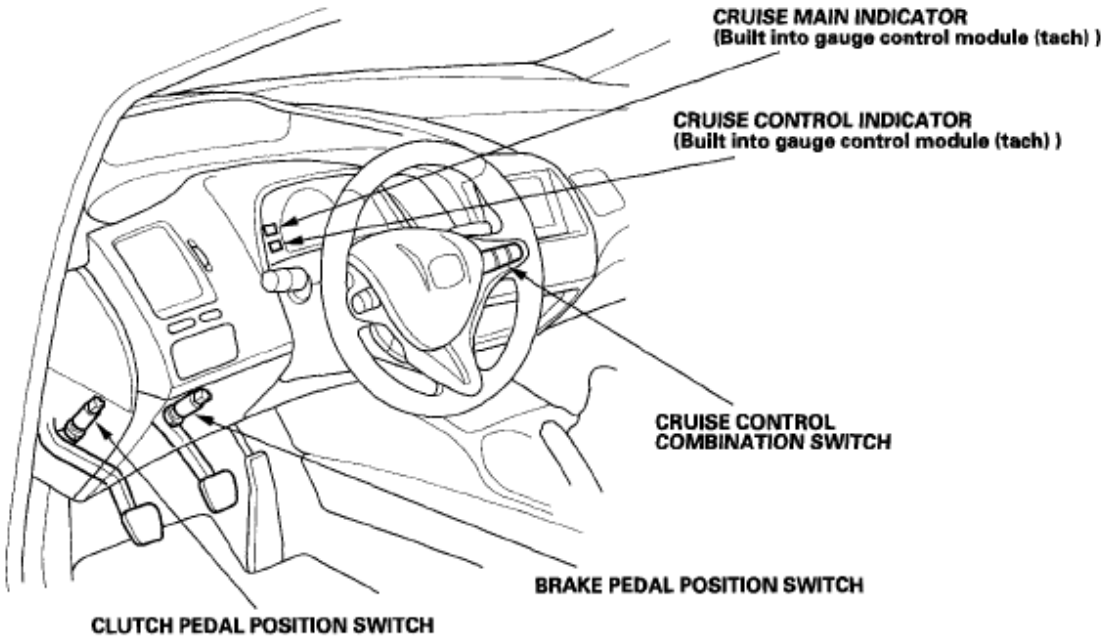
MICU INPUT TEST REFERENCE (CONNECTORS RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire

2006-08 ACCESSORIES & EQUIPMENT

Cruise Control (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX



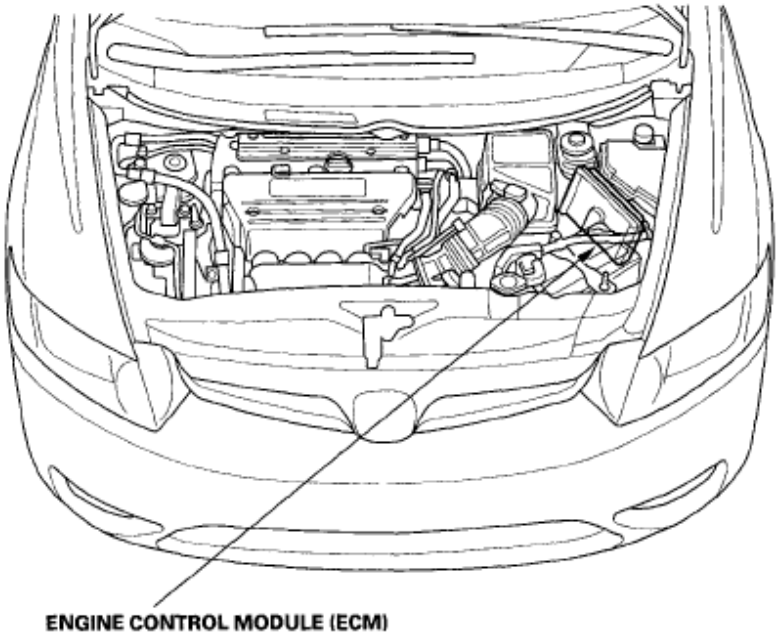


Fig. 1: Locating Cruise Control Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	
Cruise control can be set, but the cruise main indicator does not come on	Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).	Faulty gauge control module (tach)
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control indicator signal input.	Faulty gauge control module (tach)
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Open circuit, loose or disconnected terminals: YEL/RED, LT GRN or LT GRN/BLK, ORN
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). 3. Test the brake pedal position switch signal input. Do the brake pedal position switch test (see **BRAKE PEDAL POSITION SWITCH TEST**).	• Short to power on the BRN wire • Faulty brake pedal position switch

Set speed does not cancel (engine rpm stays high) when the clutch pedal is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the clutch pedal position switch signal input. 3. Do the clutch pedal position switch test (see **CLUTCH PEDAL POSITION SWITCH TEST**).	• Short in the LT BLU wire • Faulty clutch pedal position switch
Set speed does not cancel when the cruise control main switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control main switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Short to power on the PNK, YEL wire
Set speed does not cancel when the cancel switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control cancel switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Open circuit, loose or disconnected terminals: YEL/RED, LT GRN or LT GRN/BLK, ORN
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the brake pedal position switch adjustment (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input. 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH**	• Faulty brake pedal position switch • Open circuit, loose or disconnected terminals: LT GRN/BLK, ORN

	TEST/REPLACEMENT).	
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the clutch pedal)	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the clutch pedal position switch adjustment (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control resume/accel switch signal input. Test the clutch pedal position switch signal input. 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	• Faulty clutch pedal position switch • Open circuit, loose or disconnected terminals: LT GRN/BLK, ORN
With the ignition switch ON (II), and the lighting switch turned on, the cruise control combination switch illumination does not come on	Replace the cruise control combination switch (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	

CIRCUIT DIAGRAM

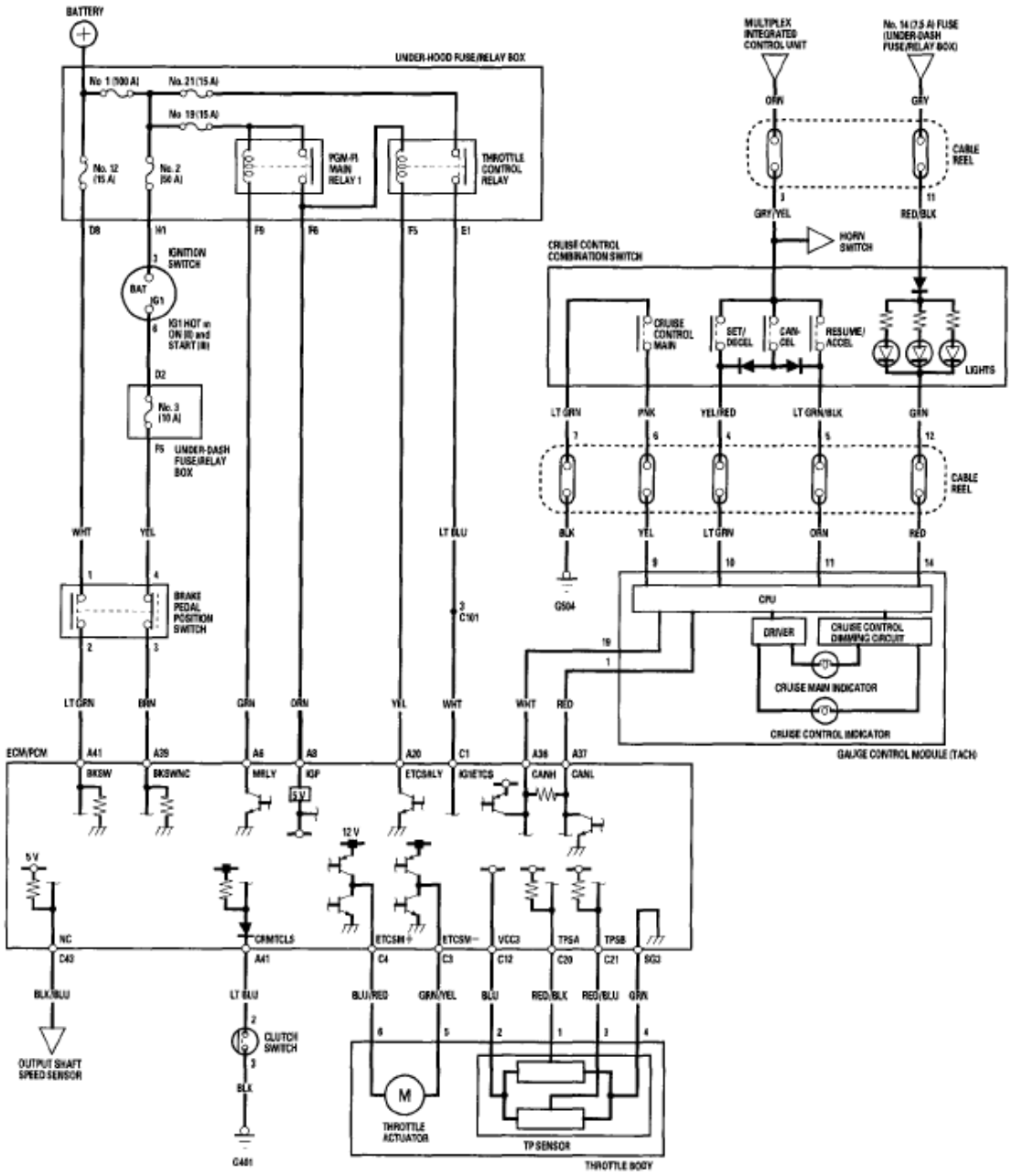


Fig. 2: Cruise Control - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CRUISE CONTROL INPUT TEST

NOTE: Always make sure you have the latest HDS software before doing the input tests.

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see **GENERAL TROUBLESHOOTING INFORMATION**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

4. Go to PGM-FI, and check for DTCs (see **DTC TROUBLESHOOTING INDEX** .
5. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

NOTE: Intermittent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex their circuits, and note if any of the test results change.

Cruise Control Input Test

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake pedal position switch signal	Brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 3 (10 A) fuse in the under-dash fuse/relay box • Open in the wire between the ECM and the brake pedal position switch • A wire shorted to ground between the ECM/PCM and the brake pedal position switch
Clutch pedal position switch signal	Clutch pedal pressed, then released	SHIFT/CLUTCH SW should indicate ON when the clutch pedal is pressed and OFF when the clutch pedal is released.	• Faulty clutch pedal position switch • Open in the wire between the ECM and the clutch pedal position switch • Short to ground in the wire between the ECM and the clutch pedal position switch • Poor ground G401
Cruise control main switch signal	Cruise control main switch ON and OFF	CRUISE MASTER (MAIN) SW should indicate ON when the cruise control main switch is turned ON and OFF when the cruise control main switch is turned OFF.	• Faulty cruise control main switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module (tach) and the cruise control main switch • Short to ground in the wire between the

			gauge control module (tach) and the cruise control main switch
Set switch signal	Set/decel switch pressed and released	CRUISE SET SW should indicate ON when the set/decel switch is pressed and OFF when the set/decel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module (tach) and the cruise control combination switch • Short to ground in the wire between the gauge control module (tach) and the cruise control combination switch
Resume switch signal	Resume/accel switch pressed and released	CRUISE RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module (tach) and the cruise control combination switch • Short to ground in the wire between the gauge control module (tach) and the cruise control combination switch
Cancel switch signal	Cancel switch pressed and released	CRUISE CANCEL SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach)
Cruise control indicator signal	Start the engine, turn the cruise control main switch on, and drive the vehicle above 25 mph (40 km/h). Set and cancel the cruise control.	CRUISE INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	• Faulty ECM • Cruise control was not set at the test by other malfunction

CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT**

LOCATION INDEX) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Remove the driver's airbag (see **DRIVER'S AIRBAG REPLACEMENT**).
2. Remove the steering wheel trim.

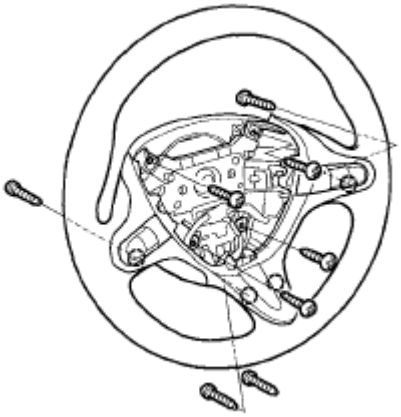


Fig. 3: Removing Steering Wheel Trim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the cruise control combination switch.

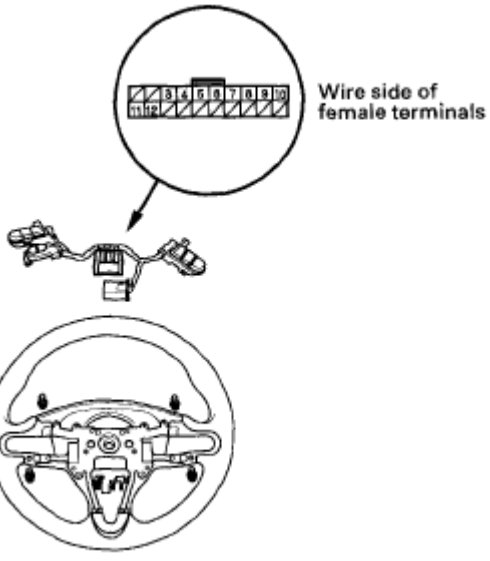


Fig. 4: Removing Cruise Control Combination Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check for continuity between the terminals in each switch position according to **Fig. 5** .
   - If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in one or more positions, replace the switch.

Terminal / Position	6	7	3		5	4
Cruise control main switch (ON)	○	○				
Cruise control main switch (OFF)						
Set/decel (PRESSED)			○			○
Resume/accel (PRESSED)			○		○	
Cancel (PRESSED)			○			○

Fig. 5: Checking Continuity Between Cruise Control Combination Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH PEDAL POSITION SWITCH TEST

1. Disconnect the 3P connector from the clutch pedal position switch.

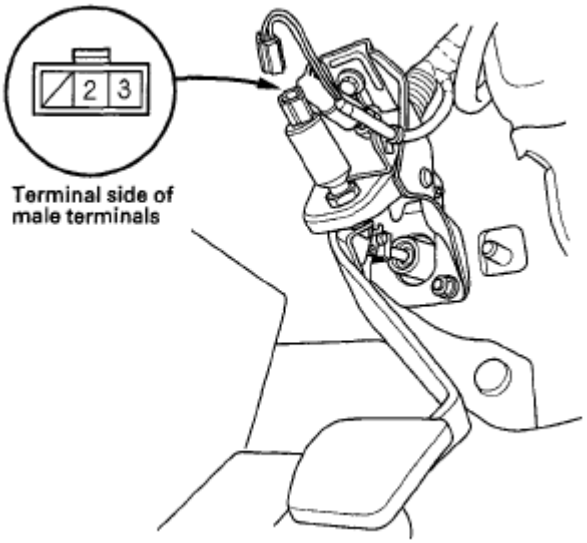


Fig. 6: Disconnecting 3P Connector From Clutch Pedal Position Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the clutch pedal position switch.
3. Check for continuity between the terminals according to **Fig. 7** .
   - If the continuity is not as specified, replace the clutch pedal position switch.
   - If OK, install the clutch pedal position switch, and adjust the pedal height (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**).

Terminal / Clutch Pedal Position Switch	2	3
PRESSED		
RELEASED	○	○

Fig. 7: Checking Continuity Between Clutch Pedal Position Switch

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-08 ACCESSORIES & EQUIPMENT

Cruise Control (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

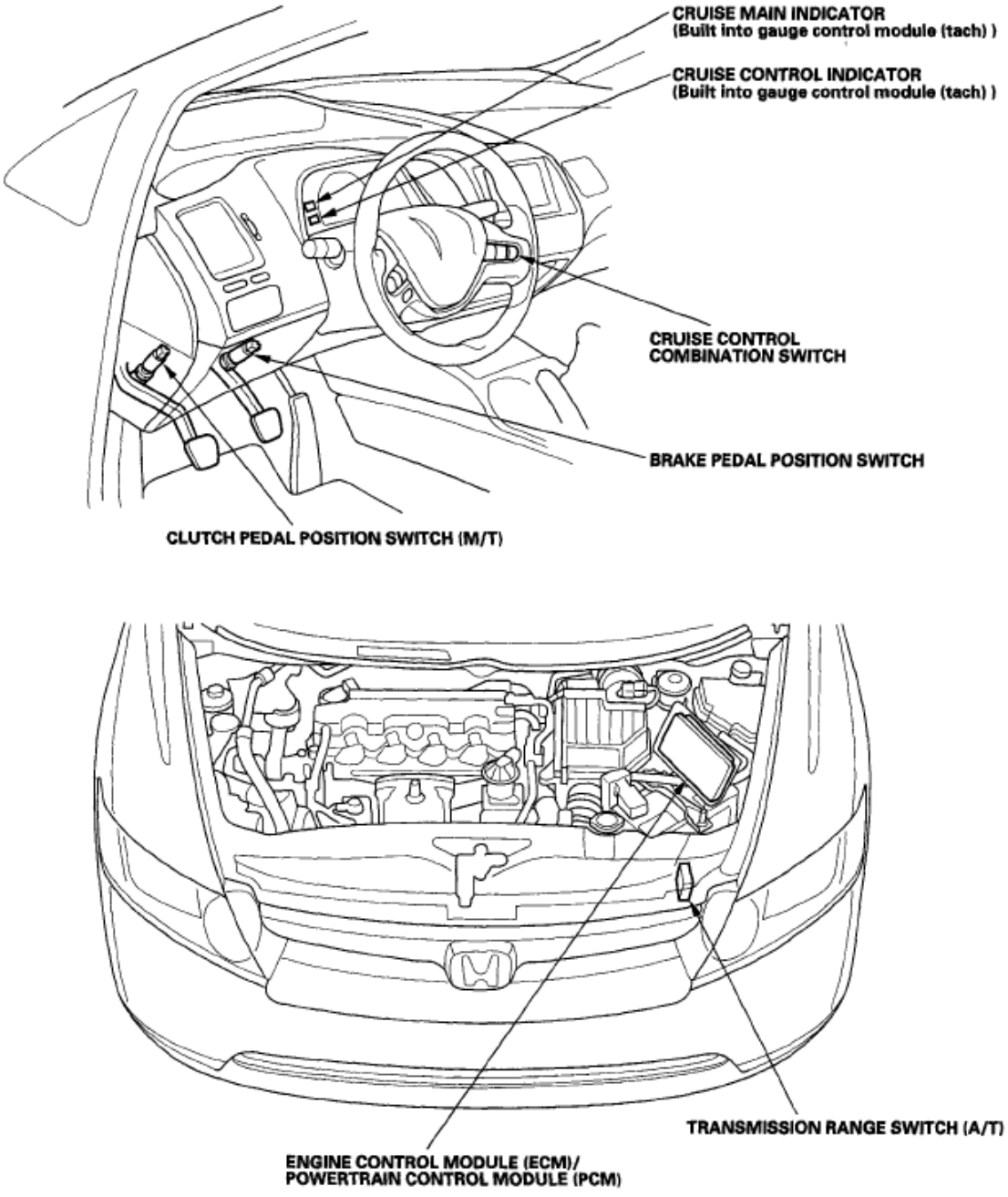


Fig. 1: Locating Cruise Control Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the No. 3(10 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	
Cruise control can be set, but the cruise main indicator does not come on	Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).	Faulty gauge control module (tach)
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control indicator signal input.	Faulty gauge control module (tach)
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Open circuit, loose or disconnected terminals: YEL/RED, LT GRN or LT GRN/BLK, ORN
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the brake pedal position switch signal input. 3. Do the brake pedal position switch test (see **BRAKE PEDAL POSITION SWITCH TEST**).	• Short to power on the BRN wire • Faulty brake pedal position switch

Set speed does not cancel (engine rpm stays high) when the clutch pedal is pressed (M/T)	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the clutch pedal position switch signal input. 3. Do the clutch pedal position switch test (see **CLUTCH PEDAL POSITION SWITCH TEST**).	• Short in the LT BLU wire • Faulty clutch pedal position switch
Set speed does not cancel when the cruise control main switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control main switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Short to power on the PNK, YEL wire
Set speed does not cancel when the cancel switch is pressed	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control cancel switch signal input. 3. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	Open circuit, loose or disconnected terminals: YEL/RED, LT GRN or LT GRN/BLK, ORN
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the brake pedal position switch adjustment (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input. 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH**	• Faulty brake pedal position switch • Open circuit, loose or disconnected terminals: LT GRN/BLK, ORN

	TEST/REPLACEMENT).	
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the clutch pedal) (M/T)	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Check the clutch pedal position switch adjustment (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**). 3. Do the cruise control input test (see **CRUISE CONTROL INPUT TEST**). Test the cruise control resume/accel switch signal input. Test the clutch pedal position switch signal input. 4. Do the cruise control combination switch test (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	• Faulty clutch pedal position switch • Open circuit, loose or disconnected terminals: LT GRN/BLK, ORN
With the ignition switch ON (II), and the lighting switch turned on, the cruise control combination switch illumination does not come on	Replace the cruise control combination switch (see **CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT**).	

CIRCUIT DIAGRAM

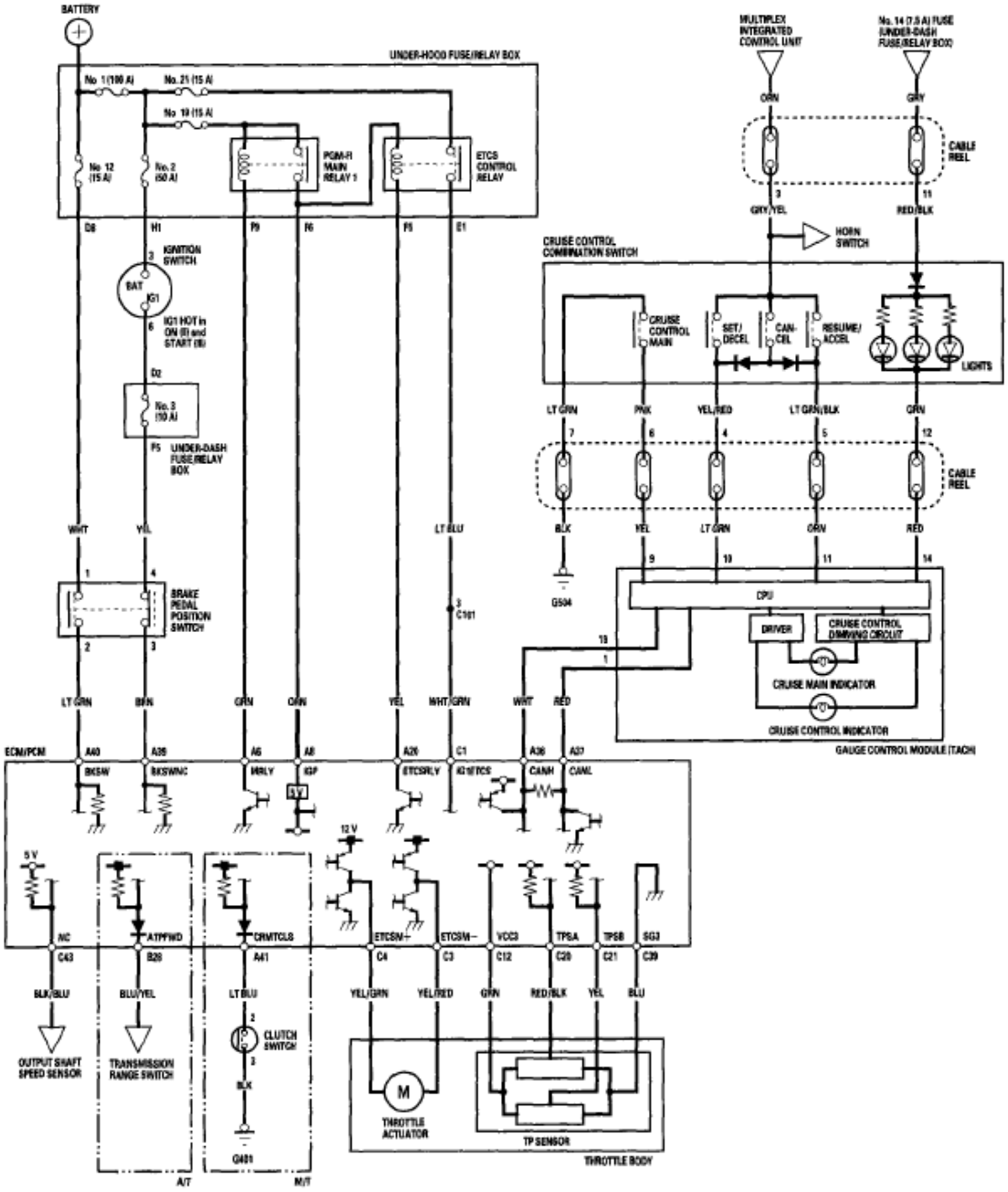


Fig. 2: Cruise Control - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CRUISE CONTROL INPUT TEST

NOTE: Always make sure you have the latest HDS software before doing the input tests.

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the

DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

4. Go to PGM-FI, and check for DTCs (see **DTC TROUBLESHOOTING**).
5. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

NOTE: Intermittent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex their circuits, and note if any of the test results change.

Cruise Control Input Test

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake pedal position switch signal	Brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 3 (10 A) fuse in the under-dash fuse/relay box • Open in the wire between the engine control module (ECM/powertrain control module (PCM) and the brake pedal position switch • A wire shorted to ground between the ECM/PCM and the brake pedal position switch
Clutch pedal position switch signal	Clutch pedal pressed, then released	SHIFT/CLUTCH SW should indicate ON when the clutch pedal is pressed and OFF when the clutch pedal is released.	• Faulty clutch pedal position switch • Open in the wire between the ECM and the clutch pedal position switch • Short to ground in the wire between the ECM and the clutch pedal position switch • Poor ground G401
Transmission range switch signal	Shift lever in D, D3, and 2	SHIFT/CLUTCH SW should indicate ON in P, R, N, and 1 and OFF in D, D3, and 2.	• Faulty transmission range switch • Open in the wire between the PCM and the transmission range switch • Short to in the wire ground between the PCM and the transmission range switch • Poor ground G101

Cruise control main switch signal	Cruise control main switch ON and OFF	CRUISE MASTER (MAIN) SW should indicate ON when the cruise control main switch is turned ON and OFF when the cruise control main switch is turned OFF.	• Faulty cruise control main switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module (tach) and the cruise control main switch • Short to ground in the wire between the gauge control module (tach) and the cruise control main switch
Set switch signal	Set/decel switch pressed and released	CRUISE SET SW should indicate ON when the set/decel switch is pressed and OFF when the set/decel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module and the cruise control combination switch • Short to ground in the wire between the gauge control module and the cruise control combination switch
Resume switch signal	Resume/accel switch pressed and released	CRUISE RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • Open in the wire between the gauge control module (tach) and the cruise control combination switch • Short to ground in the wire between the gauge control module (tach) and the cruise control combination switch
Cancel switch signal	Cancel switch pressed and released	CRUISE CANCEL SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach)
	Start the engine, turn the cruise control main	CRUISE INDICATOR	• Faulty ECM/PCM

Cruise control indicator signal	switch on, and drive the vehicle above 25 mph (40 km/h). Set and cancel the cruise control.	should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	• Cruise control was not set at the test by other malfunction

CRUISE CONTROL COMBINATION SWITCH TEST/REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Remove the driver's airbag (see **DRIVER'S AIRBAG REPLACEMENT**).
2. Disconnect the connectors (A), then remove the steering wheel trim (B).

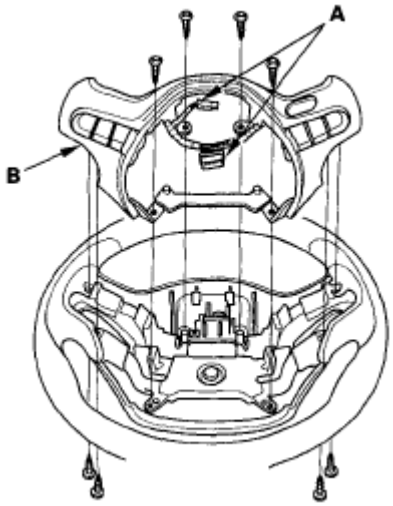


Fig. 3: Removing Steering Wheel Trim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the cruise control combination switch.

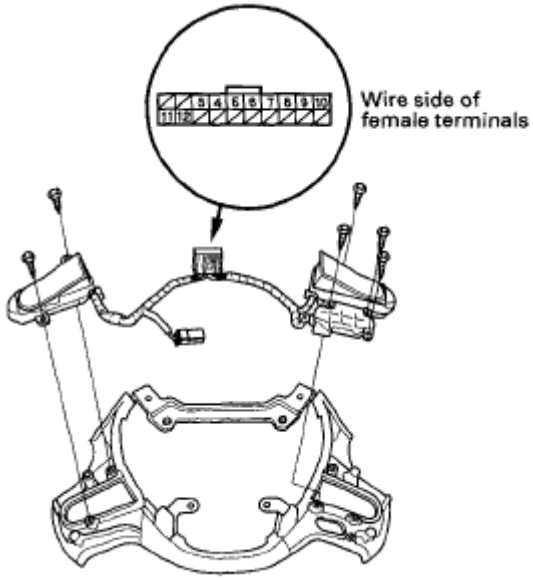


Fig. 4: Removing Cruise Control Combination Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check for continuity between the terminals in each switch position according to **Fig. 5** .
   - If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in one or more positions, replace the switch.

Terminal / Position	6	7	3		5	4
Cruise control main switch (ON)	○	○				
Cruise control main switch (OFF)						
Set/decel (PRESSED)			○			○
Resume/accel (PRESSED)			○		○	
Cancel (PRESSED)			○		○	○

Fig. 5: Checking Continuity Between Cruise Control Combination Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH PEDAL POSITION SWITCH TEST

1. Disconnect the 3P connector from the clutch pedal position switch.

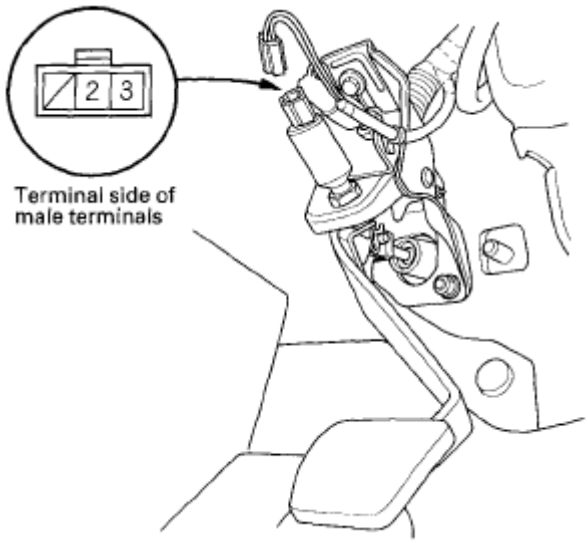


Fig. 6: Disconnecting 3P Connector From Clutch Pedal Position Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the terminals according to **Fig. 7** .
   - If the continuity is not as specified, replace the clutch pedal position switch.
   - If OK, install the clutch pedal position switch, and adjust the pedal height (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**).

Terminal / Clutch Pedal Position Switch	2	3
PRESSED		
RELEASED	o	o

Fig. 7: Checking Continuity Between Clutch Pedal Position Switch Test
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ACCESSORIES & EQUIPMENT

Immobilizer System - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

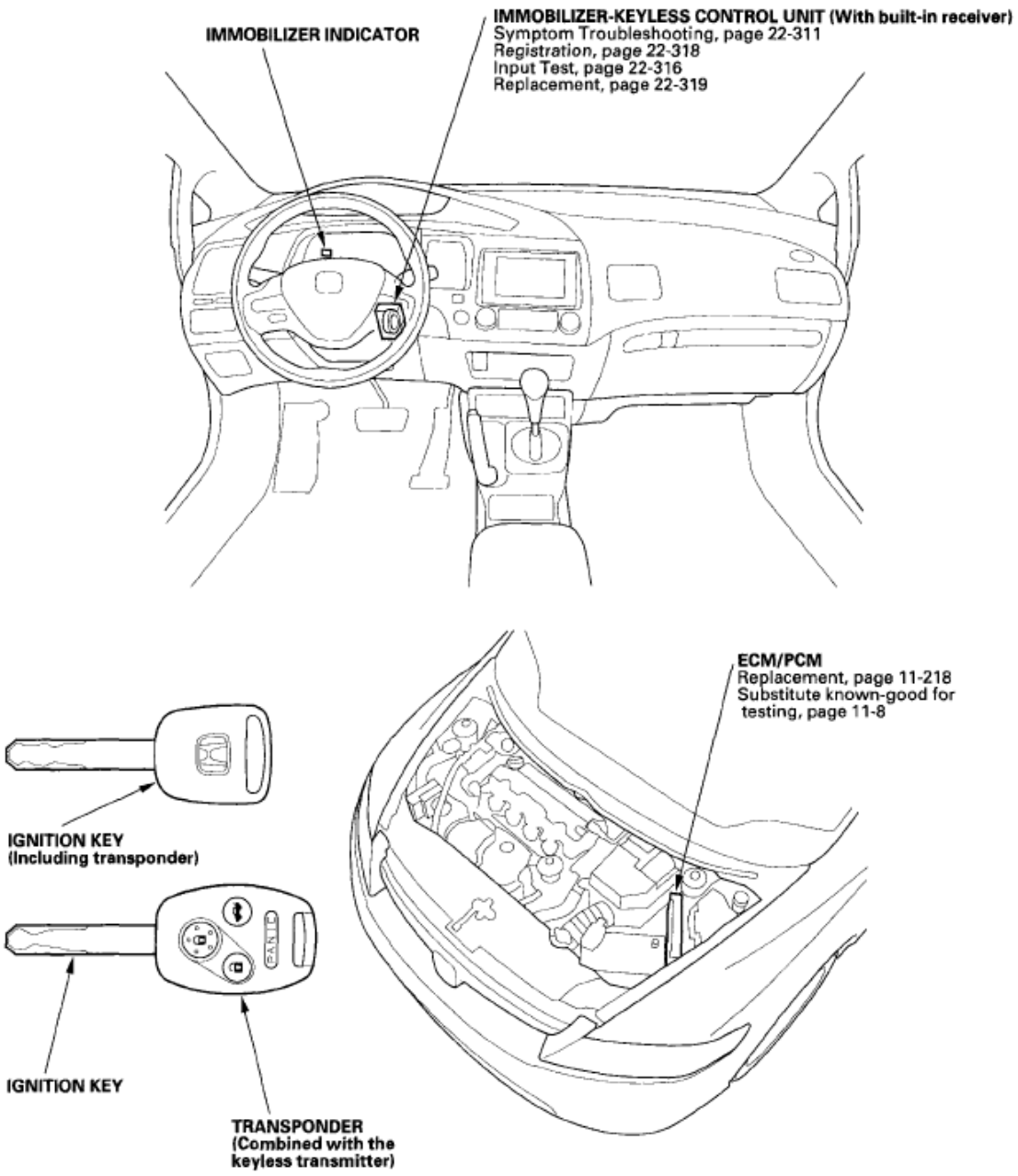


Fig. 1: Locating Immobilizer System Components
Courtesy of HONDA

SYSTEM DESCRIPTION

The vehicle is equipped with an immobilizer system that will disable the vehicle unless a programmed ignition key is used.

This system consists of a transponder combined with a keyless transmitter, immobilizer-keyless control unit, immobilizer indicator, imoes unit (built into the MICU), and the ECM/PCM.

When the immobilizer key (programmed by the HDS) is inserted into the ignition switch and turned to the ON (II) position, the immobilizer-keyless control unit sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer-keyless control unit which then sends a coded signal to the ECM/PCM and the MICU (imoes unit). The ECM/PCM and MICU (imoes unit) identify this coded signal, then fuel power is supplied.

NOTE: The transmitter is automatically programmed to the vehicle when a transponder is programmed by the HDS.

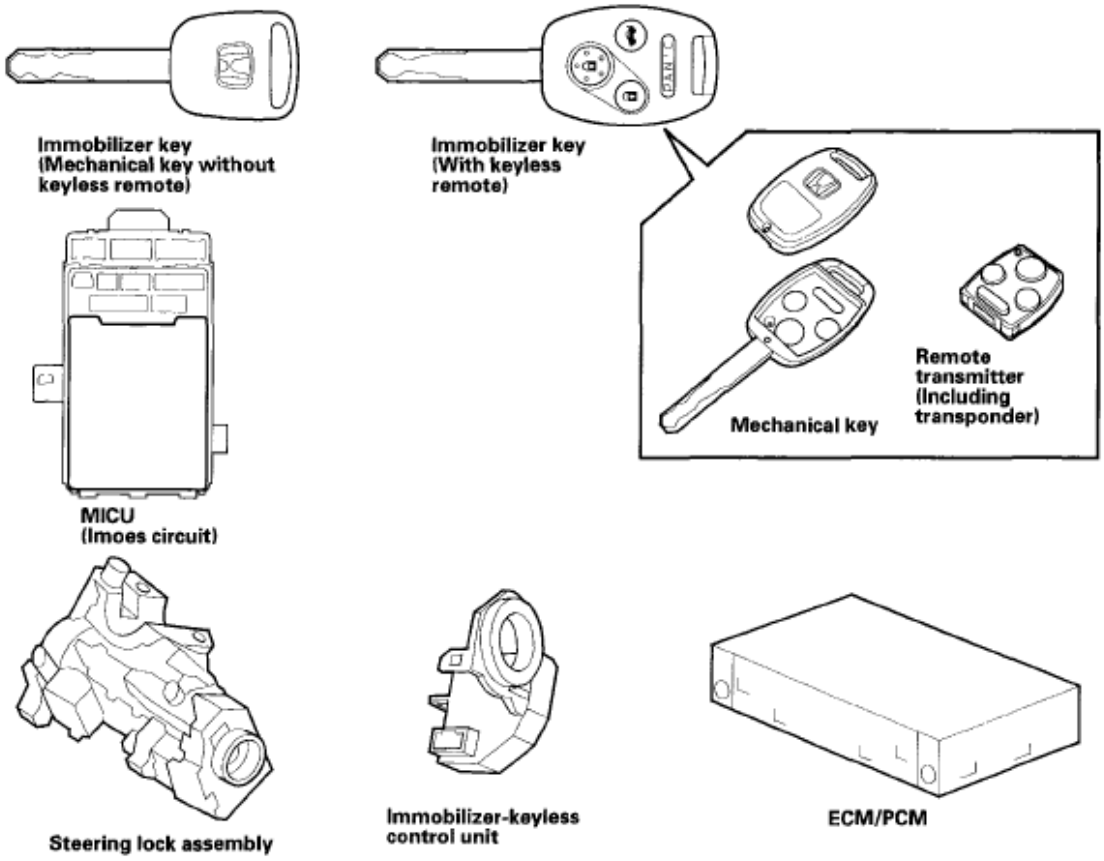


Fig. 2: Immobilizer System Description
Courtesy of HONDA

If the wrong key has been used or the code was not received or recognized by the unit, the indicator will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF. When the ignition switch is turned OFF, the indicator will blink ten times to signal that the unit has reset correctly, then the indicator will go off.

CIRCUIT DIAGRAM

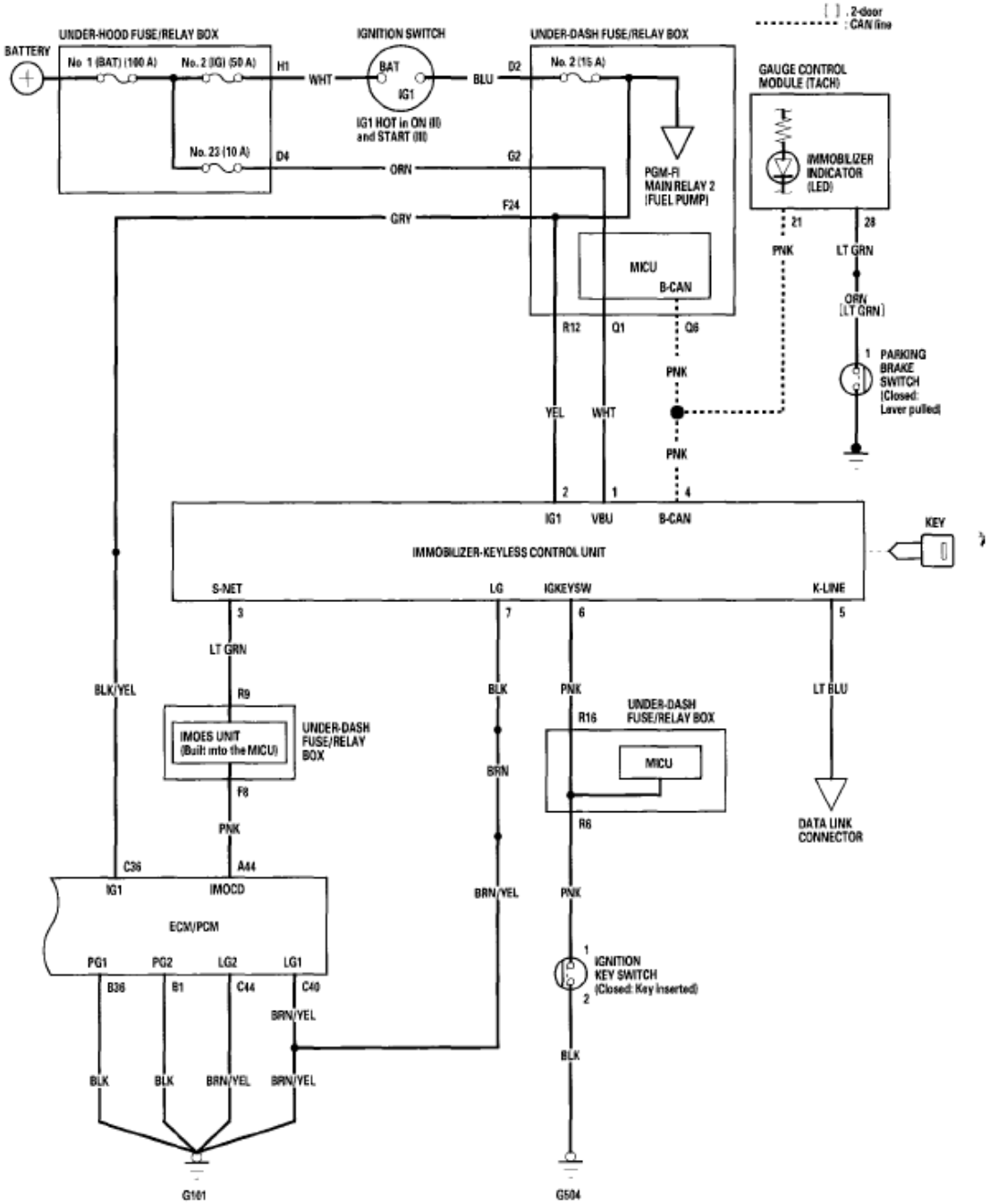


Fig. 3: Immobilizer System Circuit Diagram
Courtesy of HONDA

DTC TROUBLESHOOTING

DTC B1905: IMMOBILIZER-KEYLESS CONTROL UNIT LOST COMMUNICATION WITH MICU (DRLOCKSW MESSAGE)

NOTE: **If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).**

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs witch the HDS.

   Is DTC B1905 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer-keyless control unit 7P connector, and the under-dash fuse/relay box connector Q (16P).

5. Check for DTCs with the HDS.

   Is DTC B1160 also indicated with DTC B1905?

   YES - Faulty MICU; replace the under-dash fuse/relay box.

   NO - Replace the immobilizer-keyless control unit.

DTC B1906: IMMOBILIZER-KEYLESS CONTROL UNIT LOST COMMUNICATION WITH GAUGE CONTROL MODULE (A/T MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1906 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector and at the immobilizer-keyless control unit 7P connector.

5. Turn the ignition switch OFF, and then back ON(II).
6. Select the BODY ELECTRICAL menu, then enter the UNIT INFORMATION.
7. Check the condition of the gauge control module (tach) from the CONNECTED UNIT list.

   Is NOT AVAILABLE indicated?

   YES - Go to step 8.

NO - Replace the immobilizer-keyless control unit.

8. Do the gauge control module (tach) input test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

   Are all inputs OK?

   YES - Go to step 9.

   NO - Repair the faulty input, then recheck the DTCs.

9. Disconnect the immobilizer-keyless control unit 7P connector.
10. Disconnect the gauge control module (tach) 36P connector.
11. Check for continuity between the immobilizer-keyless control unit 7P connector No. 4 terminal and the gauge control module (tach) 36P connector No. 21 terminal.

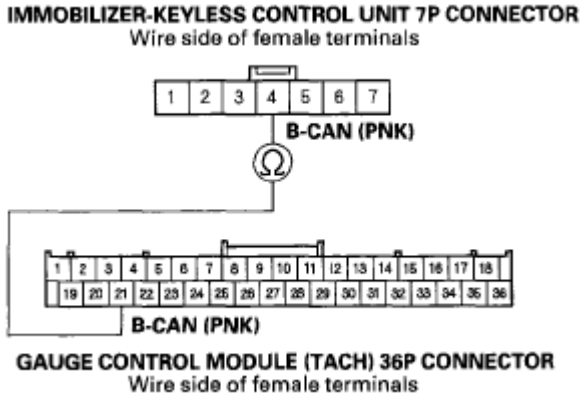


Fig. 4: Checking Continuity Between Immobilizer-Keyless Control Unit 7P Connector No. 4 Terminal And Gauge Control Module (Tach) 36P Connector No. 21 Terminal
Courtesy of HONDA

Is there continuity?

YES - Replace the gauge control module (tach).

NO - Repair an open in the wire between the immobilizer-keyless control unit and the gauge control module (tach).

DTC B1925: IGNITION KEY SWITCH SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF and remove the ignition key.
3. Insert the ignition key into the ignition switch, and turn the ignition switch ON (II).
4. Check for DTCs with the HDS.

Is DTC B1925 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer-keyless control unit 7P connector and at the ignition key switch 6P connector.

5. Turn the ignition switch OFF and remove the ignition key.
6. Disconnect the ignition key switch 6P connector.
7. At the ignition key switch side, check for continuity between the ignition key switch 6P connector No. 1 and No. 2 terminals.

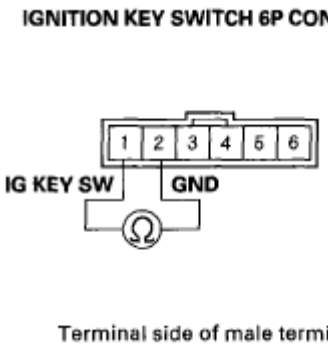


Fig. 5: Checking For Continuity Between Ignition Key Switch 6P Connector No. 1 And No. 2 Terminals
Courtesy of HONDA

Is there continuity?

YES - Faulty ignition key switch or short to ground, replace the steering lock assembly.

NO - Go to step 8.

8. Insert the ignition key into the ignition switch.
9. At the ignition key switch side, check for continuity between the ignition key switch 6P connector No. 1 and No. 2 terminals.

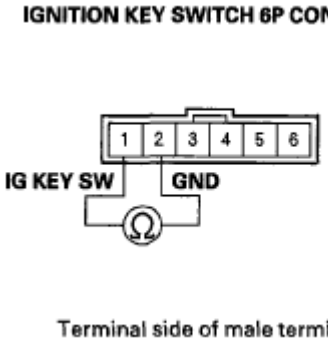


Fig. 6: Checking For Continuity Between Ignition Key Switch 6P Connector No. 1 And No. 2 Terminals
Courtesy of HONDA

Is there continuity?

YES - Go to step 10.

NO - Faulty ignition key switch, replace the steering lock assembly.

10. Disconnect the immobilizer-keyless control unit 7P connector.
11. Check for continuity between the immobilizer-keyless control unit 7P connector No. 6 terminal and the ignition key switch 6P connector No. 1 terminal.

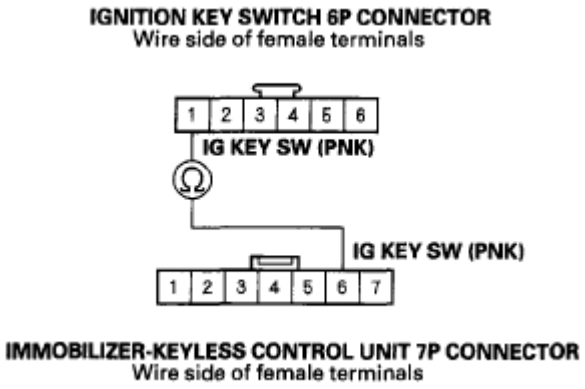


Fig. 7: Checking Continuity Between Immobilizer-Keyless Control Unit 7P Connector No. 6 Terminal And Ignition Key Switch 6P Connector No. 1 Terminal
Courtesy of HONDA

Is there continuity?

YES - Go to step 12.

NO - Repair an open in the wire.

12. Check for continuity between the immobilizer-keyless control unit 7P connector No. 6 terminal and body ground.

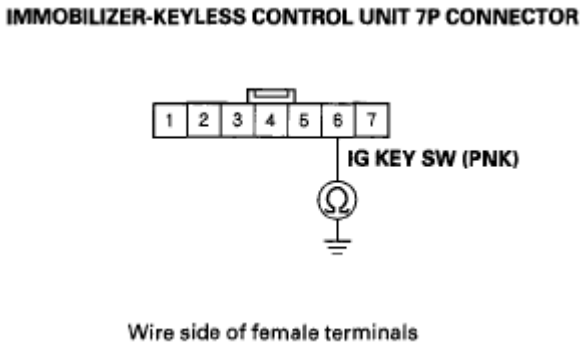


Fig. 8: Checking For Continuity Between Immobilizer-Keyless Control Unit Connector Terminal And Body Ground
Courtesy of HONDA

Is there continuity?

YES - Repair a short to ground in the wire or substitue a known-good under-dash fuse/relay box, and recheck. If the symptom/indication goes away, replace under-dash fuse/relay box.

NO - Replace the immobilizer-keyless control unit.

SYMPTOM TROUBLESHOOTING INFORMATION

SYMPTOM TROUBLESHOOTING BY THE IMMOBILIZER INDICATOR LIGHTING PATTERN

Immobilizer system condition can be checked by the immobilizer indicator lighting pattern.

Normal operation

If the immobilizer code is identified, the immobilizer indicator comes on for 2 seconds, then goes off after turning the ignition switch ON (II).

The immobilizer indicator does not come on when the ignition switch is turned OFF.

Immobilizer code is not identified

If the immobilizer code is not identified, the immobilizer indicator comes on for 2 seconds, then blinks after turning the ignition switch ON (II).

The immobilizer indicator blinks ten times, then goes off when the ignition switch is turned OFF.

Immobilizer indicator does not come on

If the immobilizer indicator does not come on after turning the ignition switch ON (II), there maybe an open or short in the F-CAN lines between the ECM/PCM and the gauge control module (tach). Watch the malfunction indicator lamp (MIL). If the MIL stays on, go to the PGM-FI system troubleshooting (see **MIL CIRCUIT TROUBLESHOOTING**).

Immobilizer indicator does not go off

If the immobilizer indicator does not go off after turning the ignition switch ON (II), do the gauge control module (tach) self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**). If the indicator drive circuit is OK, do the SYSTEM CHECK with the HDS.

GENERAL CHECK BEFORE TROUBLESHOOTING

Before troubleshooting the immobilizer system, check the following general points and solve any if applicable.

- Battery is low; charge the battery fully, then troubleshoot the immobilizer system.
- Ignition key is not a genuine Honda part; use the Honda-approved key blank, register the key, then troubleshoot the immobilizer system.
- Key ring, or keys, or a key case is used; remove the key from it, and troubleshoot the immobilizer system with a key only.
- Aftermarket electrical part is attached; remove it, then troubleshoot the immobilizer system.

HOW TO TROUBLESHOOT

NOTE: If the HDS does not communicate with the vehicle, go to the DLC circuit troubleshooting (see DLC CIRCUIT TROUBLESHOOTING).

1. Do the PGM-FI system DTCs check. If there is any DTC, go to the **DTC TROUBLESHOOTING** .
2. Do the Body Electrical DTCs check. If there is any DTC, go to **BODY ELECTRICAL (TROUBLESHOOTING) (ALL EXCEPT HYBRID)** .
3. Do the system check using the HDS. If there is a system check number, do the troubleshooting for the item indicated (see **SYSTEM CHECK**).
4. Check the status log using the HDS. Troubleshoot the line with the highest counts (see **SYSTEM CHECK**). If all the lines are "0" zero, the problem may not be caused by the immobilizer system, check for ignition or fuel problems.

NOTE: Once repaired, clear the status log by removing the back up power fuse, or disconnecting the battery.

SYMPTOM TROUBLESHOOTING OF AN OPEN POWER SUPPLY AND GROUND CIRCUIT

If a malfunction occurs in the immobilizer circuit for the VBU, IG1 and GND (LG) lines, identify the lines to check with **Fig. 9** .

Symptom / Line Error		Immobilizer Indicator	Engine Start	Key Registration	Tester Communication	Keyless Operation
Terminal No.	Cause of Malfunction					
1	VBU line open or short	Comes on, then goes off.	Possible	Possible	Possible	Impossible
2	IG1 line open or short	Blinking	Impossible	Impossible	Impossible	Possible
3	S-NET line open or short	Blinking	Impossible	Possible	Impossible	Possible
4	B-CAN line open or short	Comes on, then goes off.	Possible	Possible	Immobilizer: Possible Keyless: Impossible	Impossible
5	K-LINE line open or short	Comes on, then goes off.	Possible	Impossible	Impossible	Possible
6	KEYSW line open	Comes on, then goes off.	Possible	Possible	Possible	Possible (in spite of the key is in the ignition switch)
	KEYSW line short to ground					Impossible
7	GND (LG) line open	Blinking	Impossible	Impossible	Impossible	Impossible

Fig. 9: Power Supply And Ground Circuit Troubleshooting Chart
Courtesy of HONDA

SYSTEM CHECK AND STATUS LOG

NOTE: The HDS can be used to:

- **Check the state of the immobilizer key registration and the IMOCD line**

by doing a SYSTEM CHECK.

- **Check the number of times the immobilizer control unit-receiver doesn't permit the engine to run by checking the STATUS LOG.**

1. Connect the HDS to the data link connector, then turn the ignition switch ON (II) and follow the prompts to the MAIN MENU.

NOTE: If the HDS does not communicate with the vehicle, go to the DLC circuit troubleshooting (see DLC CIRCUIT TROUBLESHOOTING).

2. At the MAIN MENU, enter IMMOBILIZER, then select the IMMOBILIZER SET UP.
3. Do the SYSTEM CHECK. If there is a system check number, do the troubleshooting for the item indicated.
4. Check the status log using the HDS. Troubleshoot the line with the highest counts. If all the lines are "0" zero, the problem may not be caused by the immobilizer system, check for ignition or fuel problems.

NOTE: Once repaired, clear the status log by removing the No. 7 (7.5 A) fuse in the under-dash fuse/relay box or disconnecting the battery.

SYMPTOM TROUBLESHOOTING

1. Troubleshoot the immobilizer system by the order of the priority shown:

SYMPTOM TROUBLESHOOTING CHART

Order of Priority	Symptom	Possible cause
1	Immobilizer indicator blinks after the ignition switch is turned OFF.	Symptom troubleshooting (see **IMMOBILIZER INDICATOR BLINKS**).
2	Engine does not start with the immobilizer key.	Symptom troubleshooting (see **ENGINE DOES NOT START WITH THE IMMOBILIZER KEY**).
3	Immobilizer indicator does not come on.	Check the MIL indication. • If the MIL comes on, go to the PGM-FI System MIL circuit troubleshooting (see **MIL CIRCUIT TROUBLESHOOTING**). • If the MIL does not come on, replace the gauge control module (tach).
4	Immobilizer indicator does not go off.	Symptom troubleshooting (see **IMMOBILIZER INDICATOR DOES NOT GO OFF**).

IMMOBILIZER INDICATOR BLINKS

NOTE: Before troubleshooting, check the items listed in GENERAL CHECK BEFORE TROUBLESHOOTING.

1. Turn the ignition switch OFF.
2. Connect the HDS, then turn the ignition switch ON (II).
3. Enter the IMMOBILIZER, then select the IMMOBILIZER SETUP.
4. Select the SYSTEM CHECK.

   Is the SYSTEM CHECK indicated?

   YES - Troubleshoot the immobilizer system according to the result of the SYSTEM CHECK (see **SYSTEM CHECK**).

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Enter the vehicle, and remove the ignition key from the ignition switch, then close the all doors.
7. Operate the keyless transmitter LOCK and UNLOCK several times in the vehicle.

   Do the door lock actuators work normally?

   YES - Go to step 8.

   NO - Check for a poor ground (G101) and/or an open in the wire between the immobilizer-keyless control unit 7P connector No. 7 terminal and body ground (G101).

8. Turn the ignition switch ON (II).
9. Check for voltage between the immobilizer-keyless control unit 7P connector No. 2 terminal and body ground.

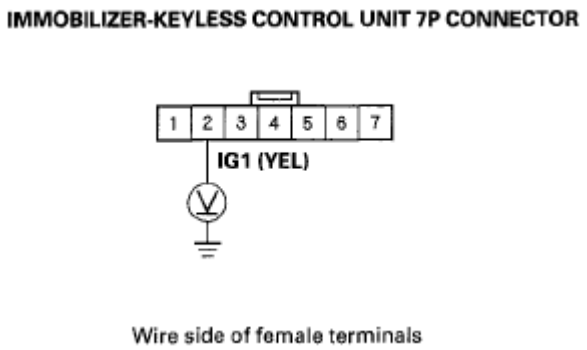


Fig. 10: Checking For Voltage Between Immobilizer-Keyless Control Unit Connector Terminal And Body Ground
Courtesy of HONDA

Is there battery voltage?

YES - Go to step 10.

NO - Repair open in the YEL wire between the under-dash fuse-relay box and the immobilizer-keyless control unit.

10. Check for voltage between the immobilizer-keyless control unit 7P connector No. 7 terminal and body ground.

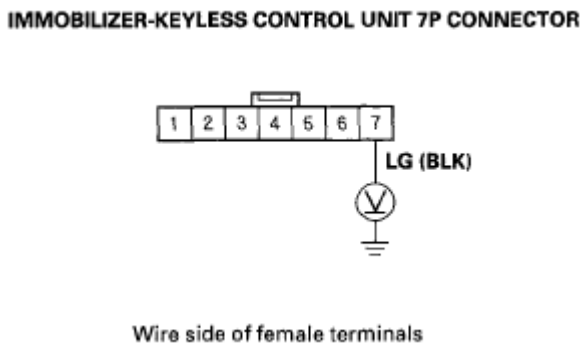


Fig. 11: Checking For Voltage Between Immobilizer-Keyless Control Unit 7P Connector No. 7 Terminal And Body Ground
Courtesy of HONDA

Is there 0.5 V or more?

YES - Repair poor connection or open between the immobilizer-keyless control unit 7P connector No. 7 terminal and G101.

NO - Replace the immobilizer-keyless control unit.

ENGINE DOES NOT START WITH THE IMMOBILIZER KEY

NOTE: Before troubleshooting, check the items listed in "GENERAL CHECK BEFORE TROUBLESHOOTING" and "HOW TO TROUBLESHOOT" (see SYMPTOM TROUBLESHOOTING INFORMATION).

1. Try to start the engine.

   Does the engine start?

   YES - Intermittent failure, the vehicle is OK at this time. Check status log.

   NO - Go to step 2.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and check the immobilizer indicator.

   Does the indicator come on for 2 seconds, then go off?

   YES - Go to step 4.

   NO - Go to the **IMMOBILIZER INDICATOR BLINKs** .

4. Turn the ignition switch to START (III).

Does the starter motor run?

YES - Go to step 5.

NO - Go to **STARTING SYSTEM (R18A1) (ALL EXCEPT HYBRID)** and check the starter motor.

5. Try to start the engine with the immobilizer key.

   Does the engine start?

   YES - Go to step 6.

   NO - Go to the **DTC TROUBLESHOOTING** .

6. Wait for a few minutes with the engine running.

   Does the engine stop?

   YES - Go to the **DTC TROUBLESHOOTING** .

   NO - The system is OK at this time.

IMMOBILIZER INDICATOR DOES NOT GO OFF

1. Turn the ignition switch OFF.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Enter the IMMOBILIZER, then select the IMMOBILIZER INFORMATION.
5. Do the SYSTEM CHECK with the HDS. Is N-1 OK indicated?

   YES - Replace the gauge control module.

   NO - Substitute a known-good immobilizer-keyless control unit, then register it and recheck. If the symptom goes away, replace the original immobilizer-keyless control unit.

SYSTEM CHECK

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. Monitor the System Check in the Immobilizer Info with the HDS.
4. If the HDS displays the "Normal", the immobilizer system is OK. If the HDS displays any other messages, check as follows:

SYSTEM CHECK

System Check No.	Status Log. Indication	System Check	Possible Cause

A-2	Possible	Communication error between the key and immobilizer unit	• Intermittent interruption between transponder and immobilizer-keyless control unit. • The immobilizer key type is incorrect non-Honda key. • Key failure (transponder failure) • No communication between the antenna and the immobilizer key by influence of metal such as key chains/key rings/other keys. • Low battery voltage.
A-3	Possible	No communication between the key and immobilizer unit	• The ignition switch was turned on with a non-immobilizer key. • The immobilizer key type is incorrect non-Honda key. • Key failure (transponder failure) • No communication between the antenna and the immobilizer key by influence of metal such as key chains/key rings/other keys. • Low battery voltage. • Immobilizer-keyless control unit failure
B-1	Possible	The ECM/PCM is not registered	• The ECM/PCM was not registered. Try to register the ECM/PCM using the HDS. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference.
B-2	Possible	Error of communication format in ECM/PCM	• The ECM/PCM was not registered. Try to register the ECM/PCM using the HDS. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference.
C-1	Possible	No registration of Imoes Unit	• Imoes unit was not registered. • No communication between the Imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the Imoes

			unit and the immobilizer-keyless control unit because of interference.
C-2	Possible	Error of communication format in Imoes Unit	• Imoes unit was not registered. • No communication between the Imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the Imoes unit and the immobilizer-keyless control unit because of interference.
D-1	Possible	S-net line short	• Harness short from the ECM/PCM to the immobilizer-keyless control unit. (S-net line short) • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference. • Immobilizer-keyless control unit failure • ECM/PCM failure
D-2	Possible	No communication between Imoes unit and Immobilizer Unit	• Blown fuse • Harness open from the Imoes unit to the immobilizer-keyless control unit. • No communication between the Imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the Imoes unit and the immobilizer-keyless control unit because of interference. • Immobilizer-keyless control unit failure • Imoes unit failure
D-3	Possible	No communication between ECM/PCM and Immobilizer Unit	• Blown fuse • Harness open from the ECM/PCM to the immobilizer-keyless control unit. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference. • Immobilizer-keyless control unit failure • ECM/PCM failuer
E-1			

E-2	-	Initial registration of Immobilizer Unit is not completed	The immobilizer-keyless control unit is not registered. Try to register the immobilizer-keyless control unit using the HDS.
E-3			
E-4			
E-5			
F-1	-	Special Mode	Turn the ignition switch ON (II) and OFF with the registered key.
F-2			
F-3			
F-4			
F-5			

IMMOBILIZER-KEYLESS CONTROL UNIT INPUT TEST

NOTE: Before troubleshooting the immobilizer system, troubleshoot the B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A) and check the No. 10 (7.5 A) and No. 38 (30 A) fuses in the under-dash fuse/relay box.

1. Remove the driver's dashboard lower cover (see **DRIVER's DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the 7P connector (A) from the immobilizer-keyless control unit (B).

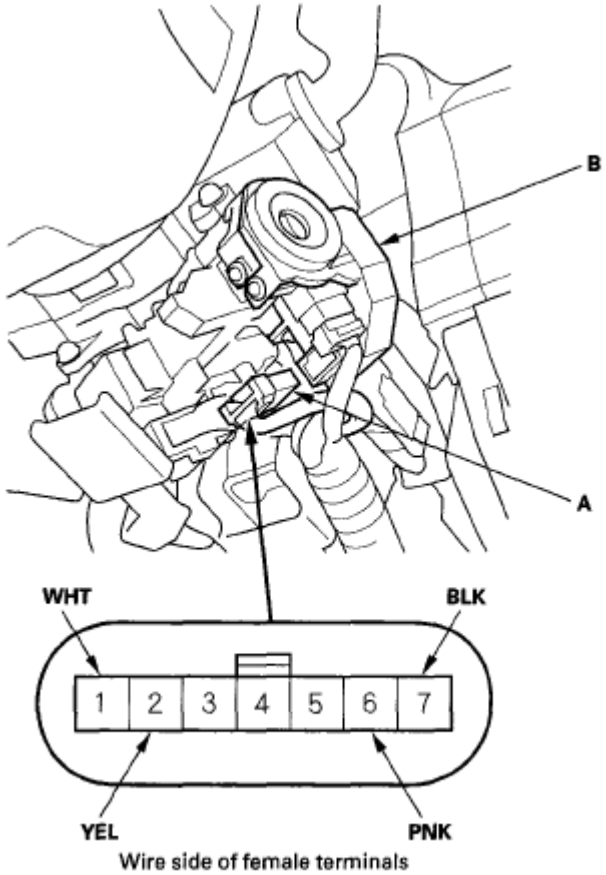


Fig. 12: Disconnecting 7P Connector From Immobilizer-Keyless Control Unit
Courtesy of HONDA

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

IMMOBILIZER-KEYLESS CONTROL UNIT INPUT TEST (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	ORN	Under all conditions	Check for voltage between immobilizer-keyless control unit 7P connector No. 1 terminal and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
2	YEL	Ignition switch ON (ID	Check for voltage to ground: There should be battery voltage.	• Blown No. 2(15 A) fuse in the under-dash fuse/relay box • An open in the wire

6. Reconnect the connectors to the immobilizer-keyless control unit, and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the immobilizer-keyless control unit must be faulty; replace it.

IMMOBILIZER-KEYLESS CONTROL UNIT INPUT TEST (CONNECTORS RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
7	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground(G101) • An open in the wire
6	PNK	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire

IMMOBILIZER KEY REGISTRATION

NOTE:

- **The HDS is required for registration of the immobilizer keys.**
- **Check for aftermarket electrical equipment that can cause problems with transponder operation.**

- **The immobilizer control unit-receiver can store up to six immobilizer Keys.**

ADD ONE NEW KEY

1. Have a registered key, a new immobilizer key, and the first pass word from the in system.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", then "Add 1 key".
6. Do the registration according to the instructions on the HDS screen.
7. Check if the engine can be started by the newly registered key.

DELETE OR ADD MULTIPLE KEYS

NOTE: If any of the registered keys were lost, do the following procedure to delete the lost registered key.

1. Have all registered keys, all new keys, and the first password.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", or "Delete or Add Multiple Keys".
6. Do the registration according to the instruction of HDS screen.
7. Check if the engine can be started by all the registered keys.

ALL KEYS ARE LOST

1. Prepare all new keys and have the immobilizer PCM code.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", then "ALL KEYS LOST".
6. Do the registration according to the instruction of HDS screen.
7. Check if the engine can be started by all the registered keys.

IMMOBILIZER-KEYLESS CONTROL UNIT REPLACEMENT

1. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the 7P connector (A) from the immobilizer-keyless control unit (B).

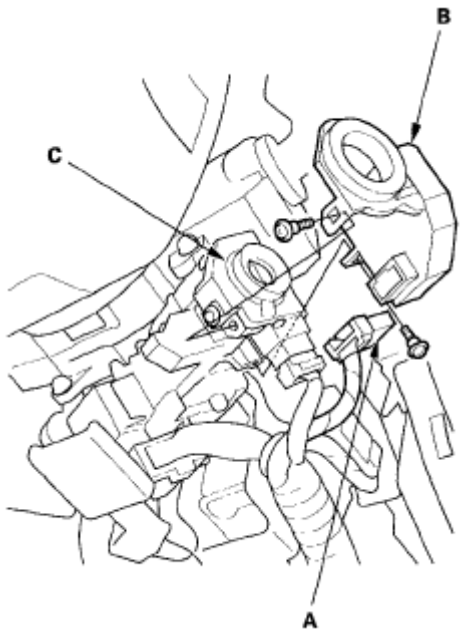


Fig. 13: Disconnecting 7P Connector From Immobilizer-Keyless Control Unit
Courtesy of HONDA

4. Remove the two screws and the immobilizer-keyless control unit from the ignition key cylinder (C).
5. Install the immobilizer-keyless control unit in the reverse order of removal.
6. After replacement, register the immobilizer-keyless control unit (see **IMMOBILIZER KEY REGISTRATION**), and make sure the immobilizer system works properly.

2006-08 ACCESSORIES & EQUIPMENT

Keyless/Power Door Locks/Security System - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

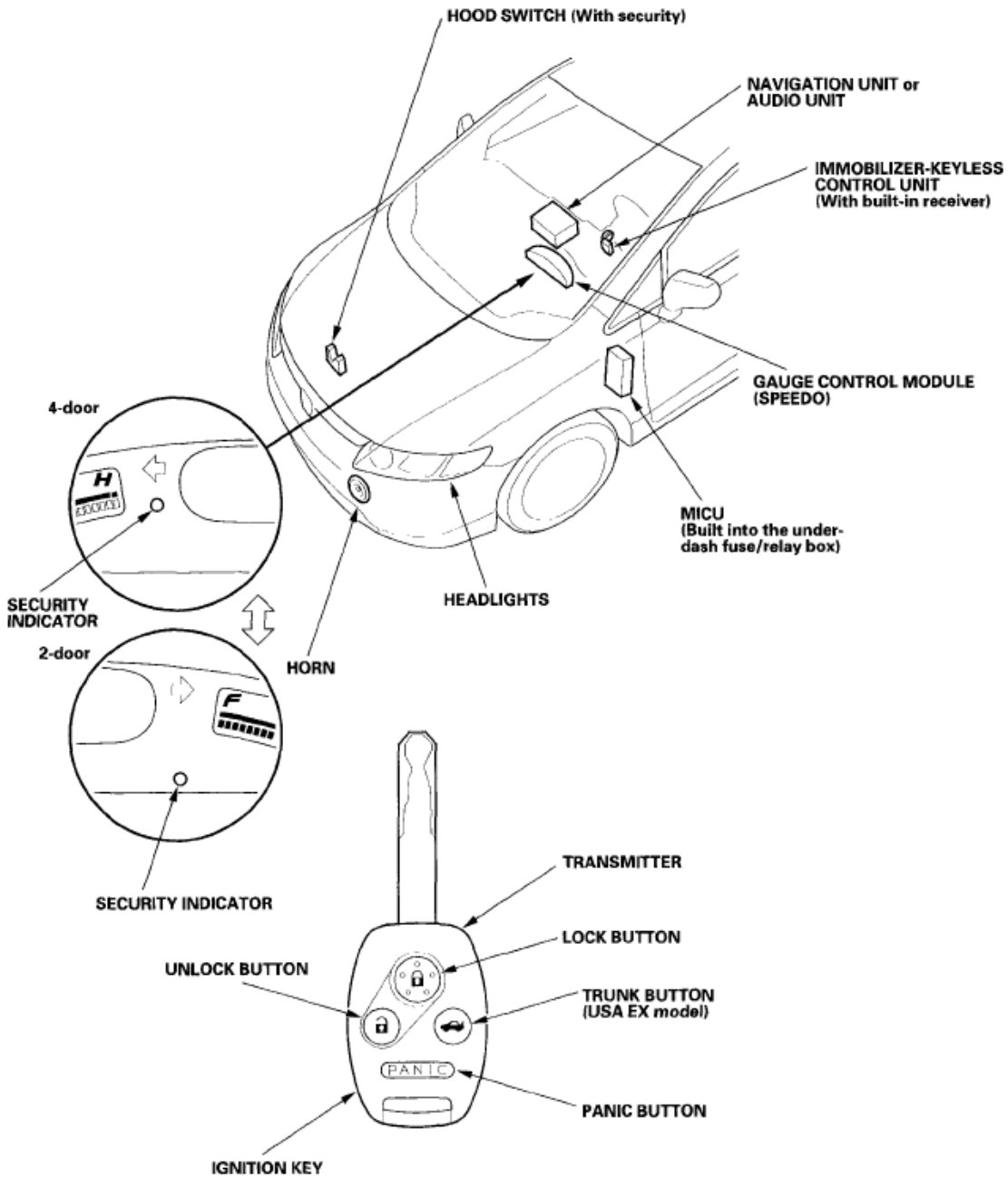


Fig. 1: Identifying Keyless/Power Door Locks/Security System Component Location (1 Of 3)

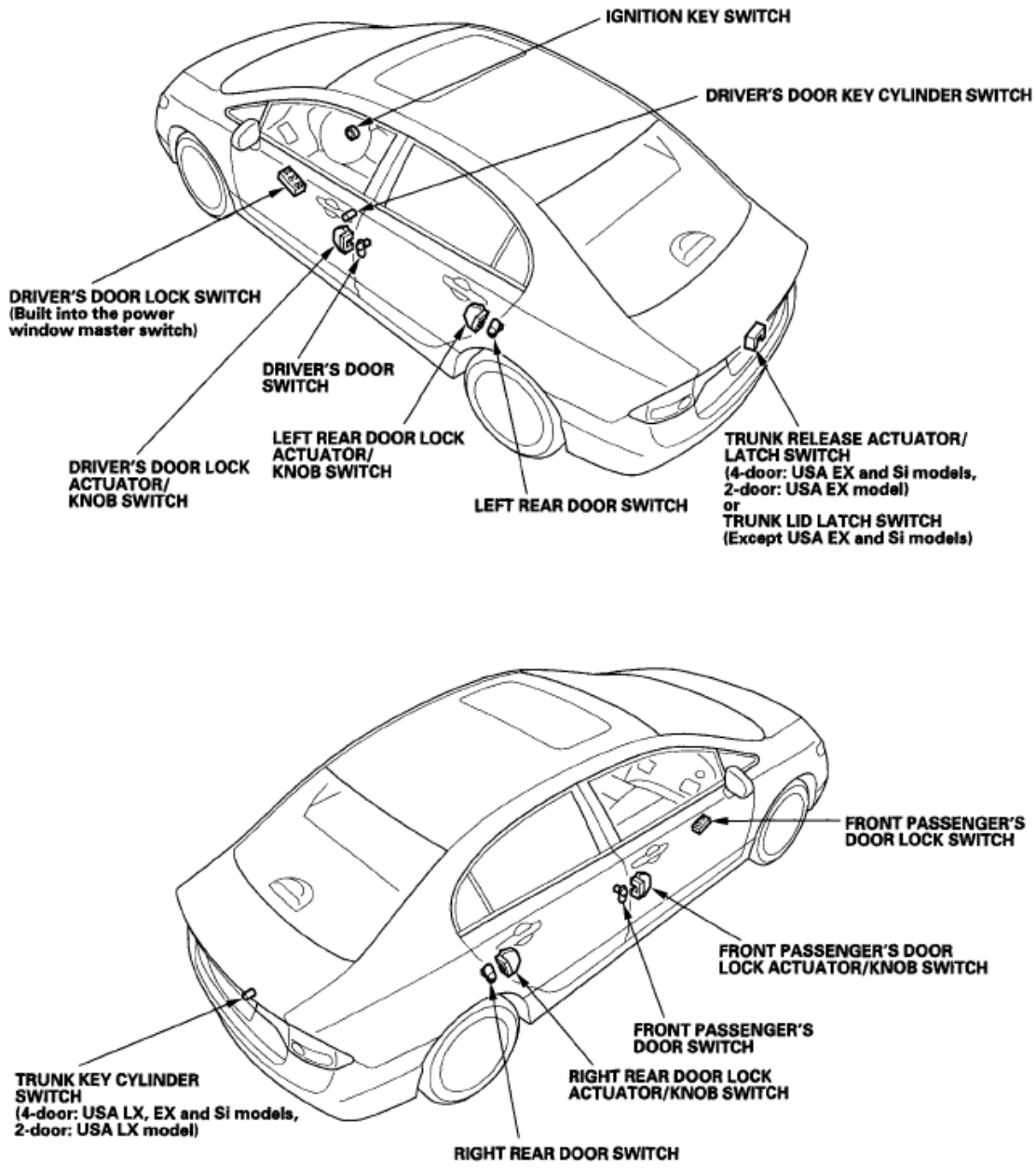
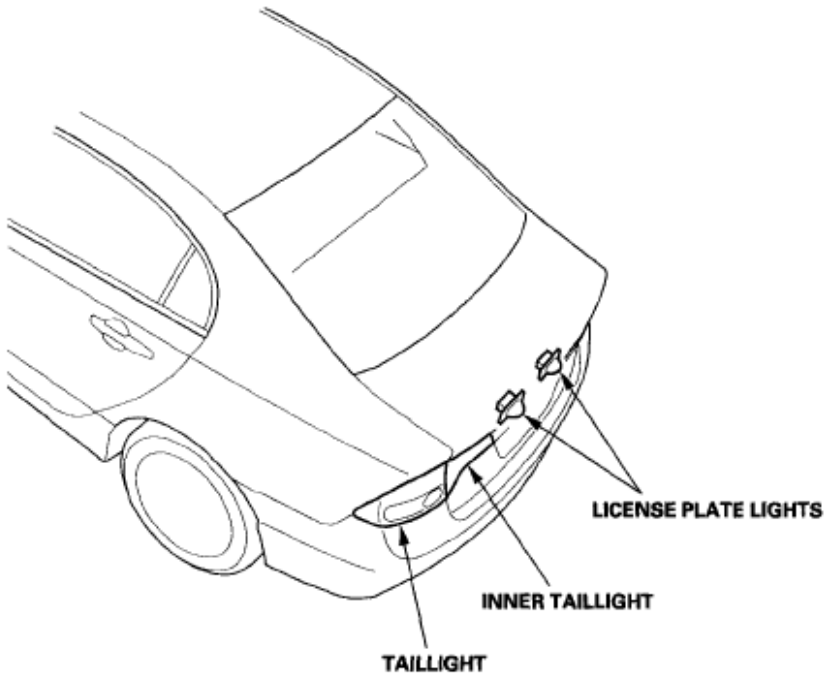


Fig. 2: Identifying Keyless/Power Door Locks/Security System Component Location (2 Of 3)

4-door



2-door

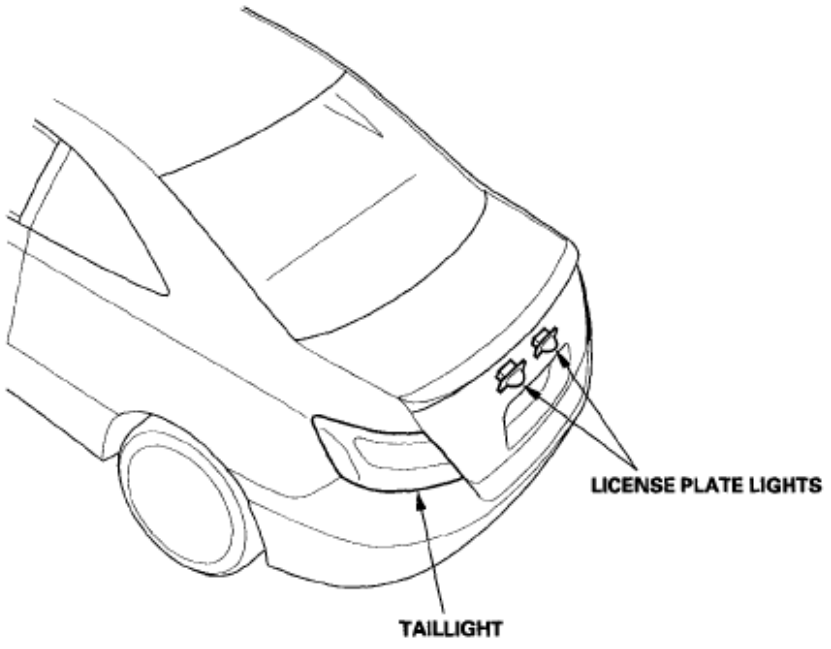


Fig. 3: Identifying Keyless/Power Door Locks/Security System Component Location (3 Of 3)

SYSTEM DESCRIPTION

SECURITY ALARM SYSTEM

NOTE: This applies to USA LX, EX and Si models.

The security alarm system is armed automatically after the doors, hood, and trunk are closed and locked. For the system to arm, the ignition switch must be off, the key must be removed from the ignition switch, and the MICU must receive signals that the doors, hood, and trunk are closed and locked. The alarm can be disarmed at any time by unlocking the driver's door with the key or pressing the UNLOCK button on the transmitter.

When everything is closed and locked, the only inputs that are grounded, and have 0 V, are the driver's door lock knob switch (LOCK position), and the audio unit or navigation unit (if equipped). In other words, all of the other switches are open, and have about 10 to 12 V, including the key cylinder switches. The security indicator in the gauge control module (speedo) begins to flash immediately after the vehicle is completely closed and locked, and 15 seconds later, the security system arms. If the security indicator does not flash, the system is not arming. A beep sounds and the parking lights flash to confirm the security alarm system is armed if the LOCK button is pressed a second time within 5 seconds.

If one of the switches is misadjusted or shorted internally, or there is a short in the circuit, the security system will not arm. As long as the control unit continues to receive a ground signal (0 V), it senses that the vehicle is not closed and locked, and the system will not arm. A switch that is slightly misadjusted can cause the alarm to sound for no apparent reason. In this case, a significant change in outside air temperature, the vibration of a passing truck, or someone bumping into the vehicle could cause the alarm to sound. There is no glass breakage or motion detector feature.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch, and the 10 to 12 V reference drops to 0 V. If the audio unit or navigation unit (if equipped) is disconnected, the input loses its ground, and the input voltage goes to 10 to 12 V. The system sounds the alarm when any of these occur:

- A door or the trunk is forced open.
- A door is unlocked without using the key or the transmitter.
- The hood is opened.
- The audio unit or navigation unit (if equipped) is disconnected.
- The transmitter PANIC button is pressed.

When the system sounds the alarm, the horn sounds and the exterior lights flash for 2 minutes. The alarm can be stopped at any time by unlocking the driver's door with the key or by pressing any button on the transmitter.

PANIC MODE

The panic mode sounds the alarm in order to attract attention. When the PANIC button on the transmitter is pressed and held for 2 seconds, the horn sounds and the exterior lights flash for about 20 seconds.

The panic mode can be cancelled at anytime by pressing any button on the transmitter or by turning the ignition switch ON (II). The panic mode will not function if the ignition switch is ON (II).

KEYLESS ENTRY SYSTEM

The keyless entry system is integrated with the multiplex integrated control system. The multiplex integrated control unit (MICU) receives LOCK, UNLOCK and PANIC signals from the immobilizer-keyless control unit (keyless receiver).

The keyless entry system allows you to lock and unlock the vehicle with the transmitter. When you press the LOCK button, all doors lock. When you press the UNLOCK button once, only the driver's door unlocks. The other doors will unlock when you press the button a second time. The doors will not lock with the transmitter if a door is not fully closed, or if the key is in the ignition switch.

When the switch for the ceiling light is in the center (DOOR) position, it will come on when the UNLOCK button is pressed. If a door is not opened, the light will go off in about 30 seconds, and the doors will relock. If the doors are locked with the transmitter within 30 seconds, the light will go off immediately.

CIRCUIT DIAGRAM

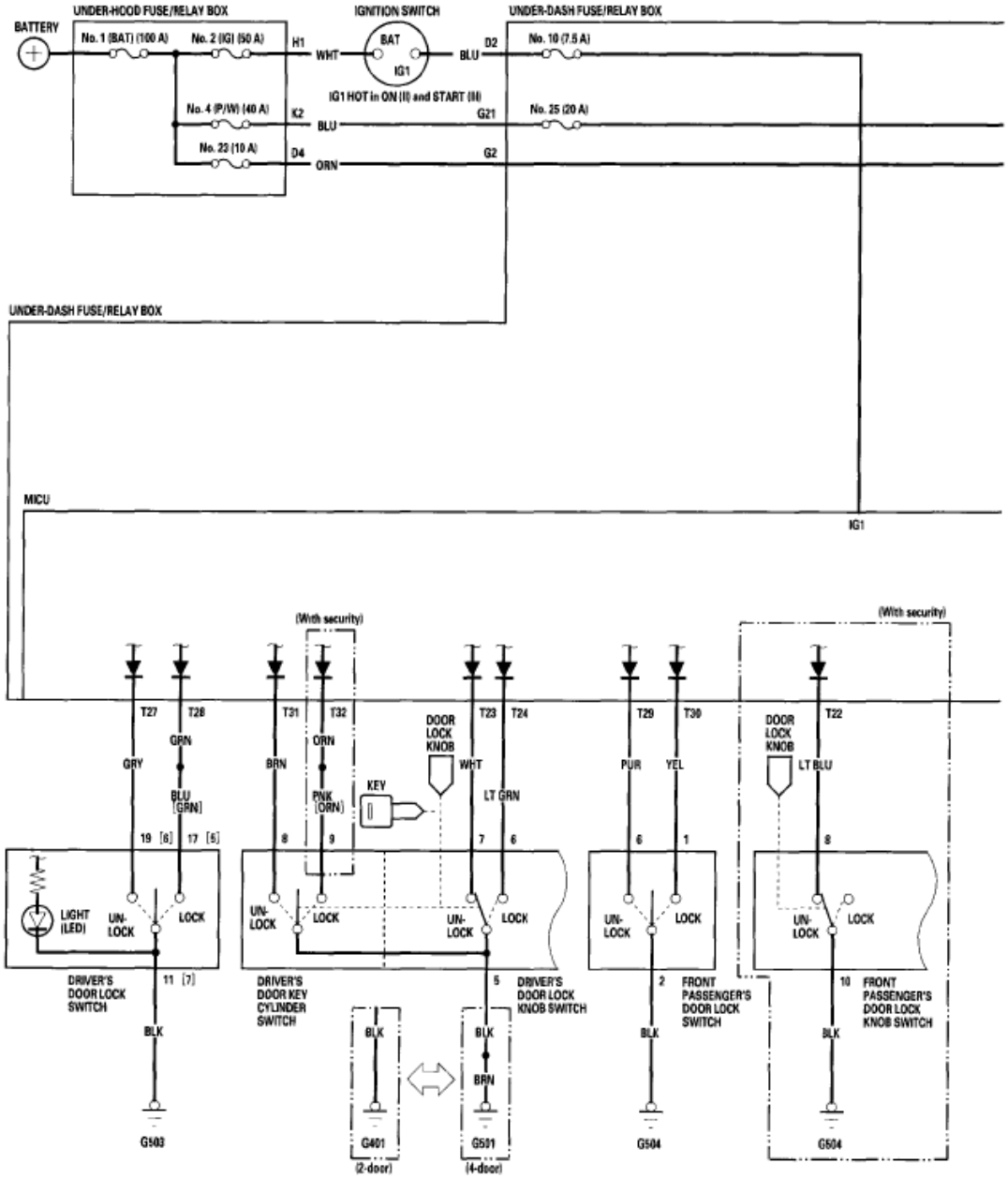


Fig. 4: Keyless/Power Door Locks/Security System - Circuit Diagram (1 Of 4)

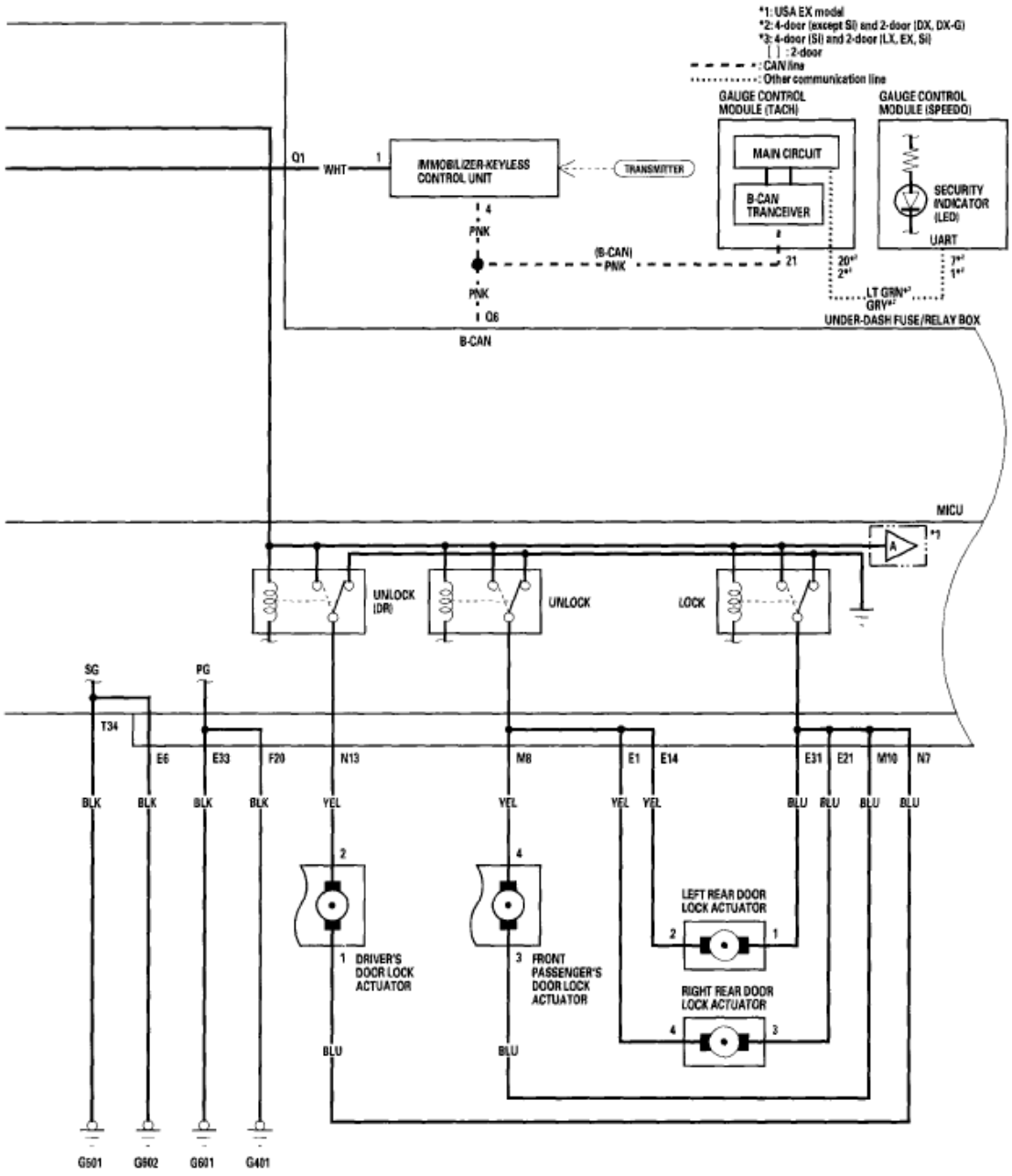


Fig. 5: Keyless/Power Door Locks/Security System - Circuit Diagram (2 Of 4)

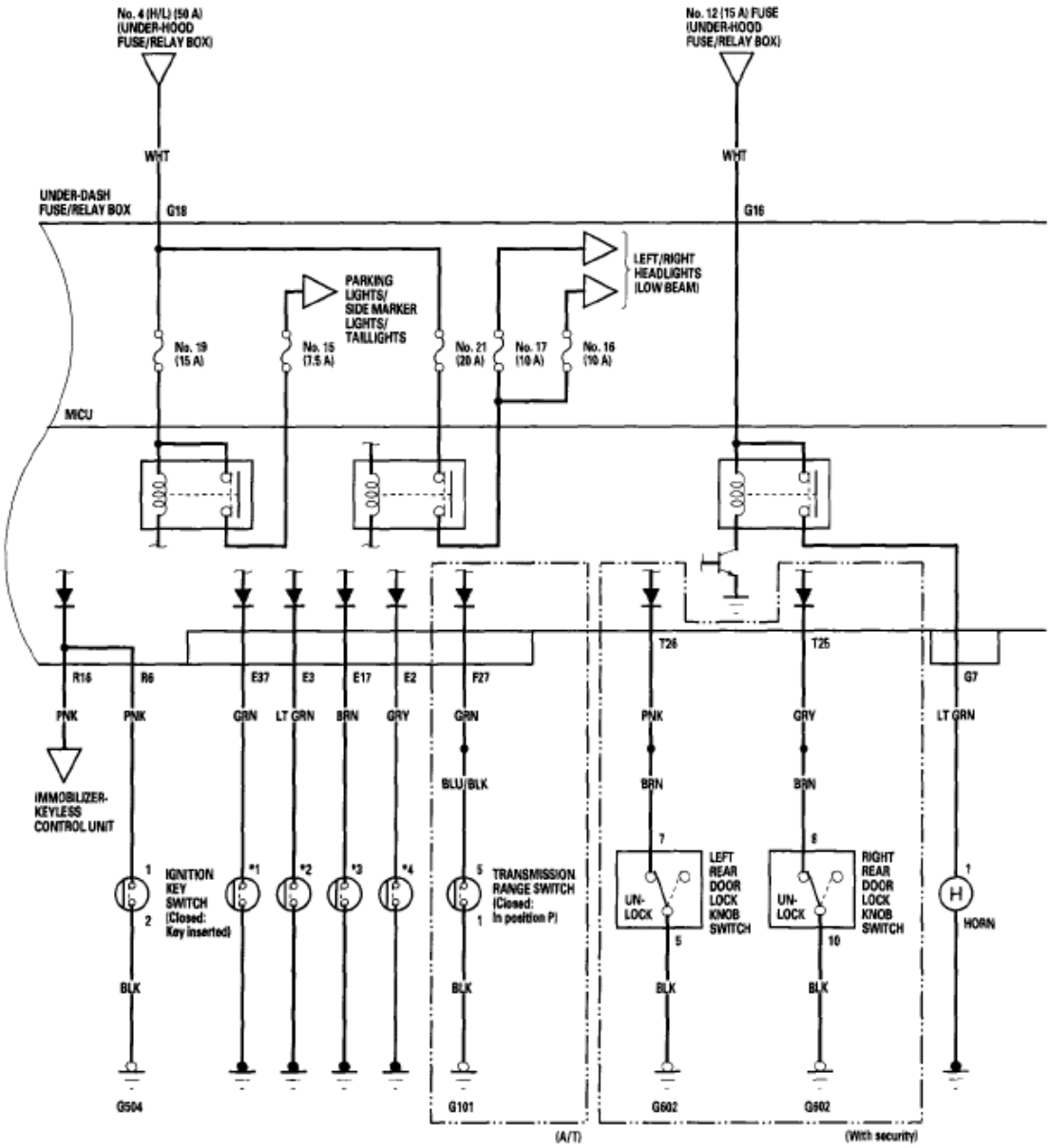


Fig. 6: Keyless/Power Door Locks/Security System - Circuit Diagram (3 Of 4)

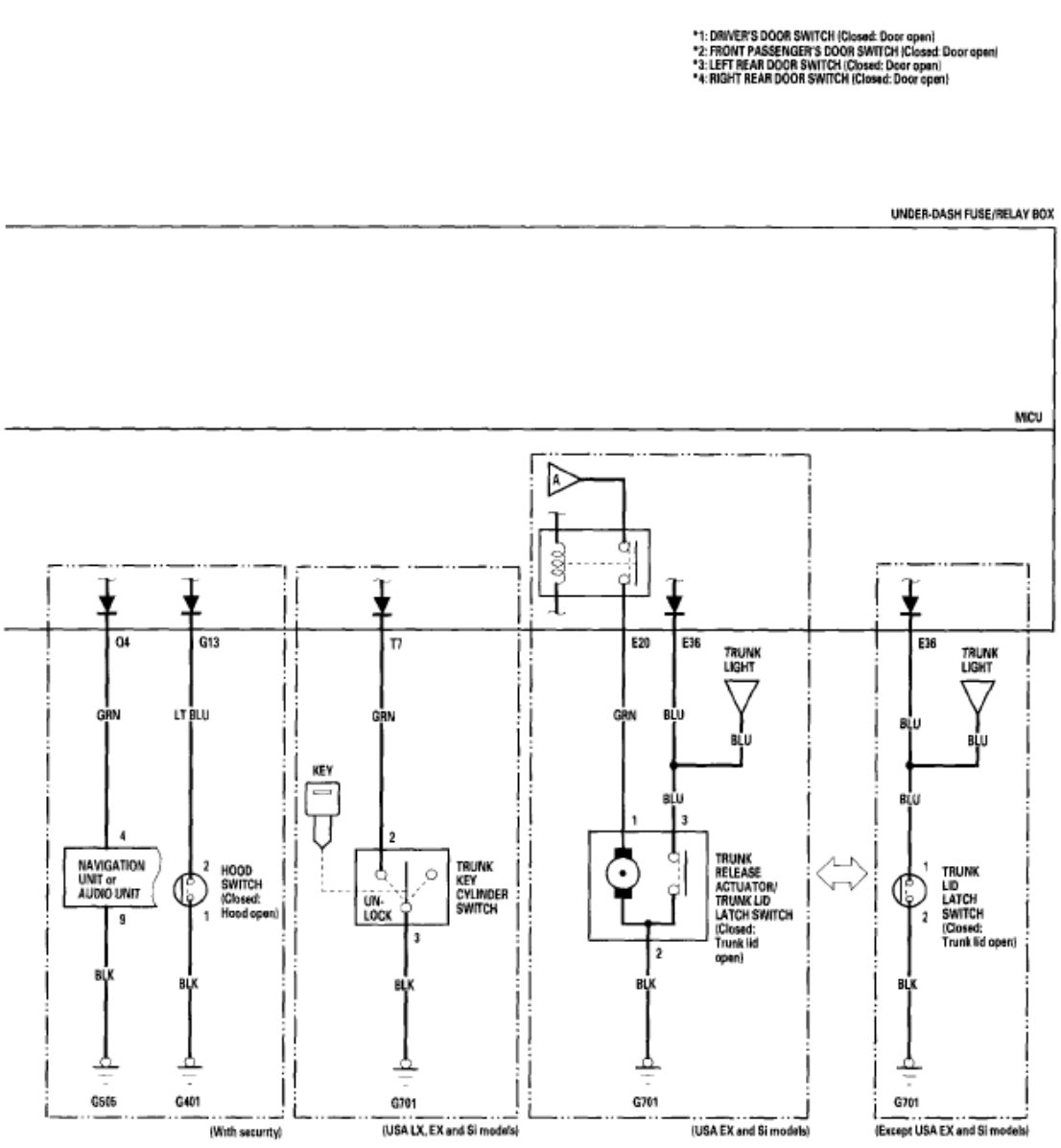


Fig. 7: Keyless/Power Door Locks/Security System - Circuit Diagram (4 Of 4)

DTC TROUBLESHOOTING

DTC B1026: FRONT PASSENGER'S DOOR LOCK SWITCH SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the front passenger's door lock switch several times.
4. Check for DTCs with the HDS.

Is DTC B1026 indicated?

YES - Go to step 5.

NO - Intermittent failure. The front passenger's door lock system is OK at this time.

5. With the front passenger's door lock switch in the neutral position, select KEYLESS from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES - Go to step 12.

   NO - Go to step 7.

7. Disconnect the front passenger's power window switch 8P connector.
8. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES - Faulty door lock switch; replace the front passenger's power window switch.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect the under-dash fuse/relay box connector T(34P).
11. Check for continuity between the No. 1 (UNLOCK) and No. 6 (LOCK) terminals of the front passenger's power window switch 8P connector and body ground.

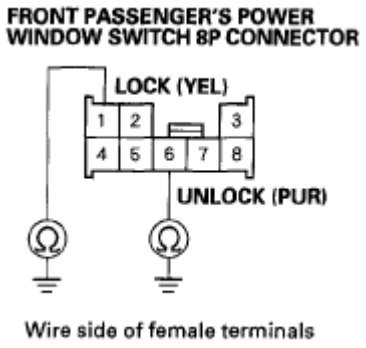


Fig. 8: Checking Continuity Between Front Passenger Power Window Switch 8P Connector Terminals And Body Ground

Is there continuity?

YES - Repair a short in the LOCK or UNLOCK wire.

NO - Faulty MICU, replace the under-dash fuse/relay box.

12. Turn the ignition switch OFF.
13. Disconnect the front passenger's window switch 8P connector.
14. Disconnect under-dash fuse/relay box connector T (34P).
15. Check for continuity between the No. 1 (UNLOCK) and No. 6 (LOCK) terminals of the front passenger's power window switch 8P connector.

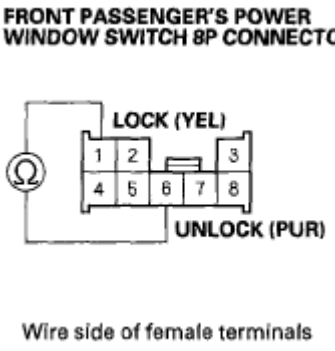


Fig. 9: Checking Continuity Between Terminals Of Front Passenger Power Window Switch 8P Connector

Is there continuity?

YES - Repair a short in the wire between the LOCK and UNLOCK wires.

NO - Substitute a known-good passenger's window master switch, and recheck. If the symptom/indication goes away, replace the original passenger's window switch. If not, the MICU is faulty, replace the under-dash fuse/relay box.

DTC B1127: DRIVER'S DOOR KEY CYLINDER SWITCH SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II)
3. Insert the ignition key into the driver's door key cylinder switch, and turn the key in LOCK and UNLOCK positions ten times.
4. Check for DTCs with the HDS.

Is DTC B1127 indicated?

YES - Go to step 5.

NO - Intermittent failure. The driver's door key cylinder switch system is OK at this time.

5. With the driver's door key cylinder in the neutral position, select KEYLESS with the HDS, and enter the DATA LIST.
6. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and

DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES - Go to step 12.

NO - Go to step 7.

7. Disconnect the driver's door lock actuator 10P connector.
8. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES - Faulty driver's door key cylinder switch; replace the driver's door lock actuator.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect the under-dash fuse/relay box connector T(34P).
11. Check for continuity between the No. 31 (UNLOCK) and No. 32 (LOCK) terminals of the under-dash fuse/relay box connector T (34P) and body ground.

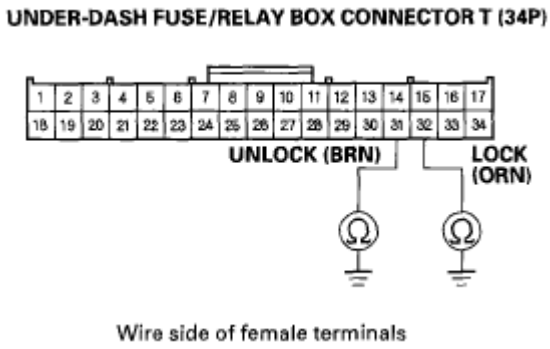


Fig. 10: Checking Continuity Between No. 31 And No. 32 Terminals Of Under-Dash Fuse/Relay Box Connector T (34P) And Body Ground

Is there continuity?

YES - Faulty MICU, replace the under-dash fuse/relay box.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect the driver's door lock actuator 10P connector.
14. Disconnect under-dash fuse/relay box connector T (34P).
15. Check for continuity between the No. 31 (UNLOCK) and No. 32 (LOCK) terminals of the under-dash fuse/relay box connector T (34P).

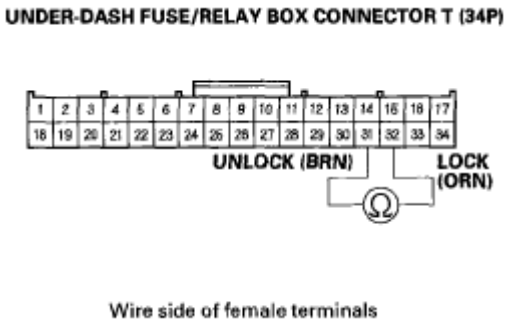


Fig. 11: Checking Continuity Between No. 31 And No. 32 Terminals Of Under-Dash Fuse/Relay Box Connector T (34P)

Is there continuity?

YES - Repair a short in the wire between the LOCK and UNLOCK wires.

NO - Substitute a known-good MICU, and recheck. If the symptom/indication goes away, replace the original MICU, if not, replace the driver's door lock actuator.

DTC B1128: DRIVER'S DOOR LOCK SWITCH SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the driver's door lock switch LOCK/UNLOCK several times.
4. Check for DTCs with the HDS.

   Is DTC B1128 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The driver's door lock system is OK at this time.

5. With the driver's door lock switch in the neutral position, select KEYLESS from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the DRIVER'S DOOR LOCK SWITCH (LOCK) and DRIVER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES - Go to step 12.

   NO - Go to step 7.

7. Disconnect the driver's power window switch 22P (16P)* connector.

*: 2-door

8. Check the ON/OFF information of the DRIVER'S DOOR LOCK SWITCH (LOCK) and DRIVER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES - Faulty door lock switch; replace the driver's power window switch.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect the under-dash fuse/relay box connector T(34P).
11. Check for continuity between the No. 28 (LOCK) and No. 27 (UNLOCK) terminals of the under-dash fuse/relay box connector T (34P) and body ground.

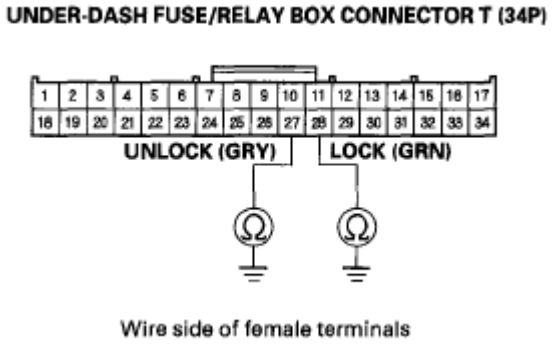


Fig. 12: Checking Continuity Between Terminals Of Under-Dash Fuse/Relay Box Connector T (34P) And Body Ground

Are there continuity?

YES - Repair a short in the LOCK or UNLOCK wire.

NO - Faulty MICU, replace the under-dash fuse/relay box.

12. Turn the ignition switch OFF.
13. Disconnect the power window master switch 22P (16P)* connector.

    *: 2-door

14. Disconnect under-dash fuse/relay box connector T (34P).
15. Check for continuity between the No. 28 (LOCK) and No. 27 (UNLOCK) terminals of the under-dash fuse/relay box connector T (34P).

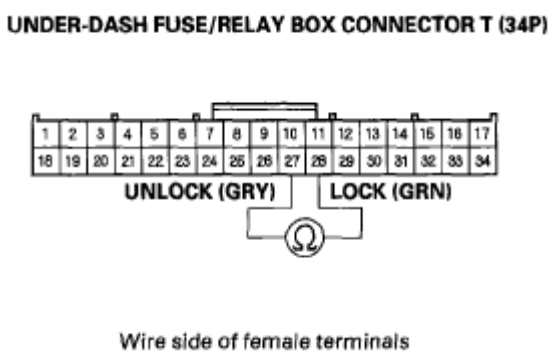


Fig. 13: Checking Continuity Between No. 28 And 27 Terminals Of Under-Dash Fuse/Relay Box Connector T (34P)

Is there continuity?

YES - Repair a short in the wire between the LOCK and UNLOCK wires.

NO - Substitute a known-good power window master switch, and recheck. If the symptom/indication goes away, replace the original power window master switch. If not, the MICU is faulty, replace the under-dash fuse/relay box.

DTC B1129: DRIVER'S DOOR LOCK KNOB SWITCH SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Operate the driver's door lock knob switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1129 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The driver's door lock knob switch system is OK at this time.

5. Select KEYLESS from the BODY ELECTRICAL menu, and enter the DATA LIST.
6. Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and the DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK).

   Does the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicator ON and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicator OFF with the driver's door lock knob switch in LOCK position, and does the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicator OFF and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicator ON with the driver's door lock knob switch in UNLOCK position?

   YES - Faulty MICU, replace the under-dash fuse/relay box.

NO - Go to step 7.

7. Disconnect the driver's door lock actuator 10P connector.
8. Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES - Check for an open in the driver's door lock knob switch (LOCK) wire or the driver's door lock knob switch (UNLOCK) wire between the MICU and the driver's door lock knob switch. If OK, replace the driver's door lock actuator.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect the under-dash fuse/relay box connector T(34P).
11. Check for continuity between the No. 23 (UNLOCK) and No. 24 (LOCK) terminals of the under-dash fuse/relay box connector T (34P) and body ground.

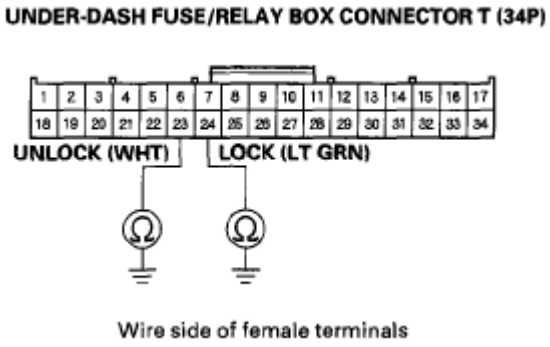


Fig. 14: Checking Continuity Between Terminals Of Under-Dash Fuse/Relay Box Connector T (34P) And Body Ground

Is there continuity?

YES - Repair a short in the LOCK or UNLOCK wire.

NO - Go to step 12.

12. Check for continuity between the No. 23 (UNLOCK) and No. 24 (LOCK) terminals of the under-dash fuse/relay box connector T (34P).

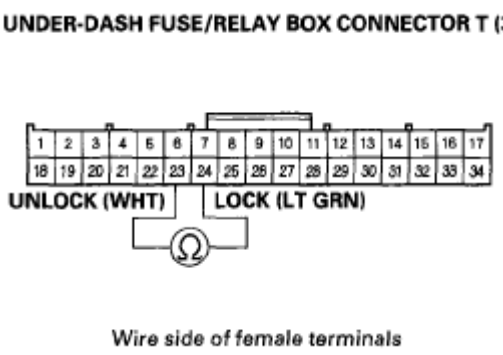


Fig. 15: Checking Continuity Between No. 23 And No. 24 Terminals Of Under-Dash Fuse/Relay Box Connector T (34P)

Is there continuity?

YES - Repair a short in the wire between the LOCK wire and UNLOCK wire.

NO - Faulty MICU, replace the under-dash fuse/relay box.

SYMPTOM TROUBLESHOOTING

POWER DOOR LOCKS/KEYLESS

1. If the door lock system works properly, but the keyless operation does not, refer to the immobilizer-keyless control unit symptom troubleshooting information (see **SYMPTOM TROUBLESHOOTING INFORMATION**).

NOTE: The door lock system does not function when:

- Any of the doors is open.
- Ignition key is in the ignition key switch.
- Ignition switch is ON (II).

SYMPTOM TROUBLESHOOTING CHART

No.	Symptom	Check Items
1	The doors will not lock or unlock.(1)	• MICU input test (see **MICU INPUT TEST**) • Driver's door key cylinder switch test (see **DOOR KEY CYLINDER SWITCH TEST**) • Door lock switch test (see **DOOR LOCK SWITCH TEST**) • Door lock knob switch test (see **DOOR LOCK KNOB SWITCH TEST**)
		• MICU input test (see **MICU**

		INPUT TEST) • Door lock knob switch test (see **DOOR LOCK KNOB SWITCH TEST**) • Driver's door switch test (check the door switch ON/OFF information with the HDS)
2	The doors will not lock. (1)	
3	The doors will not unlock.(1)	• MICU input test (see **MICU INPUT TEST**) • Door lock knob switch test (see **DOOR LOCK KNOB SWITCH TEST**) • Door switch test (check the door switch ON/OFF information with the HDS)
4	**KEYLESS OPERATION DOES NOT WORK (LOCK, UNLOCK, PANIC)**.	
5	**DOORS WILL NOT UNLOCK WITH THE TRANSMITTER, BUT WILL UNLOCK WITH THE DOOR SWITCH**.	
6	**DOORS WILL NOT LOCK WITH THE TRANSMITTER, BUT WILL LOCK WITH THE DOOR SWITCH**.	
7	**DOORS AUTOMATICALLY RELOCK AFTER BEING UNLOCKED WITH THE TRANSMITTER EVEN THOUGH A DOOR HAS BEEN OPENED**.	
8	**THE HORN DOES NOT SOUND WHEN PANIC BUTTON ON THE TRANSMITTER PRESSED (USA ONLY)**.	
9	Keyless operation will work even though the ignition key is in the ignition switch.	Ignition key switch test (see **IGNITION KEY SWITCH TEST**).

(1) If only one door is not working properly, check that door's lock actuator first, then check the other items listed in this table.

KEYLESS OPERATION DOES NOT WORK (LOCK, UNLOCK, PANIC)

NOTE:

- **Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.**
- **Before troubleshooting, do the keyless transmitter test (see TRANSMITTER TEST/REPLACEMENT).**

1. Turn the ignition switch ON (II).
2. Try to start the engine.

Does the engine start?

YES - The immobilizer system is OK, go to step 3.

NO - Go to the immobilizer symptom troubleshooting (see **SYMPTOM TROUBLESHOOTING**).

3. Turn the ignition switch OFF.
4. Connect the HDS to the data link connector.
5. Close all doors, then turn the ignition switch ON (II).
6. Enter the BODY ELECTRICAL menu, and check the door switch parameters.

   Do all door switches indicate OFF?

   YES - Go to step 6.

   NO - Faulty door switch, or shorted door switch wire. Repair as necessary.

7. Remove the ignition key from the ignition switch.
8. Disconnect the immobilizer-keyless control unit 7P connector.
9. Check for voltage between the immobilizer-keyless control unit 7P connector No. 1 terminal and body ground.

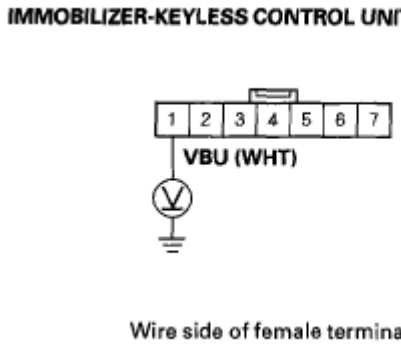


Fig. 16: Checking Voltage Between Immobilizer-Keyless Control Unit 7P Connector No. 1 Terminal And Body Ground

   Is there battery voltage?

   YES - Go to step 10.

   NO - Check the No. 23 (10 A) fuse in the under-hood fuse/relay box. If the fuse is blown, replace the fuse and repair a short to ground in the wire. If the fuse is OK, repair an open in the wire.

10. Disconnect the ignition key switch 6P connector.
11. At the ignition key switch side, check for continuity between the ignition key switch 6P connector No. 1 and No. 2 terminals.

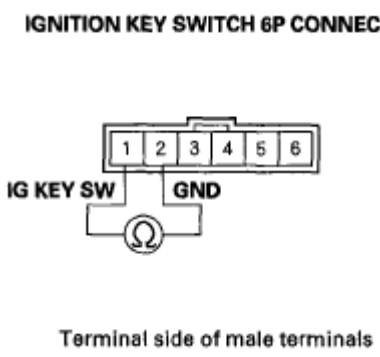


Fig. 17: Checking Continuity Between Ignition Key Switch 6P Connector No. 1 And No. 2 Terminals

Is there continuity?

YES - Faulty ignition key switch or short to ground, replace the steering lock assembly.

NO - Go to step 12.

12. Insert the ignition key into the ignition switch.
13. At the ignition key switch side, check for continuity between the ignition key switch 6P connector No. 1 and No. 2 terminals.

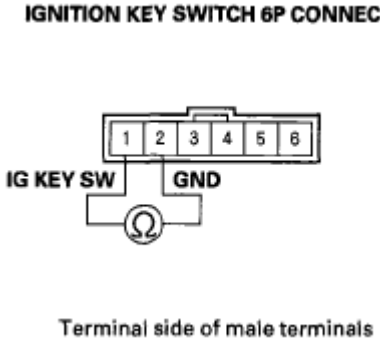


Fig. 18: Checking Continuity Between Ignition Key Switch 6P Connector No. 1 And No. 2 Terminals

Is there continuity?

YES - Go to step 14.

NO - Faulty ignition key switch, replace the steering lock assembly.

14. Check for continuity between the immobilizer-keyless control unit 7P connector No. 6 terminal and the ignition key switch 6P connector No. 1 terminal.

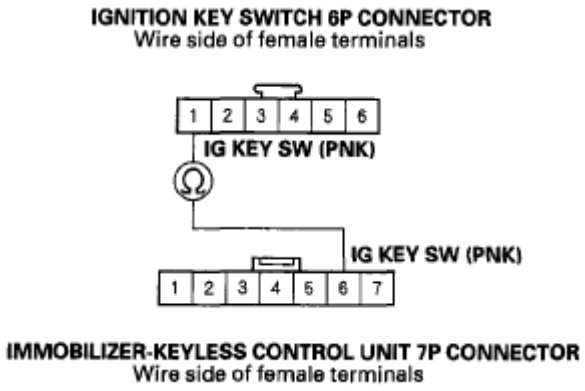


Fig. 19: Checking Continuity Between Immobilizer-Keyless Control Unit 7P Connector No. 6 Terminal And Ignition Key Switch 6P Connector No. 1 Terminal

Is there continuity?

YES - Go to step 15.

NO - Repair an open in the wire.

15. Check for continuity between the immobilizer-keyless control unit 7P connector No. 6 terminal and body ground.

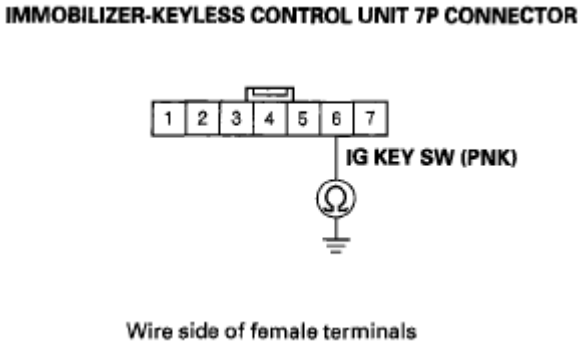


Fig. 20: Checking Continuity Between Immobilizer-Keyless Control Unit 7P Connector No. 6 Terminal And Body Ground

Is there continuity?

YES - Repair a short to ground in the wire.

NO - Replace the immobilizer-keyless control unit.

DOORS WILL NOT UNLOCK (OR LOCK) WITH THE TRANSMITTER, BUT WILL UNLOCK (LOCK) WITH THE DOOR SWITCH

NOTE: Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.

1. Turn the ignition switch OFF.

2. Remove the ignition key from the ignition switch.
3. Close and lock the doors.
4. Try to lock/unlock the doors with the keyless transmitter.

   Do the door lock actuators work normally?

   YES - Intermittent failure. The system is OK at this time.

   NO - Go to step 5.

5. Open the driver's door.

   Does the key-in reminder chime sound?

   YES - Faulty ignition key switch, or short to ground on the ignition switch PNK wire. Repair as necessary.

   NO - Go to step 6.

6. Do the transmitter test (see **TRANSMITTER TEST/REPLACEMENT**).

   Is the transmitter OK?

   YES - Substitute a known-good MICU and recheck.

   NO - Replace the transmitter.

THE HORN DOES NOT SOUND WHEN THE PANIC BUTTON ON THE TRANSMITTER IS PRESSED

NOTE: Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.

1. Press the PANIC button.

   Does the horn sound?

   YES - Go to step 3.

   NO - Go to step 2.

2. Press the horn button.

   Does the horn sound?

   YES - Go to step 3.

   NO - Check the horn circuit.

3. Turn the headlight switch ON.

   Do the headlights come on?

   YES - Go to step 4.

   NO - Check the lighting circuit.

4. Do the transmitter test (see **TRANSMITTER TEST/REPLACEMENT**).

   Is the transmitter OK?

   YES - Substitute a known-good MICU and recheck.

   NO - Replace the transmitter.

DOORS AUTOMATICALLY RELOCK AFTER BEING UNLOCKED WITH THE TRANSMITTER EVEN THOUGH A DOOR HAS BEEN OPENED

1. Turn the ceiling light switch in DOOR position.
2. Turn the ignition switch ON (II).
3. Close all doors.
4. Watch the ceiling light and the door indicator on the gauge control module.

   Does the ceiling light and door indicator go off?

   YES - Go to step 5.

   NO - Repair a short to ground in the wire between the MICU and door switch.

5. Open and close each door one at a time.
6. Watch the ceiling light and the door indicator on the gauge control module.

   Does the ceiling light and door indicator come on when the door is open, and go off when the door is closed?

   YES - Substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU.

   NO - Repair an open in the wire between the MICU and the door switch. If the wire is OK, faulty the door switch, replace the door lock actuator assembly.

TRIPPED SENSOR HISTORY

The security system stores information on the last tripped sensor if the security system has been violated. The information can be retrieved using the HDS.

To retrieve the last tripped sensor data:

1. Select HISTORY DATA from the security system test mode menu.
2. Select CURRENT DATA.
3. Confirm that the VIN matches the Vehicle then press the enter button.
4. Scroll through the data ist.
    - Sensors that were violated will indicate DETECT.
    - Sensors the were not violated will indicated NONE.
5. Inspect the DETECT circuit for:
    - Misadjusted or damaged switch.
    - Loose or corroded connections.
    - Intermittent short to ground.

MICU INPUT TEST

1. Before troubleshooting the keyless/poor door locks/security system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check the No. 10 (7.5 A) and No. 25 (20 A) fuses in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, G, M, N, Q, R, and T.

NOTE: All connector views are wire side of female terminals.

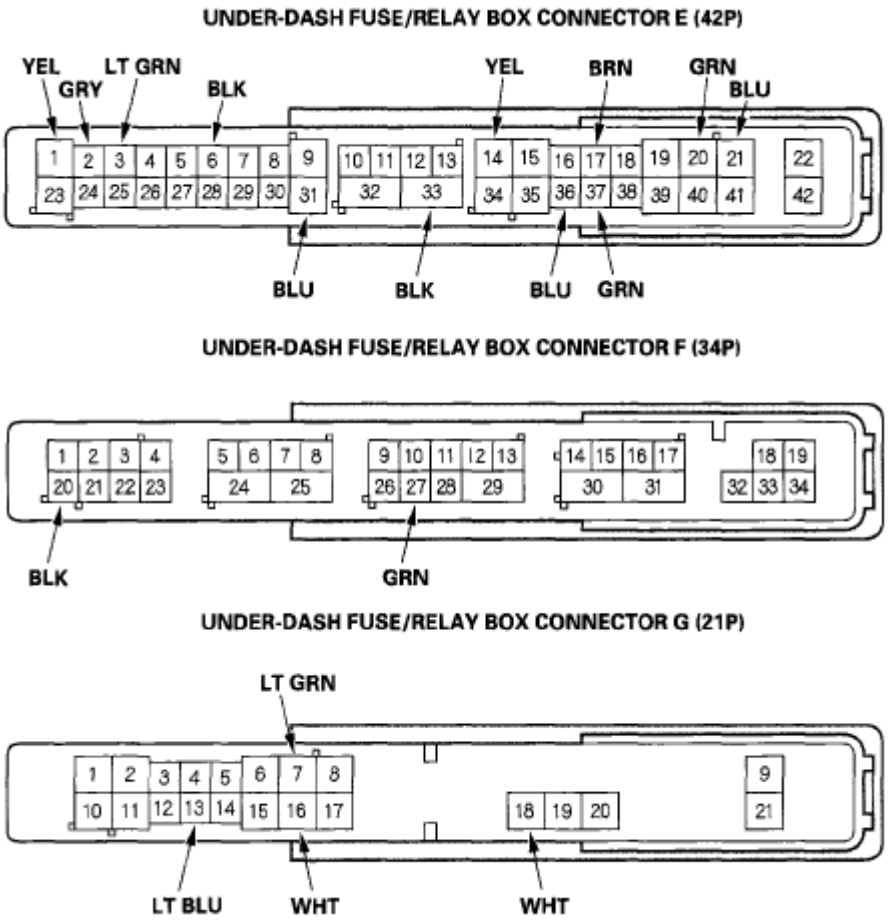


Fig. 21: Identifying Under-Dash Fuse/Relay Box Connector Terminals (1 Of 2)

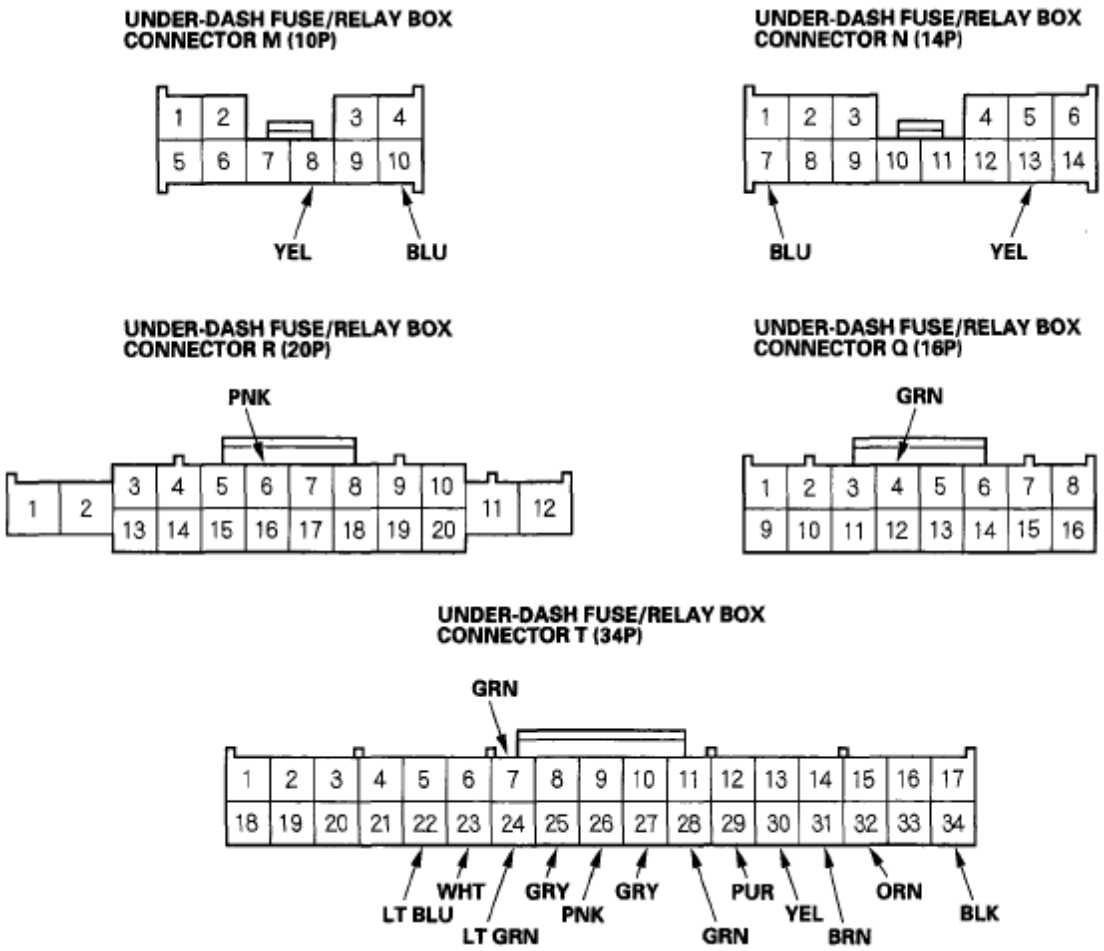


Fig. 22: Identifying Under-Dash Fuse/Relay Box Connector Terminals (2 Of 2)

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connector still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

MICU INPUT TEST (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
G16	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 12 (15 A) fuse in the under-hood fuse/relay box • An open in the wire
G18	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (50 A) fuse in the under-hood fuse/relay box

				• An open in the wire
G7	LTGRN	Under all conditions	Connect G16 and G7 terminals with a jumper wire momentarily: The horn should sound.	• Poor ground(body ground) • Blown No. 12 (15 A) fuse in the under-hood fuse/relay box • Faulty horn • An open in the wire
E20	GRN	Under all conditions	Connect G2 and E20 terminals with a jumper wire: The trunk release actuator should work (Trunk lid should open).	• Poor ground(G701) • Faulty trunk release actuator • An open in the wire
N7	BLU	Under all conditions	Connect battery power to the N13 terminal and ground the N7 terminal momentarily: The driver's door lock actuator should lock.	• Faulty driver's door lock actuator • An open in the wire
N13	YEL			
M8	YEL	Under all conditions	Connect battery power to the M8 terminal and ground the M10 terminal momentarily: The front passenger's door lock actuator should unlock.	• Faulty front passenger's door lock actuator • An open in the wire
M10	BLU			
E1 (4-door)	YEL	Under all conditions	Connect battery power to the E1 terminal and ground the E21 terminal momentarily: The right rear door lock actuator should unlock.	• Faulty right rear door lock actuator • An open in the wire
E21 (4-door)	BLU			
E14 (4-door)	YEL	Under all conditions	Connect battery power to the E14 terminal and ground the E31 terminal momentarily: The left rear door lock actuator should unlock.	• Faulty left rear door lock actuator • An open in the wire
E31 (4-door)	BLU			

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

MICU INPUT TEST (CONNECTORS RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
			Check for	

E33	BLK	Under all conditions	voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
E2 (4-door)	GRY	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door switch • Short to ground in the wire
E3	LTGRN	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground in the wire
E17 (4-door)	BRN	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
			Check for voltage to ground:	• Faulty left rear door switch

		Left rear door closed	There should be 5 V or more.	• Short to ground in the wire
E36	BLU	Trunk lid open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G701) • Faulty trunk lid latch switch • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be 5 V or more.	• Faulty trunk lid latch switch • Short to ground in the wire
E37	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground in the wire
F27	GRN	Transmission range switch in P	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G101) • Faulty transmission range switch • An open in the wire
		Transmission range switch in any other position than P	Check for voltage to ground: There should be 5 V or more.	• Faulty transmission range switch • Short to ground in the wire
G13	LT BLU	Hood open	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty hood switch • An open in the wire
		Hood closed	Check for voltage to ground: There should be 5 V or	• Faulty hood switch • Short to around in the wire

			more.	
Q4	GRN	Under all conditions	Check for voltage to ground: There should be battery voltage.	A short in the wire
R6	PNK	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground in the wire
T7	GRN	Trunk key cylinder switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G701) • Faulty trunk key cylinder switch • An open in the wire
		Trunk key cylinder switch neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty trunk key cylinder switch • Short to ground in the wire
T22	LT BLU	Front passenger's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock knob switch • An open in the wire
		Front passenger's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock knob switch • Short to ground in the wire
T23	WHT	Driver's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (4-door: G501,2-door: G401) • Faulty driver's door lock knob switch • An open in the wire
			Check for	

		Driver's door lock knob switch locked	voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground in the wire
T24	LTGRN	Driver's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to around in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (4-door: G501,2-door: G401) • Faulty driver's door lock knob switch • An open in the wire
T25 (4-door)	GRY	Right rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty right rear door lock knob switch • An open in the wire
		Right rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door lock knob switch • Short to ground in the wire
T26 (4-door)	PNK	Left rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty left rear door lock knob switch • An open in the wire
		Left rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door lock knob switch • Short to ground in the wire
T27	GRY	Driver door lock switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G503) • Faulty driver door lock switch • An open in the wire
		Driver door lock switch in	Check for voltage to ground:	• Faulty driver door lock switch

		neutral	There should be 5 V or more.	• Short to ground in the wire
T28	GRN	Driver door lock switch locked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G503) • Faulty driver door lock switch • An open in the wire
		Driver door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver door lock switch • Short to ground in the wire
T29	PUR	Front passenger's door lock switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock switch • Short to ground in the wire
T30	YEL	Front passenger's door lock switch locked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door lock switch • Short to ground in the wire
T31	BRN	Driver door key cylinder switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door key cylinder switch • An open in the wire
		Driver door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or	• Faulty driver door key cylinder switch • Short to ground in the

			more.	wire
T32	ORN	Driver door key cylinder switch locked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door key cylinder switch • An open in the wire
		Driver door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver door key cylinder switch • Short to ground in the wire

DOOR LOCK ACTUATOR TEST

DRIVER'S DOOR AND LEFT REAR DOOR

1. Remove the door panel.
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 10P connector (A) from the actuator (B).

NOTE: Driver's door shown.

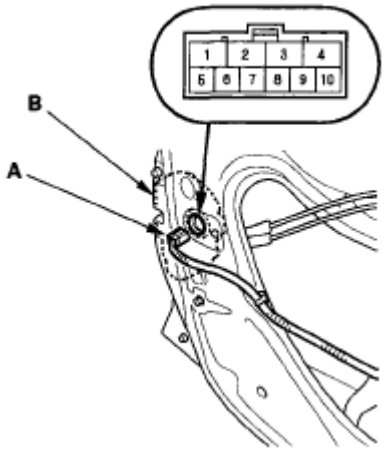


Fig. 23: Disconnecting 10P Connector From Actuator

3. Check actuator operation by connecting power and ground according to **Fig. 24** . To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

Fig. 24: Checking Actuator Operation Connecting Power And Ground Chart

4. If the actuator does not operate as specified, replace it.

FRONT PASSENGER'S DOOR AND RIGHT REAR DOOR

1. Remove the door panel.
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 10P connector (A) from the actuator (B).

NOTE: Front passenger's door shown.

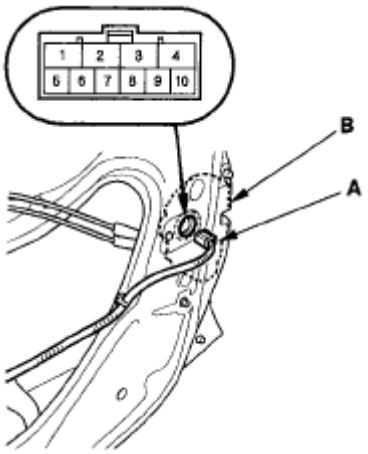


Fig. 25: Disconnecting 10P Connector From Actuator

3. Check actuator operation by connecting power and ground according to **Fig. 26** . To prevent damage to the actuator, apply battery voltage only momentarily.

Position \ Terminal	3	4
LOCK	⊕	⊖
UNLOCK	⊖	⊕

Fig. 26: Checking Actuator Operation By Connecting Power And Ground Chart

4. If the actuator does not operate as specified, replace it.

DOOR LOCK KNOB SWITCH TEST

DRIVER'S DOOR

1. Remove the driver's door panel.
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 10P connector (A) from the actuator (B).

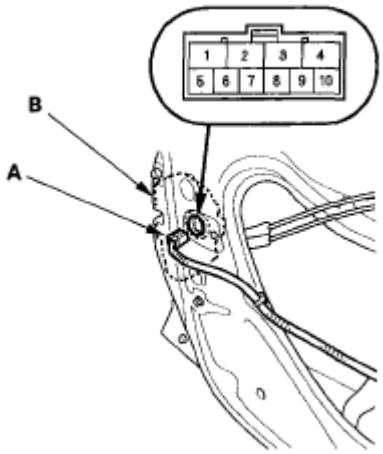


Fig. 27: Disconnecting 10P Connector From Actuator

3. Check for continuity between the terminals.
   - There should be continuity between the No. 6 and No. 5 terminals when the door lock knob switch is in the LOCK position and no continuity when the switch is in the UNLOCK position.
   - There should be continuity between the No. 7 and No. 5 terminals when the door lock knob switch is in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

PASSENGER'S DOOR

1. Remove the passenger's door panel.
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 10P connector (A) from the actuator (B).

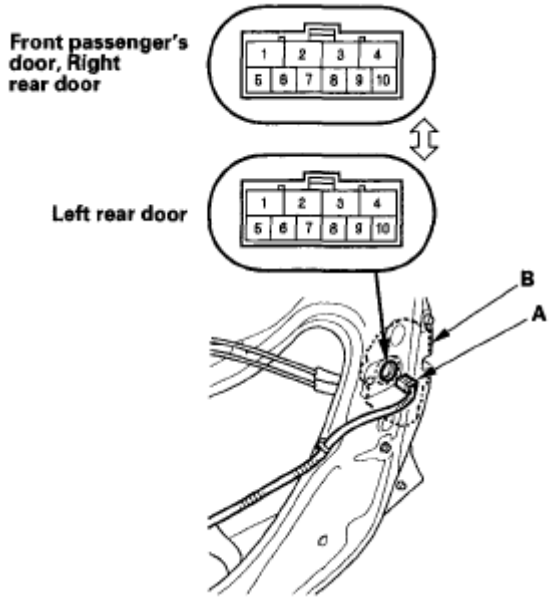


Fig. 28: Disconnecting 10P Connector From Actuator

3. Check for continuity between the terminals.

   There should be continuity between the No. 8 [No. 7] and No. 10 [No. 5] terminals when the door lock knob switch in the UNLOCK position and no continuity when the switch is in the LOCK position.

   [ ] : Left rear door

4. If the continuity is not specified, replace the door lock actuator.

DOOR LOCK SWITCH TEST

DRIVER'S DOOR (4-DOOR)

1. Remove the power window master switch and disconnect its connector (see **MASTER SWITCH TEST/REPLACEMENT**).

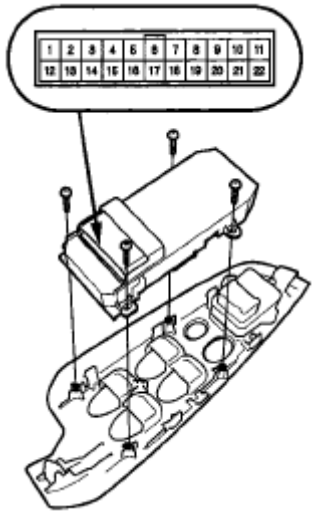


Fig. 29: Removing Power Window Master Switch (4-Door)

2. Check for continuity between the power window master switch 22P connector terminals.
   - There should be continuity between the No. 11 and No. 17 terminals when the door lock switch is in the LOCK position. (With security)
   - There should be no continuity between the No. 11 and No. 17 terminals when the door lock switch is in the UNLOCK position. (With security)
   - There should be continuity between the No. 11 and No. 19 terminals when the door lock switch is in the UNLOCK position.
   - There should be no continuity between the No. 11 and No. 19 terminals when the door lock switch is in the LOCK position.
3. If the continuity is not as specified, replace the power window master switch.

DRIVER'S DOOR (2-DOOR)

1. Remove the power window master switch and disconnect its connector (see **2-DOOR**).

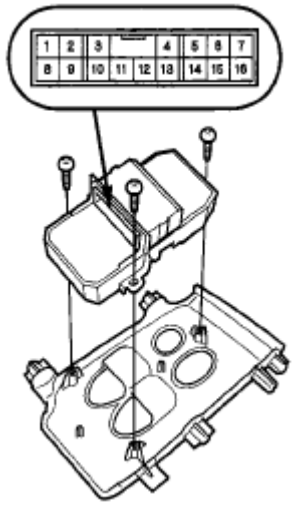


Fig. 30: Removing Power Window Master Switch (2-Door)

2. Check for continuity between the power window master switch 16P connector terminals.
   - There should be continuity between the No. 5 and No. 7 terminals when the door lock switch is in the LOCK position. (With security)
   - There should be no continuity between the No. 5 and No. 7 terminals when the door lock switch is in the UNLOCK position. (With security)
   - There should be continuity between the No. 6 and No. 7 terminals when the door lock switch is in the UNLOCK position.
   - There should be no continuity between the No. 6 and No. 7 terminals when the door lock switch is in the LOCK position.
3. If the continuity is not as specified, replace the power window master switch.

FRONT PASSENGER'S DOOR

1. 4-door: Remove the front passenger's window switch (see **PASSENGER'S POWER WINDOW SWITCH TEST/REPLACEMENT**).

   2-door: Remove the passenger's power window switch (see **DOOR PANEL REMOVAL/INSTALLATION**).

   NOTE: Shown is 4-door front passenger's door.

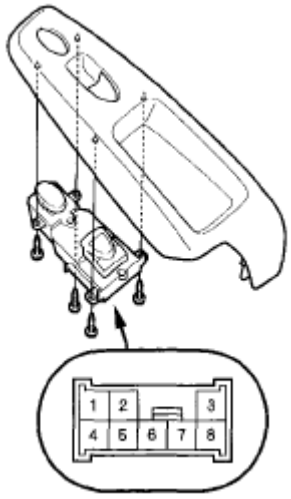


Fig. 31: Identifying Front Passenger's Door (4-Door)

2. Check for continuity between the front passenger's power window switch 8P connector terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the door lock switch is in the LOCK position.
   - There should be no continuity between the No. 1 and No. 2 terminals when the door lock switch is in the UNLOCK position.
   - There should be continuity between the No. 2 and No. 6 terminals when the door lock switch is in the UNLOCK position.
   - There should be no continuity between the No. 2 and No. 6 terminals when the door lock switch is in the LOCK position.
3. If the continuity is not as specified, replace the front passenger's window switch.

DOOR KEY CYLINDER SWITCH TEST

1. Remove the driver's door panel.
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 10P connector (A) from the key cylinder switch (B).

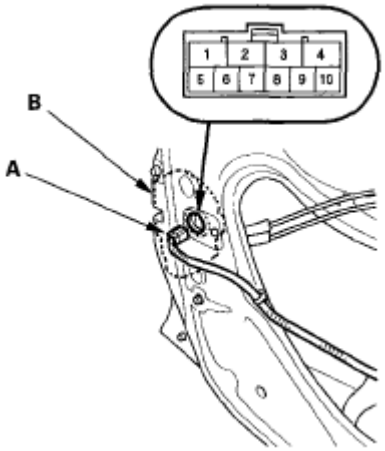


Fig. 32: Disconnecting 10P Connector From Key Cylinder Switch

3. Check for continuity between the terminals.
   - There should be continuity between the No. 9 and No. 5 terminals when the door key cylinder switch is in LOCK position. (With security)
   - There should be no continuity between the No. 9 and No. 5 terminals when the door key cylinder switch is in the neutral or UNLOCK position. (With security)
   - There should be continuity between the No. 8 and No. 5 terminals when the door key cylinder switch is in UNLOCK position.
   - There should be no continuity between the No. 8 and No. 5 terminals when the door key cylinder switch is in the neutral or LOCK position.
4. If the continuity is not as specified, replace the door key cylinder assembly (see **FRONT DOOR OUTER HANDLE REPLACEMENT**).

TRUNK RELEASE ACTUATOR TEST

1. Open the trunk lid.
2. Disconnect the 3P connector from the trunk lid latch switch/trunk release actuator.

Fig. 33: Disconnecting 3P Connector From Trunk Lid Latch Switch/Trunk Release Actuator

3. Check actuator operation by connecting power to the No. 1 terminal and ground to the No. 2 terminal momentarily. The actuator should work.
4. If the actuator does not work, replace the trunk lid latch switch/release actuator assembly (see **TRUNK LID LATCH REPLACEMENT**).

TRUNK KEY CYLINDER SWITCH TEST

1. Open the trunk lid.
2. Disconnect the 3P connector (A) from the trunk key cylinder switch (B).

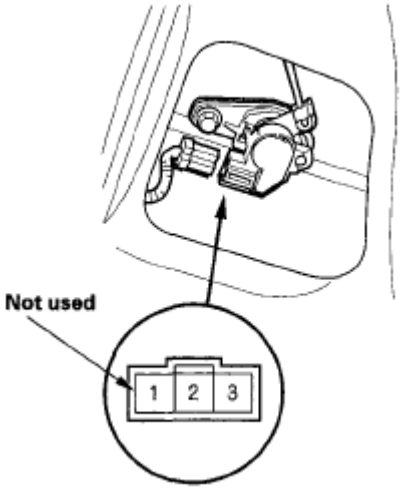


Fig. 34: Disconnecting 3P Connector From Trunk Key Cylinder Switch

3. Check for continuity between the terminals.
   - There should be no continuity between the No. 2 and No. 3 terminals when the trunk key cylinder switch is in the neutral position.
   - There should be continuity between the No. 2 and No. 3 terminals when the trunk key cylinder switch is in the UNLOCK position.
4. If the continuity is not as specified, replace the trunk key cylinder switch.

- 4-door (see **TRUNK LID LOCK CYLINDER REPLACEMENT**)
- 2-door (see **TRUNK LID LOCK CYLINDER REPLACEMENT**)

HOOD SWITCH TEST

1. Open the hood.
2. Disconnect the 2P connector from the hood switch.

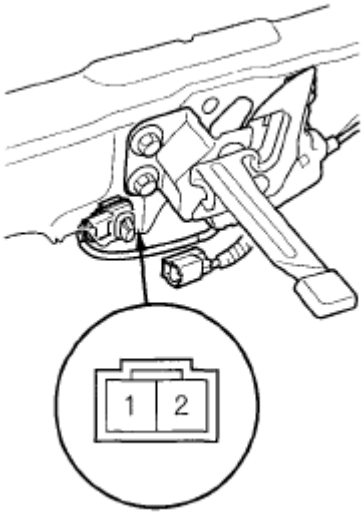


Fig. 35: Disconnecting 2P Connector From Hood Switch

3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the hood is opened (latch released).
   - There should be no continuity between the No. 1 and No. 2 terminals when the hood is closed (latch pushed down).
4. If the continuity is not as specified, replace the hood latch assembly (see **HOOD LATCH REPLACEMENT**).

TRANSMITTER TEST/REPLACEMENT

NOTE:

- **If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.**
- **If any door is open, you cannot lock the doors with the transmitter.**
- **If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.**
- **The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.**

WITH HDS

1. Press the lock or unlock button five or six times to reset the transmitter.

- If the locks work, the transmitter is OK.
- If any of the transmitter buttons does not work, replace the transmitter, then do the transmitter programming register (see **IMMOBILIZER KEY REGISTRATION**).
- If the locks don't work, go to step 2.

2. Connect the HDS to the data link connector.
3. Select the KEYLESS from the BODY ELECTRICAL menu, then enter the KEYLESS CHECK.
4. Press lock, unlock, trunk, or panic button and check the responce on the screen of the HDS.

NOTE: The door lock actuators may or may not cycle when receiving input from the transmitter.

- If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK.
- If DIFFERENT KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is not registered to the vehicle, if necessary, reprogram and register the transmitter (see **IMMOBILIZER KEY REGISTRATION**).
- If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, go to step 5.

5. Open the transmitter and check for water damage.
   - If you find any water damage, replace the transmitter, then reprogram and register the transmitter (see **IMMOBILIZER KEY REGISTRATION**).
   - If there is no water damage, go to step 6.

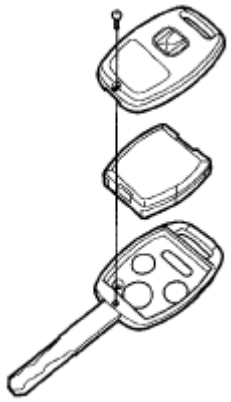


Fig. 36: Checking Transmitter For Water Damage

6. Replace the transmitter battery (A) with a new one, and press lock or unlock button and check the receive condition on the screen of the HDS.
   - If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK.
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, go to step 7.

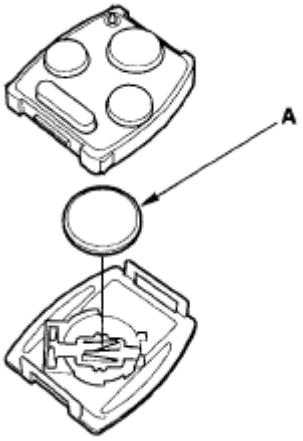


Fig. 37: Replacing Transmitter Battery

7. Use a different known-good keyless transmitter assembly and repeat steps 3 and 4.

NOTE: The keyless transmitter does not need to be programmed to the vehicle for this test.

- If (DIFFERENT) KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, replace the keyless transmitter and do the immobilizer system registration (see **IMMOBILIZER KEY REGISTRATION**).
- If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, the immobilizer-keyless control unit is faulty, replace it and do the immobilizer system registration (see **IMMOBILIZER KEY REGISTRATION**).

NOTE: As the keyless transmitter is combined with the immobilizer transponder, so when the transponder is registered by the HDS, the keyless transmitter programming is completed automatically.

WITHOUT HDS

1. Start the engine.
   - If the engine does not start, go to the immobilizer system troubleshooting (see **SYMPTOM TROUBLESHOOTING**).
   - If the engine starts, go to step 2.
2. Press the lock or unlock button five or six times to reset the transmitter.
   - If the locks work, the transmitter is OK.
   - If the locks don't work, go to step 3.
3. Open the transmitter and check for water damage.
   - If you find any water damage, replace the transmitter.
   - If there is no water damage, go to step 4.

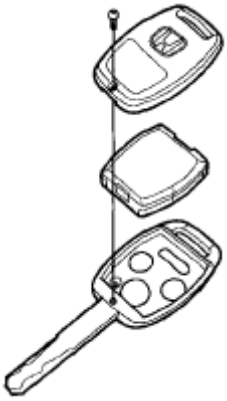


Fig. 38: Checking Transmitter For Water Damage

4. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.
    - If the doors lock and unlock, the transmitter is OK.
    - If the doors don't lock and unlock, go to step 5.

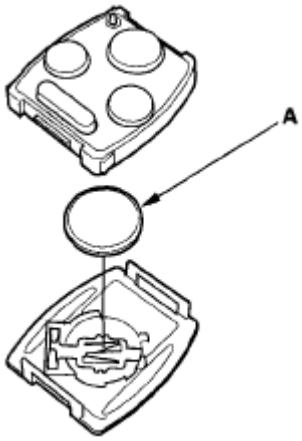


Fig. 39: Replacing Transmitter Battery

5. Reprogram and register the transmitter (see **IMMOBILIZER KEY REGISTRATION**), then try to lock and unlock the doors.
    - If the doors lock and unlock, the transmitter is OK.
    - If the doors don't lock and unlock, substitute a known-good transmitter and recheck (see **IMMOBILIZER KEY REGISTRATION**). If still not operating, replace the immobilizer-keyless control unit.

2006-09 ACCESSORIES AND EQUIPMENT

Openers - Civic

COMPONENT LOCATION INDEX

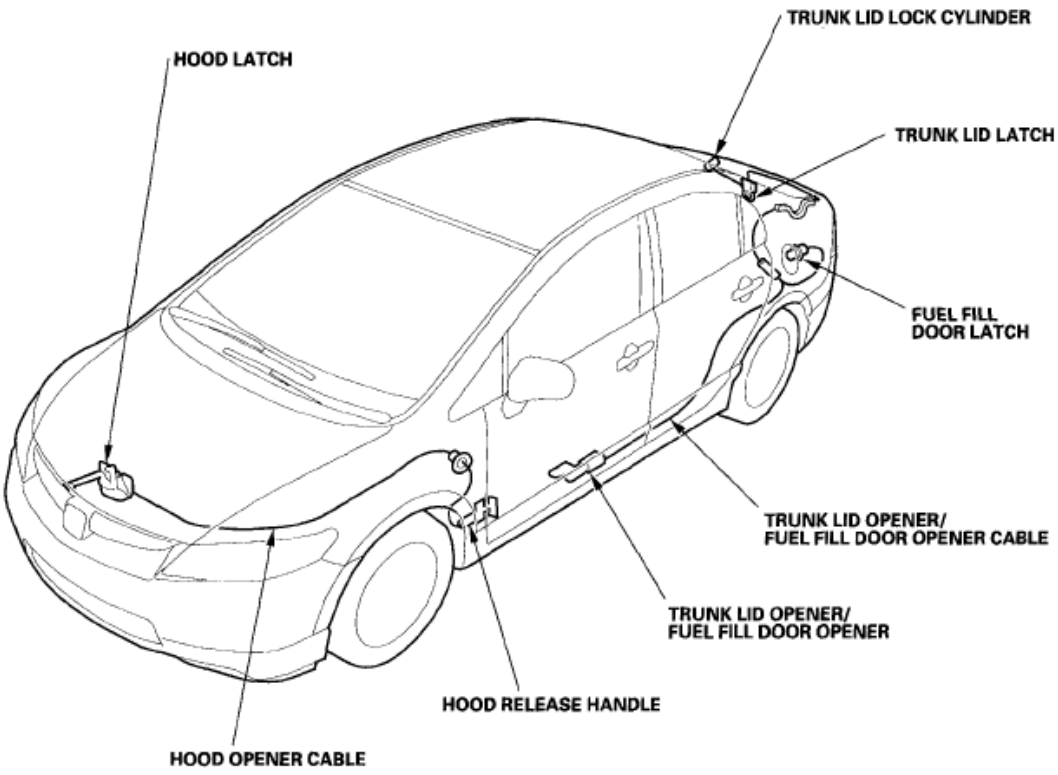


Fig. 1: Identifying Openers Component Location
Courtesy of HONDA

HOOD OPENER CABLE REPLACEMENT

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the body and related parts.**

1. Remove these items:
   - Front grille cover (see **FRONT GRILLE COVER REPLACEMENT**)
   - Front inner fender (see **FRONT INNER FENDER REPLACEMENT**)
   - Kick panel:
     - 2-door (see **TRIM REMOVAL/INSTALLATION - DOOR AREAS**)
     - 4-door (see **FRONT DOOR SILL AREA - 4-DOOR**)
2. Disconnect the hood opener cable (A) from the hood latch (B) (see **HOOD LATCH REPLACEMENT**), and remove the bolts (C), then remove the hood release handle (D). Take care not to kink the cable.

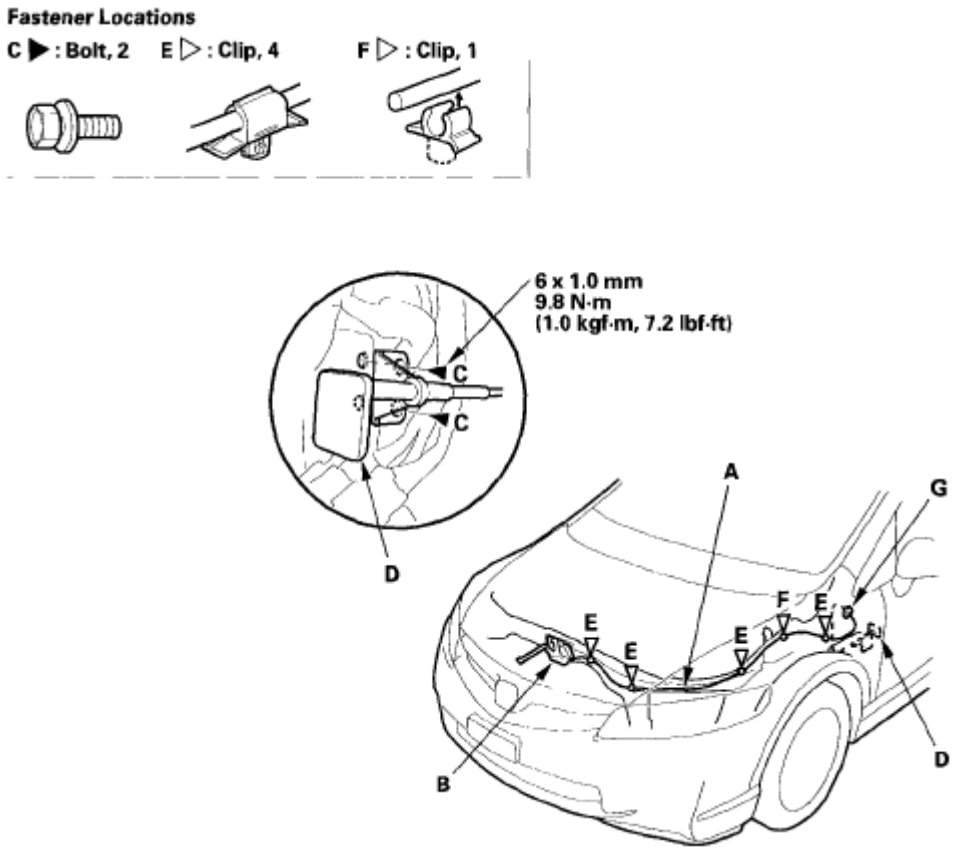


Fig. 2: Identifying Hood Opener Cable, Hood Latch And Hood Release Handle (With Torque Specifications)
Courtesy of HONDA

3. Using a clip remover, detach the clips (E), release the hood opener cable from the clip (F), and remove the grommet (G) from the body, then remove the hood opener cable from the vehicle. Take care not to kink the cable.
4. Install the cable in the reverse order of removal, and check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.

TRUNK LID OPENER CABLE/FUEL FILL DOOR OPENER CABLE REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the body and related parts.**

1. Remove these items:
   - Rear seat cushion (see **SEAT CUSHION**)
   - Rear seat side bolster (see **SEAT SIDE BOLSTER - 4-DOOR**)
   - Front door sill trim, driver's:

    - 2-door (see step 4 on **DOOR SILL AREA - 2-DOOR**)
    - 4-door (see step 3 on **FRONT DOOR SILL AREA - 4-DOOR**)
  - Kick panels, driver's sides:
    - 2-door (see **DOOR SILL AREA - 2-DOOR**)
    - 4-door (see **FRONT DOOR SILL AREA - 4-DOOR**)
  - Rear door sill trim, both sides (see **REAR DOOR SILL AREA - 4-DOOR**)
  - B-pillar lower trim (see **B-PILLAR UPPER/LOWER TRIM - 4-DOOR**)
  - Side trim panel (see **2-DOOR**)
  - Trunk side trim panel, left side:
    - 2-door (see step 6 on **2-DOOR**)
    - 4-door (see step 6 on **4-DOOR**)
  - Trunk lid trim (for some models) (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**)
  - Trunk lid opener/fuel fill door opener (see **TRUNK LID OPENER/FUEL FILL DOOR OPENER REPLACEMENT**)
2. Pull the carpet back as needed.
3. Release the opener cable (A) from the clips (B). Remove the cushion tape (C).

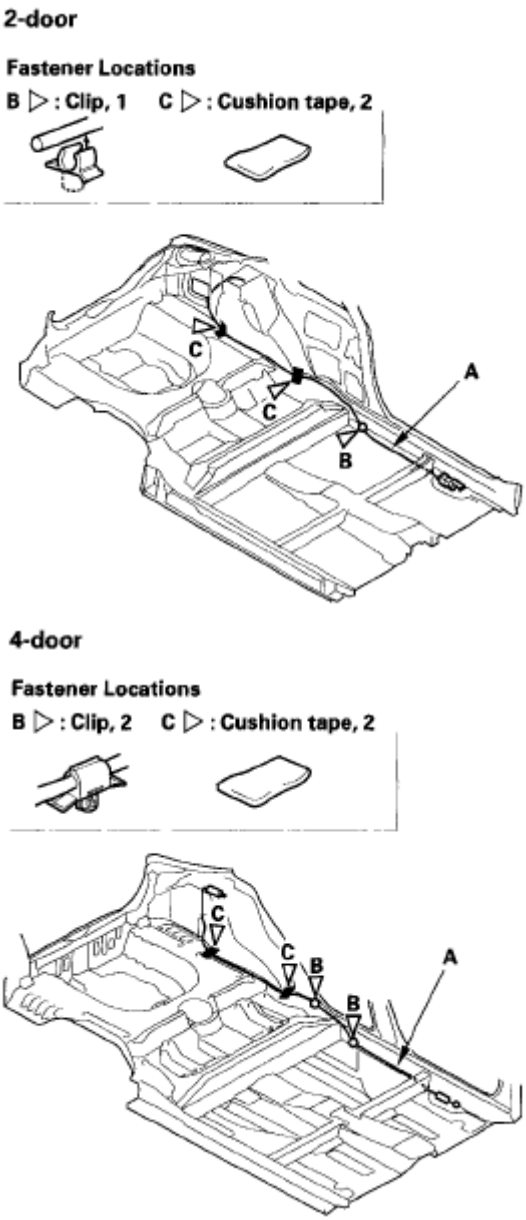


Fig. 3: Identifying Opener Cable From Clips And Cushion Tape
Courtesy of HONDA

4. Remove the screw. Remove the fuel cap (A) by turning it counterclockwise.

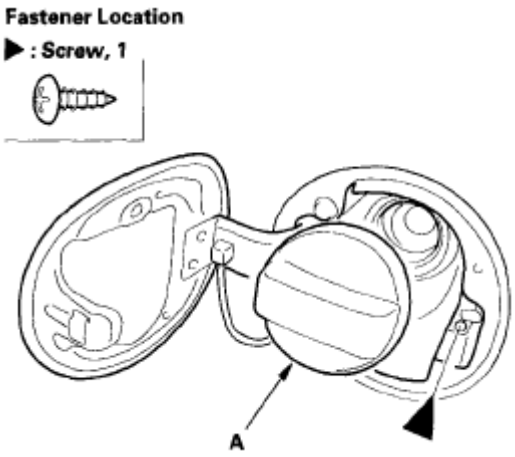


Fig. 4: Identifying Fuel Cap
Courtesy of HONDA

5. While pinching the hooks (A) from inside the vehicle, remove the grommet (B) from the body.

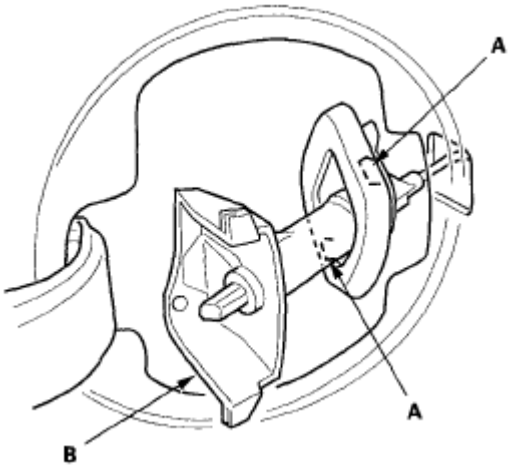


Fig. 5: Identifying Grommet From Body
Courtesy of HONDA

6. Release the hook (A), then remove the grommet (B) from the fuel fill door latch (C).

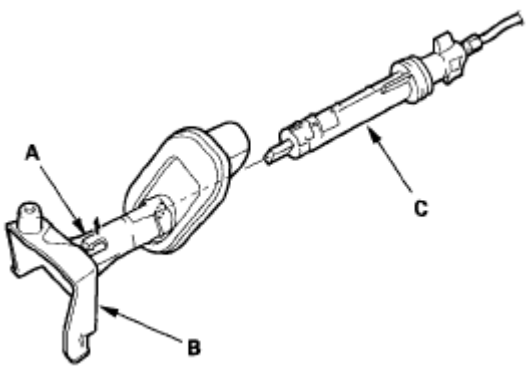


Fig. 6: Identifying Grommet From Fuel Fill Door Latch
Courtesy of HONDA

7. Remove the fuel fill door opener cable from inside the body.
8. Detach the opener cable junction box (A) from the body.

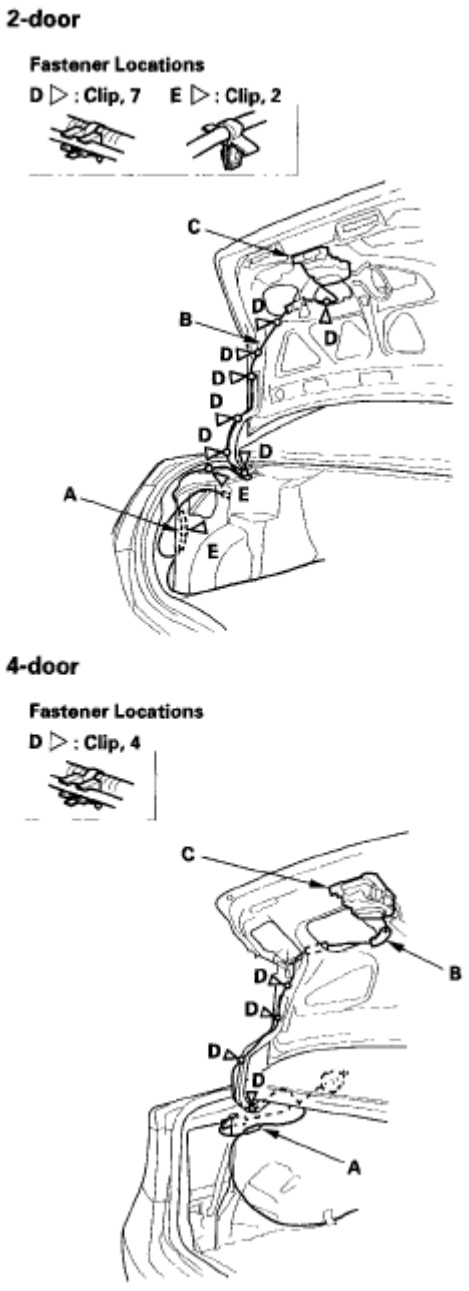


Fig. 7: Identifying Opener Cable Junction Box From Body
Courtesy of HONDA

9. Disconnect the trunk lid opener cable (B) from the trunk lid latch (C) (see **TRUNK LID LATCH REPLACEMENT**).
10. Release the trunk lid opener/fuel fill door opener cable from the clips (D, E).
11. Remove the trunk lid opener/fuel fill door opener cable from the vehicle. Take care not to kink the cable.
12. Install the opener cable in the reverse order of removal, and note these items:

- Align the marks (A) on the opener cable (B) with the cable clips (C) as shown.
- Replace any damaged clips, and replace the cushion tape.

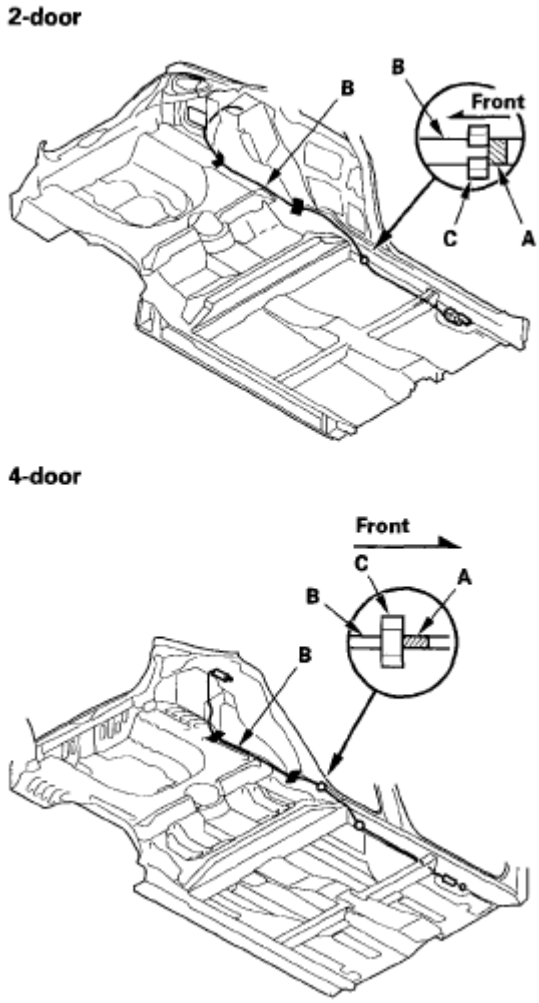
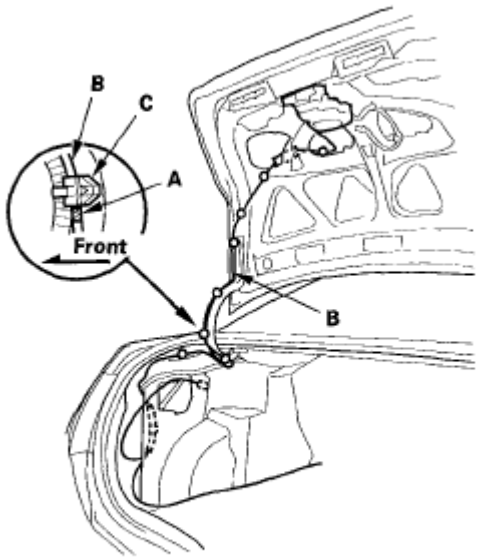


Fig. 8: Aligning Marks On Opener Cable With Cable Clips
Courtesy of HONDA

2-door



4-door

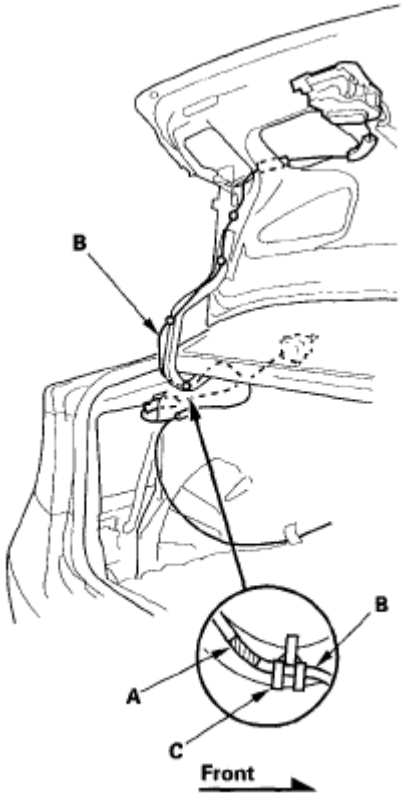


Fig. 9: Identifying Damaged Clips And Cushion Tape
Courtesy of HONDA

HOOD LATCH REPLACEMENT

1. Remove the front grille cover (see **FRONT FENDER TRIM REPLACEMENT**).
2. With hood latch switch: Remove the clip (A), then disconnect and detach the hood latch switch connector (B).

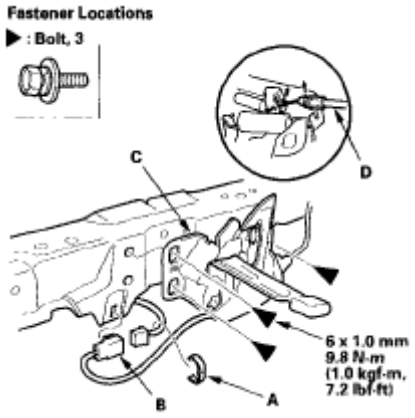


Fig. 10: Identifying Hood Latch Switch Connector (With Torque Specifications)
Courtesy of HONDA

3. Remove the bolts, then remove the hood latch (C) from the body, and disconnect the hood opener cable (D) from the hood latch.
4. Install the latch in the reverse order of removal, and note these items:
    - Apply multipurpose grease to each location of the hood latch indicated by the arrows.
    - Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly (for some models).
    - Adjust the hood latch alignment (see **ADJUSTMENT**).
    - Make sure the hood opens properly and locks securely.

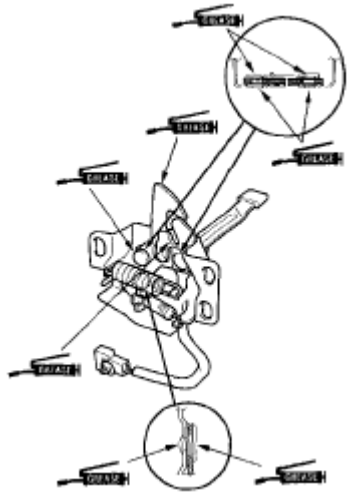


Fig. 11: Applying Multipurpose Grease To Each Location Of Hood Latch Indicated By Arrows
Courtesy of HONDA

TRUNK LID OPENER/FUEL FILL DOOR OPENER REPLACEMENT

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a trim tool, detach the hooks (A) by prying the front side cap (B), then remove it from the front door sill trim (C), and remove the opener lock cylinder (D).

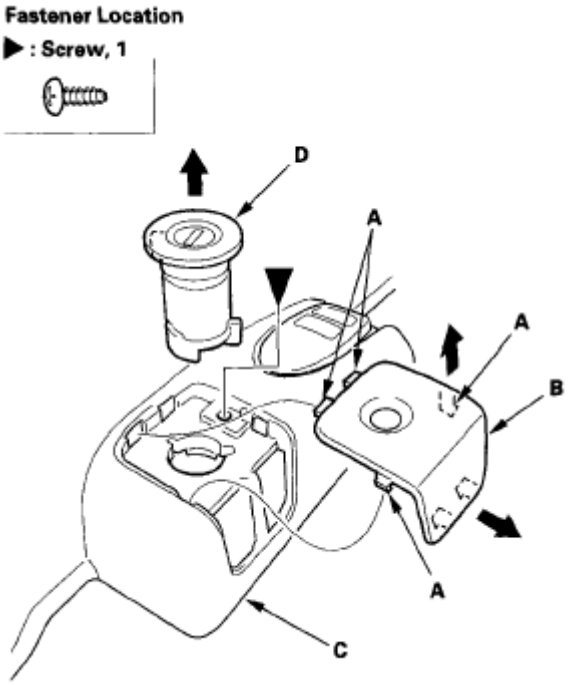


Fig. 12: Identifying Hooks, Side Cap And Lock Cylinder
Courtesy of HONDA

2. Remove the screw.
3. Remove the front door sill trim, 2-door (see step 4 on **DOOR SILL AREA - 2-DOOR**), 4-door (see step 3 on **FRONT DOOR SILL AREA - 4-DOOR**).
4. Loosen the bolt (A), and remove the bolt (B, C), then remove the trunk lid opener/fuel fill door opener (D).

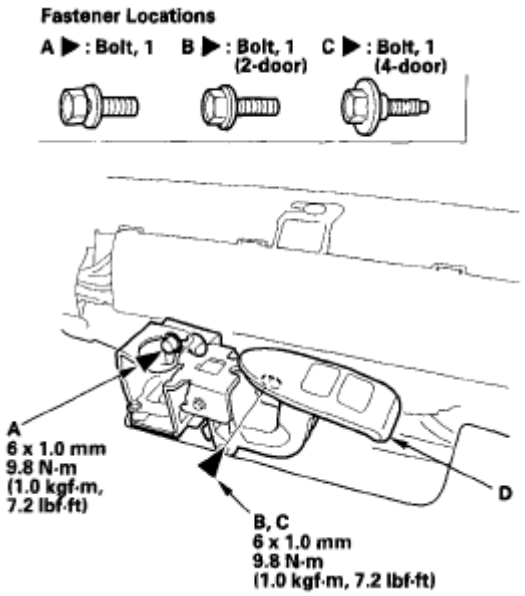


Fig. 13: Identifying Trunk Lid Opener/Fuel Fill Door Opener Bolt (With Torque Specifications)
Courtesy of HONDA

5. Disconnect the trunk lid opener/fuel fill door opener cable (A), then remove the opener (B). Take care not to kink the cable.

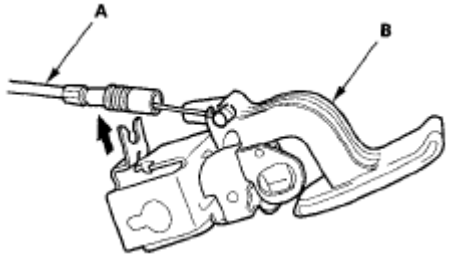


Fig. 14: Identifying Trunk Lid Opener/Fuel Fill Door Opener Cable
Courtesy of HONDA

6. Install the opener in the reverse order of removal, and note these items:
   - Make sure the opener cable is connected properly.
   - Make sure the trunk lid and fuel fill door open properly and lock securely.
   - Fix at the original position in the outer end of cable on the trunk lid opener/fuel fill door opener securely. And check the trunk lid latch operation: Make sure trunk lid latch, and fuel fill door latch unlock when pulling, and pushing the trunk lid opener/fuel fill door opener. If necessary, adjust the position of the cable end.

TRUNK LID LOCK CYLINDER REPLACEMENT

2-DOOR

1. Disconnect the cylinder rod (A), and if equipped, disconnect the cylinder switch connector (B).

NOTE: Check for damaged or stress-whitened rod fastener (C).

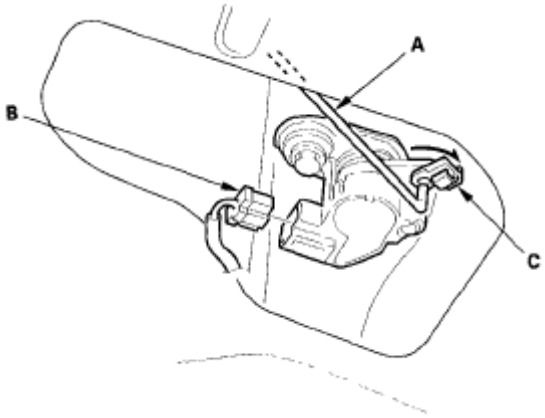


Fig. 15: Identifying Cylinder Rod And Cylinder Switch Connector
Courtesy of HONDA

2. Remove the bolt securing the lock cylinder (A). Then turn the trunk lid lock cylinder clockwise, and remove it.

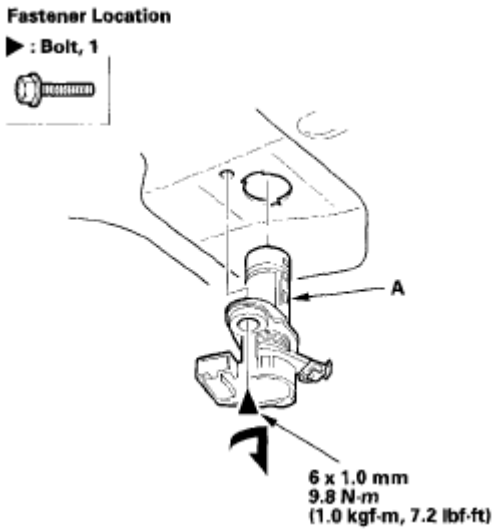


Fig. 16: Identifying Bolt Securing Lock Cylinder (With Torque Specifications)
Courtesy of HONDA

3. Install the lock cylinder in the reverse order of removal, and note these items:
   - Replace the rod fastener if it is damaged.
   - Make sure the cylinder switch connector is plugged in properly (if equipped) and the cylinder rod is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

4-DOOR

1. If equipped, remove the trunk lid trim (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**).
2. Disconnect the cylinder rod (A), and if equipped, disconnect the cylinder switch connector (B).

NOTE: Check for damaged or stress-whitened, rod fastener (C).

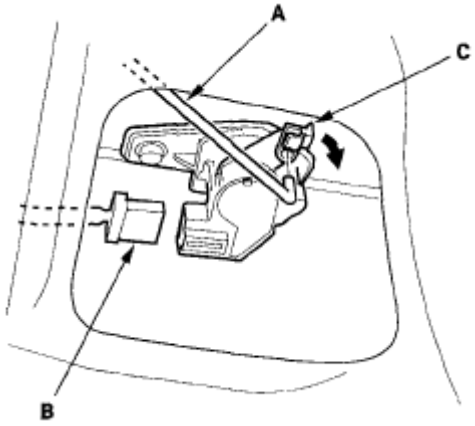


Fig. 17: Identifying Cylinder Rod And Cylinder Switch Connector
Courtesy of HONDA

3. Remove the bolt securing the lock cylinder (A).

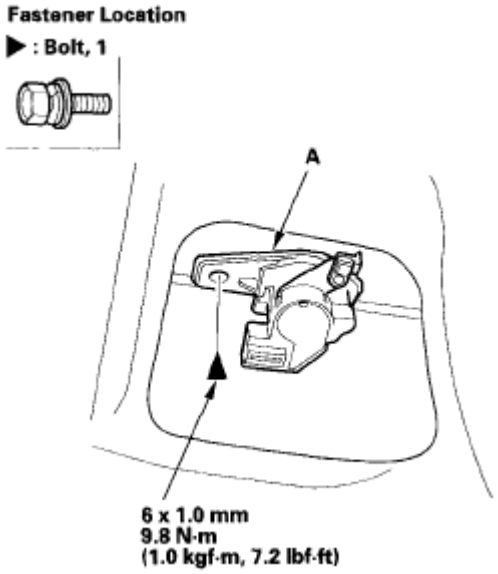


Fig. 18: Identifying Bolt Securing Lock Cylinder (With Torque Specifications)
Courtesy of HONDA

4. Remove the rear license trim (see **SIDE SILL PROTECTION TAPE REPLACEMENT**).
5. Remove the bolt securing the lock cylinder (A).

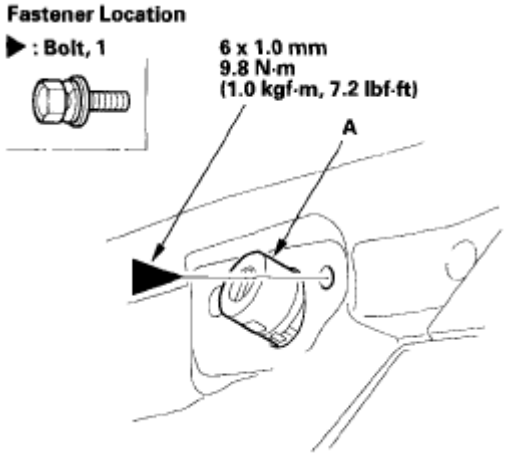


Fig. 19: Identifying Securing Lock Cylinder (With Torque Specifications)
Courtesy of HONDA

6. Turn the lock cylinder (A) to release the hook (B) from the trunk lid (C), then remove the lock cylinder.

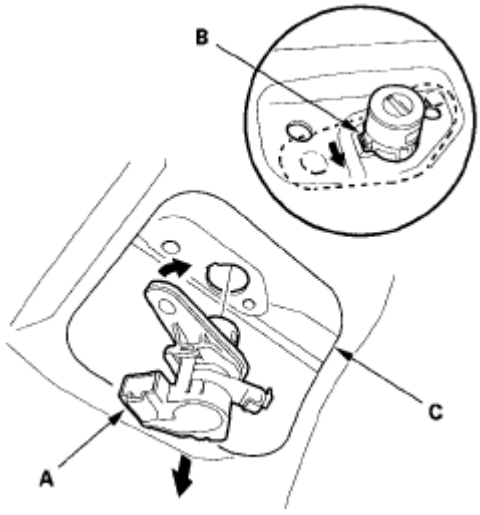


Fig. 20: Identifying Lock Cylinder, Hook From Trunk Lid
Courtesy of HONDA

7. Install the lock cylinder in the reverse order of removal, and note these items:
   - Replace the rod fastener if it is damaged.
   - Make sure the cylinder switch connector is plugged in properly (if equipped) and the cylinder rod is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

TRUNK LID LATCH REPLACEMENT

1. 4-door: If equipped, remove the trunk lid trim (see **TRIM REMOVAL/INSTALLATION - TRUNK LID**).
2. Disconnect the cylinder rod from the lock cylinder:

- 2-door (see step 1 on **2-door**)
- 4-door (see step 1 on **4-door**)

3. Disconnect the trunk lid opener cable (A), and on power trunk lid latch model and security switch model, disconnect trunk lid latch switch connector (B). Take care not to bend the opener cable.

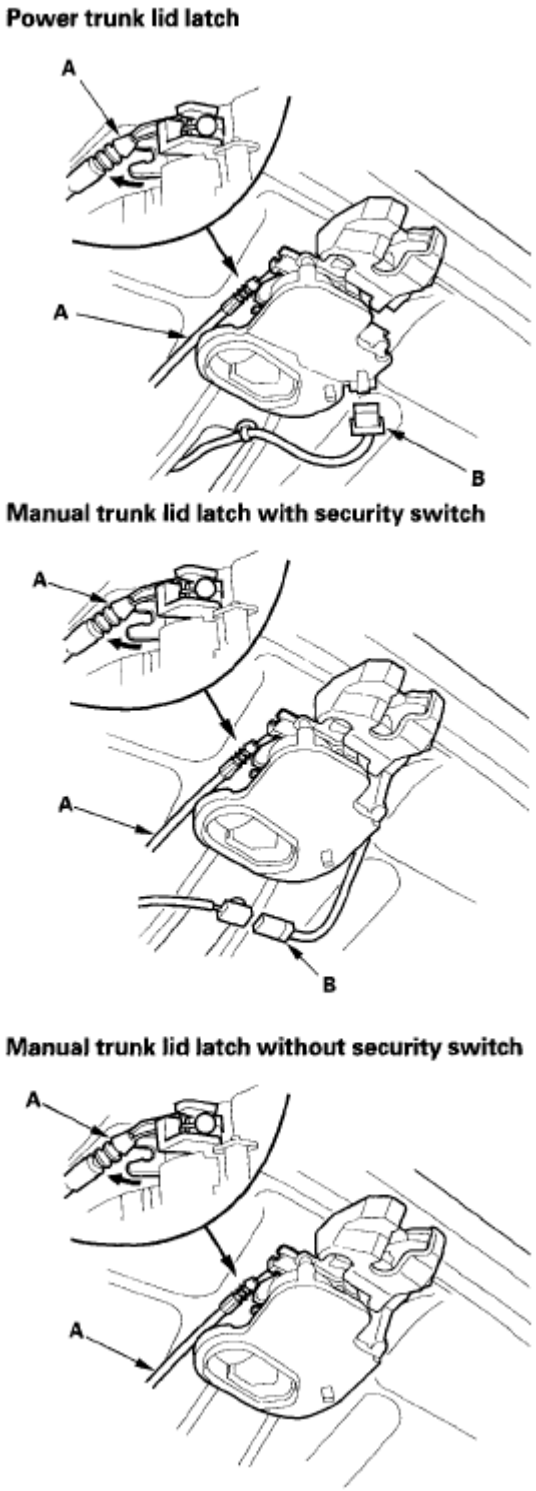


Fig. 21: Identifying Trunk Lid Opener Cable, And Trunk Lid Latch Switch Connector
Courtesy of HONDA

4. Remove the bolts from the trunk lid latch (A).

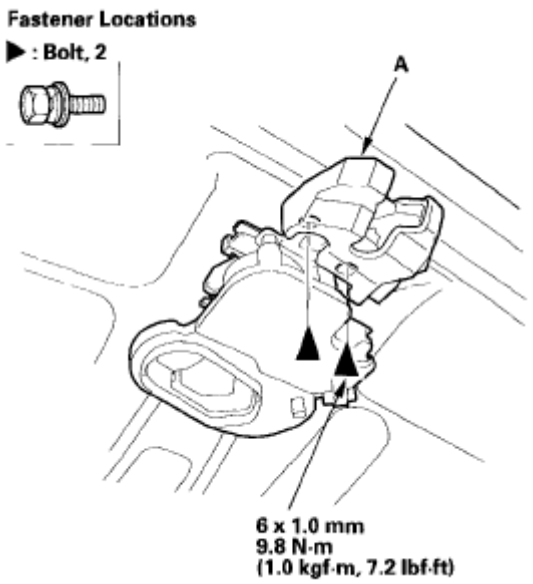


Fig. 22: Identifying Bolts From Trunk Lid Latch (With Torque Specifications)
Courtesy of HONDA

5. Pull the trunk lid latch (A) out, and disconnect the cylinder rod (B) from the trunk lid latch, and on no security switch model, disconnect the latch switch connector (C). Take care not to bend the cylinder rod.

NOTE: Check for damaged or stress-whitened rod fastener (D).

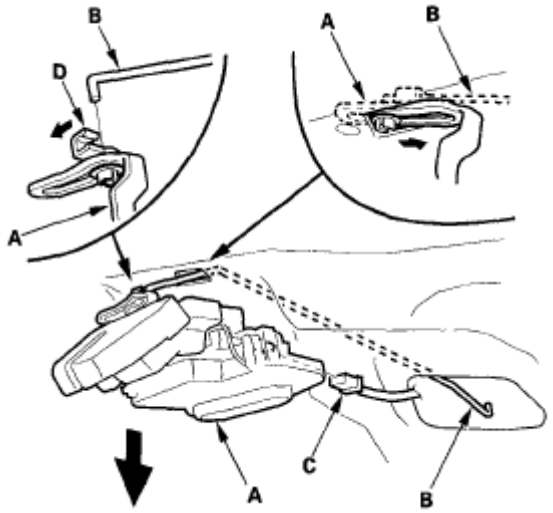


Fig. 23: Identifying Trunk Lid Latch, Cylinder Rod And Latch Switch Connector
Courtesy of HONDA

6. Install the latch in the reverse order of removal, and note these items:
   - Replace the rod fastener if it is damaged.
   - Make sure the connector is plugged in properly and the opener cable is connected properly.

- Make sure the trunk lid opens properly and locks securely.
- Fix the original position of the outer end of cable (A) on the trunk lid latch securely. And check the trunk lid latch operation:

  Make sure the trunk lid latch unlock when pulling the trunk lid opener/fuel fill door opener. If necessary, adjust the position of the cable end.

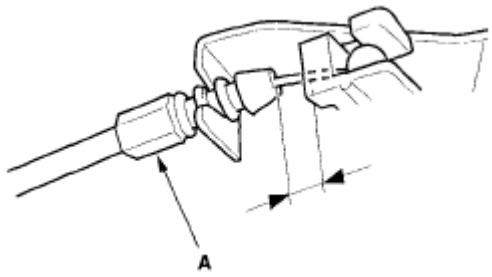


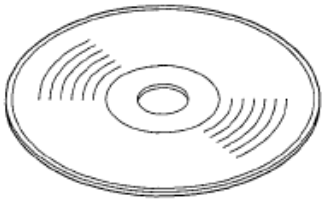
Fig. 24: Identifying Position Of Outer End Of Cable On Trunk Lid Latch Securely
Courtesy of HONDA

2006-08 ACCESSORIES & EQUIPMENT

Audio System - Civic (Except Hybrid)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAZ-SDBA100	Diagnostics CD	1
②	07AAZ-SDBA200 (ABEX-TCD-725B)	Skip Test CD	1
③	07AAZ-SDBA300 (ABEX-TCD-721)	Skip Test CD	1



①, ②, ③

Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

4-door

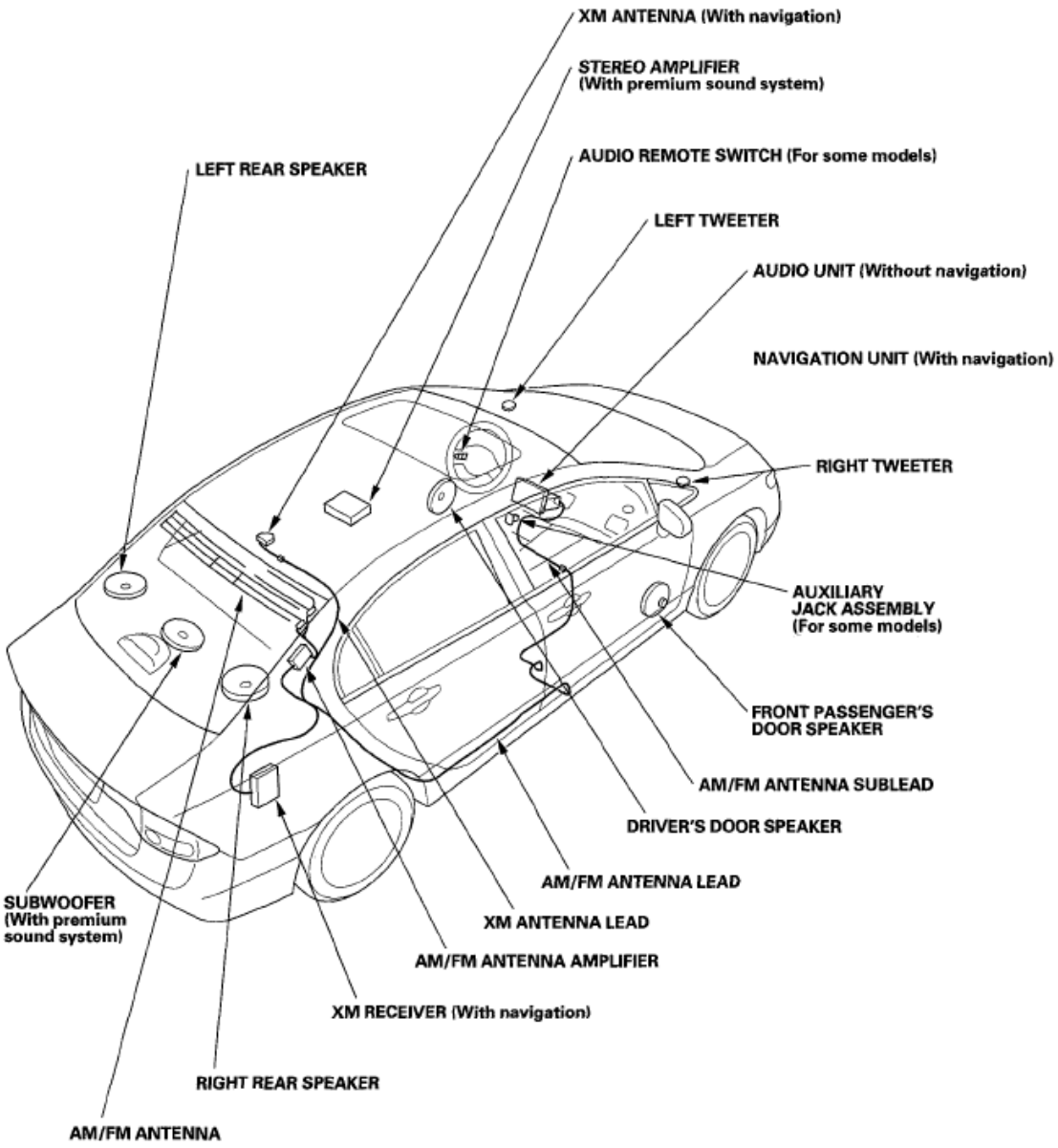


Fig. 2: Audio System Component Location Index (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door

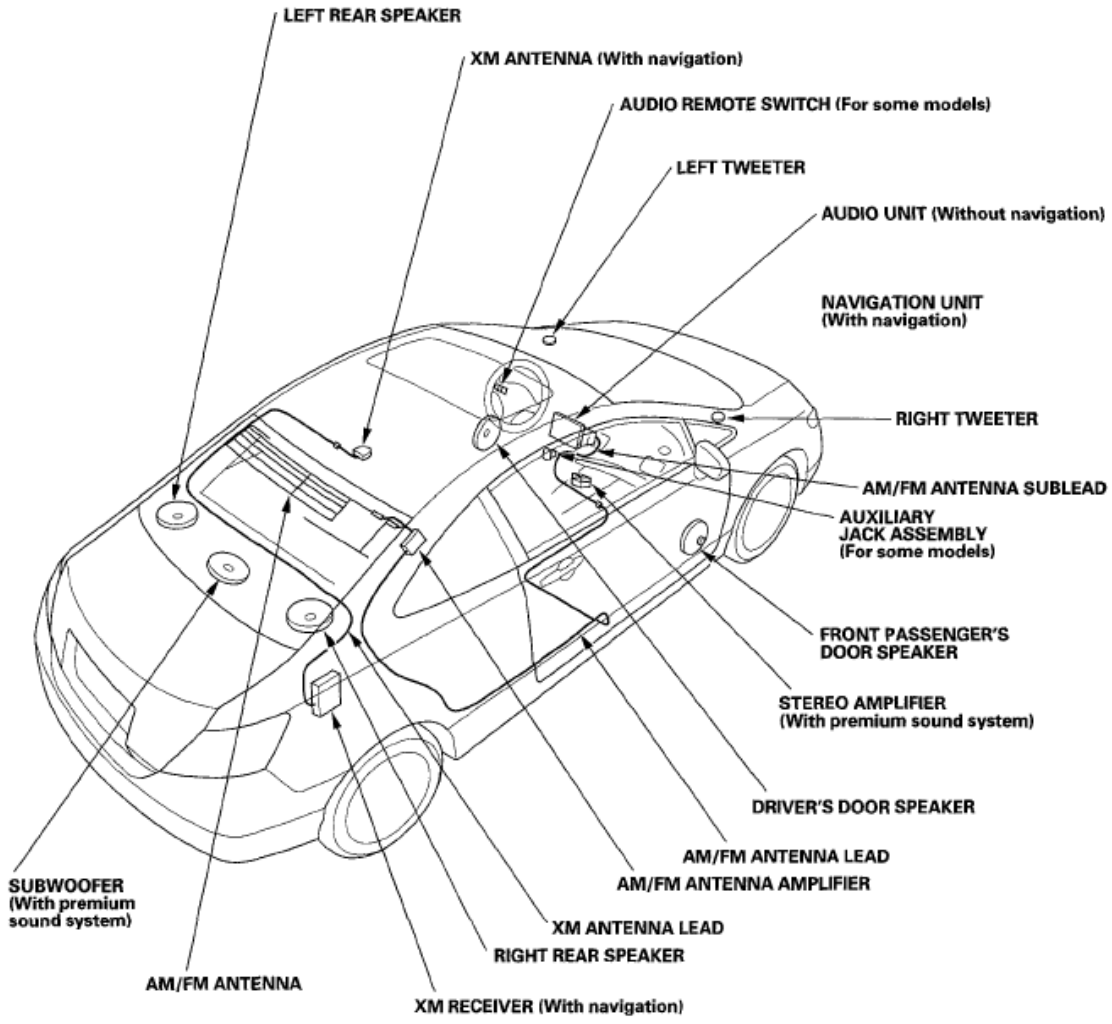


Fig. 3: Audio System Component Location Index (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference (with navigation)	Symptom Troubleshooting (see **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITH NAVIGATION)**)	AM/FM antenna lead and/or sublead short or open in the wire
Poor AM or FM radio reception or interference (without navigation)	Symptom Troubleshooting (see **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITHOUT NAVIGATION)**)	AM/FM antenna lead and/or sublead short or open in the wire
Audio unit power switch will not turn on (No information display and no sound) (with	Symptom Troubleshooting (see **AUDIO UNIT POWER SWITCH WILL NOT TURN ON (NO INFORMATION DISPLAY AND NO SOUND)**	

navigation)	**(WITH NAVIGATION)**)	
Audio unit power switch will not turn on (No information display and no sound) (without navigation)	Symptom Troubleshooting (see **AUDIO UNIT POWER SWITCH WILL NOT TURN ON (NO INFORMATION DISPLAY AND NO SOUND) (WITHOUT NAVIGATION)**)	
Audio unit power will not turn off (with navigation)	Symptom Troubleshooting (see **AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITH NAVIGATION)**)	
Audio unit power will not turn off (without navigation)	Symptom Troubleshooting (see **AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITHOUT NAVIGATION)**)	
No sound is heard from speaker(s) (display is normal) (with navigation)	Symptom Troubleshooting (see **AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITHOUT NAVIGATION)**)	
No sound is heard from speaker(s) (display is normal) (without navigation)	Symptom Troubleshooting (see **NO SOUND IS HEARD FROM SPEAKER(S) (DISPLAY IS NORMAL) (WITHOUT NAVIGATION)**)	
Auxiliary input sound is low or cannot be heard	Symptom Troubleshooting (see **AUXILIARY INPUT SOUND IS LOW OR CANNOT BE HEARD**)	
Poor or no sound with XM radio (Navigation unit does display XM channels) (with navigation)	Symptom Troubleshooting (see **POOR OR NO SOUND WITH XM RADIO (NAVIGATION UNIT CAN DISPLAY XM CHANNELS) (WITH NAVIGATION)**)	
XM radio display is blank and no station information is displayed (with navigation)	Symptom Troubleshooting (see **XM RADIO DISPLAY IS BLANK AND NO STATION INFORMATION IS DISPLAYED (WITH NAVIGATION)**)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see **AUDIO SYSTEM SOUND IS WEAK OR DISTORTED (DISPLAY IS NORMAL)**)	
Navigation unit button illumination does not work (with navigation)	Symptom Troubleshooting (see **AUDIO SYSTEM SOUND IS WEAK OR DISTORTED (DISPLAY IS NORMAL)**)	
Audio unit button illumination does not work (without navigation)	Symptom Troubleshooting (see **AUDIO UNIT BUTTON ILLUMINATION DOES NOT WORK (WITHOUT NAVIGATION)**)	
Radio preset memory is lost	Symptom Troubleshooting (see **RADIO PRESET MEMORY IS LOST**)	Internal error
XM radio preset memory is lost (with navigation)	Symptom Troubleshooting (see **XM RADIO PRESET MEMORY IS LOST (WITH NAVIGATION)**)	
Error code: XM NO SIGNAL or XM ANTENNA is displayed	Symptom Troubleshooting (see **ERROR CODE: XM NO SIGNAL OR XM ANTENNA IS DISPLAYED**)	
Audio disc does not eject	Symptom Troubleshooting (see **AUDIO DISC DOES NOT EJECT**)	

Audio disc does not load	Symptom Troubleshooting (see **AUDIO DISC DOES NOT LOAD**)	
Radio tuner does not change stations	Symptom Troubleshooting (see **AUDIO DISC DOES NOT LOAD**)	
Volume does not change	Symptom Troubleshooting (see **VOLUME DOES NOT CHANGE**)	
Volume does not increase with speed	Symptom Troubleshooting (see **VOLUME DOES NOT CHANGE**)	
Volume is too high or too low when driving at freeway speeds	Symptom Troubleshooting (see **VOLUME IS TOO HIGH OR TOO LOW WHEN DRIVING AT FREEWAY SPEEDS**)	
Display does not dim or brighten with dimmer (without navigation)	Symptom Troubleshooting (see **DISPLAY DOES NOT DIM OR BRIGHTEN WITH DIMMER (WITHOUT NAVIGATION)**)	
Audio disc does not play	Symptom Troubleshooting (see **AUDIO DISC DOES NOT PLAY**)	
Audio disc skips	Symptom Troubleshooting (see **AUDIO DISC DOES NOT PLAY**)	Tire pressure (over-inflated), disc smudged, dirty, or scratched
Audio remote switch does not work properly	Symptom Troubleshooting (see **AUDIO REMOTE SWITCH DOES NOT WORK PROPERLY**)	
Audio disc cannot be inserted and/or ejected (with navigation)	Symptom Troubleshooting (see **AUDIO DISC CANNOT BE INSERTED AND/OR EJECTED (WITH NAVIGATION)**)	
Display can be opened and/or closed even when an audio disc is being inserted or ejected	Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**)	
PC card will not play/card icon on audio screen cannot be selected (with navigation)	Symptom Troubleshooting (see **AUDIO DISC CANNOT BE INSERTED AND/OR EJECTED (WITH NAVIGATION)**)	

SYSTEM DESCRIPTION

OVERVIEW

The audio unit acts as the processor for all audio functions. Select audio functions from the audio unit, the audio remote,(on the steering wheel), or by using the navigation voice control system. The audio display provides the current audio status. For vehicles with navigation, additional audio information is available by touching the audio button on the navigation audio screen. (See the owner's manual and the navigation system manual for more details.)

The XM receiver passes its signal to the audio unit. In addition, it communicates with the audio unit via the GA-Net bus. Any open connections in the GA-Net bus circuit causes audio and navigation functions to appear inoperative.

For vehicles with navigation, pressing the open/close switch on the navigation display panel allows access to the CD slot and PC card.

A security signal is daisy-chained between the audio and vehicle components for integration into the vehicle's security system.

Speed-sensitive volume compensation (SVC)

Some audio systems are equipped with speed-sensitive volume compensation (SVC). The navigation or audio unit receives the vehicle speed pulse (VSP) from the ECM/PCM. The system processes the speed input and increases the navigation or audio system volume level as the vehicle speed increases to compensate for the various interior noises that occur at higher speeds. When the vehicle slows down, the volume returns to its normal level. The SVC has four settings: SVC OFF, LOW, MID and HIGH that can be adjusted using the navigation or audio unit. The SVC comes from the factory with the MID setting as the default.

To change the audio unit SVC setting, press the tune folder sound knob repeatedly until the SVC is displayed, rotate the knob to adjust the SVC to the desired setting (SVC OFF, LOW, MID, or HIGH).

To change the navigation unit SVC setting, press the AUDIO button, and then select the SOUND icon on the navigation display. Press the navigation display to select the desired setting (OFF, LOW, MID, HI).

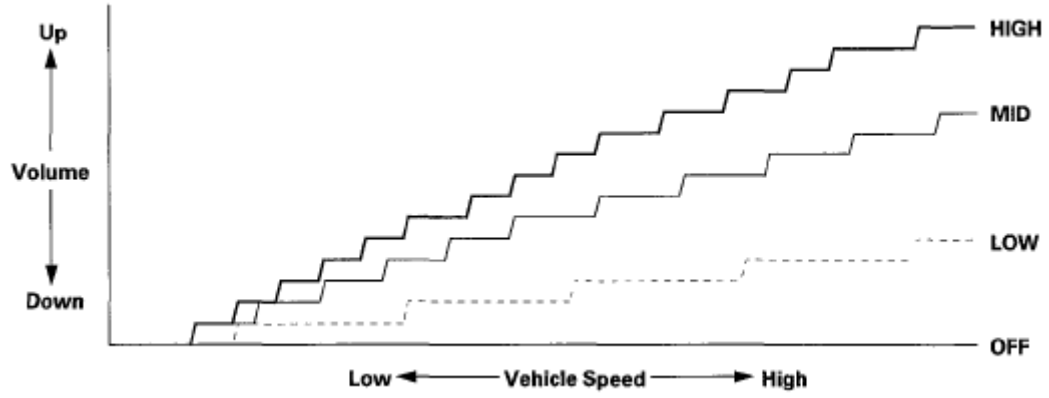


Fig. 4: Speed-Sensitive Volume Compensation (SVC) Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

The navigation system allows voice control of the audio, XM, PC card, and CD player. Voice control commands are communicated on the GA-Net (audio unit). When using the TALK/BACK button, the audio is muted on all speakers and you get navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers give the navigation sound and the rear speakers continue to play. For more information, see the **NAVIGATION SYSTEM (EXCEPT HYBRID)** article. The outline of the interruption function is shown in this table.

AUDIO OUTPUT AND CONTENTS REFERENCE

Contents	Audio output				
	Left front CH	Right front CH	Right rear CH	Left rear CH	Subwoofer CH
TALK/BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted	Muted

Route guidance	Navigation voice output	Navigation voice output	Audio	Audio	Audio

GA-NET BUS CONFIGURATION

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. Naturally the addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.

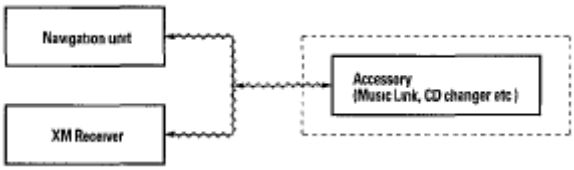


Fig. 5: Audio System - Circuit Diagram (Navigation Unit, XM Receiver And Music Link, CD Changer)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

With navigation

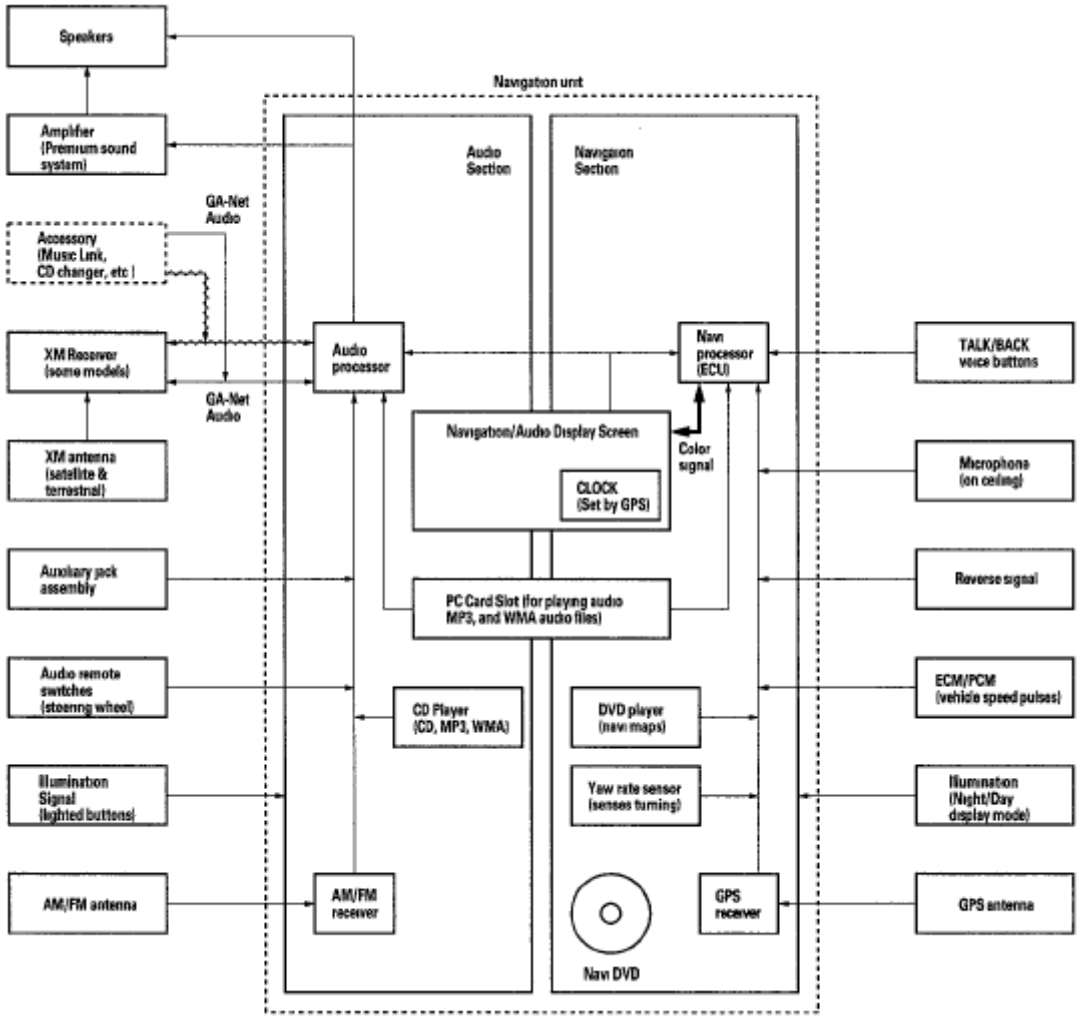


Fig. 6: Audio System - Circuit Diagram (With Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: All items may not apply to this vehicle. See the Owner's Manual for more information.

Audio Glossary

ITEM DEFINITION

Item	Definition
Active Noise Control	The active noise control system cancels some of the vehicle noise. This occurs in the 1,500-2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
AM (Amplitude Modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1705 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC Card)	A type of card that has been tested for use in playing WMA, and MP3 music files in the PC card slot. Sizes of up to 1 GB have been tested.
Auxiliary jack	Allows the customer to use a portable audio device to input music recordings.

Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for recording or play back.
Compact Flash	A standard for small-size (3x4 cm), memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 MB up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB has not been tested.
CD (Compact Disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot car, labels can curl up and jam the unit.
CD Changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CD's stacked in a container).
CD player	A component designed to play compact disc CD recording using a laser optical pickup. The signal from a CD player usually requires amplification.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recording media. The result is a clearer playback from the audio system.
DVD (Digital Versatile Disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC card to receive files, this function is performed on a PC. Always choose either FAT or FAT32 as the NTFS format is not accepted by the system. Pick the default sectors for the format method selected.
FM (Frequency Modulation)	The modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broadcast band covers roughly 87 to 108 MHz.
GA-NET	A data connection between the display panel, the navigation unit, and the audio system. The information passed on this bus are touch screen button commands, and audio and climate control settings directed by the navigation unit.
GB (Gigabyte)	A unit of memory or disk storage equal to billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (HZ)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated Amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.

Jewel Case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (Liquid Crystal Display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form such as the AM/FM radio presets.
MB (Megabyte)	One million bytes. Written as 1 MB. Megabytes are used s a measure of digital storage space. For example, a CD can hold 650 MB.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a poplar audio compression format on the Internet and computers. CDs, and PC card with these files can be played on some vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC Card	The slot used for playing MP3 and WMA music files. The PC card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs task/calculations. In the audio unit, the processor handles muting to allow the navi to speak voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
Audio Remote switch	The switches on the steering wheel that control the audio system.
SCF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
SD (Secure Digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing, or popping sounds heard on the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Speed-sensitive volume compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drives at freeway speeds.
Subwoofer	A loudspeaker made to reproduce the lowest audio frequencies, approx 25 Hz to 125 Hz.
Track	A sound recording on a CD, tape, or PC card.
Treble	An adjustment to control the volume of the high frequency sounds.
Tuner	A component (or part of a component) that receives radio signals and selects

	one broadcast from many.
Tweeter	A speaker designed to reproduce the higher frequencies (treble) only.
Voice Coil	A coil of wire wrapped around a tube and then attached to the speaker cone or diaphragm. When an audio signal is applied, the coil becomes an electromagnet and interacts with the permanent magnet causing the cone or diaphragm to vibrate. We interpret this vibration as sound.
Volume Control	Allows you to control the loudness of the music.
WMA music file	Windows Media Audio File. This is an accepted format for music files to be played on either a CD or a PC card.
Woofer	A speaker that is designed to reproduce bass frequencies only.
XM Radio	Satellite based radio transmission, which also uses a ground based repeater network to ensure seamless reception. The channels originate from XM's broadcast center, in Washington, DC, and uplink to two satellites. These satellites transmit the signal across the entire continental United States.
XM Receiver	The external component that receives and processes the XM signals from the XM satellites, and terrestrial (land) stations. The audio unit communicates to the XM receiver over the GA-Net bus.

AUDIO UNIT CONNECTOR FOR INPUTS AND OUTPUTS

With navigation (Navigation unit)

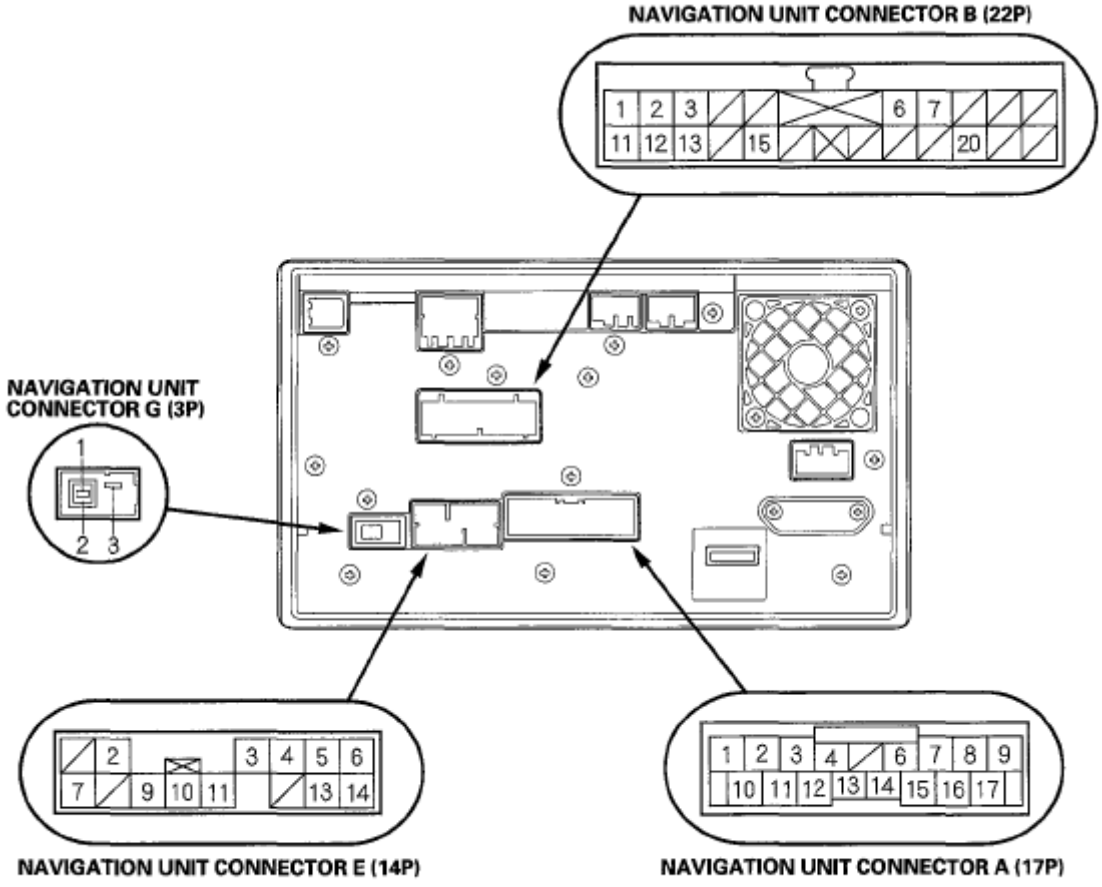


Fig. 7: Identifying Audio Unit For Inputs And Outputs Connector Terminals (With Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Without navigation/Without premium sound system

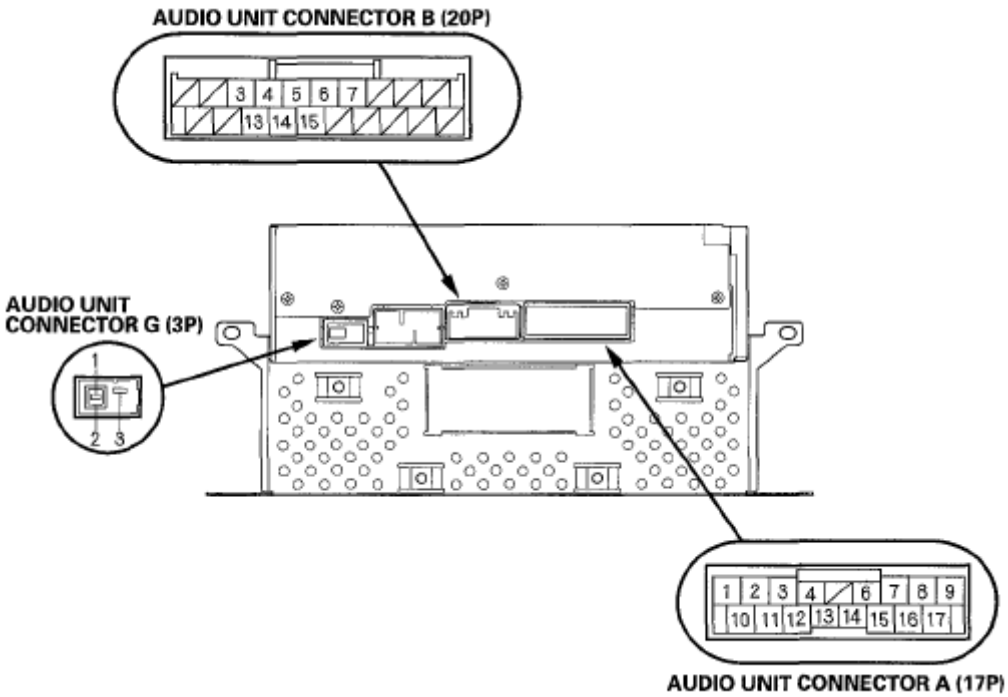


Fig. 8: Identifying Audio Unit For Inputs And Outputs Connector Terminals (Without Navigation/Without Premium Sound System)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Without navigation/With premium sound system

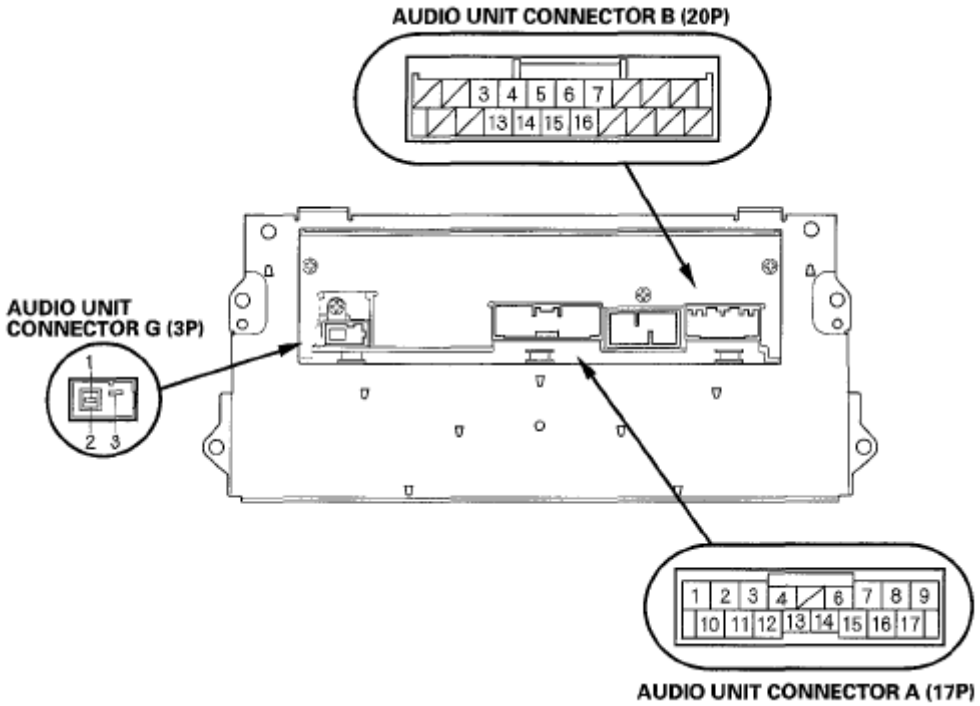


Fig. 9: Identifying Audio Unit For Inputs And Outputs Connector Terminals (Without Navigation/With Premium Sound System)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Navigation Unit/Audio Unit Connector A (17P)

(2-door with premium audio system)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	RED	Dash lights brightness controller
A2	WHT	Stereo amplifier (RL SIG-)
A3	ORN	Stereo amplifier (FL SIG-)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	RED	Stereo amplifier (FR SIG-)
A8	YEL	Stereo amplifier (RR SIG-)
A9	BLK	Ground (G505)
A10	GRY	Lights-on signal
A11	BLK	Stereo amplifier (RL SIG+)
A12	BLU	Stereo amplifier (FL SIG+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A15	GRN	Stereo amplifier (FR SIG+)
A16	BRN	Stereo amplifier (FR SIG+)
A17	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)

Navigation Unit/Audio Unit Connector A (17P)

('07-08 4-door with premium audio system)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	RED	Dash lights brightness controller
A2	WHT	Stereo amplifier (RL SIG-)
A3	RED	Stereo amplifier (FL SIG-)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	PNK	Stereo amplifier (FR SIG-)
A8	PUR	Stereo amplifier (RR SIG-)
A9	BLK	Ground (G505)
A10	GRY	Lights-on signal
A11	BLK	Stereo amplifier (RL SIG+)
A12	BLU	Stereo amplifier (FL SIG+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A15	BLU	Stereo amplifier (FR SIG+)
A16	LT GRN	Stereo amplifier (FR SIG+)
A17	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)

Audio Unit Connector A (17P)

(Without premium sound system)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	RED	Dash lights brightness controller
A2	BRN	Left rear speaker (-)
A3	PNK	Driver's door speaker (-), Left tweeter (-)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	BRN	Front passenger's door speaker (-), Right tweeter (-)
A8	ORN	Right rear speaker (-)
A9	BLK	Ground (G505)
A10	GRY	Lights-on signal
A11	YEL	Left rear speaker (+)
A12>	LT GRN	Driver's door speaker (+), Left tweeter (+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A15	GRY	Front passenger's door speaker (+), Right tweeter (+)
A16	BLU	Right rear speaker (+)
A17	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)

Audio Unit Connector A (20P)

(Without Audio)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A2	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A5	BLU	Right rear speaker (+)
A6	YEL	Left rear speaker (+)
A7	GRY	Front passenger's door speaker (+)
A8	LT GRN	Driver's door speaker (+), Left tweeter (+)
A9	GRY	Lights-on signal
A10	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)
A15	ORN	Right rear speaker (-)
A16	BRN	Left rear speaker (-)
A17	BRN	Front passenger's door speaker (-)
A18	PNK	Driver's door speaker (-), Left tweeter (-)
A19	RED	Dash lights brightness controller
A20	BLK	Ground (G505)

Navigation Unit Connector B (22P)

(With navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	BRN	Auxiliary jack assembly (AUX SGND)
B2	GRY(1)	Shield for terminals No. 1, No. 3, No. 11, No. 12, and No. 13 (AUX SHIELD GND)
B3	BLU	Auxiliary jack assembly (AUX GND)
B6	BRN	Audio remote switch (AUDIO REMOTE GND)
B7	PNK	Audio remote switch (AUDIO REMOTE SW)
B11	YEL	Auxiliary jack assembly (AUX L)
B12	GRN	Auxiliary jack assembly (AUX R)
B13	WHT	Auxiliary jack assembly (AUX DET)
B15	BLK	Ground (G501)
B20(2)	LT BLU	Stereo amplifier (AMP ON)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(2) With premium sound system

Audio Unit Connector B (20P)

(Without navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B3	BRN	Auxiliary jack assembly (AUX SGND)
B4	GRY(1)	Shield for terminals No. 3, No. 5, No. 13, No. 14, and No. 15 (AUX SHILD GND)
B5	BLU	Auxiliary jack assembly (AUX GND)
B6	BRN	Audio remote switch (AUDIO REMOTE GND)
B7	PNK	Audio remote switch (AUDIO REMOTE SW)
B13	YEL	Auxiliary jack assembly (AUX L)
B14	GRN	Auxiliary jack assembly (AUX R)
B15	WHT	Auxiliary jack assembly (AUX DET)
B16(2)	LT BLU	Stereo amplifier (AMP ON)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(2) With premium sound system

Navigation Unit Connector E (14P)

(Navigation with XM)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
E2	LT BLU	XM receiver (SAT SYS ACC)
E3	BRN(1)	Shield for terminals No. 9 and No. 10 (BUS SHIELD GND)
E4	GRY(1)	Shield for terminals No. 5, No. 6, No. 13, and No. 14 (SAT SHIELD GND)
E5	WHT	XM receiver (SAT R+)
E6	RED	XM receiver (SAT L+)
E7	BLU	XM receiver (+B)
E9	BLU	XM receiver (SAT BUS+ (GA-NET))
E10	PNK	XM receiver (SAT BUS- (GA-NET))
E11	BLK	XM receiver (GND)
E13	BLK	XM receiver (SAT R-)
E14	GRN	XM receiver (SAT L-)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Audio Unit/Navigation Unit Connector G (3P)

(All models)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to

G1	-	AM/FM antenna amplifier (SIG)
G2	-	AM/FM antenna amplifier (SH (AM/FM))
G3	-	AM/FM antenna amplifier (ANT + B)

STEREO AMPLIFIER CONNECTOR FOR INPUTS AND OUTPUTS (2-DOOR WITH PREMIUM SOUND SYSTEM)

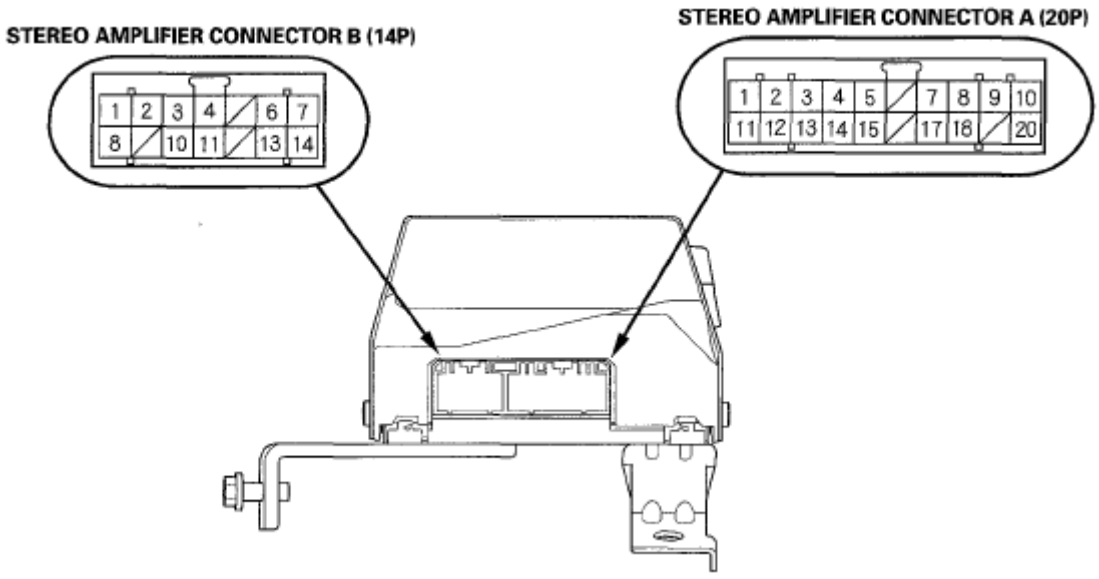


Fig. 10: Identifying Stereo Amplifier For Inputs And Outputs Connector Terminals (2-Door With Premium Sound System)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Stereo Amplifier Connector A (20P)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	PNK	Right tweeter (+)
A2	GRY	Front passenger's door speaker (+)
A3	LT GRN	Driver's door speaker (+)
A4	RED	Left tweeter (+)
A5	GRN	Subwoofer (+)
A7	BLU	Right rear speaker (+)
A8	YEL	Left rear speaker (+)
A9	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A10	LT GRN	+B (Main stereo power supply)
A11	BLU	Right tweeter (-)
A12	BRN	Front passenger's door speaker (-)
A13	PNK	Driver's door speaker (-)
A14	GRN	Left tweeter (-)
A15	RED	Subwoofer (-)
A17	ORN	Right rear speaker (-)

A18	BRN	Left rear speaker (-)
A20	BLK	Ground (G505)

Stereo Amplifier Connector B (14P)

(With navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	BLU	Navigation unit (FL SIG+)
B2	GRY(1)	Shield for terminals No. 1, No. 3, No. 4, No. 6, No. 8, No. 10, and No. 13 (SIG SHIELD)
B3	BLK	Navigation unit (RL SIG+)
B4	GRN	Navigation unit (FR SIG+)
B6	BRN	Navigation unit (RR SIG+)
B7	LT BLU	Navigation unit (AMP ON)
B8	ORN	Navigation unit (FL SIG-)
B10	WHT	Navigation unit (RL SIG-)
B11	RED	Navigation unit (FR SIG-)
B13	YEL	Navigation unit (RR SIG-)
B14(2)	BLK	Ground (G505)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(2) '06 model

Stereo Amplifier Connector B (14P)

(Without navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	BLU	Audio unit (FL SIG+)
B2	GRY(1)	Shield for terminals No. 1, No. 3, No. 4, No. 6, No. 8, No. 10, and No. 13 (SIG SHIELD)
B3	BLK	Audio unit (RL SIG+)
B4	GRN	Audio unit (FR SIG+)
B6	BRN	Audio unit (RR SIG+)
B7	LT BLU	Audio unit (AMP ON)
B8	ORN	Audio unit (FL SIG-)
BIO	WHT	Audio unit (RL SIG-)
B11	RED	Audio unit (FR SIG-)
B13	YEL	Audio unit (RR SIG-)
B14(2)	BLK	Ground (G505)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(2) '06 model

STEREO AMPLIFIER CONNECTOR FOR INPUTS AND OUTPUTS ('07-08 4-DOOR WITH PREMIUM SOUND SYSTEM)

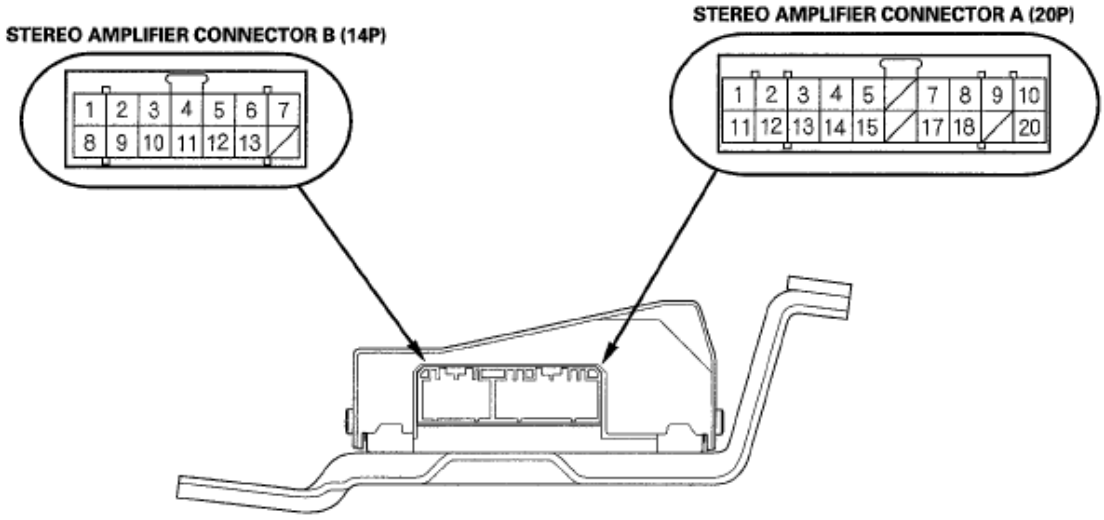


Fig. 11: Identifying Stereo Amplifier For Inputs And Outputs Connector Terminals ('07-08 4-Door With Premium Sound System)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Stereo Amplifier Connector A (20P)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	PNK	Right tweeter (+)
A2	GRY	Front passenger's door speaker (+)
A3	LT GRN	Driver's door speaker (+)
A4	RED	Left tweeter (+)
A5	GRN	Subwoofer (+)
A7	BLU	Right rear speaker (+)
A8	GRY	Left rear speaker (+)
A9	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A10	LT GRN	+B (Main stereo power supply)
A11	BLU	Right tweeter (-)
A12	BRN	Front passenger's door speaker (-)
A13	PNK	Driver's door speaker (-)
A14	GRN	Left tweeter (-)
A15	RED	Subwoofer (-)
A17	ORN	Right rear speaker (-)

A18	BRN	Left rear speaker (-)
A20	BLK	Ground (G601)

Stereo Amplifier Connector B (14P)

(With navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	BLU	Navigation unit (FL SIG+)
B2	BRN(1)	Shield for terminals No. 1 and No. 8 (FL SHIELD GND)
B3	BLK	Navigation unit (RL SIG+)
B4	BLU	Navigation unit (FR SIG+)
B5	GRY(1)	Shield for terminals No. 4 and No. 11 (FR SHIELD GND)
B6	LT GRN	Navigation unit (RR SIG+)
B7	LT BLU	Navigation unit (AMP ON)
B8	RED	Navigation unit (FL SIG-)
B9	GRN(1)	Shield for terminals No. 3 and No. 10 (RL SHIELD GND)
B10	WHT	Navigation unit (RL SIG-)
B11	PNK	Navigation unit (FR SIG-)
B12	YEL(1)	Shield for terminals No. 6 and No. 13 (RR SHIELD GND)
B13	PUR	Navigation unit (RR SIG-)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Stereo Amplifier Connector B (14P)

(Without navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	BLU	Audio unit (FL SIG+)
B2	BRN(1)	Shield for terminals No. 1 and No. 8 (FL SHIELD GND)
B3	BLK	Audio unit (RL SIG+)
B4	BLU	Audio unit (FR SIG+)
B5	GRY(1)	Shield for terminals No. 4 and No. 11 (FR SHIELD GND)
B6	LT GRN	Audio unit (RR SIG+)
B7	LT BLU	Audio unit (AMP ON)
B8	RED	Audio unit (FL SIG-)
B9	GRN(1)	Shield for terminals No. 3 and No. 10 (RL SHIELD GND)
B10	WHT	Audio unit (RL SIG-)
B11	PNK	Audio unit (FR SIG-)
B12	YEL(1)	Shield for terminals No. 6 and No. 13 (RR SHIELD GND)

B13	PUR	Audio unit (RR SIG-)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

XM RECEIVER CONNECTOR FOR INPUTS AND OUTPUTS ('06-08 2-DOOR WITH NAVIGATION AND '07-08 4-DOOR WITH NAVIGATION)

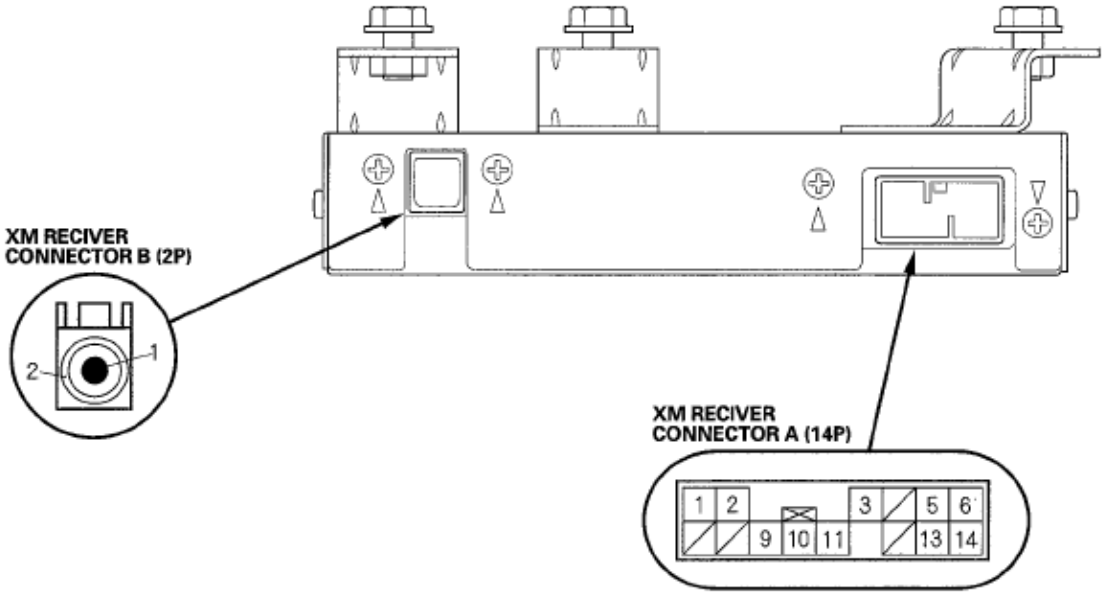


Fig. 12: Identifying XM Receiver For Inputs And Outputs Connector Terminals ('06-08 2-Door With Navigation)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

XM Receiver Connector A (14P)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
A1	BLU	Navigation unit (+B)
A2	LT BLU	Navigation unit (SAT SYS ACC)
A3(2)	BRN(1)	Shield for terminals No. 9 and No. 10 (BUS SHIELD GND)
A5	WHT	Navigation unit (SAT R+)
A6	RED	Navigation unit (SAT L+)
A9	BLU	Navigation unit (SAT BUS+ (GA-NET))
A10	PNK	Navigation unit (SAT BUS- (GA-NET))
A11	BLK	Navigation unit (GND)
A13	BLK	Navigation unit (SAT R-)
A14	GRN	Navigation unit (SAT L-)

(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

'07-08 models

(2)

XM Receiver Connector B (2P)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
B1	-	Satellite signal antenna (SIG)
B2	-	Satellite signal antenna (SIELD (XM))

AUXILIARY JACK ASSEMBLY CONNECTOR FOR INPUTS AND OUTPUTS

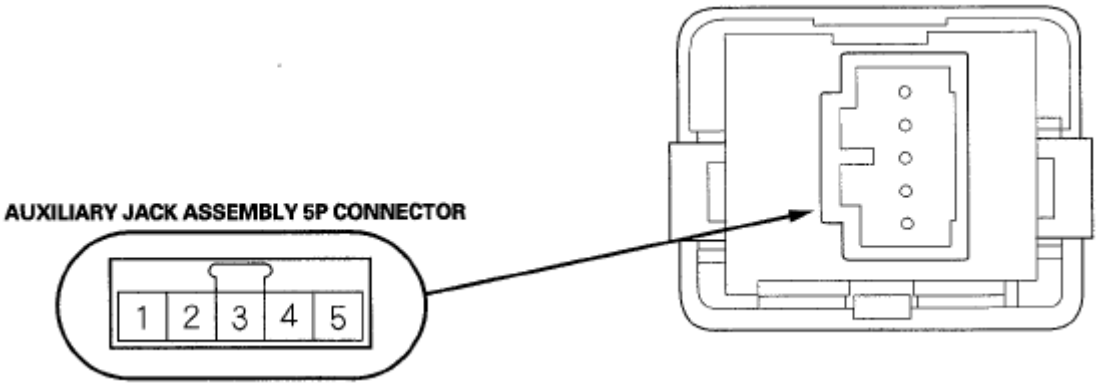


Fig. 13: Identifying Auxiliary Jack Assembly For Inputs And Outputs Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Auxiliary Jack Assembly 5P Connector

(With navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
1	WHT	Navigation unit (AUX DET)
2	BLU	Navigation unit (AUX GND)
3	BRN	Navigation unit (AUX SGND)
4	YEL	Navigation unit (AUX L)
5	GRN	Navigation unit (AUX R)

Auxiliary Jack Assembly 5P Connector

(Without navigation)

CAVITY AND WIRE SPECIFICATION

Cavity	Wire	Connect to
1	WHT	Audio Unit (AUX DET)
2	BLU	Audio Unit (AUX GND)
3	BRN	Audio Unit (AUX SGND)

4	YEL	Audio Unit (AUX L)
5	GRN	Audio Unit (AUX R)

CIRCUIT DIAGRAM

With Navigation

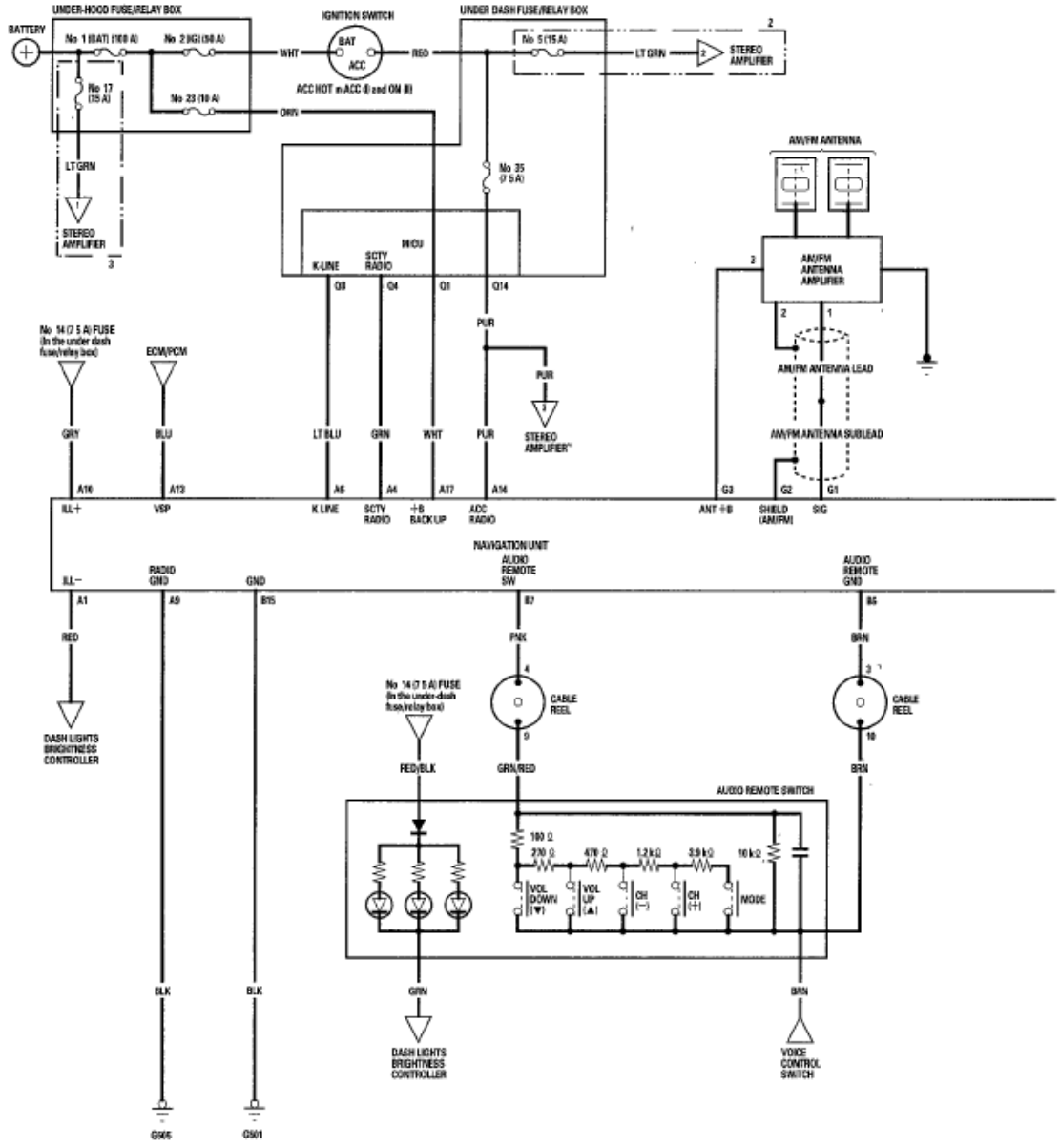


Fig. 14: Audio System Circuit Diagram - With Navigation (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

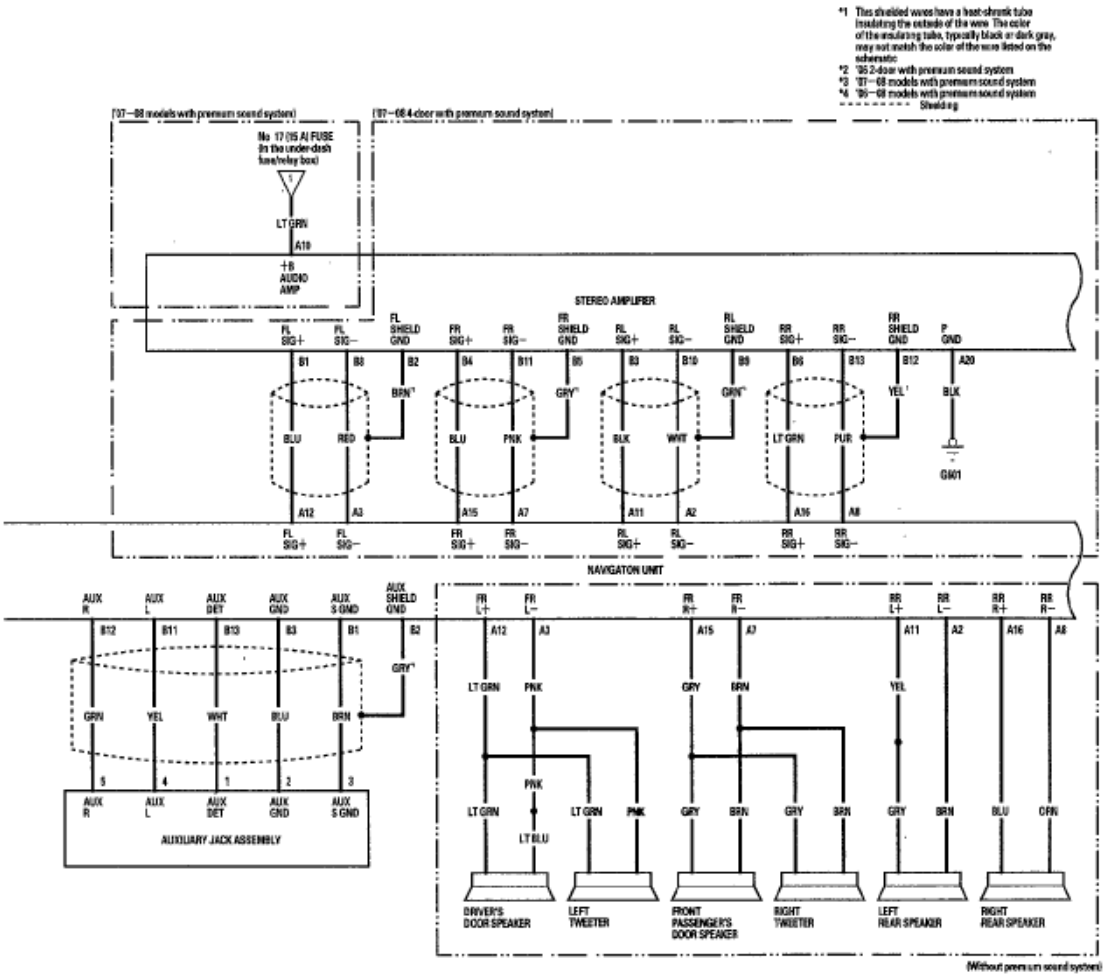


Fig. 15: Audio System Circuit Diagram - With Navigation (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

With Navigation

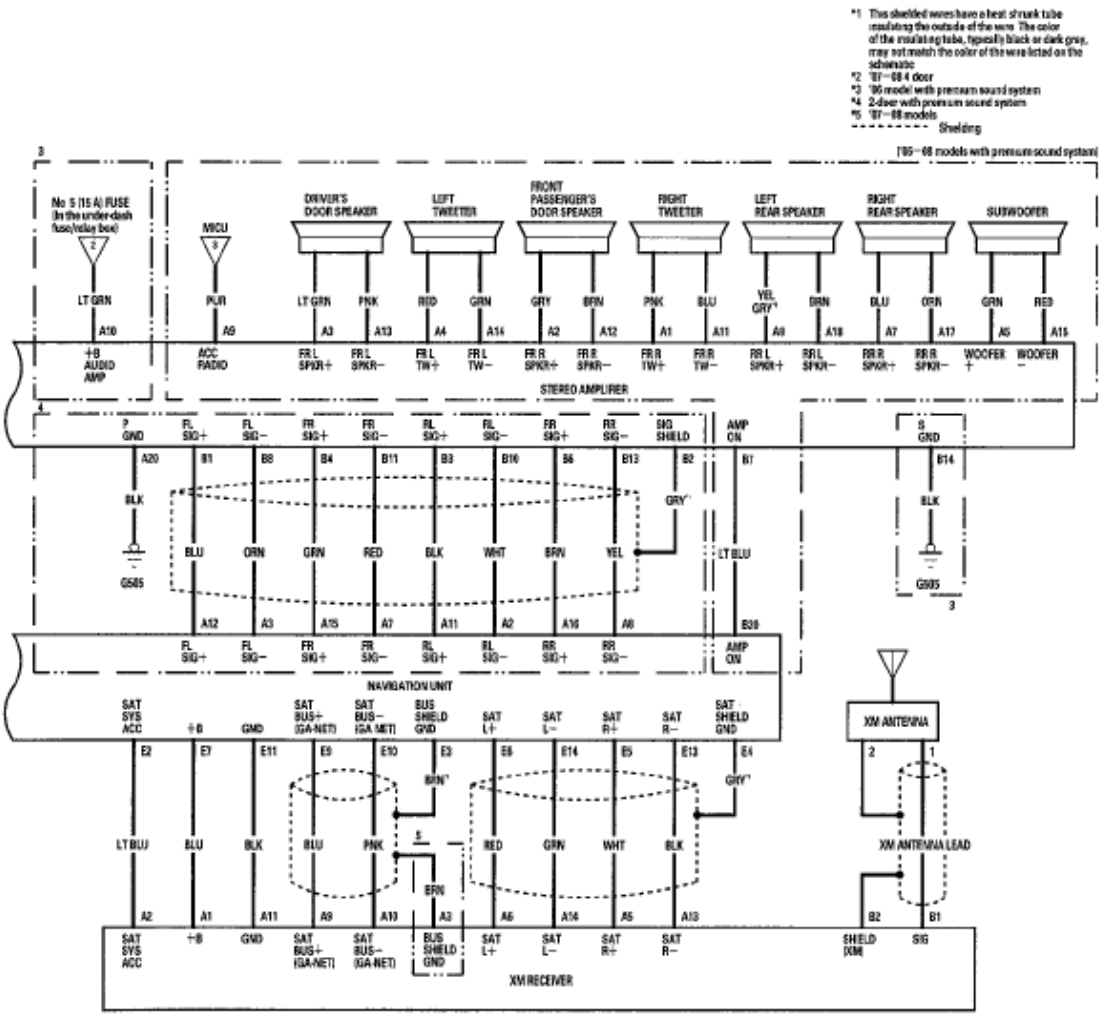


Fig. 16: Audio System Circuit Diagram - With Navigation (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Audio without Navigation

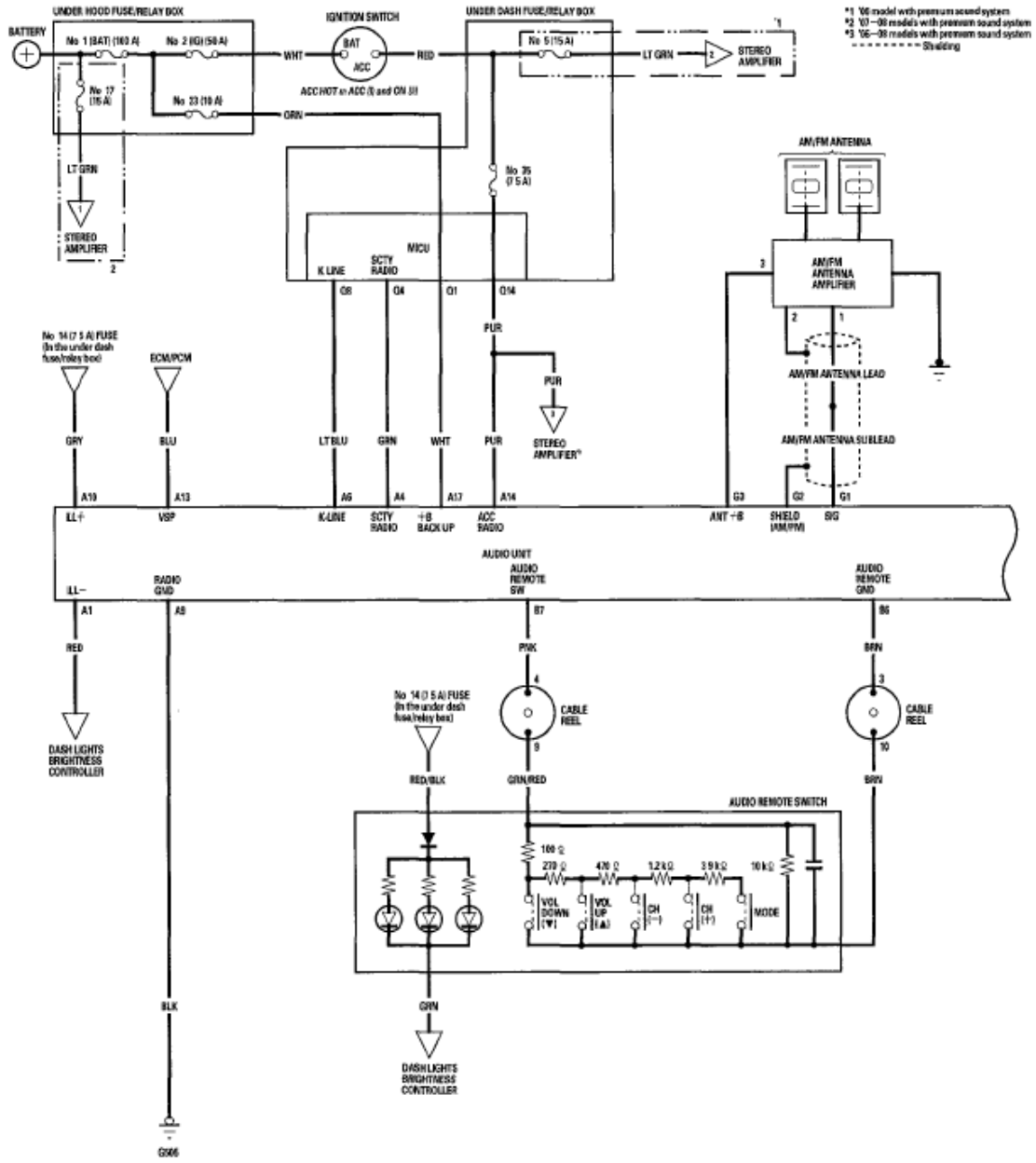


Fig. 17: Audio System Circuit Diagram - Without Navigation (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Audio without Navigation

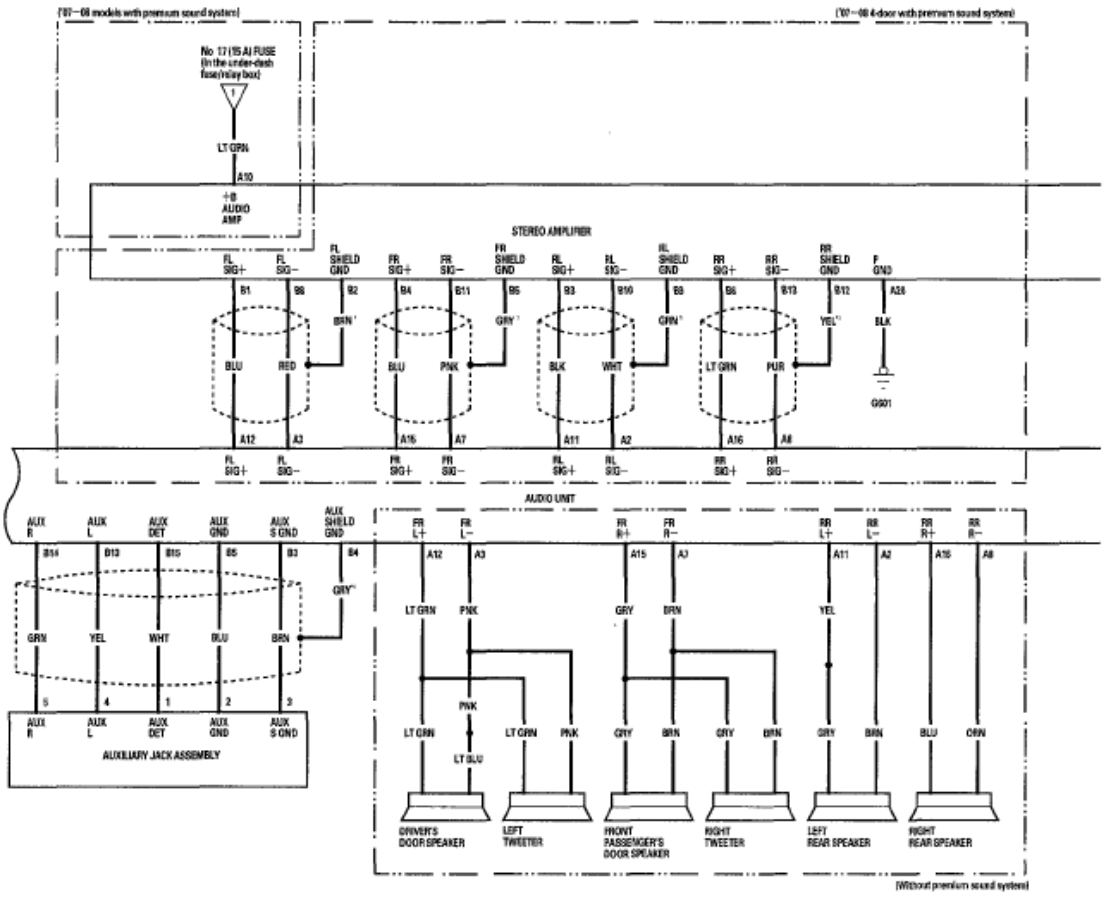


Fig. 18: Audio System Circuit Diagram - Without Navigation (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

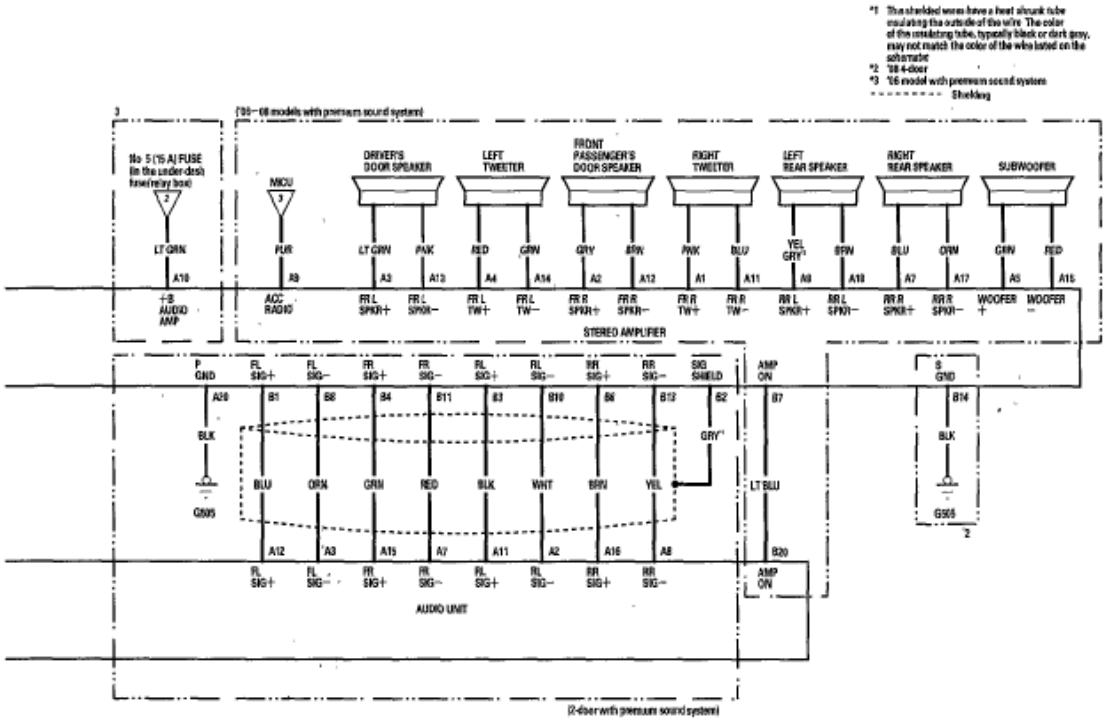


Fig. 19: Audio System Circuit Diagram - Without Navigation (3 Of 3)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Without Audio

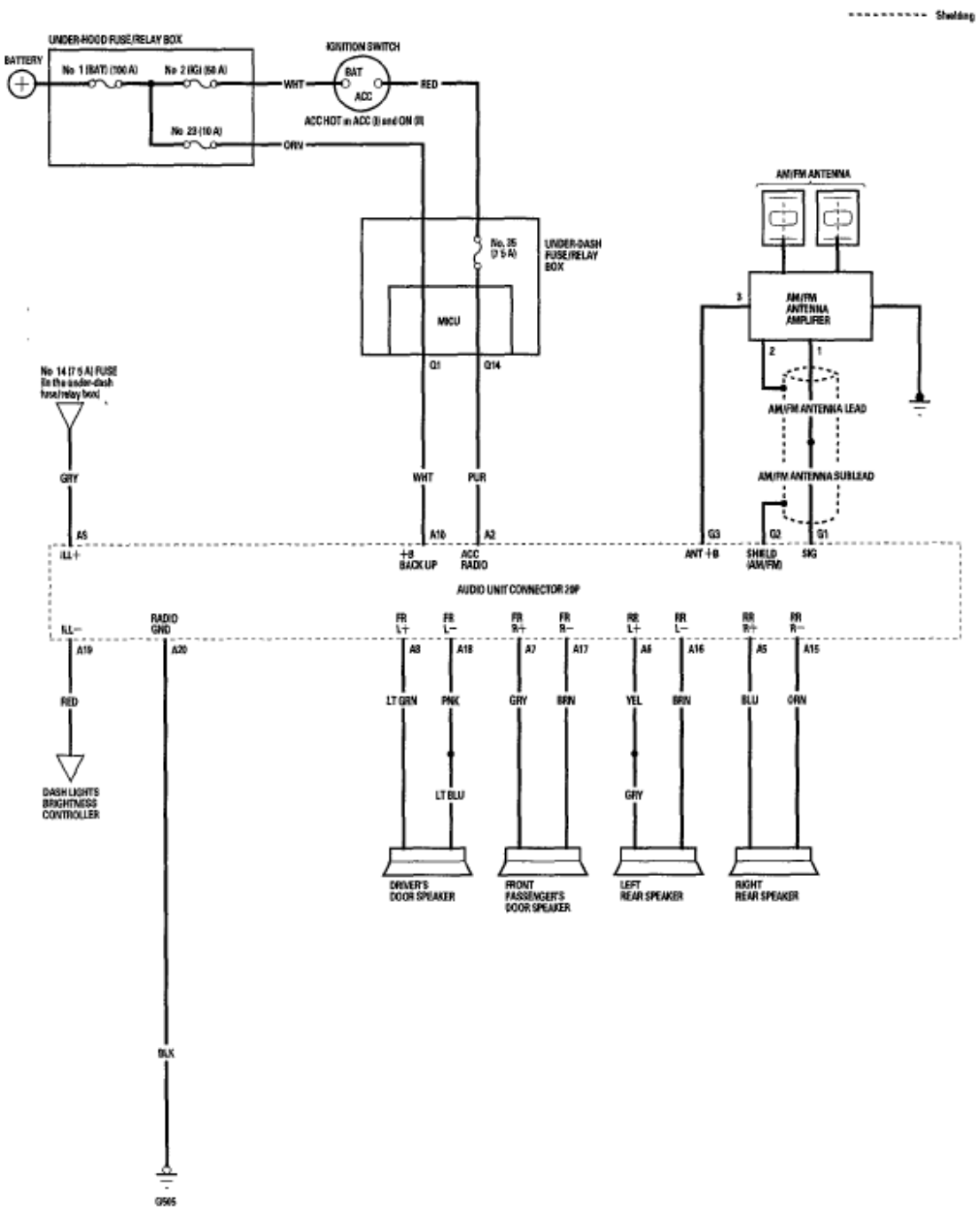


Fig. 20: Audio System Circuit Diagram - (Without Audio)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SELF-DIAGNOSTIC FUNCTION

WITHOUT NAVIGATION

The audio system has a self-diagnostic function.

SERIAL NUMBER DISPLAY MODE

To obtain the audio unit serial number on a vehicle, do the following:

NOTE:

- **This procedure can only be performed when the battery power is disconnected from the audio unit and the audio unit displays CODE.**
- **To obtain the navigation unit serial number, refer to NAVI ECU in the navigation system diagnostic mode .**

1. Turn the ignition switch to ON (II).
2. With the audio unit turned off, push and hold the No. 1 and No. 6 buttons. While holding the buttons, push the VOL push PWR knob (A) to ON.

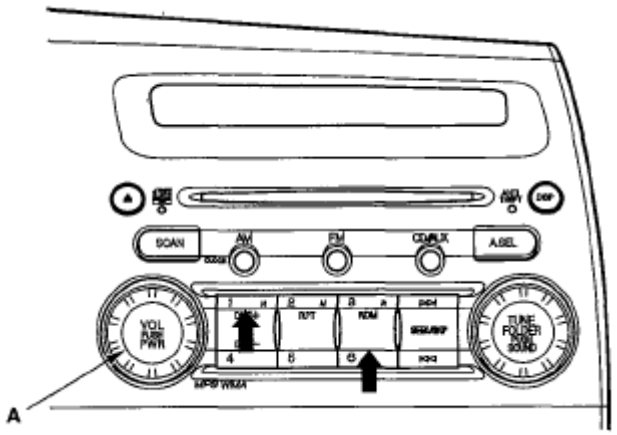


Fig. 21: Identifying Buttons And Self-Diagnostic Function
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. The display will show a 8 digit serial number.

   Eight digits of the serial number (example 12345678)

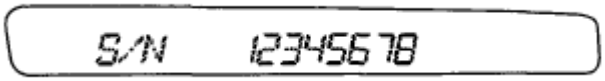


Fig. 22: Identifying Eight Digits Of Serial Number
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Use all 8 numbers as the serial number when using the Interactive Network (*i* N) to retrieve the 5 digit anti-theft code.
5. The serial number display mode ends when you turn the audio unit off, or turn the ignition switch to LOCK (0).

HOW TO CHECK FOR AUDIO SYSTEM CONDITION

NOTE: **The audio unit must be in the code enter screen before performing the self-diagnostic function.**

1. Turn the ignition switch to ON (II).
2. Push and hold the No. 1 and No. 6 buttons. While holding the buttons, push the VOL push PWR knob (A) to ON. Release the buttons and the self-diagnostic function begins.

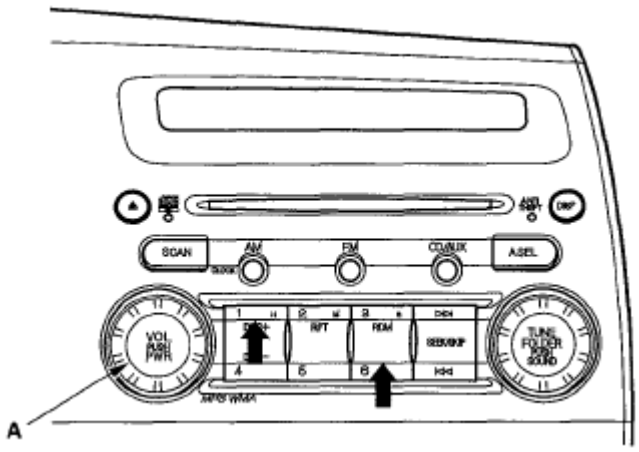


Fig. 23: Identifying Buttons And Self-Diagnostic Function
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. By pressing a preset button, the input will trigger the diagnostic mode that is assigned to that preset switch.

   NO. 3 button

   Entire LCD lighting/light-out mode: Turns on/off the entire LCD to show the presence or absence of an LCD failure.

   NO. 4 button

   Duty (for the Illumination dim) indication mode: Indicates the duty for the Illumination dim.

   NO. 5 button

   Vehicle speed pulse indication mode: Indicates the vehicle speed pulse.

   FM button (Push and hold 5 sec.)

   Reception level check mode: Indicates the reception level. When entering the reception level check mode, the AM/FM button is used to change the main/sub antenna.

   CD button (Push and hold 5 sec.)

   DRAM residual quantity indication mode: Indicates the DRAM residual quantity.

4. The self-diagnostic function will end when the audio unit is turned off, or the ignition switch to LOCK (0).

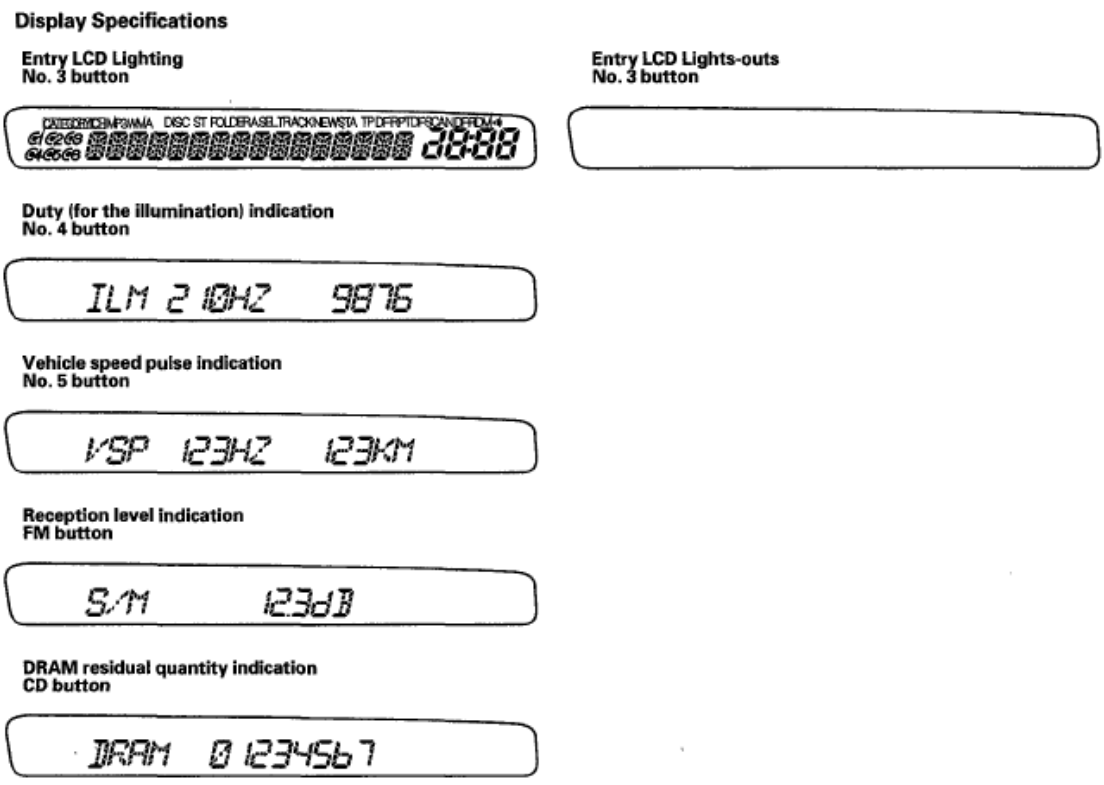


Fig. 24: CD Buttons Self-Diagnostic Function -: Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Speaker check mode

5. Turn off the audio unit.
6. Push and hold the No. 1 and No. 3 buttons. While holding the buttons, push the VOL push PWR knob to ON. Release the buttons and the speaker check mode will begin. A low-frequency hum should sound for about one minute. Change the test speaker by push the SKIP button. If you find a speaker(s) with no sound, check the speaker and harness connections. If the connections are good, replace the speaker and retest.
7. The self-diagnostic function ends when the audio unit is turned off, or the ignition switch to LOCK (0).

ERROR CODES

The audio system displays error codes when a problem is detected with the disc changer, the disc, the tape player, the XM radio, or the anti-theft code.

CD Error Codes ('06-07 models and '08 model with navigation)

CD ERROR CODES ('06-07 MODELS AND '08 MODEL WITH NAVIGATION)

Error Code Displayed	Possible Cause	Solution
DISC ERROR	The system cannot read the disc because an audio or video DVD is inserted into the unit. The CD may be inserted upside down.	Make sure the unit functions with a known-good CD.

MECH ERROR	There is a problem with the mechanism. A CD label may be jammed in the mechanism.	Replace the navigation unit.

CD Error Codes ('08 model without navigation)

CD ERROR CODES ('08 MODEL WITHOUT NAVIGATION)

Error Code Displayed	Possible Cause	Solution
BAD DISC-PLEASE CHECK OWNERS MANUAL PUSH EJECT	• CD label jammed in the mechanism. • CD eject mechanism or motor is inoperative. • CD spindle motor won't spin up the CD. • The wrong type disc is inserted.	Press the EJECT button and hold it for 5 seconds. If the disc does not eject, try again. If the disc still won't eject, replace the unit.

CD Error Codes ('06-08 models)

CD ERROR CODES ('06-08 MODELS)

Error Code Displayed	Possible Cause	Solution
HEAT ERROR	CD player is too hot. This can happen if the vehicle is parked in the sunlight all day and is warmer than 104 °F (40 °C).	The unit should function normally when it cools off, and internal temperature is less than 104 °F (40 °C).
FORMAT	Audio unit cannot read the files on the CD or CD-R.	Current track will skipped. The next supported track or file plays automatically. • Verify that CD, CD-R, or CD-RW file names end in CD-A or WMA. • Verify that CD, CD-R, or CD-RW with compressed music formats end in MP3 or WMA. • Other file formats like iTunes or Ogg are not recognized. • WMA files may have (DRM) copy protection and cannot be read.

XM Error Codes

XM ERROR CODES

Error Code Displayed	Possible Cause	Solution
LOADING	XM radio is acquiring audio or program information.	Wait until the radio receives the information.
	XM channel not in	

(XM) OFF AIR	service.	Try another XM channel.
(XM) NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
(XM) UPDATING	XM radio is receiving information update from the network.	This message will disappear once the update finishes.
(XM) CHECK ANTENNA	XM antenna error.	Repair open or short in the satellite antenna. Substitute the XM antenna with a known-good one, and recheck. If the error is gone, replace the original XM antenna. If the error is still present, replace the antenna lead.
(XM) ANTENNA ERROR		
-	No signal from XM.	Check a known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM Satellite Radio at (800) 852-9696.

Audio Unit Error Codes

AUDIO UNIT ERROR CODES

Error Code Displayed	Possible Cause	Solution
CODE ERROR 1	Anti-theft code mismatch (1st try).	Enter the correct anti-theft code.
CODE ERROR E	Anti-theft code mismatch (10th try).	Remove No. 23 (10 A) fuse in the under-hood fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

SYMPTOM TROUBLESHOOTING

POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITH NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check for aftermarket accessories plugged into the vehicle accessory power sockets.**
- **Check the connectors for poor connections or loose terminals.**
- **Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:**
  - **The radio station is far away.**
  - **Atmospheric conditions are unfavorable.**
  - **Tall buildings, mountains, or high-voltage power lines are nearby.**
  - **Aftermarket metallic window tint.**

1. Turn the ignition switch to ON (II).
2. Do the seek stop test (see **SEEK STOP TEST**).

Is the test vehicle within 10% of the known-good vehicle?

YES -Multipath interference or weak station. Operation is normal.

NO -Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES -Go to step 4.

   NO -Multi path interference or weak station. Operation is normal.

4. Start the engine.
5. Check the reception/interference.

   Is there noise (static or whine) only with the engine running?

   YES -Check the antenna and radio grounds. If OK, check the charging system and the ignition system.

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Wrap aluminum foil (A) around the tip of a tester probe (B) as shown.

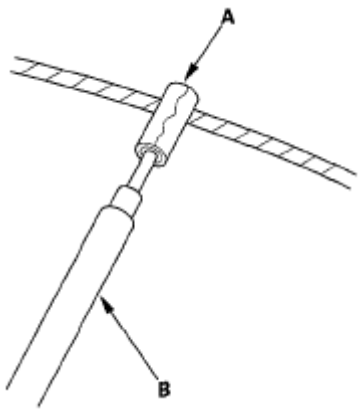


Fig. 25: Identifying Wrap Aluminum Foil And Tip Of Tester Probe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check for continuity by touching one tester probe to the window antenna terminal (A), and move the other tester probe along the antenna wires.

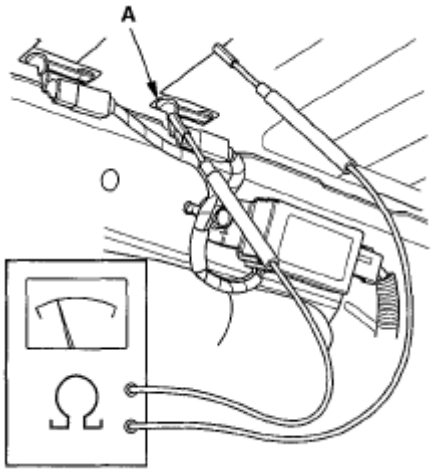


Fig. 26: Checking Continuity By Touching Tester Probe To Window Antenna Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity in all sections of the antenna?

YES -Go to step 9.

NO -Repair the window antenna wire. Go to **AM/FM ANTENNA REPAIR** .

9. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). Check that the antenna lead is properly connected.

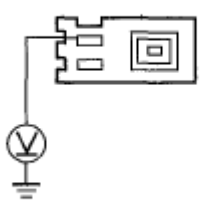
   Is it connected properly?

   YES -Go to step 10.

   NO -Reconnect the connector, and recheck the function.

10. Disconnect the AM/FM antenna lead 3P connector from the AM/FM antenna amplifier (see **AM/FM ANTENNA AMPLIFIER REPLACEMENT**).
11. Turn the ignition switch to ON (II).
12. Turn on the navigation unit.
13. Measure the voltage between the AM/FM antenna lead connector No. 3 terminal at the AM/FM antenna amplifier and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Fig. 27: Measuring Voltage Between AM/FM Antenna Lead Connector Terminal At AM/FM Antenna Amplifier And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 18.

NO -Go to step 14.

14. Turn the ignition switch to LOCK (0).
15. Disconnect navigation unit connector G (3P).
16. Check for continuity between the AM/FM antenna amplifier connector (3P) No. 3 terminal and body ground.

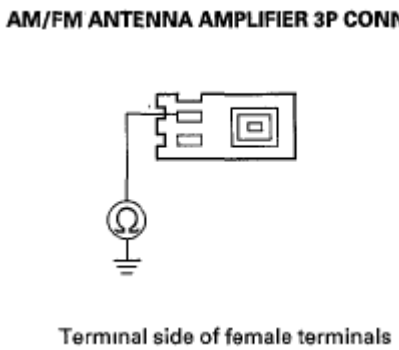


Fig. 28: Checking Continuity Between AM/FM Antenna Amplifier Connector Terminal 3P And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the navigation unit and the AM/FM antenna amplifier.

NO -Go to step 17.

17. Check for continuity between navigation unit connector G (3P) No. 3 terminal and the AM/FM antenna amplifier 3P connector No. 3 terminal.

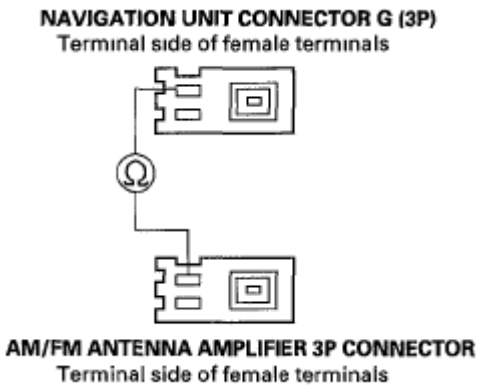


Fig. 29: Checking Continuity Between Navigation Unit Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good navigation unit, and recheck.

NO -Repair open in the wire between the navigation unit and the AM/FM antenna amplifier.

18. Turn the ignition switch to LOCK (0).
19. Disconnect navigation unit connector G (3P).
20. Check for continuity between navigation unit connector G (3P) No. 1 terminal and body ground.

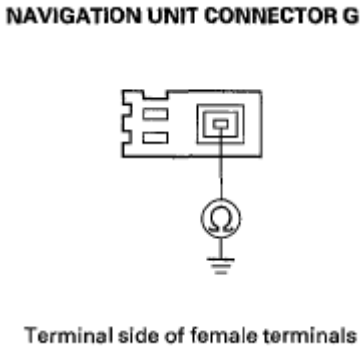


Fig. 30: Checking Continuity Between Navigation Unit G (3P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the AM/FM antenna lead and/or sublead.

NO -Go to step 21.

21. Check for continuity between navigation unit connector G (3P) No. 1 and No. 2 terminals.

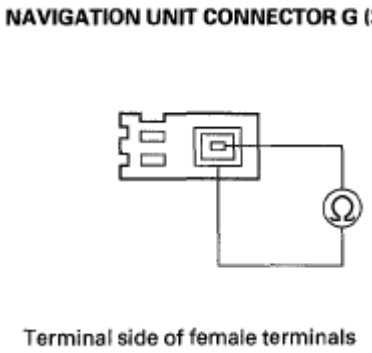


Fig. 31: Checking Continuity Between Navigation Unit G (3P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the antenna lead and/or sublead.

NO -Go to step 22.

22. Check for continuity between navigation unit connector G (3P) No. 2 terminal and the AM/FM antenna amplifier 3P connector No. 2 terminal.

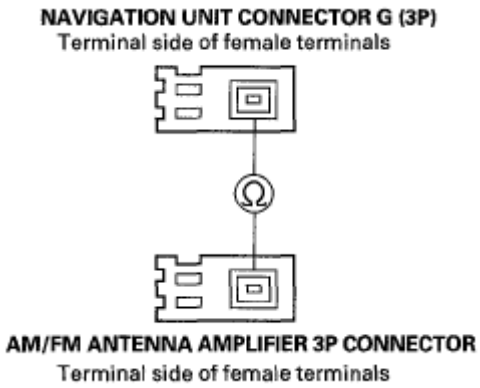


Fig. 32: Checking Continuity Between Navigation Unit G (3P) Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the antenna lead and/or sublead.

NO -Go to step 23.

23. Check for continuity between navigation unit connector G (3P) No. 1 terminal and the AM/FM antenna amplifier 3P connector No. 1 terminal.

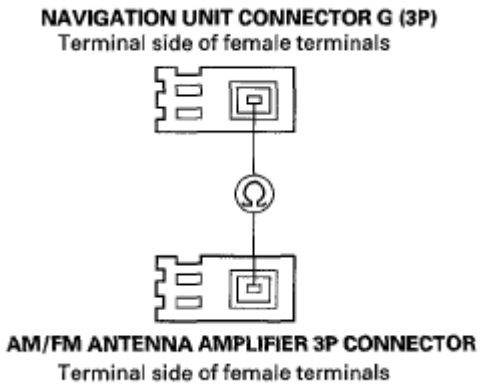


Fig. 33: Checking Continuity Between Navigation Unit G (3P) Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the AM/FM antenna amplifier, and recheck. If the reception is still poor, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Replace the AM/FM antenna lead and/or sublead.

POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITHOUT NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check for aftermarket accessories plugged into the vehicle accessory power sockets.**
- **Check the connectors for poor connections or loose terminals.**
- **Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:**
  - **The radio station is far away.**
  - **Atmospheric conditions are unfavorable.**
  - **Tall buildings, mountains, or high-voltage power lines are nearby.**
  - **Aftermarket metallic window tint.**

1. Turn the ignition switch to ON (II).
2. Do the seek stop test (see **SEEK STOP TEST**).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES -Multipath interference or weak station. Operation is normal.

   NO -Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

Is the reception/interference the same?

YES -Go to step 4.

NO -Multipath interference or weak station. Operation is normal.

4. Start the engine.
5. Check the reception/interference.

Is there noise (static or whine) only with the engine running?

YES -Check the antenna and radio grounds. If OK, check the charging system and the ignition system.

NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Wrap aluminum foil (A) around the tip of a tester probe (B) as shown.

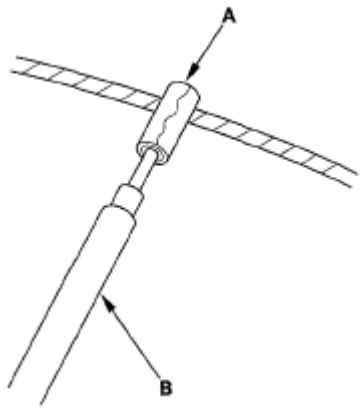


Fig. 34: Identifying Wrap Aluminum Foil And Tip Of Tester Probe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check for continuity by touching one tester probe to the window antenna terminal (A), and move the other tester probe along the antenna wires.

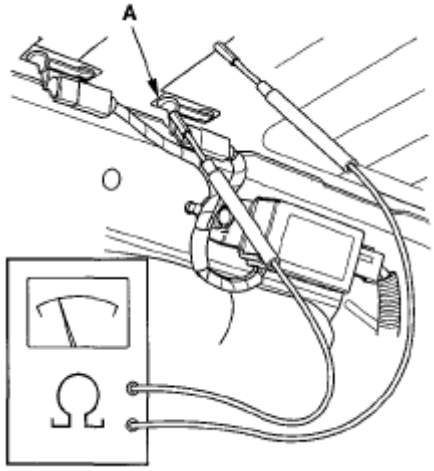


Fig. 35: Checking Continuity By Touching Tester Probe To Window Antenna Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity in all sections of the antenna?

YES -Go to step 9.

NO -Repair the window antenna wire. Go to **AM/FM ANTENNA REPAIR** .

9. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**). Check that the antenna lead is properly connected.

   Is it connected properly?

   YES -Go to step 10.

   NO -Reconnect the connector, and recheck the function.

10. Disconnect the antenna cable 3P connector from the AM/FM antenna amplifier (see **AM/FM ANTENNA AMPLIFIER REPLACEMENT**).
11. Turn the ignition switch to ON (II).
12. Turn on the audio unit.
13. Measure the voltage between the AM/FM antenna lead connector No. 3 terminal at the AM/FM antenna amplifier and body ground.

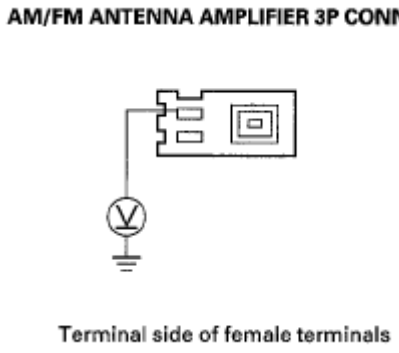


Fig. 36: Measuring Voltage Between AM/FM Antenna Lead Connector Terminal At AM/FM Antenna Amplifier And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 18.

NO -Go to step 14.

14. Turn the ignition switch to LOCK (0).
15. Disconnect audio unit connector G (3P).
16. Check for continuity between the AM/FM antenna amplifier connector (3P) No. 3 terminal and body ground.

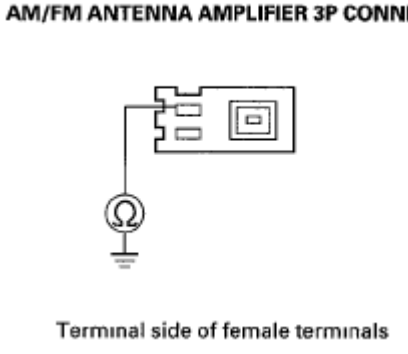


Fig. 37: Checking Continuity Between AM/FM Antenna Amplifier (3P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the audio unit and the AM/FM antenna amplifier.

NO -Go to step 17.

17. Check for continuity between audio unit connector G (3P) No. 3 terminal and the AM/FM antenna amplifier 3P connector No. 3 terminal.

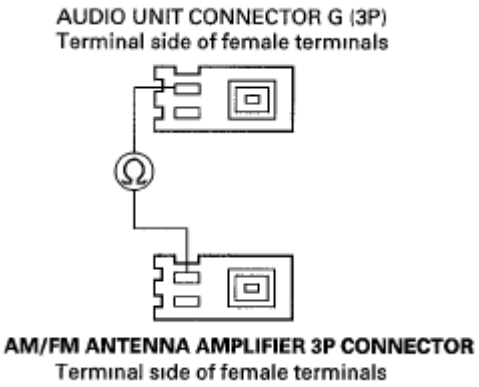


Fig. 38: Checking Continuity Between Audio Unit G (3P) Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good audio unit, and recheck.

NO -Repair open in the wire between the audio unit and the AM/FM antenna amplifier.

18. Turn the ignition switch to LOCK (0).
19. Disconnect audio connector G (3P).
20. Check for continuity between audio unit connector G (3P) No. 1 terminal and body ground.

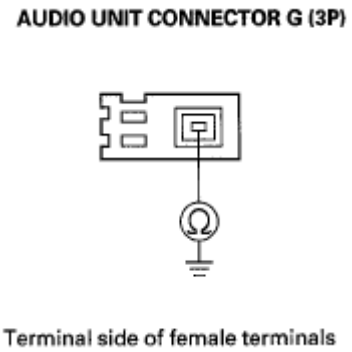


Fig. 39: Checking Continuity Between Audio Unit G (3P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the antenna lead and/or sublead.

NO -Go to step 21.

21. Check for continuity between audio unit connector G (3P) No. 1 and No. 2 terminals.

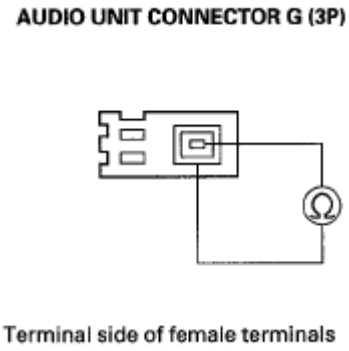


Fig. 40: Checking Continuity Between Audio Unit G (3P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the antenna lead and/or sublead.

NO -Go to step 22.

22. Check for continuity between audio unit connector G (3P) No. 2 terminal and the AM/FM antenna amplifier 3P connector No. 2 terminal.

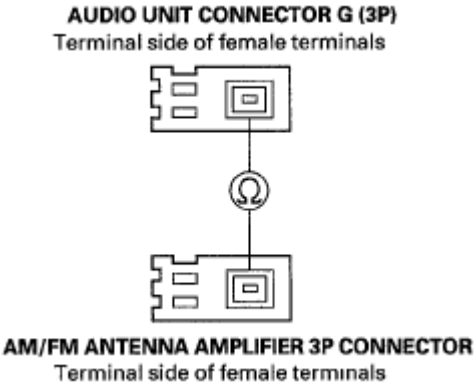


Fig. 41: Checking Continuity Between Audio Unit G (3P) Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the antenna lead and/or sublead.

NO -Go to step 23.

23. Check for continuity between audio unit connector G (3P) No. 1 terminal and the AM/FM antenna amplifier 3P connector No. 1 terminal.

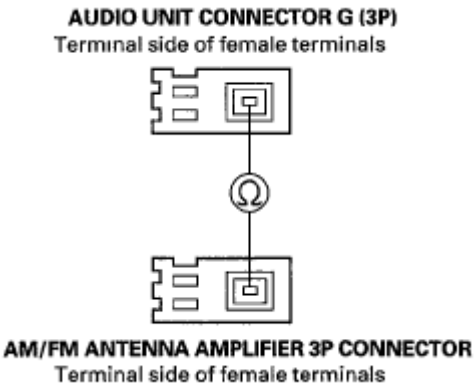


Fig. 42: Checking Continuity Between Audio Unit G (3P) Connector Terminal And AM/FM Antenna Amplifier 3P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the AM/FM antenna amplifier, and recheck. If the reception is still poor, replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Replace the antenna lead and/or sublead.

AUDIO UNIT POWER SWITCH WILL NOT TURN ON (NO INFORMATION DISPLAY AND NO SOUND) (WITH NAVIGATION)

NOTE:
- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Push the power switch ON to see if the navigation unit turns ON.

   Does the navigation unit display operate properly, and does the audio sound normal?

   YES -Intermittent failure, the system is OK at this time.

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES -Go to step 5.

   NO -Replace the fuse(s), and recheck.

5. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). Check

that the navigation unit is properly connected.

NOTE: Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.

Is it connected properly?

YES -Go to step 6.

NO -Reconnect the connector, and recheck the function.

6. Turn the ignition switch to ON (II).
7. Measure the voltage between body ground and navigation unit connector A (17P) terminals No. 14 and No. 17 individually.

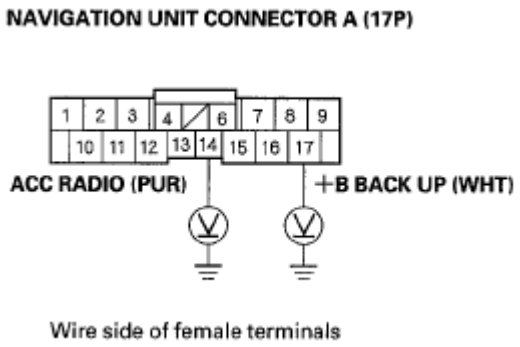


Fig. 43: Measuring Voltage Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage on both terminals?

YES -Go to step 8.

NO -Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) in the under-dash fuse/relay box and the audio unit.

8. Turn the ignition switch to LOCK (0).
9. Turn the ignition switch to ON (II).
10. Measure the voltage between navigation unit connector A (17P) No. 9 terminal and body ground, and navigation unit connector B (22P) No. 15 terminal and body ground.

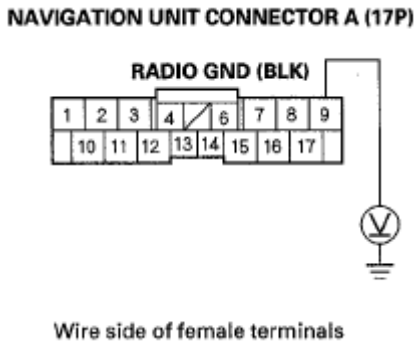


Fig. 44: Measuring Voltage Between Navigation Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

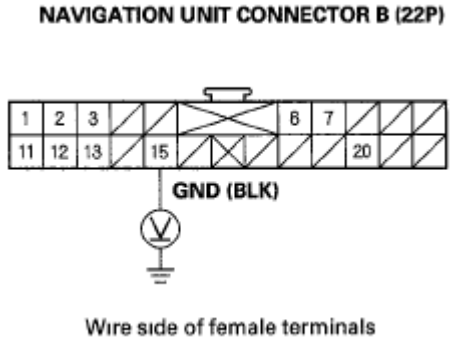


Fig. 45: Measuring Voltage Between Navigation Unit B (22P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V on both terminals?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between navigation unit connector A (17P) No. 19 terminal or navigation unit connector B (22P) No. 15 terminal and body ground (G505) (see **CONNECTOR TO HARNESS INDEX**).

AUDIO UNIT POWER SWITCH WILL NOT TURN ON (NO INFORMATION DISPLAY AND NO SOUND) (WITHOUT NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Push the power switch ON to see if audio unit turns ON.

Does the audio unit operate properly, and does the audio sound normal?

YES -Intermittent failure, the system is OK at this time.

NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES -Go to step 5.

   NO -Replace the fuse(s), and recheck.

5. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**). Check that the audio unit is properly connected.

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

   Is it connected properly?

   YES -Go to step 6.

   NO -Reconnect the connector, and recheck the function.

6. Turn the ignition switch to ON (II).
7. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground, and between terminal No. 17 and body ground.

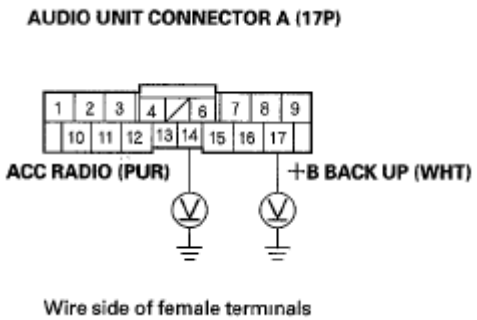


Fig. 46: Measuring Voltage Between Audio Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there battery voltage on the both terminals?

   YES -Go to step 8.

   NO -Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) in the under-dash fuse/relay box and the audio unit.

8. Turn the ignition switch to LOCK (0).

9. Turn the ignition switch to ON (II).
10. Measure the voltage between audio unit connector A (17P) No. 9 terminal and body ground.

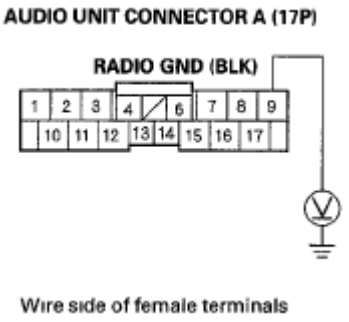


Fig. 47: Measuring Voltage Between Audio Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between audio unit connector A (17P) No. 9 terminal and body ground (G505) (see **CONNECTOR TO HARNESS INDEX**).

AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITH NAVIGATION)

NOTE:

- **Check for aftermarket accessories plugged into the vehicle's accessory power sockets.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch OFF to see if the navigation unit turns OFF.

Is the navigation unit OFF?

YES -Operation is normal.

NO -Go to step 2.

3. Turn the ignition switch to LOCK (0).
4. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
5. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

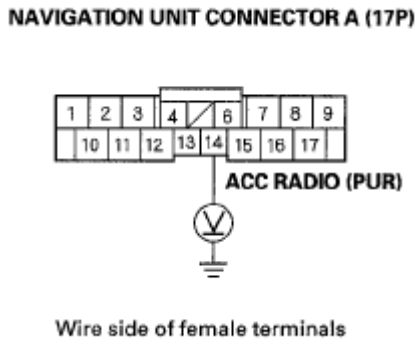


Fig. 48: Measuring Voltage Between Navigation Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for short to power on PUR wire.

NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITHOUT NAVIGATION)

NOTE:

- **Check for aftermarket accessories plugged into the vehicle's accessory power sockets.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch OFF to see if the audio unit turns OFF.

   Is the audio unit OFF?

   YES -Operation is normal.

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).
5. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground.

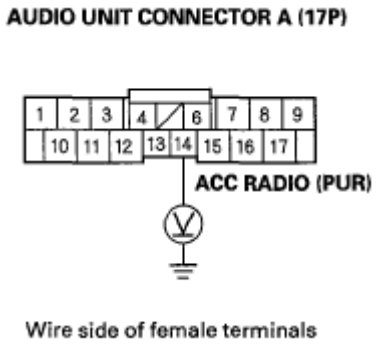


Fig. 49: Measuring Voltage Between Audio Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there voltage?

YES -Check for short to power on PUR wire.

NO -Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO SOUND IS HEARD FROM SPEAKER(S) (DISPLAY IS NORMAL) (WITH NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Set the fader and balance positions to the center.**

1. Turn the ignition switch to ON (II).
2. Check for sound in each mode (AM, FM, XM, and CD).

   Is the sound OK in each mode?

   YES -Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit and speaker(s).

   NO -Go to step 3.

3. Check that the volume button is not set to the MIN level.

   Is it at the MIN level?

   YES -Raise the volume level, and recheck the function.

   NO -Go to step 4.

4. On the steering wheel, check the navigation TALK command.

   Is the navigation TALK command function set?

   YES -Cancel the navigation TALK command by pressing the navigation BACK button, then recheck

the function.

NO -Go to step 5.

5. Check to see if there is a specific speaker that has no sound.

   Do any or all of the speakers fail to sound?

   YES -Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 6.
   - If all speakers fail to sound:
     - With premium sound system: Go to step 14.
     - Without premium sound system: Go to step 9.

   NO -Speakers all work, but sound quality is poor in step 1.

   - If sound is poor only with XM radio, or the XM radio does not function, go to **POOR OR NO SOUND WITH XM RADIO** .
   - If the sound is poor only with AM or FM, go to **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE** .
   - If the sound is poor only with disc.
     - Try several known- good tapes/disc in the navigation unit.
     - If the sound quality is normal, the original disc is faulty.
     - If the sound quality is still poor, replace the navigation unit.
   - If the sound is poor in all modes, go to **SOUND QUALITY DIAGNOSIS** .
6. Turn the ignition switch to LOCK (0).
7. Remove the speaker(s) with no sound (see **SPEAKER REPLACEMENT**), and disconnect its connector.
8. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

   YES -Go to step 9.

   NO -Operation is normal.

9. Make sure the ignition switch is in LOCK (0).
10. Measure the resistance between the (+) and (-) terminals of the speaker connector.

    Is there about 4 ohms?

    YES -

    - With premium sound system: Go to step 20.
    - Without premium sound system: Go to step 11.

NO -Faulty speaker(s).

11. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). Disconnect navigation unit connector A (17P).

NOTE: Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.

12. Measure the resistance between the following terminals of navigation unit connector A (17P) according to the table.

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (-)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (-)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (-)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (-)	ORN

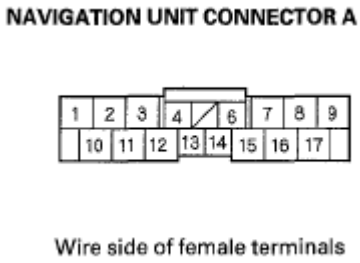


Fig. 50: Measuring Resistance Between Navigation Unit A (17P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 4 ohms?

YES -Go to step 13.

NO -Repair open or short in the wires between navigation unit and speaker(s).

13. Check for continuity between body ground and the following terminals of navigation unit connector A (17P).

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (-)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (-)	BRN

Left rear speaker	A11 (+)	YEL
	A2 (-)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (-)	ORN

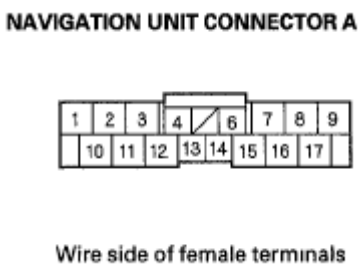


Fig. 51: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire(s) between the navigation unit and speaker(s).

NO -Substitute a known-good navigation unit and recheck. If the symptom/indication goes away, replace the original navigation unit.

14. Measure the voltage between stereo amplifier connector A (20P) No. 10 terminal and body ground.

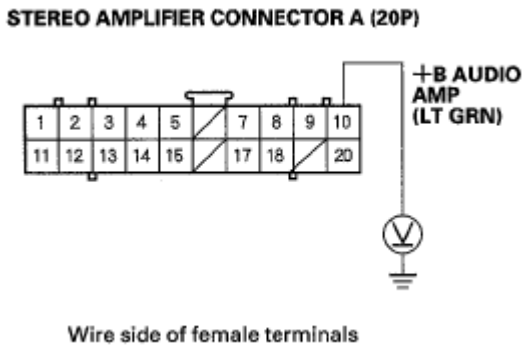


Fig. 52: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 15.

NO -

- '06 model: Repair open in the wire between No. 5 (15 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) No. 10 terminal.
- '07-08 models: Repair open in the wire between No. 17 (15 A) fuse in the under-hood fuse/relay

box and stereo amplifier connector A (20P) No. 10 terminal.

15. Turn the ignition switch to ON (II).
16. Measure the voltage between stereo amplifier connector A (20P) No. 9 terminal and body ground.

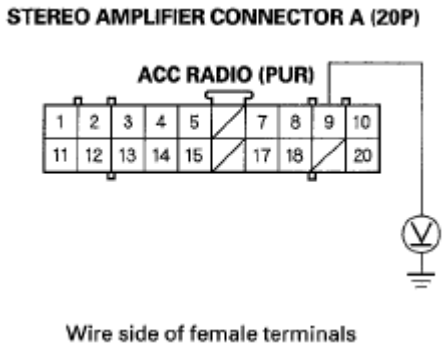


Fig. 53: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 17.

NO -Repair open in the wire between No. 35 (7.5 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) No. 9 terminal.

17. Measure the voltage between stereo amplifier connector B (14P) No. 7 terminal and body ground.

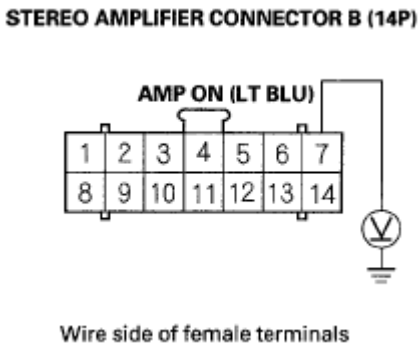


Fig. 54: Measuring Voltage Between Stereo Amplifier B (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 18.

NO -Repair open in the wire between the stereo amplifier connector B (14P) No. 7 terminal and navigation unit connector B (22P) No. 20 terminal.

18. Measure the voltage between stereo amplifier connector A (20P) No. 20 terminal and body ground,

and between stereo amplifier connector B (14P) No. 14 terminal and body ground.

'06-08 models

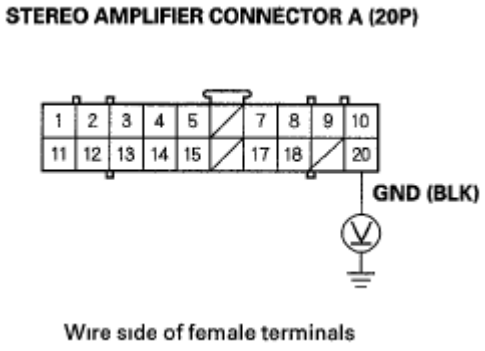


Fig. 55: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'06 model

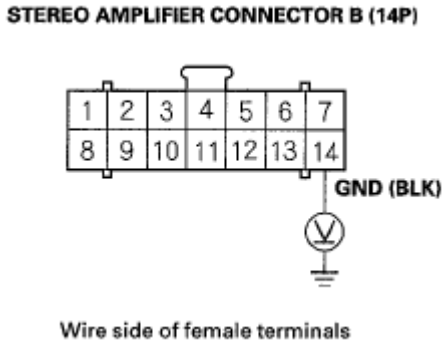


Fig. 56: Measuring Voltage Between Stereo Amplifier B (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V on both terminals?

YES -Go to step 19.

NO -Repair open in the wire between stereo amplifier connector A (20P) No. 20 terminal or connector B (14P) No. 14 terminal and body ground, 2-door model (G505), 4-door model (G601).

19. Turn the ignition switch to LOCK (0).
20. Disconnect stereo amplifier connector A (20P).
21. Measure the resistance between the following terminals of stereo amplifier connector A (20P) according to the table.

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
	A3 (+)	LT GRN

Driver's door speaker	A13 (-)	PNK
Left tweeter	A4 (+)	RED
	A14 (-)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (-)	BRN
Right tweeter	A1 (+)	PNK
	A11 (-)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (-)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (-)	ORN
Subwoofer	A5 (+)	GRN
	A15 (-)	RED

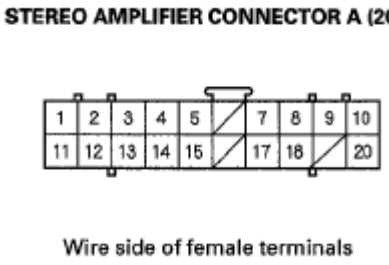


Fig. 57: Measuring Resistance Between Stereo Amplifier A (20P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 4 ohms?

YES -Go to step 22.

NO -Repair oper or short in the wires between stereo amplifier and speaker(s).

22. Check for continuity between body ground and the following terminals of stereo amplifier connector A (20P).

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (-)	PNK
Left tweeter	A4 (+)	RED
	A14 (-)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (-)	BRN
Right tweeter	A1 (+)	PNK
	A11 (-)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (-)	BRN

Right rear speaker	A7 (+)	BLU
	A17 (-)	ORN
Subwoofer	A5 (+)	GRN
	A15 (-)	RED

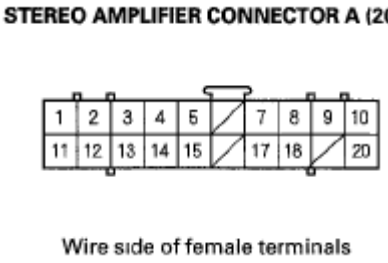


Fig. 58: Checking Continuity Between Stereo Amplifier A (20P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire(s) between stereo amplifier and speaker(s).

NO -

- 2-door: Go to step 23.
- '08 4-door: Go to step 27.

23. Disconnect stereo amplifier connector B (14P).
24. Disconnect navigation unit connector A (17P).
25. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 2 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B1	BLU
B3	BLK
B4	GRN
B6	BRN
B8	ORN
B10	WHT
B11	RED
B13	YEL

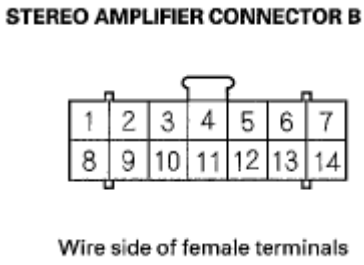


Fig. 59: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the navigation unit. Replace the appropriate shielded harness.

NO -Go to step 26.

26. Check for continuity between navigation unit connector A and stereo amplifier connector B according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Amplifier connector	Wire color
A2	B10	WHT
A3	B8	ORN
A7	B11	RED
A8	B13	YEL
A11	B3	BLK
A12	B1	BLU
A15	B4	GRN
A16	B6	BRN

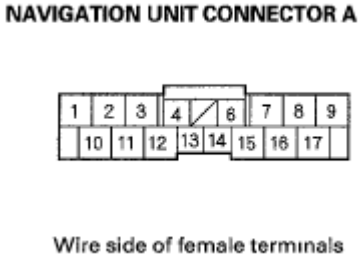


Fig. 60: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

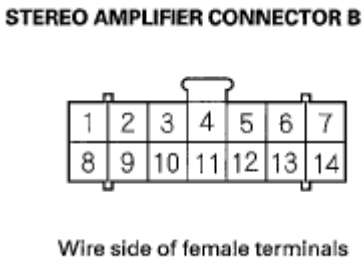


Fig. 61: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good navigation unit and recheck. If the symptom/indication goes away, replace the original navigation unit. If the symptom is still present, substitute a known-good stereo amplifier and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see **STEREO AMPLIFIER REMOVAL/INSTALLATION**).

NO -Repair open in the wire(s) between the navigation unit and stereo amplifier.

27. Disconnect stereo amplifier connector B (14P).
28. Disconnect navigation unit connector A (17P).
29. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 2 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B1	BLU
B8	RED

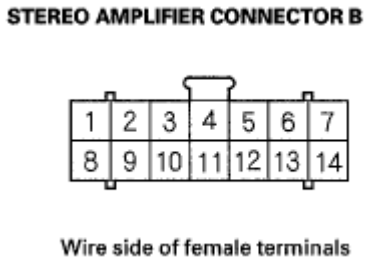


Fig. 62: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the navigation unit. Replace the appropriate shielded harness.

NO -Go to step 30.

30. Check for continuity between navigation unit connector A and stereo amplifier connector B according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Amplifier connector	Wire color
A3	B8	RED
A12	B1	BLU

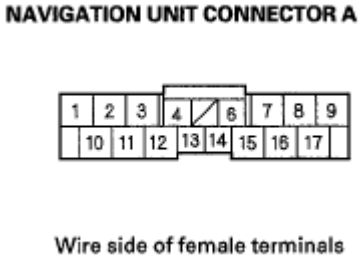


Fig. 63: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

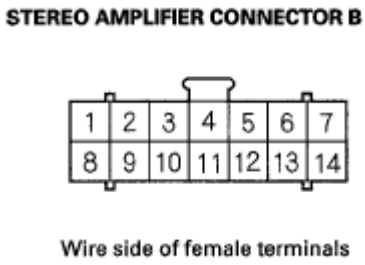


Fig. 64: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 31.

NO -Repair open in the wire between the navigation unit and stereo amplifier.

31. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 5 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B4	BLU
B11	PNK

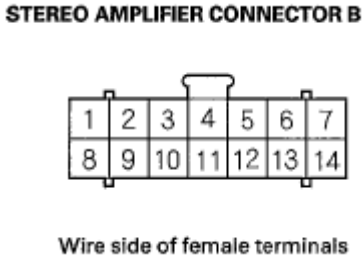


Fig. 65: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the navigation unit. Replace the appropriate shielded harness.

NO -Go to step 32.

32. Check for continuity between navigation unit connector A and stereo amplifier connector B according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Amplifier connector	Wire color
A7	B11	PNK
A15	B4	BLU

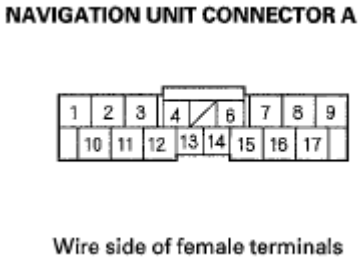


Fig. 66: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

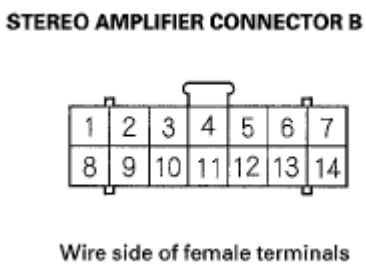


Fig. 67: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 33.

NO -Repair open in the wire between the navigation unit and stereo amplifier.

33. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 9 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B3	BLK
B10	WHT

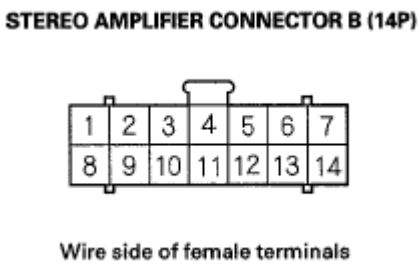


Fig. 68: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the navigation unit. Replace the appropriate shielded harness.

NO -Go to step 34.

34. Check for continuity between navigation unit connector A and stereo amplifier connector B according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Amplifier connector	Wire color
A2	B10	WHT
A11	B3	BLK

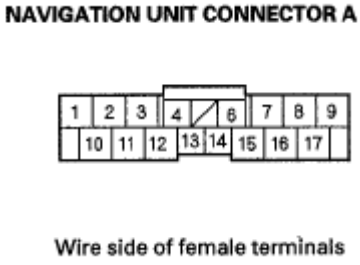


Fig. 69: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

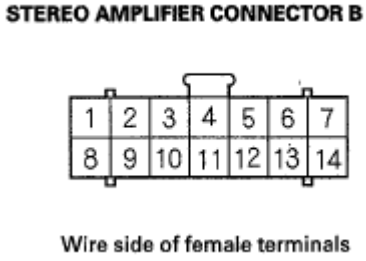


Fig. 70: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 35.

NO -Repair open in the wire between the navigation unit and stereo amplifier.

35. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 12 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B6	LT GRN
B13	PUR

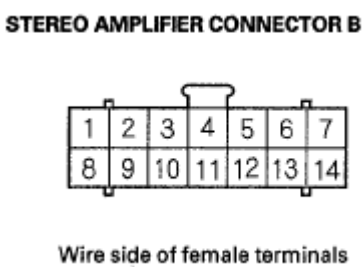


Fig. 71: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the navigation unit. Replace the appropriate shielded harness.

NO -Go to step 36.

36. Check for continuity between navigation unit connector A and stereo amplifier connector B according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Amplifier connector	Wire color
A8	B13	PUR
A16	B6	LT GRN

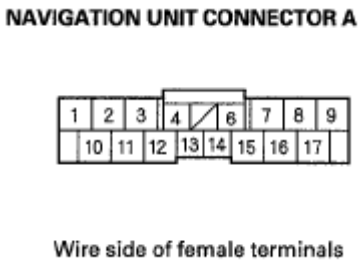


Fig. 72: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

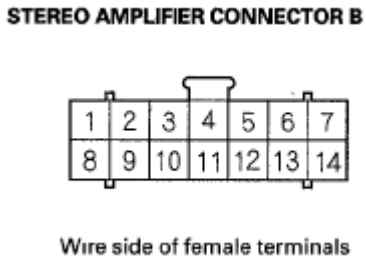


Fig. 73: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good navigation unit and recheck. If the symptom/indication goes away, replace the original navigation unit. If the symptom is still present, substitute a known-good stereo amplifier and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see **STEREO AMPLIFIER REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the navigation unit and stereo amplifier.

NO SOUND IS HEARD FROM SPEAKER(S) (DISPLAY IS NORMAL) (WITHOUT NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Set the fader and balance positions to the center.**
- **Before performing symptom troubleshooting, do the power switch will not turn ON troubleshooting (see AUDIO UNIT POWER SWITCH WILL NOT TURN ON (NO INFORMATION DISPLAY AND NO SOUND) (WITHOUT NAVIGATION)).**

1. Turn the ignition switch to ON (II).
2. Check that the volume button is not set to min level.

   Is it at MIN level?

   YES -Raise the volume level, and recheck the function.

   NO -Go to step 3.

3. Do the speaker check mode in the self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).

   Do any or all of the speakers fail to sound?

   YES -Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 4.
   - If all speakers fail to sound;
     - With premium sound system: Go to step 12.
     - Without premium sound system: Go to step 7.

   NO -Speakers all work, but sound quality is poor:

   - If the sound is poor only with AM or FM, go to **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE** (see **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITHOUT NAVIGATION)**).
   - If the sound is poor only with disc.
     - Try several known- good disc in the audio unit.
     - If the sound quality is normal, the original disc is faulty.
     - If the sound quality is still poor, replace the audio unit.
   - If the sound is poor in all modes, go to **SOUND QUALITY DIAGNOSIS** .
4. Turn the ignition switch to LOCK (0).
5. Remove the speaker(s) with no sound (see **SPEAKER REPLACEMENT**), and disconnect its connector.
6. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

YES -Go to step 7.

NO -Operation is normal.

7. Make sure turn the ignition switch is in LOCK (0).
8. Measure the resistance between the (+) and (-) terminal of the speaker connector.

   Is there about 4 ohms?

   YES -

   - With premium sound system: Go to step 18.
   - Without premium sound system: Go to step 9.

   NO -Faulty speaker(s).

9. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**). Disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

10. Measure the resistance between the following terminals of audio unit connector A (17P).

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (-)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (-)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (-)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (-)	ORN

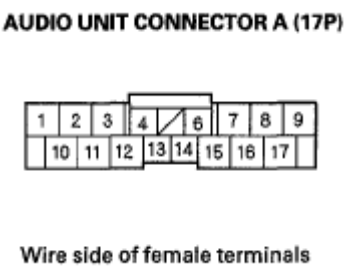


Fig. 74: Measuring Resistance Between Audio Unit A (17P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 4 ohms?

YES -Go to step 11.

NO -Repair open or short in the wires between audio unit and speaker(s).

11. Check for continuity between body ground and following terminals of audio unit connector A (17P).

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (-)	PNK
Front passenger's door speaker. Right tweeter	A15 (+)	GRY
	A7 (-)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (-)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (-)	ORN

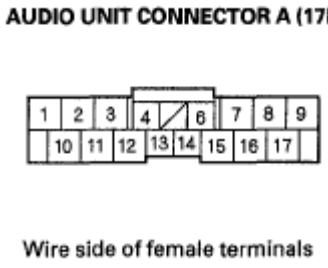


Fig. 75: Checking Continuity Between Audio Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire(s) between the audio unit and speaker(s).

NO -Substitute a known-good audio unit and recheck. If the symptom/indication goes away, replace the original audio unit.

12. Measure the voltage between stereo amplifier connector A (20P) No. 10 terminal and body ground.

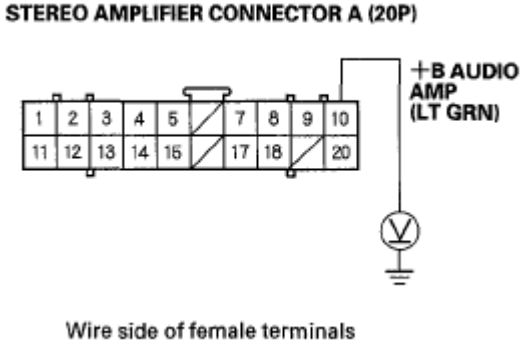


Fig. 76: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 13.

NO -

- '06 model: Repair open in the wire between No. 5 (15 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) No. 10 terminal.
- '07-08 models: Repair open in the wire between No. 17 (15 A) fuse in the under-hood fuse/relay box and stereo amplifier connector A (20P) No. 10 terminal.

13. Turn the ignition switch to ON (II).
14. Measure the voltage between stereo amplifier connector A (20P) No. 9 terminal and body ground.

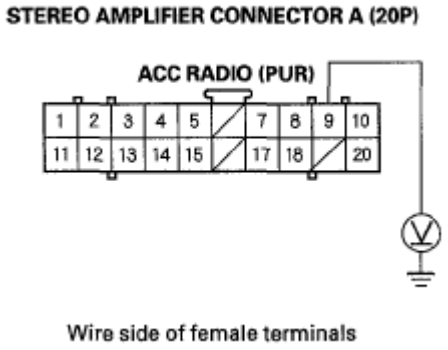


Fig. 77: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 15.

NO -Repair open in the wire between No. 35 (7.5 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) No. 9 terminal.

15. Measure the voltage between stereo amplifier connector B (14P) No. 7 terminal and body ground.

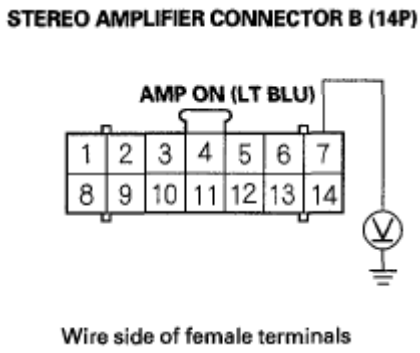


Fig. 78: Measuring Voltage Between Stereo Amplifier B (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 16.

NO -Repair open in the wire between the stereo amplifier connector B (14P) No. 7 terminal and audio unit connector B (20P) No. 16 terminal.

16. Measure the voltage between stereo amplifier connector A (20P) No. 20 terminal and body ground, and between stereo amplifier connector B (14P) No. 14 terminal and body ground.

'06-08 models

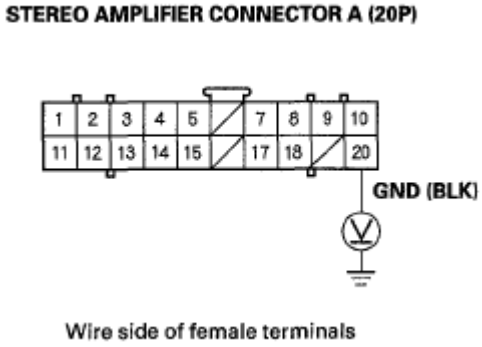


Fig. 79: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'06 model

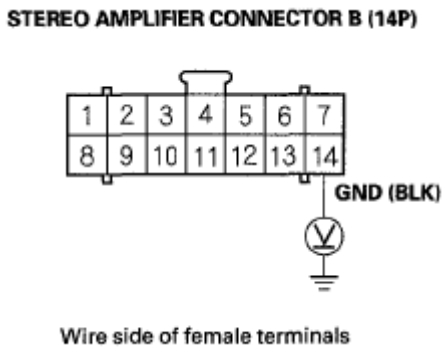


Fig. 80: Measuring Voltage Between Stereo Amplifier B (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V on both terminals?

YES -Go to step 17.

NO -Repair open in the wire between stereo amplifier connector A (20P) No. 20 terminal or connector B (14P) No. 14 terminal and body ground, 2-door model (G505), 4-door model (G601).

17. Turn the ignition switch to LOCK (0).
18. Disconnect stereo amplifier connector A (20P).
19. Measure the resistance between the following terminals of stereo amplifier connector A (20P) according to the table.

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (-)	PNK
Left tweeter	A4 (+)	RED
	A14 (-)	GRIM
Front passenger's door speaker	A2 (+)	GRY
	A12 (-)	BRN
Right tweeter	A1 (+)	PNK
	A11 (-)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (-)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (-)	ORN
Subwoofer	A5 (+)	GRN
	A15 (-)	RED

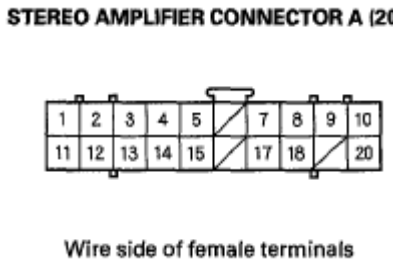


Fig. 81: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 4 ohms?

YES -Go to step 20.

NO -Repair open or short in the wires between stereo amplifier and speaker(s).

20. Check for continuity between body ground and the following terminals of stereo amplifier connector A (20P).

SPEAKER TERMINALS REFERENCE

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (-)	PNK
Left tweeter	A4 (+)	RED
	AH (-)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (-)	BRN
Right tweeter	A1 (+)	PNK
	A11 (-)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (-)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (-)	ORN
Subwoofer	A5 (+)	GRN
	A15 (-)	RED

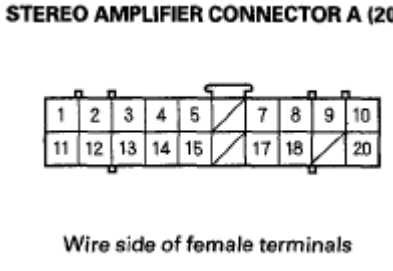


Fig. 82: Measuring Voltage Between Stereo Amplifier A (20P) Connector Terminal And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire(s) between stereo amplifier and speaker(s).

NO -

- 2-door: Go to step 21.
- '08 4-door: Go to step 25.

21. Disconnect stereo amplifier connector B (14P).
22. Disconnect audio unit connector A (17P).
23. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 2 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B1	BLU
B3	BLK
B4	GRN
B6	BRN
B8	ORN
B10	WHT
B11	RED
B13	YEL

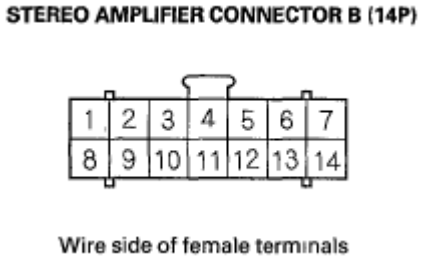


Fig. 83: Measuring Voltage Between Stereo Amplifier B (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the audio unit. Replace the appropriate shielded harness.

NO -Go to step 24.

24. Check for continuity between audio unit connector A and stereo amplifier connector B according to the table.

AUDIO UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Audio unit connector	Amplifier connector	Wire color
A2	B10	WHT
A3	B8	ORN
A7	B11	RED
A8	B13	YEL
A11	B3	BLK
A12	B1	BLU
A15	B4	GRN
A16	B6	BRN

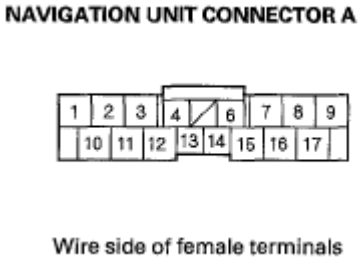


Fig. 84: Checking Continuity Between Navigation Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

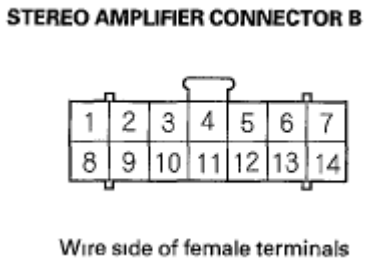


Fig. 85: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good audio unit and recheck. If the symptom/indication goes away, replace the original audio unit. If symptom is still present, substitute a known-good stereo amplifier and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see **STEREO AMPLIFIER REMOVAL/INSTALLATION**).

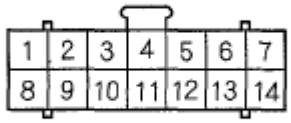
NO -Repair open in the wire between the audio unit and stereo amplifier.

25. Disconnect audio unit connector A (17P).
26. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 2 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B1	BLU
B8	RED

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Fig. 86: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the audio unit. Replace the appropriate shielded harness.

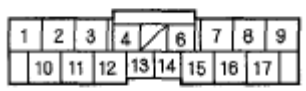
NO -Go to step 27.

27. Check for continuity between audio unit connector A and stereo amplifier connector B according to the table.

AUDIO UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Audio unit connector	Amplifier connector	Wire color
A3	B8	RED
A12	B1	BLU

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Fig. 87: Checking Continuity Between Audio Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

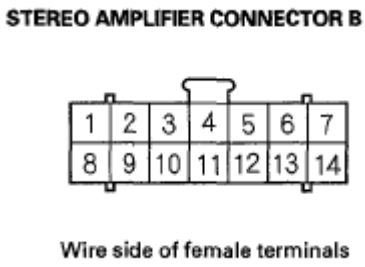


Fig. 88: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 28.

NO -Repair open in the wire between the audio unit and stereo amplifier.

28. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 5 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B4	BLU
B11	PNK

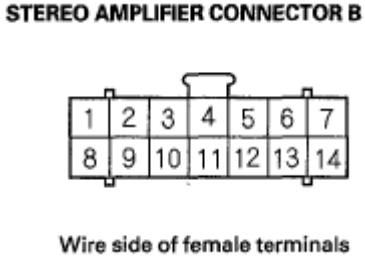


Fig. 89: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the audio unit. Replace the appropriate shielded harness.

NO -Go to step 29.

29. Check for continuity between audio unit connector A and stereo amplifier connector B according to the table.

AUDIO UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Audio unit connector	Amplifier connector	Wire color
A7	B11	PNK
A15	B4	BLU

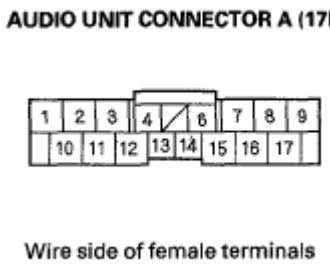


Fig. 90: Checking Continuity Between Audio Unit A (17P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

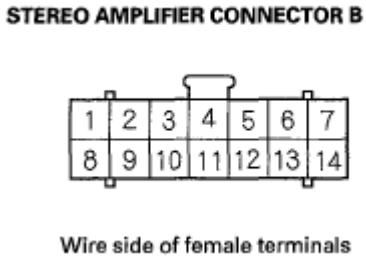


Fig. 91: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 30.

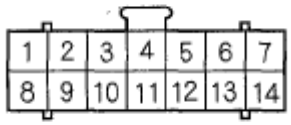
NO -Repair open in the wire between the audio unit and stereo amplifier.

30. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 9 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B3	BLK
B10	WHT

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Fig. 92: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the audio unit. Replace the appropriate shielded harness.

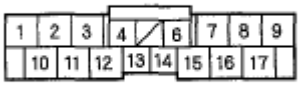
NO -Go to step 31.

31. Check for continuity between audio unit connector A and stereo amplifier connector B according to the table.

AUDIO UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Audio unit connector	Amplifier connector	Wire color
A2	B10	WHT
A11	B3	BLK

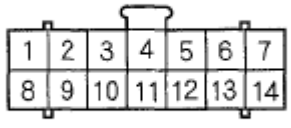
AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Fig. 93: Checking Continuity Between Audio Unit A (17P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Fig. 94: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 32.

NO -Repair open in the wire between the audio unit and stereo amplifier.

32. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) No. 12 terminal (the harness shield).

AMPLIFIER CONNECTOR REFERENCE

Amplifier connector	Wire color
B6	LT GRN
B13	PUR

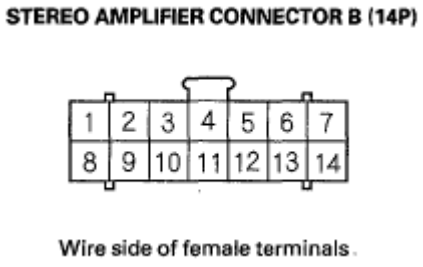


Fig. 95: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the stereo amplifier and the audio unit. Replace the appropriate shielded harness.

NO -Go to step 33.

33. Check for continuity between audio unit connector A and stereo amplifier connector B according to the table.

AUDIO UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Audio unit connector	Amplifier connector	Wire color
A8	B13	PUR
A16	B6	LT GRN

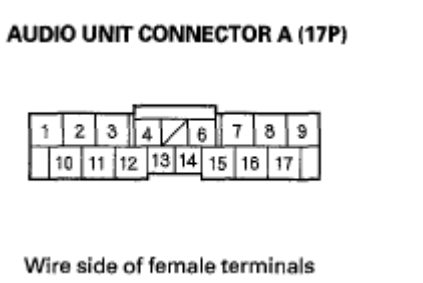


Fig. 96: Checking Continuity Between Audio Unit A (17P) Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

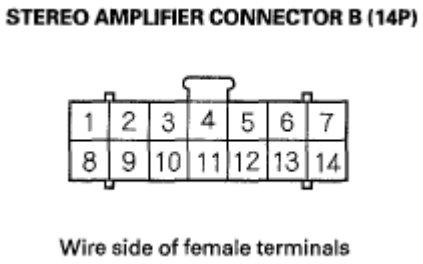


Fig. 97: Checking Continuity Between Stereo Amplifier B (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good audio unit and recheck. If the symptom/indication goes away, replace the original audio unit. If symptom is still present, substitute a known-good stereo amplifier and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see **STEREO AMPLIFIER REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the audio unit and stereo amplifier.

AUXILIARY INPUT SOUND IS LOW OR CANNOT BE HEARD

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Use auxiliary stereo cables with 3.5 mm ends only.**
- **Auxiliary accessories may be played on the audio unit using the auxiliary input.**

1. Turn the ignition switch to ON (II).
2. Turn on the audio unit or navigation unit and connect an auxiliary accessory to the auxiliary input jack.
3. Check the volume operation.

   Is the sound normal?

   YES -Operation is normal at this time.

   NO -Go to step 4.

4. Make sure the auxiliary accessory volume is set to high.

   Is the volume set to high?

   YES -Go to step 5.

   NO -Raise the auxiliary accessory volume is set to high. Make sure the audio unit volume is turned

down before retesting.

5. Substitute a known-good auxiliary audio accessory and/or auxiliary stereo cable and recheck.

   Does the auxiliary audio accessory operate properly?

   YES -Original auxiliary audio accessory or auxiliary stereo cable is faulty.

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Remove the auxiliary jack assembly (see **AUXILIARY JACK ASSEMBLY REPLACEMENT**), and check that the auxiliary jack assembly is properly connected.

   Is the auxiliary jack assembly connected properly?

   YES -

   - With navigation: go to step 8.
   - Without navigation: go to step 13.

   NO -Reconnect the connector, and recheck the function.

8. Disconnect auxiliary jack assembly 5P connector.
9. Disconnect navigation unit connector B (22P).
10. Check for continuity between body ground and navigation unit connector B (22P) according to the table.

NAVIGATION UNIT CONNECTOR AND AMPLIFIER CONNECTOR REFERENCE

Navigation unit connector	Wire color
B1	BRN
B3	BLU
B11	YEL
B12	GRN
B13	WHT

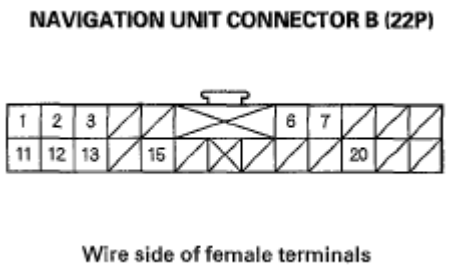


Fig. 98: Checking Continuity Between Navigation Unit B (22P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short to body ground in the wire(s) between navigation unit and auxiliary jack assembly. Replace the affected shielded harness.

NO -Go to step 11.

11. Check for continuity between navigation unit connector B (22P) according to the table.

TERMINALS REFERENCE

From terminal	To terminals
B1	B2(1), B3, B11, B12, B13
B2(1)	B3, B11, B12, B13
B3	B11, B12, B13
B11	B12, B13
B12	B13
(1) Shielded wire	

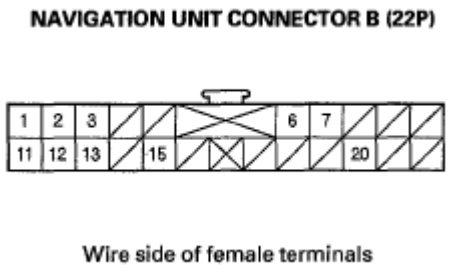


Fig. 99: Checking Continuity Between Navigation Unit B (22P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short in the wire(s) between navigation unit and auxiliary jack assembly. Replace the affected shielded harness.

NO -Go to step 12.

12. Check for continuity between navigation unit connector B (22P) and auxiliary jack assembly 5P connector according to the table.

NAVIGATION UNIT CONNECTOR AND AUXILIARY JACK ASSEMBLY CONNECTOR REFERENCE

Navigation unit connector	Auxiliary jack assembly connector	Wire color
B1	3	BRN
B3	2	BLU
B11	4	YEL
B12	5	GRN
B13	1	WHT

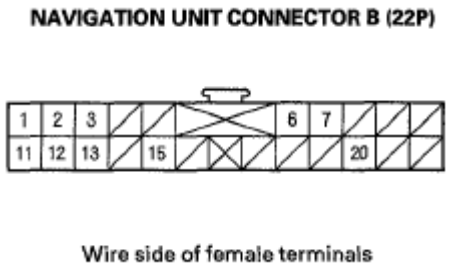


Fig. 100: Checking Continuity Between Navigation Unit B (22P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

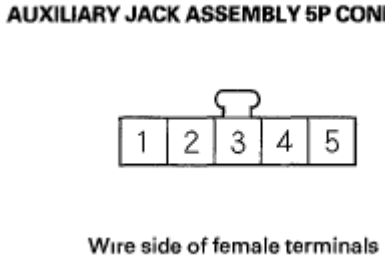


Fig. 101: Checking Continuity Between Auxiliary Jack Assembly 5P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good auxiliary jack assembly and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Open in the wire(s) between navigation unit and auxiliary jack assembly. Replace affected shielded harness.

13. Disconnect auxiliary jack assembly 5P connector.
14. Disconnect audio unit connector B (22P).
15. Check for continuity between body ground and audio unit connector B (20P) according to the table.

AUDIO UNIT CONNECTOR REFERENCE

Audio unit connector	Wire color
B3	BRN
B5	BLU
B13	YEL
B14	GRN
B15	WHT

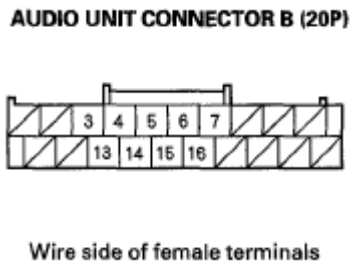


Fig. 102: Checking Continuity Between Audio Unit B (20P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short to body ground in the wire(s) between audio unit and auxiliary jack assembly. Replace the affected shielded harness.

NO -Go to step 16.

16. Check for continuity between audio unit connector B (20P) according to the table.

TERMINALS REFERENCE

From terminal	To terminals
B3	B4(1), B5, B13, B14, B15
B4(1)	B5, B13, B14, B15
B5	B13, B14, B15
B13	B14, B15
B14	B15
(1) Shielded wire	

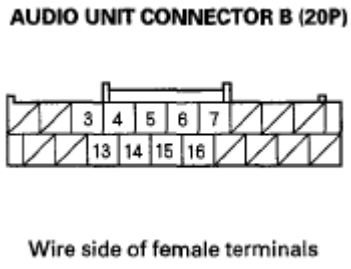


Fig. 103: Checking Continuity Between Audio Unit B (20P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short in the wire(s) between navigation unit and auxiliary jack assembly. Replace the affected shielded harness.

NO -Go to step 17.

17. Check for continuity between audio unit connector B (20P) and auxiliary jack assembly 5P connector according to the table.

AUDIO UNIT CONNECTOR AND AUXILIARY JACK ASSEMBLY CONNECTOR REFERENCE

Audio unit connector	Auxiliary jack assembly connector	Wire color
B3	3	BRN
B5	2	BLU
B13	4	YEL
B14	5	GRN
B15	1	WHT

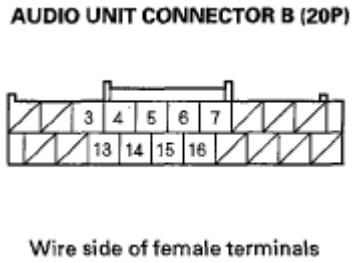


Fig. 104: Checking Continuity Between Audio Unit B (20P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

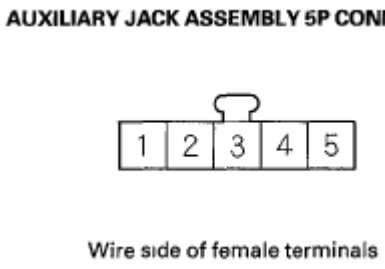


Fig. 105: Checking Continuity Between Auxiliary Jack Assembly 5P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good auxiliary jack assembly and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Open in the wire(s) between navigation unit and auxiliary jack assembly. Replace affected shielded harness.

POOR OR NO SOUND WITH XM RADIO (NAVIGATION UNIT CAN DISPLAY XM CHANNELS) (WITH NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

- **Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines that are nearby.**
- **If you can only tune to channels 000, 001, 174, and 247, make sure the audio unit is set to the channel mode (see owner's manual), if it is set to channel mode, call XM satellite radio customer support and check the account activation status.**

1. Turn the ignition switch to ON (II).
2. Turn on the navigation unit and select XM radio.
3. Check for an error message on the display.

   Are there any messages displayed?

   YES -Go to **ERROR CODE LIST** .

   NO -Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Disconnect navigation unit connector E (14P) and XM receiver connector A (14P).
6. Check for continuity between navigation connector E (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and navigation unit connector E (14P) No. 4 terminal (the harness shield).

NAVIGATION UNIT CONNECTOR REFERENCE

Navigation unit connector	Wire color
E6	RED
E14	GRN
E5	WHT
E13	BLK

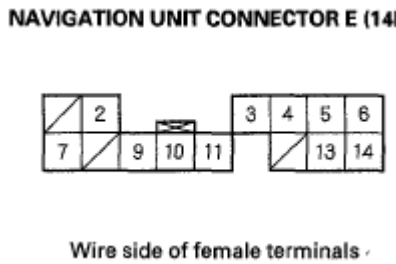


Fig. 106: Checking Continuity Between Navigation E (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short in the wire(s) between navigation unit and XM receiver. Replace the affected shielded harness.

NO -Go to step 7.

7. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

NAVIGATION UNIT CONNECTOR AND XM RECEIVER CONNECTOR REFERENCE

Navigation unit connector	XM receiver connector	Wire color
E5	A5	WHT
E6	A6	RED
E13	A13	BLK
E14	A14	GRN

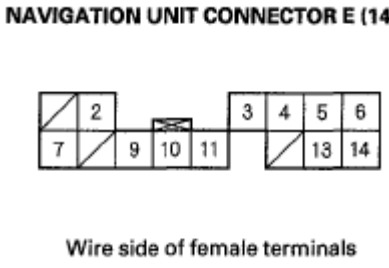


Fig. 107: Checking Continuity Between Navigation Unit E (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

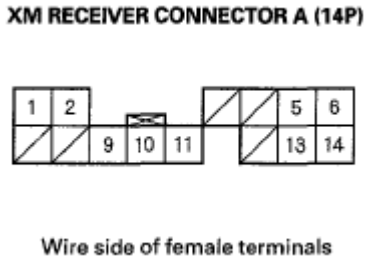


Fig. 108: Checking Continuity Between XM Receiver A (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good XM receiver, then reconnect the all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If the symptom/indication is still present, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the navigation unit and the XM receiver.

XM RADIO DISPLAY IS BLANK AND NO STATION INFORMATION IS DISPLAYED (WITH NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

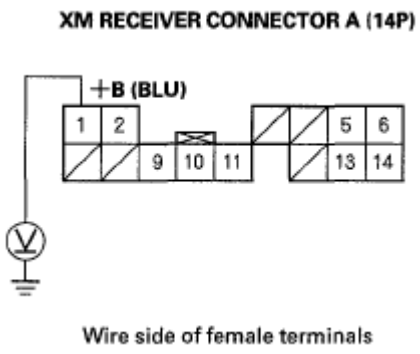


Fig. 109: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 2.

NO -Repair open in the wire between No. 23 (10 A) fuse in the under-hood fuse/relay box and XM receiver connector A (14P) No. 1 terminal.

2. Turn the ignition switch to ON (II).
3. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

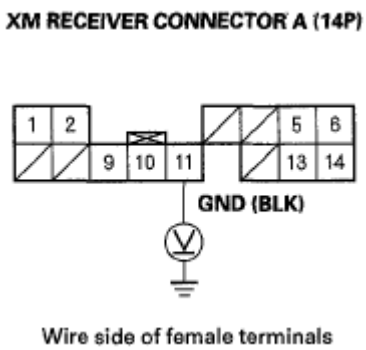


Fig. 110: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Go to step 4.

NO -Repair open in the wire between the XM receiver connector A (14P) No. 1 terminal and navigation unit connector E (14P) No. 11 terminal.

4. Turn the ignition switch to LOCK (0).
5. Measure the voltage between XM receiver connector A (14P) No. 2 terminal and body ground.

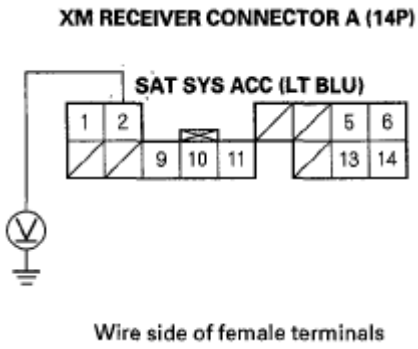


Fig. 111: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 10 V or more present?

YES -Go to step 7.

NO -Go to step 6.

6. Measure the voltage between navigation unit connector E (14P) No. 2 terminal and body ground.

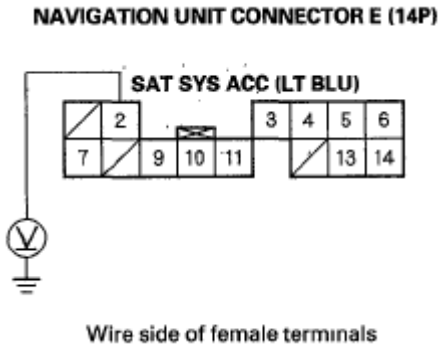


Fig. 112: Measuring Voltage Between Navigation Unit E (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 10 V or more present?

YES -Repair open or short to body ground in the wire between the navigation unit and XM receiver.

NO -Substitute a known-good navigation unit and recheck. If 10 V or more are present, replace the original navigation unit.

7. Turn the ignition switch to ON (II).
8. Measure voltage between the navigation unit connector E (14P) No. 2 terminal and body ground.

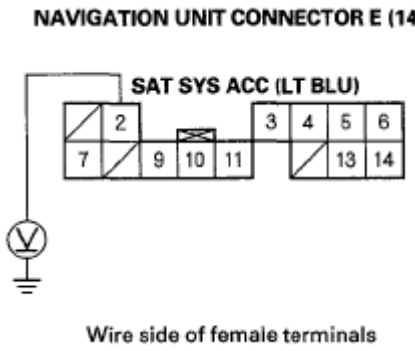


Fig. 113: Measuring Voltage Between Navigation Unit E (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.5 V?

YES -Go to step 9.

NO -# Substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**) and recheck. If 0.5 V or less are present, replace the original navigation unit.

9. Turn the ignition switch to LOCK (0).
10. Disconnect navigation unit connector E (14P) and XM receiver connector A (14P).
11. Check for continuity between navigation unit connector E (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and navigation unit connector E (14P) No. 3 terminal (the harness shield).

NAVIGATION UNIT CONNECTOR REFERENCE

Navigation unit connector	Wire ester
E9	BLU
E10	PNK

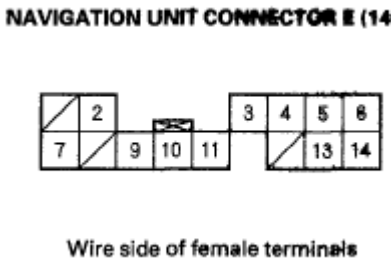


Fig. 114: Checking Continuity Between Navigation Unit E (14P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Short to body ground in the wire(s) between navigation unit and XM receiver. Replace the affected shielded harness.

NO -Go to step 12.

12. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

NAVIGATION UNIT CONNECTOR AND XM RECEIVER CONNECTOR REFERENCE

Navigation unit connector	XM receiver connector	Wire color
E9	A9	BLU
E10	A10	PNK

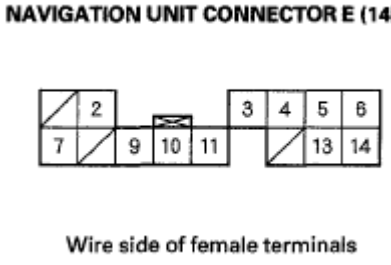


Fig. 115: Checking Continuity Between Navigation Unit E (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

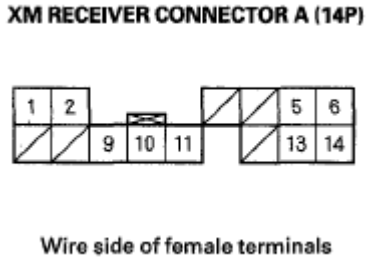


Fig. 116: Checking Continuity Between XM Receiver Connector A (14P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good XM receiver, then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Open in the wire(s) between navigation unit and XM receiver. Replace the affected shielded harness.

AUDIO SYSTEM SOUND IS WEAK OR DISTORTED (DISPLAY IS NORMAL)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Check for sound in each mode (AM, FM, XM, and CD).

Is there sound from the speakers, and is the sound quality normal in each mode?

YES -Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit, audio unit, amplifier, and each speaker.

NO -Speakers all work, sound quality is poor.

- If the sound quality is poor only with the XM radio, or the XM radio does not function, go to **POOR OR NO SOUND WITH XM RADIO** .
- If the sound quality is poor only with AM or FM radio, go to **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE** .
- If sound is poor in all modes, go to **SOUND QUALITY DIAGNOSIS** .

NAVIGATION UNIT BUTTON ILLUMINATION DOES NOT WORK (WITH NAVIGATION)

NOTE:
- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the navigation unit buttons.

   Are the buttons illuminated?

   YES -Intermittent problem: the navigation unit is OK at this time. Check for loose or poor connections at the navigation unit connector A (17P).

   NO -Go to step 4.

4. Check the illumination of several other buttons not related to the navigation system.

   Are the buttons illuminated?

   YES -Go to step 5.

   NO -Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the navigation unit.

5. Turn the ignition switch to LOCK (0).
6. Disconnect navigation unit connector A (17P).

   NOTE: Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.

7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between navigation unit connector A (17P) No. 1 terminal and gauge control module (tach) 36P connector No. 14 terminal.

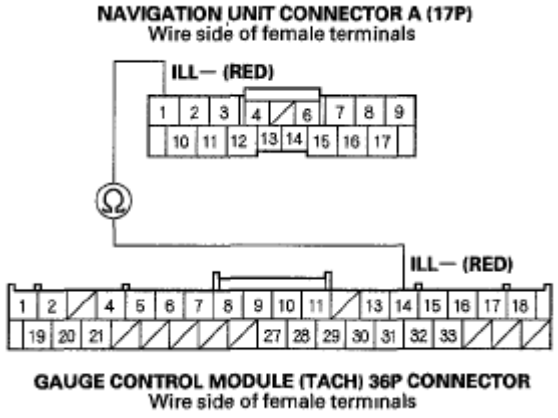


Fig. 117: Checking Continuity Between Navigation Unit A (17P) Connector Terminal And Gauge Control Module (Tach) 36P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the gauge control module and the navigation unit.

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between navigation unit connector A (17P) No. 10 terminal and body ground.

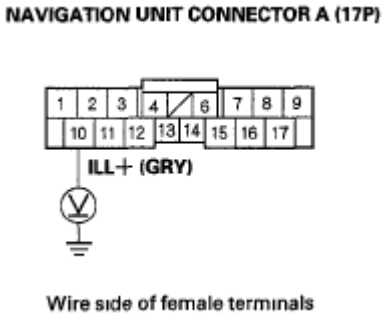


Fig. 118: Measuring Voltage Between Navigation Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check the connections at navigation unit connector A (17P). If all connections are OK, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the under-dash fuse/relay box and the navigation unit.

AUDIO UNIT BUTTON ILLUMINATION DOES NOT WORK (WITHOUT NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the audio unit buttons.

   Are the buttons illuminated?

   YES -Intermittent problem: the audio unit is OK at this time. Check for loose or poor connections at the audio unit connector A (17P).

   NO -Go to step 4.

4. Check the illumination of several other buttons not related to the audio system.

   Are the buttons illuminated?

   YES -Go to step 5.

   NO -Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the audio unit.

5. Turn the ignition switch to LOCK (0).
6. Disconnect audio unit connector A (17P).

NOTE: Eject all the discs before removing the audio unit to prevent the CD player's load mechanism.

7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between audio unit connector A (17P) No. 1 terminal and gauge control module (tach) 36P connector No. 14 terminal.

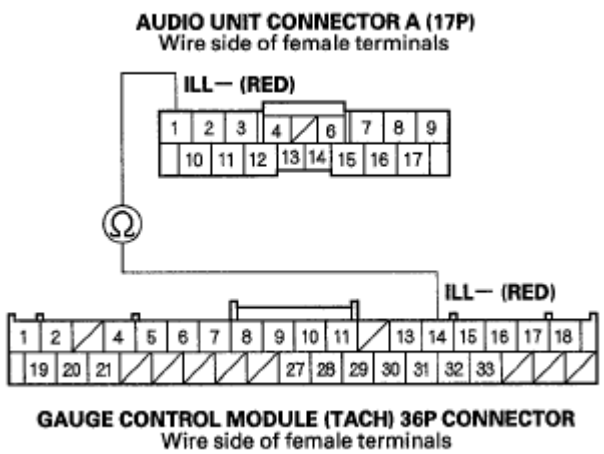


Fig. 119: Checking Continuity Between Audio Unit A (17P) Connector Terminal And Gauge

Control Module (Tach) 36P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the gauge control module and the audio unit.

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between audio unit connector A (17P) No. 10 terminal and body ground.

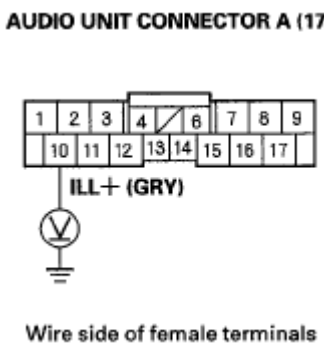


Fig. 120: Measuring Voltage Between Audio Unit A (17P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check the connections at audio unit connector A (17P). If all the connections are OK, replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the under-dash fuse/relay box and the audio unit.

RADIO PRESET MEMORY IS LOST

NOTE: If only the XM stations are lost, go to XM RADIO PRESET MEMORY IS LOST .

1. Set each of the radio station preset buttons.

Do each of the buttons set properly?

YES -Go to step 2.

NO -

- With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
- Without navigation: Replace the audio unit (see **AUDIO UNIT**

REMOVAL/INSTALLATION).

2. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).
3. Test the preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES -System is normal at this time. Check the connections at the navigation unit or audio unit.

   NO -

   - With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

XM RADIO PRESET MEMORY IS LOST (WITH NAVIGATION)

NOTE: If you can only tune to channels 000,001,174, and 247, make sure the audio unit is set to the channel mode (see owner's manual), if it is set to channel mode, call XM satellite radio customer support and check the account activation status.

1. Turn the ignition switch to ON (II).
2. Set each of the XM radio channel preset buttons.

   Do each of the XM radio channel preset buttons set properly?

   YES -Go to step 3.

   NO -Replace the navigation unit.

3. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).
4. Test all of the XM radio channel preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES -System is normal at this time. Check the connections at the navigation unit.

   NO -Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

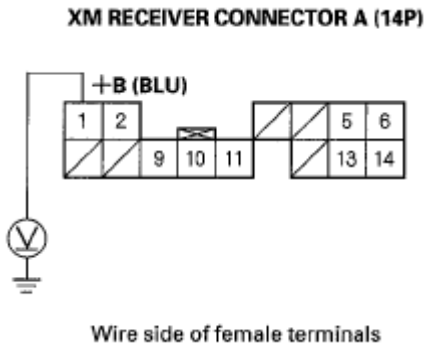


Fig. 121: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 7.

NO -Repair open in the wire between the under-dash fuse/relay box and XM receiver connector A (14P) No. 1 terminal.

7. Turn the ignition switch to ON (II).
8. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

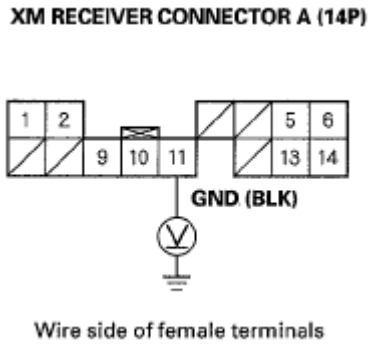


Fig. 122: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Replace the XM receiver (see **SPEAKER REPLACEMENT**).

NO -Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and body ground (G505) .

ERROR CODE: XM NO SIGNAL OR XM ANTENNA IS DISPLAYED

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

- **Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines.**

1. Park vehicle outside with a clear view of the southern horizon.

   Does XM radio receive a signal?

   YES -Reception interference operation is normal.

   NO -Go to step 2.

2. Check XM antenna connector B (2P) at XM receiver.

   Is XM antenna connector B connected?

   YES -Go to step 3.

   NO -Reconnect XM connector B, recheck XM radio operation. If the signal restored, operation is normal. If signal not restored go to step 3.

3. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

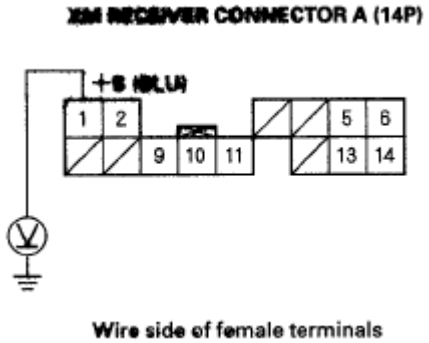


Fig. 123: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there battery voltage?

   YES -Go to step 4.

   NO -Repair open in the wire between navigation unit and XM receiver connector A (14P) No. 1 terminal.

4. Turn the ignition switch to ON (II).
5. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

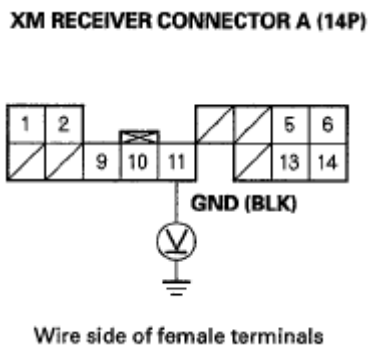


Fig. 124: Measuring Voltage Between XM Receiver A (14P) Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Go to step 6.

NO -Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and body ground (G505) .

6. Substitute known-good XM antenna.

   Does the XM radio receiver a signal?

   YES -Replace XM antenna (see **XM ANTENNA REPLACEMENT**).

   NO -Substitute known-good XM antenna subharness. If XM radio receives signal, replace original XM antenna subharness. If the XM radio does not receive a signal, substitute a known-good XM receiver.

AUDIO DISC DOES NOT EJECT

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.**

1. Turn on the audio system.

   Does the system turn on?

   YES -Go to step 2.

   NO -Go to **POWER SWITCH WILL NOT TURN ON** .

2. Check to see if the disc ejects correctly with no binding by pushing the EJECT button.

   Does the disc eject normally?

YES -Operation is normal.

NO -

- With navigation: Replace navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
- Without navigation: Replace audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

AUDIO DISC DOES NOT LOAD

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.**
- **Make sure the disc is compatible with the system (see the owner's manual for more information).**

1. Insert a known-good disc to see if the symptom can be duplicated.

   Does the disc load?

   YES -Operation is normal. If the disc loads normally, lower case but will not play, go to **AUDIO DISC DOES NOT PLAY** .

   NO -Go to step 2.

2. Insert another disc-Does the disc load?

   YES -The original disc is faulty.

   NO -

   - With navigation: Replace navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

RADIO TUNER DOES NOT CHANGE STATIONS

1. Check the audio information on the display panel.

   Does the audio information display properly?

   YES -Go to step 2.

   NO -Go to **POWER SWITCH WILL NOT TURN ON** .

2. Operate the tuning knob to see if the radio station changes.

Does the radio station change?

YES -Intermittent failure: the tuning knob is OK at this time.

NO -

- With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
- Without navigation: Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

VOLUME DOES NOT CHANGE

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Set the fader and balance positions to the center.**

1. Listen for sound from the speakers.

   Is the sound normal?

   YES -Go to step 2.

   NO -Go to **AUDIO SYSTEM SOUND IS WEAK OR DISTORTED**, or **NO SOUND IS HEARD FROM SPEAKER(S)** .

2. Operate the volume knob to see if the volume changes.

   Does the volume change?

   YES -Operation is normal.

   NO -

   - With navigation: Replace navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

VOLUME DOES NOT INCREASE WITH SPEED

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Verify the SVC mode setting in the navigation or audio unit sound set-up.

   Is the SVC set to off?

   YES -Change the setting to Mid and retest (see **SYSTEM DESCRIPTION**).

NO -Go to step 2.

2. Do the self-diagnostic function for the vehicle speed pulse indication (see **SELF-DIAGNOSTIC FUNCTION**).

   Does the self-diagnostic function indicate a VSP signal?

   YES -Substitute a known-good navigation or audio unit and retest. If the symptom/indication goes away, replace the original navigation or audio unit.

   NO -Go to step 3.

3. Test-drive the vehicle at highway speeds, and monitor if the volume increases.

   Do the volume increase?

   YES -Intermittent failure, the system is OK at this time.

   NO -Go to step 4.

4. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**), or audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**), and disconnect the navigation, or audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit or navigation unit to prevent damaging the CD player's load mechanism.

5. Drive the vehicle, and have an assistant measure voltage at navigation or audio unit connector A (17P) terminal No. 13.

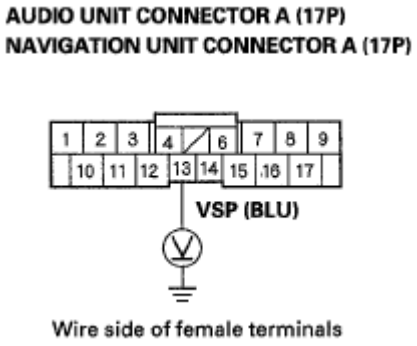


Fig. 125: Measuring Voltage At Navigation Or Audio Unit A (17P) Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there a 0- 5 V Pulse?

YES -

- With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

- Without navigation: Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Repair open or shorts in the wire between the navigation, or audio unit connector A (17P) No. 13 terminal and the ECM/PCM connector A (44P) No. 29 terminal. If no opens or shorts are found, substitute a known-good ECM/PCM and recheck. If the symptom/indication goes away, replace the original ECM/PCM . See **ECM/PCM REPLACEMENT** .

VOLUME IS TOO HIGH OR TOO LOW WHEN DRIVING AT FREEWAY SPEEDS

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Test-drive the vehicle at highway speeds and monitor volume level.

   Is the volume level too high, or too low?

   YES -Go to step 2.

   NO -Intermittent failure, the system is OK at this time.

2. Change the SVC mode setting in sound set-up to Mid (see **SYSTEM DESCRIPTION**).

   Is the volume level still too high, or too low?

   YES -

   - With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

   NO -Improper SVC setting for customers sound taste.

DISPLAY DOES NOT DIM OR BRIGHTEN WITH DIMMER (WITHOUT NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **If the vehicle is equipped with navigation, refer to DISPLAY DAY/NIGHT MODE DOES NOT WORK .**

1. Turn the ignition switch to ON (II).
2. Turn the combination light switch ON and LOCK (0) to see if the symptom can be duplicated.

   Is it duplicated?

   YES -Go to step 3.

NO -Operation is normal.

3. Turn the combination light switch OFF.
4. Operated the illumination control dial.

   Is it normal?

   YES -Operation is normal.

   NO -Go to step 5.

5. Disconnect and check audio unit connector A (17P) for loose or a poor connection.

   NOTE: Eject all the discs before removing the audio unit to prevent the CD player's load mechanism.

   Reconnect audio unit connector A (20P) and recheck the symptom; does it still appear?

   YES -Go to step 6.

   NO -Operation is normal.

6. Turn the ignition switch to LOCK (0).
7. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between audio unit connector A (17P) No. 1 and No. 10 terminals. Operate the dash brightness controller buttons to see if the voltage changes.

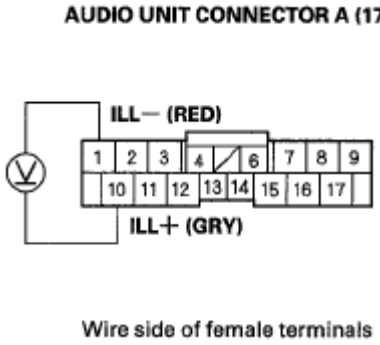


Fig. 126: Measuring Voltage Between Audio Unit A (17P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the voltage change?

YES -Substitute a known-good audio unit, and recheck. If the symptom/indication goes away, replace the original audio unit. If symptom is still present, substitute a known-good center panel display and recheck. If the symptom/indication goes away, replace the original center panel display (see **AUDIO UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the under-dash fuse/relay box and the gauge control module.

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

AUDIO DISC DOES NOT PLAY

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Try loading a known-good disc.

   Does the disc load?

   YES -Go to step 2.

   NO -Go to **AUDIO DISC DOES NOT LOAD** .

2. Insert another known-good disc to see if the symptom can be duplicated.

   Does the disc play?

   YES -Operation is normal.

   NO -Go to step 3.

3. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) in the navigation unit or audio unit.

   Does the disc play?

   YES -The original disc is faulty, or has an unreadable format.

   NO -

   - With navigation: Replace navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

   Special Tools Required

   Diagnostics CD 07AAZ-SDBA100

AUDIO DISC SKIPS

1. Confirm the vehicles tires are properly inflated.
2. Check the customers CD for scratches, fingerprints, and marks.

NOTE: **The following test should be performed with audio unit bass and treble set to customers listening performance. When comparing to known-**

good vehicles, comparison should be performed on same model and trim level.

3. Test drive to identify when the CD skips. The audio diagnostic CD (T/N: 07AAZ-SDBA100) can be used if customers CD is not available. Use tracks 10 to 12.

   Does the CD skip?

   YES -Go to step 4.

   NO -Operation is normal.

4. Compare the customers CD that is skips in a known-good vehicle under the same conditions.

   Does the CD skip in the known-good vehicle under the same conditions?

   YES -Operation is normal.

   NO -Go to step 5.

   NOTE: The following test should be performed with vehicle parked and engine running.

5. Insert the diagnostic skip test CD (T/N: 07AAZ-SDBA300) (ABEX TCD 721). Play tracks 2 to 11 and note the track number(s) where the CD starts skipping. Do the same test on a known-good vehicle.

   Does the CD skip on the same track number(s) as the known-good vehicle?

   YES -Operation is normal.

   NO -Go to step 6.

6. Insert the diagnostic skip test CD (T/N: 07AAZ-SDBA200) (ABEX TCD 725B) play tracks 7 to 11 and tracks 13 to 15 and note the track number(s) where the CD starts skipping. Perform the same test on a known-good vehicle.

   Does the CD skip on same track number (s) as the known-good vehicle?

   YES -Operation is normal.

   NO -

   - With navigation: Replace navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

AUDIO REMOTE SWITCH DOES NOT WORK PROPERLY

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**

1. Check the audio unit operation.

   Is the audio unit operation OK?

   YES -Go to step 2.

   NO -

   - With navigation: Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
   - Without navigation: Replace the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).
2. Test the audio remote switch (see **AUXILIARY JACK ASSEMBLY REPLACEMENT**).

   Is the audio remote switch OK?

   YES -

   - With navigation: Go to step 3.
   - Without navigation: Go to step 6.

   NO -Replace the audio remote switch.

3. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
4. Measure the resistance between navigation unit connector B (22P) No. 6 and No. 7 terminals as specified in the table.

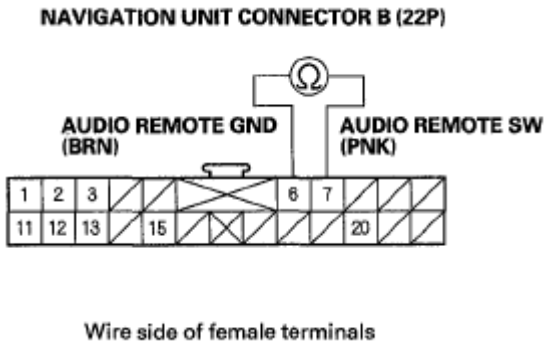


Fig. 127: Measuring Resistance Between Navigation Unit B (22P) Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

AUDIO REMOTE SWITCH TABLE

AUDIO REMOTE SWITCH REFERENCE

Button held down	VOL DOWN	VOL UP	CH (-)	CH (+)	MODE	No button pressed

Resistance	about 100 ohms	about 370 ohms	about 840 ohms	about 2.0 K ohms	about 6.0 K ohms	about 10 k ohms

Is the resistance OK?

YES -Go to step 5.

NO -Repair open or high resistance in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see **CABLE REEL REPLACEMENT**).

5. Check for continuity between the No. 6 and No. 7 terminals of navigation unit connector B (22P) and body ground.

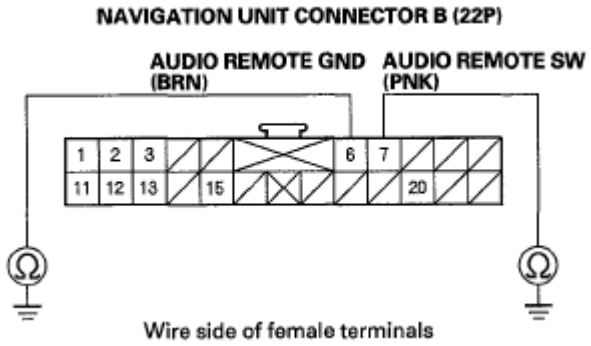


Fig. 128: Checking Continuity Between Navigation Unit B (22P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see **CABLE REEL REPLACEMENT**).

NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

6. Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).
7. Measure the resistance between audio unit connector B (20P) No. 6 and No. 7 terminals as specified in/the table.

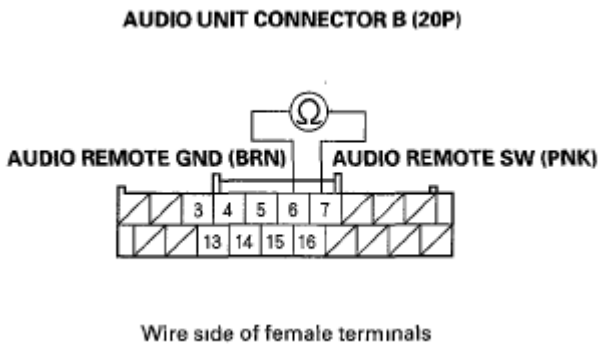


Fig. 129: Measuring Resistance Between Audio Unit B (20P) Connector Terminals

Courtesy of AMERICAN HONDA MOTOR CO., INC.

AUDIO REMOTE SWITCH TABLE

AUDIO REMOTE SWITCH REFERENCE

Button held down	VOL DOWN	VOL UP	CH (-)	CH (+)	MODE	No button pressed
Resistance	about 100 ohms	about 370 ohms	about 840 ohms	about 2.0 K ohms	about 6.0 K ohms	about 10 k ohms

Is the resistance OK?

YES -Go to step 8.

NO -Repair open or high resistance in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see **CABLE REEL REPLACEMENT**).

8. Check for continuity between the No. 6 and No. 7 terminals of the audio unit connector B (20P) and body ground.

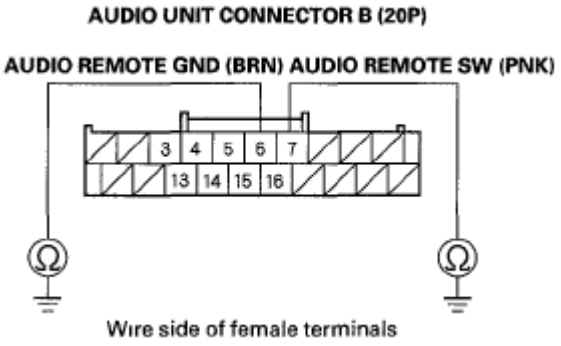


Fig. 130: Checking Continuity Between Audio Unit B (20P) Connector Terminals And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the circuit between audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see **CABLE REEL REPLACEMENT**).

NO -Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

AUDIO DISC CANNOT BE INSERTED AND/OR EJECTED (WITH NAVIGATION)

NOTE:

- **Check the vehicle battery condition first.**
- **Check the connectors for poor connections or loose terminals.**
- **Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.**
- **Make sure the disc is compatible with the system (see the owner's**

manual for more information).

1. Press the OPEN/CLOSE button to open the navigation display.
2. Try inserting an audio CD.

   Does the player accept the CD?

   YES -The system is OK at this time.

   NO -Go to step 3.

3. Press the CD eject button.

   Does the player eject the CD?

   YES -The system is OK at this time.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

PC CARD WILL NOT PLAY/CARD ICON ON AUDIO SCREEN CANNOT BE SELECTED (WITH NAVIGATION)

Unfortunately, there are no error messages and no diagnostics for the PC card. There are many reasons why a card won't play audio files in the audio unit.

- The card may not be fully inserted into the slot. Eject the card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a card. This can result in damage to the pins in the rear of the slot.
- The customer's card may contain audio files that are not recognized by the system. Only MP3 and WMA music files are played.
- The flash card type may not be accepted by the system. Only Compact Flash and ATA cards have been tested.
- The card's PCMCIA adapter may be preventing a known-good card from playing. New PCMCIA adapters are constantly being released and have not been tested.
- The card's capacity may exceed 1 GB. Only cards with capacities of up to 1 GB (1000 MB) have been tested.
- There may not be any files on the card. Some cards have write protection. Make sure it is turned off before putting files on the card.
- Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevent them from playing. The customer should reformat the card using the FAT or FAT32 format.
- The card may have been damaged by heat. Suggest that the customer remove the card when exiting the vehicle.
- The customer may have formatted the card using the format NTFS. Only the formats FAT and FAT32 are accepted by the system.
- Hard Disc Drive (HDD) cards may not work properly in the system and can overheat and quit functioning, particularly in a hot vehicle. They are not recommended.

- The filing structure of the card may exceed the specification of 8 folder levels deep, 99 folders maximum, and 999 total tracks maximum. If any of these limitations are exceeded, the system may not properly display or play the tracks.

NOTE: A delay when first inserting a card is normal. The system is reading the File Tag information for album names, artists, and song titles, and there is no hourglass. The delay length depends on the number of tracks and the complexity of the folder structure. See the audio article for an explanation of the terms used above.

SOUND QUALITY DIAGNOSIS

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Use the following tests to check sound quality.

NOTE: Before beginning the following tests, write down the customer's bass, treble, fader and balance settings, and then set them to their center positions for testing.

LEFT/RIGHT CHANNEL ID

Do this test to confirm proper channel routing.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.
3. The voice should be audible only from the channel or channels when indicated.
   - If the channel ID is correct for each side, go to the **PHASE TEST**.
   - If the channel ID is not correct, check for;
     - Shorted speaker wire
     - Faulty amplifier (with premium sound system)
     - Faulty navigation unit
     - Faulty audio unit

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

PHASE TEST

Do this test to confirm proper speaker phasing.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.

3. The voice should sound centered and focused when it is in-phase.
4. The voice should sound diffused, and have less bass when it is out of phase.
    - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to **ELECTRICAL NOISE TEST**.
    - If the voice always sounds out of phase, phasing is not correct. Check for;
        - Crossed speaker wires
        - Faulty amplifier (with premium sound system)
        - Faulty navigation unit - Faulty audio unit

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

ELECTRICAL NOISE TEST

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be handled by the audio system. Make sure you remove any cell phones and/or turn off any aftermarket device before beginning this test.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.
7. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
    - If no abnormal noise is heard, go to **INDIVIDUAL SPEAKER TEST**.
    - If the noise is present only during the SNR track, replace the navigation unit or audio unit.
    - If the noise is heard during the digital zero or near digital zero track, check for;
        - Poor ground for the audio unit, amplifier, engine or battery cable
        - Pinched or shorted speaker or amplifier wire
        - Faulty amplifier (with premium sound system)
        - Faulty navigation unit
        - Faulty audio unit
        - Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

INDIVIDUAL SPEAKER TEST

Do this test to identify a faulty speaker.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound compared to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the **SOUND BALANCE TEST**.
   - If the sound quality is OK, go to the **SOUND BALANCE TEST**.

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

SOUND BALANCE TEST

Perform this test to identify a faulty channel or speaker.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher then normal, volume level.
4. A static type sound should be heard through all speakers.
5. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.
6. Set the bass and treble to the center position.
7. Play track No. 3 (pink noise) all the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
   - If the noise sounds made by the two vehicles are very similar, go to the **FREQUENCY SWEEP TEST** .
   - If the sound does not have as much bass, check the subwoofer and circuit.
   - If the sound does not have enough hiss, check the tweeters and their circuits.

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

FREQUENCY SWEEP

Do this test to find rattles or reverberation that may cause a perception of poor sound quality.

1. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.

3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
    - If vibrations or poor sound quality are heard, go to step 4.
    - If no vibrations or poor sound quality are heard, go to sound judging.
4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3: this aids in diagnosis of the cause.

    NOTE: When you get to the track that recreates the problem, select the repeat function on the navigation unit or audio unit, this will help you isolate the cause.

5. Replace or insulate the source of the vibrations or, if the speaker is the source of the poor sound quality, replace it.

    Special Tools Required

    Diagnostics CD 07AAZ-SDBA100

SOUND JUDGING

- Do this test to compare overall sound quality, imaging, and dynamics between the customer's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.
- Make sure the vehicle is using only OEM speakers.

1. In the customer's vehicle, set the bass, treble, fader, and balance settings to the customer's normal settings that were written down before beginning testing.
2. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.
4. Listen to areas of the track that stand out as being either very clear, or poorer than other areas of the track.
5. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.
6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the customer's vehicle.
7. Listen to the same area of the track that stood out as being either very clear or poorer than other areas of the track.
8. Compare the customer's vehicle's sound quality results to the known-good vehicle's results.
    - If the sound quality in the customer's vehicle is comparable to the sound quality in the known-good vehicle, then the customer's vehicle is operating as designed.
    - If the sound quality is not comparable, check these items in order.
        - Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
        - Poor power or ground to the stereo amplifier (with premium sound system)

- Damaged speaker(s)
- Faulty amplifier (with premium sound system)
- Faulty navigation unit - Faulty audio unit

SEEK STOP TEST

Do this test to check the performance of the audio unit's AM and FM reception. Refer to **AUDIO UNIT POWER SWITCH WILL NOT TURN OFF (WITHOUT NAVIGATION)** symptom troubleshooting: audio sound weak or distorted, or no sound is heard from speakers (display is normal) before continuing with this test.

NOTE:

- **Window tint, aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.**
- **Changes in cloud cover and other atmosphere conditions will affect the ability of the navigation unit or audio unit to receive radio signals.**

1. Park the customer's vehicle in an open area away from buildings or other obstructions.
2. Park a known-good vehicle (same year, model, and trim level) next to the customer's vehicle, facing the same direction.
3. Start the engine in the customer's vehicle, and turn on the radio.
4. Set the FM receiver to 87.7 MHz.
5. Press the Seek + button and record the first station that the navigation unit or audio unit locks onto.
6. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 5 is reached again.
7. Set the AM receiver to 530 kHz.
8. Press the Seek + button, and record the first station that the navigation unit or audio unit locks onto.
9. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 8 is reached again.
10. Turn the ignition switch to LOCK (0).
11. Start the engine in the known-good vehicle, and then perform steps 4 thru 10 on the known-good vehicle.
12. Compare the number of stations received in steps 6 and 9 in the customer's vehicle with the number of stations received in the known-good vehicle.
    - If the number of stations received is the same, or within 10%, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
    - If the customer's vehicle receives fewer stations by at least 10%, go to step 2 of poor AM or FM radio reception of interference (see **POOR AM OR FM RADIO RECEPTION OR INTERFERENCE (WITH NAVIGATION)**).

AUDIO UNIT REMOVAL/INSTALLATION

WITHOUT NAVIGATION

SRS components are located in this area. Review the SRS component location, 4-door (see **COMPONENT**

LOCATION INDEX), 2-door (see **COMPONENT LOCATION INDEX**).

Also review the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS article before doing repairs or service.

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the dashboard and related parts.**
- **Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.**
- **Do not work in a dusty or dirty place.**
- **Discharge static electricity from your body before and during the work.**
- **Do not touch the circuit board(s) with your bare hands.**
- **Do not work with dirty hands.**
- **Be careful not to fold the flat plate cable.**
- **Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)**
- **Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.**
- **If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.**

1. Make sure you have the anti-theft code for the audio system, then write down the audio presets.
2. Remove the subdisplay visor (see **SUBDISPLAY VISOR REMOVAL/INSTALLATION**).
3. Remove the center pocket hole lid and bolts, then pull out the center panel (A).

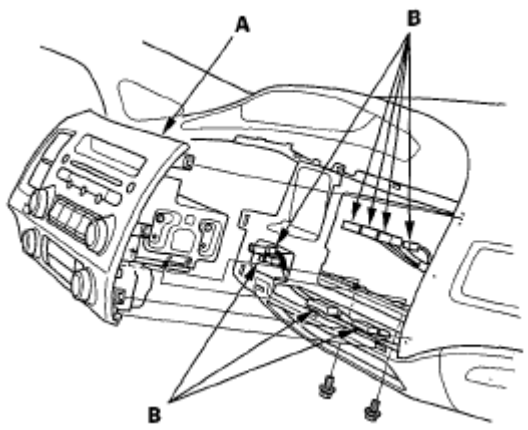


Fig. 131: Identifying Center Pocket Hole Lid And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the connectors (B), then remove the center panel.
5. Remove the bolts, screws and the brackets (A).

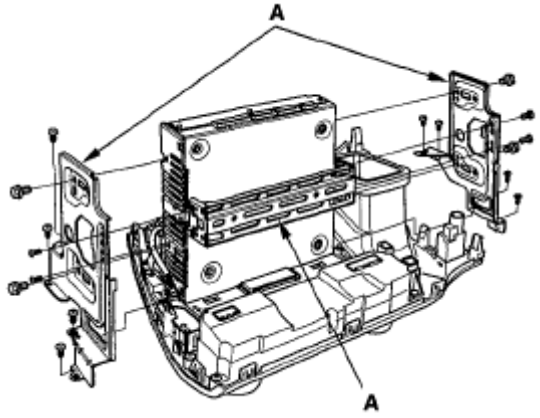


Fig. 132: Identifying Brackets And Bolts, Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the screws, rear covers (A) and the audio unit (B) from the center panel display (C).

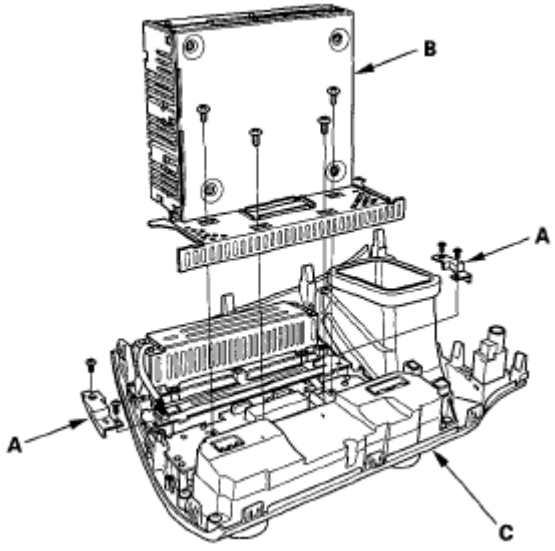


Fig. 133: Identifying Rear Covers And Audio Unit From Center Panel Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the audio unit in the reverse order of removal, and note these items:
   - Make sure all connectors and antenna lead are secure.
   - Enter the anti-theft code for the audio system, then enter the audio presets. Set the clock.

STEREO AMPLIFIER REMOVAL/INSTALLATION

2-DOOR

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Remove the stereo amplifier connectors (A) from the stereo amplifier (B).

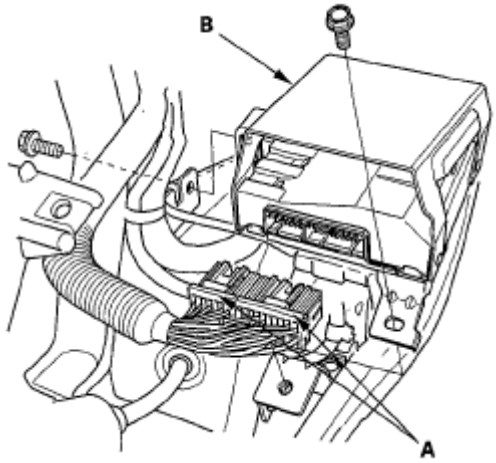


Fig. 134: Identifying Stereo Amplifier Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Loosen the mounting bolt, and remove the mounting bolt, then remove the stereo amplifier.
4. Install the stereo amplifier in the reverse order of removal.

4-DOOR

1. Slide the driver's front seat forward fully.
2. Remove the amplifier cover (A), and connectors (B).

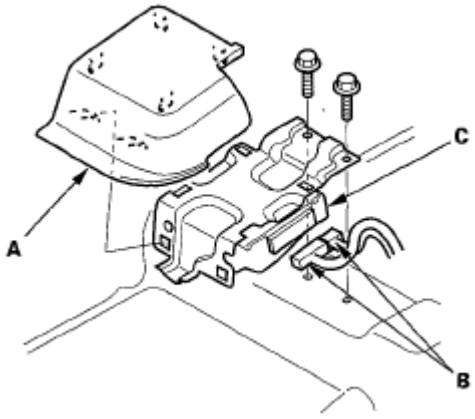


Fig. 135: Identifying Amplifier Cover And Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts and stereo amplifier (C).
4. Install the stereo amplifier in the reverse order of removal.

XM RECEIVER REMOVAL/INSTALLATION

1. Open the trunk lid and remove the right trunk side trim panel (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**).
2. Disconnect the antenna 1P connector (A) and 14P connector (B) from the XM receiver (C).

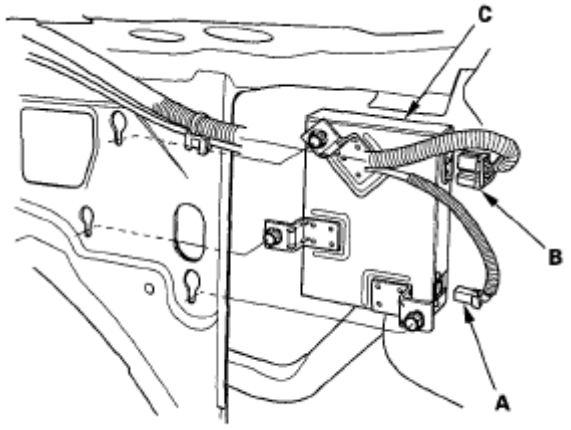


Fig. 136: Identifying Antenna 1P Connector And 14P Connector From XM Receiver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Loosen the three bolts, and remove the XM receiver.
4. Install in the reverse order of removal.

SPEAKER REPLACEMENT

FRONT DOOR SPEAKER

1. Remove the front door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Remove the screw. Then lift the speaker (A) straight up to release the lower clips (B).

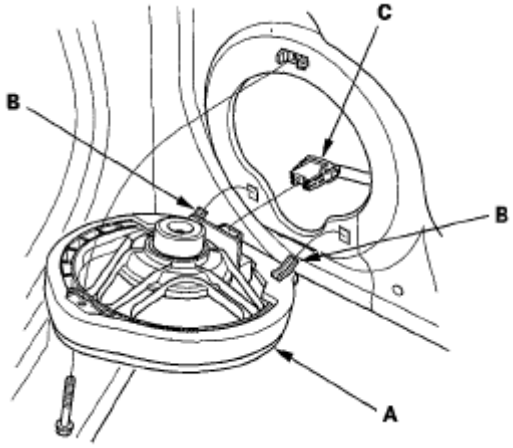


Fig. 137: Identifying Speaker And Lower Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2P connector (C), and remove the speaker.
4. Install the speaker in the reverse order of removal.

TWEETER

1. Carefully pry the tweeter grille (A) out of the dashboard. Be careful not to damage the tweeter grille

and the dashboard.

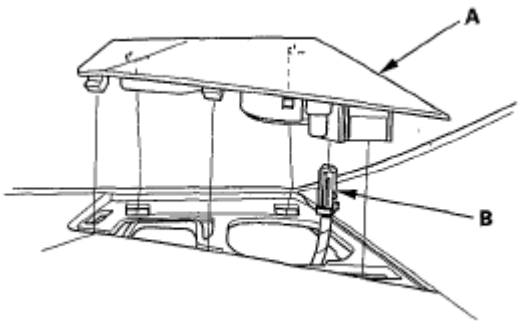


Fig. 138: Identifying Tweeter Grille And Dashboard
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the 2P connector (B) from the tweeter.
3. Remove the tweeter speaker from the speaker grille.

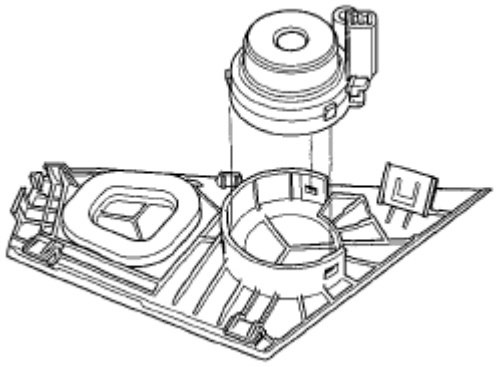


Fig. 139: Identifying Tweeter Speaker From Speaker Grille
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the speaker in the reverse order of removal.

REAR SPEAKER (4-DOOR)

1. Remove the rear speaker grille (A).

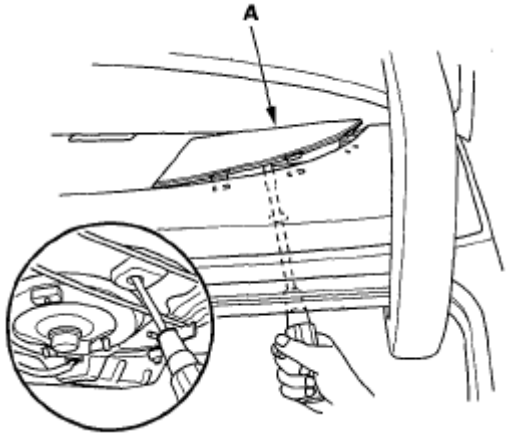


Fig. 140: Identifying Rear Speaker Grille
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the screw. Then lift the speaker (A) straight up to release the clips (B).

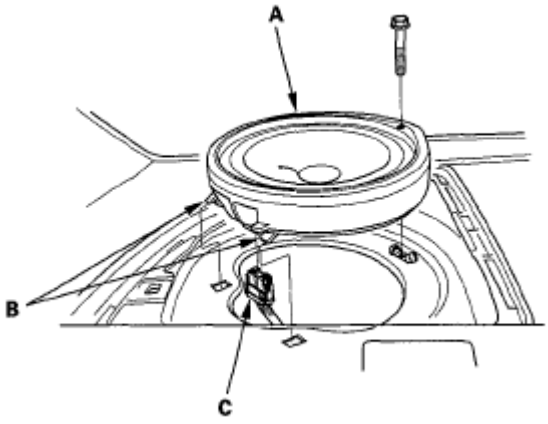


Fig. 141: Identifying Speaker And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2P connector (C), and remove the speaker.
4. Install in the reverse order of removal.

REAR SPEAKER (2-DOOR)

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Remove the screw. Then lift the speaker (A) straight up to release the clips (B).

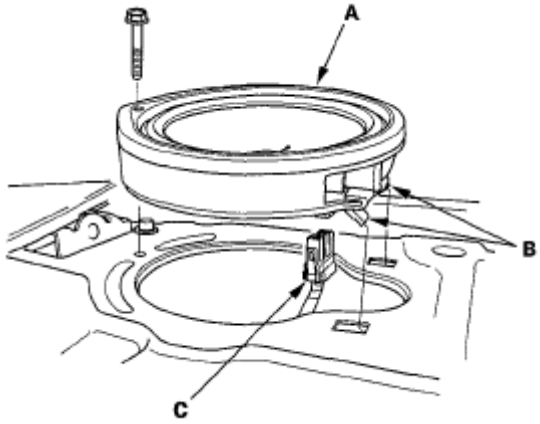


Fig. 142: Identifying Speaker And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2P connector (C), and remove the speaker.
4. Install in the reverse order of removal.

SUBWOOFER

1. Remove the rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**).
2. Remove the four mounting bolts from the subwoofer (A).

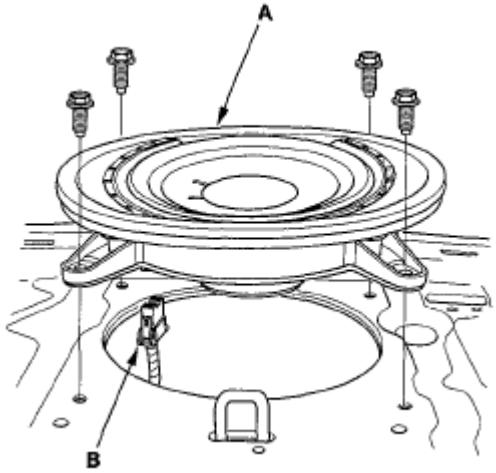


Fig. 143: Identifying Four Mounting Bolts From Subwoofer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2P connector (B), and remove the subwoofer.
4. Install in the reverse order of removal.

AUXILIARY JACK ASSEMBLY REPLACEMENT

1. With navigation: Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   Without navigation: Remove the audio unit (see **AUDIO UNIT REMOVAL/INSTALLATION**).

2. Carefully pull out the auxiliary jack assembly (A), then disconnect the 5P connector (B).

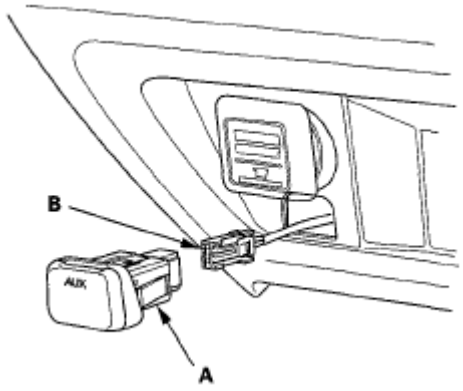


Fig. 144: Identifying Auxiliary Jack Assembly And 5P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install in the reverse order of removal.

AUDIO REMOTE SWITCH TEST

1. Remove the driver's airbag assembly (see **DRIVER'S AIRBAG REPLACEMENT**).
2. Remove the 20P connector (A) from the cable reel (B).

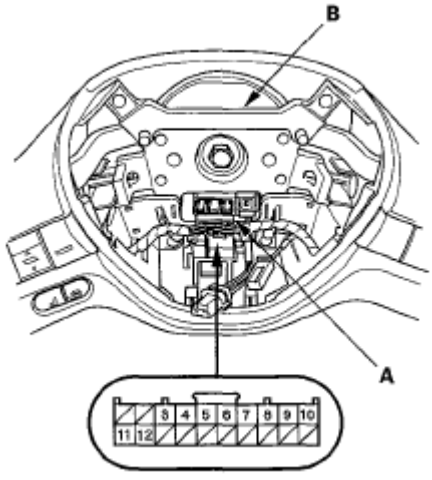


Fig. 145: Identifying 20P Connector From Cable Reel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the resistance between the No. 9 and No. 10 terminals in each switch position according to the table.

RESISTANCE SPECIFICATION

Position	Resistance
No button pressed	About 10 k ohms
MODE	About 6.0 k ohms
CH (+)	About 2.0 k ohms

CH (-)	About 840 ohms
<!-- [utrif] --> (VOL.UP)	About 370 ohms
<!-- [dtrif] --> (VOL.DOWN)	About 100 ohms

4. If the resistance is not as specified, replace the audio remote switch (see **AM/FM ANTENNA AMPLIFIER REPLACEMENT**).

AUDIO REMOTE SWITCH REPLACEMENT

1. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
2. Remove the audio remote switch (see **STEERING WHEEL DISASSEMBLY/REASSEMBLY**).
3. Install the audio remote switch in the reverse order of removal.

AM/FM ANTENNA AMPLIFIER REPLACEMENT

1. Remove the right side C-pillar trim (see **C-PILLAR TRIM - 4-DOOR**).
2. 2-door: Remove the terminal cover (A).

2-door

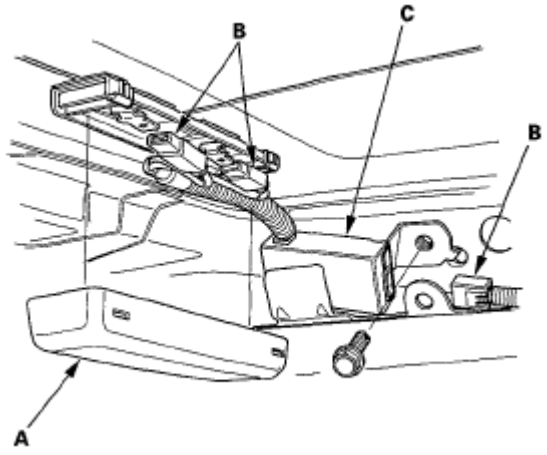


Fig. 146: Identifying AM/FM Antenna Amplifier And Terminal Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the connectors (B) from the AM/FM antenna amplifier (C).

4-door

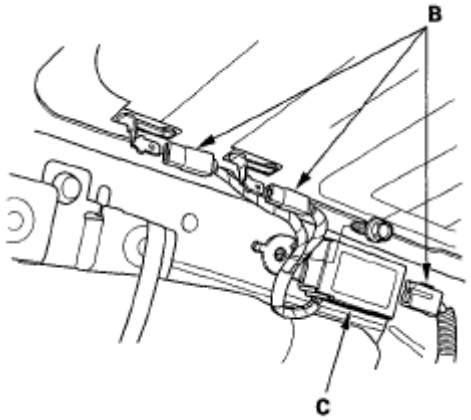


Fig. 147: Identifying AM/FM Antenna Amplifier And Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the bolt and AM/FM antenna amplifier.
5. Install the unit in the reverse order of removal.

XM ANTENNA REPLACEMENT

1. Remove the headliner (see **HEADLINER REMOVAL/INSTALLATION**).
2. Remove the nut (A) from the XM antenna (B).

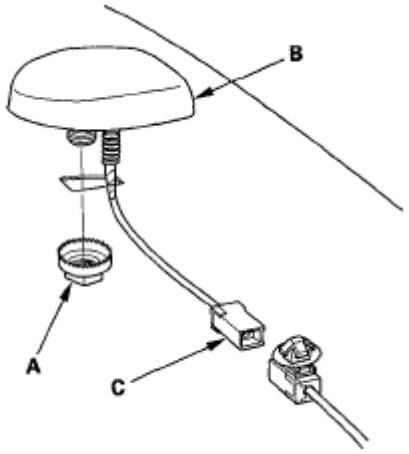


Fig. 148: Identifying XM Antenna And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the connector (C) and remove the XM antenna.
4. Install in the reverse order of removal.

AM/FM ANTENNA REPAIR

NOTE: To make an effective repair, the broken section must not be longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.

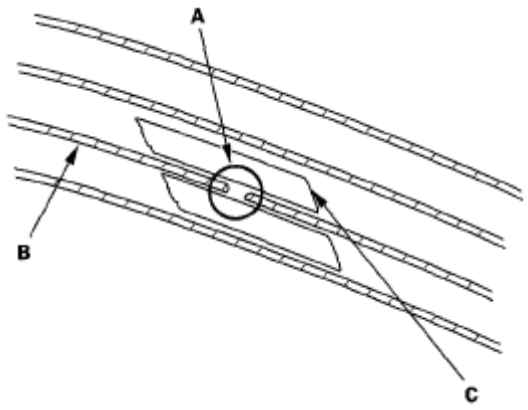


Fig. 149: Identifying Broken Section Around Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Carefully mask above and below the broken portion of the window antenna wire (B) with cellophane tape (C).
3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8" on both sides of the break. Allow 30 minutes to dry.

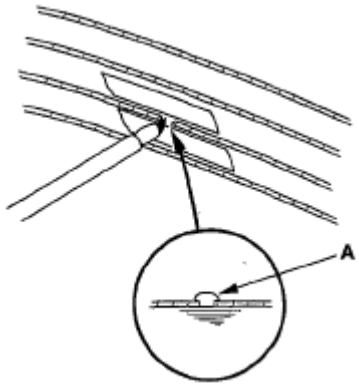


Fig. 150: Applying Heavy Coat Of Paint On Both Sides
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

2006-08 ACCESSORIES & EQUIPMENT

Gauges - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

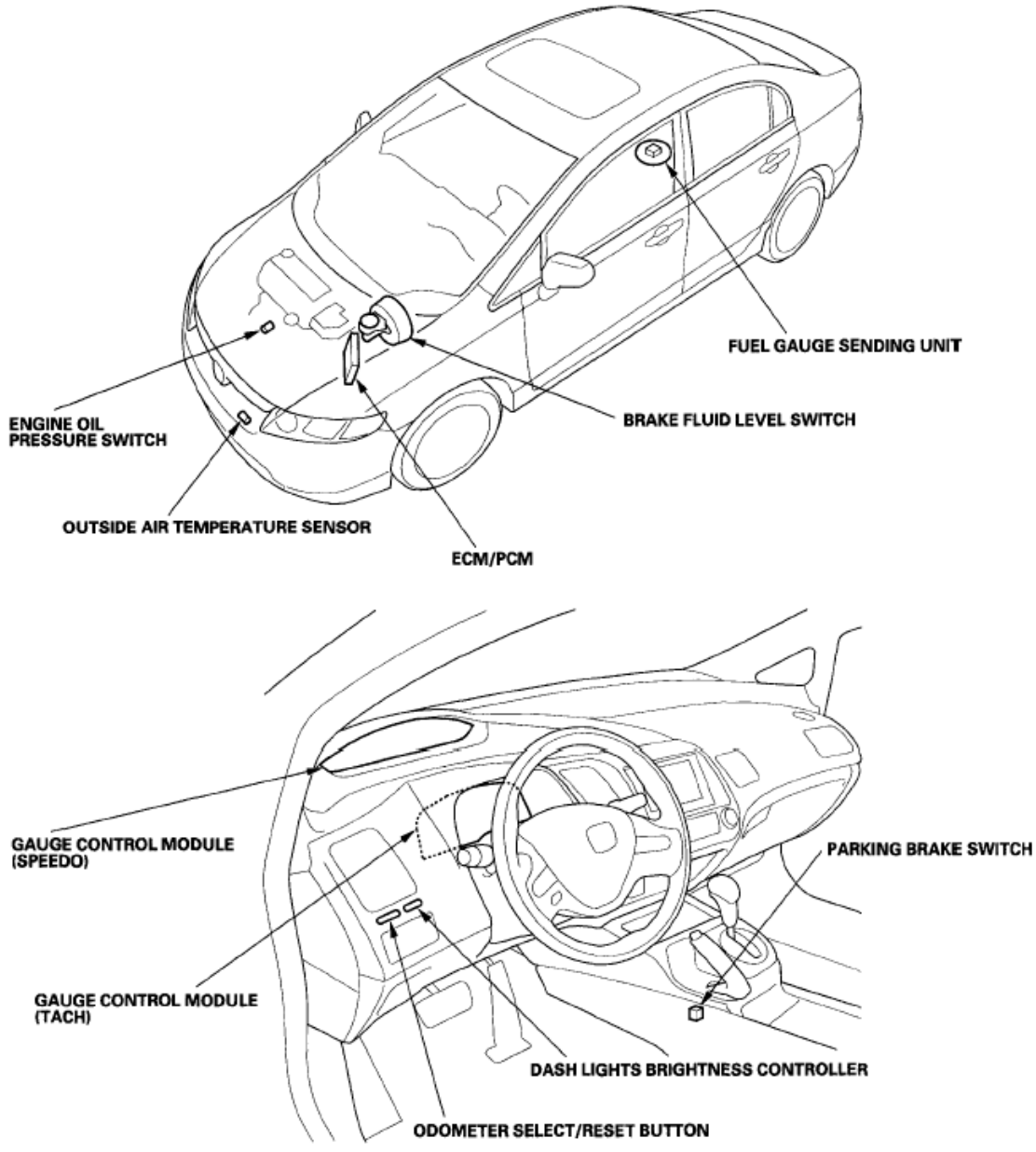


Fig. 1: Locating Gauges Components

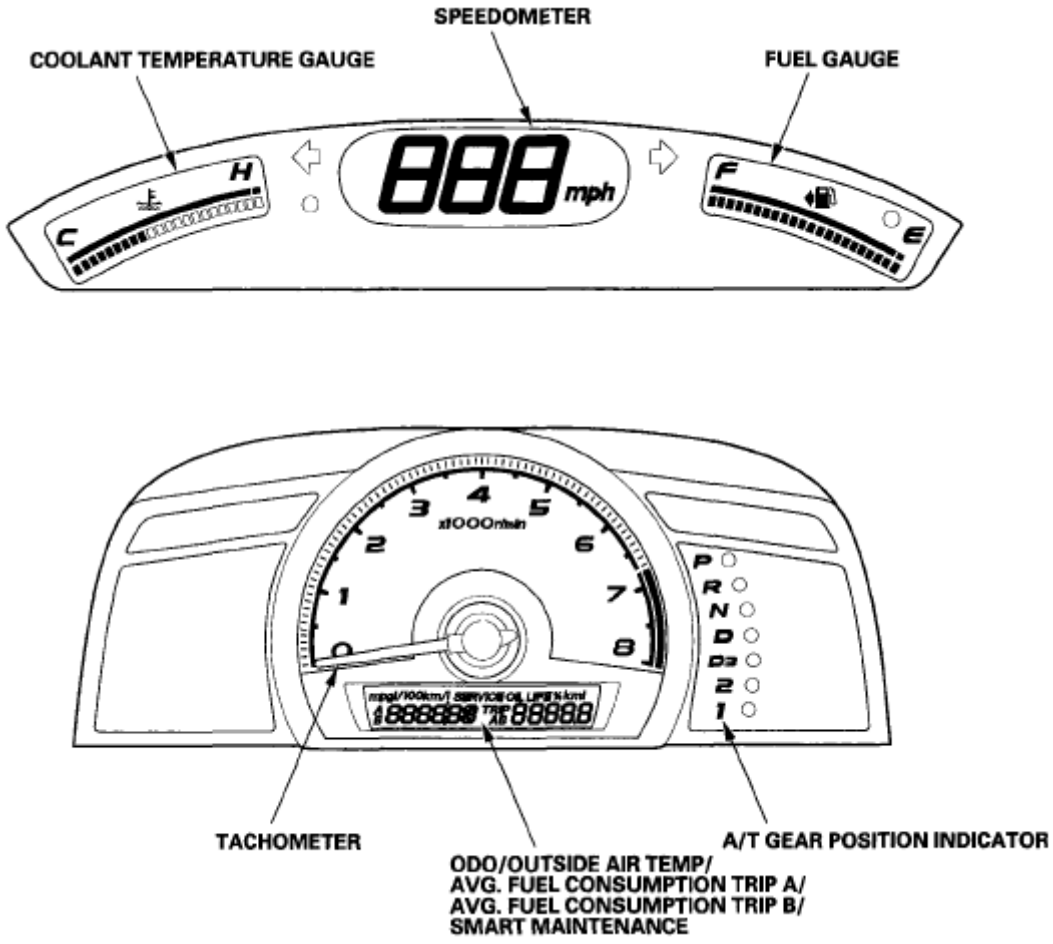


Fig. 2: Identifying Speedometer And Tachometer Components

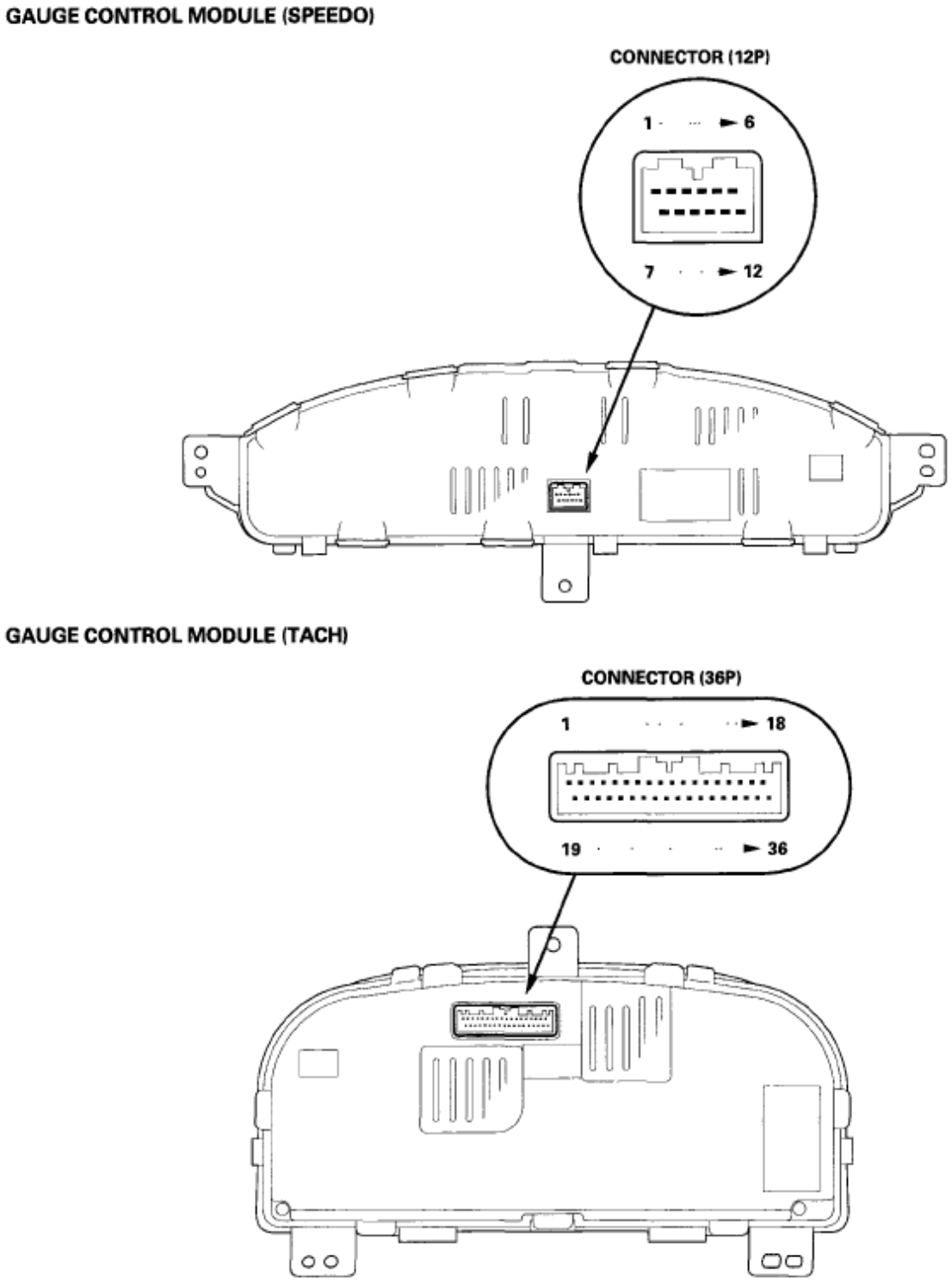


Fig. 3: Identifying Gauge Control Modules

SELF-DIAGNOSTIC FUNCTION

Before troubleshooting the gauge system, refer to multiplex integrated control system B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).

The gauge control module (tach) has a self-diagnostic function shown, and also has a customizable reset function.

- The beeper drive circuit check.
- The indicator drive circuit check.
- The switch input test.
- The LCD segments check.
- 4-door: The gauges drive circuit check (Tachometer, Fuel gauge, Coolant temperature gauge).
- 2-door: The self-diagnostic function does not operate the Fuel gauge and Coolant temperature gauge.
- The communication line check (of the body-controller area network (B-CAN) communication line and the fast-controller area network (F-CAN) communication line between the gauges).

NOTE: Indicators are also controlled via the communication line.

ENTERING THE SELF-DIAGNOSTIC FUNCTION WITH THE HDS

4-door: Using the HDS, select Body Electrical, Gauges, then Function Test and do the self-diagnostic Function.

2-door: Use the manual method.

ENTERING THE SELF-DIAGNOSTIC FUNCTION (MANUAL METHOD)

Before doing the self-diagnostic function, check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box and the No. 23 (10 A) fuse in the under-hood fuse/relay box.

1. Push and hold the SEL/RESET switch button.
2. Turn the headlights ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec, turn the headlights OFF, then ON and OFF again.
5. Within 5 sec, release the SEL/RESET switch button, and then push and release the button three times repeatedly.

NOTE:

- **While in the self-diagnostic mode, the dash lights brightness controller operates normally.**
- **While in the self-diagnostic mode, the SEL/RESET button is used to start the Beeper Drive Circuit Test and the Gauge Drive Circuit Check.**
- **If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnostic mode ends.**

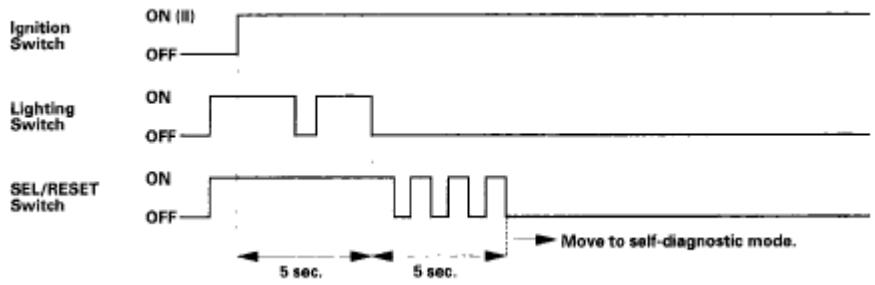


Fig. 4: Self-Diagnostic Function Blinking Pattern

THE INDICATOR DRIVE CIRCUIT CHECK

When entering the self-diagnostic mode, the following indicators blink:

ABS indicator, A/T gear position indicator, brake system indicator, charging system indicator, cruise control indicator, cruise indicator, door indicator, DRL indicator, high beam indicator, immobilizer indicator, lights-on indicator, low fuel indicator, malfunction indicator lamp (MIL), oil pressure indicator, Seat belt indicator, security indicator, side airbag off indicator, smart maintenance indicator, SRS indicator, trunk indicator, and washer fluid level indicator (Canada models).

SWITCH INPUT CHECK

At the initial stage of the self-diagnostic function, the beep sounds intermittently, the beeper sounds continuously when any of the following switch inputs are switched from OFF to ON:

Cruise control master, SET, RESUME, CANCEL switches, SEL/RESET switch, mph-km/h switch, illumination volume (+), (-) switch, parking brake switch, and VSA OFF switch.

THE BEEPER DRIVE CIRCUIT CHECK

When entering the self-diagnostic mode, the beeper sounds five times.

THE LCD SEGMENT CHECK

4-door: When entering the self-diagnostic mode, all the segments blink five times.

2-door: Self-diagnostic function does not operate the Fuel gauge and Coolant temperature gauge.

THE GAUGE DRIVE CIRCUIT CHECK

When entering the self-diagnostic mode, the tachometer, needle sweeps from the minimum position to maximum position, then returns to the minimum position.

NOTE: After the beeper stops sounding and the gauge needle returns to the minimum position, pushing the SEL/RESET switch starts the Beeper Drive Circuit Check (one beep) and the Gauge Drive Circuit Check again.

The check cannot be started again until the gauge needle returns to the minimum position.

The needle sweeps from the minimum position to the maximum position, then return to the minimum position.

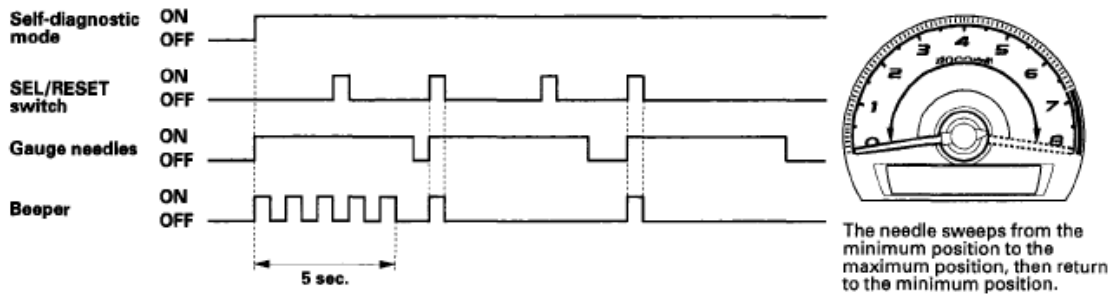


Fig. 5: Checking Gauge Drive Circuit Blinking Pattern

If the needle fails to sweep, or the beeper does not sound, replace the gauge control module (tach).

THE COMMUNICATION LINE CHECK

While in the self-diagnostic mode, the Communication Line Check starts after the LCD Segments Check.

If all segments come on, the communication line is OK. If faulty, the word "Error" will be indicated on the odometer display followed by number(s).

4-DOOR ERROR CODE LIST

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	UART communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and UART communication
Error 23	B-CAN and UART communication
Error 123	F-CAN, B-CAN and UART communication

2-DOOR ERROR CODE LIST

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	F-CAN and B-CAN communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and B-CAN communication
Error 23	F-CAN and B-CAN communication
Error 123	F-CAN and B-CAN communication

Example Indication

Fig. 6: Example Of Indication

- If the word "Error 1" is indicated, there is a malfunction in the communication line between the gauge control module (tach) and the fast-controller area network (F-CAN). Check for DTCs in the ECM/PCM and troubleshoot any DTCs found. If no DTCs are found, go to indicated troubleshooting.
- If the word "Error 2" is indicated, there is a malfunction in the communication line between the gauge control module (tach) and the body-controller area network (B-CAN). Go to troubleshooting **DTC B1155** to **DTC B1160** .
- 4-door: the word "Error 3" is indicated, there is a malfunction in the UART communication line between the gauge control module (tach) and the gauge control module (speedo). Go to **GAUGE CONTROL MODULE (TACH) INPUT TEST** and check the No. 20 terminal . If the wire harness is OK, substitute a known-good gauge control module (speedo) and recheck.

If any F-CAN or B-CAN communication line errors are found, go to DTC check using HDS .

ENDING THE SELF-DIAGNOSTIC FUNCTION

Turn the ignition switch OFF.

NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnostic function ends.

CIRCUIT DIAGRAM - GAUGE CONTROL MODULE (TACH)

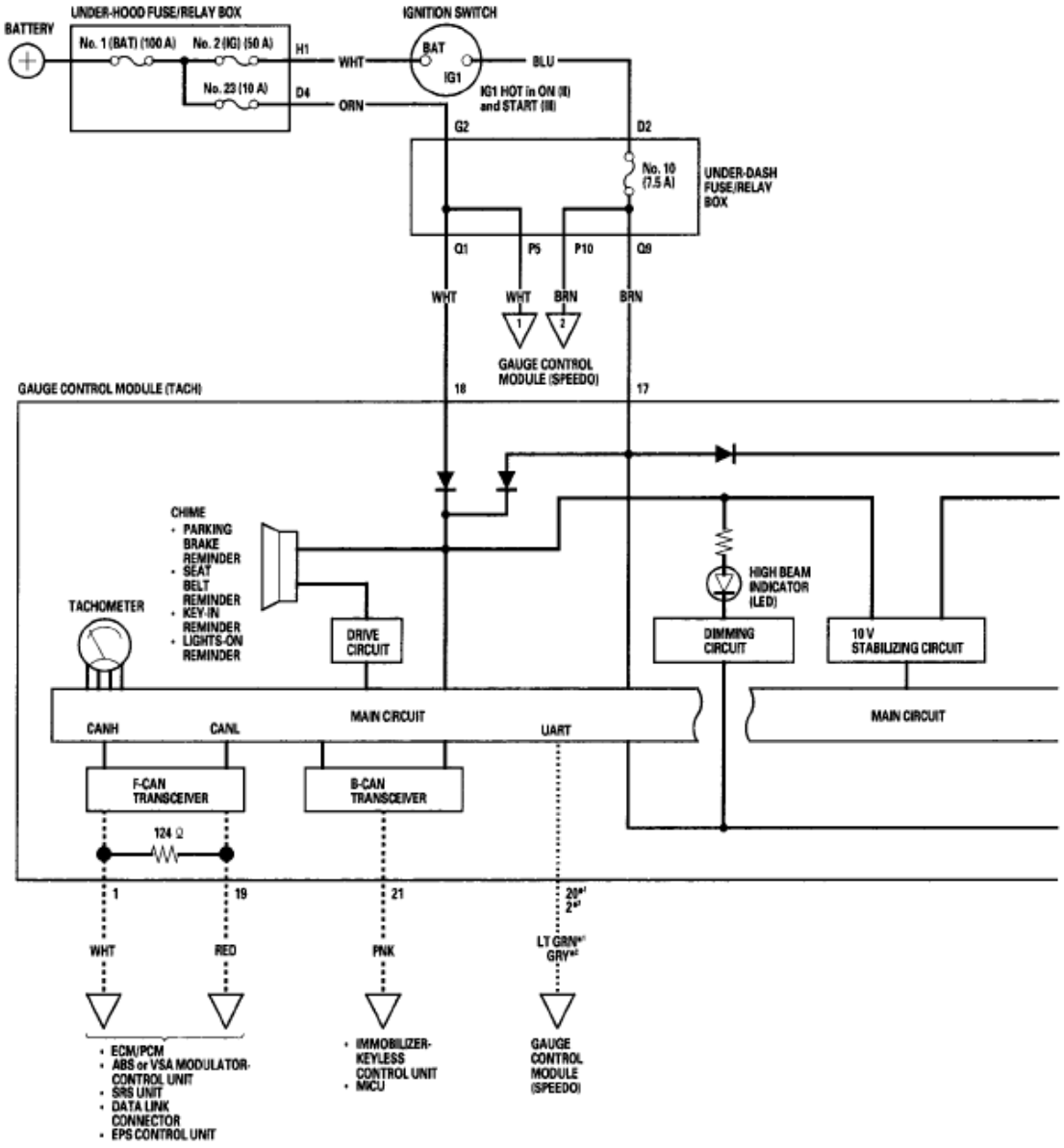


Fig. 7: Circuit Diagram - Gauge Control Module (Tach) (1 Of 5)

*1: 4-door and 2-door (DX, DX-G)
*2: 4-door (SI) and 2-door (LX, EX, SI)
▪▪▪▪▪▪▪▪▪▪ : CAN line
▫▫▫▫▫▫▫▫▫▫ : Other communication line

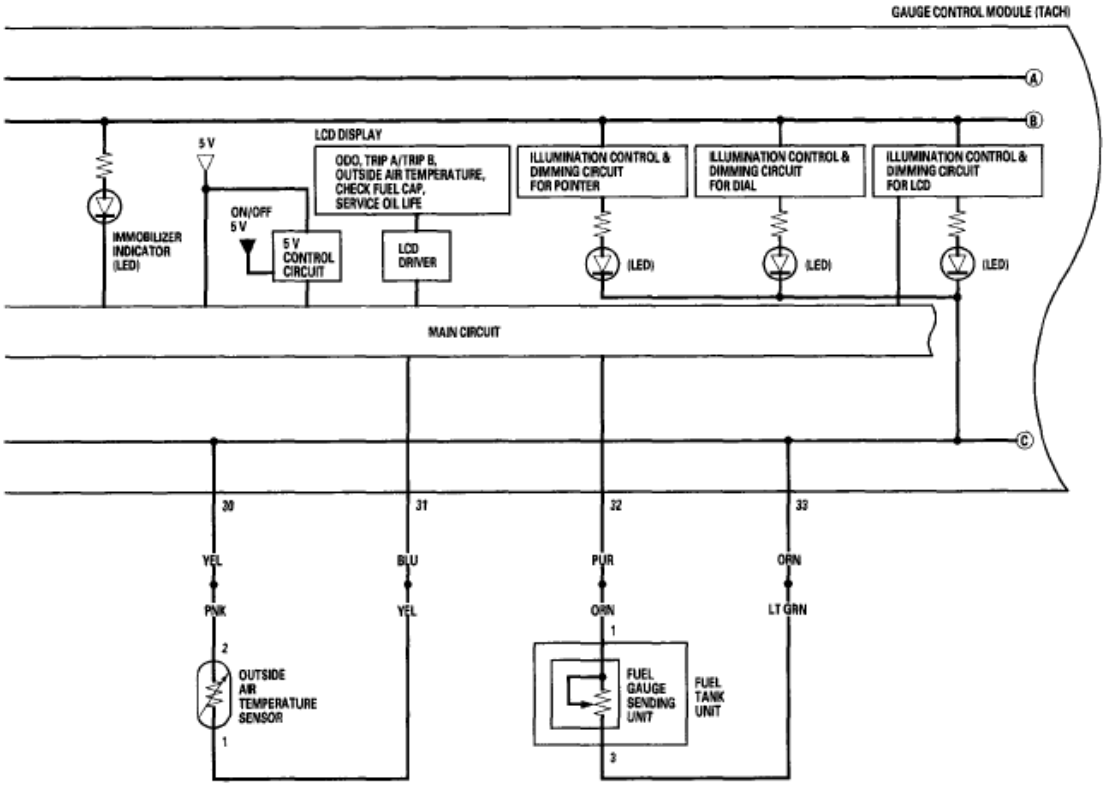


Fig. 8: Circuit Diagram - Gauge Control Module (Tach) (2 Of 5)

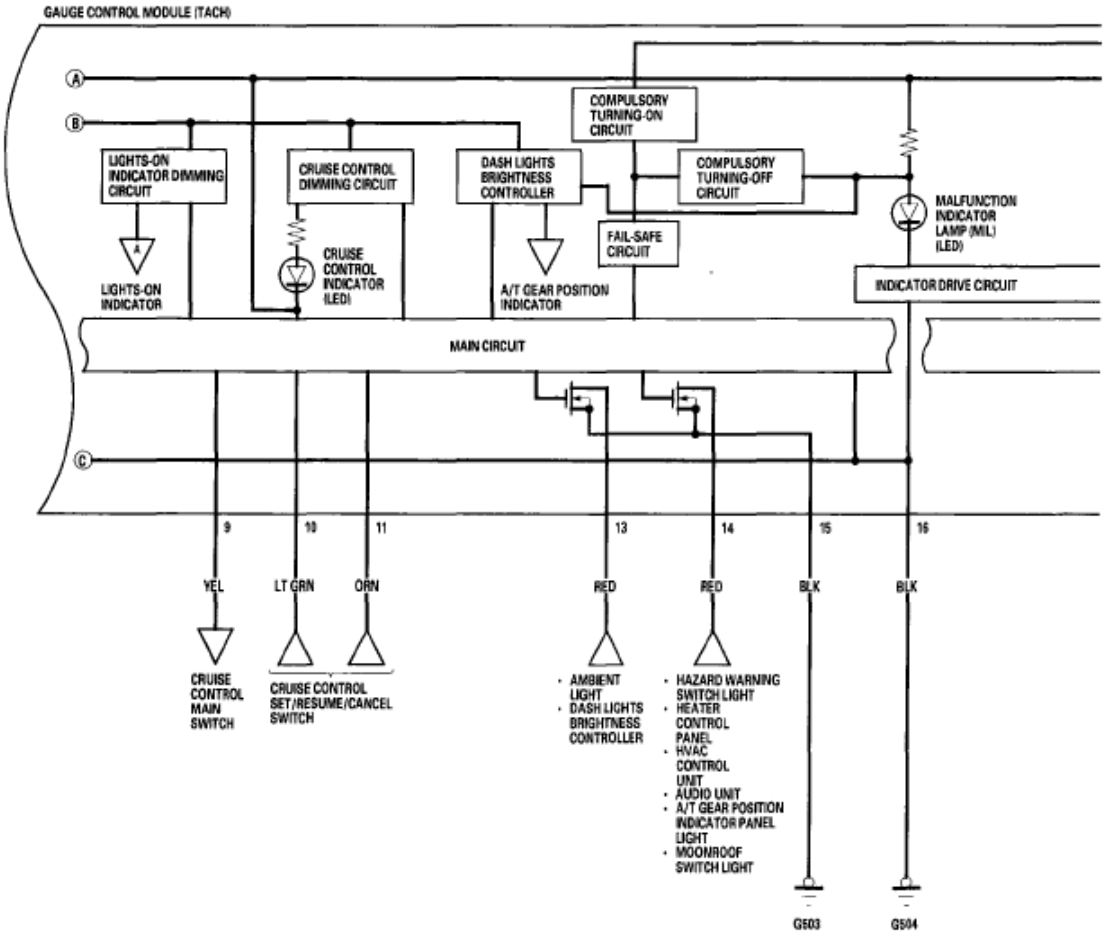


Fig. 9: Circuit Diagram - Gauge Control Module (Tach) (3 Of 5)

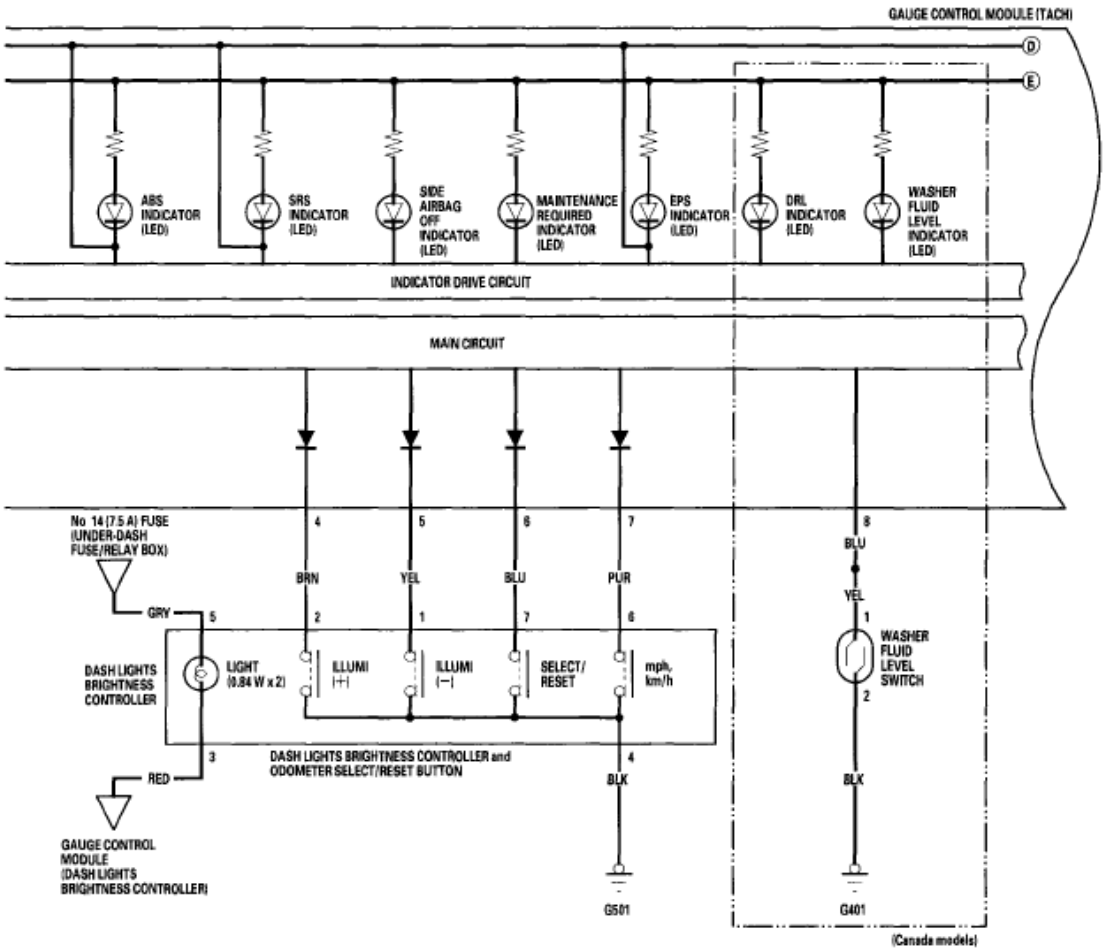


Fig. 10: Circuit Diagram - Gauge Control Module (Tach) (4 Of 5)

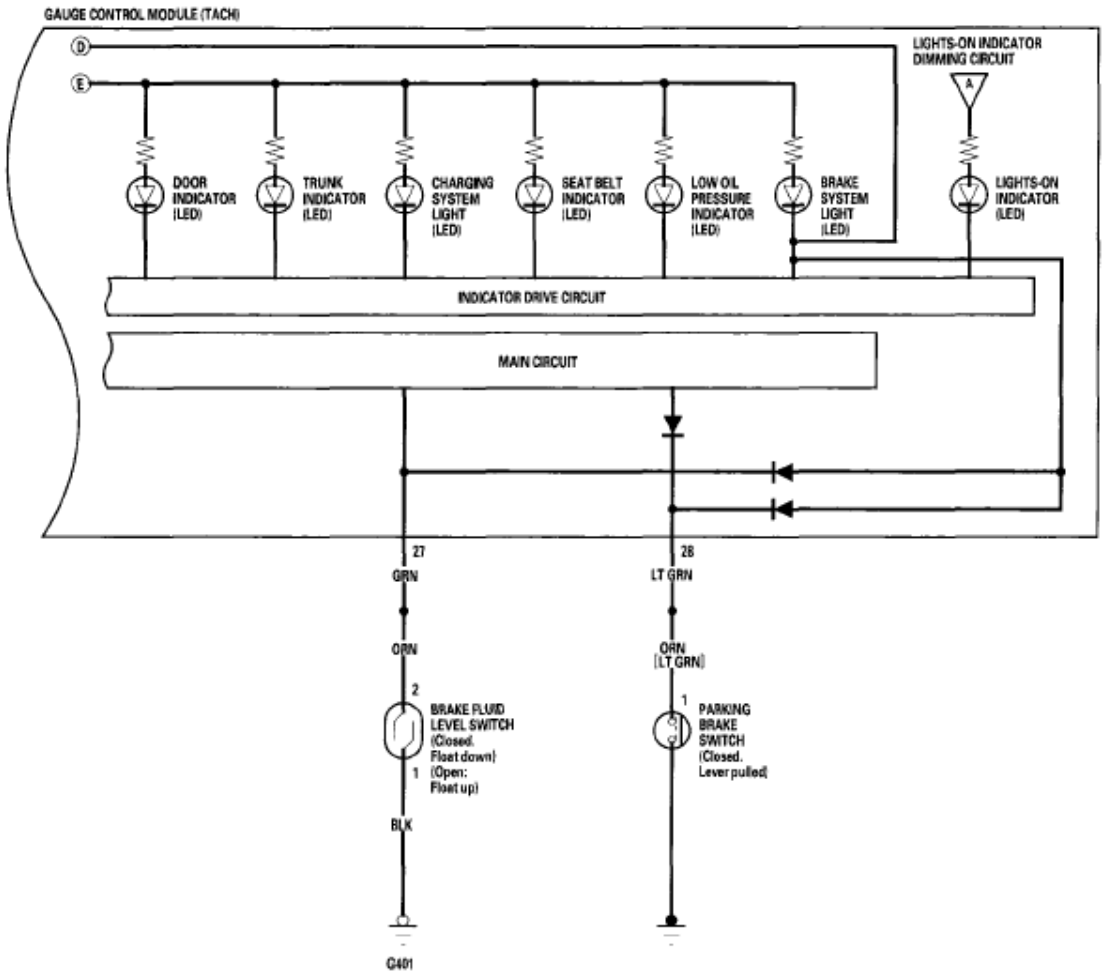


Fig. 11: Circuit Diagram - Gauge Control Module (Tach) (5 Of 5)

CIRCUIT DIAGRAM - DASH LIGHTS BRIGHTNESS CONTROLLER

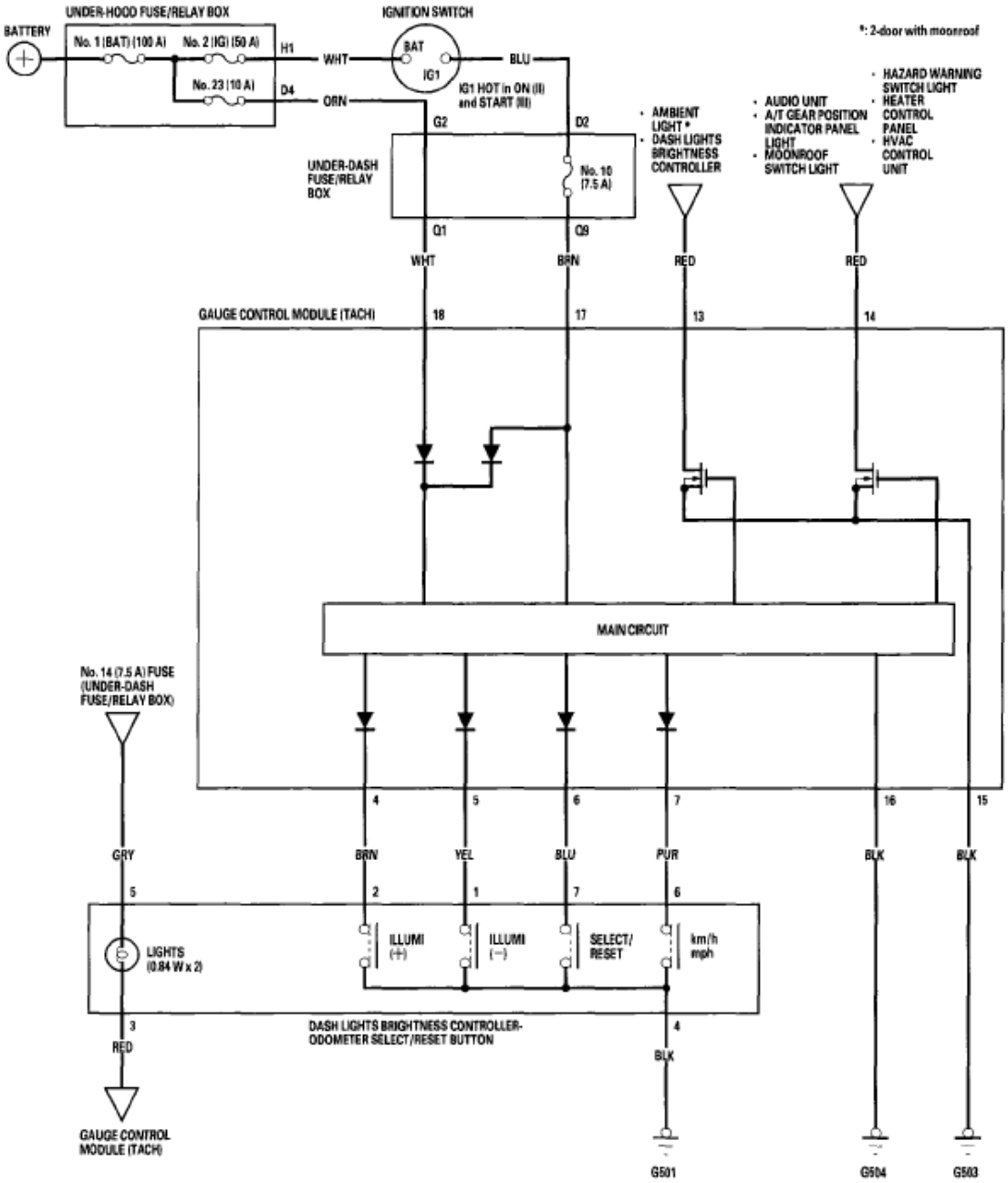


Fig. 12: Circuit Diagram - Dash Lights Brightness Controller

CIRCUIT DIAGRAM - GAUGE CONTROL MODULE (SPEEDO)

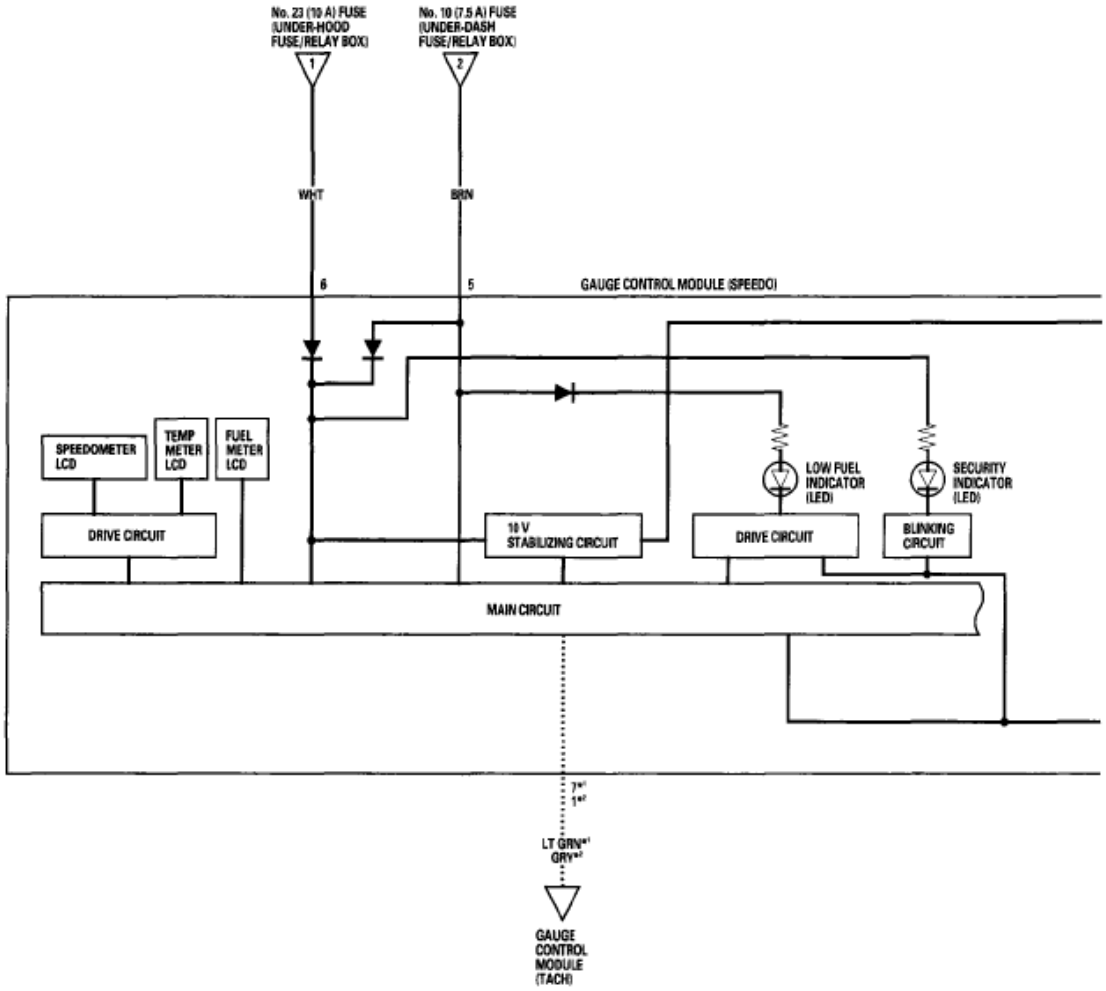


Fig. 13: Circuit Diagram - Gauge Control Module (Speedo) (1 Of 2)

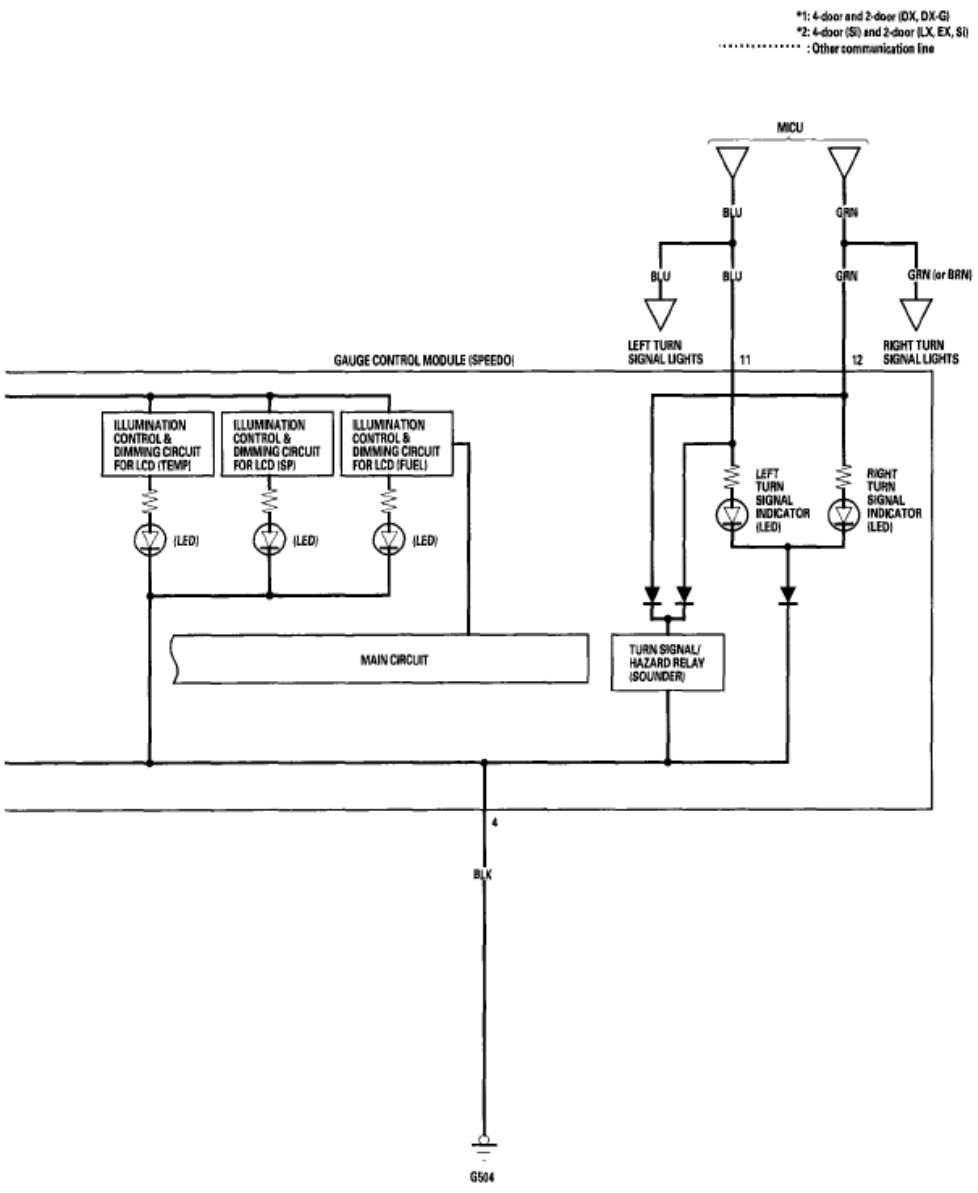


Fig. 14: Circuit Diagram - Gauge Control Module (Speedo) (2 Of 2)

DTC TROUBLESHOOTING

DTC B1152: GAUGE CONTROL MODULE (EEPROM) ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

Is DTC B1152 indicated?

YES - Replace the gauge control module (tach).

NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**), and the charging system.

DTC B1155: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (HEADLIGHT SWITCH MESSAGE); DTC B1156: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (WIPER SWITCH MESSAGE); DTC B1159: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (DOOR SW MESSAGE); DTC B1188: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (RM MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Are DTCs B1155, B1156, B1157, B1159, B1160, and/or B1188 indicated?

   YES - Go to step 4.

   NO - Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**), and the charging system.

4. Check for DTCs with the HDS.

   Are DTCs B1155, B1156, B1157, B1159, B1160, and/or B1188 indicated?

   YES - Faulty MICU; replace the under-dash fuse/relay box (see **UNDER-DASH FUSE/RELAY BOX**).

   NO - Replace the gauge control module (tach) (see **REPLACEMENT**).

DTC B1157: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (MICU MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1157 indicated?

YES - Go to step 5.

NO - Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**), and the charging system.

4. Check for DTCs with the HDS.

   Are DTCs B1905 or B1211 also indicated?

   YES - Faulty MICU; replace the under-dash fuse/relay box.

   NO - Replace the gauge control module (tach).

DTC B1160: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE MICU (DRLOCKSW MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1160 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**), and the charging system.

4. Check for DTCs with the HDS.

   Are DTCs B1160 or B1905 also indicated?

   YES - Faulty MICU; replace the under-dash fuse/relay box.

   NO - Replace the gauge control module (tach).

DTC B1168: GAUGE CONTROL MODULE LOST COMMUNICATION WITH ECM/PCM (ENGINE MESSAGES); DTC B1169: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE PCM (A/T MESSAGES); DTC B1170: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE ABS/VSA MODULATOR-CONTROL UNIT (ABS/VSA MESSAGE); DTC B1178: F-CAN COMMUNICATION LINE ERROR; DTC B1187: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE SRS UNIT (SRS MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions

in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs with the HDS.

   Is DTC B1168, B1169, B1170, B1178, and/or B1187 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see **BATTERY TEST**), and the charging system.

5. Check for DTCs in the ECM/PCM or ABS/VSA.

   Are any DTCs indicated?

   YES - Troubleshoot the ECM/PCM or ABS/VSA.

   NO - Go to step 6.

6. Do the Gauge Control Module Input Test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

   Are all inputs OK?

   YES - Go to step 7.

   NO - Repair the faulty input then recheck for DTCs.

7. Substitute a known-good gauge control module (tach).
8. Clear the DTCs with the HDS.
9. Turn the ignition switch OFF, and then back ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs with the HDS.

    Is DTC B1168, B1169, B1170, B1178, and/or B1187 indicated?

    YES - Substitute a known-good ECM/PCM and retest. If the system/indication goes away, replace the original ECM/PCM.

    NO - The original gauge control module (tach) is faulty; replace the gauge control module (tach) (see **TACHOMETER**).

DTC B1173: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE TPMS

CONTROL UNIT (TPMS MESSAGE)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1173 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections.

5. Turn the ignition switch OFF.
6. Disconnect the gauge control module (tach) 36P connector.
7. Disconnect the TPMS control unit 20P connector.
8. Check for continuity between the gauge control module (tach) 36P connector No. 1 and No. 19 and TPMS control unit 20P connector No. 2 and No. 11 terminals individually.

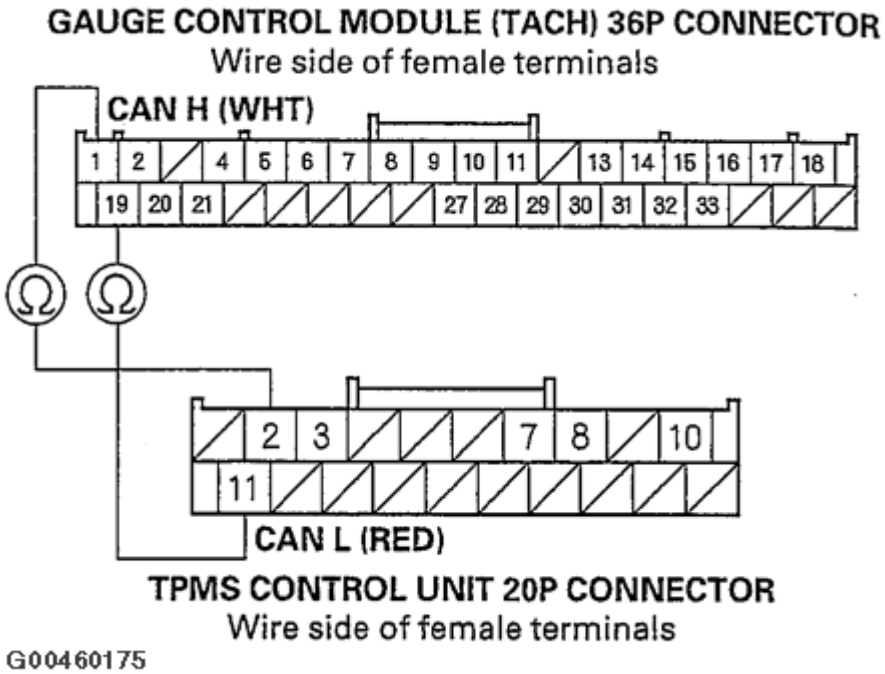


Fig. 15: Checking Continuity Between Gauge Control Module & TPMS Control Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Substitute a known-good TPMS control unit and recheck. If DTC B1183 is still indicated, replace the gauge control module (tach).

NO - Repair an open in the wire.

DTC B1175: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT OPEN

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 30 seconds.
4. Check for DTCs with the HDS.

Is DTC B1175 indicated ?

YES - Go to step 5.

NO - Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections.

5. Turn the ignition switch OFF.
6. Disconnect the fuel tank unit 5P connector and the gauge control module (tach) 36P connector.
7. Connect the fuel tank unit 4P connector No. 1 and No. 3 terminals and body ground with jumper wires.

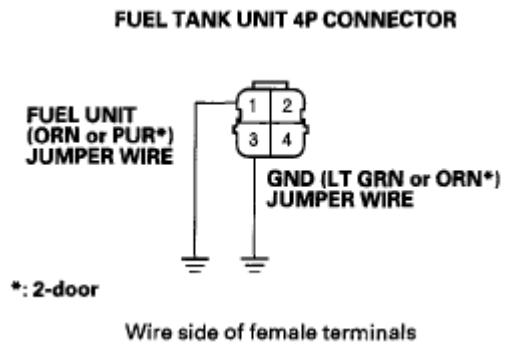


Fig. 16: Connecting Fuel Tank Unit 4P Connector No. 1 And No. 3 Terminals And Body Ground With Jumper Wires

8. Check for continuity between gauge control module (tach) 36P connector No. 32 and No. 33 terminals and body ground individually.

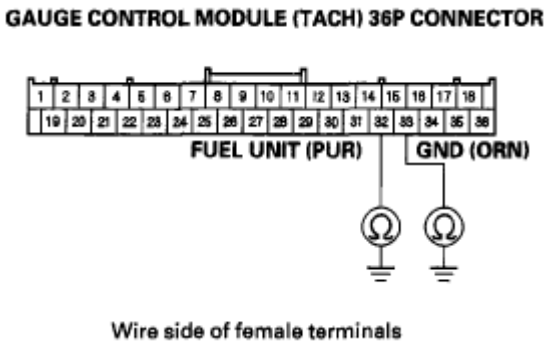


Fig. 17: Checking Continuity Between Gauge Control Module (Tach) 36P Connector No. 32 And No. 33 Terminals And Body Ground

Is there continuity?

YES - Go to step 9.

NO - Repair an open in the wire between the gauge control module (tach) and the fuel tank unit.

9. Do the fuel gauge sending unit test (see **FUEL GAUGE SENDING UNIT TEST** for R18A1 engine or **FUEL GAUGE SENDING UNIT TEST** for R20Z3 engine) .

   Is the fuel gauge sending unit OK?

   YES - Replace the gauge control module (tach).

   NO - Replace the fuel tank unit.

DTC B1176: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT SHORT

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 30 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1176 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections.

5. Turn the ignition switch OFF.
6. Disconnect the fuel tank unit 4P connector.

7. Clear the DTCs with the HDS.
8. Turn the ignition switch OFF, and then back ON (II).
9. Wait for 30 seconds.
10. Check for DTCs with the HDS.

    Is DTC B1176 indicated?

    YES - Go to step 11.

    NO - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT** for R18A1 engine or **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT** for R20Z3 engine).

11. Disconnect the gauge control module (tach) 36P connector.
12. Check for continuity between the gauge control module (tach) 36P connector No. 32 terminal and body ground.

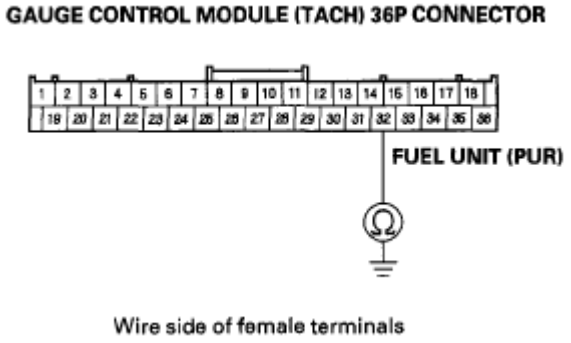


Fig. 18: Checking Continuity Between Gauge Control Module (Tach) 36P Connector No. 32 Terminal And Body Ground

Are there continuity?

YES - Repair a short in the wire between the gauge control module (tach) and the fuel tank unit.

NO - Replace the gauge control module (tach).

DTC B1177: BATTERY VOLTAGE ABNORMAL

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

    Is DTC B1177 indicated?

YES - Go to step 8.

NO - Go to step 4.

4. Clear the DTCs with the HDS.
5. Turn the ignition switch OFF, and then back ON (II).
6. Crank the engine.
7. Check for DTCs with the HDS.

   Is DTC B1177 indicated?

   YES - Go to step 8.

   NO - Intermittent failure. The gauge control module (tach) and power supply voltage (IG1) that is supplied to the gauge control module (tach) are OK at this time. The battery may have been discharged, and recovered.

8. Check the battery (see **BATTERY TEST**) and the charging system.

   Is the battery condition normal and the charging system OK?

   YES - Go to step 9.

   NO - The battery needs a recharge or replacement, or the charging system needs to repaired.

9. Turn the ignition switch ON (II).
10. With the gauge control module (tach) 36P connector still connected, check for voltage between the body ground and the gauge control module (tach) 36P connector No. 17 terminal.

    Is the voltage above 7.5 V?

    YES - Replace the gauge control module (tach).

    NO - Repair an open or high resistance in the BRN wire between the ignition switch and the gauge control module (tach).

DTC B1183: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE EPS CONTROL UNIT (EPS MESSAGE)

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1183 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The gauge control module (tach) is OK at this time. Check for loose or poor

connections.

5. Check for DTCs with the HDS.

   Are DTCs B1168, B1169, B1178, and B1187 and indicated at the same time?

   YES - Troubleshoot DTC B1178.

   NO - Go to step 6.

6. Check for EPS DTCs with the HDS.

   Are any DTCs indicated?

   YES - Go to the indicated DTC troubleshooting , then recheck.

   NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Disconnect the gauge control module (tach) 36P connector.
9. Disconnect the EPS control unit 20P connector.
10. Check for continuity between the gauge control module (tach) 36P connector No. 1 and No. 19 and EPS control unit 28P connector No. 1 and No. 15 terminals individually.

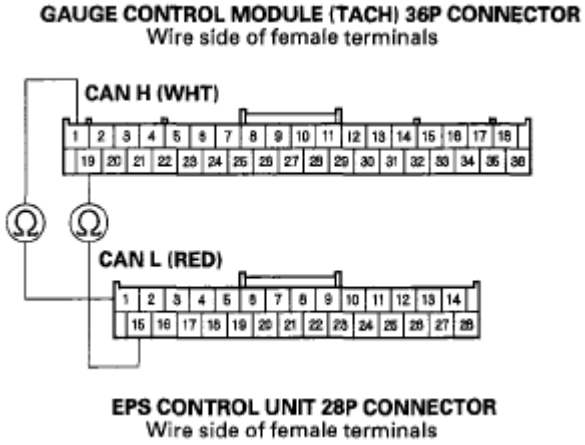


Fig. 19: Checking Continuity Between Gauge Control Module (Tach) 36P Connector No. 1 And No. 19 And EPS Control Unit 28P Connector No. 1 And No. 15 Terminals

Are there continuity?

YES - Substitute a known-good EPS control unit and recheck. If DTC B1183 is still indicated, replace the gauge control module (tach).

NO - Repair an open in the wire.

GAUGE CONTROL MODULE (TACH) INPUT TEST

NOTE: Before testing, do the gauge control module self-diagnosis procedure, and make sure the B-CAN communication line is OK.

1. Turn the ignition switch OFF.
2. Remove the gauge control module (tach) and disconnect the 36P connector from it (see **TACHOMETER**).

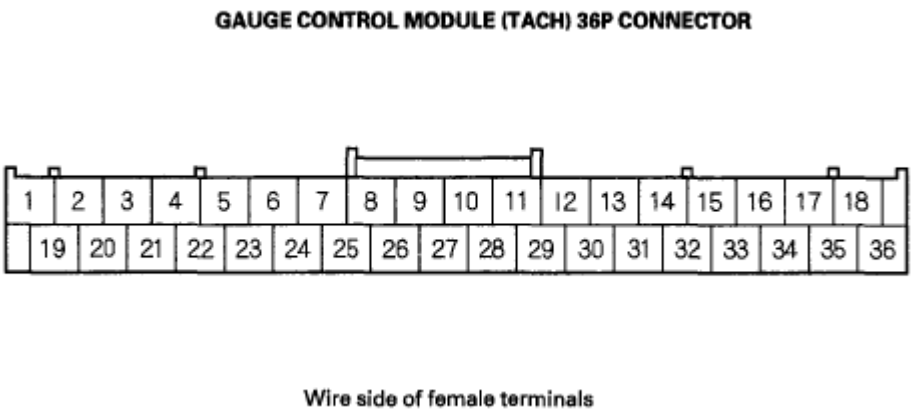


Fig. 20: Identifying Gauge Control Module (Tach) 36P Connector

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 4.
4. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

GAUGE CONTROL MODULE (TACH) INPUT TEST (CONNECTOR DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
20 [2]	LT GRN [GRY]	Under all conditions (disconnect the gauge control module (speedo) 12P connector)	Check for continuity between the No. 20 terminal and gauge control module (speedo) 12P connector No. 7 terminal: There should be continuity.	An open in the wire
			Check for continuity: There should be no continuity.	A short to ground in the wire
13	RED [BLU]	Combination light switch ON	Attach to ground: The illuminations of the steering wheel switches come on full bright.	• Faulty LEDs • An open in the wire
		Combination light	Attach to ground: The illuminations of the dash lights, the	• Faulty LEDs

14	RED	switch ON	audio unit, and the heater control panel/HVAC control unit lights come on full bright.	• An open in the wire
[ ] :2-door				

5. Reconnect the connector to the gauge control module (tach), and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the gauge control module (tach) must be faulty; replace it.

GAUGE CONTROL MODULE (TACH) INPUT TEST (CONNECTOR RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
15	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground(G503) • An open in the wire
16	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G504) • An open in the wire
17	BRN	Ignition switch ON (ID	Check for voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
18	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
4	BRN	Ignition switch ON (II), ILLUMI (+) switch pressed	Check for voltage to ground: There should be less than 1 V.	• Poor ground(G501) • Faulty dash light brightness controller • An open in the wire
		Ignition switch ON (II), ILLUMI (+) switch released	Check for voltage to ground: There should be 5 V or more.	• Faulty dash light brightness controller • A short to ground in the wire
5	YEL	Ignition switch ON (II), ILLUMI (-) switch pressed	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty dash light brightness controller • An open in the wire
			Check for voltage	• Faulty dash light

		Ignition switch ON (II), ILLUMI (-) switch released	to ground: There should be 5 V or more.	brightness controller • A short to ground in the wire
6	BLU	Ignition switch ON (II), SELECT/RESET switch pressed	Check for voltage to ground: There should be less than 1 V.	• Poor ground(G501) • Faulty dash light brightness controller • An open in the wire
		Ignition switch ON (II), SELECT/RESET switch released	Check for voltage to ground: There should be 5 V or more.	• Faulty dash light brightness controller • A short to ground in the wire
7	PUR	Ignition switch ON (II), mph, km/h switch pressed	Check for voltage to ground: There should be less than 1 V.	• Poor ground(G501) • Faulty dash light brightness controller • An open in the wire
		Ignition switch ON (II), mph, km/h switch released	Check for voltage to ground: There should be 5 V or more.	• Faulty dash light brightness controller • A short to ground in the wire
8 (Canada models)	BLU	Ignition switch ON (II), washer fluid is half or more in the washer reservoir	Check for voltage to ground: There should be less than 1 V.	• Poor ground(G401) • Faulty washer fluid level switch • An open in the wire
		Ignition switch ON (II), washer fluid is empty in the washer reservoir	Check for voltage to ground: There should be 5 V or more.	• Faulty washer fluid level switch • A short to ground in the wire
27	GRN	Ignition switch ON (II), brake fluid is full level in the reservoir	Check for voltage to ground: There should be 5 V or more.	• Faulty brake fluid level switch • A short to ground in the wire
		Ignition switch ON (II), brake fluid is lower level in the reservoir	Check for voltage to ground: There should be less than 1 V.	• Poor ground(G401) • Faulty brake fluid level switch • An open in the wire
28	LT GRN	Ignition switch ON (II), parking brake lever pulled	Check for voltage to ground: There should be less than 1 V.	• Faulty parking brake switch • An open in the wire
		Ignition switch ON (II), parking brake lever released	Check for voltage to ground: There should be 5 V or more.	• Faulty parking brake switch • A short to ground in the wire

GAUGE CONTROL MODULE (SPEEDO) INPUT TEST

NOTE: Before testing, do the gauge control module self-diagnosis procedure, and make sure the B-CAN communication line is OK.

1. Turn the ignition switch OFF.
2. Remove the gauge control module (SPEEDO) and disconnect the 12P connector from it (see **SPEEDOMETER**).

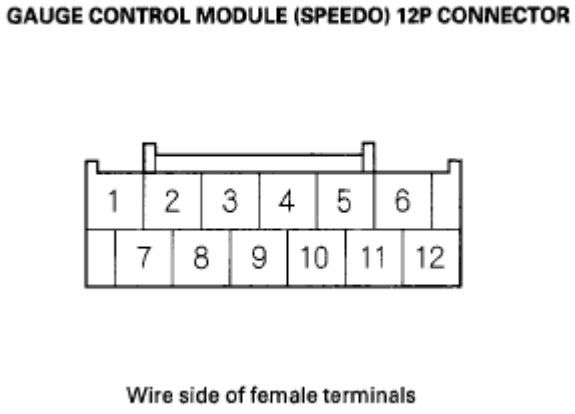


Fig. 21: Identifying Gauge Control Module (Speedo) 12P Connector

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 4.
4. With the connector still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

GAUGE CONTROL MODULE (SPEEDO) INPUT TEST (CONNECTOR DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
11	BLU	Ignition switch ON, turn signal switch in LEFT	Check for voltage to ground: There should be battery voltage when the lights are flashing.	• Faulty MICU • Faulty combination light switch • An open in the wire
12	GRN	Ignition switch ON, turn signal switch in RIGHT	Check for voltage to ground: There should be battery voltage when the lights are flashing.	• Faulty MICU • Faulty combination light switch • An open in the

				wire
7	LT GRN	Under all conditions (disconnect the gauge control module (tach) 36P connector)	Check for continuity between the No. 7 terminal and gauge control module (tach) 36P connector No. 20 terminal: There should be continuity.	An open in the wire
			Check for continuity between the No. 7 terminal and body ground (gauge control module (tach) 36P connector disconnected): There should be no continuity.	A short ground in the wire

5. Reconnect the connector to the gauge control module (speedo), and make the input test at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input test proves OK, the gauge control module (speedo) must be faulty; replace it.

GAUGE CONTROL MODULE (SPEEDO) INPUT TEST (CONNECTOR RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
5	BRN	Ignition switch ON (ID	Check for voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
4	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground(G504) • An open in the wire

REPLACEMENT

TACHOMETER

1. Remove the subdisplay visor assembly (see **SUBDISPLAY VISOR REMOVAL/INSTALLATION**).
2. Remove the three screws from the gauge control module (tach) (A).

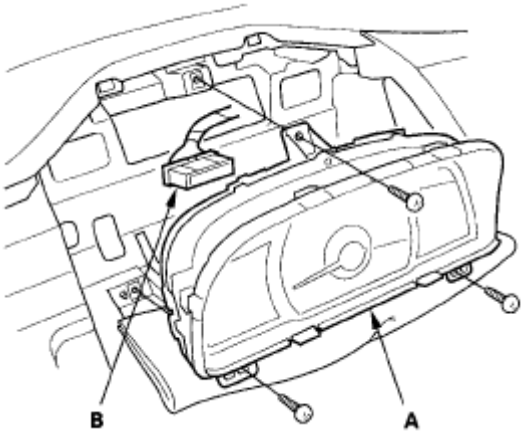


Fig. 22: Removing Gauge Control Module Screws (Tach)

3. Disconnect the 36P connector (B) from the gauge control module (tach).
4. Install the gauge in the reverse order of removal.

SPEEDOMETER

1. Remove the instrument panel (see **INSTRUMENT PANEL REMOVAL/INSTALLATION** .
2. Remove the three screws from the gauge control module (speedo) (A).

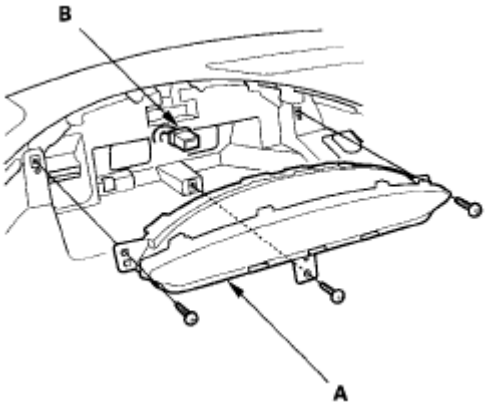


Fig. 23: Removing Gauge Control Module Screws (Speedo)

3. Disconnect the 12P connector (B) from the gauge control module (speedo).
4. Install the gauge in the reverse order of removal.

REWRITING THE ODO DATA AND TRANSFERRING SMART MAINTENANCE ON A NEW GAUGE CONTROL MODULE

NOTE:

- **Obtain a new gauge control module before starting the rewriting process.**
- **Rewriting is not possible on a gauge control module that will not communicate with the HDS.**
- **Make sure that the HDS shows the correct VIN for the car you are**

working on.

- **One you have started this procedure, you must complete it before removing the HDS from the DLC.**
- **Connect a battery jump box (not a Battery charger) to insure that correct battery voltage will be maintained.**

1. Before replacing the gauge control module, connect the HDS.
2. Select GAUGES from the BODY ELECTRICAL menu display.
3. Select "Gauge Control Module Replacement (ODO rewrite)" from the ADJUSTMENT menu, and follow the instructions on the display to retrieve the ODO value and the Smart Maintenance information.
4. Replace the gauge control module.
5. Follow the instructions on the display to write the new ODO value and Smart maintenance to the new gauge control module. If the data transfer fails, refer to the instructions to release the locked ODO value .

RELEASE LOCKED ODOMETER MILEAGE TO THE ORIGINAL GAUGE CONTROL MODULE

If after you attempt to transfer mileage the odometer has dashes (- - -), garbled, or incorrect value display, do the following Start over. The original gauge control module is going to be unlocked and restored to its original state.

1. Confirm that you have the latest HDS version of software.
2. Make sure that the HDS shows the correct VIN for the car you are working on.
3. With the ignition switch OFF, reconnect the original gauge assembly.
4. Completely re-boot the HDS.
5. Clear any stored DTCs.
6. Navigate to Body Electric/Gauges/Adjustment/Instrument Panel Replacement.
7. Select "3. Releasing Locked ODO Valve".
8. Follow the prompts and the Odometer mileage will be restored.
9. Start over and make sure the screen prompts are followed.

DASH LIGHTS BRIGHTNESS CONTROLLER AND ODOMETER SELECT/RESET BUTTON TEST/REPLACEMENT

1. Remove the subdisplay visor (see **SUBDISPLAY VISOR REMOVAL/INSTALLATION**) and disconnect the connectors.
2. Remove the two screws and the dash lights brightness controller-odometer select/reset button (A).

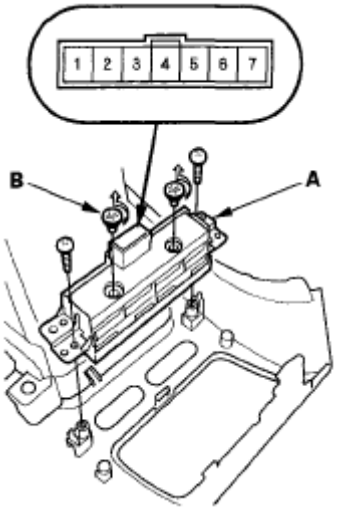


Fig. 24: Removing Dash Lights Brightness Controller-Odometer Select/Reset Button

3. Check for continuity between the terminals in each switch position according **Fig. 25** .

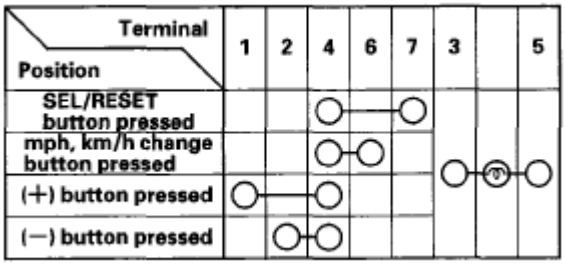


Fig. 25: Checking Continuity Between Dash Light Brightness Controller And Odometer Select/Reset Button Terminals Chart

4. If the continuity is not as specified, replace the bulbs (B) or the dash lights brightness controller-odometer select/reset button.

OUTSIDE AIR TEMPERATURE INDICATOR CALIBRATION

DESCRIPTION

The outside temperature sensor is located behind the center of the front bumper. The gauge control module (tach) uses measurements from this sensor to display the outside air temperature.

Because of the location of the sensor, it may be affected by heat reflection from the road, engine and radiator heat or hot exhaust from surrounding traffic. These conditions can heat soak the outside air temperature sensor and cause inaccurate readings. Logic has been written into the gauge control module (tach) to help prevent abnormal or fluctuating outside air temperature indicator readings.

OUTSIDE AIR TEMPERATURE INDICATOR LOGIC

Initial outside air temperature indication after the ignition switch is turned ON (II).

- If the engine coolant temperature is 140°F (60°C) or higher when the ignition switch is turned ON

(II), the outside air temperature indicated the last time the key was turned off will be displayed regardless of the current temperature measured by the outside air temperature sensor.

- If the engine coolant temperature is 139°F (59°C) or lower when the ignition switch is turned ON (II), the current temperature measured by the outside air temperature sensor will be indicated.

UPDATE TO THE OUTSIDE AIR TEMPERATURE INDICATOR WHILE DRIVING

If the temperature measured by the outside air temperature sensor is greater than the temperature on the outside air temperature indicator, the outside temperature indicator will increase by 1.8°F (1°C) per minute after the vehicle speed is greater than 19 mph (30 km/h) for more than 1 minute and 30 seconds. It will continue to increase until the current outside air temperature is indicated. So, the first change to the outside air temperature indicator is 1 minute and 30 seconds after the vehicle speed is greater than 19 mph (30 km/h). If the vehicle speed drops below 19 mph (30 km/h), the indicator will not update again until the vehicle speed is increased to 19 mph (30 km/h) or more for more than 1 minute and 30 seconds again. If the outside air temperature is less than the indicated temperature, the temperature will decrease 1°F every 1.1 seconds (1°C every 2 seconds) until the current outside air temperature is indicated regardless of vehicle speed.

TROUBLESHOOTING

If the indicator displays "- - -" for more than 2 seconds after selecting the outside air temperature display mode, check the outside air temperature sensor, or gauge control module self-diagnosis (see **SELF-DIAGNOSTIC FUNCTION**).

CALIBRATION

The outside air temperature indicator's displayed temperature can be recalibrated ±5°F (or ±3°C) to meet the customer's expectations.

1. Turn the ignition switch ON (II).
2. Select the outside air temperature display.
3. Press and hold the SEL/RESET switch until the trip meter resets, then release it. Press, and continue to hold, the switch again, and the display will scroll through temperature settings from +5°F to -5°F (or +3°C to -3°C) as shown.

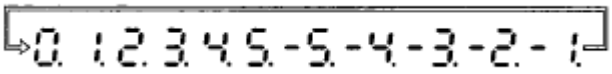


Fig. 26: Resetting Trip Meter

4. When the desired correction value appears on the display, release the button, and the recalibrated outside air temperature will be displayed.

   Example:

   Incorrect value = 68°F (20 °C)
   Desired correction value = +2°F (+1°C)
   Correct valve = 70°F (21°C)
   Desired correction value = -2°F (-1°C)

Correct valve = 66°F (19°C)

NOTE: The recalibration temperature is not the value the sensor sees. Therefore the temperature can only be adjusted ±5 degrees from the sensor.

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.

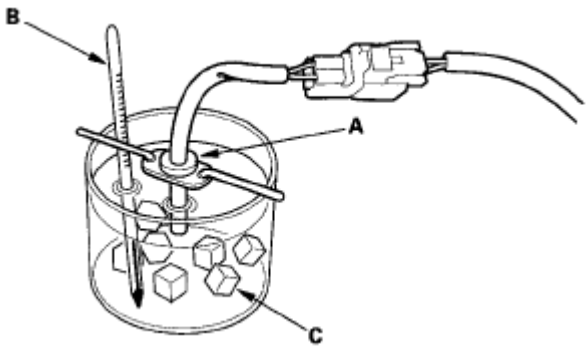


Fig. 27: Submerging Sensor And Thermometer In Container Of Ice Water

OUTSIDE AIR TEMPERATURE SENSOR TEST

1. Remove the outside air temperature sensor (see **OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT**).
2. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in **Fig. 28** ; the resistance should be within the specifications.

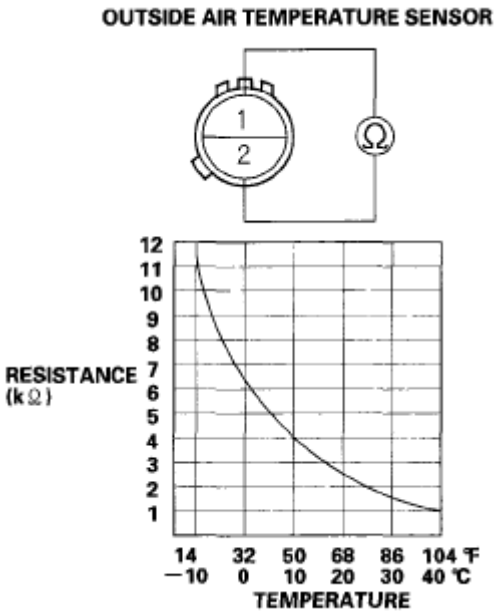


Fig. 28: Outside Air Temperature Sensor Graph

4. If the resistance is not as specified, replace the outside air temperature sensor (see **OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT**).

OUTSIDE AIR TEMPERATURE SENSOR REPLACEMENT

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the receiver/dryer desiccant bracket [from the A/C condenser].

   [ ] :2-door

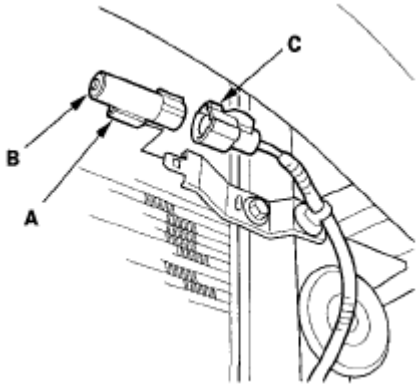


Fig. 29: Removing Outside Air Temperature Sensor

3. Install the sensor in the reverse order of removal.

2006-09 ACCESSORIES AND EQUIPMENT

Reminder Systems - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: Refer to the REMINDER SYSTEMS (GX) (SUPPLEMENT) article for additional information for the GX model.

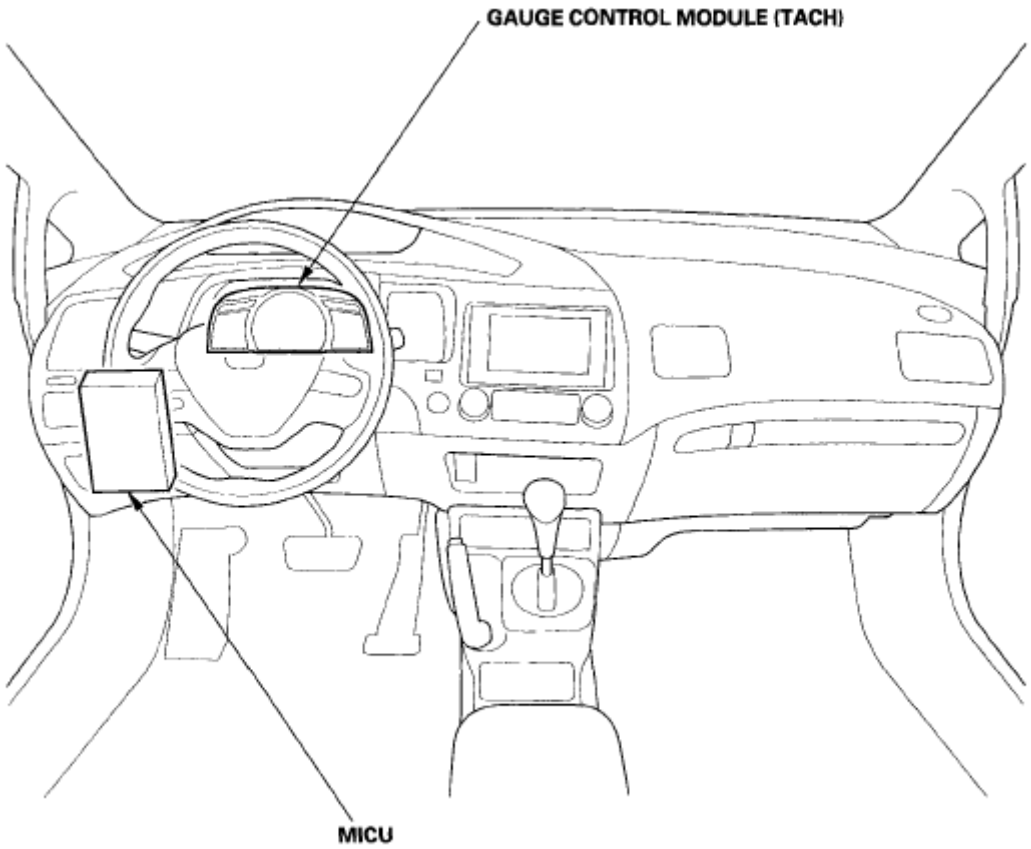


Fig. 1: Identifying Reminder Systems Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

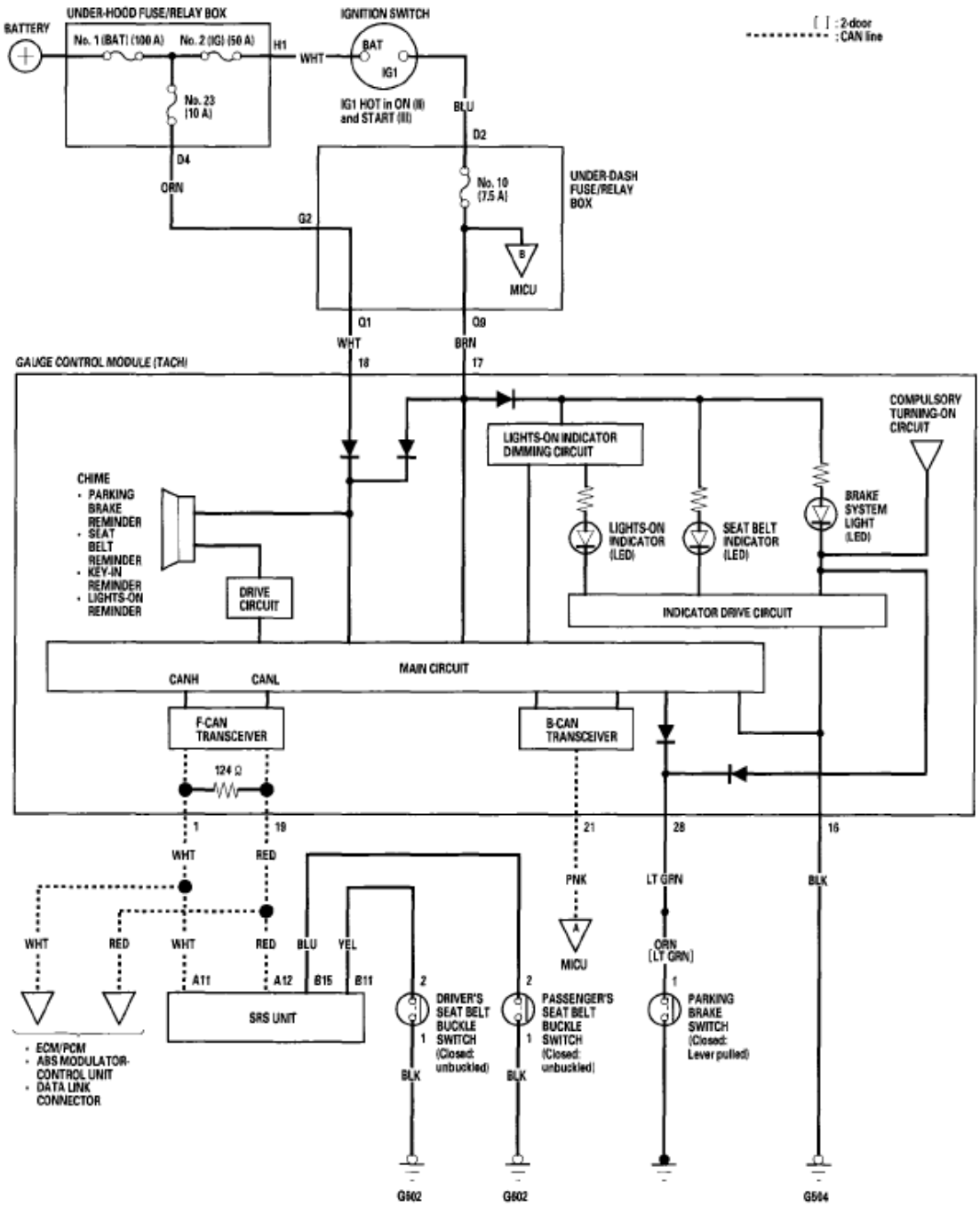


Fig. 2: Reminder Systems - Circuit Diagram (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

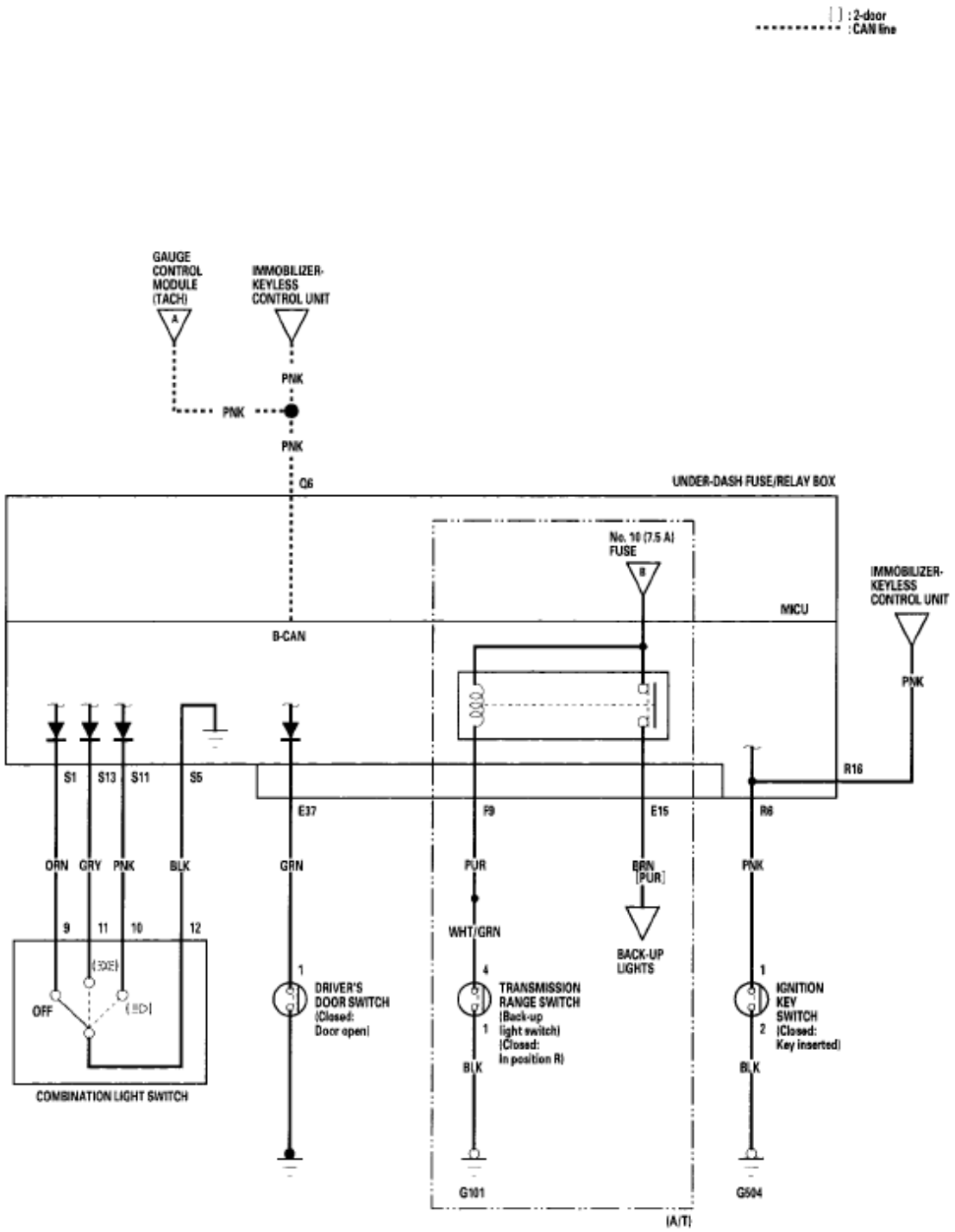


Fig. 3: Reminder Systems - Circuit Diagram (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ACCESSORIES & EQUIPMENT

Rear Window Defogger - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

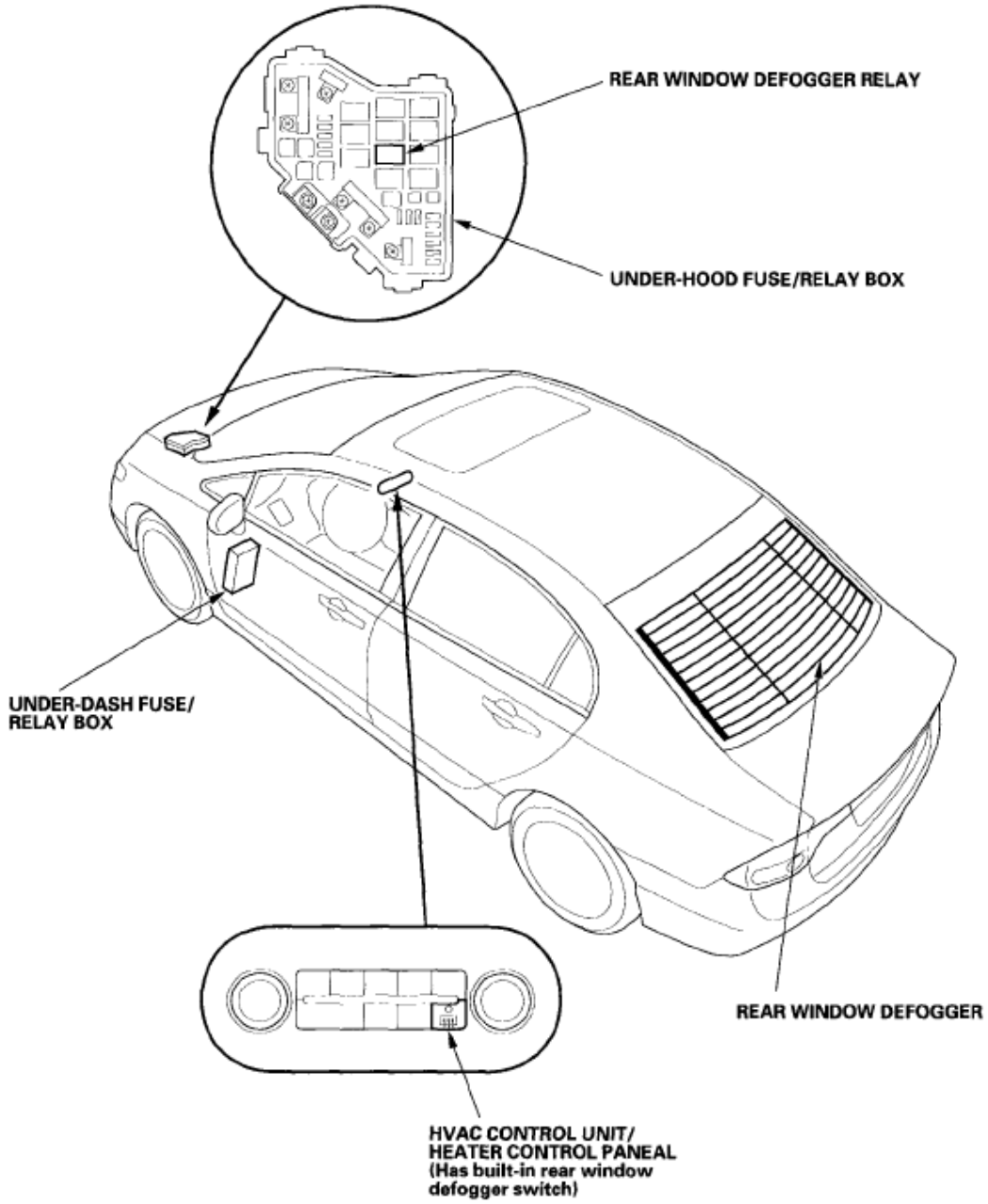


Fig. 1: Identifying Rear Window Defogger Component Locations

CIRCUIT DIAGRAM

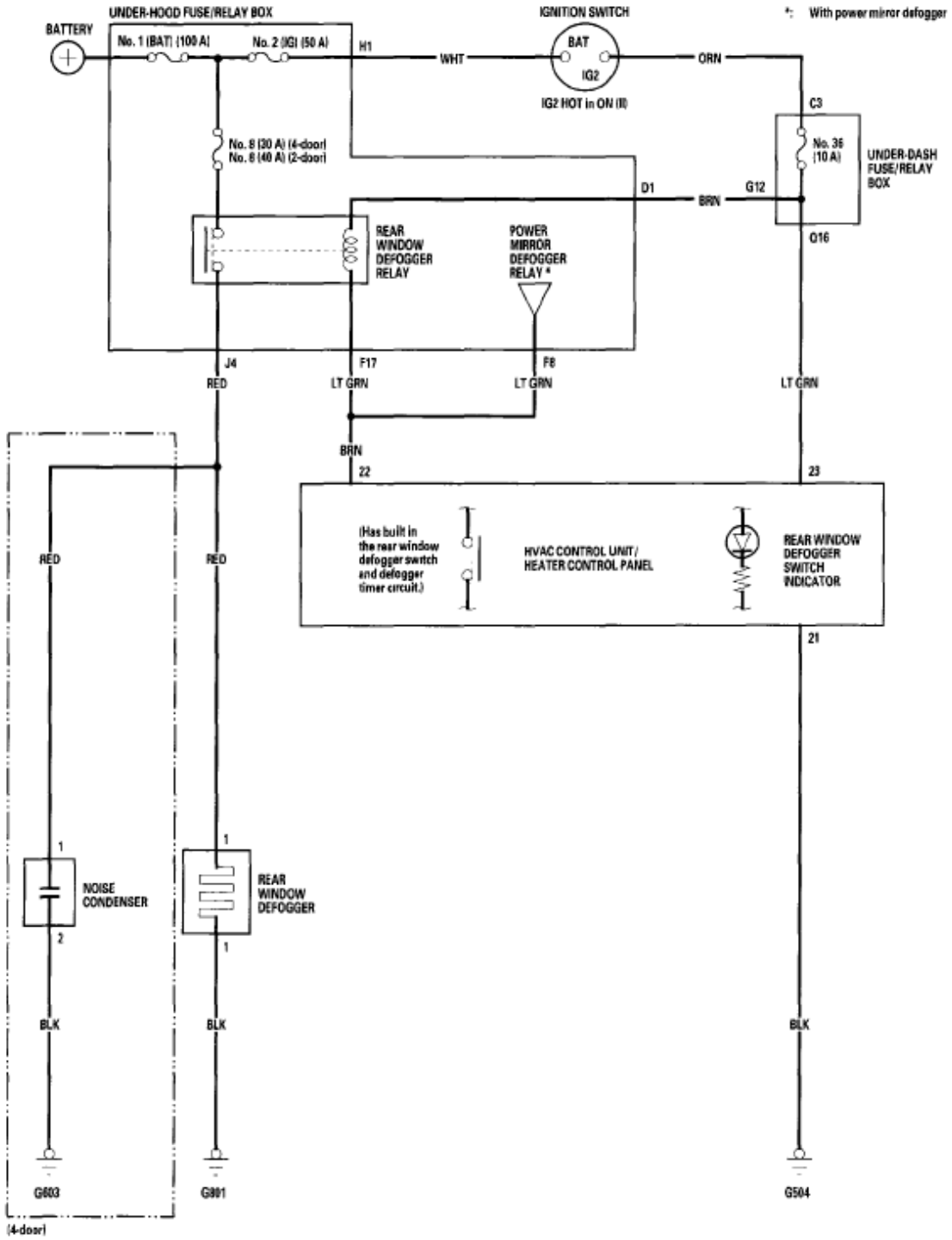


Fig. 2: Rear Window Defogger Circuit Diagram

FUNCTION TEST

NOTE:

- **Be careful not to scratch or damage the defogger wires with the tester probe.**
- **Before testing, check the No. 8 (30 A) [No. 8 (40 A)] fuse in the under-hood fuse/relay box and the No. 36 (10 A) fuse in the under-dash fuse/relay box.**

[ ] : 2-door

1. Check for voltage between the positive terminal (A) and body ground with the ignition switch and the defogger switch ON.

   There should be battery voltage.

   - If there is no voltage, check for:
     - Faulty rear window defogger relay.
     - Faulty HVAC control unit/heater control panel.
     - An open in the RED wire to the positive terminal.
   - If there is voltage, go to step 2.

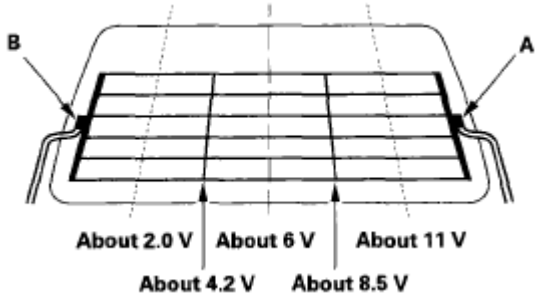


Fig. 3: Function Test Defogger Wires With Tester Probe

2. Disconnect the negative terminal (B) from the rear window defogger.
3. Check for continuity between the negative terminal (B) and body ground.

   If there is no continuity, check for an open in the wire or poor ground (G801). If there is continuity, go to step 4.

4. Reconnect the negative terminal to the rear window defogger.
5. Turn the ignition switch ON (II) and the rear window defogger switch ON.
6. Touch the voltmeter positive probe to each point on each defogger wire, and the negative probe to the negative terminal.
   - If the voltage is as specified, the defogger wire up to that point is OK.
   - If the voltage is not as specified, repair the defogger wire.
     - If it is more than specified at one of the points, there is a break in the negative half of the wire.
     - If it is less than specified at one of the points, there is a break in the positive half of the wire.

DEFOGGER WIRE REPAIR

NOTE: To make an effective repair, the broken section must be no longer than 1 inch (2.5 mm).

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with isopropyl

alcohol.

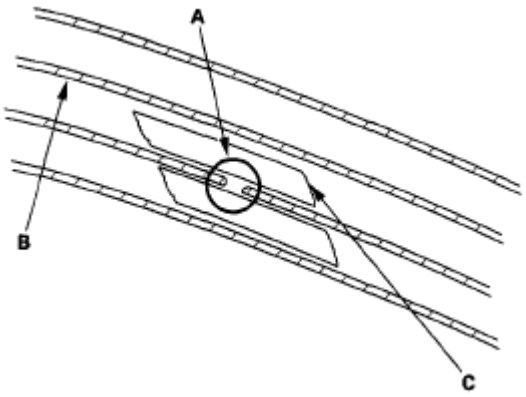


Fig. 4: Identifying Defogger Wire Broken Section

2. Carefully mask above and below the broken portion of the defogger wire (B) with cellophane tape (C).
3. Using a small brush, apply a heavy coat of silver conductive paint (commercially available) (A) extending about 1/8 " on both sides of the break. Allow 25 minutes to dry.

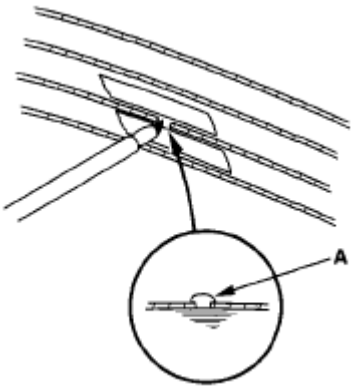


Fig. 5: Applying Heavy Coat Of Silver Conductive Paint On Both Sides Of Defogger Wire Break

4. Do the function test to confirm that the wire is repaired (see **FUNCTION TEST**).
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

2006-09 ACCESSORIES & EQUIPMENT

Horn - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

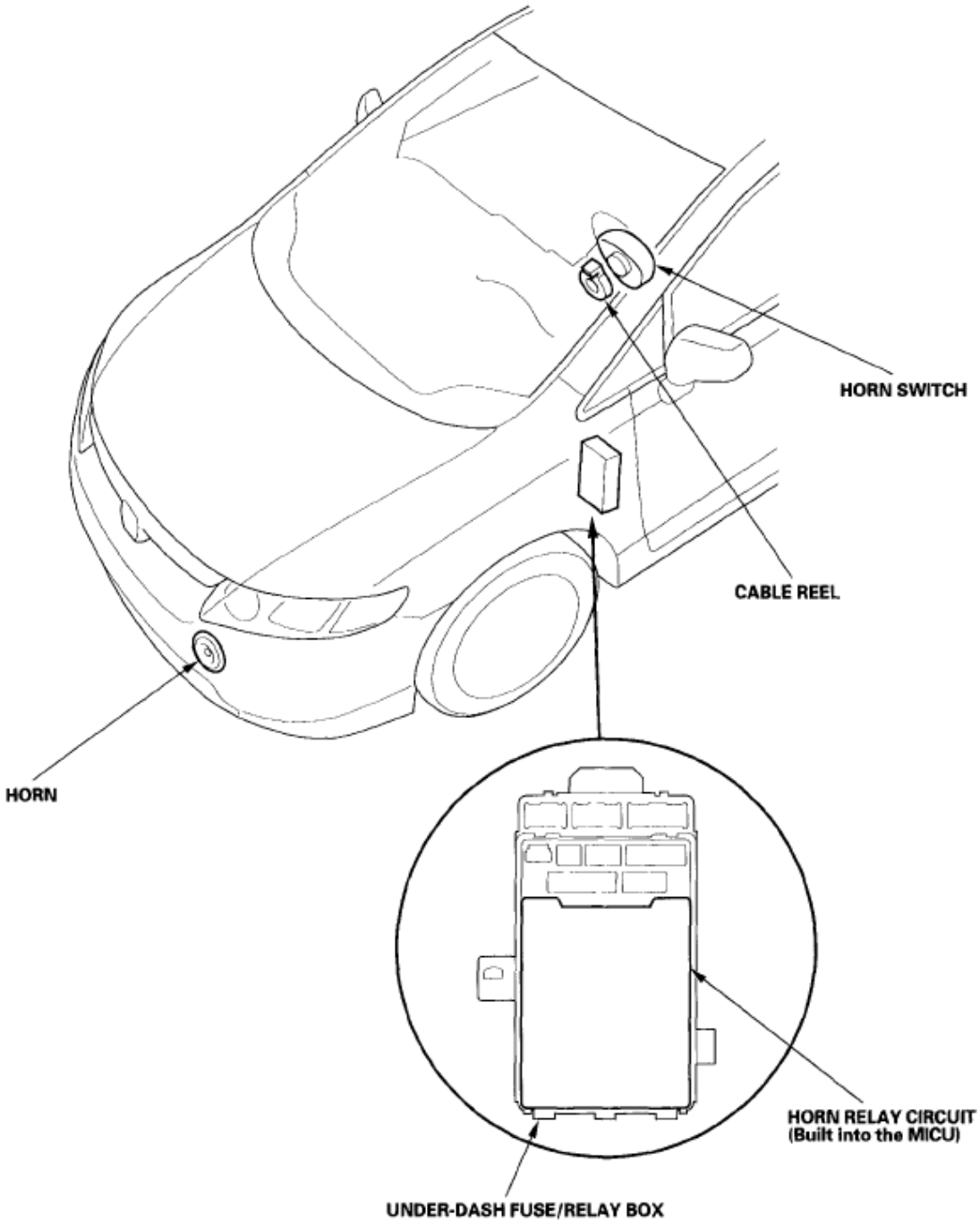
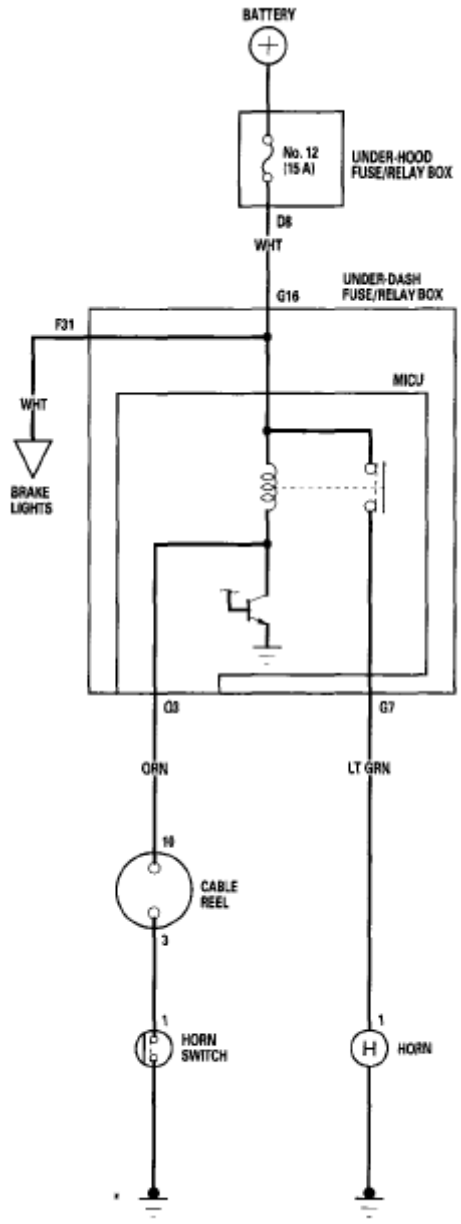


Fig. 1: Identifying Horns Component Location

CIRCUIT DIAGRAM



*. Ground through steering column.

Fig. 2: Horns - Circuit Diagram

HORN TEST/REPLACEMENT

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Disconnect the 1P connector (A) from the horn (B).

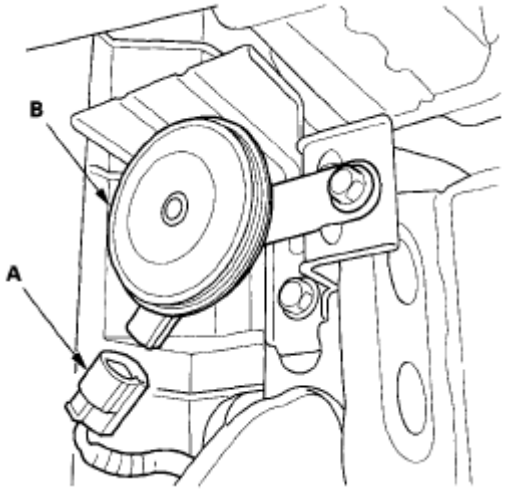


Fig. 3: Identifying 1P Connector And Horn

3. Test the horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

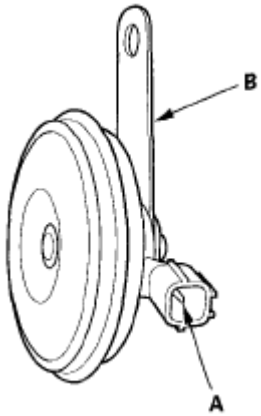


Fig. 4: Identifying Terminal And Bracket

4. If it fails to sound, replace it.

HORN SWITCH TEST

1. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the cable reel 20P connector (A) from the dashboard wire harness.

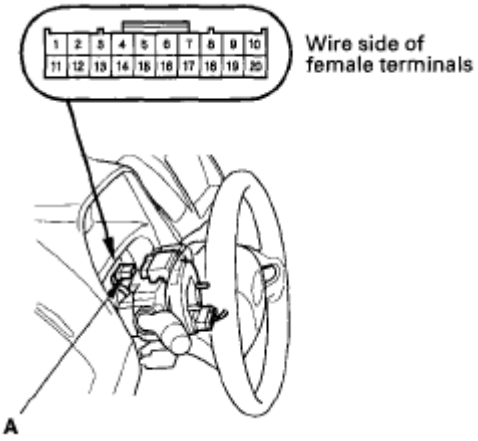


Fig. 5: Identifying Cable Reel 20P Connector

3. Using a jumper wire, connect the No. 10 terminal of the dashboard wire harness 20P connector to body ground. The horn should sound.
    - If the horn sounds, go to step 4.
    - If the horn does not sound, check these items:
        - No. 12 (15 A) fuse in the under-hood fuse/relay box.
        - MICU.
        - Horn.
        - An open in the wire.
4. Reconnect the cable reel 20P connector (A) to the dashboard wire harness.

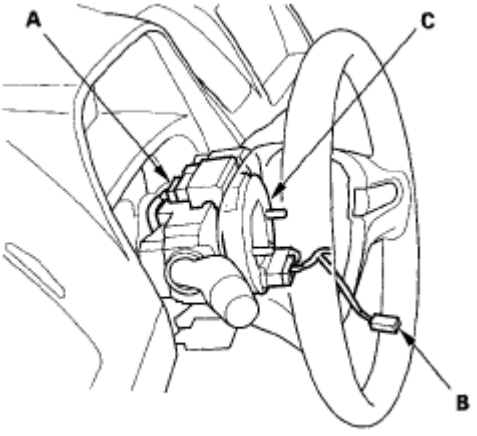


Fig. 6: Identifying Cable Reel 20P Connector, Horn Switch 1P Positive Terminal And Cable Reel

5. Remove the driver's airbag assembly (see **DRIVER'S AIRBAG REPLACEMENT**), and disconnect the horn switch 1P positive terminal (B) from the cable reel (C).
6. Using a jumper wire, connect the 1P connector to body ground.
    - If the horn sounds, replace the driver's airbag assembly.
    - If the horn does not sound, check these items:
        - Cable reel.

- An open in the wire.

2006-09 ACCESSORIES AND EQUIPMENT

Ignition Switch - Civic

TEST

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets. Make sure the ignition switch is OFF.
2. Disconnect the negative battery cable.
3. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**), and the steering column covers (see **COLUMN COVER REMOVAL AND INSTALLATION**).
4. Disconnect the 7P connector (A) from the ignition switch (B).

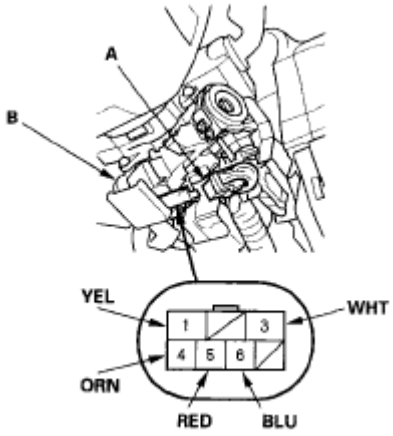


Fig. 1: Identifying Ignition Switch And 7P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	RED (ACC)	WHT (BAT)	BLU (IG1)	ORN (IG2)	YEL (ST)
O (LOCK)					
I (ACC)	○—○				
II (ON)	○—○	○—○	○—○		
III (START)		○—○	○—○	○—○	

Fig. 2: Continuity Reference Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the continuity checks do not agree with the table, replace the ignition switch (see **REPLACEMENT**).

7. After reconnecting the battery, enter the anti-theft code for the audio or the navigation system, then enter the customer's audio presets, and set the clock.

REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets. Make sure the ignition switch is OFF.
2. Disconnect the negative battery cable.
3. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**), and the steering column covers (see **COLUMN COVER REMOVAL AND INSTALLATION**).
4. Disconnect the 7P connector (A) from the ignition switch (B).

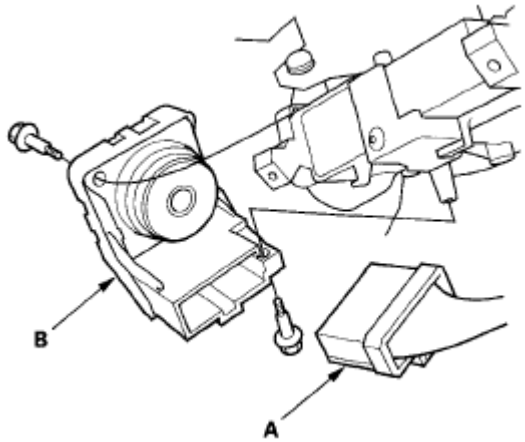


Fig. 3: Identifying 7P Connector And Ignition Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the two screws and the ignition switch.
6. Install in the reverse order of removal.
7. After reconnecting the battery, enter the anti-theft code for the audio or the navigation system, then enter the customer's audio presets, and set the clock.

2006-09 ACCESSORIES AND EQUIPMENT

Mirrors - Civic

COMPONENT LOCATION INDEX

2-door

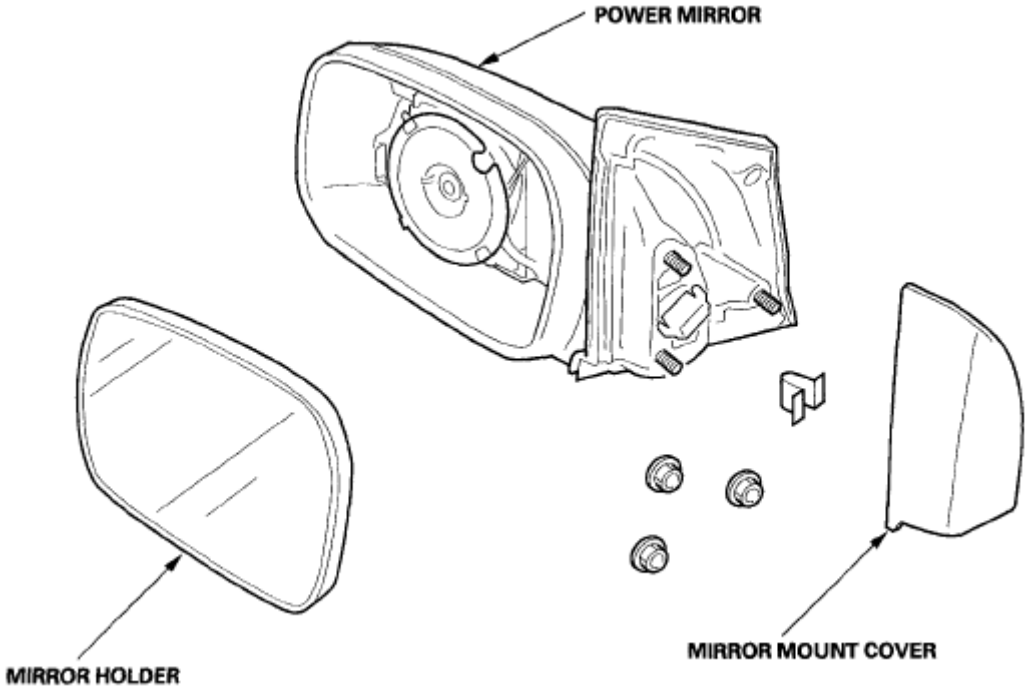


Fig. 1: Identifying Mirrors Component Locations (2-Door)
Courtesy of HONDA

4-door

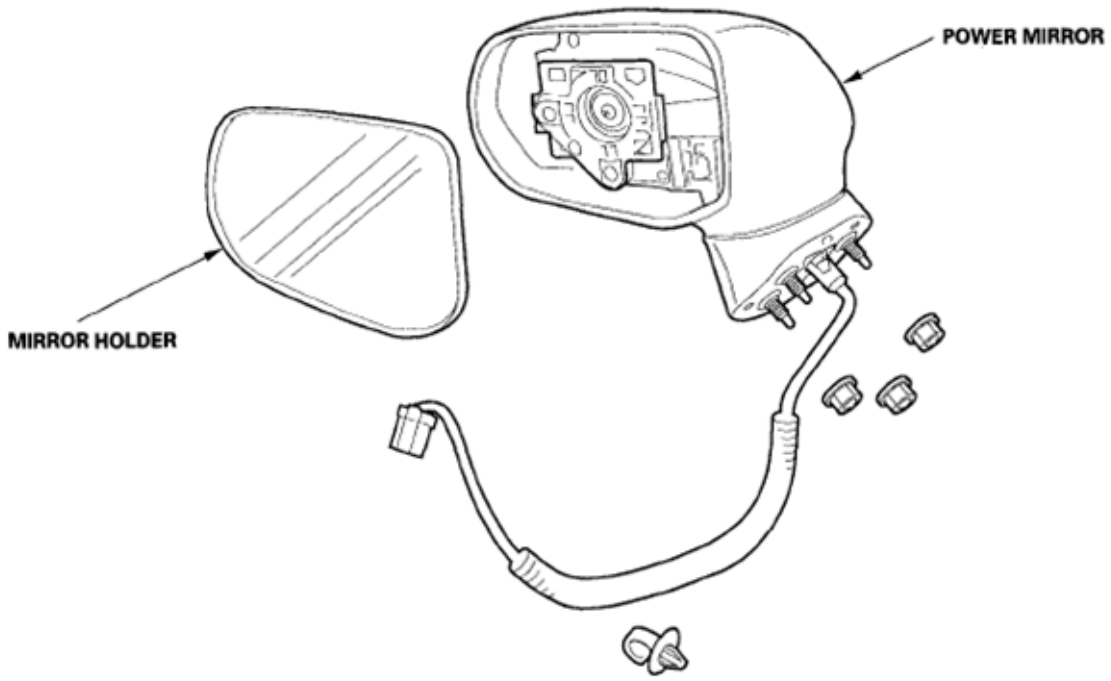


Fig. 2: Identifying Mirrors Component Locations (4-Door) (1 Of 2)
Courtesy of HONDA

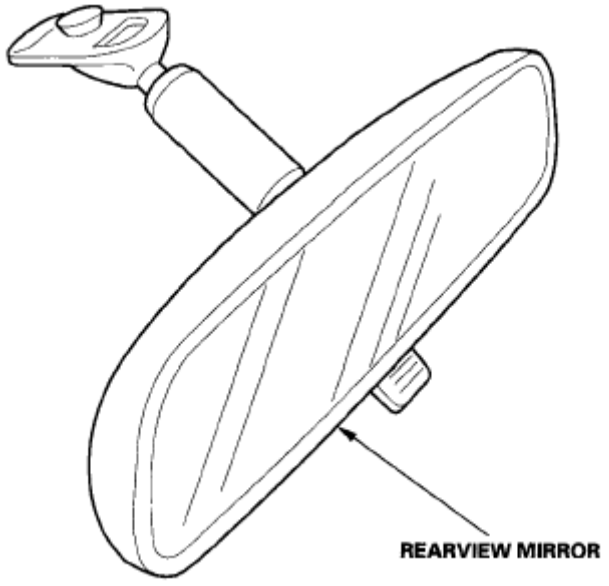


Fig. 3: Identifying Mirrors Component Locations (4-Door) (2 Of 2)
Courtesy of HONDA

POWER MIRROR REPLACEMENT

2-DOOR

1. Lower the door glass fully.
2. Carefully pull out the mirror mount cover (A) to detach the clip, then lift the cover to release the hook (B). Remove the cover.

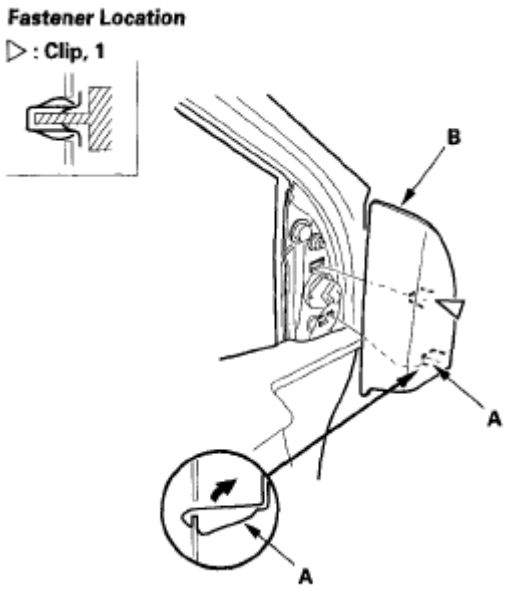


Fig. 4: Identifying Mirror Mount Cover And Hook
Courtesy of HONDA

3. Disconnect the power mirror connector (A), and remove the cap (B).

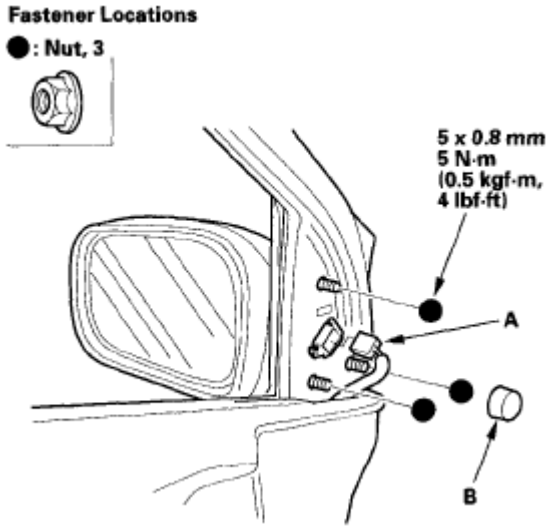


Fig. 5: Identifying Connector And Cap (With Torque Specifications)
Courtesy of HONDA

4. While holding the power mirror, remove the nuts securing the mirror.
5. While holding the power mirror (A), squeeze the retaining tabs (B), then push out to remove the mirror.

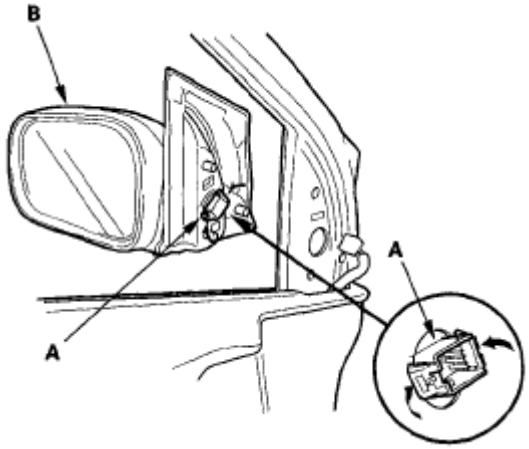


Fig. 6: Identifying Connector Clip And Mirror
Courtesy of HONDA

6. Install the power mirror in the reverse order of removal, and note these items:
   - Make sure the connector is plugged in properly.
   - Push the clip and the hook into place securely.
   - Make sure the power mirror operate properly.

4-DOOR

NOTE: Take care not to scratch the door.

1. Remove these items:
   - Door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**)
   - Plastic cover, as needed **FRONT DOOR OUTER HANDLE REPLACEMENT**
2. Disconnect the power mirror connector (A), and detach the harness clip (B).

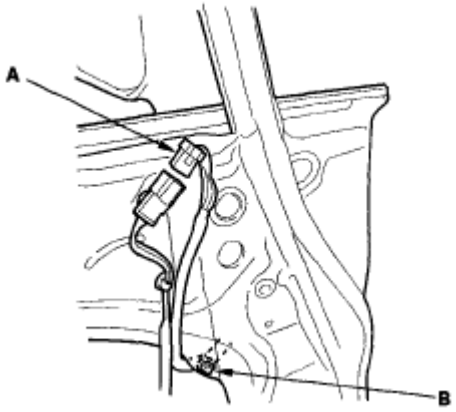


Fig. 7: Identifying Connector And Clip
Courtesy of HONDA

3. Remove the plug caps (A) and the nuts.

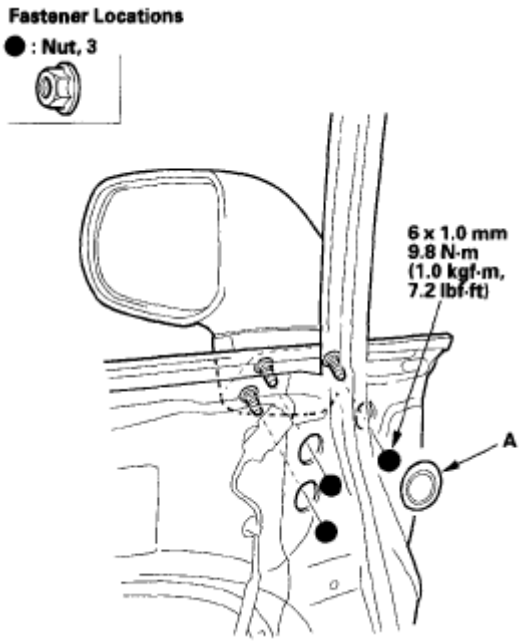


Fig. 8: Identifying Maintenance Caps And Nuts (With Torque Specifications)
Courtesy of HONDA

4. While holding the power mirror (A), release the hook (B), then remove the mirror, and pull out the harness (C) through the hole in the door.

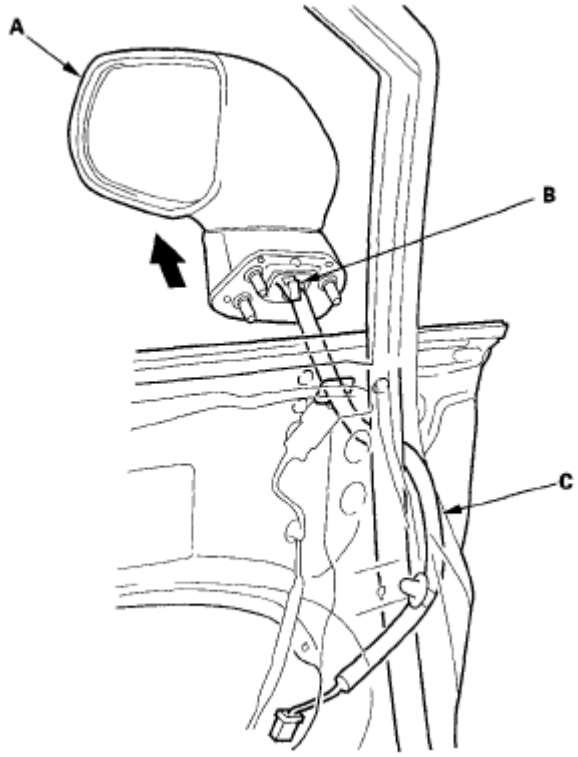


Fig. 9: Identifying Mirror, Clip And Door
Courtesy of HONDA

5. Install the power mirror in the reverse order of removal, and note these items:

- If the clip is damaged or stress-whitened, replace it with a new one.
- Make sure the connector is plugged in properly.
- Make sure the power mirror operate properly.

MIRROR HOLDER REPLACEMENT

2-DOOR

- Put on gloves to protect your hands.
- When prying with a flat-tipped screwdriver, wrap it with protective tape to prevent damage.

1. Adjust the mirror fully to the inward position.
2. Insert a long, thin flat-tipped screwdriver along the notch (A) on the mirror holder (B). Slide the tip of the screwdriver between the mirror holder and the actuator (C).

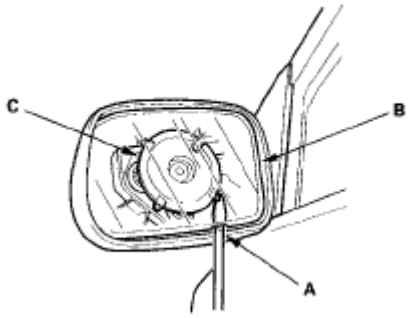


Fig. 10: Identifying Mirror Holder And Actuator
Courtesy of HONDA

3. Quickly twist the screwdriver to separate the mirror holder from the mirror actuator.
4. Insert the screwdriver further under the mirror holder and twist it again.

NOTE: Do not pry up on the mirror holder to separate the two parts, as this can cause either the mirror glass or actuator to break.

5. Separate the mirror holder (A) from the actuator (B) by slowly pulling the mirror apart while separating the adhesive (C), and release the hooks (D). If equipped, disconnect the mirror defogger connectors from the heater pad terminals.

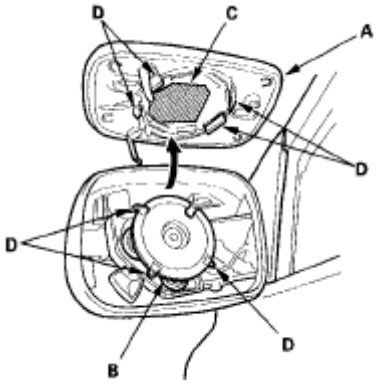


Fig. 11: Identifying Mirror Holder From Actuator
Courtesy of HONDA

6. Before reinstalling the mirror holder to the inner holder (A) of the actuator, check the actuator rods (B) and the actuator boots (C):
    - Make sure each actuator rod is inserted into the actuator securely, and each actuator boot is fully seated on the actuator.

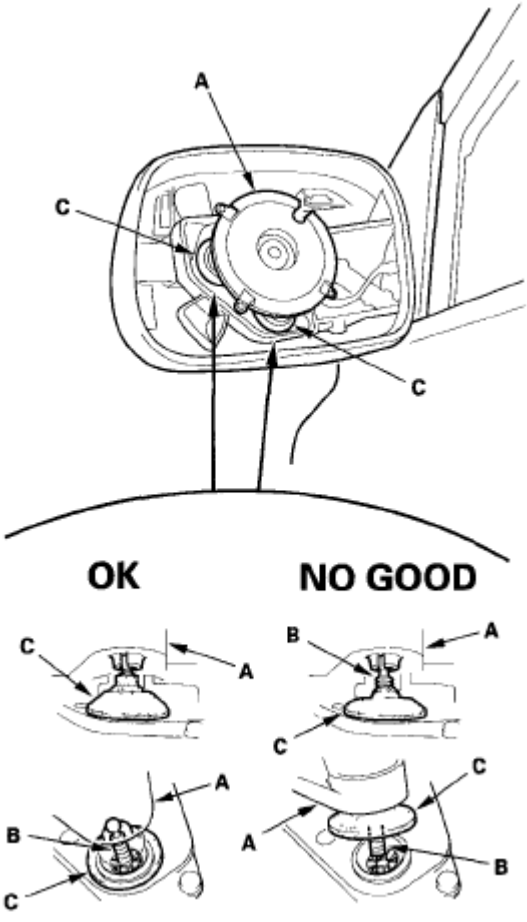


Fig. 12: Identifying Actuator Rods And Actuator Boots
Courtesy of HONDA

7. If equipped, reconnect the mirror defogger connectors.

8. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.
9. Check the actuator operation.

4-DOOR

Note:

- Put on gloves to protect your hands.
- When prying with a flat-tipped screwdriver, wrap it with protective tape to prevent damage.

1. Carefully push on the top edge of the mirror holder (A) by hand.

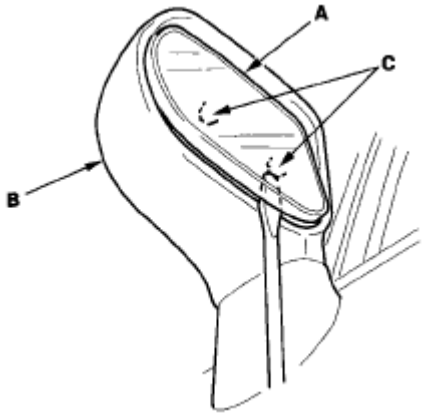


Fig. 13: Identifying Top Edge Of Mirror Holder
Courtesy of HONDA

2. Put a shop towel in the opening between the bottom edge of the mirror holder and the mirror housing (B) to prevent scratches. Insert a flat-tip screwdriver to the mirror holder, and detach the bottom hooks (C).
3. Apply heat with a heat gun to the gap between the mirror holder (A) and the mirror housing (B). Carefully pull out the bottom edge of the mirror holder to separate the adhesive (C), and then release the side hooks (D).

NOTE: Do not heat the plastic parts too much or you may damage them.

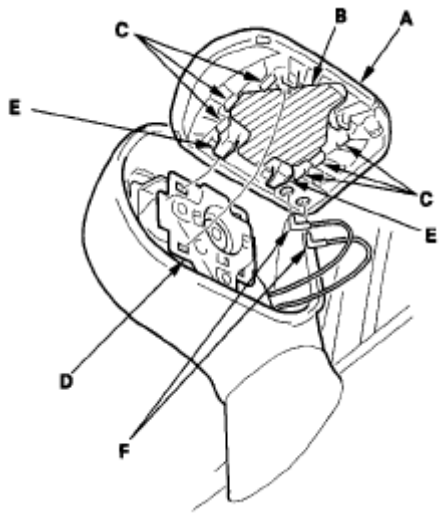


Fig. 14: Identifying Mirror Holder And Adhesive
Courtesy of HONDA

4. Separate the mirror holder from the actuator (E) by releasing the hooks (F). If equipped, disconnect the mirror defogger connectors (G).
5. Before reinstalling the mirror holder to the actuator (A), check the actuator rods (B) and the actuator boots (C).

NOTE: Make sure each actuator rod is inserted into the actuator securely, and each actuator boot is fully seated on the actuator.

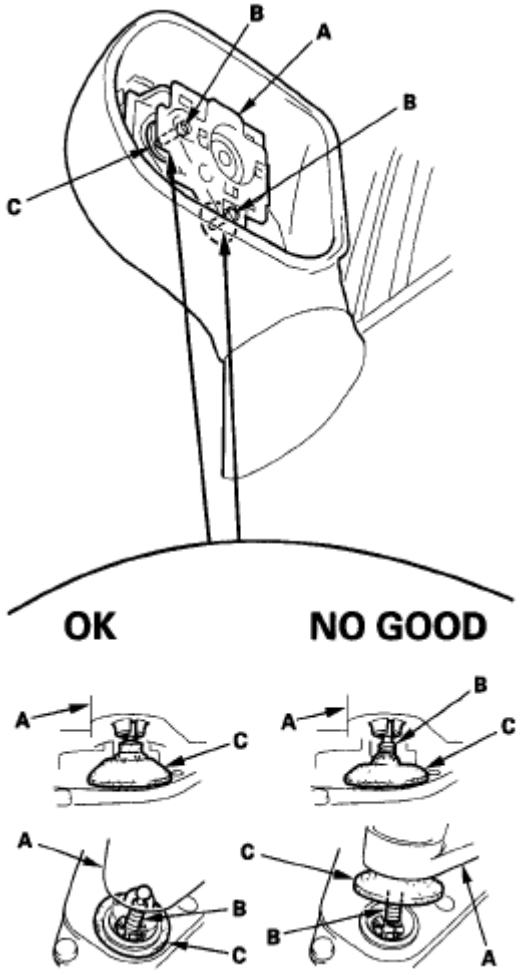


Fig. 15: Identifying Actuator Rods And Actuator Boots
Courtesy of HONDA

6. If equipped, reconnect the mirror defogger connectors.
7. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the side hooks of the mirror holder until the mirror holder locks into place.
8. Check the actuator operation.

REARVIEW MIRROR REPLACEMENT

1. Turn the rearview mirror base (A) 90 °.

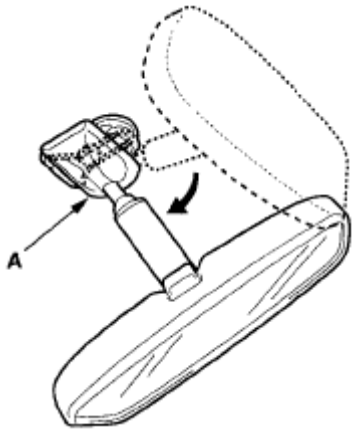


Fig. 16: Identifying Rearview Mirror Base
Courtesy of HONDA

2. Slide the rearview mirror (A) down toward the bottom of the windshield to detach it from the spring (B) in the mount (C).

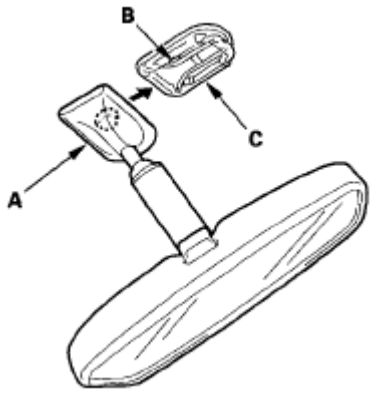


Fig. 17: Identifying Rearview Mirror Down Toward Bottom Of Windshield
Courtesy of HONDA

3. Install the rearview mirror in the reverse order of removal.
4. Install the rearview mirror in the reverse order of removal.

2006-08 ACCESSORIES & EQUIPMENT

Power Mirrors - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

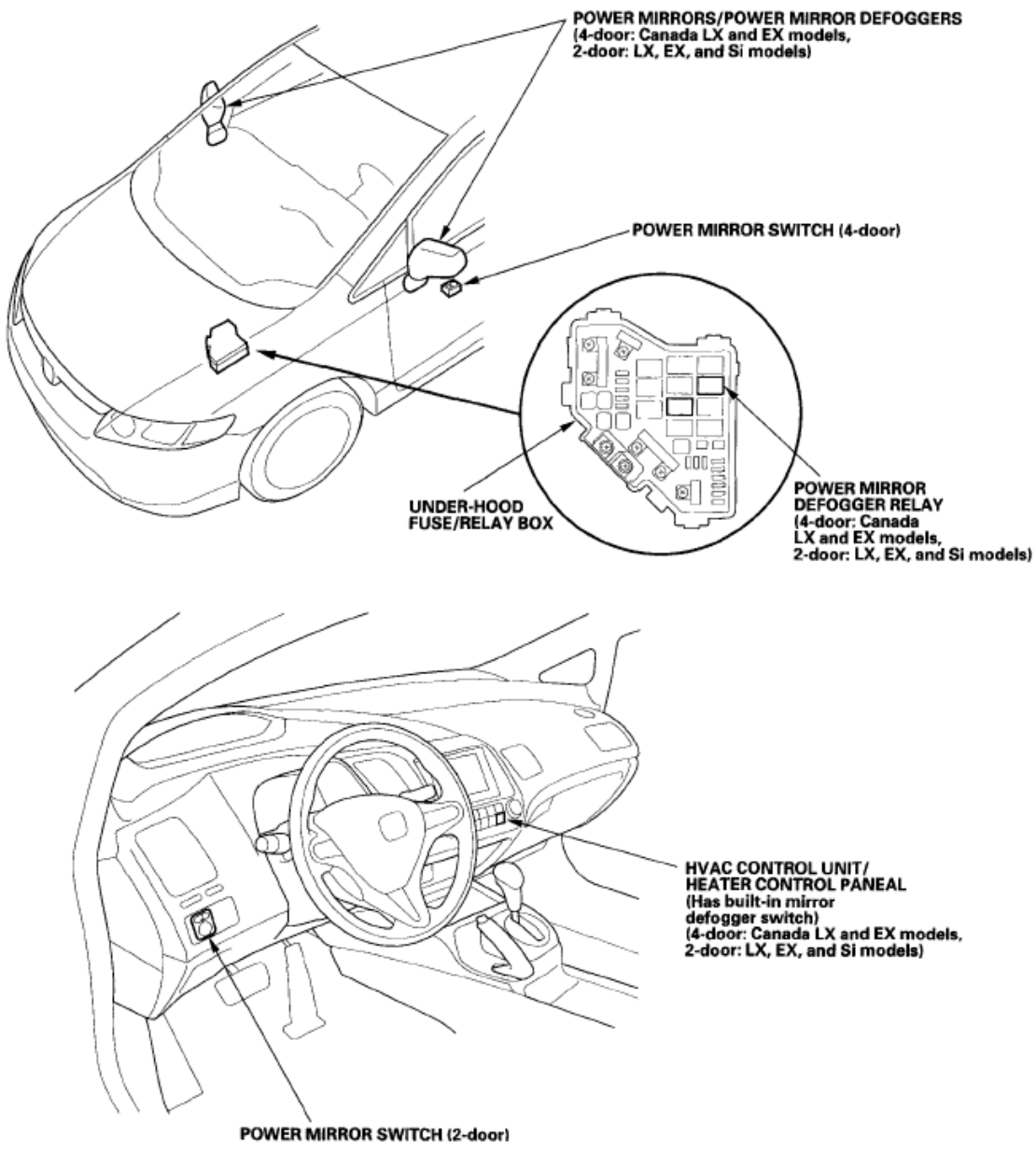


Fig. 1: Locating Power Mirrors Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

4-door

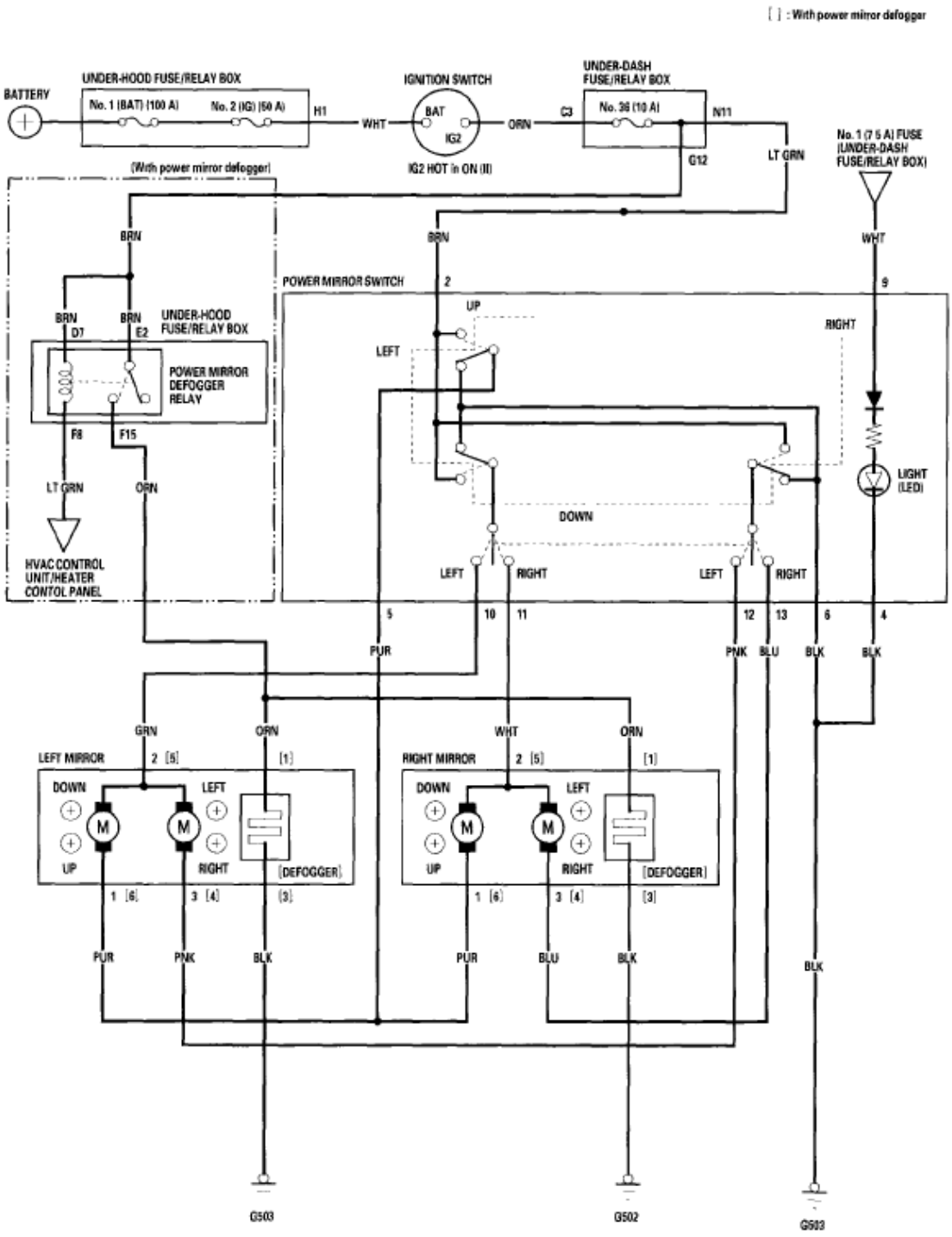


Fig. 2: Power Mirrors Circuit Diagram (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door

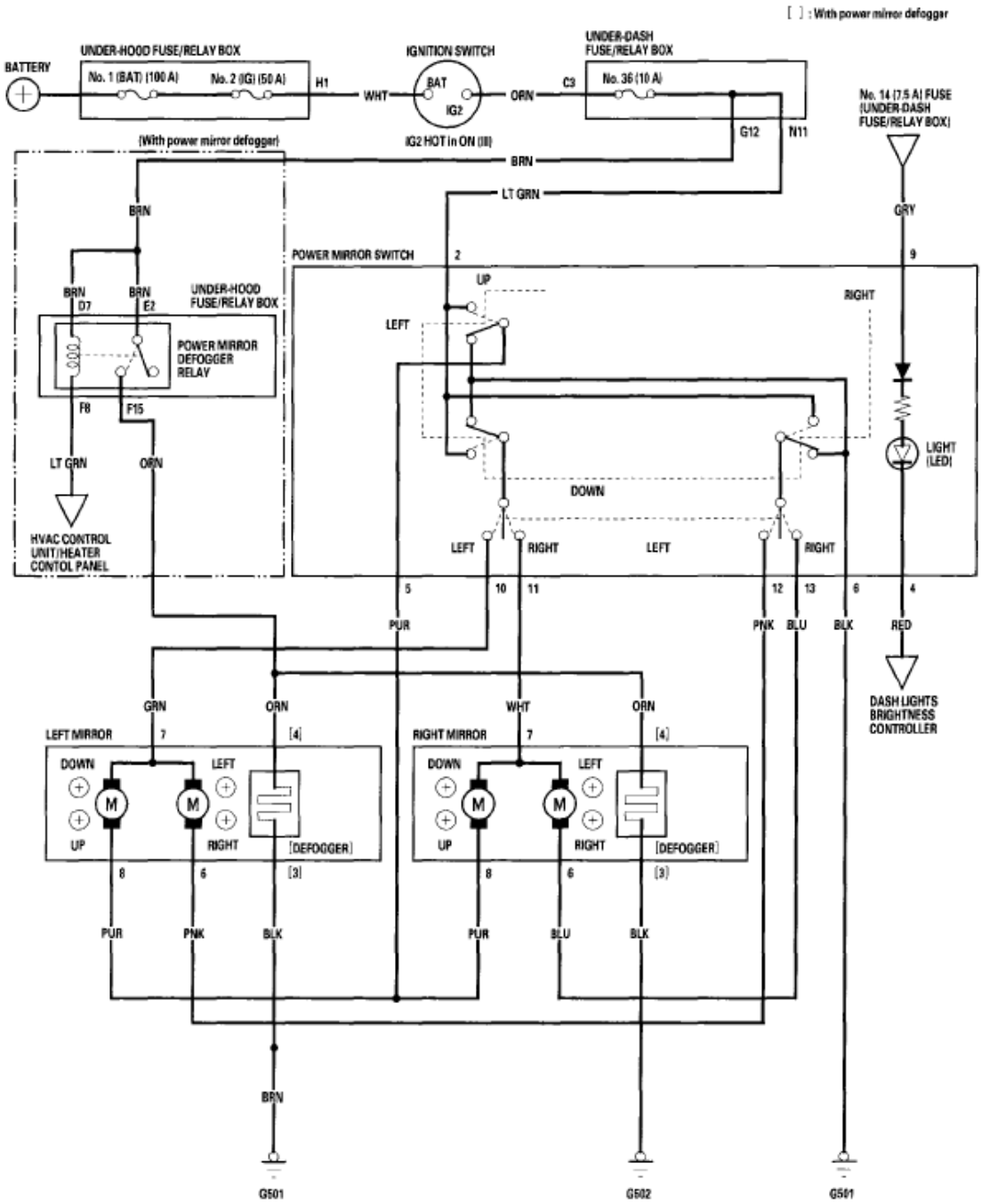


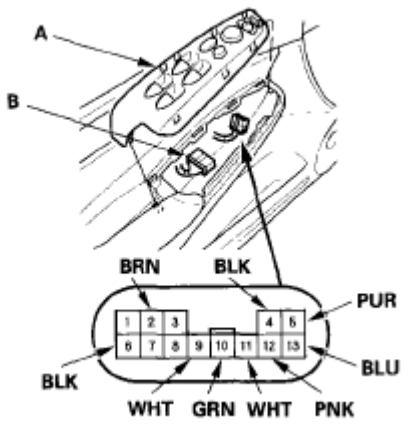
Fig. 3: Power Mirrors Circuit Diagram (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUNCTION TEST

1. 4-door: Remove the power window master switch (A).

   2-door: Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).

4-door



2-door

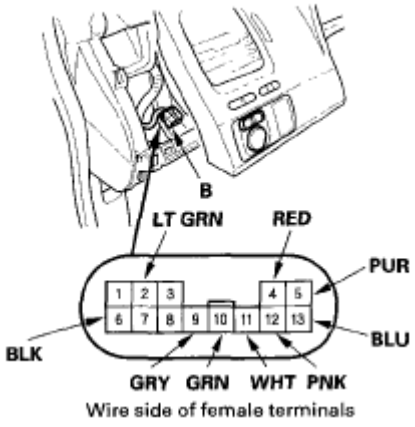


Fig. 4: Removing Power Window Master Switch (4-Door) And Driver's Dashboard Lower Cover (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the 13P connector (B) from the power mirror switch.
3. Choose the appropriate test based on the symptom:
   - Both mirrors don't work, go to step 4.
   - Left mirror doesn't work, go to step 6.
   - Right mirror doesn't work, go to step 7.

Both mirrors

4. Check for voltage between the No. 2 terminal and body ground with the ignition switch ON (II). There should be battery voltage.
   - If there is no battery voltage, check for:
     - Blown No. 36 (10 A) fuse in the under-dash fuse/relay box.
     - An open in the BRN (or PUR *) wire.
   - If there is battery voltage, go to step 5.

*: 2-door

5. Check for continuity between the No. 6 terminal and body ground.

   There should be continuity.

   - If there is no continuity, check for:
     - An open in the BLK wire.
     - Poor ground (G 503, G501 *).
   - If there is continuity, check both mirrors individually as described in the next steps.

     * : 2-door

   Left mirror

6. Connect the No. 2 and No. 10 terminals, and the No. 5 (or No. 12) and No. 6 terminals with jumper wires.

   The left mirror should tilt down (or swing left) with the ignition switch ON (II).

   - If the left mirror does not tilt down (or does not swing left), check for an open in the PUR (or PNK) wire between the left mirror and the 13P connector.

     If the wire is OK, check the left mirror actuator.

   - If the mirror neither tilts down nor swings left, repair the GRN wire.
   - If the mirror works properly, check the mirror switch.

   Right mirror

7. Connect the No. 2 and No. 11 terminals, and the No. 5 (or No. 13) and No. 6 terminals with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
   - If the mirror does not tilt down (or does not swing left), check for an open in the PUR (or BLU) wire between the right mirror and the 13P connector. If the wire is OK, check the right mirror actuator.
   - If the mirror neither tilts down nor swings left, repair the WHT wire.
   - If the mirror works properly, check the mirror switch.

POWER MIRROR SWITCH TEST/REPLACEMENT

4-DOOR

1. Remove the driver's door power switch panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 13P connector from the power mirror switch (A).

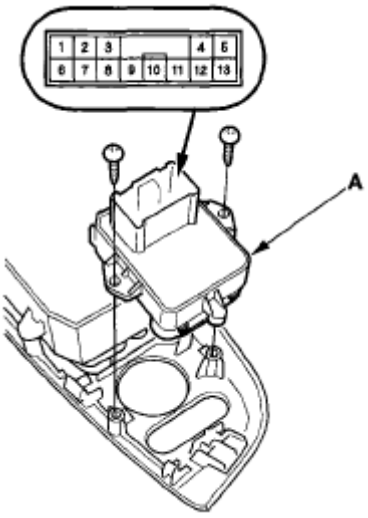


Fig. 5: Disconnecting 13P Connector From Power Mirror Switch (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the terminals in each switch position according to **Fig. 6** .

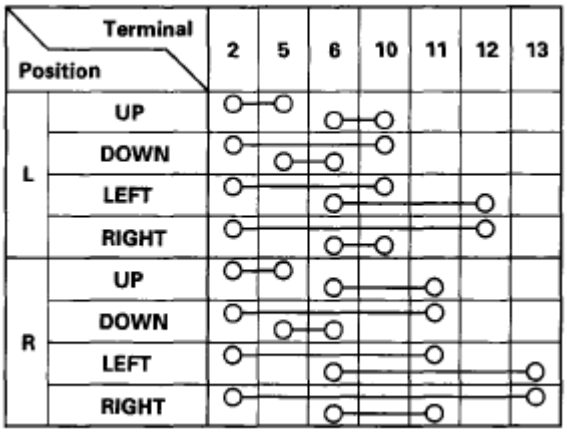


Fig. 6: Checking Continuity Between Power Mirror Switch (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the continuity is not as specified, remove the screws and replace the switch.

2-DOOR

1. Remove the driver's dashboard lower cover (see **DRIVER's DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Disconnect the 13P connector from the power mirror switch (A).

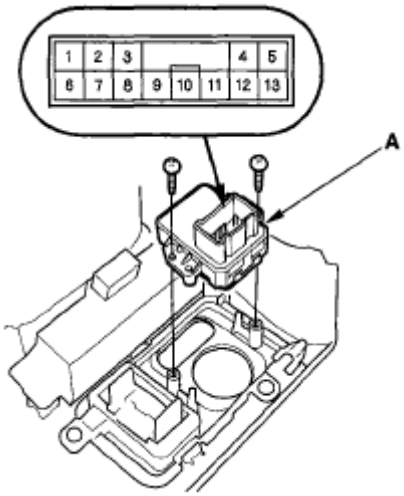


Fig. 7: Disconnecting 13P Connector From Power Mirror Switch (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the terminals in each switch position according to **Fig. 8** .

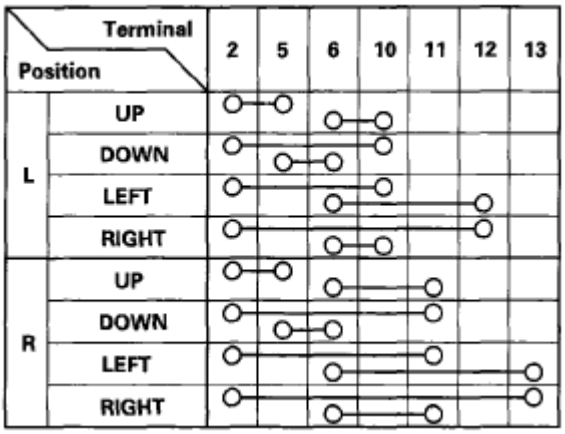


Fig. 8: Checking Continuity Between Power Mirror Switch (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the continuity is not as specified, remove the screws and replace the power mirror switch.

POWER MIRROR ACTUATOR TEST

4-DOOR

1. Remove the door panel (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 3P (or 6P)* connector (A) from the power mirror actuator (B).

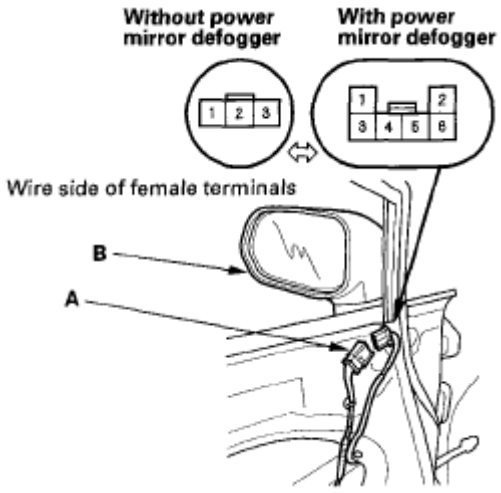


Fig. 9: Disconnecting 3P (or 6P)* Connector From Power Mirror Actuator (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check actuator operation by connecting power and ground according to **Fig. 10** .

Position \ Terminal	1 [6]	2 [5]	3 [4]
TILT UP	⊕	⊖	
TILT DOWN	⊖	⊕	
SWING LEFT		⊕	⊖
SWING RIGHT		⊖	⊕

[ ] : With power mirror defogger

Fig. 10: Checking Actuator Operation By Connecting Power And Ground (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test

5. Check for continuity between the No. 1 and No. 3 terminals of the 6P connector. These should be continuity.
6. If the continuity is not as specified, check for:
   - An open in the wire.
   - A faulty mirror holder.

2-DOOR

1. Remove the mirror mount cover (see **POWER MIRROR REPLACEMENT**).
2. Disconnect the 8P connector (A) from the power mirror actuator (B).

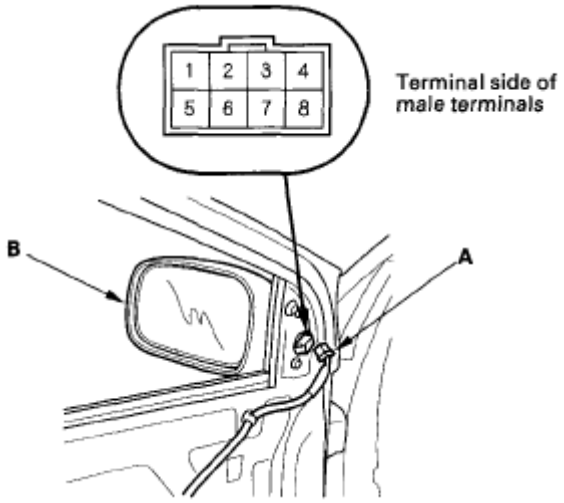


Fig. 11: Disconnecting 8P Connector From Power Mirror Actuator (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check actuator operation by connecting power and ground according to **Fig. 12** .

Position \ Terminal	6	7	8
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

Fig. 12: Checking Actuator Operation By Connecting Power And Ground (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test

5. Check for continuity between the No. 3 and No. 4 terminals of the 6P connector. These should be continuity.
6. If the continuity is not as specified, check for:
   - An open in the wire.
   - A faulty mirror holder.

POWER MIRROR ACTUATOR REPLACEMENT

4-DOOR

1. Remove the mirror holder (see **4-DOOR**).
2. Remove the power mirror (see **4-DOOR**).
3. Disconnect the 3P (without power mirror defogger) or 6P (with power mirror defogger) connector from the mirror.

4. With power mirror defogger:

   Disassemble the power mirror 6P connector (A), and remove the No. 1 and No. 3 terminals from it.

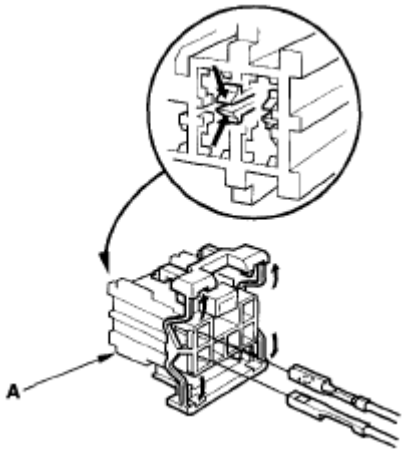


Fig. 13: Removing No. 1 And No. 3 Terminals (With Power Mirror Defogger)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the screw from the gasket (A).

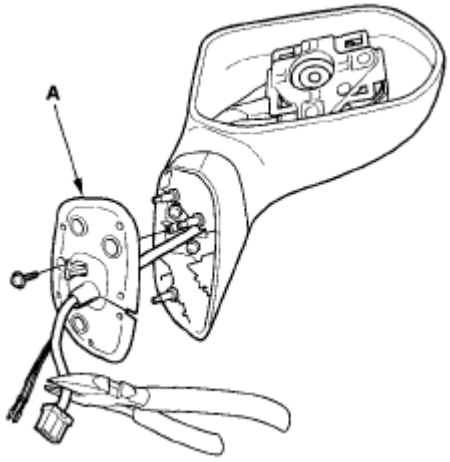


Fig. 14: Removing Screw From Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Record the terminal locations and wire colors.
7. Cut the wire harness with wire cutters, and remove the gasket.
8. Remove the three screws, and separate the mirror housing (A) from the bracket (B).

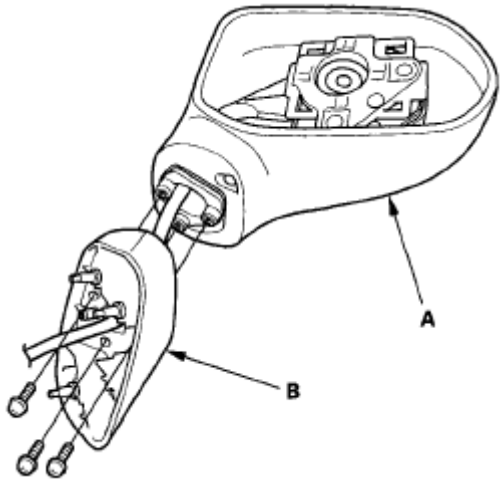


Fig. 15: Separating Mirror Housing From Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the six screws, and the actuator (A).

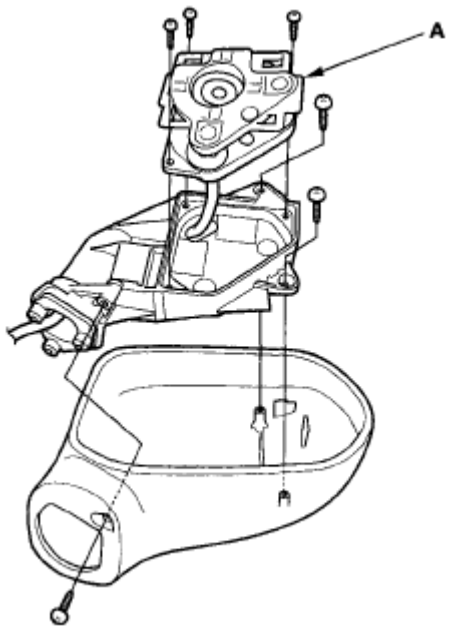


Fig. 16: Removing Actuator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Route the wire harness (A) of the new actuator through the hole in the bracket (B) and gasket (C).

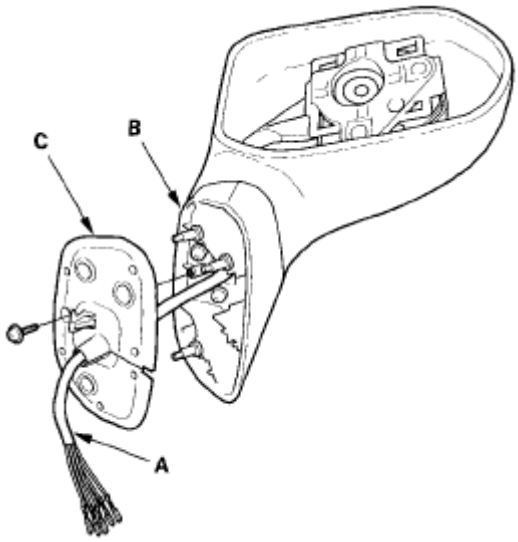


Fig. 17: Routing Wire Harness Of Actuator Through Hole In Bracket And Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the actuator, bracket, harness clip, and gasket in the reverse order of removal.
12. Insert the new actuator terminals into the connector in the original arrangement.

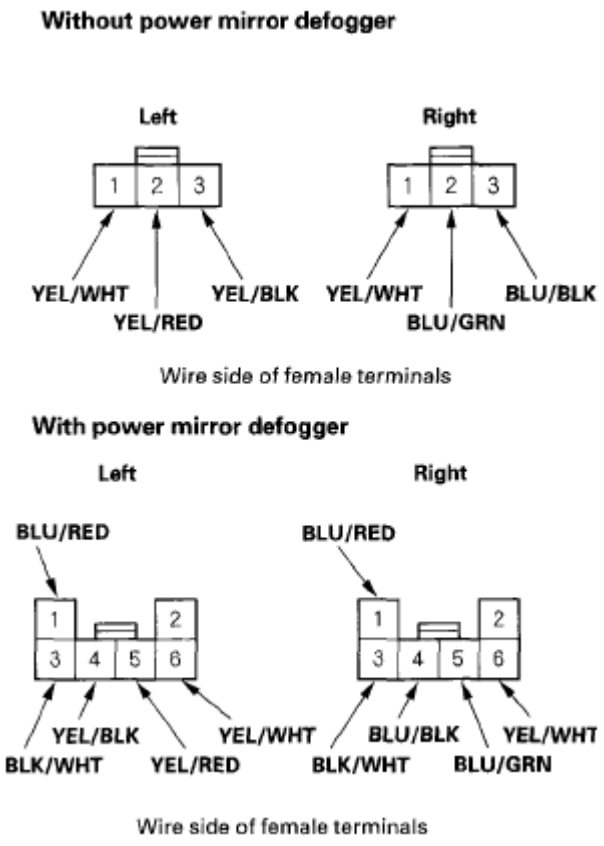


Fig. 18: Inserting New Actuator Terminals Into Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Apply tape to seal the intersection of the wire harness and the gasket.

14. Reassemble in the reverse order of disassembly. Be careful not to break the mirror when reinstalling it to the actuator.
15. Reinstall the mirror assembly on the door.
16. Operate the power mirror to ensure smooth operation.

2-DOOR

1. Remove the mirror holder (see **MIRROR HOLDER REPLACEMENT**).
2. Remove the power mirror (see **POWER MIRROR REPLACEMENT**).
3. Disconnect the 8P connector from the power mirror.
4. Remove the gasket (A).

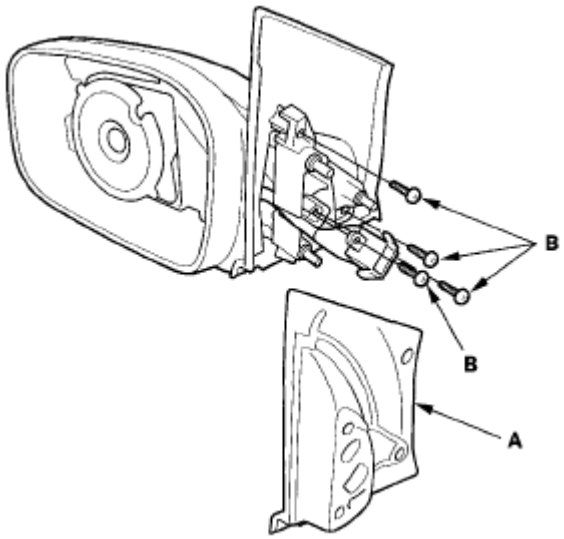


Fig. 19: Removing Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the T10 TORX screws (B).
6. Remove the T10 TORX screws (A) and the mirror actuator (B).

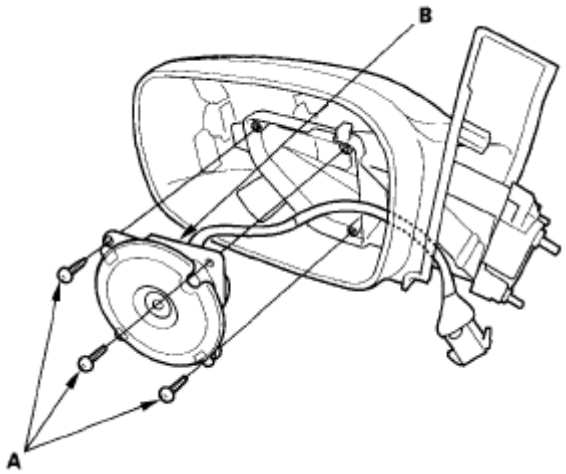


Fig. 20: Removing Mirror Actuator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the power mirror actuator in the reverse order of removal.

2006-08 ACCESSORIES & EQUIPMENT

Navigation System - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

4-door

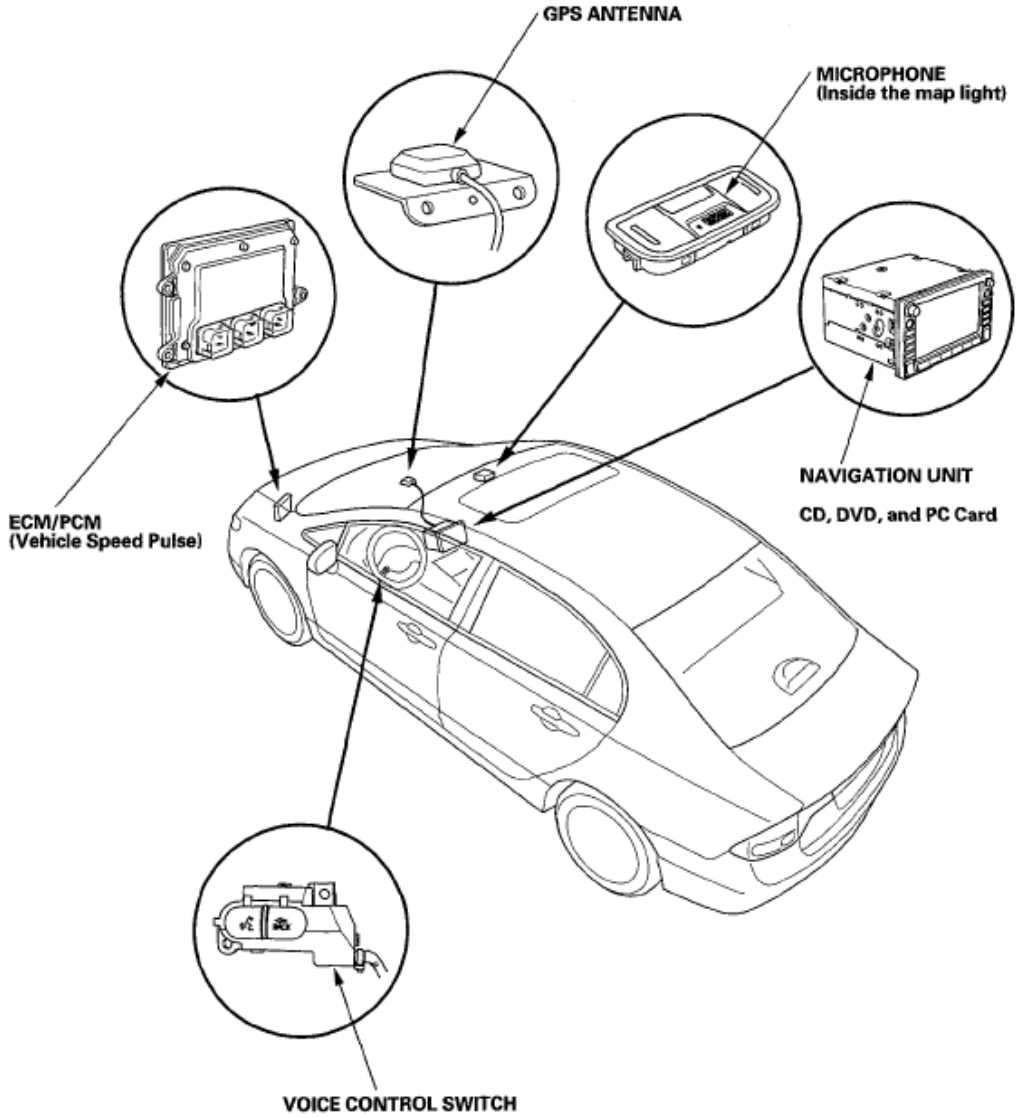


Fig. 1: Identifying Navigation System Component Location - 4-Door
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door

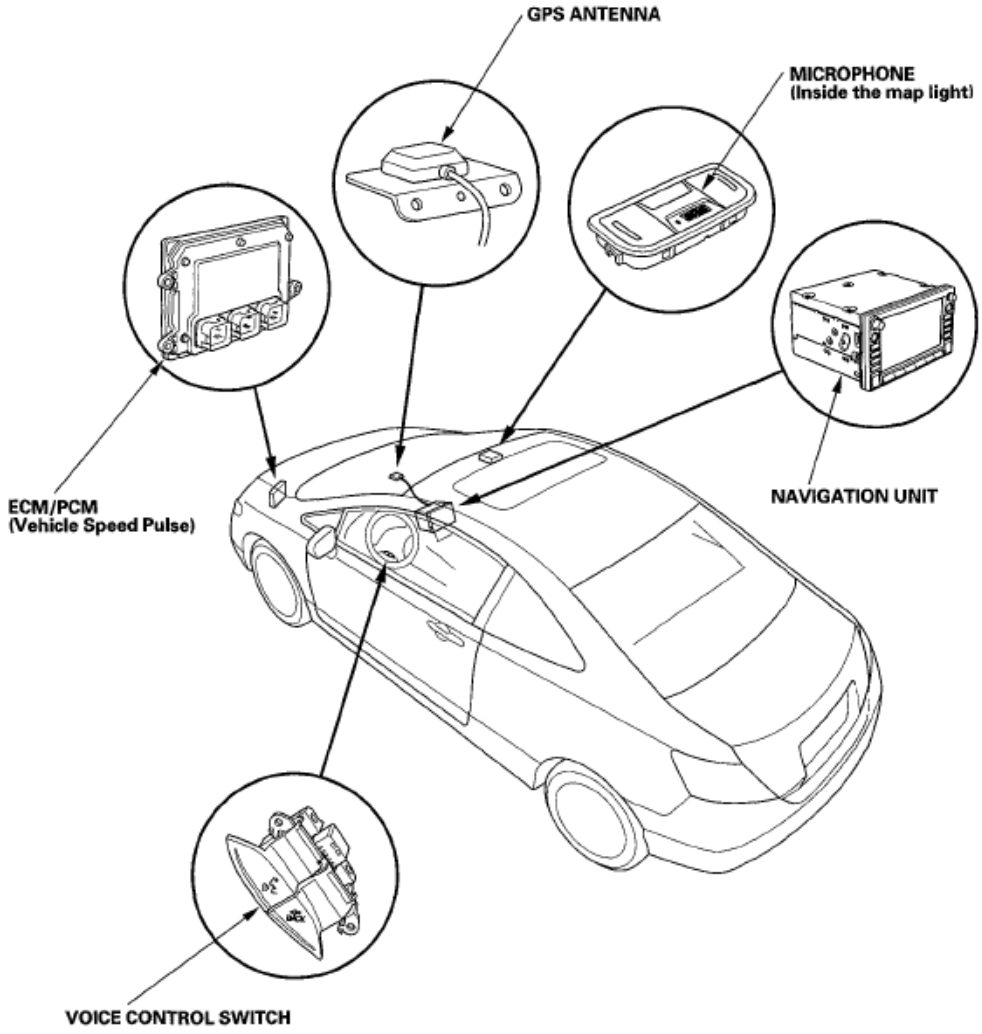


Fig. 2: Identifying Navigation System Component Location - 2-Door
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

GENERAL OPERATION

Refer to the Navigation System manual, for the navigation system operating procedures.

ANTI-THEFT FEATURE

The navigation system has a coded theft protection circuit. Be sure you have the customer's anti-theft security code before;

- Disconnecting the battery
- Disconnecting the navigation unit 12P and 17P connector
- Removing the No. 23 (10 A) fuse from the under-hood fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit

anti-theft security codes, then select Done.

If the code cannot be found, use the interactive Network (*i* N) to look it up. You can view the serial number in one of the Navi ECU diagnostic screen (see **TOUCH PANEL CALIBRATION**). Alternatively, you will need the serial number from the navigation unit in the dash.

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

SYMPTOM DIAGNOSIS

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about symptoms of the navigation system.

SELF-INERTIAL NAVIGATION LIMITATIONS

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position).

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table.
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  - Continuous tire slippage on a slippery surface.
  - Driving with snow chains mounted.
  - Abnormal tire pressure.
  - Incorrect tire size.
  - Frequent lane changes across a wide highway.
  - Continuous driving on a straight or gently curving highway.
- Tolerances in the system and map inaccuracies will sometimes limit how precisely the vehicle position is indicated. Examples of this include:
  - Driving on roads not shown on the map (map matching is not possible).
  - Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage.
  - Driving on a road with a series of sharp hair-pin turns.
  - Driving near a gradual highway exit or transition.
  - Driving on one of two close parallel roads.
  - Making many 90 degree turns.
  - The direction to destination icon or the destination icon shown or the map may be up to several hundred feet away from the actual location.

GLOBAL POSITIONING SYSTEM (GPS) LIMITATIONS

The GPS cannot detect the vehicle's position during the following conditions:

- Metallic window tinting above the GPS antenna,
- When only three satellite signals can be received (Four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic after market accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.
- When the satellite control centers are experiencing problems.

The accuracy of GPS is reduced during these instances:

- Metallic window tinting above the GPS antenna.
- When only three satellite signals can be received (Four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic after market accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.
- When the satellite control centers are experiencing problems.

MUTING LOGIC

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD UNIT LIMITATIONS

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. Clean the screen with a soft damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners, or shop towels.
- The touch panel consists of a touch sensitive resistive membrane covering the display. Unlike previous systems, you must actually touch the display to activate it. Never use hard or sharp implements to operate the screen because you risk damaging the sensing membrane. If a touch switch does not function immediately, shift your finger slightly, and touch it again.

SYMPTOM DUPLICATION

- If you can duplicate the symptom, compare it to a known-good vehicle. Only use a vehicle of the same model, year, trim, and software version. If you can duplicate the symptom in the known-good vehicle, then it is a characteristic of the system.
- When the symptom can be duplicated, follow the self-diagnostic procedures and the appropriate

troubleshooting procedures.

- When the symptom does not reappear or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
  - Try to establish if outside interference may be the cause.
  - Try to duplicate the symptom under the same conditions the customer experienced.
  - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  - Inspect the vehicle for after market electronic devices (vehicle locators, radar detector amps, etc.) that may be hidden.

NOTE: When troubleshooting navigation system problems, ensure that the known-good vehicle is the same software version year and model as the vehicle being serviced. Mixing incompatible navigation DVDs or other system components can delay the troubleshooting process by causing effects unrelated to the original problem.

SERVICE PRECAUTIONS

- If the navigation unit needs to be replaced, inform the client that personal information in the navigation system may be lost. If possible, have the customer record any personal information before the unit is replaced. On '07-08 models, you can back up the navigation data and transfer it to a new navigation unit. See **SAVE USER'S MEMORY** .
- Before disconnecting the battery, make sure you have the anti-theft codes for the audio and navigation systems, and write down the audio presets.

  Also obtain any PGM-FI or transmission DTCs and freeze frame date (which will be lost when the ECM/PCM loses power).

- When the battery is disconnected, the internal GPS clock is reset to 0:00. The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take 10 to 45 minutes.
- Before returning the vehicle to the client, enter the audio and navigation anti-theft security codes, then enter the audio presets.
- Adjust the setup clock settings (time zone and daylight savings) in the navigation system.

SYSTEM INITIALIZATION

If for any reason you lose power to the navigation system (the battery was disconnected), the navigation system will require initialization. Once completed, your system will be ready to use.

Initialization requires the following:

- Entering the 4-digit anti-theft security code to unlock the system.
- GPS initialization (may not be needed depending of the length of time the system was without power).
- Map-matching to align the GPS to a location on the map.

ENTERING SECURITY CODE

Anytime power is disconnected from the navigation unit, the 4-digit anti-theft code must be entered on the navigation system display. This 4-digit code can be found on a small code card that was given to the customer. Enter the 4-digit code, then select Done.

If the navigation system anti-theft code cannot be found, use the interactive Network (*i* N) to look it up. You will need the serial number from the navigation unit to do this. You can view the serial number in the diagnostic mode. Select Unit Check from the main menu, then the Navi ECU diagnostic screen. This allows you go get the serial number without removing the navigation unit.

The *i* N may display more than one code for a given serial number. This is because serial numbers are not unique. You may have to try more than one 4-digit code. If no code is shown, or if the code(s) given do not work in the navigation unit, contact the Automobile Warranty department. If the code 0000 works, then replace the navigation unit.

When replacing the navigation unit or audio unit, be sure to give the customer the new anti-theft security code.

GPS INITIALIZATION

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:

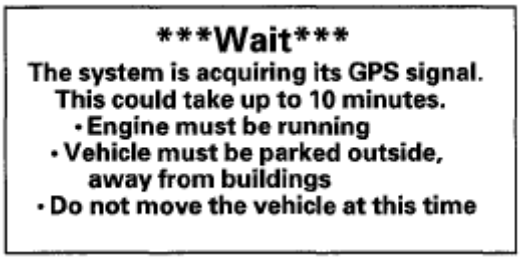


Fig. 3: Identifying GPS Initialization Label
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If this procedure is not necessary, the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites and obtains their orbital information. During this procedure, the vehicle should be out in the open with a clear view of the sky.

If the navigation system finds the satellites properly, this box clears and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears:

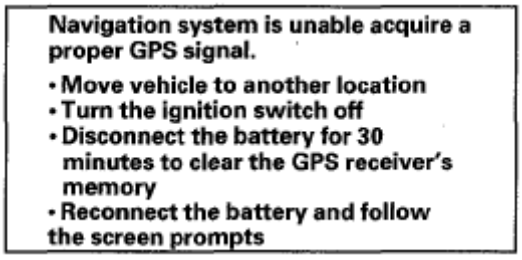


Fig. 4: Identifying GPS Initialization Label
Courtesy of AMERICAN HONDA MOTOR CO., INC.

After 30 minutes with this screen displayed, turn off the engine, then restart the vehicle. If you now see the Disclaimer screen, the GPS initialization is complete.

NOTE:

- **The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.**
- **If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon is white or not shown (see GPS ICON IS WHITE OR NOT SHOWN).**
- **To bypass the GPS acquire screens, press and hold the Menu and Zoom Out keys at the same time. Touch the Return button on the screen to exit the diagnostic mode. This allows you to continue troubleshooting while in the shop.**

AFTER SERVICING PROCEDURES-MAP MATCHING

- Park the vehicle in an area where the GPS satellite signals are unobstructed, and check the satellite mark on the display.
- Drive the vehicle 1 mile before entering a destination and confirm the road being used is displayed at the bottom of the screen (map-matched).
- Enter the dealer address and confirm the system routes and performs normally.
- Clear any previous destinations and address entries that may have been entered for testing purposes.

OBTAINING A NAVIGATION DVD

If the navigation DVD is lost or damaged, or you need a yearly updated DVD, you have two ways to purchase one. You can either call (888) 291-4675, or order online at www.honda.com.

Both methods require a credit card. The DVD for this model has a turquoise (blue/green) label and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model navigation DVDs (black, orange, or white label)
- Map software programs manufactured by other companies
- DVD movies or DVDs containing audio recordings
- Copies of an original navigation DVD

Updated DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

NOTE:

- **Map-matching must be done any time the DVD is removed or replaced.**

- **Always order navigation DVDs on an as-needed basis. During a typical model year, each color DVD may undergo a half a dozen software-only version upgrades to fix minor issues on some or all models the DVD supports. This is normal. Usually only the letter at the end of the version number changes, while the database (maps and POIs) remain unchanged.**
- **Never promise your clients future free updates. There are no free programs for updating the navigation DVD. Update DVDs are generally available for purchase each fall. The online DVD order site provides information when an update for a particular color DVD is available. Damaged discs are not warrantable.**

DVD HANDING AND CLEANING

To avoid damaging or leaving fingerprints on the DVD, always handle it by the edges and place it in a jewel case whenever it is outside the navigation unit. Deep scratches or fingerprints on the back of the DVD can cause intermittent rebooting or other system errors.

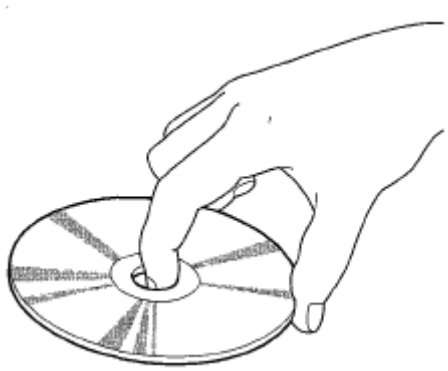


Fig. 5: Precaution For - DVD Handing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Smudges and fingerprints can be carefully removed using a mild cleaner and tissues designed to clean eyeglasses. To clean a DVD, use a clean soft cloth. Very gently wipe across the DVD from the center to the outside edge, never in a circular motion.

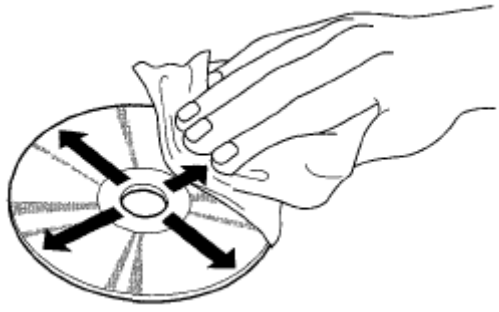


Fig. 6: Precaution For - DVD Cleaning
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Do not place stabilizer rings or labels on the DVD.

EARLIEST DVD VERSION APPLICATION FOR EACH MODEL

Each navigation system DVD contains a map/POI (point of interest) database and the navigation system software for each model that it supports. Inserting an older DVD can cause problems since it lacks the software to provide the specific features needed for that model. Unfortunately, the navigation software does not detect or warn you that the version is outdated, and it may even appear to operate.

NOTE: Replacing a DVD just because the version number is higher is not always warranted. A higher software version does not necessarily mean it contains newer software for your model. The DVD contains software for all models that use the same color DVD, and a revised number may or may not have software fixes or upgrades for the model in question.

Typical warning symptoms that an outdated DVD is being used include:

- The Honda model navigation screen may display a Acura logo while booting up.
- A newly introduced model future or accessory may not display properly, and Extension will display instead.

NOTE: Extension may be displayed when using Music Link, but should never be displayed when XM is selected.

- The current street (the street being driven on) may not appear properly at the bottom of the map screen display when the vehicle is driven on a main road.

NOTE: If necessary, compare the operation to the navigation system of the same model and year vehicle that has a current DVD.

HOW TO IDENTIFY NAVIGATION DVD VERSIONS, AND HOW TO INSPECT A DVD FOR DAMAGE

To determine the navigation version on a particular model, start the engine, then locate the navigation unit. Open the DVD door, and push the eject button to eject the DVD. Hold the DVD by the edges, and check for these items:

- The label color.
- Read the DVD version on the label, and note it on the repair order. The version number is near the bottom of the label text (for example, ver: 4.23A). You will need this version number:
  - To verify that the DVD version is appropriate for the vehicle.
  - Any time you call Tech Line regarding a navigation system issue.
  - To answer customer inquires concerning update or coverage issue.

    NOTE: Customers may obtain DVDs from sources outside the normal ordering process. If you determine this is the case, recommend that your customer purchase the appropriate DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

  - Check the underside of the DVD for signs of mishandling. Deep scratches, swirl marks, or

fingerprints can cause random lock-ups, reboots, and DVD read or format errors.

NOTE: A damaged DVD is not covered under warranty unless the disc is damaged by the navigation unit. Damage by the navigation unit typically appears as circular scratches caused by something rubbing against the DVD as it spins. The damage may appear as arcs or complete circles on the DVD reading surface.

  - Verify that the underside of the DVD is silver, and not a copy with a blue color. Copies will not work properly and can cause other symptoms that mimic hardware problems.
- Incorrectly colored DVDs being put into navigation vehicles. This causes the system to either display error messages, or it causes system malfunctions that mimic a hardware problem. This result in the customer driving away with a malfunctioning navigation system.
- The DVD version provided to the customer is out-of date or incompatible with a particular model. This inconveniences your customer by delaying the repair, or by causing additional (and unnecessary) returns to your dealership.
- The customer experiences bugs or other issues that have already been resolved in later versions currently available at the fulfillment desk.

If the DVD is defective, or has any of the issues mentioned above, return the vehicle to your customer and recommend that they order the proper DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

NOTE: If it is determined that the navigation unit is defective (through the appropriate service manual troubleshooting procedures) and the DVD will not eject, order a replacement navigation unit, and also order a DVD from the Honda Disc Fulfillment Center.

HOW TO ANSWER CUSTOMER QUESTIONS ABOUT NAVIGATION COVERAGE

Some customers may ask questions regarding a city, address or POI (point of interest) covered by the navigation system. It is better to verify a coverage question on an actual vehicle than to disappoint your customer by promising coverage that may be incomplete or missing in their area. The following suggestions can be used to answer coverage inquiries from your customer.

Is my address covered by the navigation system?

Using a current production vehicle (of the same model), try entering the customer's address (street first) to see if their area is covered. Always enter the street first, because sometimes their city may be included in a neighboring township, or under some lager metropolitan city name. If the address is shown in a later year vehicle, but not your customer's vehicle, you might want to recommend that your customer purchase an update.

Is my city covered by the navigation system?

For general questions about whether a city is covered, view the map coverage link on the DVD order site. On the site, you enter a year and model, and then click on the Coverage link. You then select a state or province, and the cities are listed. Of course, this does not guarantee that the customer's road or address is in the system. Verifying on an actual production vehicle is always the best guarantee that your information is

accurate.

The gas station on my corner is now a restaurant. Why is it still incorrect in the navigation system?

For POI-related customer questions, explain that businesses are constantly moving, and there can be a considerable lag in updating the millions of POIs in the system. The database is updated annually, and the best way to the verify whether the POI is accurate is verify the inquiry on a current production vehicle.

Answers to these and other questions regarding coverage can be found in these locations:

- In the Frequently Asked Questions section of the navigation system manual.
- At the on-line DVD order site, by clicking on the **FAQs** link (see ORDERING A DVD).

PRECAUTION ON CUSTOMER SNEAK PREVIEWS

Your customer might request a look (or sneak preview) at features in the latest navigation software. You should never preview a navigation DVD in a customer's vehicle. Inserting a new DVD installs the latest software from the DVD into the memory of the customer's navigation system. When the original DVD is reinstalled, the newer software remains in memory and is often incompatible with the customer's original DVD Map and POI database.

If your customer wishes to see the latest navigation coverage or software features, demonstrate it on an in-stock vehicle that already has the latest DVD version.

If, by chance, a newer version is located accidentally, either by the dealer or the customer, the only remedy is to enter the navigation diagnostic mode's Version screen and do a forced download. Refer to the *i* N for applicable patches that may need reinstalling.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING CHART

Symptom	Diagnostic procedure	Also check for
No picture is displayed	Symptom Troubleshooting (see **NO PICTURE IS DISPLAYED**)	• Navigation unit • Open/short between the navigation unit, or the XM receiver or the GA-Net bus • Harness/fuses/switches
Picture has lines/rolls/other issues or is an odd color	Symptom Troubleshooting (see **PICTURE HAS LINES/ROLLS/OTHER ISSUES OR IS AN ODD COLOR**)	• Navigation unit • Harness/fuses/switches
Navigation display buttons do not work or respond properly	Symptom Troubleshooting (see **NAVIGATION DISPLAY BUTTONS DO NOT WORK OR RESPOND PROPERLY**)	• Navigation unit • Open/short between the XM receiver or the GA-Net bus • Harness/fuses/switches
GPS icon is white or not shown	Symptom Troubleshooting (see **GPS ICON IS WHITE OR NOT**	• Navigation unit • GPS antenna/cable

	SHOWN)	• Harness/fuses/switches
Voice guidance cannot be heard, is broken up, or there is static	Symptom Troubleshooting (see **GPS ICON IS WHITE OR NOT SHOWN**)	• Navigation unit • Harness/fuses/switches
Voice control does not work/respond	Symptom Troubleshooting (see **VOICE CONTROL DOES NOT WORK/RESPOND**)	• Navigation unit • Microphone/steering buttons • Harness/fuses/switches
Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position	Symptom Troubleshooting (see **VEHICLE POSITION ICON CONSTANTLY LEAVES ROAD, MOVES ERRATICALLY, OR IS VERY FAR FROM ACTUAL POSITION**)	• Navigation unit • GPS antenna/cable • ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
DVD screen error messages	Symptom Troubleshooting (see **DVD SCREEN ERROR MESSAGES**)	• Navigation unit • DVD
System always comes up in in-line diagnostic mode	Symptom Troubleshooting (see **DVD SCREEN ERROR MESSAGES**)	Software remedy, do not replace hardware
Display day/night mode does not work	Symptom Troubleshooting (see **DISPLAY DAY/NIGHT MODE DOES NOT WORK**)	• Navigation unit • Gauge control module (CAN) • Harness/fuses/switches
System locks up or freezes constantly	Symptom Troubleshooting (see **DISPLAY DAY/NIGHT MODE DOES NOT WORK**)	• Navigation unit • Harness/fuses/switches • DVD
Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins	Symptom Troubleshooting (see **VEHICLE ICON WANDERS ACROSS THE MAP WHEN DRIVING (DOES NOT FOLLOW A DISPLAYED ROAD) OR MAP OR VEHICLE ICON SPINS**)	Navigation unit (Yaw rate sensor)
Vehicle icon moves by itself or spins when parked	Symptom Troubleshooting (see **VEHICLE ICON WANDERS ACROSS THE MAP WHEN DRIVING (DOES NOT FOLLOW A DISPLAYED ROAD) OR MAP OR VEHICLE ICON SPINS**)	Navigation unit
Navigation display stays on with ignition switch OFF	Symptom Troubleshooting (see **NAVIGATION DISPLAY STAYS ON WITH IGNITION SWITCH OFF**)	• Harness/fuses/switches • Aftermarket accessory or cell phone installed
Navigation cannot control audio system	Symptom Troubleshooting (see **NAVIGATION DISPLAY STAYS ON WITH IGNITION SWITCH OFF**)	• Navigation unit • Open/short between the Navigation unit, or the XM receiver or the GA-Net bus
		• Navigation unit

Navigation cannot control XM radio	Symptom Troubleshooting (see **NAVIGATION CANNOT CONTROL XM RADIO**)	• Open/short between the Navigation unit, or the XM receiver or the GA-Net bus • Harness
Navigation frequently asks for anti-theft code and needs GPS initialization	Symptom Troubleshooting (see **NAVIGATION CANNOT CONTROL XM RADIO**)	• Navigation unit • Harness/fuses/switches/unit grounds
OPEN/CLOSE function of the display does not work	Symptom Troubleshooting (see **OPEN/CLOSE FUNCTION OF THE DISPLAY DOES NOT WORK**)	• Navigation unit • Harness
Navigation display will not close	Symptom Troubleshooting (see **NAVIGATION DISPLAY WILL NOT CLOSE**)	• Navigation unit • Harness
Navigation display does not open or opens part way	Symptom Troubleshooting (see **NAVIGATION DISPLAY WILL NOT CLOSE**)	• Navigation unit • Harness
PC card will not play/card icon on audio screen cannot be selected	Symptom Troubleshooting (see **AUDIO DISC CANNOT BE INSERTED AND/OR EJECTED (WITH NAVIGATION)**)	Navigation unit
The vehicle icon lags behind when the vehicle turns	See **SELF-INERTIAL NAVIGATION LIMITATIONS**	• Aftermarket accessories connected to the system • GPS antenna/cable
Navigation screen is darker than normal or takes time to start up when it is cold	See **LCD UNIT LIMITATIONS**	
A new navigation DVD is needed	See **OBTAINING A NAVIGATION DVD**	
The DVD is scratched or dirty	See **DVD HANDING AND CLEANING**	Navigation unit
The wrong DVD was installed and now the system does not function properly	See **PRECAUTION ON CUSTOMER SNEAK PREVIEWS**	• Install the correct version DVD • Check on-line for service bulletins or other service information for the navigation system
A specific city cannot be found	See **PRECAUTION ON CUSTOMER SNEAK PREVIEWS**	The DVD is scratched or dirty

SYSTEM DESCRIPTION

OVERVIEW

The navigation system is a highly sophisticated, hybrid locating system.

The navigation unit uses global positioning system (GPS) satellite signals, internal yaw and vehicle speed inputs, and a map database to show where the vehicle is and to help guide you to a desired destination.

The navigation unit's GPS receiver receives signals from the GPS, a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude, and elevation of the vehicle.

Signals from the system's yaw rate sensor (inside the navigation unit) detects turns, and the ECM/PCM vehicle speed pulse (VSP) and reverse signal enable the system to keep track of the vehicle's speed and direction of travel. The advantage of this hybrid system is that the system can track your position if either the GPS signal or the vehicle speed signal is missing. For instance, when in a tunnel (no GPS), the speed signal is used to update your position on the map. Alternately, while the vehicle is being transported on a ferry, GPS signals can show the vehicle position on the map as it crosses the water.

The navigation system uses the location, direction, and speed information to display the appropriate map and calculate a route to the destination entered. As you drive to a destination, the system provides both visual and audio guidance. Audio guidance is sent to the audio unit, and an RGB graphics color signal is sent to the navigation display.

This navigation system also has voice recognition that allows voice control of most of the navigation, and audio functions. The voice control switches (TALK and BACK buttons on the steering wheel) activate the voice control system. The microphone on the ceiling receives your voice commands. For more information on this feature, consult the navigation owner's guide.

The illumination signal is used by the navigation unit to automatically switch the display mode between the Night and Day display modes. When the headlights are on, the dash brightness control setting full brightness overrides the Night display mode, and allows a daytime navigation display with the lights on.

When the navigation system is giving voice guidance commands, the front speakers are muted. When the voice control system is being used (TALK button pressed), all of the speakers are muted.

The internal GA-Net II bus passes information back and forth between the navigation display, the navigation unit, and the audio system components. The information passed on this bus are touch button commands, audio muting signal, audio (radio and XM), and any open in these bus lines can affect the navigation system or other audio accessory operation.

The clock on the navigation display is set and maintained by the navigation unit. The time is automatically adjusted for daylight savings, and time zone changes while driving. The time can be adjusted in setup.

Additional information is available about the navigation components following the System Diagram. A glossary of terms that are used throughout this article follows the detailed information.

The Navigation System Manual in the glove box covers all of the system functions and settings. Use this as a resource when evaluating a customer concern.

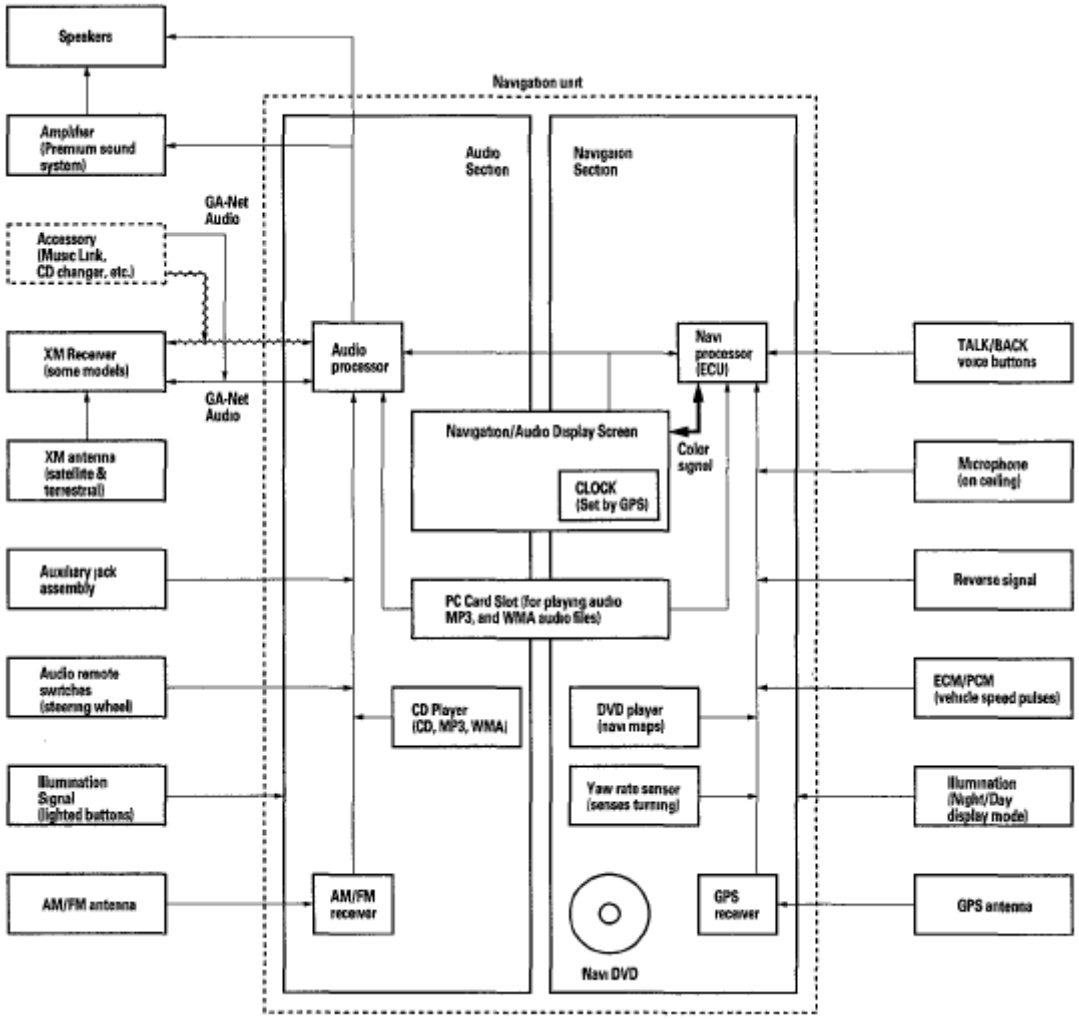


Fig. 7: Navigation System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NAVIGATION FUNCTION

The navigation system is composed of the navigation unit, the ECM/PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, XM receiver, and the climate control unit.

These units communicate with each other on the GA-Net bus.

Function Diagram

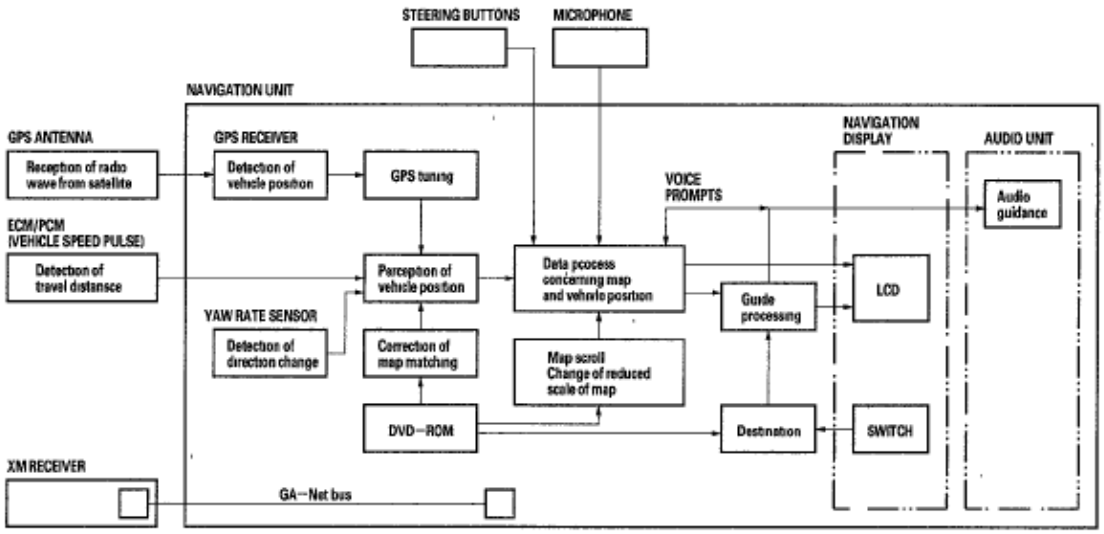


Fig. 8: Navigation System Function Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Vehicle Speed Pulse

The vehicle speed pulse is sent by the ECM/PCM. The ECM/PCM receives a signal from the countershaft speed sensor, then it processes the signal and transmits it to the speedometer and other systems.

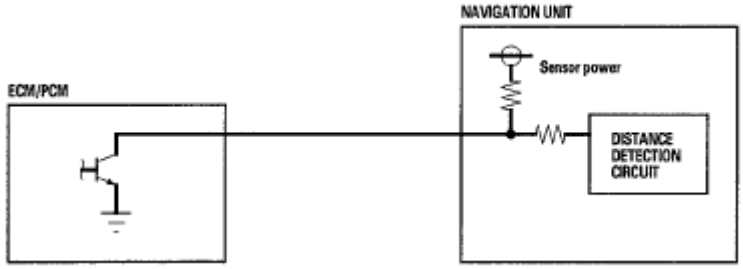


Fig. 9: Vehicle Speed Pulse Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components.

These commands include audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram below), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any factory audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.

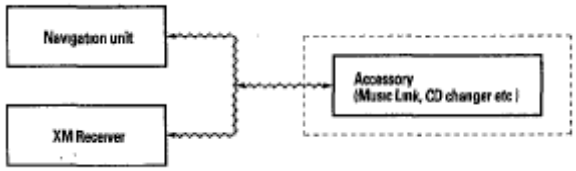


Fig. 10: GA-NET Bus Configuration - Communication Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Yaw Rate Sensor

The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure

The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

Oscillation Gyro Principles

The piezoelectric parts have electric/mechanical transfer characteristics. They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and Coriolis force. (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation

1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part, The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

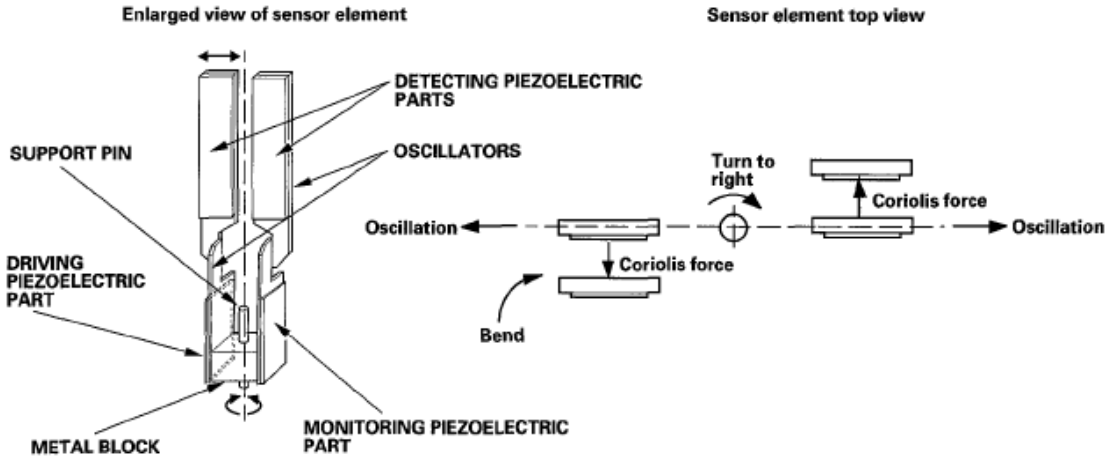


Fig. 11: Enlarged View Of Sensor Element
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Global Positioning System (GPS)

The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by using the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from four or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite's positions in its respective orbit.

Position Detection Image with GPS Satellite

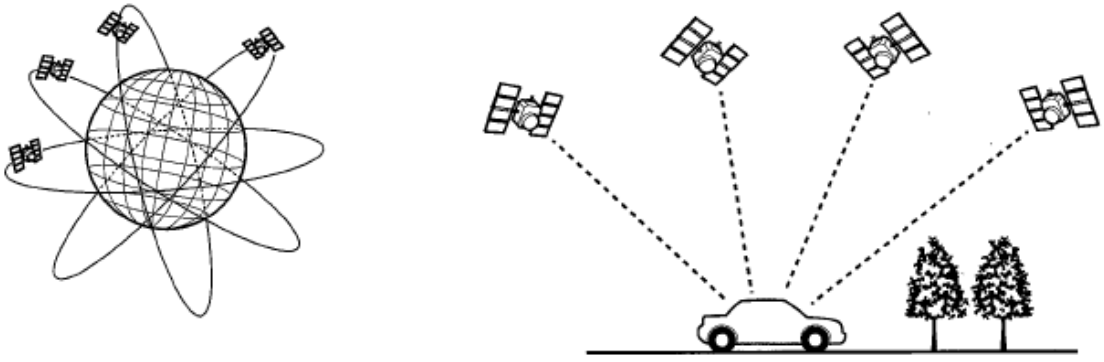


Fig. 12: Identifying Position Detection Image With GPS Satellite
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Precision of GPS

The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The precision is indicated by the color and shape of the GPS icon shown on the display.

PRECISION GPS

GPS ICON COLOR	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
			The GPS can't be utilized due to a faulty

White GPS icon	None	Faulty	GPS receiver, open in the wire, or other fault or interference.
	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
	4 or more	Vehicle position detectable in 3 dimensions (elevation displayed)	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna

The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS Receiver and Clock

The GPS receiver is built into the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The current time vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation unit to adjust vehicle position.

Navigation Unit

The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the navigation display and audio driving instructions to the audio unit.

Calculation of Vehicle Position

The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

Map Matching Tuning

The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicate on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning

The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning

The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance

The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route - Calculate a route that is the most direct.
- Easy Route - Calculate a route that minimizes the number of turns needed.
- Minimize Freeways - Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads - Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways - Calculate a route that uses freeways as much as possible.

Audio Guidance

The navigation unit transmits audio driving instructions before entering an intersection or passing a junction.

The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers are muted when the voice control system is being used.

DVD-ROM

The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

Audio Unit (Built in the navigation unit)

The audio unit receives the audio driving instructions from the navigation unit, and transmits the instructions through the front speakers even when the audio system is in use.

Navigation Display

The navigation display uses liquid crystal display (LCD). The LCD is a 6.5-inch-diagonal, thin film transistor (TFT), stripe type with 65,536 color, The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations.

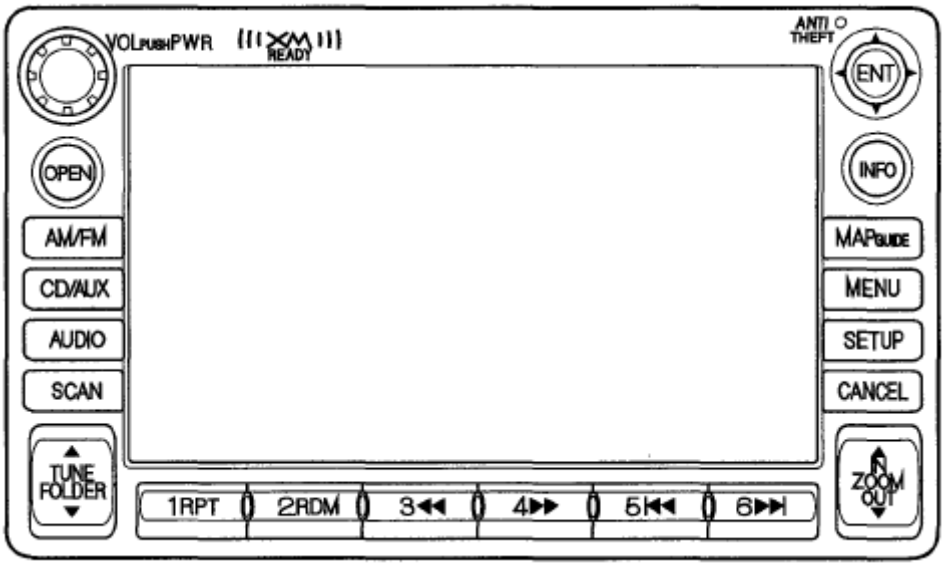


Fig. 13: Identifying Audio Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Microphone

The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

TALK Button

Activates the voice control system in the navigation unit to accept voice commands.

BACK Button

Returns the display to the previous screen (similar function as the CANCEL button).

Glossary

The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

GLOSSARY ITEM AND DESCRIPTION CHART

Item	Definition
Breadcrumbs	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed coverage area, an area that is covered in the database digital mapping. For example, the 48 continuous United States are within the DCA. Hawaii and Alaska are outside of the DCA.

DTC	Diagnostic Trouble Codes. Use the HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives off road, the navigation system will display Not on a digitized road. The breadcrumbs will appear after driving for 1/2 mile.
Disclaimer Screen	Screen containing cautionary information. It is meant to be read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or an update DVD.
ECM	Engine Control Module. Typically referred to as the ECM.
FAQ	Frequently Asked Question. See the Navigation Owner's Manual for a list of the customer FAQs, and troubleshooting information.
GA-Net bus	Units communication line.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC used for diagnosing vehicle problems.
H/U	Head Unit. The navigation system display unit assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots (breadcrumbs) are displayed if the option is enabled in Setup. The user can use them to return to a mapped road. The bottom of the navigation screen will say "Not on a digitized road". Breadcrumbs will appear after driving for 1/2 mile.
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
PC Card Slot	The PC card (PCMCIA, type II) slot is for playing MP3 and WMA audio files.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal.
PCMCIA	A computer industry defined term referring to the PC card slot standard.
PIN	Personal Identification Number. A random 4 digit number created by the customer to protect personal information.

POI	Point Of Interest. These are the businesses, schools etc. found under the places option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools etc. See the Navigation System Manual "Traveling to Your Destination" for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
Security Code	Code needed to activate the navigation system. You can obtain the security code from the iN by entering the navigation system control serial number. You can find the serial number on the diagnostic screens (Unit Check, Navi ECU) or on the underside of the navigation unit.
Touch Screen Buttons or Touch Sensor	The display panel has 2 layers of clear film on the screen panel. If you touch the screen panel, the layers engage and the navigation display detects the touch point.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either System Description, or System Diagnostic Mode (see **SYSTEM DIAGNOSTIC MODE**) in this article.
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but depending on your Unverified Routing choice in setup, voice guidance may end at the last verified street closest to your destination.
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, steering wheel (TALK/BACK) buttons, and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the ECM/PCM is used to update the Vehicle position on the map. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU and directs the VP to move backwards on the map.
VSS	Vehicle Speed Signal. The counter shaft speed sensor reads the output shaft speed at the transmission and provides a speed pulse to the ECM/PCM. The ECM/PCM sends this pulse to the navigation system.
XM Satellite Radio	A satellite band radio system where signals are received from either a satellite or land based transmitters.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in this article.

Diagnostic System Diagram

This diagram below shows an overview of the navigation diagnostic features starting at the center and working outward in layers. The diagram starts with "Key On." Next the diagram shows two ways to get the diagnostic main menu:

From any of the navigation Map or Menu screens, press and simultaneously hold the keys Menu Map Cancel.

Finally, the diagram shows the available diagnostic menu choices, starting at the bottom left, and moving clockwise. In most cases, do not clear or change settings in any diagnostic screen unless instructed to do so in the explanation, or by the factory. If the factory asks you to insert a PCMCIA memory card into the PC card slot, then the features specified on the diagram with PC card are available.

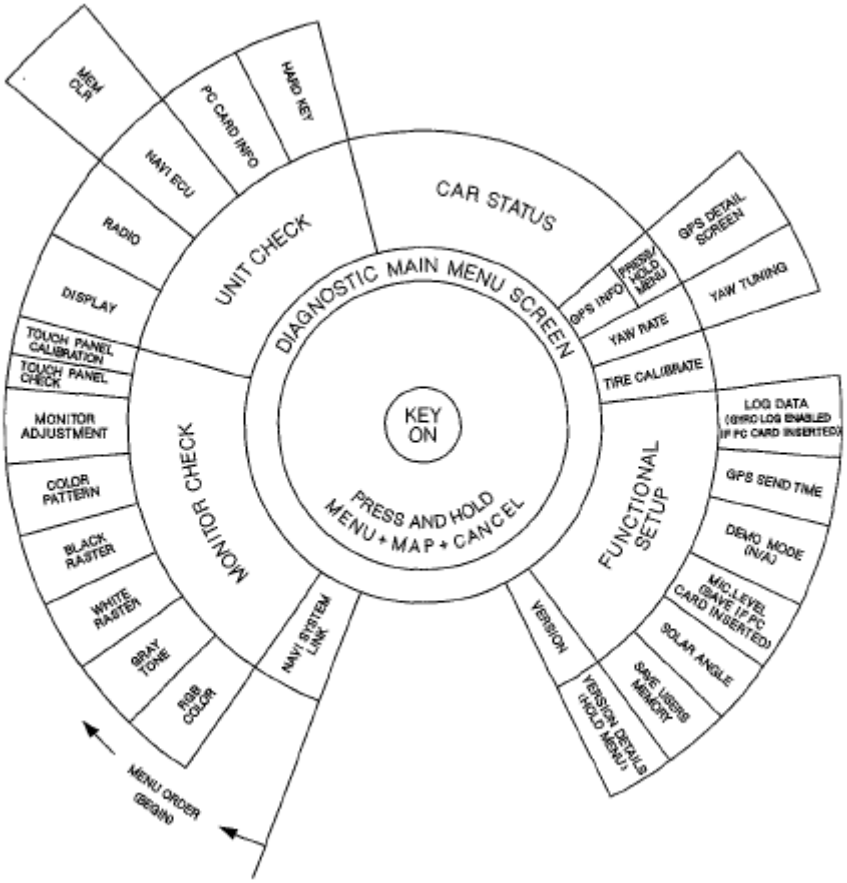


Fig. 14: Diagnostic System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NAVIGATION SYSTEM CONNECTOR LOCATION

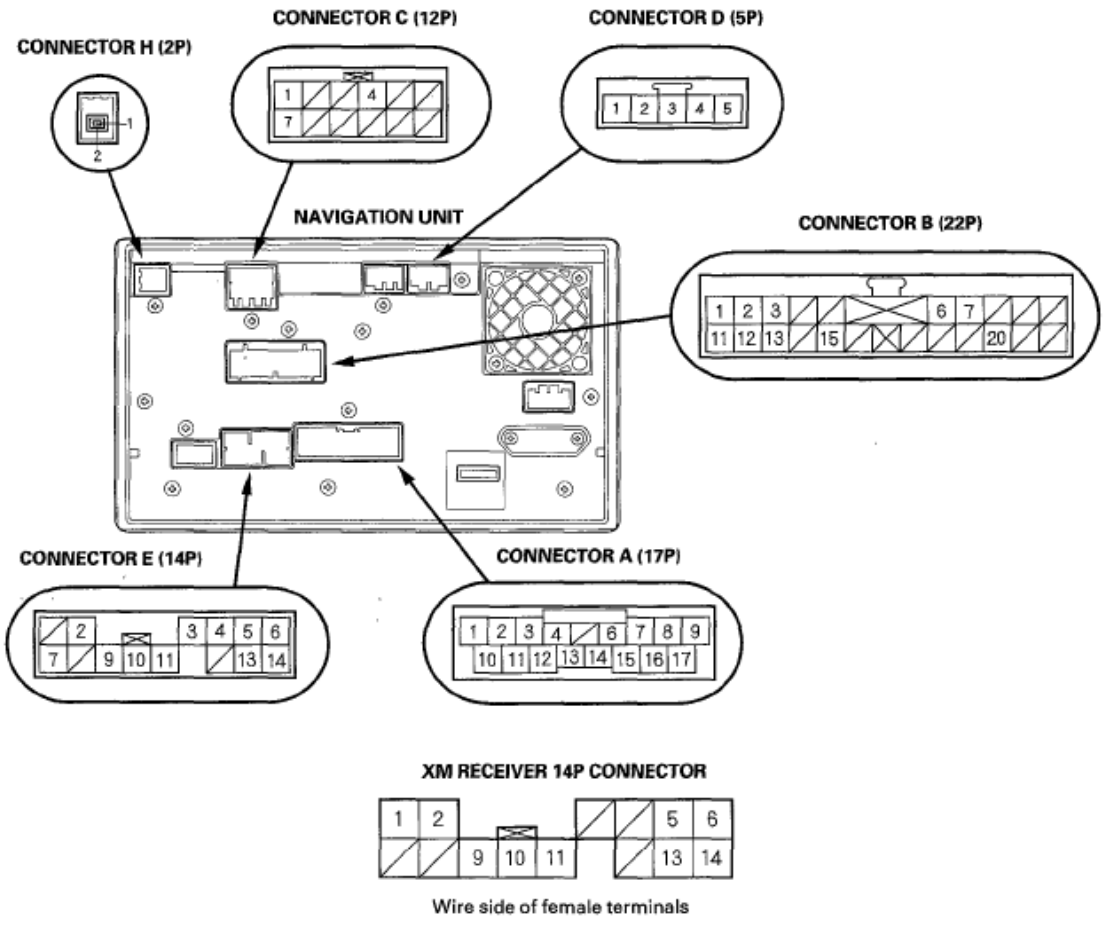


Fig. 15: Identifying Navigation System Connector Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR A (17P)

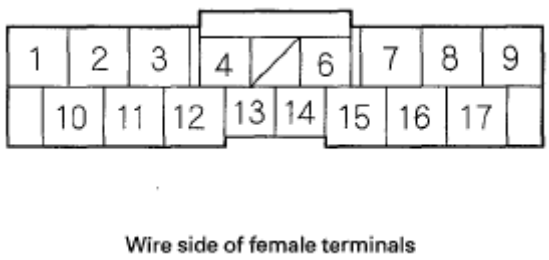


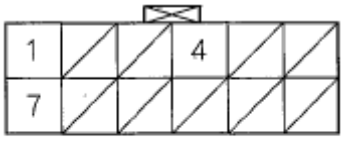
Fig. 16: Identifying Navigation Unit Connector A (17P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TERMINALS REFERENCE CHART

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	RED	ILL (-)	Ground for illumination light	With full dash lights brightness, 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on. If short to ground: No

					change to display
9	BLK	RADIO GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
10	GRY	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Light on = battery voltage, Lights off = 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on If short to ground: Blows fuse No. 14 (7 5 A) in under-dash fuse/relay box.
13	BLU	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from ECM/PCM	Pulses 0-5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0. If short to ground: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0.
17	WHT	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 23 (10 A) in the under-hood fuse/relay box.

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR C (12P)



Wire side of female terminals

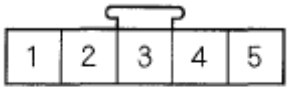
Fig. 17: Identifying Navigation Unit Connector C (12P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TERMINALS REFERENCE CHART

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	+B BACK UP	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to enter code screen. If short to ground: Blows fuse No 23 (10 A) in the under-

					dash fuse/relay box.
4	BLK	GND	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
7	BRN	BACK LT-	Reverse signal of select laver from Multiplex integrated Control unit (A/T) or backup light switch (M/T)	In reverse, battery voltage Otherwise 0 V	If open: Navigation never sees the reverse signal and back-up camera does not come on when in reverse. Diagnostic screen Car Status, Back = 0. If short to ground' Blows fuse No. 10 (7 5 A) in the under-dash fuse/relay box.

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR D (5P)



Wire side of female terminals

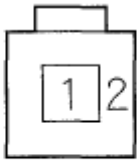
Fig. 18: Identifying Navigation Unit Connector D (5P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TERMINALS REFERENCE CHART

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BRN	MIC GND	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: Navi System Link and Functional Set up Mic Level. If short to ground: No effect on voice recognition.
2	YEL	MIC SIG+	Microphone output signal positive	4-5 V (with TALK button pressed)	If open: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level. If short to ground: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level.
3	GRV (1)	MIC SHIELD	Shield for terminal No. 1, 2, 5	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
				4-5 V (TALK	If open: Steering wheel TALK, and BACK switch/ buttons do not

4	GRN	NAVI GUIDE	Steering wheel switch output	button pressed) 2.5-3 V (BACK button pressed)	work. If short to ground: Steering wheel TALK, and BACK switch/buttons do not work.
5	ORN	MIC ADPT	Control signal for microphone	0 V	If open: No effect on voice recognition. If short to around: No effect on voice recognition.
(1) The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.					

NAVIGATION UNIT INPUTS AND OUTPUTS FOR CONNECTOR H (2P)



Wire side of female terminals

Fig. 19: Identifying Navigation Unit Connector H (2P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TERMINALS REFERENCE CHART

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	-	GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to ground: GPS icon on screen is white, system links screen ANT shows NG.
2	-	GPS SH	Shield for terminal No. 1	0 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to around: No effect on system.

CIRCUIT DIAGRAM

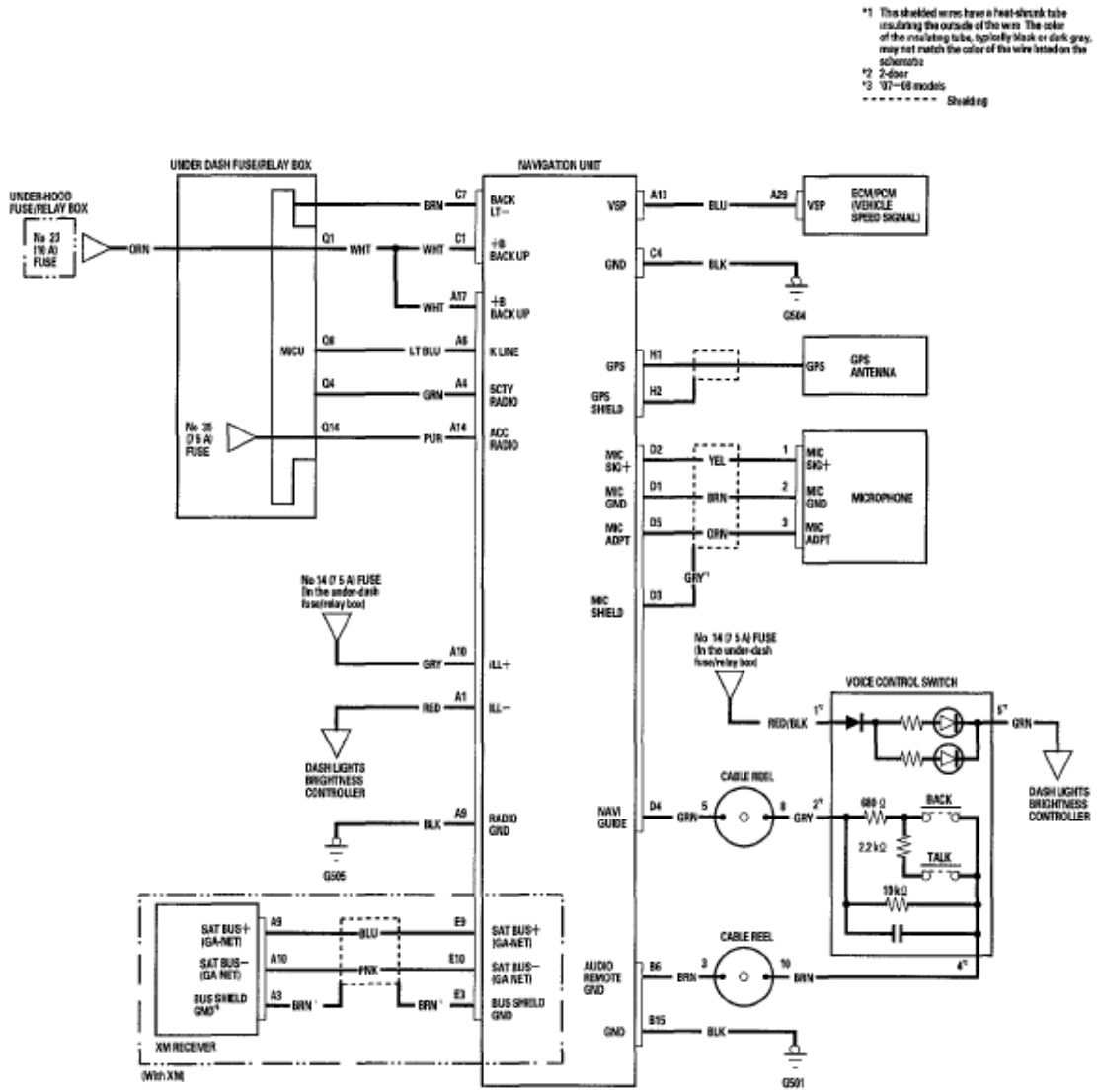


Fig. 20: Navigation System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING

NO PICTURE IS DISPLAYED

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **For problems with the rearview camera, do the rearview camera does not come on or work properly troubleshooting.**
- **Check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, make sure you have the navigation system anti-theft code.**

1. Check the No. 23(10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-

dash fuse/relay box, and reinstall the fuse if it is OK.

Is the fuse OK?

YES -Go to step 2.

NO -Replace the fuse and recheck.

2. Turn the ignition switch to ON (II).
3. Operate the radio and listen to the audio.

Can you hear the audio?

YES -Go to step 4.

NO -Refer to audio system troubleshooting.

4. Turn the ignition switch to LOCK (0).
5. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
6. Measure the voltage between navigation unit connector A (17P) terminal No. 17 and body ground.

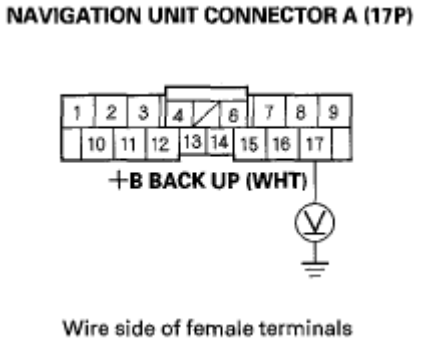


Fig. 21: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 7.

NO -Repair open in the wire between the under-dash fuse/relay box and the navigation unit.

7. Turn the ignition switch to ON (II).
8. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

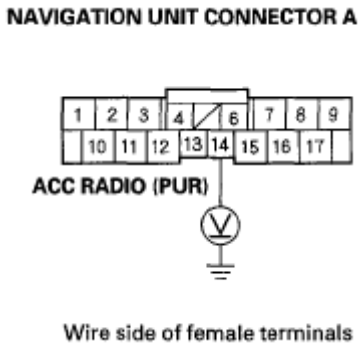


Fig. 22: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 14 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 9.

NO -Repair open in the wire between the under-dash fuse/relay box and the navigation unit.

9. Measure the voltage between the navigation unit connector A (17P) terminal No. 9 and body ground, and between navigation unit connector C (12P) terminal No. 4 and body ground.

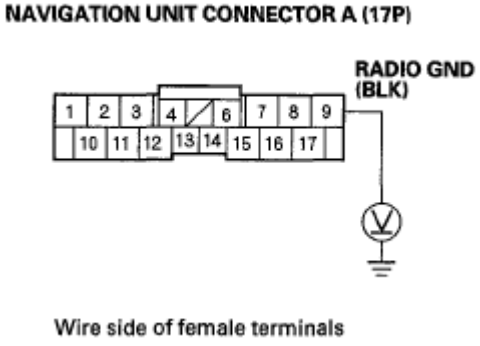


Fig. 23: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

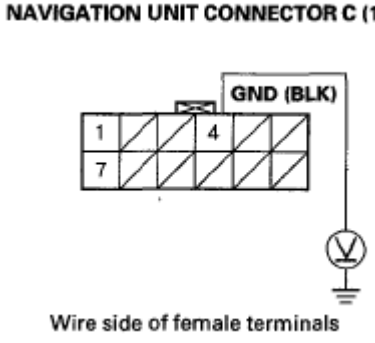


Fig. 24: Measuring Voltage Between Navigation Unit Connector C (12P) Terminal No. 4 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the navigation unit and body ground (G504) (see **CONNECTOR TO HARNESS INDEX**), (G505) (see **CONNECTOR TO HARNESS INDEX**).

PICTURE HAS LINES/ROLLS/OTHER ISSUES OR IS AN ODD COLOR

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Check the navigation screen settings for brightness, contrast, black level and the color screen for map color and menu color.**
- **Check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, make sure you have the navigation and audio system anti-theft codes.**

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the navigation unit.

   Are there any electronic accessories?

   YES -Disable the accessories, and recheck.

   NO -Go to step 2.

2. Turn the ignition switch to ON (II).
3. Start up the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES -Go to step 5.

   NO -Go to step 4.

4. Go into the Diagnostic mode and use RGB Color diagnostic under Monitor Check (see **MONITOR CHECK**).

   Are the red, green, and blue colored circle shown?

   YES -Go to step 5.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

5. Turn the ignition switch to LOCK (0), then turn to ON (II) and observe the navigation picture.

Did the image improve?

YES -Check for sources of electrical noise, such as poor battery connection, alternator, defective battery, aftermarket accessories or cell phone, and poor pin fits at the display or control unit.

NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION DISPLAY BUTTONS DO NOT WORK OR RESPOND PROPERLY

NOTE:

- **Always make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Always check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, make sure you have the navigation and audio system anti-theft codes.**

1. Turn the ignition switch to ON (II).

   Does the navigation display turn on?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Refer to troubleshooting for **NO PICTURE IS DISPLAYED** .

GPS ICON IS WHITE OR NOT SHOWN

NOTE:

- **Make sure the vehicle is parked outside and away from buildings.**
- **Refer to GPS INFORMATION for realtime satellite reception display.**
- **Check for window tinting above the GPS antenna and any non-OEM accessories mounted near the navigation unit or GPS antenna.**

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there metallic window tint or electronic accessories?

   YES -Remove tint or the accessories and recheck.

   NO -Go to step 2.

2. Go into the Diagnostic Menu and use the Navi System Link test (see **SYSTEM DIAGNOSTIC MODE**) to check the GPS antenna.

   Is the GPS Ant icon red?

   YES -Use the Navi ECU test under Unit Check (see **UNIT CHECK**) to check for a kinked, crushed, or disconnected GPS antenna wire. If necessary, try a known-good GPS antenna. If icon is still red, replace the navigation unit.

NO -Check that nothing is blocking the GPS antenna located behind the gauge assembly and recheck. Substitute a known-good navigation unit, and recheck.

VOICE GUIDANCE CANNOT BE HEARD, IS BROKEN UP, OR THERE IS STATIC

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Check that the volume setting and voice feedback are turned ON.**
- **Check the connectors for poor connection or loose terminals.**
- **Before troubleshooting, make sure you have the navigation system 4-digit anti-theft code, then write down the audio presets.**
- **After troubleshooting, enter the navigation system anti-theft code, then enter the audio presets.**

1. Press the display unit SET-UP button.
2. Check the volume setting for the navigation system.

   Is it set to OFF?

   YES -Set the volume to an audible level.

   NO -Go to step 3.

3. Check the radio operation.

   Can you hear the radio?

   YES -Go to step 4.

   NO -Troubleshoot the audio system.

4. Go into the Diagnostic Menu and use the Navi System Link test (see **SYSTEM DIAGNOSTIC MODE**) to check the radio.

   Is the Radio icon red?

   YES -Troubleshoot the audio system.

   NO -Go to step 5.

5. Test the voice control switch (see **VOICE CONTROL SWITCH TEST**).

   Is voice control switch OK?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Replace the voice control switch (see **VOICE CONTROL SWITCH REPLACEMENT**).

VOICE CONTROL DOES NOT WORK/RESPOND

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Check the connector for poor connection or loose terminals.**
- **Before troubleshooting, make sure you have the navigation system 4-digit anti-theft code, then write down the audio presets.**
- **After troubleshooting, enter the anti-theft code then enter the audio presets.**

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command "Find the nearest Italian Restaurant" only works on a Map screen.

  (See the Navigation System Manual for a complete list of allowed voice commands for the information being displayed.)

- Close the windows, moonroof, and doors.
- Set the fan speed to low (1 or 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.
- Compare the system operation with a known-good vehicle. Have more than one person test the system operation. If the like known-good vehicle performs the same, if is a characteristic of the system.

1. Turn the ignition switch to ON (II).
2. Go into the Diagnostic Menu and use the Mic Level test under Functional Setup (see **FUNCTIONAL SETUP**) to check the operation of the TALK and BACK buttons.

   Are the TALK and BACK buttons operational?

   YES -Go to step 15.

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Do the voice control switch test (see **VOICE CONTROL SWITCH TEST**).

   Is the voice control switch OK?

YES -

- 2-door model: Go to step 5.
- 4-door model: Go to step 10.

NO -Replace the voice control switch.

5. Disconnect the voice control switch 5P connector and navigation unit connector D (5P).
6. Check for continuity between body ground and navigation unit connector D (5P) terminals No. 4.

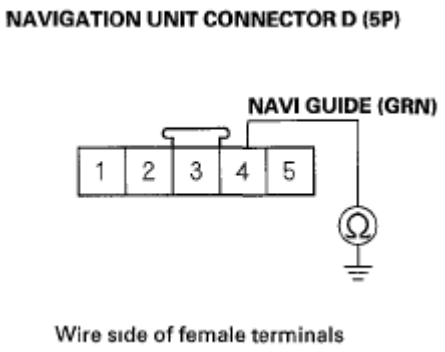


Fig. 25: Checking Continuity Between Body Ground And Navigation Unit Connector D (5P) Terminals No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace short to body ground in the wire between navigation unit and voice control switch, or replace the cable reel.

NO -Go to step 7.

7. Check for continuity between navigation unit connector D (5P) terminal No. 4 and voice control switch 5P connector terminal No. 2.

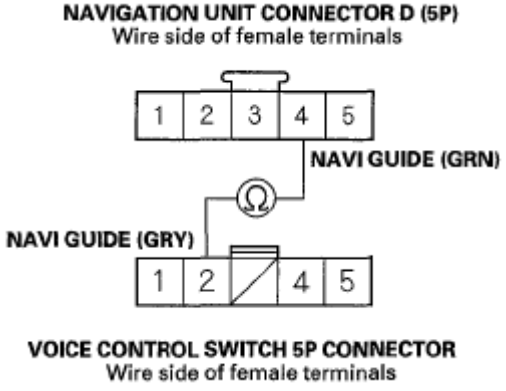


Fig. 26: Checking Continuity Between Navigation Unit Terminal No. 4 And Voice Control Switch 5P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 8.

NO -Repair open in the wire between navigation unit and voice control switch, or replace the cable reel.

8. Disconnect navigation unit connector D (22P).
9. Check for continuity between navigation unit connector B (22P) terminal No. 6 and voice control switch 5P connector terminal No. 4.

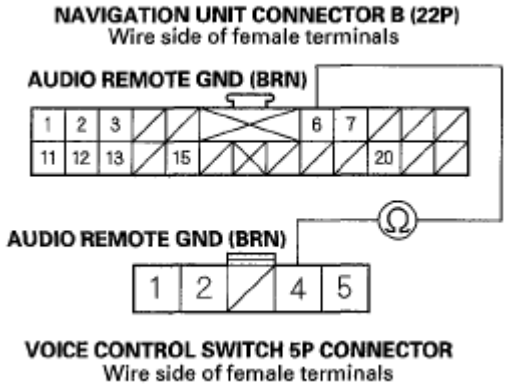


Fig. 27: Checking Continuity Between Navigation Unit Terminal No. 6 And Voice Control Switch 5P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between navigation unit and voice control switch, or replace the cable reel.

10. Disconnect the cable reel 20P connector and navigation unit connector D (5P).
11. Check for continuity between body ground and navigation unit connector D (5P) terminals No. 4.

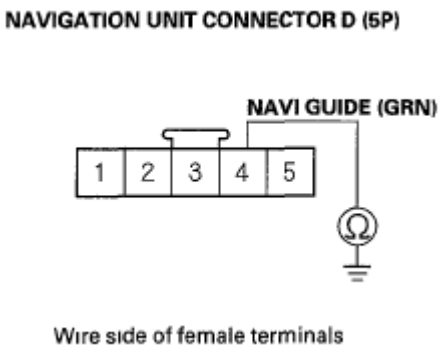


Fig. 28: Checking Continuity Between Body Ground And Navigation Unit Connector D (5P) Terminals No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between navigation unit and voice control switch, or replace the cable reel.

NO -Go to step 12.

12. Check for continuity between navigation unit connector D (5P) terminal No. 4 and cable reel 20P connector terminal No. 8.

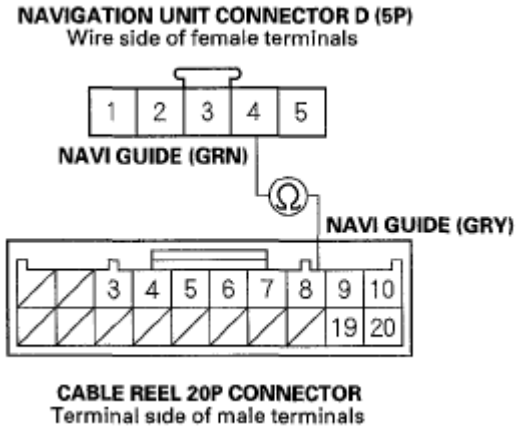


Fig. 29: Checking Continuity Between Navigation Unit Terminal No. 4 And Cable Reel 20P Connector Terminal No. 8
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 13.

NO -Repair open in the wire between navigation unit and voice control switch, or replace the cable reel.

13. Disconnect navigation unit connector B (22P).
14. Check for continuity between navigation unit connector B (22P) terminal No. 6 and cable reel 20P connector terminal No. 10.

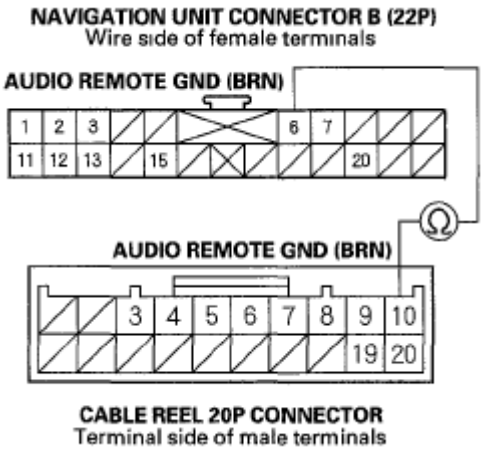


Fig. 30: Checking Continuity Between Navigation Unit Terminal No. 6 And Cable Reel 20P Connector Terminal No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between navigation unit and voice control switch, or replace the cable reel.

15. Use the Mic Level diagnostic under Functional Setup (see **FUNCTIONAL SETUP**) to check the operation of the microphone.

    Is the microphone operational?

    YES -Check the operation of the voice control system (see the Navigation System Manual).

    NO -Go to step 16.

16. Turn the ignition switch to LOCK (0).
17. Remove the moonroof switch and disconnect the microphone 3P connector (see **MICROPHONE REPLACEMENT**).
18. Disconnect navigation unit connector D (5P).
19. Check for continuity between body ground and navigation unit connector D (5P) terminal No. 2 and No. 5 individually.

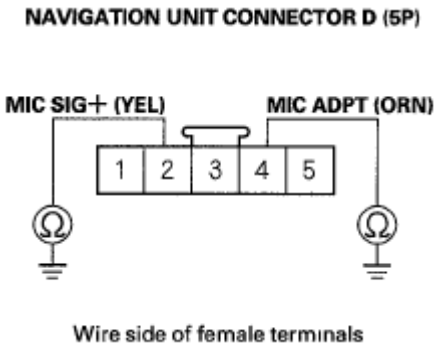


Fig. 31: Checking Continuity Between Body Ground And Navigation Unit Connector D (5P) Terminal No. 2 And No. 5
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire(s) between navigation unit and microphone.

NO -Go to step 20.

20. Check for continuity between navigation unit connector D (5P) according to the table.

TERMINALS CONTINUITY CHART

From terminal	To terminals
D2	D3, D5
D3	D5

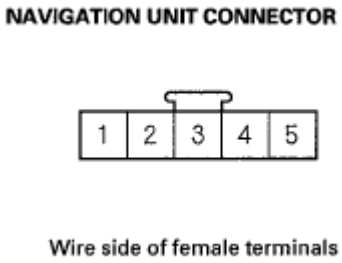


Fig. 32: Identifying Navigation Unit Connector D (5P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity between any of the terminals?

YES -Short in the wire(s) between the navigation unit and microphone. Replace the affected shielded harness.

NO -Go to step 21.

21. Check for continuity between navigation unit connector D (5P) and microphone 3P connector according to the table.

TERMINALS CONTINUITY CHART

Navigation unit connector	Microphone connector	Wire color
D1	2	BRN
D2	1	YEL
D5	3	ORN

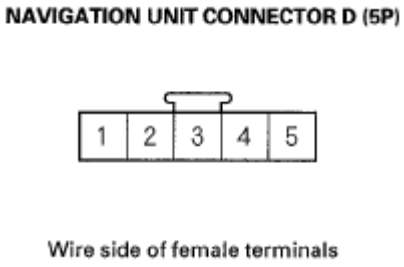


Fig. 33: Identifying Navigation Unit Connector D (5P) Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

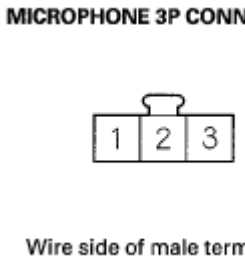


Fig. 34: Identifying Microphone 3P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good microphone, then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original microphone. If the symptom/indication is still present, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire(s) between the navigation unit and microphone. Replace the affected shielded harness.

VEHICLE POSITION ICON CONSTANTLY LEAVES ROAD, MOVES ERRATICALLY, OR IS VERY FAR FROM ACTUAL POSITION

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Check for aftermarket accessories.**

1. Check the GPS icon on the navigation picture.

   Is the GPS icon on the map screen?

YES -Do the troubleshooting for GPS icon is white or not shown (see **GPS ICON IS WHITE OR NOT SHOWN**).

NO -Go to step 2.

2. Go into the Diagnostic Menu, and use the Yaw Rate test (see **YAW RATE**) to check the yaw rate sensor.
3. Go into the Diagnostic Menu and use the Car Status test (see **CAR STATUS**) to check the vehicle speed pulse.

Are the yaw rate sensor and vehicle speed pulse OK?

YES -The problem may be a normal characteristic. Check to see if the problem occurs in the same place. If it does, the problem could be in the database. Compare to a known-good vehicle under the same conditions. If you can duplicate the problem, report it. Refer to the Customer Assistance section of the Navigation User's Guide, "Reporting Errors".

NO -If the problem is the yaw rate sensor, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**). If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit.

DVD SCREEN ERROR MESSAGES

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**
- **Check the Navigation System Manual for a list of common DVD screen error messages and the probable cause.**
- **Go into the Diagnostic Menu and use the Car Status test (see CAR STATUS) to check the status of the display.**

1. Check the DVD-ROM reading surface for scratches.

Are there scratches?

YES -Replace the DVD-ROM.

NO -If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

SYSTEM ALWAYS COMES UP IN IN-LINE DIAGNOSTIC MODE

1. When a navigation unit is powered up for the first time at the factory, the factory diagnosis screen (In Line Diag) appears. Normally the factory performs the steps necessary to verify proper operation and terminate the factory diagnostic. Until the proper confirmation sequence is performed, the screen will appear every time the vehicle is started.

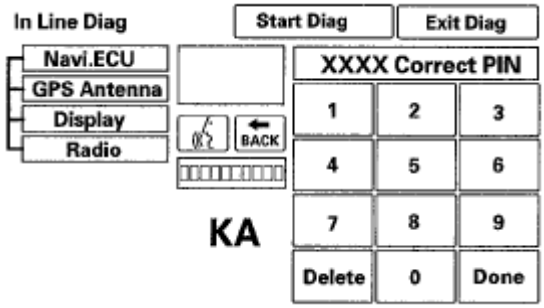


Fig. 35: Display Screen - In-Line Diagnostic Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Follow the steps to prevent the screen from showing up in the future:
   - Hold down the buttons (Menu+Map/Guide+Cancel) for about 5 seconds (the Select Diagnosis Items screen will appear).
   - Hold down the Map/Guide button for 5-10 seconds (A screen with a Complete button, will appear).
   - Touch Complete, and then the Return button (the system may re-boot).
   - Restart the vehicle, and confirm normal operation by completing the "PDI of the navigation system" Service Bulletin.

DISPLAY DAY/NIGHT MODE DOES NOT WORK

NOTE:

- **Check the connectors for poor connection or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft code.**
- **After troubleshooting, enter the navigation system anti-theft code.**
- **Full brightness on the instrument panel brightness control with the head lights turned on causes the system to stay in the day mode, even when the lights are on.**

1. Make sure the instrument panel brightness control is not on full brightness. Turn the headlights on and adjust the dash brightness to the middle range.
2. Change the day/night mode under Set-up to AUTO and recheck.

   Does the display change to day and night modes when turning the headlights on and off?

   YES -The system is OK at this time.

   NO -Go to step 3.

3. Go into the Diagnostic Menu and use the Car Status test to check for an ILL signal (see **CAR STATUS**).

   Is the ILL signal OK?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Check the ILL+ circuit between the navigation unit and No. 14 (7.5 A) fuse in the under-dash fuse/relay box.

SYSTEM LOCKS UP OR FREEZES CONSTANTLY

NOTE:

- **Make sure that the correct DVD color and version are installed.**
- **Check any official Honda service website for more service information about the navigation system.**

1. Start the engine and turn the ignition switch to LOCK (0), then turn the ignition switch to ON (II).

   Does the system reboot?

   YES -The system is OK at this time.

   NO -Check the DVD for scratches or damage, and the navigation unit for water damage. If OK, go into the Diagnostic Menu and do all of the Unit Check tests (see **UNIT CHECK**). Also check for low battery charge or poor charging system performance.

VEHICLE ICON WANDERS ACROSS THE MAP WHEN DRIVING (DOES NOT FOLLOW A DISPLAYED ROAD) OR MAP OR VEHICLE ICON SPINS

NOTE:

- **This symptom is usually caused by a defective yaw rate sensor. Perform this diagnostic when the vehicle is cold and warm.**
- **Also refer to symptom troubleshooting for GPS ICON IS WHITE OR NOT SHOWN .**

1. Go into the Diagnostic Menu and use the Yaw Rate test (see **YAW RATE**).

   Are the values correct?

   YES -The system is OK.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

VEHICLE ICON MOVES BY ITSELF OR SPINS WHEN PARKED

NOTE:

- **Check the connectors for poor connection or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft code, then write down the audio presets.**
- **After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system, then enter the audio presets.**

1. Start the engine.
2. From the main menu, select places, then select any destination, and begin the trip.
3. With the vehicle parked, watch the vehicle icon on the display.

Does the vehicle position icon move by itself?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -The system is OK at this time.

NAVIGATION DISPLAY STAYS ON WITH IGNITION SWITCH OFF

NOTE:

- **Check the connectors for poor connections or loose terminals.**
- **Before troubleshooting, get the navigation system anti-theft code, then write down the audio presets.**
- **After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system, then enter the audio presets.**
- **Check for aftermarket accessories that use the same power circuit. A feedback can cause this problem.**

1. Remove the key from the ignition.

   Does the navigation screen stay on?

   YES -Go to step 2.

   NO -The system is OK at this time.

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit connector A (17P) for a non-factory jumper wire in series with the factory cable.

   Is there a jumper wire?

   YES -Remove the jumper wire, and re-test. Return the jumper wire to Tech Line.

   NO -Go to step 3.

3. Check if the audio unit works.

   Does the audio unit work with the ignition switch off?

   YES -Troubleshoot the ACC circuit for a short to power with another circuit.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION CANNOT CONTROL AUDIO SYSTEM

1. Make sure the anti-theft code for the navigation system is entered.
2. Go into the Diagnostic Menu and use the Navi System Link test (see **SYSTEM DIAGNOSTIC MODE**).

Is the Radio icon red?

YES -Do the troubleshooting for the voice guidance cannot be heard (see **GPS ICON IS WHITE OR NOT SHOWN**).

NO -Go to step 3.

3. Substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**), and recheck.

   Can the navigation control audio?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Do the audio system troubleshooting.

NAVIGATION CANNOT CONTROL XM RADIO

- Review the audio system diagnostic article.
- If you can only tune to channels 000, 001, 174, and 247, make sure the audio unit is set to the channel mode (see owner's manual), if is set to channel mode, call XM satellite radio customer support and check the account activation status.

1. Substitute a known-good navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**), and recheck.

   Can the navigation control the XM radio?

   YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

   NO -Do the audio system troubleshooting.

NAVIGATION FREQUENTLY ASKS FOR ANTI-THEFT CODE AND NEEDS GPS INITIALIZATION

1. Measure the voltage between navigation unit connector A (17P) terminal No. 17 and body ground.

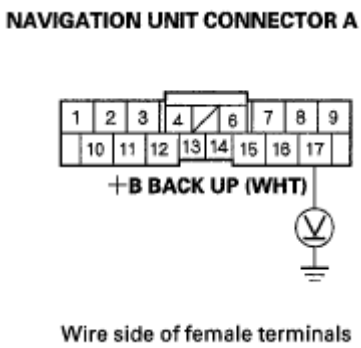


Fig. 36: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 2.

NO -Repair open in the wire between the under-dash fuse/relay box and the navigation unit.

2. Turn the ignition switch to ON (II).
3. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

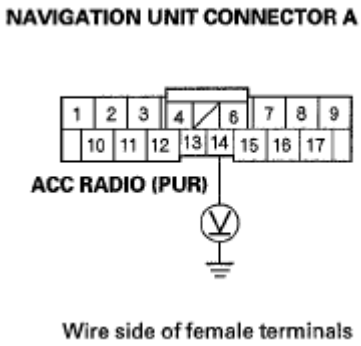


Fig. 37: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 14 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 4.

NO -Repair open in the wire between the under-dash fuse/relay box and the navigation unit.

4. Measure the voltage between navigation unit connector A (17P) terminal No. 9 and body ground, and between navigation unit connector C (12P) terminal No. 4 and body ground.

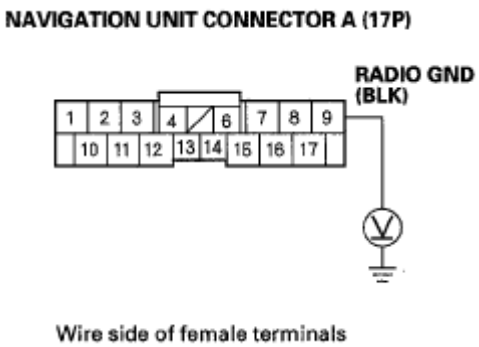


Fig. 38: Measuring Voltage Between Navigation Unit Connector A (17P) Terminal No. 9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

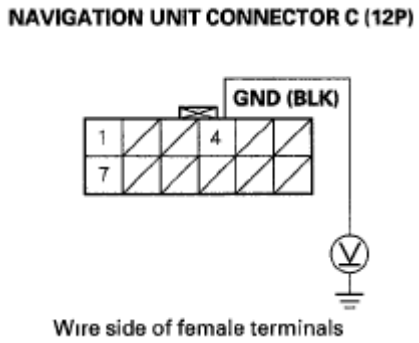


Fig. 39: Measuring Voltage Between Navigation Unit Connector C (12P) Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.1 V?

YES -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the navigation unit and body ground (G504, G505).

OPEN/CLOSE FUNCTION OF THE DISPLAY DOES NOT WORK

NOTE: If the display's Open/Close button does not work, you must manually open the display to obtain the customer's navigation DVD, audio CD, and PC card (see CD, DVD, AND PC CARD REMOVAL/INSTALLATION).

1. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES -The system is OK at this time.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION DISPLAY WILL NOT CLOSE

1. Check the CD slot. Look for foreign objects, stuck CD, broken or sticking slot.

   Is the CD slot OK?

   YES -Go to step 2.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

2. Check the PC card.

   Is the PC card fully seated?

   YES -Go to step 3.

NO -Reseat the card or remove it. If it still won't close, replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

3. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES -The system is OK at this time.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

NAVIGATION DISPLAY DOES NOT OPEN OR OPENS PART WAY

1. Press the OPEN/CLOSE button.

   Does the unit beep?

   YES -Go to step 2.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

2. Press the OPEN/CLOSE button.

   Does the display open normally?

   YES -The system is OK at this time.

   NO -Replace the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).

SYSTEM DIAGNOSTIC MODE

START-UP PROCEDURE AND DIAGNOSIS MENU

1. Turn the ignition switch to ON (II).

   Press and hold the Menu, the Map/Guide, and the Cancel buttons. Keep them pressed for approximately 3 seconds. The display screen then goes directly to the Diagnostic Menu.

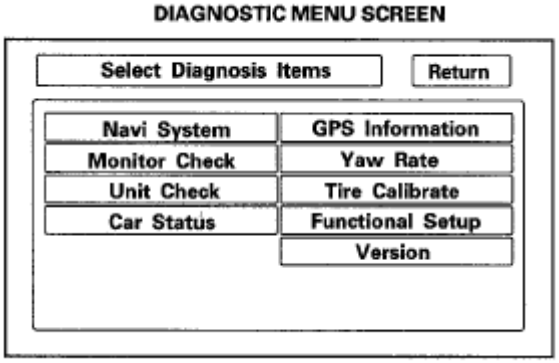


Fig. 40: Diagnostic Menu Screen Display

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. After the display changes to the Diagnostic Menu, select the item you want to check, and the test will begin. To return to the previous screen, select Return.
    - Navi System (Link)
    - Monitor Check
    - Unit Check
    - Car Status
    - GPS Information
    - Yaw Rate
    - Tire Calibrate
    - Functional Setup
    - Version

NAVI SYSTEM LINK

- This diagnostic step tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnosis begins, you hear a bong sound. The system is in a Detecting mode, and is waiting for all the items in white to be tested. This includes the voice control switch (TALK/BACK buttons), and the microphone. Press the TALK button on the steering wheel, and in a normal voice, say "testing". The Talk indicator on the screen should turn green, and the voice level indicator should move to at least the 6th bar to pass. Next, press the BACK button. The Cancel indicator should turn green.
- If all of the communication lines connecting the system components, and the TALK/BACK buttons/ microphone check out OK (all block diagram items green), then the OK indicator turns green.
- If there is a problem with the system, the faulty system component item turns red, and the screen will show NG in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indicator on the screen may not change until you cycle the ignition switch. After repairing the affected cable or system, repeat this diagnostic.

NOTE: Green boxes and green OK indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as green. A road test, or other diagnostic may be necessary to find the problem.

- Select Return to return to the Diagnostic Menu, or the Exit Diag button to exit.

NOTE: The Mic Level indicator must reach the 6th bar or greater to pass the test.

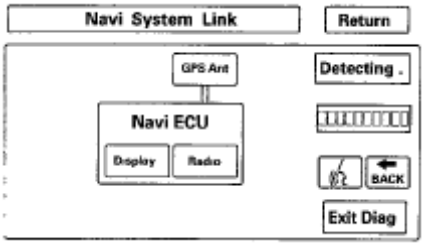


Fig. 41: Diagnostic Menu Screen Display - Navi System Link
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MONITOR CHECK

Overview of navigation display

The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.

These screens allow troubleshooting of the navigation display. Select the item you want to troubleshoot, and follow the diagnostic instructions.

- RGB Color
- Gray Tone
- White Raster
- Black Raster
- Color Pattern
- Monitor Adjustment
- Touch Panel Check
- Touch Panel Calibration

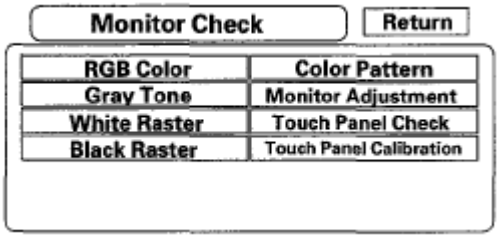


Fig. 42: Diagnostic Menu Screen Display - Monitor Check
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RGB Color

This screen verifies that the navigation display is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If the picture has lines in it, or scrolls horizontally or vertically, and any of the colors are missing, troubleshoot for a Composite sync and color signal problem (see **PICTURE HAS LINES/ROLLS/OTHER ISSUES OR IS AN ODD COLOR**).

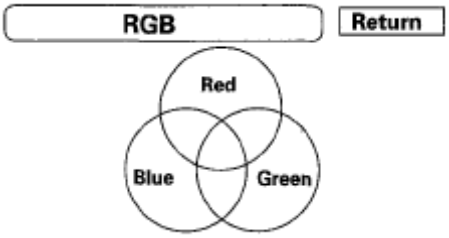


Fig. 43: Diagnostic Menu Screen Display - RGB Color
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Gray Tone

This screen looks for problems with contrast. You should be able to see the changes from bar to bar across the scale. If you can't see the shade changes from bar to bar, replace the navigation unit.

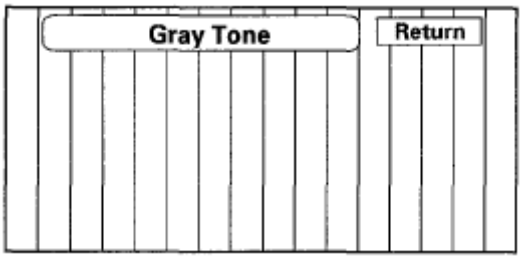


Fig. 44: Diagnostic Menu Screen Display - Gray Tone
Courtesy of AMERICAN HONDA MOTOR CO., INC.

White Raster

This diagnostic screen checks for pixels that may be dead (off). The entire display must be white. If pixels are dead, replace the navigation unit.

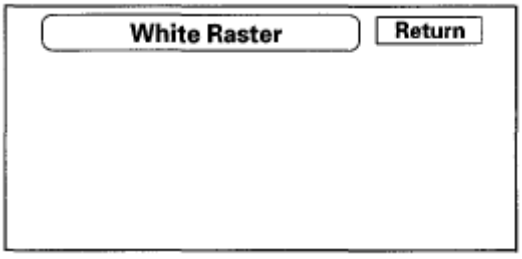


Fig. 45: Diagnostic Menu Screen Display - White Raster
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Black Raster

The entire display must be black. This diagnostic screen checks for pixels that may be stuck (on). If pixels are stuck on, replace the navigation unit.

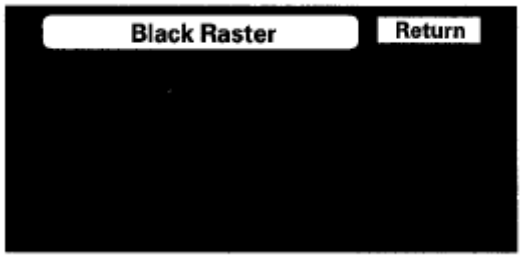


Fig. 46: Diagnostic Menu Screen Display - Black Raster
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Color Pattern

The chart below shows the colors being used for the Map and Menu screens. This is for factory use only. To check the color signal use the RGB test.

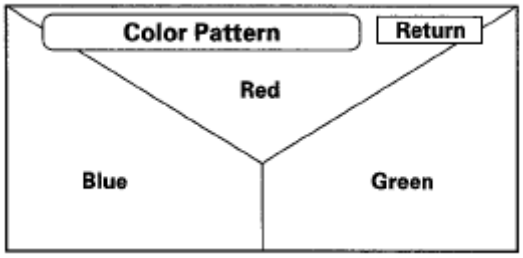


Fig. 47: Diagnostic Menu Screen Display - Color Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Monitor Adjustment

This allows you to center the navigation display. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The Default button will reset the display position to factory specifications. The factory default is 0, 0. The H-POS button is for factory use only.

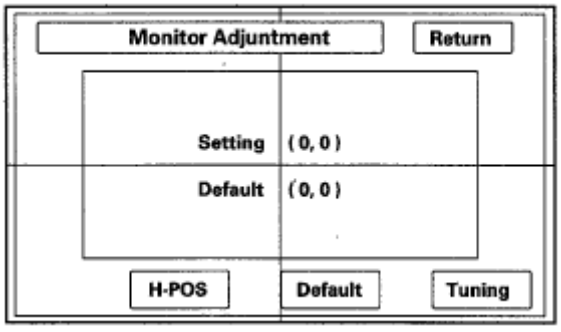


Fig. 48: Diagnostic Menu Screen Display - Monitor Adjustment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Touch Panel Check

The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically touched to make it work. The display has the capability of 479 touch locations (left to right), and 233 touch locations (top to bottom).

The upper left hand corner is position (0, 0) and the lower right hand corner is (479, 233) as displayed. Touching anywhere on the screen will display the coordinate of the location, and cause the place you touch to display a + icon. If any area of the screen either doesn't respond, or responds at some other location when touched, then replace the navigation unit.

NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.

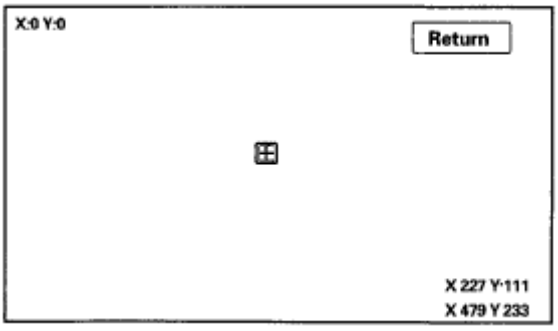


Fig. 49: Diagnostic Menu Screen Display - Touch Panel Check
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Touch Panel Calibration

The display screen uses a touch sensitive membrane. This means that every location of the entire surface of the display is touch sensitive. This diagnostic allows alignment of these touch locations with the location of the buttons images on the screen.

Normally this should never need adjustment, and is used only to adjust the touch locations for parallax (the touch locations appear different when viewed at an angle). However, if an adjustment is necessary, follow this procedure:

- The screen consists of the + button icons. Touch the center of the five + buttons on order 1-5.
- To store any change you make, touch the Set button.
- Use the Return key to exit the diagnostic.

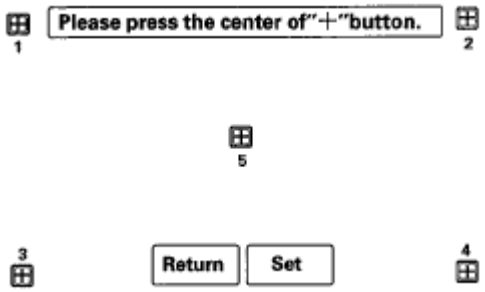


Fig. 50: Diagnostic Menu Screen Display - Touch Panel Calibration
Courtesy of AMERICAN HONDA MOTOR CO., INC.

UNIT CHECK

Select the item you want to check, and the test starts.

- Display
- Radio
- Navi ECU
- PC Card Info
- Hard Key

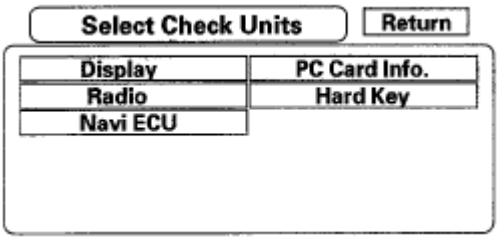


Fig. 51: Diagnostic Menu Screen Display - Unit Check
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Display

This performs additional checks on the communication bus between the navi CPU and the display. In addition, the internal electronics and touch screen functionality are confirmed.

If the connection is NG, replace the navigation unit.

- Connection verifies internal communications.
- Version represents the software version for the display.

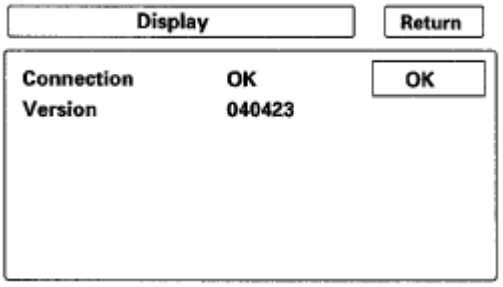


Fig. 52: Diagnostic Menu Screen Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Radio

This diagnostic screen checks the internals of the radio (AM and FM) and CD player. If NG, replace the navigation unit.

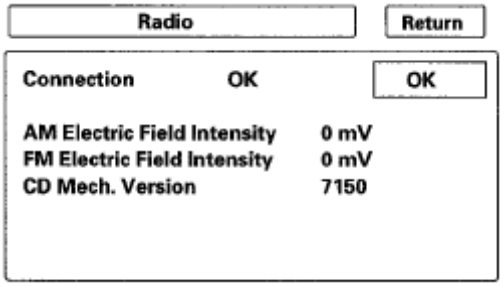


Fig. 53: Diagnostic Menu Screen Display - Radio
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Navi ECU

This screen looks for problems with the navigation unit. When you initiate this diagnostic, the navigation unit may delay up to a minute while the diagnostic runs.

- If V-RAM or D-RAM is NG, then replace the navigation unit.
- If GPS indicates NG (ANT), then check the entire GPS antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known-good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- DVD ROM represents the database version on the DVD. You can also find this information in setup by selecting System Information.
- Serial No. should be the same as the serial number found on the underside of the navigation unit. You need this number to obtain the security code from the Interactive Network system.
- Mem Clear is for factory use, and should never be used unless instructed by the factory. Accidental selection will erase the customer's personal data, PINS, and settings. If selected, a popup box appears asking if you want to clear the memory. If so, select Yes.

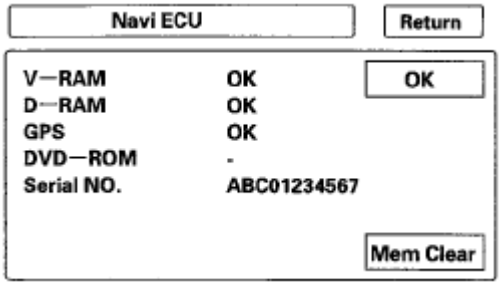


Fig. 54: Diagnostic Menu Screen Display - Navi ECU
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PC Card info

There is no PC card in the PC slot, and the screen should say, "PC card is not inserted".

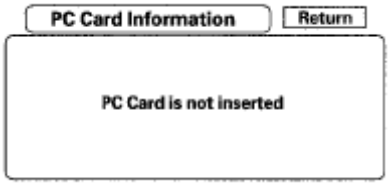


Fig. 55: Diagnostic Menu Screen Display - PC Card Info
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the factory provides a PC card and instructs you to insert a card, then the screen displays the Manufacturer, and Product Name as shown in the following screen. Touch the FILES button to see the contents of the card.

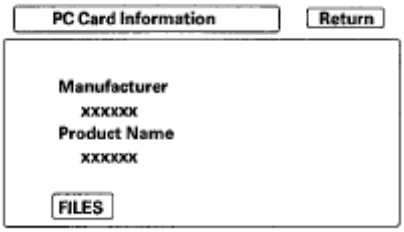


Fig. 56: Diagnostic Menu Screen Display - FILES Button
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Hard Key

This diagnostic screen checks the status of each of the hard buttons surrounding the navigation display. When you press each hard button, the corresponding item on the screen should flash blue. Touch the return key, or press and hold the joystick to exit.

NOTE: It is normal for the VOL (+, -) CH (+, -) and MODE button to be inactive.

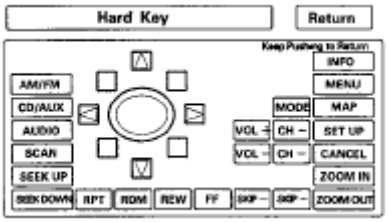


Fig. 57: Diagnostic Menu Screen Display - Hard Key
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CAR STATUS

Use this screen to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

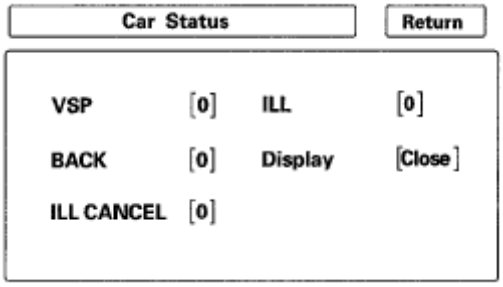


Fig. 58: Diagnostic Menu Screen Display - Car Status
Courtesy of AMERICAN HONDA MOTOR CO., INC.

- VSP-Vehicle Speed Pulse from ECM/PCM connector A (Navigation unit connector A (17P) terminal No. 13)
    a. OFF (0) when vehicle is not moving
    b. ON (1) when vehicle is moving

The VSP comes from the ECM/PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor.

- BACK-Reverse indication from taillight relay (Navigation unit connector C (12P) terminal No. 7)
    a. OFF (0) when shift lever is in any position other than reverse
    b. ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse and to trigger the optional rear view camera. This signal is needed because the Speed Pulse does not provide any directional information to the system.

- ILL CANCEL
    a. OFF (0) when the dash lights brightness control button is less than 90 % brightness with the headlights turned on.
    b. ON (1) when the dash lights brightness control button is more than 90 % brightness with the headlights turned on.
- ILL-Illumination Indication (Navigation unit connector A (17P) terminal No. 10)
    a. OFF (0) when parking lights, or headlights are off
    b. ON (1) when parking lights, or headlights are on

The navigation unit uses the signal to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- Display-this displays the current position of the display
    a. (Close) when the display is closed
    b. (Open) when the display is open

The navigation unit has a microswitch to detect this. If open is indicated when the display is closed, replace the navigation unit.

GPS INFORMATION

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow balls) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Nearby obstructions, like tall buildings, will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues. The satellites shown on the diagram correspond to the PRN number in the GPS Details screen. There are always 24 active GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares are always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE:

- **To use this screen for troubleshooting, the vehicle should be outside, away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.**
- **Metallic window tinting on the front or side window or after-market electronic accessories mounted near the navigation unit, GPS antenna, or navigation display can interfere with GPS acquisition.**
- **The Number of Satellites box shows the number of acquired satellites (maximum of 12). It should contain 4 or more icons. If not, troubleshoot for GPS icon is white or not shown (see GPS ICON IS WHITE OR NOT SHOWN).**
- **The Current Position shows latitude, longitude, and elevation (in meters). If there are less than 4 satellites, the elevation can be grossly inaccurate.**
- **The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup function Adjust Time Zone/Clock.**

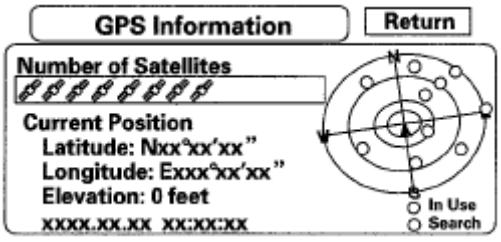


Fig. 59: Diagnostic Menu Screen Display - GPS Information
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: **Push and hold the Map/Guide button, and the dots on the diagram are replaced with the PRN # (satellite numbers). These numbers correspond to the numbers in the PRN column on the GPS details screen.**

GPS DETAIL

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen appears. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.

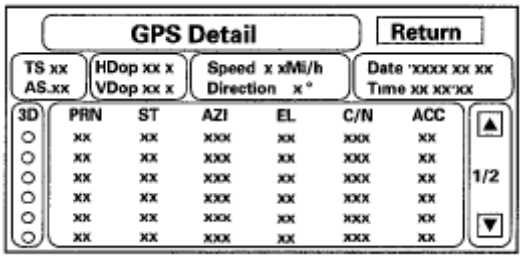


Fig. 60: Diagnostic Menu Screen Display - GPS Detail
Courtesy of AMERICAN HONDA MOTOR CO., INC.

- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 Adjust Time Zone/Clock.
- If the 3D icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the GPS indicator on the map screen will be green. See the **GLOBAL POSITIONING SYSTEM** detailed explanation in the System Description .
- If the row of data in the table below begins with a yellow dot, the AZI and EL fields can be used to locate each satellite PRN # on the circular GPS diagram (see prior screen).

NOTE: The data shown in the GPS Detail screen is an example only.

GPS DATA CHART

Column	Description	Problem indication
3D	Active satellites (Yellow Dot)	If 3D is missing follow GPS icon is white or not shown (see **GPS ICON IS WHITE OR NOT SHOWN**).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow GPS icon is white or not shown troubleshooting (see **GPS ICON IS WHITE OR NOT SHOWN**).
AZI	Azimuth, the angle (0-360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49-52, no signal: 27-33
ACC	N/A	

YAW RATE

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see **YAW RATE SENSOR** theory of operation under System Description.

- Sensor indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when stopped.
- Offset is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when stopped.

- A sensor output voltage LOWER than the Offset voltage indicates that the vehicle is turning to the right.

  A sensor output voltage HIGHER than the Offset voltage indicates that the vehicle is turning to the left.

- The yaw rate offset and sensor should both indicate about 2.500 V when stopped. If either reads zero or 5.000 V, replace the navigation unit.
- The yaw rate offset and sensor should be within +/- 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

Example: Vehicle stopped

VEHICLE STOPPED SPECIFICATION

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516-2.536 V	Sensor	2.623 V

Example: Vehicle turning

VEHICLE TURNING SPECIFICATION

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (right turn) 2.478 V (left turn)	Sensor	2.623 V (no change on turns)

The settings CCW Cal Factor, CW Cal Factor, and Set are for factory use only. THIS SHOULD NEVER BE USED.

NOTE: Do not try to adjust the yaw rate sensor without instructions from the factory. See next paragraph for tuning.

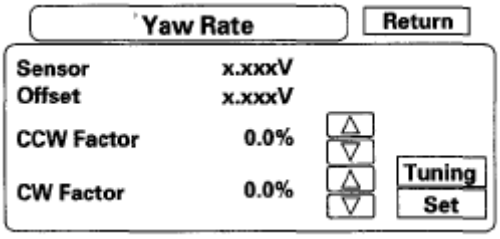


Fig. 61: Diagnostic Menu Screen Display - Yaw Rate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

YAW RATE TUNING

This diagnostic allows you to graphically display problems with the yaw rate sensor.

- The ANG-Disp value accumulates any differences between the offset, and sensor voltages (see Yaw

Rate diagnostic). When the sensor is healthy, the random changes in these two voltages generally cancels out, so the value is 0. However if one voltage is consistently higher than the other, then the ANG-Disp value accumulates the constant change.

- The Reset button temporarily clears the angular accumulation (ANG-Disp), and clears the display dots.
- Do not touch the CCW or CW, or Set buttons. These are used for factory setup only.

For serious problems with the sensor, the stationary test usually confirms whether the sensor is defective. For yaw rate issues related to driving, perform the road test described below.

1. Stationary test: If the-VP icon spins in place and the ANG-Disp value slowly increases or decreases in value, the yaw rate sensor is defective. Replace the Navigation unit.
2. Road test: Drive the vehicle on a very straight road. Enter the diagnostic mode, select Yaw rate, and touch the Tuning button. While driving down a straight road, the white dots should trace a straight line across the screen. However, if you are driving on a straight road, and you notice the dots constantly dropping down or heading up as you drive, the navigation unit's yaw sensor is defective. You can touch Reset to clear ANG-Disp, and dotted line.
3. If either test fails, please enter "Yaw rate sensor defective" for the problem description, on the "Navigation core return form".

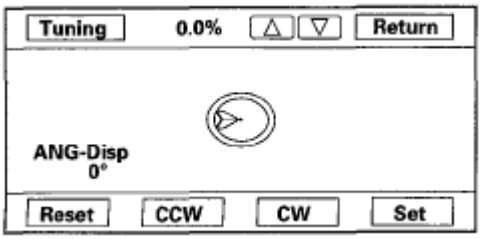


Fig. 62: Diagnostic Menu Screen Display - Yaw Rate Tuning
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TIRE CALIBRATION

As the vehicle moves, the navigation system receives speed pulses from the ECM/PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The Level indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The Auto Tuning is factory set to ON, and should remain on.
- The Study indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The Tire-Cal. Tuning and Set should not be used. It is for factory use only.

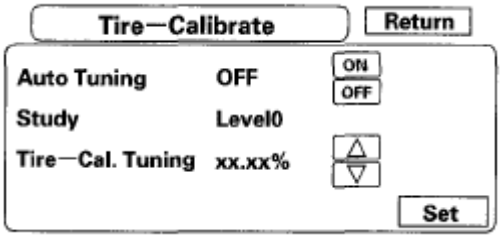


Fig. 63: Diagnostic Menu Screen Display - Tire Calibration
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUNCTIONAL SETUP

Select the item you want to check.

- Log Data
- GPS Send Time
- Demo Mode
- Mic Level
- Solar Angle
- Save Users Memory ('07-08 models)

'06 model

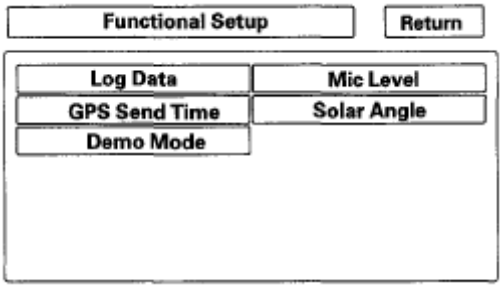


Fig. 64: Diagnostic Menu Screen Display - Functional Setup (06 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'07-08 models

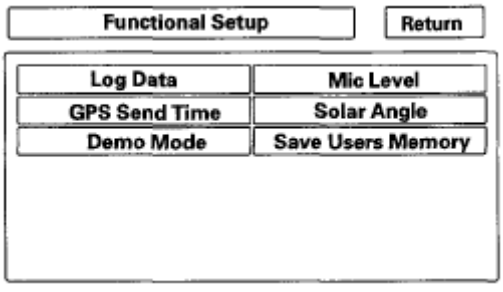


Fig. 65: Diagnostic Menu Screen Display - Functional Setup (07 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Log Data

This screen allows the factory to collect log data to troubleshoot navigation system issues.

- There is no card in the PC card Slot, the screen appears as:

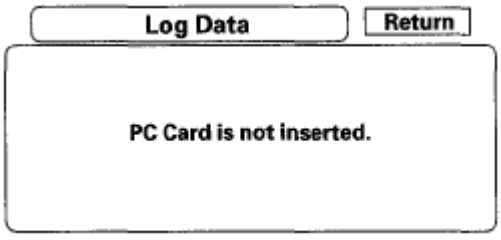


Fig. 66: Diagnostic Menu Screen Display - Log Data
Courtesy of AMERICAN HONDA MOTOR CO., INC.

- However, if the factory provides a PC card, insert it into the card slot (label side up). Follow the factory logging VD data procedure for gathering test data and properly ending the test.

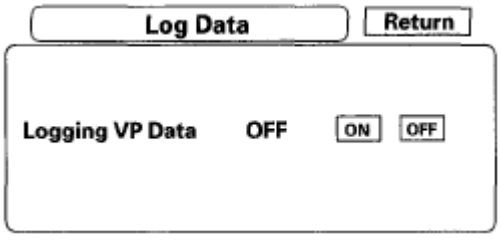


Fig. 67: Diagnostic Menu Screen Display - Log Data
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GPS Send Time

This screen is for factory use only. It allows adjustment of the GPS time. This display updates in realtime.

- GPS Time is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- Date, Hour, Minute, and Set should not be used.

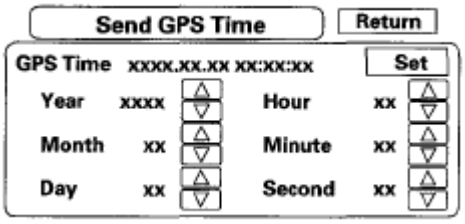


Fig. 68: Diagnostic Menu Screen Display - GPS Send Time
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Demo Mode

This screen allows the navigation system to drive a route, when the vehicle is stationary. Typical

applications include auto shows, and other events. This feature allows a visitor to enter a destination, and see the system drive to the destination. No speed signal is needed.

- To initiate the mode select ON.
- Changing the speed rate in ms (milliseconds) is optional, and represents the time between updates of the VP (vehicle position) movement.
  - When you increase the rate, the VP slows down because it is updated (moved) at a slower rate.
  - When you decrease the rate, VP is faster because it is updated (moved) more frequently.
  - 1500 ms is VP at its slowest in demo mode.
  - 150 ms is VP at its fastest in demo mode (Default).
- At key off, the setting automatically returns to the default of Off.

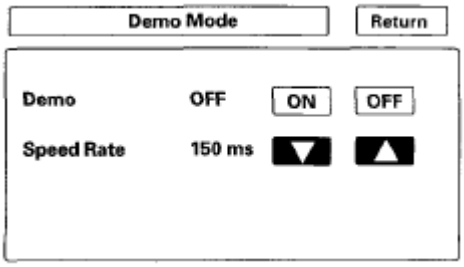


Fig. 69: Diagnostic Menu Screen Display - Demo Mode
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mic Level

This diagnostic screen allows you to independently test the microphone and the TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Press the TALK button on the steering wheel, and in a normal voice say "testing". The TALK indicator on the screen should momentarily turn green, and the text "Now Recording..." should appear in yellow. If the Mic Level indicator on the screen does not briefly turn green, then check the wiring from the TALK button to the navigation unit.
- If there is no Mic Level movement when you speak, then you should check the wire running from the microphone to the navigation unit.
- If the mic level bar is full or almost full without you speaking or other back ground noise, replace the microphone and recheck.
- Press the BACK button on the steering wheel. The Cancel indicator on the screen should momentarily turn green. If it does not briefly turn green, then check the wiring from the steering wheel BACK button to the navigation unit.

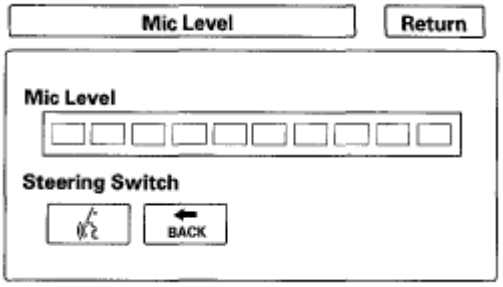


Fig. 70: Diagnostic Menu Screen Display - Mic Level
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: If the radio is off, and there is movement in the indicator-even without speaking, ensure that the vents are not blowing on the microphone. This should resolve voice control complaints such as:

- **Sometimes the system does not understand my commands.**
- **I have to shout at the navi for a command to be recognized.**
- **The system just says "pardon".**

SOLAR ANGLE

This screen graphically displays the sun's position as determined by GPS.

This screen is for factory use only, and allows simulation of this feature for development purposes.

- The manual tuning button should always be OFF
- The Angle is the angle that the sun (shown with the red dot) is above the horizon.
- The vehicle value represents the angle, clockwise from North, to the direction that the vehicle position (VP) icon is pointing (always points straight up).
- The direction value is the angle, measured clockwise from the VP (straight up) to the suns position.
- The reliability ranges from 1 to 3, and represents the accuracy of the Vehicle Position relative to the sun.

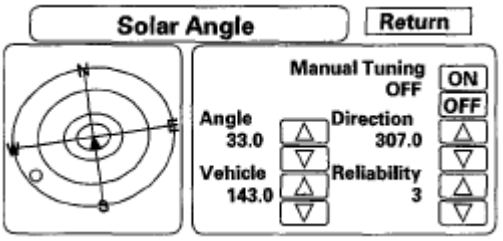


Fig. 71: Diagnostic Menu Screen Display - Solar Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VERSION

This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The Program Flash version should always be greater than or equal to the Program Disc version. IPL, APL, DBOOT, and system ucomare for factory use only.

The Model code is SNA for the 4-door and SVA for the 2-door, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

NOTE: If any model number other than SNA or SVA is displayed, replace the navigation unit with the correct part. The model code tells the navigation unit what software to load off the DVD.

Do not use Download, unless instructed to do so by the factory.

4-door

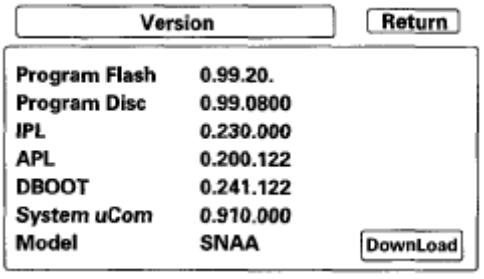


Fig. 72: Diagnostic Menu Screen Display - Version (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door

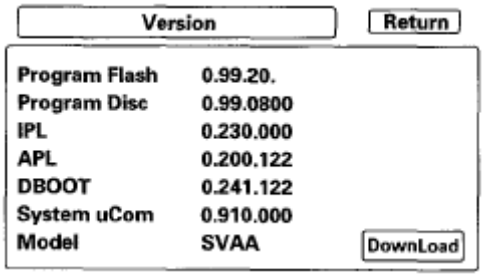


Fig. 73: Diagnostic Menu Screen Display - Version (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SAVE USERS MEMORY

When replacing the navigation unit, this function allows the dealer to transfer the customer's personal data td the new navigation unit. The transferred information includes their Setup settings, and personal addresses. The dealer inserts a PC card to the navigation unit, and then selects the Save Users Memory function. The two functions in this diagnostic screen are EXPORT and IMPORT. EXPORT saves the customer's data to the PC card, and IMPORT moves the PC card files to the new navigation unit.

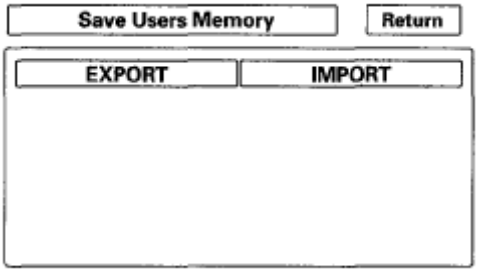


Fig. 74: Diagnostic Menu Screen Display - Save Users Memory
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Before starting this function, see the **PC CARD FAQS** for information regarding PC cards, and the use of this function.

1. Select EXPORT button to move the customer's data from the original navigation unit to the PC card. Select YES on the Export User Data Confirmation screen. The process takes only a couple of seconds. The system stores two files on the card.

NOTE: If the EXPORT button is grayed out, check the PC card's edge connector, and the pins inside the navigation unit (with a flashlight) for damage.

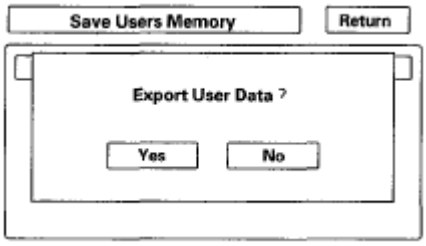


Fig. 75: Diagnostic Menu Screen Display - Save Users Memory
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. After installing the customer's original DVD in the new navigation unit, allow the system to boot up. Insert the PC card in the new navigation unit and enter the Save Users Memory in the navigation system diagnostic mode.
3. Select IMPORT button to move the two files stored by the Export process from the PC card to the new navigation unit. Select YES on the Import User Data Confirmation screen. When the transfer is finished (a few seconds) the system will automatically reboot. After the system reboots, remove the PC card from the PC card slot.

NOTE: If the IMPORT button is grayed out, check if the Model and the Program Flash shown on the Version screen are the same.

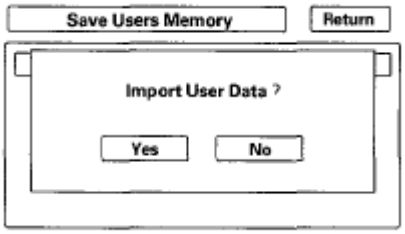


Fig. 76: Diagnostic Menu Screen Display - Save Users Memory
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PC CARD FAQS

PC CARD FAQs REFERENCE

Question	Answer
Where do we buy the flash memory or adaptors, and what do we ask for?	You need a PCMCIA type II adaptor and a flash memory chip. You can purchase them at a computer, or office supply store. The card will have the same size and shape as the PC card in the HDS. Adaptors that accept multiple flash types are not recommended.
What memory flash chips will work with what adaptors?	The flash memory devices that have been tested include Compact Flash (CF), and ATA style (like the card in the HDS). Other card types and flash memory chips may work, but have not been tested.
What capacity card do I need for this function?	A memory chip with capacity of 64 MB to 2 GB will work. The two files moved to the PC card during export are less than a Megabyte in size.
Should the dealer have a dedicated PC card for the Export and Import navigation function?	Yes, treat the PC card as a dedicated special tool that should be used anytime the owner of an '07 or later vehicle needs their navigation personal files transferred to a new navigation unit.
What device can I use to maintain the PC card, and delete files	Any computer store sells USB style card readers that accept the PC card, and allow you to perform file maintenance on your PC card. Most laptops will also accept the PC card.
Can we move the customer's data to different models?	No, the files are model specific and will only load into a navigation unit with the same part number.
Can we move the customer's data to the same vehicle with a different software version?	The customer's files can only be transferred to a new navigation unit, if the Model and the Program Flash shown on the Version screen are the same. Files cannot be transferred to the different model and different versions.
Will other files on the PC card like images or music files prevent the Export/Import function from working?	No, the system simply adds two small files that are recognized by the new navigation unit when performing the import function. However, it the PC card is full, the Export function won't work correctly.
Do I have to delete the files on the PC card after each transfer of the customer's data?	After the transfer of customer data to the new navigation unit, the files remain on the PC card. Since this is confidential information, we recommend that you delete these files after each use. Please note that each time you export navigation files of the same model and version, the files are overwritten. Over time the PC card will accumulate two files for each version of the 8 or so Honda navigation models.
What format should be used	

if the PC card needs reformatting?	It is unlikely that the PC card will ever need formatting, however the FAT file system should be used.
I can't enter the navigation diagnostic mode to do the Export/Import function. How can I transfer the customer's data?	Some internal navigation unit ECU failures may make it impossible to use the Export/Import function.
Why wont the Export or Import functions work? What do I check as part of troubleshooting?	• The card may not be fully inserted into the slot. Eject the PC card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a PC card. This can result in damage to the pins in the rear of the slot. • The PC card may not contain files that are recognized by the new navigation unit. Navigation data can only be transferred between navigation units with the same Model code, and with the same navi Program flash version. • The flash memory chip type may not be accepted by the system. Only Compact Flash and ATA cards have been tested. • The card's PCMCIA adaptor may be preventing a known-good PC card from playing. Avoid multi-slot type PCMCIA adaptors that accept several different flash memory types. • The card may be full and as a result the files are stored, but without any data. Export and import appear to function, but move nothing. Delete unused files from the PC card. • There may not be any files on the PC card. If the PC card has a write protection switch, make sure it is turned off before attempting to use the Export function. • Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from accepting files. The PC card should be reformatted using the FAT format. • The PC card may have been formatted using the format NTFS. Only the FAT format is accepted by the system. • Hard Disc Drive (HDD) cards may not work properly in the system and can overheat or quit functioning, particularly in a hot vehicle. They are not recommended. • Before performing the Import function, ensure that the customer's original DVD is loaded into the new navigation unit and working properly.

ERROR MESSAGE TABLE

ERROR MESSAGE CHART

Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the dashboard blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. After-market devices can affect the GPS reception.
Navigation is open or No	Make sure the correct white-labeled navigation DVD is installed with the

DVD disc installed. Please check system.	label side up and the navigation display is closed.
DVD reading error (incorrect DVD disc) place consult your dealer.	Verify correct color (white) DVD installed.
Display temp is too high. System will shut down until display cools down.	This message will appear briefly when the display temperature is too high, and the display will turn off until the temperature cools down. The system will turn back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below -30 °C and the navigation ECU has difficulties reading the DVD. The system will start up when the temperature warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the DVD source for deep scratches or other damage. Make sure you are using an official Honda navigation DVD (white in color). The system cannot read other mapping databases or video DVDs. Check online for any service publications to update the navigation system.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location.
No alternate route found. Original route will be guided.	No alternate route method was found. The original route will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the joystick.

CD, DVD, AND PC CARD REMOVAL/INSTALLATION

If the display will not open, use this procedure to manually open the display and remove the CD, DVD, and or the PC card.

1. Remove the navigation unit from the vehicle (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
2. On the bench, carefully pull the display (A) straight out (about 1/2 inch).

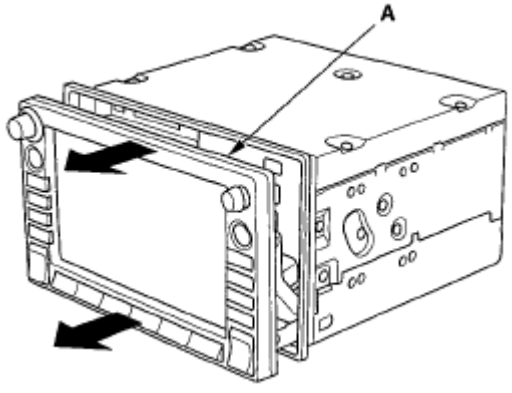


Fig. 77: Identifying Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Fold down the display as shown in the diagram below.

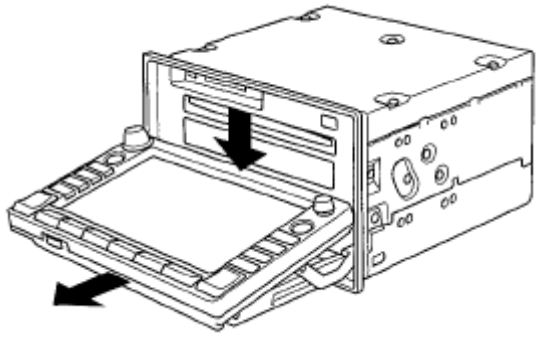


Fig. 78: Folding Down Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Push the PC card eject button (A) to eject the customer's PC card (if installed). Power is not required for this function.

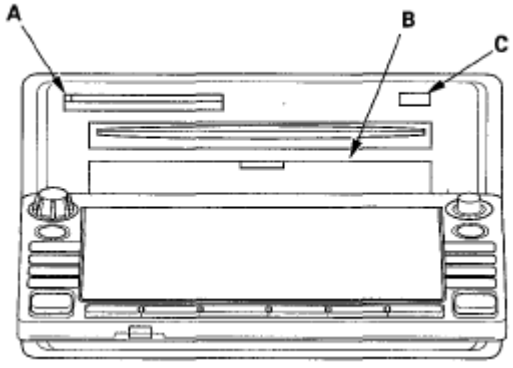


Fig. 79: Identifying PC Card Eject Button And Plastic Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Open the plastic cover (B) for the navigation DVD slot. Do not remove the plastic cover.
6. With the display open, temporarily reconnect the unit in the dash (to power it up).
7. Push the CD eject button (C), and navigation DVD eject button and remove the discs (holding the discs by their edges to avoid fingerprints). To avoid scratches, place the navigation DVD, and customer's CD in a jewel case if available.
8. Close the plastic cover that hides the navigation DVD slot.
9. Close the display by first returning the display to the upward position, and then pushing the entire display straight back into the unit.
10. After installing the new navigation unit, re-insert the navigation DVD, the customer's CD, and PC card.

NAVIGATION UNIT REMOVAL/INSTALLATION

SRS components are located in this area. Review the SRS component location, 4-door (see **COMPONENT LOCATION INDEX**), 2-door (see **COMPONENT LOCATION INDEX**).

Also review the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS article before doing repairs or service.

NOTE:

- **Put on gloves to protect your hands.**
- **Take care not to scratch the dashboard and related parts.**
- **Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.**
- **Do not work in a dusty or dirty place.**
- **Discharge static electricity from your body before and during the work.**
- **Do not touch the circuit board(s) with your bare hands.**
- **Do not work with dirty hands.**
- **Be careful not to fold the flat plate cable.**
- **Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)**
- **Before replacing the navigation unit, make sure to remove the customer's navigation DVD, and their audio CD, or PC card. Remanufactured navigation units do not come with a navigation DVD. Re-install the customer's navigation DVD, audio CD, and audio PC card into the new Remanufactured unit. If the navigation display won't open, manually remove the navigation DVD, audio CD, and PC card (see CD, DVD, AND PC CARD REMOVAL/INSTALLATION).**

1. Make sure you have the 4-digit anti-theft code for the navigation system, then write down the audio presets.
2. Eject the DVD from the original navigation unit (see **CD, DVD, AND PC CARD REMOVAL/INSTALLATION**). To avoid scratching or damaging the DVD, temporarily place the DVD in a jewel case.
3. Remove the subdisplay visor (see **SUBDISPLAY VISOR REMOVAL/INSTALLATION**).
4. Remove the center pocket hole lid and bolts, then pull out the center panel (A).

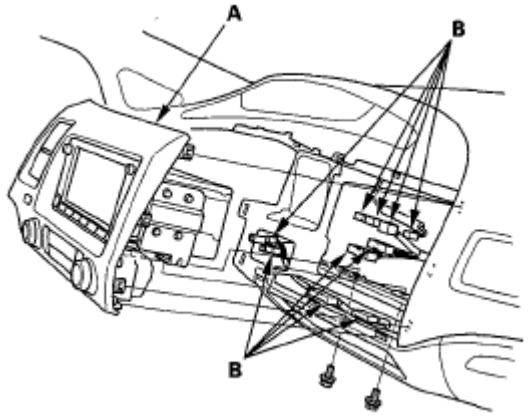


Fig. 80: Identifying Center Panel And Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the connectors (B), then remove the center panel.
6. Remove the screws, brackets (A), and the navigation unit (B) from the center panel (C).

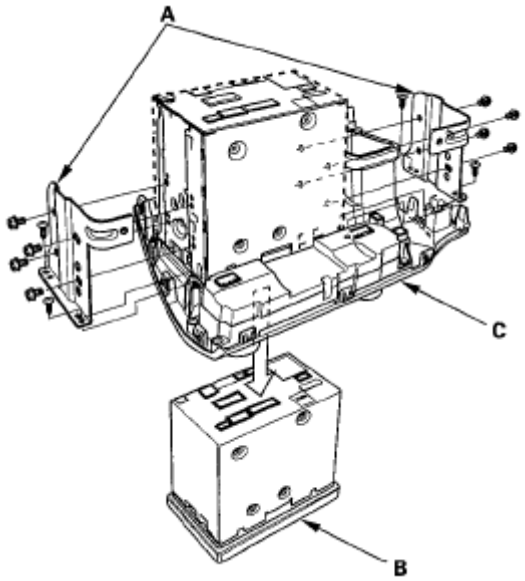


Fig. 81: Identifying Screws, Brackets And Navigation Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the navigation unit in the reverse order of removal, and make sure all connectors are secure.
8. Turn the ignition switch to ON (II), then reinstall the customer's original DVD, verifying that the DVD is free of scratches or smudges.
9. Check any official Honda service website for more service information about the navigation system.

NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

10. Enter the new navigation anti-theft code, then enter the audio presets.
11. Park the vehicle outside, and do the GPS initialization (see **GPS INITIALIZATION**).
12. Give the new navigation anti-theft code to the customer.

VOICE CONTROL SWITCH TEST

4-DOOR

1. Remove the driver's airbag assembly (see **DRIVER'S AIRBAG REPLACEMENT**).
2. Remove the 20P connector (A) from the cable reel (B).

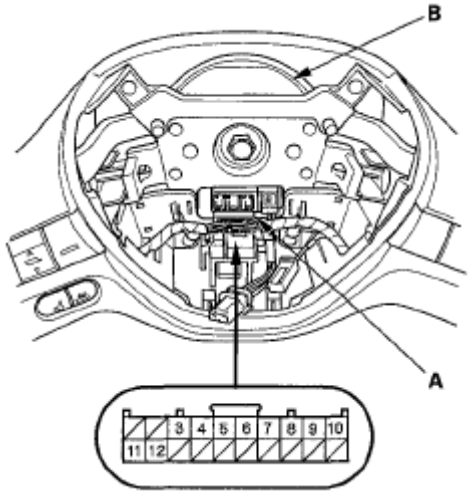


Fig. 82: Identifying Voice Control Switch 20P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the resistance between the No. 8 and No. 10 terminals in each switch position according to the table.

TERMINALS RESISTANCE REFERENCE

Position	Resistance
No button pressed	About 10 kohms
TALK	About 2.9 kohms
BACK	About 680 ohms

4. If the resistance is not as specified, replace the voice control switch (see **VOICE CONTROL SWITCH REPLACEMENT**).

2-DOOR

1. Remove the voice control switch (see **VOICE CONTROL SWITCH REPLACEMENT**).

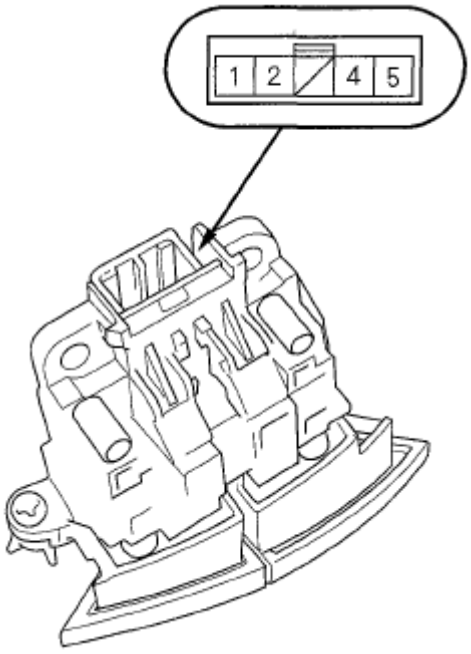


Fig. 83: Identifying Voice Control Switch Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the resistance between the No. 2 and No. 4 terminals in each switch position according to the table.

TERMINALS RESISTANCE REFERENCE

Position	Resistance
No button pressed	About 10 kohms
TALK	About 2.9 kohms
BACK	About 680 ohms

3. If the resistance is not as specified, replace the voice control switch (see **VOICE CONTROL SWITCH REPLACEMENT**).
4. Use a diode tester between the terminals in each switch position according to the table.

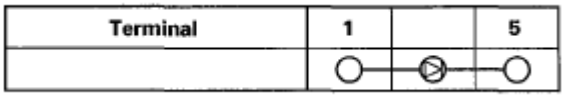


Fig. 84: Terminals Diode Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the diode test is not as specified, replace the switch (see **VOICE CONTROL SWITCH REPLACEMENT**).

VOICE CONTROL SWITCH REPLACEMENT

1. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
2. Remove the voice control switch.

- Si model (see **STEERING WHEEL DISASSEMBLY/REASSEMBLY**)
- Except Si model (see **STEERING WHEEL DISASSEMBLY/REASSEMBLY**)

3. Install the voice control switch in the reverse order of removal.

MICROPHONE REPLACEMENT

1. Remove the navigation unit (see **NAVIGATION UNIT REMOVAL/INSTALLATION**).
2. Remove the meter upper visor (see **INSTRUMENT PANEL REMOVAL/INSTALLATION**).
3. Remove the wire harness clip (A), screws and GPS antenna (B).

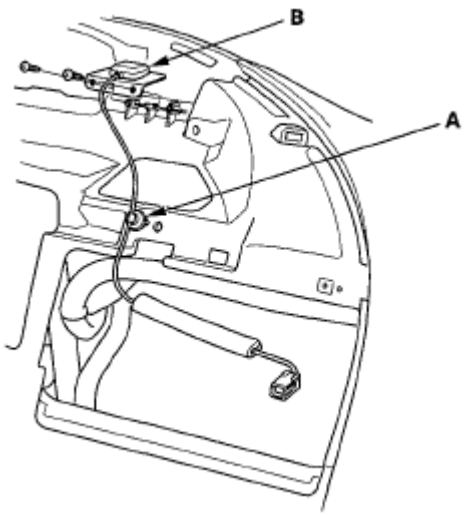


Fig. 85: Identifying Wire Harness Clip, Screws And GPS Antenna
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the antenna in the reverse order of removal.

GPS ANTENNA REMOVAL/INSTALLATION

1. Remove the front individual map light lens (A).

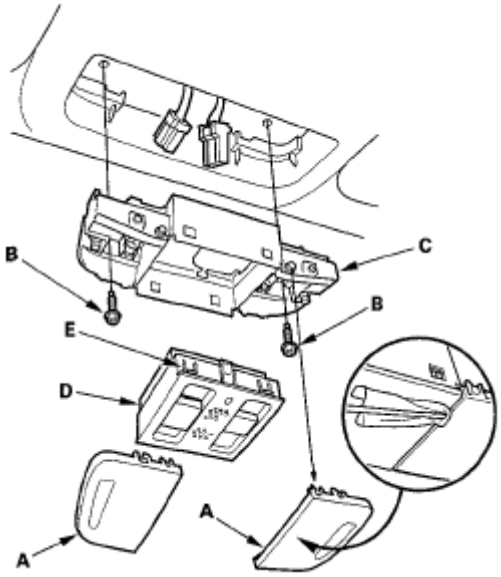


Fig. 86: Identifying Front Individual Map Light Lens
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the bolts (B), then disconnect the connectors and remove the map lights housing (C).
3. Carefully pry off the moonroof switch (D) from the map light housing while pressing the retaining tabs (E).
4. From the moonroof switch (A), remove the screw and microphone (B).

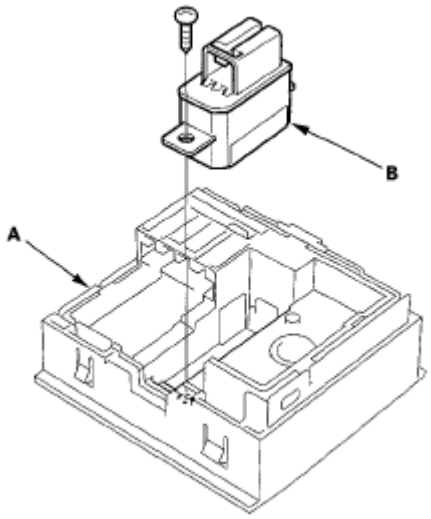


Fig. 87: Identifying Moonroof Switch And Microphone
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the microphone in the reverse order of removal.

2006-08 ACCESSORIES & EQUIPMENT

Seats - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: **Refer to the SEATS (GX) (SUPPLEMENT) article for additional information for the GX model.**

2-door

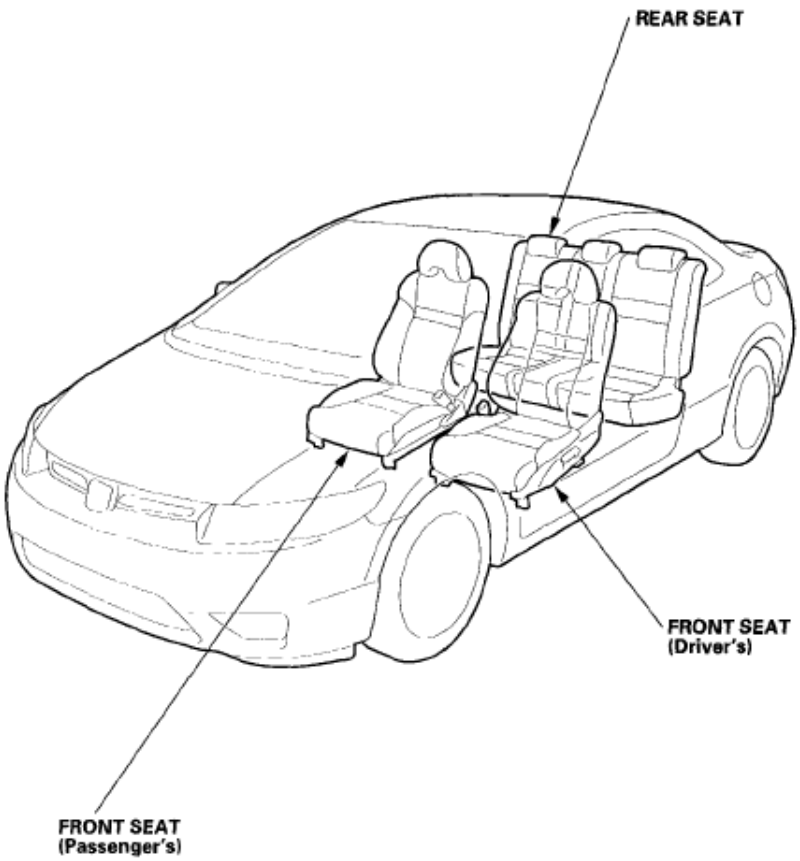


Fig. 1: Locating Seats Component (2-Door)

4-door

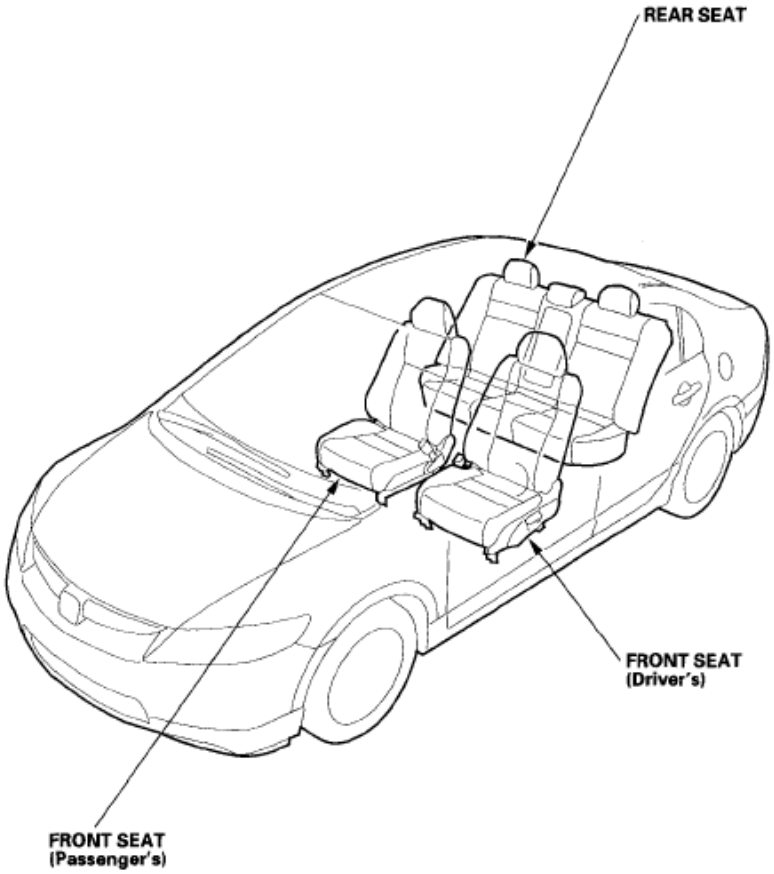


Fig. 2: Locating Seats Component (4-Door)

FRONT SEAT ACTIVE HEADREST INSPECTION

NOTE: If the vehicle has been in a collision, always inspect the active headrests, even if they appear reusable, by doing the following procedure.

RESETTING HEAD RESTRAINT POSITION.

1. Push the head restraint (A) forward fully from the locked position to return the inside inertia lock (B).

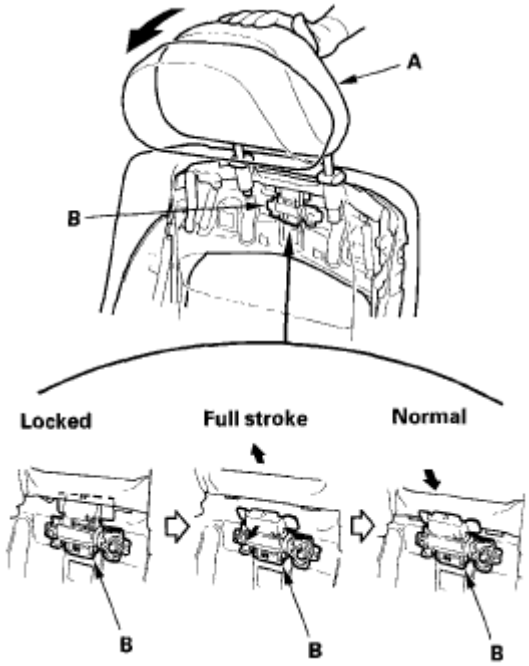


Fig. 3: Pushing Head Restraints Forward Fully From Locked Position To Return Inside Inertia Lock

2. Slowly raise the head restraint into the normal position.

Inspection

3. Fold the seat-back forward, then recline the seat-back to the first lock position, and adjust the head restraint to the highest position.
4. Apply masking tape on the top of the head restraint.
5. Make marks (A) on both sides at 250 mm (9.84 in.) upward from the roots of the head restraint frame (B) along the back of the head restraint (C) surface. Make a center of these points as a datum point (D).

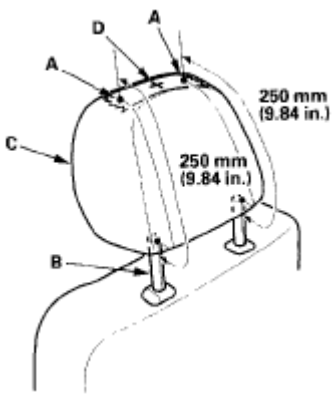


Fig. 4: Making Center Of Points As Datum Point (With Specifications)

6. Push the head restraint (A) forward, and check: With a scale, measure the level amount of the head restraint movement. The head restraint should move more than 50 mm (2.0 in.) without resistance. If it is less than 50 mm (2.0 in.), or the head restraint doesn't move smoothly, replace the seat-back

frame assembly:

- 2-door passenger's seat (see **PASSENGER'S SEAT - 2-DOOR**)
- 4-door passenger's seat (see **PASSENGER'S SEAT - 4-DOOR**)
- Driver's seat (see **DRIVER'S SEAT**)

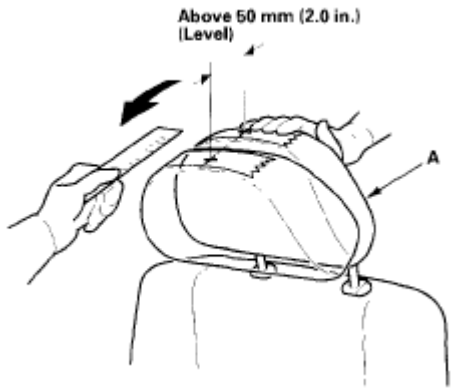


Fig. 5: Pushing Head Restraint Forward (With Specifications)

FRONT SEAT REMOVAL/INSTALLATION

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

NOTE:

- **Put on gloves to protect your hands.**
- **When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.**
- **Take care not to scratch the body or tear the seat covers.**
- **Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.**

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.
2. Disconnect the negative cable from the battery, and wait at lease 3 minutes before beginning work.
3. Tilt the steering wheel all the way up, and telescope it all the way in.
4. 2-door passenger's seat: Carefully insert the tip of a small screwdriver (A) through the hole in the back of the front seat belt lower anchor cover (B) and into the hole in the front seat belt lower anchor (C). Unlock the lower anchor by pushing in on the screwdriver. Remove the screwdriver, and then detach the front seat belt anchor plate (D) and anchor cover from the lower anchor.

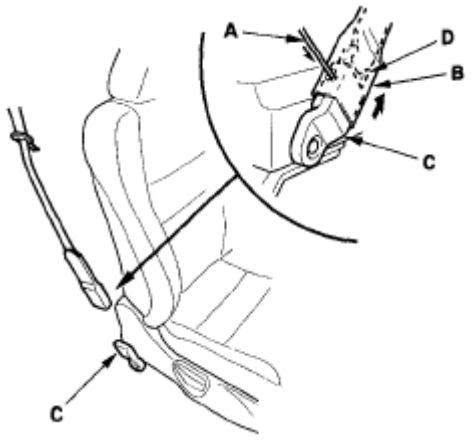


Fig. 6: Detaching Front Seat Anchor Plate And Anchor Cover From Lower Anchor

5. Except 2-door passenger's seat: Slide the front seat forward fully, carefully pry up on the bottom edge of the anchor cover (A) to release the hooks, and remove the cover.

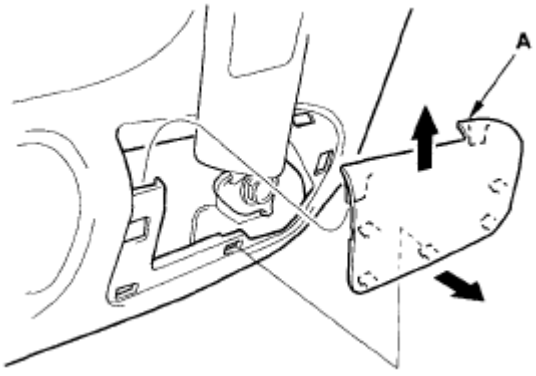


Fig. 7: Prying Up On Bottom Edge Of Anchor Cover To Release Hooks

6. Except 2-door passenger's seat: Remove the lower anchor bolt (A).

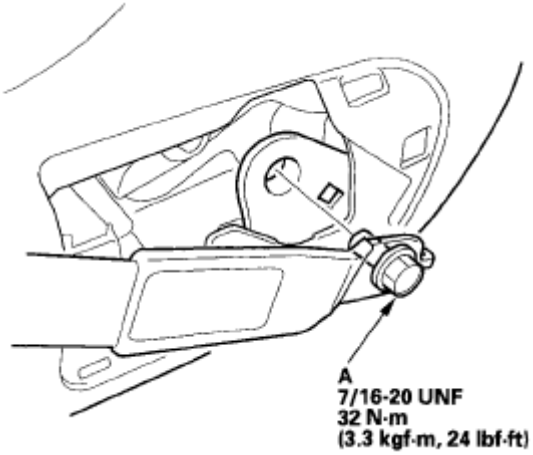


Fig. 8: Removing Lower Anchor Bolt (With Specifications)

7. Remove the seat track outer end covers (A) and seat track center end covers (B) from the back of both seat tracks.

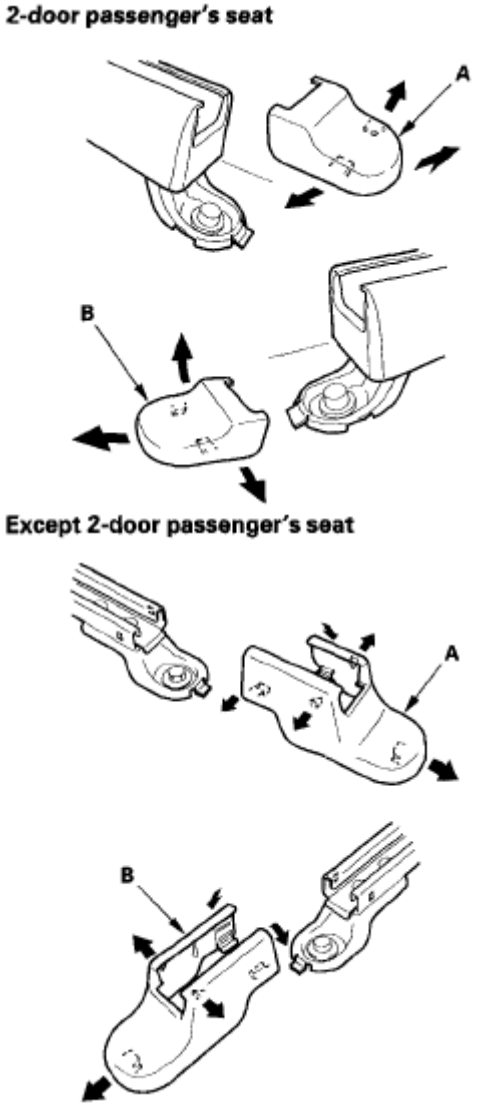


Fig. 9: Removing Seat Track Outer End Covers And Seat Track Center End Covers

8. Remove the bolts.

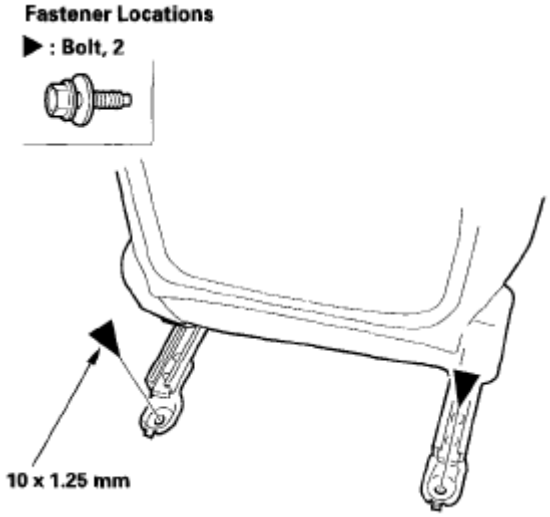


Fig. 10: Removing Seat Tracker Bolts

9. Slide the front seat rearward fully, and remove the bolts.

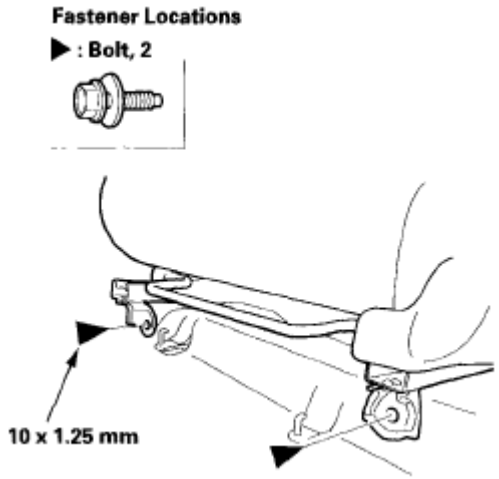
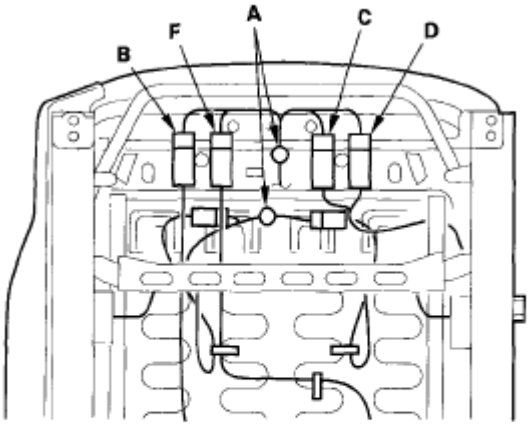


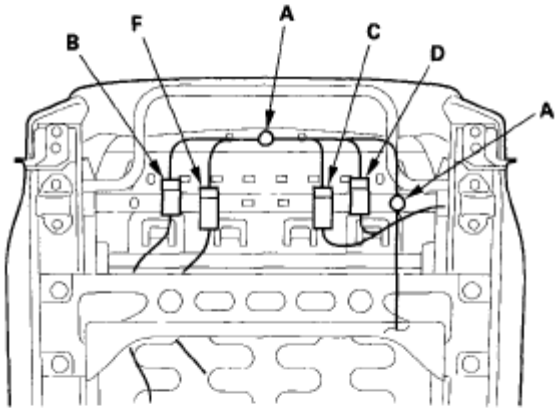
Fig. 11: Removing Seat Tracker Bolts Sliding Front Seat Rearward Fully

10. Lift up the front seat, then detach the harness clips (A), and disconnect the side airbag connector (B), the seat belt switch connector (C), the seat belt buckle tensioner connector (D), and the seat position sensor connector (E) on the driver's seat. On passenger's seat, disconnect the ODS subharness connector (F).

2-door passenger's seat



4-door passenger's seat



Driver's seat

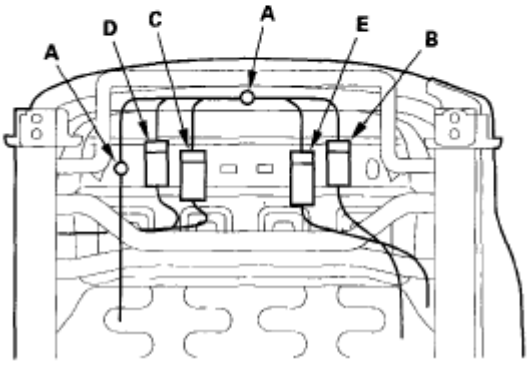


Fig. 12: Detaching Harness Clips And Connectors

11. With the help of an assistant, carefully remove the front seat through the front door opening.
12. Install the seat in the reverse order of removal, and note these items:
    - Apply medium strength type liquid thread lock to the seat mounting bolts before reinstallation.
    - Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat all the way back and tighten (1) and (2), then slide it forward and tighten (3) and (4). The driver's seat is shown; the passenger's seat is similar.

- Tighten the bolts by hand first, then tighten them to specification with a torque wrench.
- Make sure each connector is plugged in properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft code for the audio or the navigation system, then enter the audio presets.
- Set the clock.
- Check for any DTCs that may have been set during repairs, and clear them.

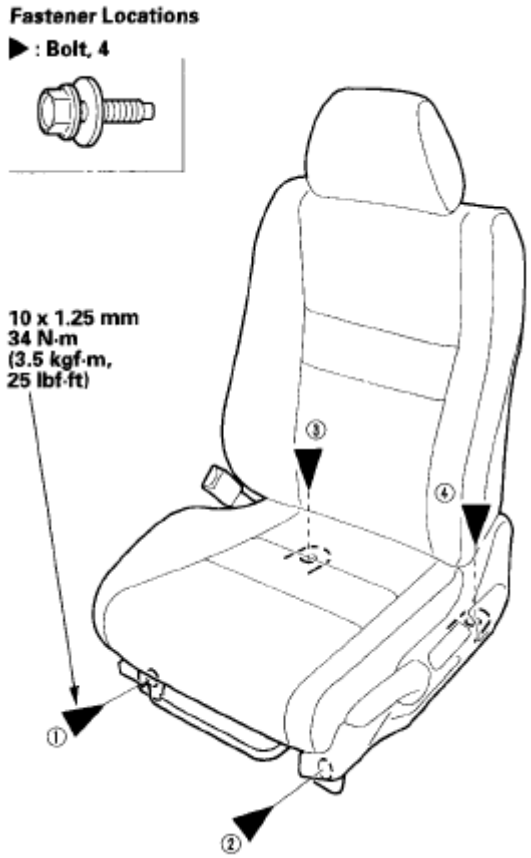


Fig. 13: Tightening Seat Mounting Bolts In Sequence (With Specifications)

FRONT SEAT FRAME REPLACEMENT

PASSENGER'S SEAT - 2-DOOR

Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):

- Front passenger's seat replacement (including any seat components)
- Replacement of the seat weight sensors
- After a vehicle collision

NOTE:

- **Put on gloves to protect your hands.**
- **Apply oil to the pivot portions of the slide locks.**
- **Apply multipurpose grease to the sliding portions of the seat tracks.**

- **Make sure the ODS unit connectors are plugged in properly.**
- **Make sure the ODS wires are routed properly so they are not pinched and do not interfere with other parts.**
- **If the side airbag has deployed, replace the seat frame and related parts with new ones (see COMPONENT REPLACEMENT/INSPECTION AFTER DEPLOYMENT).**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Slide the front seat frame rearward fully, detach the clips, then remove the front rail covers (A) from the front of both seat tracks.

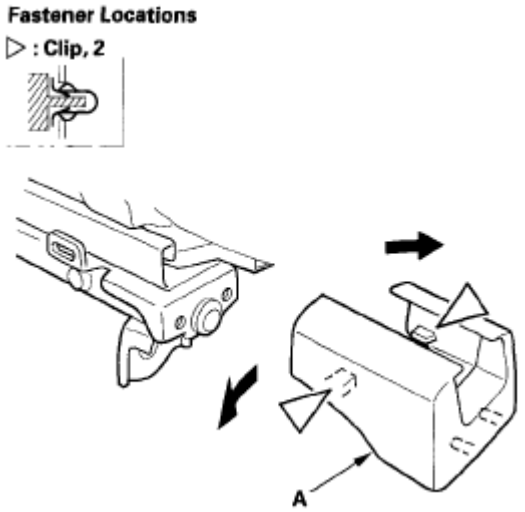


Fig. 14: Removing Front Rail Covers From Front Of Seat Tracks

3. Slide the front seat frame forward fully, detach the clips, then remove the left rear rail cover (A) and the right rear rail cover (B) from the back of both seat tracks.

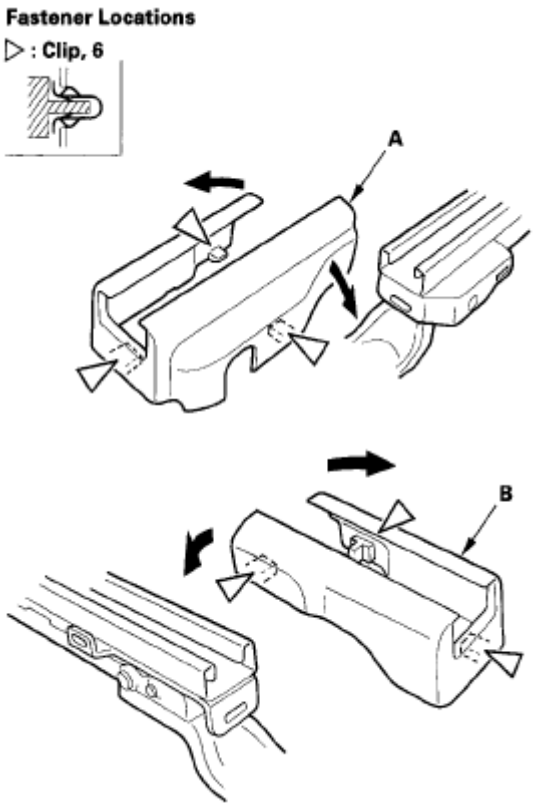


Fig. 15: Removing Left And Right Rear Rail Cover

4. Remove these items:
   - Front seat-back cover (see **FRONT SEAT-BACK COVER REPLACEMENT**)
   - Front seat cushion cover (see **FRONT SEAT CUSHION COVER REPLACEMENT**)
   - Seat weight sensor, both sides:
     - 2-door (see **SEAT-BACK - SPLIT FOLD DOWN - 2-DOOR**)
     - 4-door (see **SEAT-BACK - FOLD DOWN - 4-DOOR**)
   - ODS unit (see **ODS UNIT REPLACEMENT**)
5. Remove the clips, then remove the recline inner covers (A), and the side airbag module holder (B) from the seat frame (C).

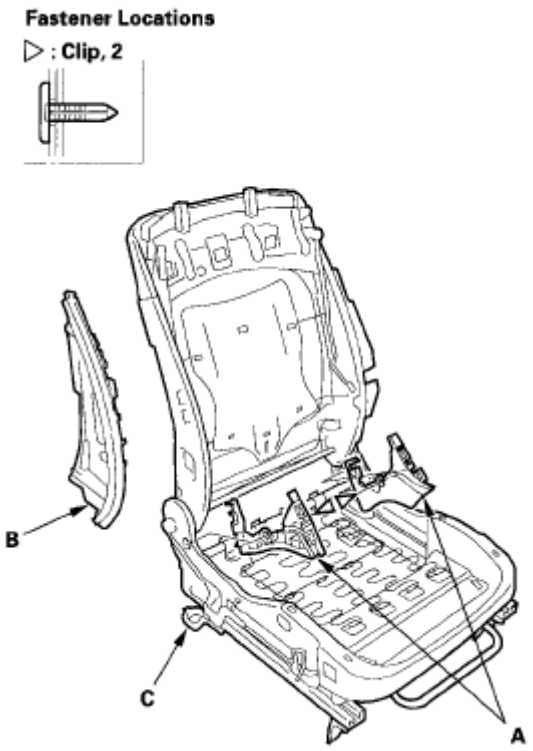


Fig. 16: Removing Recline Inner Covers And Side Airbag Module Holder

6. Install the new seat frame in the reverse order of removal, and note these items:
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

PASSENGER'S SEAT - 4-DOOR

Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):

- Front passenger's seat replacement (including any seat components)
- Replacement of the seat weight sensors
- After a vehicle collision

NOTE:

- **Put on gloves to protect your hands.**
- **Apply oil to the pivot portions of the slide locks.**
- **Apply multipurpose grease to the sliding portions of the seat tracks.**
- **If the side airbag has deployed, replace the seat frame and related parts with new ones (see COMPONENT REPLACEMENT/INSPECTION AFTER DEPLOYMENT).**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove these items:
   - Front seat-back cover (see **FRONT SEAT-BACK COVER REPLACEMENT**)
   - Front seat cushion cover (see **FRONT SEAT CUSHION COVER REPLACEMENT**)

- ODS unit (see **ODS UNIT REPLACEMENT**)

3. Remove the clips, then remove the recline inner covers (A) from the seat frame (B), with side airbag remove the module holder (C).

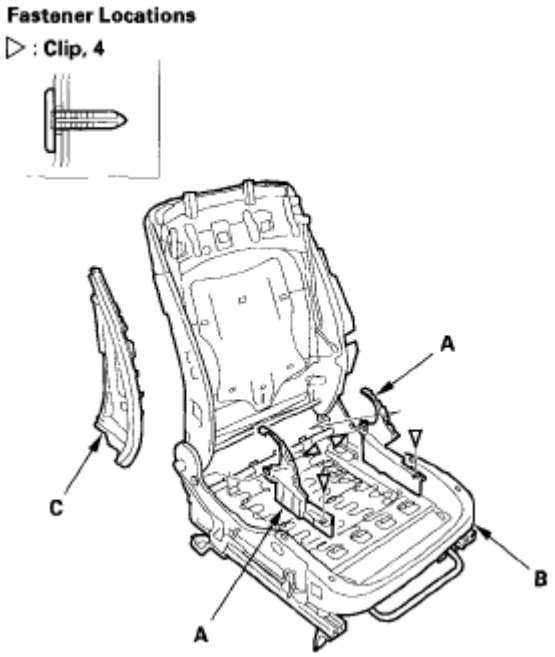


Fig. 17: Removing Recline Inner Covers From Seat Frame

4. Remove the bolts, and release the seat cushion springs (A) from the hooks (B), then remove the seat cushion frame (C).

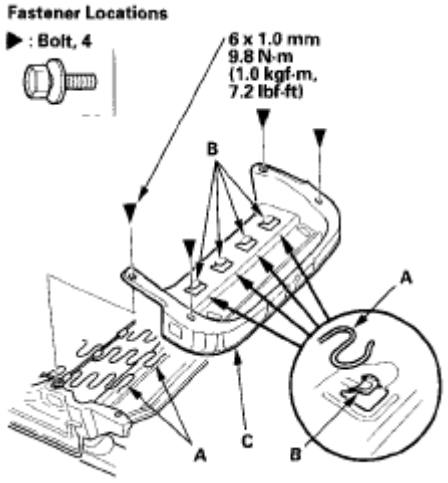


Fig. 18: Releasing Seat Cushion Springs (With Specifications)

5. Remove the seat weight sensors:
   - 2-door (see **2-DOOR**)
   - 4-door (see **4-DOOR**)
6. If necessary, remove the bushing (A, B) from the seat cushion frame (C).

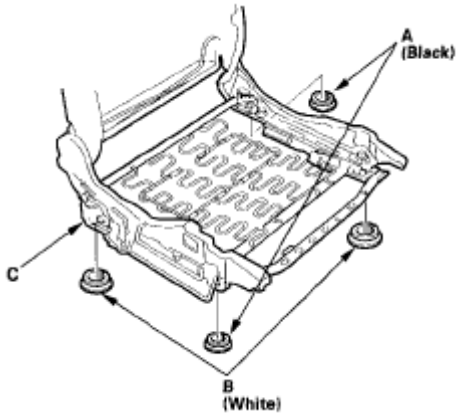


Fig. 19: Removing Bushing From Seat Cushion Frame

7. Install the new seat frame in the reverse order of removal, and note these items:
   - Make sure the ODS unit connector is plugged in properly.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

DRIVER'S SEAT

Check the operation of the driver's seat position sensor after any of these actions (see **DRIVER'S SEAT POSITION SENSOR OPERATION CHECK**):

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

NOTE:

- **Put on gloves to protect your hands.**
- **Apply oil to the pivot portions of the slide lock.**
- **Apply multipurpose grease to the sliding portions and pivot portions of the seat tracks.**
- **If the side airbag has deployed, replace the seat frame and related parts with new ones (see COMPONENT REPLACEMENT/INSPECTION AFTER DEPLOYMENT).**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove these items:
   - Front seat back cover/pad:
     - 2-door (see **FRONT SEAT-BACK COVER REPLACEMENT**)
     - 4-door (see **FRONT SEAT-BACK COVER REPLACEMENT**)
   - Front seat cushion cover/pad:
     - 2-door (see **FRONT SEAT CUSHION COVER REPLACEMENT**)
     - 4-door (see **FRONT SEAT CUSHION COVER REPLACEMENT**)
   - Seat position sensor (see **DRIVER'S SEAT POSITION SENSOR REPLACEMENT**)

3. Remove the clips, then remove the recline inner covers (A), outer upper rail cover (B), inner upper rail cover (C) and the module holder (D) from the seat frame (E).

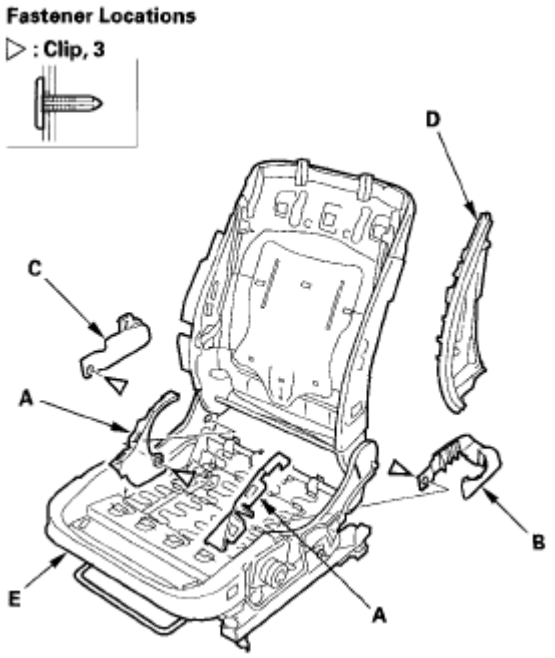


Fig. 20: Removing Clips, Recline Inner Covers, Outer Upper Rail Cover, Inner Upper Rail Cover And Module Holder

4. Install the new seat frame in the reverse order of removal, and note these items:
   - Make sure seat position sensor connector is plugged in properly.
   - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
   - Push the clips into place securely.

FRONT SEAT-BACK COVER REPLACEMENT

2-DOOR

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

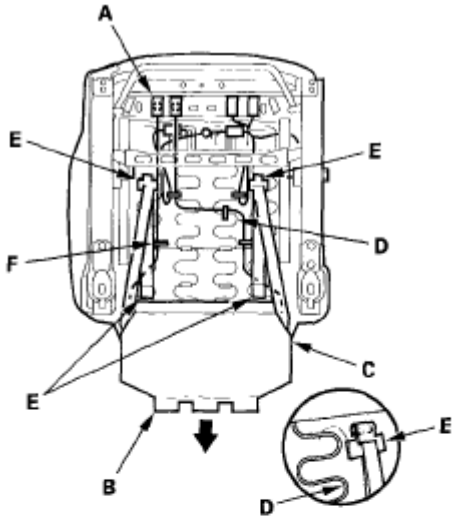
- Check the operation of the driver's seat position sensor after any of these actions (see **DRIVER'S SEAT POSITION SENSOR OPERATION CHECK**):
  - Driver's seat position sensor replacement
  - Cover plate (front side of driver's seat slide rail) replacement
- Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):
  - Front passenger's seat replacement (including any seat components)
  - Replacement of the seat weight sensors
  - After a vehicle collision

NOTE:

- **Take care not to tear the seams of damage the seat covers.**
- **On the passenger's seat, do not touch the ODS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.**
- **Put on gloves to protect your hands.**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the head restraint.
3. From under the seat cushion, disconnect and detach the side airbag connector (A).

Passenger's seat A



Driver's seat

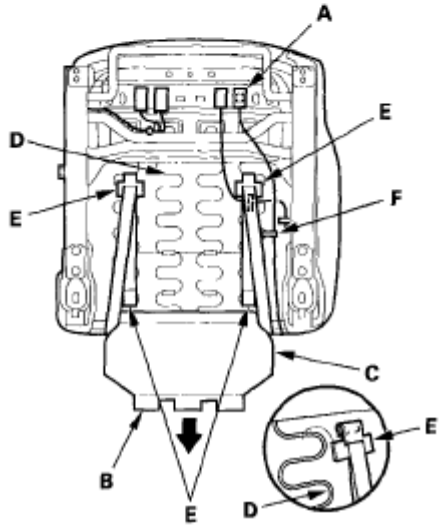


Fig. 21: Disconnecting And Detaching Side Airbag Connector

4. Release the hook (B) and seat cushion cover (C) from the seat cushion frame spring (D), then pull the cover back and release the hooks (E). Remove the wire ties (F).

5. Detach the clips and hooks (A) by pulling the bottom of the back cover (B) back, then gently pull down the cover to release the hooks (C) from the seat frame, and remove the panel.

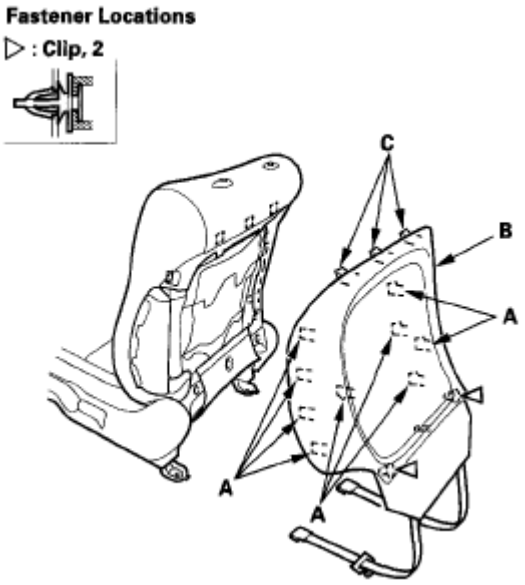


Fig. 22: Detaching Clips And Hooks By Pulling Bottom Of Back Cover

6. Release the hook strips (A), then loosen the seat-back cover (B). Pull the side airbag harness (C) with harness guides (D) out through holes in the seat cushion cover (E). Passenger's seat is shown; driver's seat is similar.

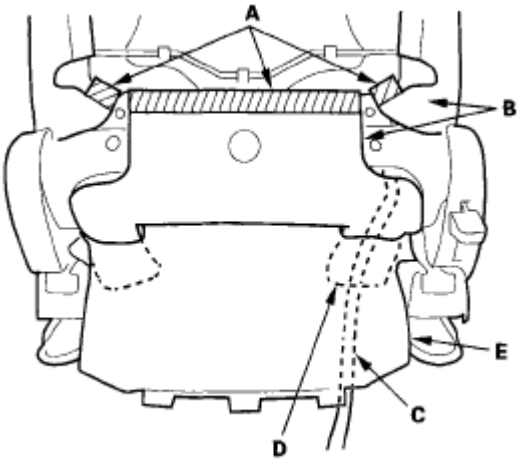


Fig. 23: Releasing Hook Strips And Loosening Seat-Back Cover

7. Detach the harness clip (A), and pull the side airbag harness (B) out through the harness hole (C) in the seat-back cover and seat frame. Passenger's seat is shown; driver's seat is similar.

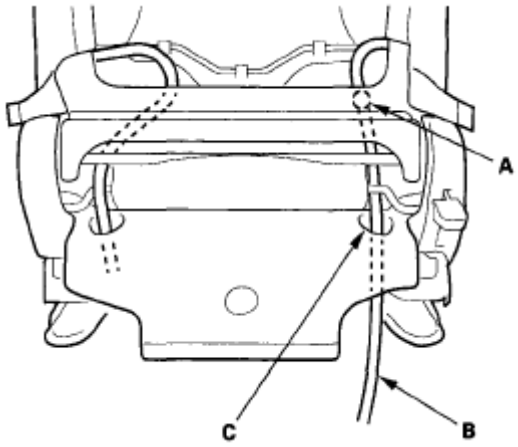


Fig. 24: Detaching Harness Clip And Pulling Side Airbag Harness Out Through Harness Hole In Seat-Back Cover And Seat Frame

8. Remove the side airbag (see **SIDE AIRBAG REPLACEMENT**).
9. Release the hook strips (A), then loosen the seat-back cover (B). Driver's seat is shown; passenger's seat is similar.

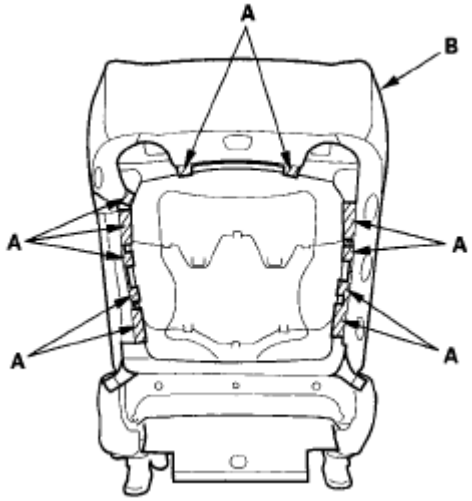


Fig. 25: Releasing Hook Strips And Loosening Seat-Back Cover

10. Turn over the reinforcing cloth (A), then release the hooks (B) from the side airbag module holder (C). Passenger's seat is shown; driver's seat is similar.

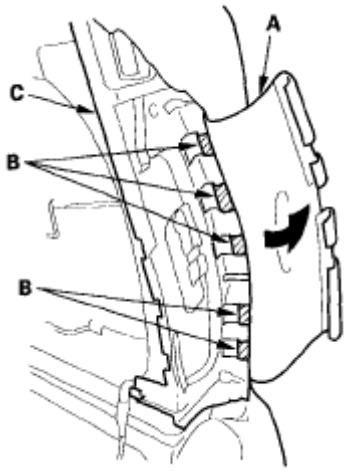


Fig. 26: Releasing Hooks From Side Airbag Module Holder

11. Passenger's seat: Disconnect the ODS sensor connectors (A) and ODS subharness connector (B) from the ODS unit (C), and pull them out through the hole in the seat frame. Pull the ODS subharness (D) out through the harness hole (E) in the seat-back cover (F). Detach the harness clips (G) and remove the wire tie (H).

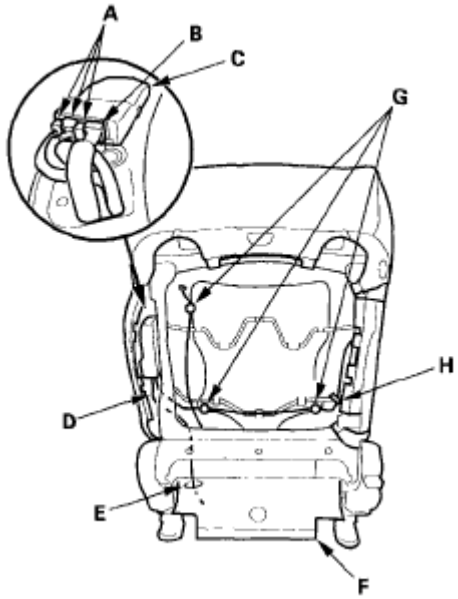


Fig. 27: Disconnecting ODS Sensor Connector And ODS Subharness Connector From ODS Unit

12. Pinch the tabs on the ends of the head restraint guides (A), and remove them from the seat-back.

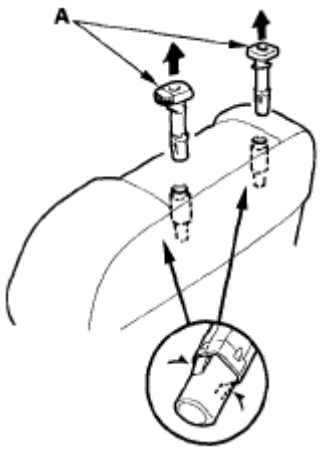


Fig. 28: Pinching Tabs On Ends Of Head Restraint Guides

13. Remove the seat-back cover/pad (A) from the seat (B).

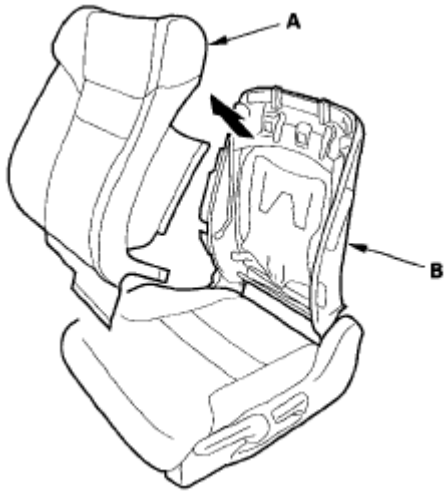


Fig. 29: Removing Seat-Back Cover/Pad From Seat

14. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

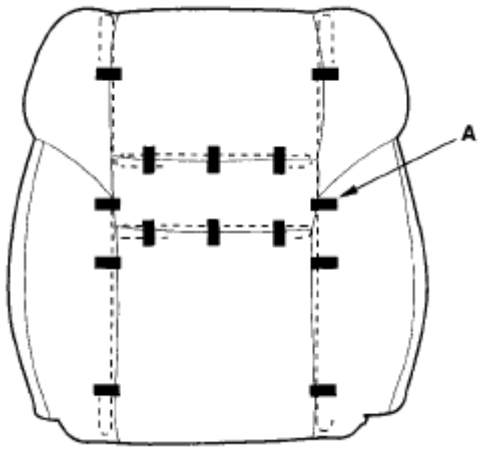


Fig. 30: Releasing Clips

15. Install the cover in the reverse order of removal, and note these items:
    - Reinitialize the ODS unit (see **ODS UNIT INITIALIZATION**).
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
    - Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).
    - Before installing the side airbag (C), make sure the reinforcing cloth (D) is fixed on the seat-back frame (E) securely.
    - Make sure the side airbag harness and ODS subharness (passenger's seat) are routed properly.

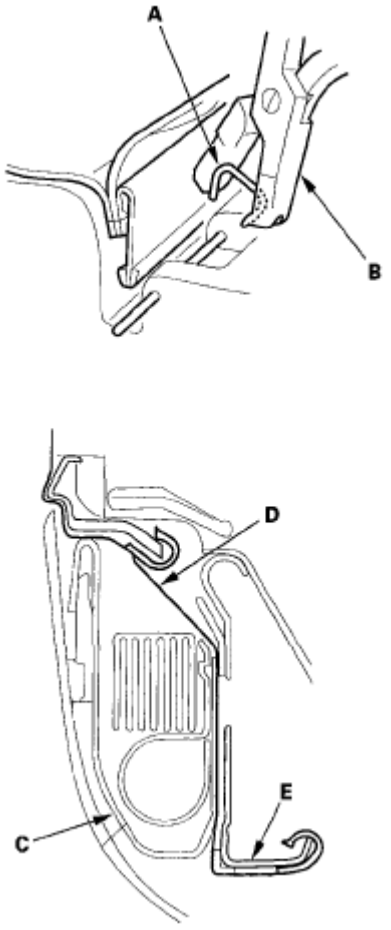


Fig. 31: Installing Front Seat-Back Cover (2-Door)

4-DOOR

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

- Check the operation of the driver's seat position sensor after any of these actions (see **DRIVER'S SEAT POSITION SENSOR OPERATION CHECK**):

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

- Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):
  - Front passenger's seat replacement (including any seat components)
  - Replacement of the seat weight sensors
  - After a vehicle collision

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **On the passenger's seat, do not touch the ODS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor caution it to fail.**
- **Put on gloves to protect your hands.**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the head restraint.
3. From under the seat cushion, detach the side airbag connector clip (A).

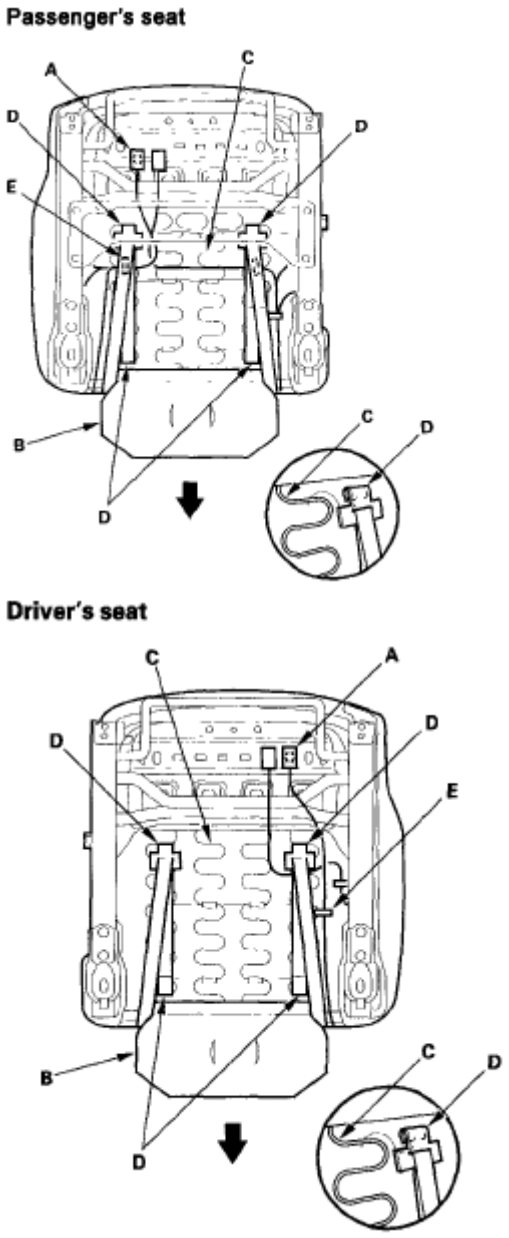


Fig. 32: Detaching Side Airbag Connector Clip

4. Release the slit in the seat cushion cover (B) from the seat cushion frame spring (C), then pull the cover back. Release the hooks (D) and remove the wire ties (E).
5. Detach the clips and hooks (A) by pulling the bottom of the back cover (B) back, then gently pull down the cover to release the hooks (C) from the seat frame, and remove the panel.

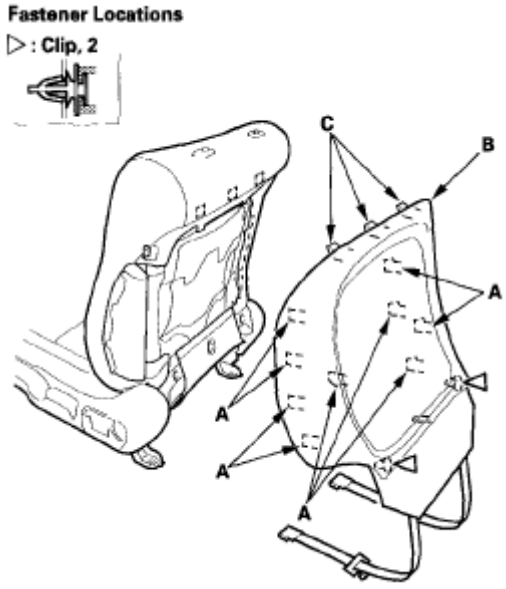


Fig. 33: Detaching Clips And Hooks Pulling Bottom Of Back Cover Back

6. Pull the side airbag harness (A) out through the loop (B), and release the hook (C), then pull the seat-back cover (D) back.

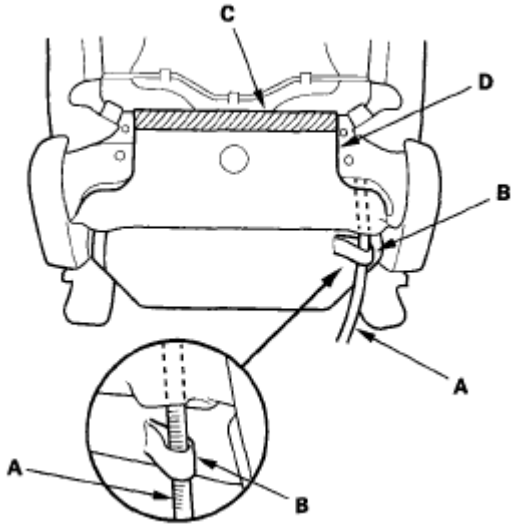


Fig. 34: Pulling Side Airbag Harness Out Through Loop

7. Detach the harness clip (A), and pull the side airbag harness (B) out through the harness hole (C) in the seat-back cover and seat frame. Passenger's seat is shown; driver's seat is similar.

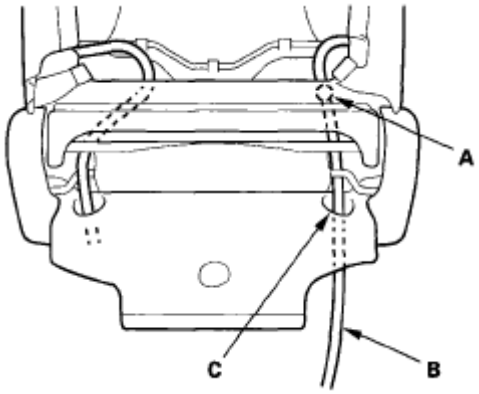


Fig. 35: Detaching Harness Clip And Pulling Side Airbag Harness Out Through Harness Hole In Seat-Back Cover And Seat Frame

8. Remove the side airbag (see **SIDE AIRBAG REPLACEMENT**).
9. Release the hook strips (A), then loosen the seat-back cover (B). Driver's seat is shown; passenger's seat is similar.

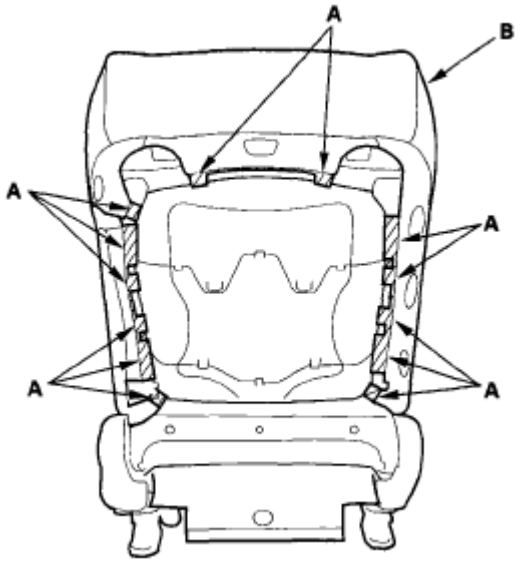


Fig. 36: Releasing Hook Strips

10. Turn over the reinforcing cloth (A), then release the hooks (B) from the module holder (C).

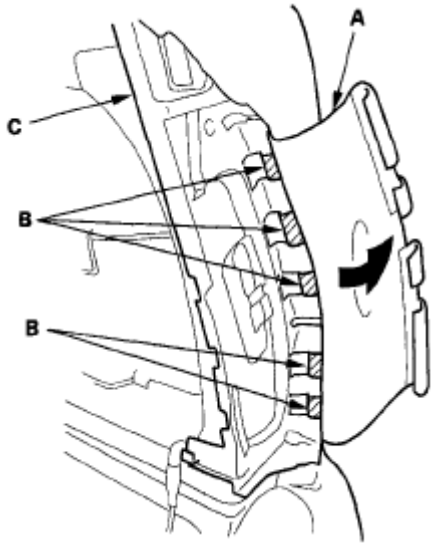


Fig. 37: Releasing Hooks From Module Holder

11. Passenger's seat: Disconnect the ODS sensor connectors (A) and ODS subharness connector (B) from the ODS unit (C), and pull them in through the hole in the seat frame. Pull the ODS subharness (D) out through the harness hole (E) in the seat-back cover (F). Detach the harness clips (G), and remove the wire tie (H).

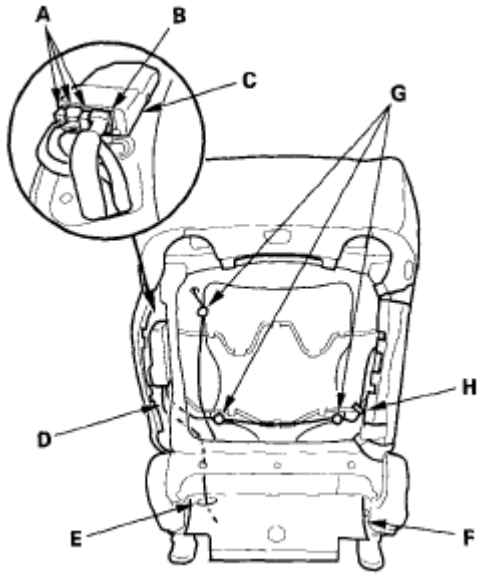


Fig. 38: Disconnecting ODS Sensor Connectors And ODS Subharness Connector From ODS Unit

12. Pinch the tabs on the ends of the head restraint guides (A), and remove them from the seat-back.

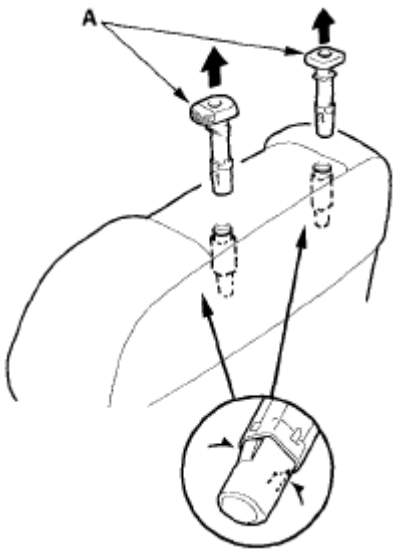


Fig. 39: Pinching Tabs On Ends Of Head Restraint Guides

13. Remove the seat-back cover/pad (A) from the seat (B).

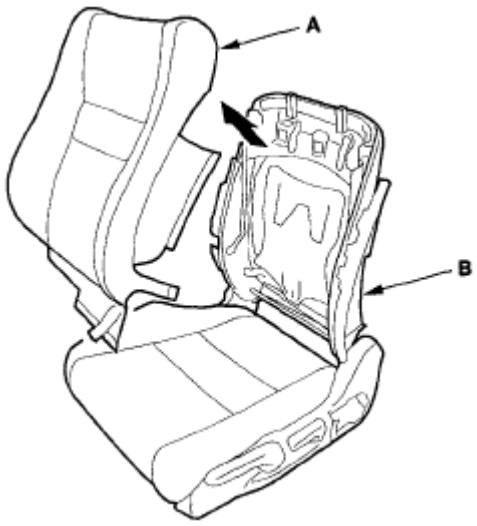


Fig. 40: Removing Seat-Back Cover/Pad From Seat

14. Except Si model: Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

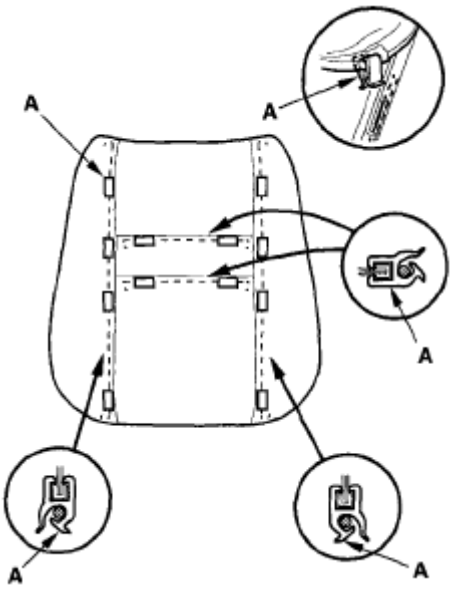


Fig. 41: Removing Seat-Back Cover

15. Except Si model: Install the cover in the reverse order of removal, and note these items:
    - Reinitialize the ODS unit (see **ODS UNIT INITIALIZATION**).
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
    - Replace any clips (A) you removed with new ones.
    - Before installing the side airbag (B), make sure the reinforcing cloth (C) is fixed on the seat-back frame (D) securely.
    - Make sure the side airbag harness and ODS subharness (passenger's seat) are routed properly.

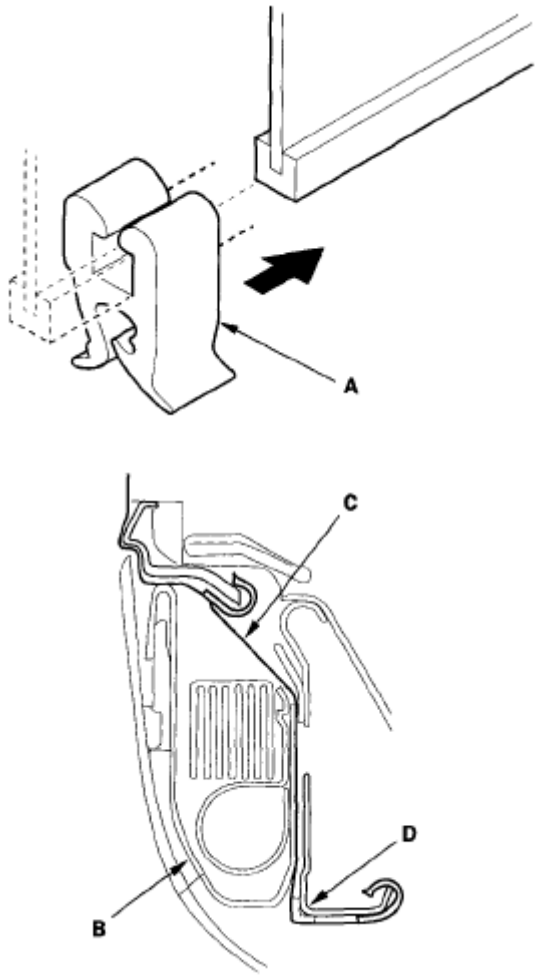


Fig. 42: Installing Cover (Except Si Model)

16. Si model: Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

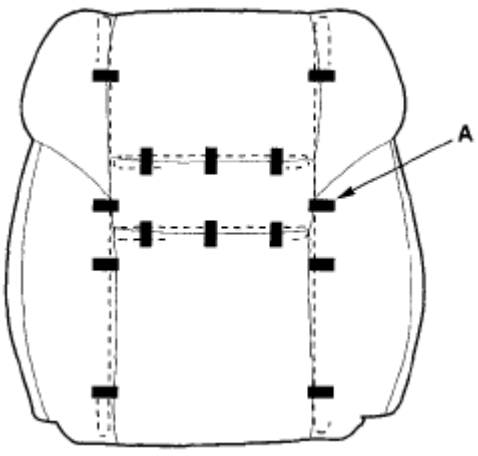


Fig. 43: Removing Seat-Back Cover (Si Model)

17. Si model: Install the cover in the reverse order of removal, and note these items:
    - Reinitialize the ODS unit (see **ODS UNIT INITIALIZATION**).

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
- Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).
- Before installing the side airbag (C), make sure the reinforcing cloth (D) is fixed on the seat-back frame (E) securely.
- Make sure the side airbag harness and ODS subharness (passenger's seat) are routed properly.

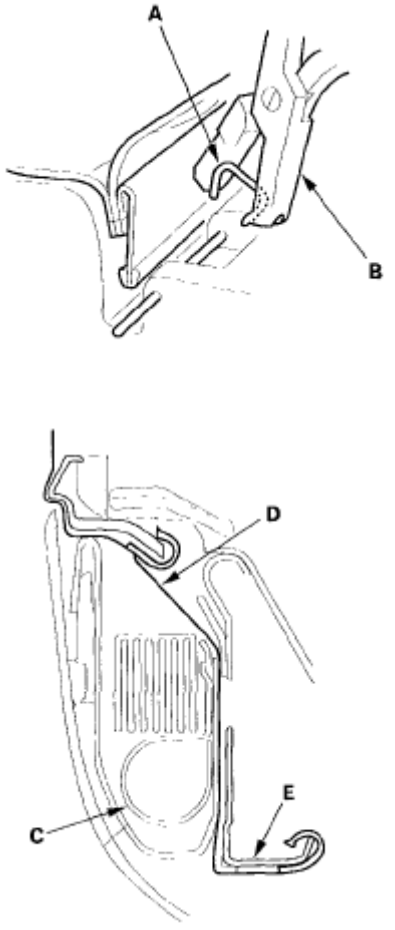


Fig. 44: Installing Front Seat-Back Cover (Si Model)

FRONT SEAT CUSHION COVER REPLACEMENT

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

2-DOOR

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**)

in the SRS before doing repairs or service.

- Check the operation of the driver's seat position sensor after any of these actions (see **DRIVER'S SEAT POSITION SENSOR OPERATION CHECK**):
  - Driver's seat position sensor replacement
  - Cover plate (front side of driver's seat slide rail) replacement
- Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):
  - Front passenger's seat replacement (including any seat components)
  - Replacement of the seat weight sensors
  - After a vehicle collision

NOTE:

- **Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.**
- **Take care not to tear the seams of damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the front seat belt buckle (see **FRONT SEAT BELT BUCKLE**).
3. Passenger's seat: Remove the screws, then remove the rear seat access knob (A).

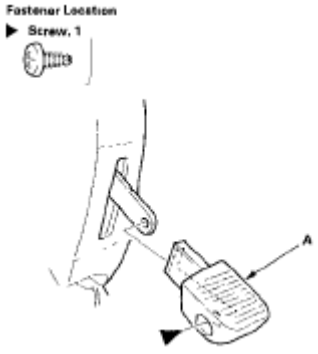


Fig. 45: Removing Rear Seat Access Knob

4. Pull back the cap (A) to release the hooks (B), and remove the screws, then remove the height handle (C).

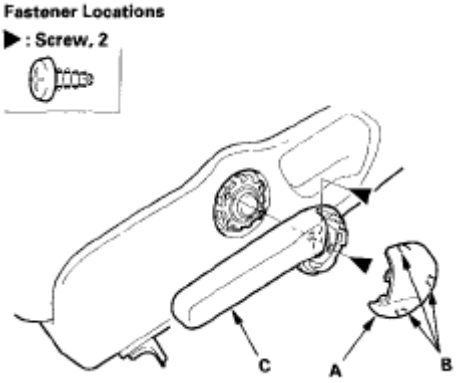


Fig. 46: Removing Height Handle

5. Remove the recline outer cover (A).
   - 1 Remove the recline knob (B) and screw (C).
   - 2 Gently pull out the cover, then detach the clips (D), and release the hooks (E).
   - 3 Release the rear seat access lever (F).

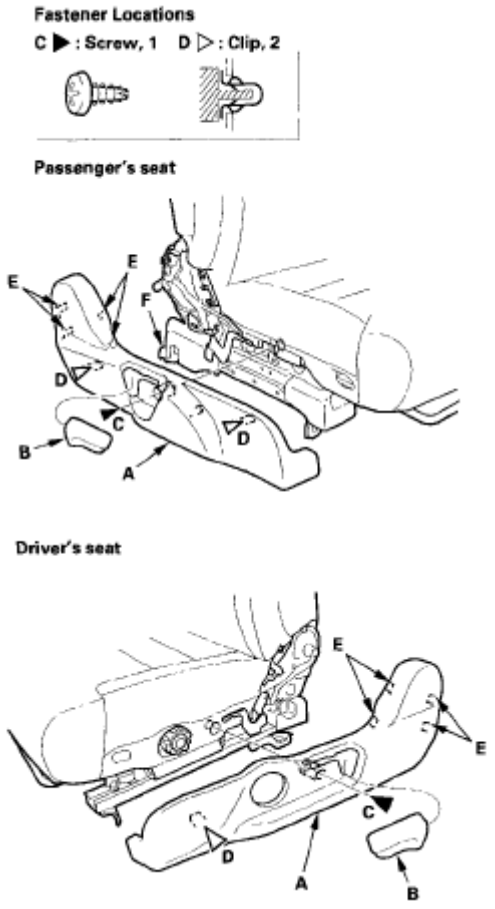


Fig. 47: Removing Recline Outer Cover

6. Gently pull out the center cover (A), then detach the clips, and release the hooks (B). Driver's seat is shown; passenger's seat is similar.

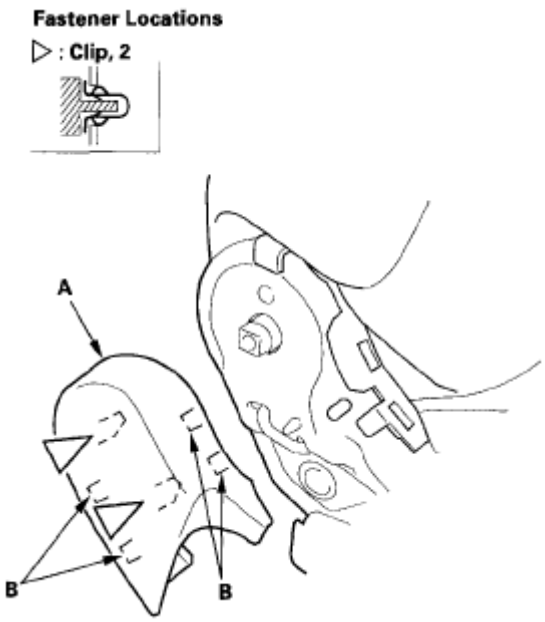


Fig. 48: Pulling Out Center Cover And Detaching Clips Releasing Hooks

7. From under the seat cushion, disconnect and detach the connectors:
    - Passenger's seat:
        - Seat weight sensor connectors (A)
        - Side airbag connector (B)
        - ODS subharness connector (C)
    - Driver's seat:
        - Side airbag connector (B)

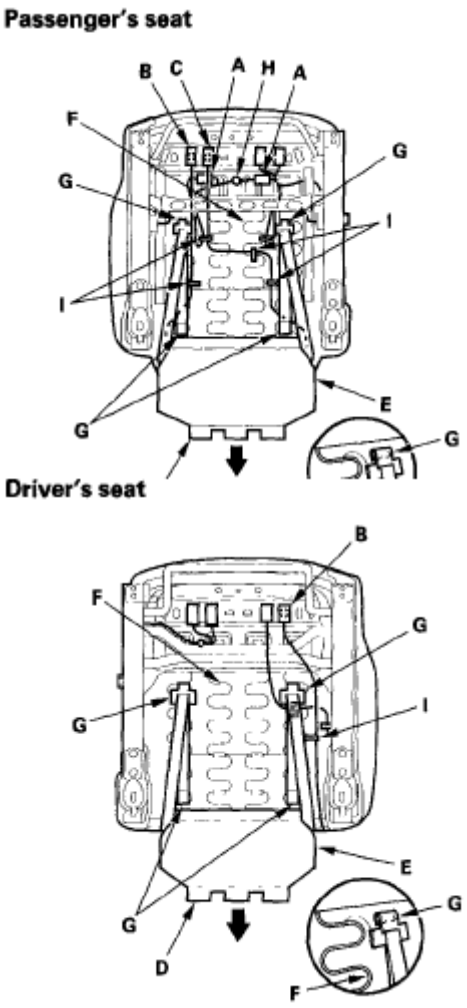


Fig. 49: Disconnecting And Detaching Connectors

8. Release the hook (D) and seat cushion cover (E) from the seat cushion frame spring (F), then pull the cover back and release the hooks (G). Detach the harness clip (H), and remove the wire ties (I).
9. Pull the side airbag harness (A), ODS subharness (B) (passenger's seat), and harness guides (C) out through the holes (D) in the seat cushion cover.

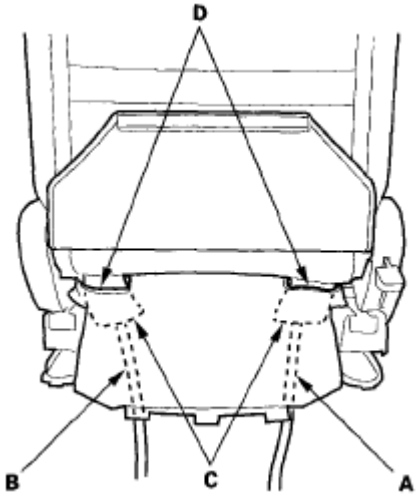


Fig. 50: Pulling Side Airbag Harness, ODS Subharness (Passenger's Seat) And Harness Guides

10. Release the hook strips (A, B) from the seat frame (C).

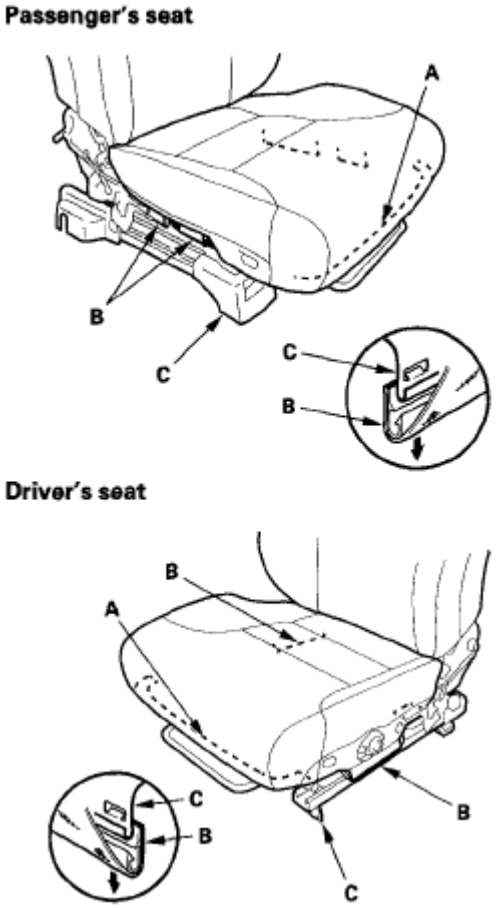


Fig. 51: Releasing Hook Strips From Seat Frame

11. Release the hook (A) from under the seat cushion.

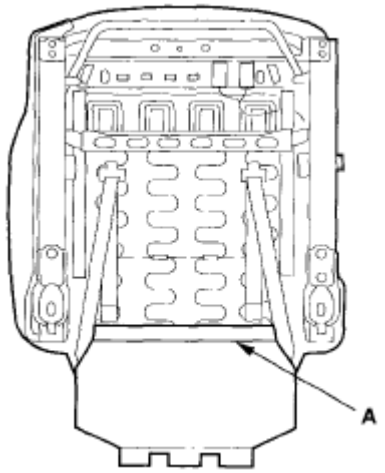


Fig. 52: Releasing Hook From Under Seat Cushion

12. Remove the seat cushion cover/pad (A) from the seat frame (B).

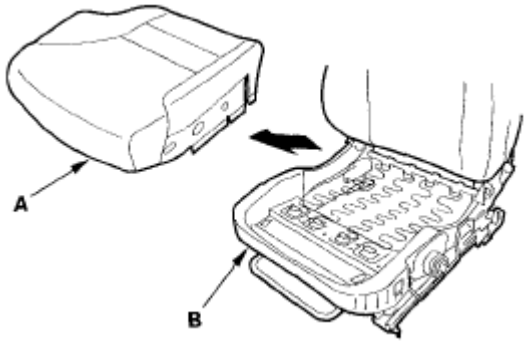


Fig. 53: Removing Seat Cushion Cover/Pad From Seat Frame

13. Release the clips (A) from under the seat cushion (B).

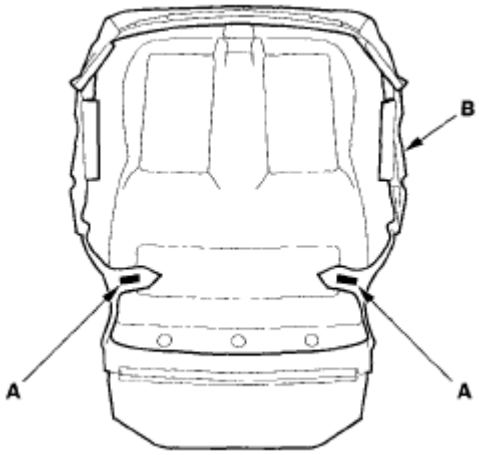


Fig. 54: Releasing Clips From Under Seat Cushion

14. Pull back the edge of the seat cushion coverall the way around, and release the clips (A), then remove the seat cushion cover.

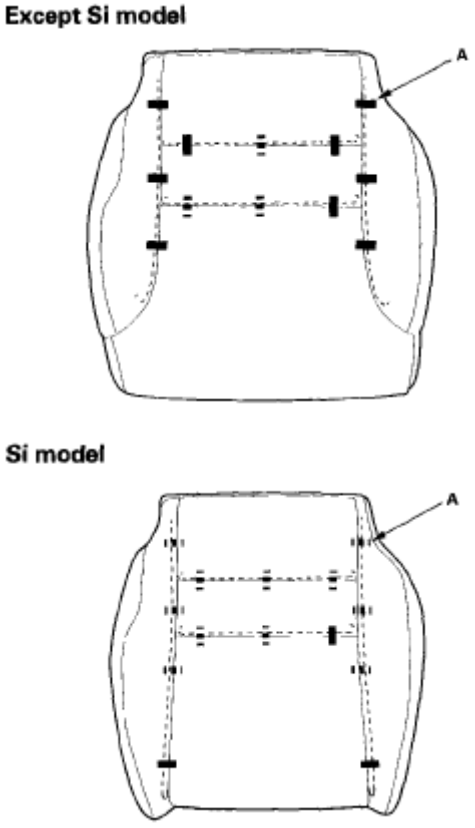


Fig. 55: Removing Seat Cushion Cover

15. Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
    - Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).

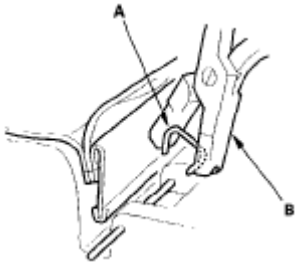


Fig. 56: Installing Front Seat Cushion Cover (2-Door)

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

4-DOOR

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

- Check the operation of the driver's seat position sensor after any of these actions (see **DRIVER'S SEAT POSITION SENSOR OPERATION CHECK**):
  - Driver's seat position sensor replacement
  - Cover plate (front side of driver's seat slide rail) replacement
- Calibrate the ODS unit after any of the these actions (see **ODS UNIT CALIBRATION**):
  - Front passenger's seat replacement (including any seat components)
  - Replacement of the seat weight sensors
  - After a vehicle collision

NOTE:

- **Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.**
- **Take care not to tear the seams of damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
2. Remove the front seat belt buckle (see **FRONT SEAT BELT BUCKLE**).
3. Pull back the cap (A) to release the hooks (B), and remove the screws, then remove the height adjuster handle (C).

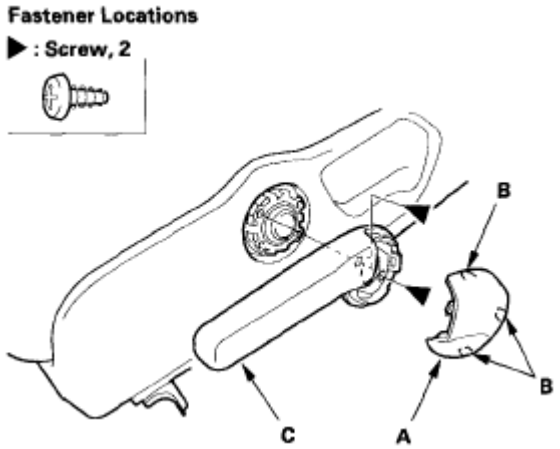


Fig. 57: Removing Height Adjuster Handle

4. Remove the recline cover (A).
   - 1 Remove the recline knob (B) and screw (C).
   - 2 Gently pull out the cover, then detach the clip (D), and release the hooks (E).

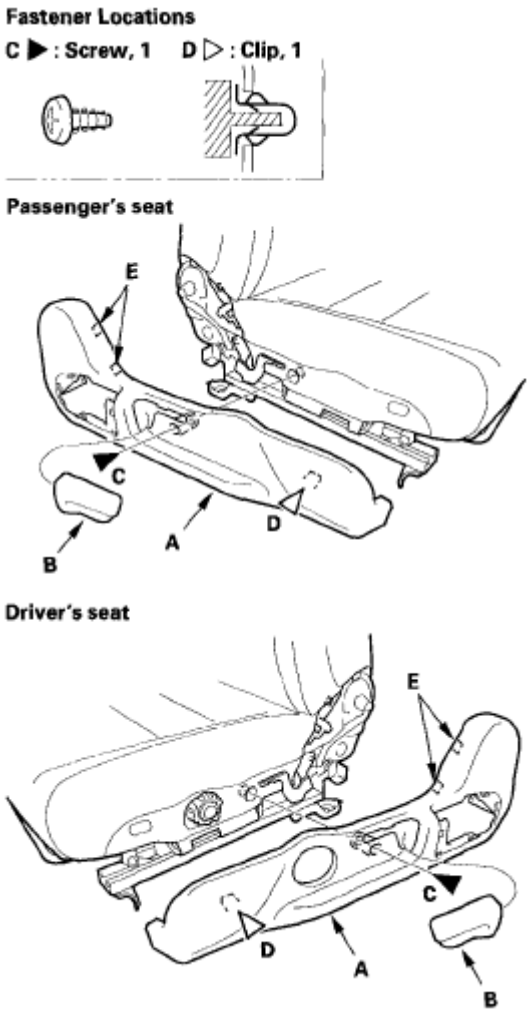


Fig. 58: Removing Recline Cover

5. Gently pull out the center cover (A), then detach the clip, and release the hooks (B). Driver's seat is shown; passenger's seat is similar.

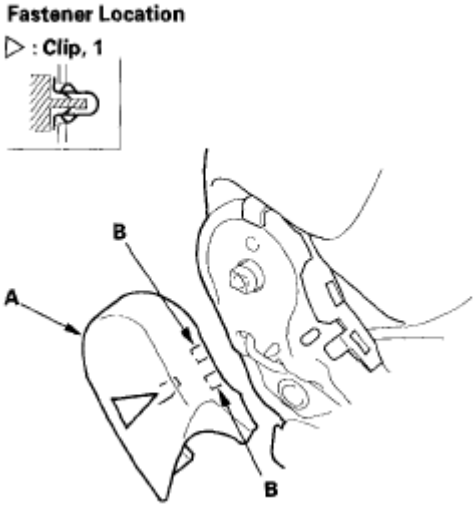


Fig. 59: Releasing Hooks Pulling Center Cover

6. From under the seat cushion, detach the side airbag connector clip (A).

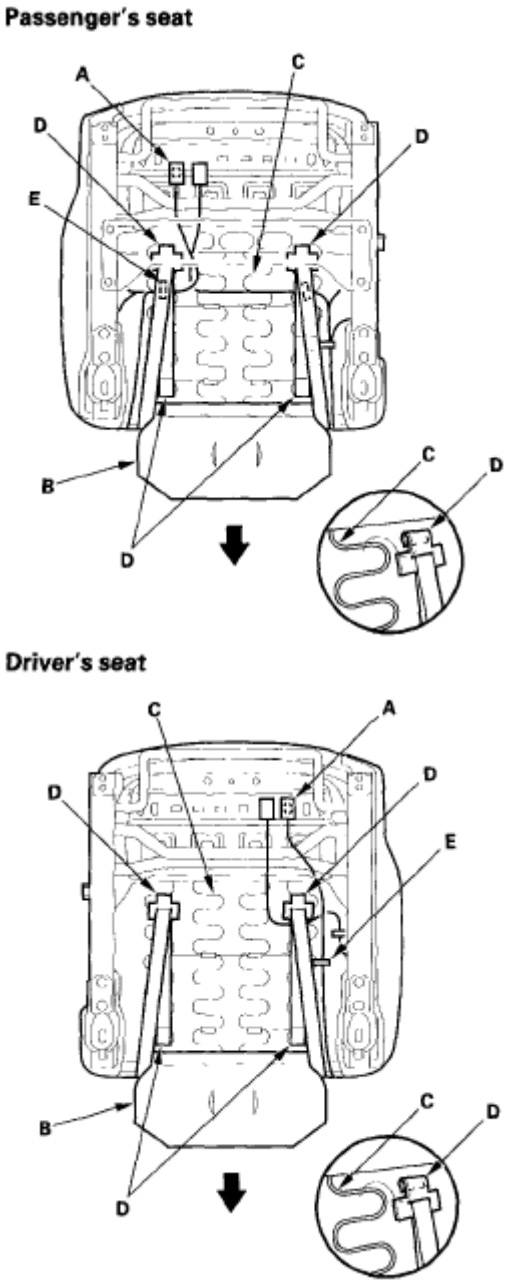


Fig. 60: Detaching Side Airbag Connector Clip

7. Release slits in the seat cushion cover (B) from the seat cushion frame spring (C), then pull the cover back. Release the hooks (D) and remove the wire ties (E).
8. Pull the side airbag harness (A) out through the loop (B).

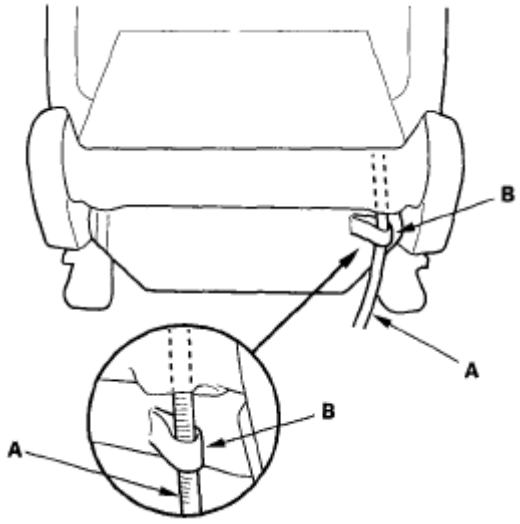


Fig. 61: Pulling Side Airbag Harness Out Through Loop

9. Release the hook strips (A, B) from the seat frame (C).

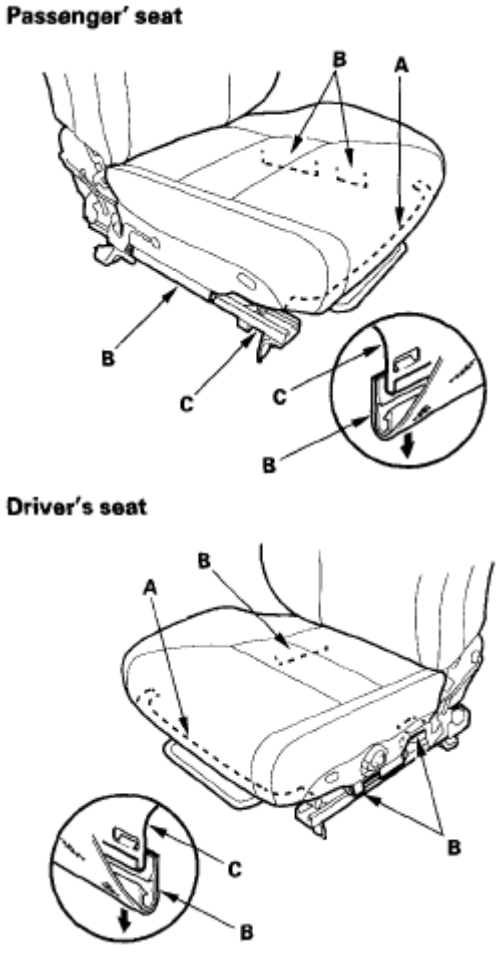


Fig. 62: Releasing Hook Strips From Seat Frame

10. Release the hook (A) from under the seat cushion.

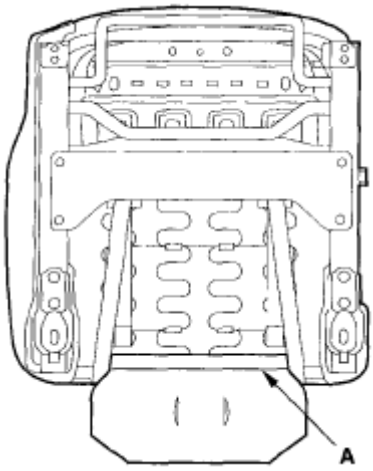


Fig. 63: Releasing Hook From Under Seat Cushion

11. Remove the seat cushion cover/pad (A) from the seat frame (B).

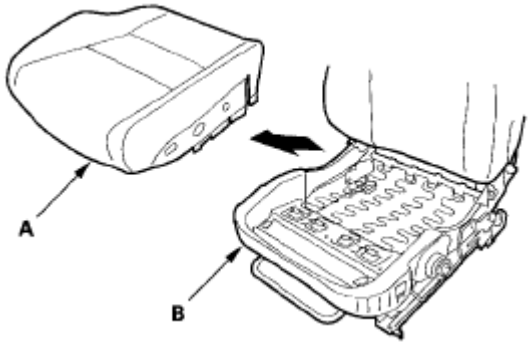


Fig. 64: Removing Seat Cushion Cover/Pad From Seat Frame

12. Except Si model: Release the hooks (A) from under the seat cushion (B).

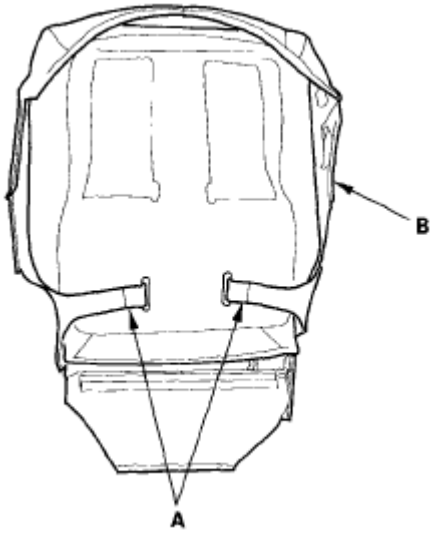


Fig. 65: Releasing Hooks From Under Seat Cushion (Except Si Model)

13. Except Si model: Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

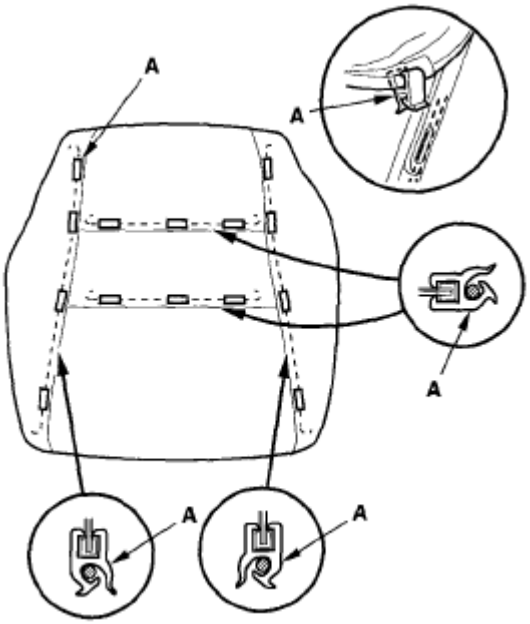


Fig. 66: Removing Seat-Back Cover (Except Si Model)

14. Except Si model: Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
    - Replace any clips (A) you removed with new ones.

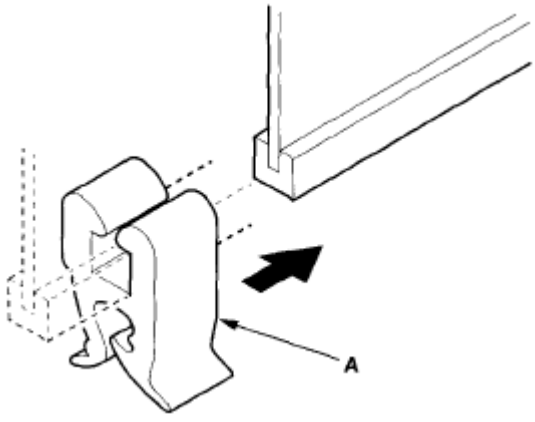


Fig. 67: Installing Cover (Except Si Model)

15. Si model: Release the clips (A) from under the seat cushion (B).

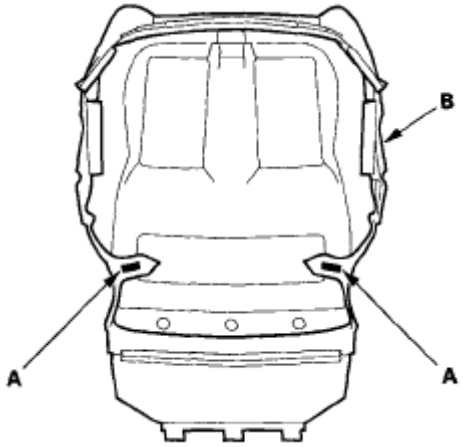


Fig. 68: Releasing Clips From Under Seat Cushion (Si Model)

16. Si model: Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.

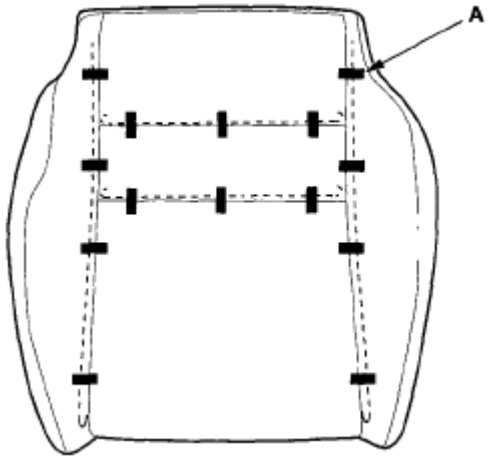


Fig. 69: Removing Seat Cushion Cover (Si Model)

17. Si model: Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
    - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

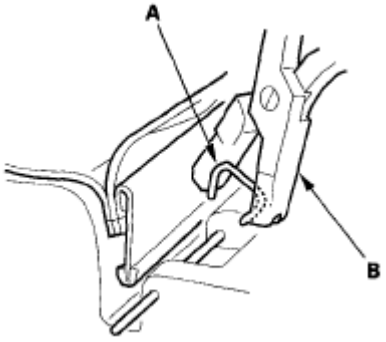


Fig. 70: Installing Front Seat Cushion Cover (Si Model)

REAR SEAT REMOVAL/INSTALLATION

SEAT-BACK - FOLD DOWN

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the seat-back (A).
   - 1 Fold the seat-back forward.
   - 2 Pull the rear center seat belt (B) out through the slit (C) in the seat belt guide (D).
   - 3 Release the velcro fasteners (E), and pull back the seat-back cover (F), then remove the bolts.
   - 4 Release the hooks (G) of the pivot brackets (H).

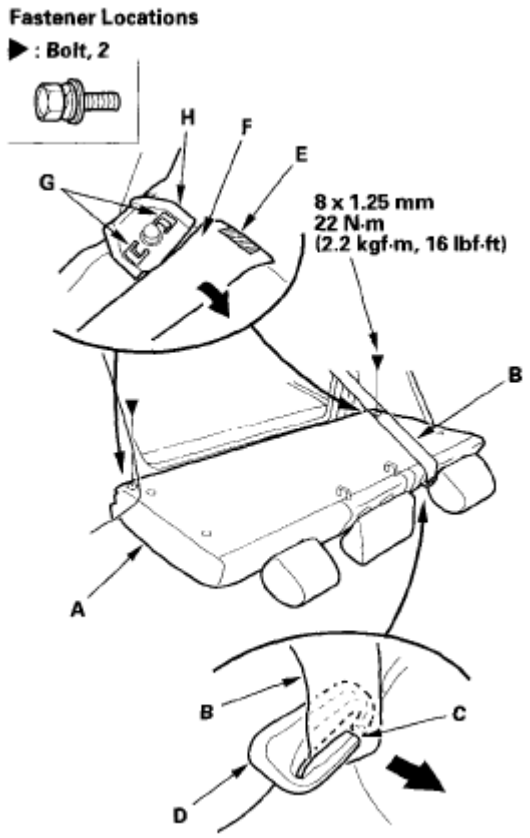


Fig. 71: Removing Seat-Back (With Specifications)

2. 2-door: Remove the rear side trim panel (see **2-DOOR**).
3. Remove the bolt, then remove the pivot bracket (A).

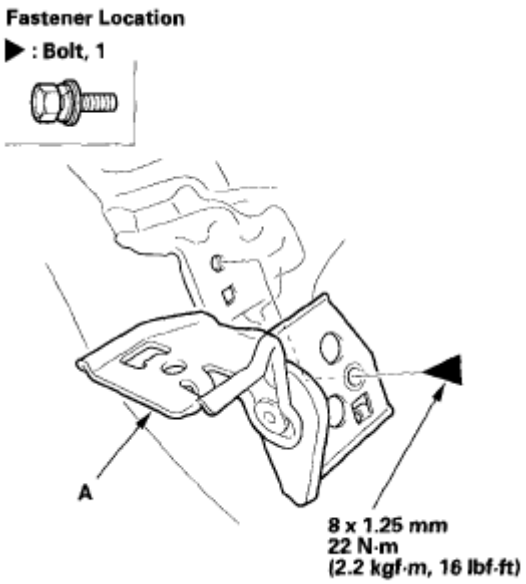


Fig. 72: Removing Pivot Bracket (With Specifications)

4. Install the seat-back in the reverse order of removal, and note these items:

- Guide the belt over the front of the seat-back as you install the seat-back.
- Before attaching the rear seat-back, make sure there are no twists or kinks in the rear center seat belt.

SEAT-BACK - SPLIT FOLD DOWN

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the right seat-back (A).
    - 1 Fold the right seat-back forward.
    - 2 Release the velcro fasteners (B), and pull back the seat-back cover (C), then remove the bolts.
    - 3 Release the hooks (D) of the pivot bracket (E).

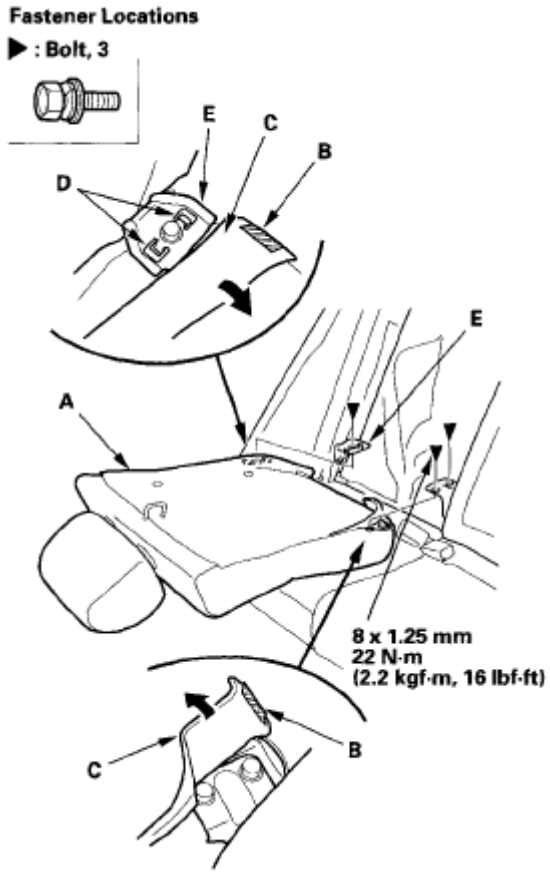


Fig. 73: Removing Right Seat-Back (With Specifications)

2. Remove the bolt, then remove the center pivot bracket (A).

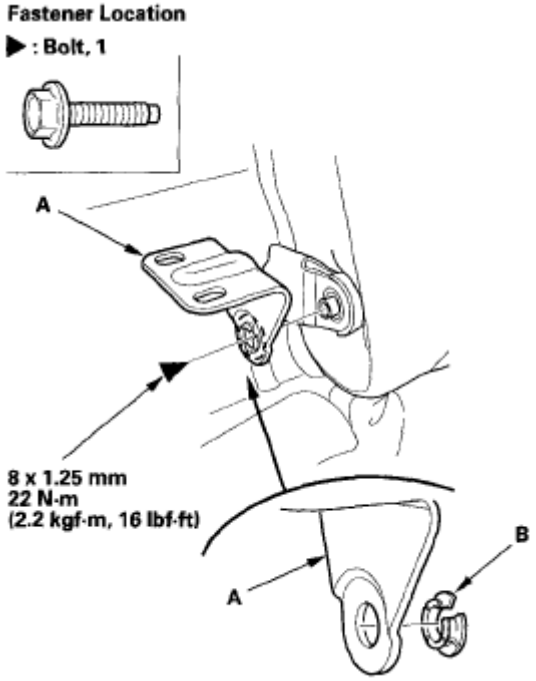


Fig. 74: Removing Center Pivot Bracket (With Specifications)

3. If necessary, remove the bushing (B).
4. Remove the left seat-back (A).
    - 1 Fold the left seat-back forward.
    - 2 Pull the rear center seat belt (B) out through the slit (C) in the seat belt guide (D).
    - 3 Release the velcro fastener (E), and pull back the seat-back cover (F), then remove the bolt.
    - 4 Release the hooks (G) of the pivot bracket (H).

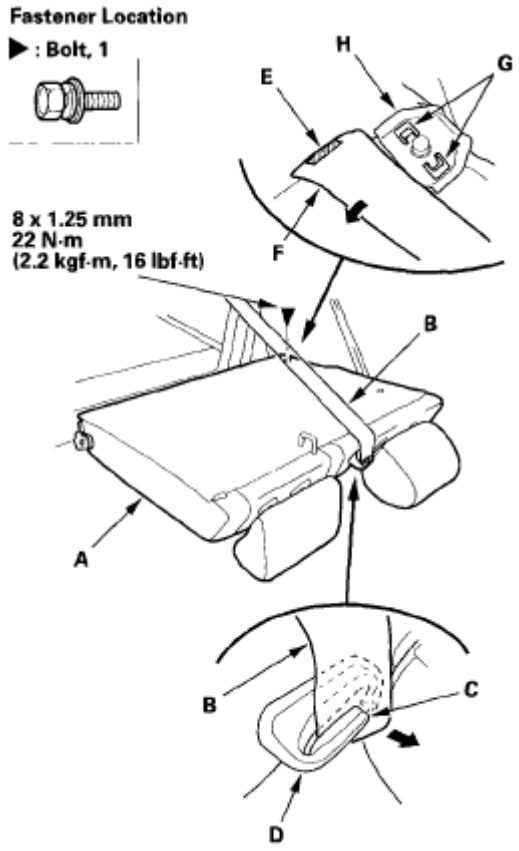


Fig. 75: Removing Left Seat-Back (With Specifications)

5. Extend the rear center seat belt (A) to remove the left seat-back (B), then release the pivot shaft (C) from the center pivot bracket (D).

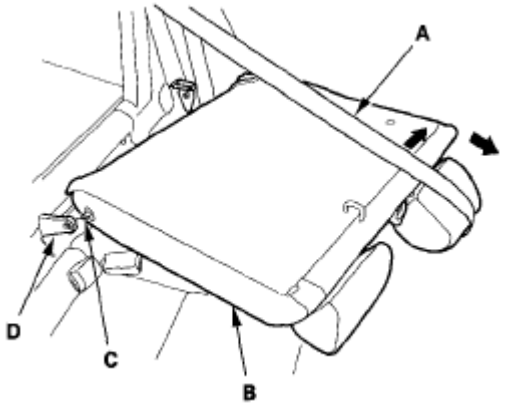


Fig. 76: Removing Left Seat-Back Extending Rear Center Seat Belt

6. If necessary, remove the bushing (A), from the center pivot bracket (B).

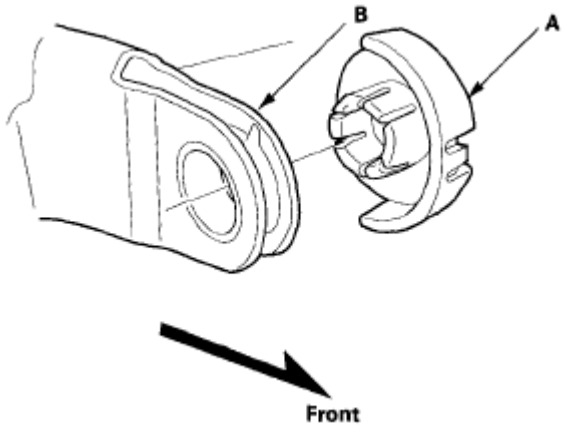


Fig. 77: Removing Bushing From Center Pivot Bracket

7. 2-door: Remove the rear side trim panel (see **2-DOOR**).
8. Remove the bolt, then remove the pivot bracket (A).

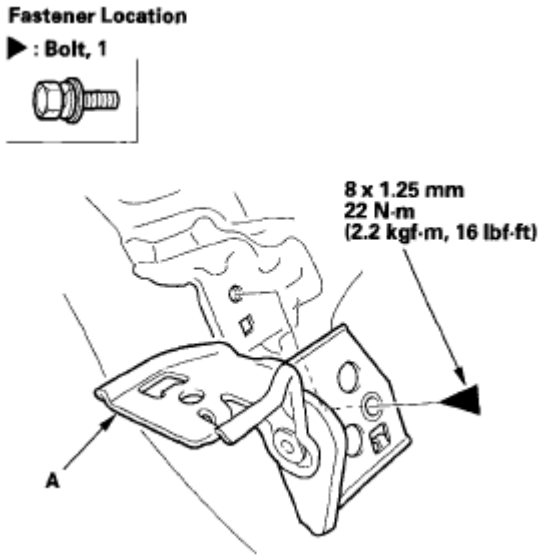


Fig. 78: Removing Pivot Bracket (With Specifications)

9. Install the seat-back in the reverse order of removal, and note these items:

- Guide the belt over the front of the seat-back as you install the seat-back.
- Before attaching the rear seat-back, make sure there are no twists or kinks in the rear center seat belt.

SEAT CUSHION

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the bolt between the seat-back (A) and the seat cushion (B).

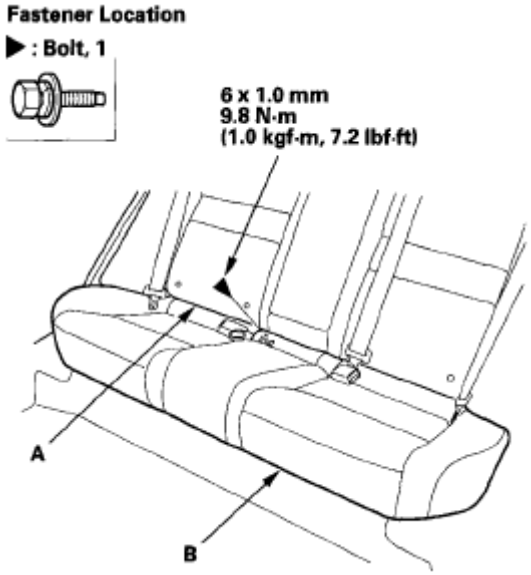


Fig. 79: Removing Bolt Betwen Seat-Back And Seat Cushion (With Specifications)

2. Pull each front edge of the seat cushion (A) up to release the hooks (B), then pull back the seat cushion, and remove it.

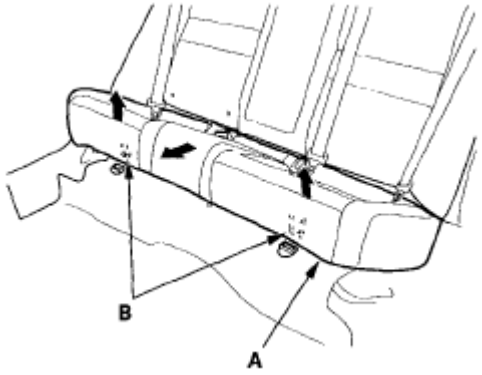


Fig. 80: Removing Seat Cushion

3. Install the seat cushion in the reverse order of removal, and note these items:

- Before attaching the seat cushion, make sure there are no twists or kinks in the seat belts.
- When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.

SEAT SIDE BOLSTER - 4-DOOR

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the seat cushion.
2. Remove the bolt.

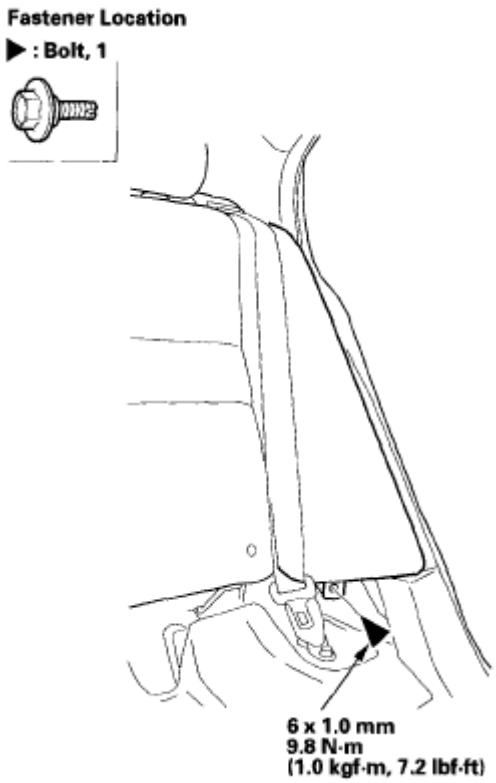


Fig. 81: Removing Seat Side Bolster Bolt - 4-Door (With Specifications)

3. Fold the seat-back forward.
4. Lift the seat side bolster (A) up to release the hook (B), then remove the seat side bolster.

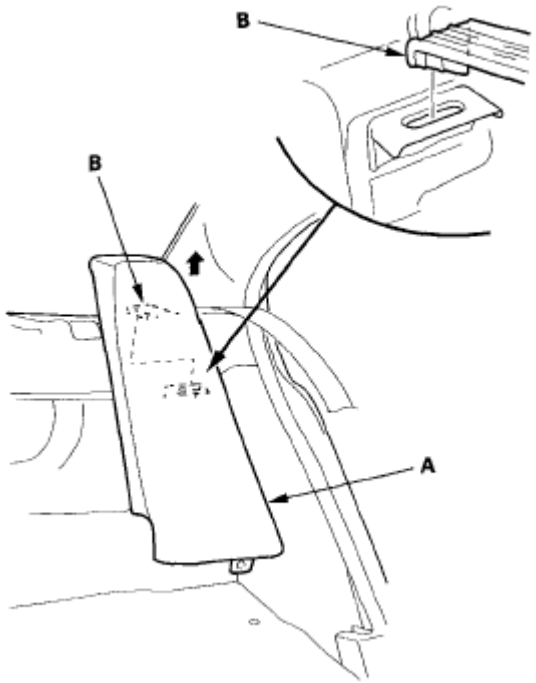


Fig. 82: Removing Seat Side Bolster

5. Install the seat in the reverse order of removal, and note these items:

- Guide the belts over the front of the seat side bolster as you install the bolster.
- Before attaching the seat side bolster, make sure there are no twists or kinks in the seat belts.

REAR SEAT-BACK LATCH REPLACEMENT

FOLD DOWN REAR SEAT/SPLIT FOLD DOWN REAR SEAT

NOTE: Take care not to bend or scratch the interior trim.

1. Remove the rear shelf:
   - 2-door (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
   - 4-door (see **REAR SHELF EXTENSION - 2-DOOR**)
2. From the trunk, disconnect the seat-back release cable (A) from the seat-back latch (B).

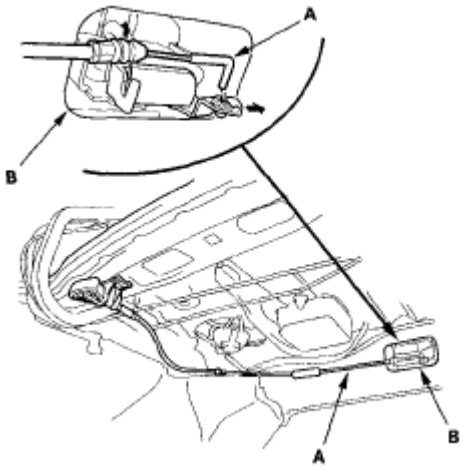


Fig. 83: Disconnecting Seat-Back Release Cable (From Trunk)

3. Remove the bolts, then remove the seat-back latch (A).

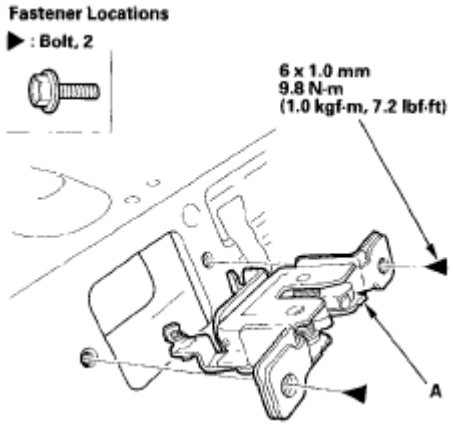


Fig. 84: Removing Seat-Back Latch (With Specifications)

4. Install the latch in the reverse order of removal, and note these items:
   - Make sure the release cable is connected securely.

- Make sure the seat-back locks securely and unlocks properly.

REAR SEAT-BACK RELEASE LEVER/CABLE REMOVAL/INSTALLATION

FOLD DOWN REAR SEAT/SPLIT FOLD DOWN REAR SEAT

NOTE: Take care not to bend or scratch the interior trim.

1. Open the trunk lid.
2. From the trunk room, detach the cable clip.

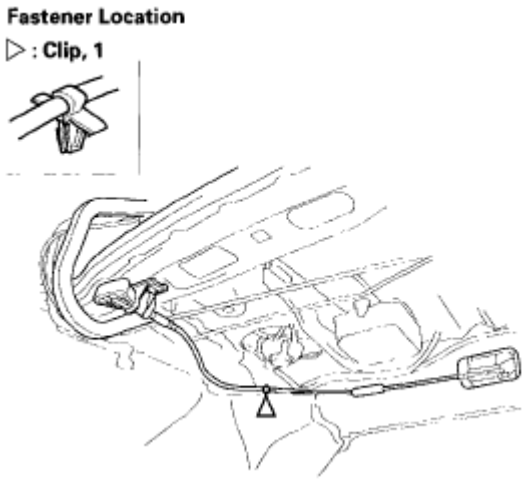


Fig. 85: Detaching Cable Clip From Trunk Room

3. 2-door: Remove the rear seat-back release cable (A) out through the slit (B) in the trim panel.

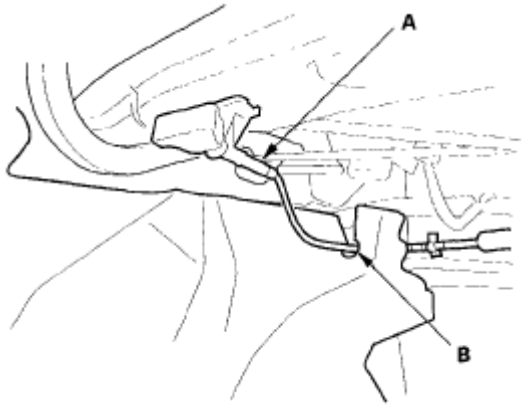


Fig. 86: Removing Rear Seat-Back Release Cable (2-Door)

4. Disconnect the seat-back release cable (A) from the seat-back latch (B).

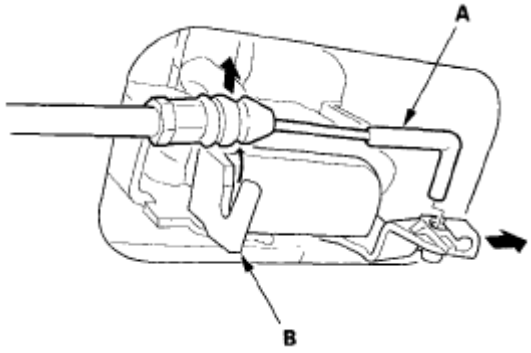


Fig. 87: Disconnecting Seat-Back Release Cable From Seat-Back Latch

5. Push the tab (A) to release the hook (B), and rotate the seat-back release lever (C) clockwise to release the hook (D).

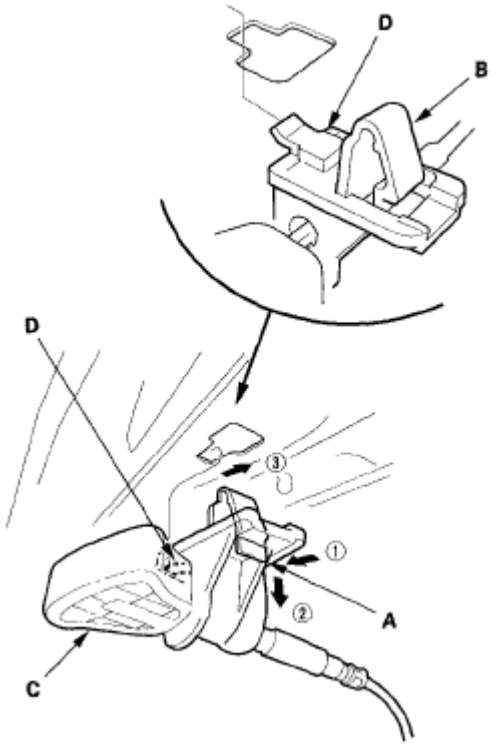


Fig. 88: Rotating Seat-Back Lever Clockwise To Release Hook

6. Install the release lever/cable in the reverse order of removal, and note these items:

- Make sure the release cable is connected securely.
- Make sure the seat-back locks securely and unlocks properly.

REAR SEAT ARMREST BEVERAGE HOLDER REPLACEMENT

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

FOR SOME MODELS - 4-DOOR

NOTE:

- **Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.**
- **Take care not to tear the seams or damage the seat covers.**

1. Using a trim tool, push on the bottom ribs (A) of the rear hooks (B) to pull up the beverage holder (C), then release the hooks from the wire (D).

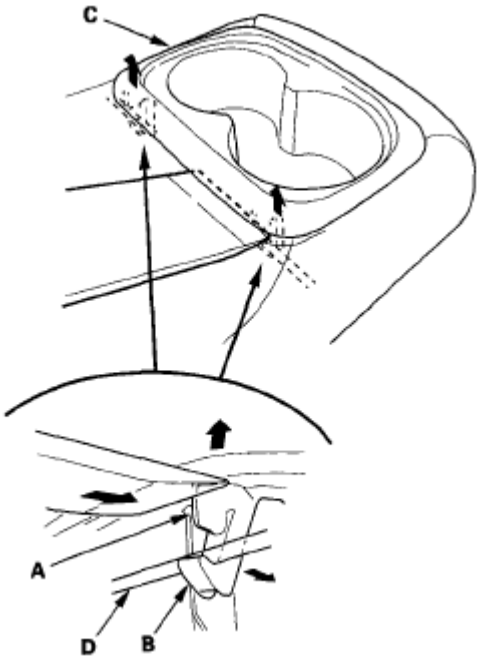


Fig. 89: Pushing Bottom Ribs Of Rear Hooks To Pull Up Beverage Holder

2. Release the front hooks (A) from the wire (B), then remove the beverage holder (C).

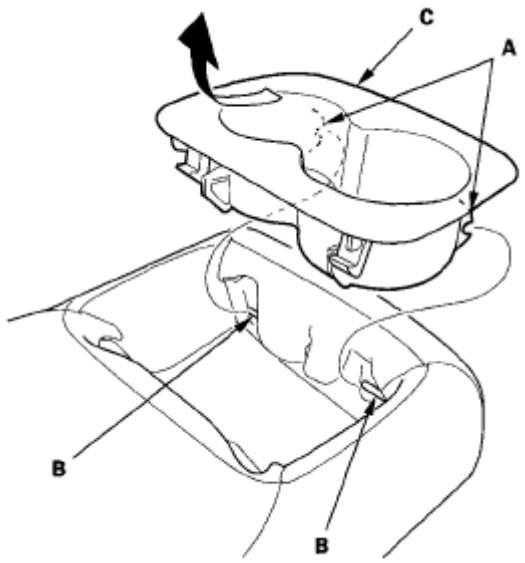


Fig. 90: Removing Beverage Holder

3. Install the beverage holder in the reverse order of removal. Make sure the front hooks are installed securely to the wire, then push down on the beverage holder and install the rear hooks into the wire securely.

REAR SEAT ARMREST REPLACEMENT

FOR SOME MODELS - 4-DOOR

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the clip (A) from the left portion of the armrest pivot (B).

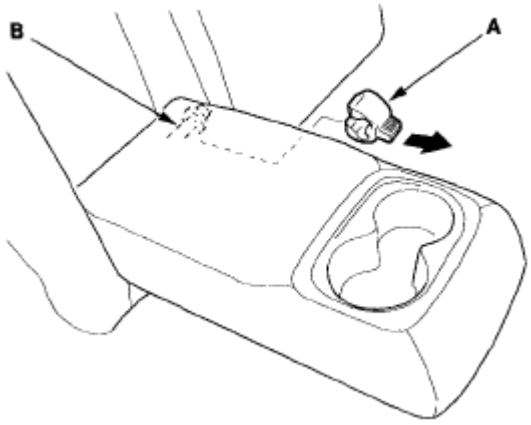


Fig. 91: Removing Clip From Left Portion Of Armrest Pivot

2. Slide the armrest (A) toward the driver's side of the vehicle, and remove the pivot shaft (B) from the collar (C) on the right side of the vehicle by pulling back on the armrest.

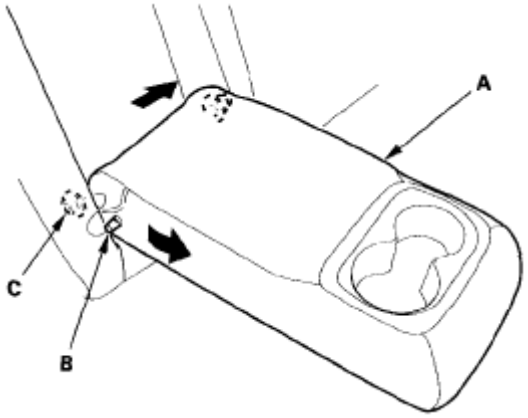


Fig. 92: Removing Pivot Shaft Form Collar On Side Of Vehicle

3. Remove the pivot shaft (A) from the collar (B) on the left, then remove the armrest (C).

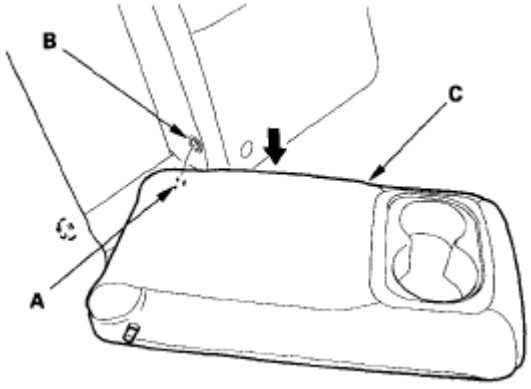


Fig. 93: Removing Armrest

4. Remove the collars (A) from the seat-back (B). A

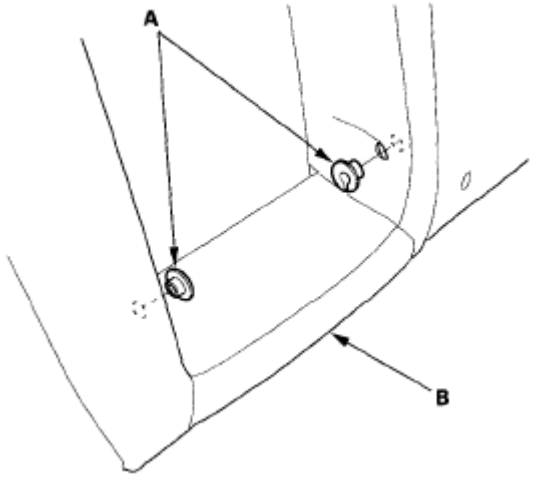


Fig. 94: Removing Collars From Seat-Back

5. Install the armrest in the reverse order of removal.

REAR SEAT-BACK COVER REPLACEMENT

SEAT-BACK - FOLD DOWN - 2-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat-back (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Remove these head restraint.
3. Remove the screw, then remove the center belt guide (A).

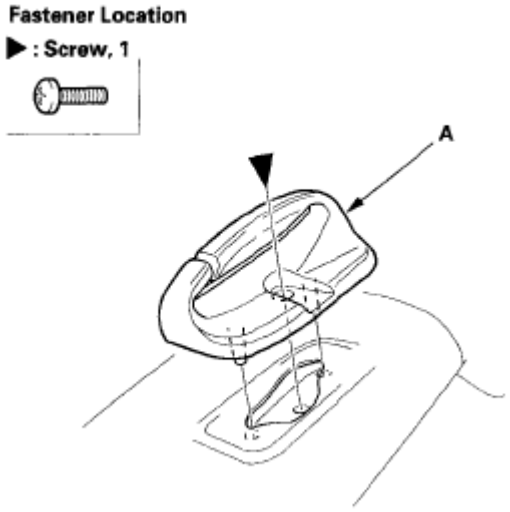


Fig. 95: Removing Center Belt Guide

4. Release the lower hook (A), and clips.

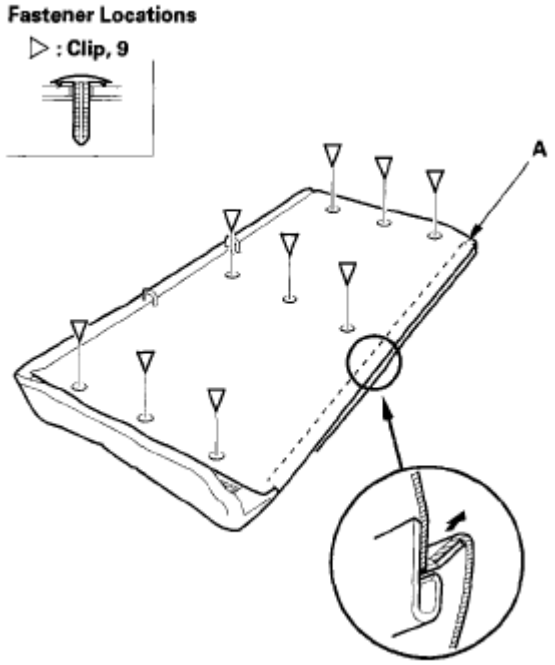


Fig. 96: Releasing Lower Hook And Clips

5. Pull back the seat-back cover (A), then release the hook strips (B).

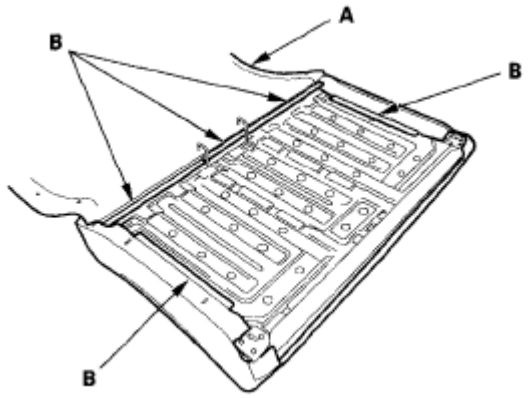


Fig. 97: Releasing Hook Strips Pulling Back Seat-Back Cover

6. Pull out the seat-back frame (A) from the pad (B), then pull out the head restraint guides (C) while pinching the end of the guides, and remove them.

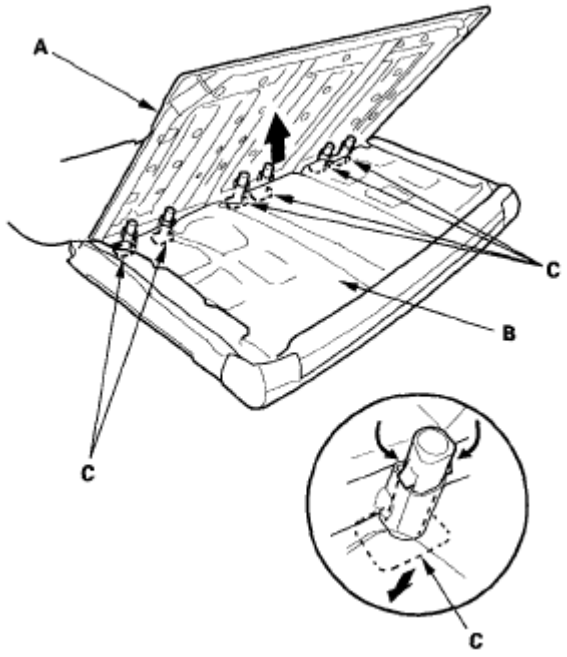


Fig. 98: Removing Head Restraint Guides

7. Remove the seat-back cover and pad from the seat-back frame.
8. Pull back the edge of the seat-back cover (A) all the way around, and release the hooks (B) of the horizontal wires (C) from the vertical wires (D) on the pad, and remove the clips (E), then remove the seat-back cover.

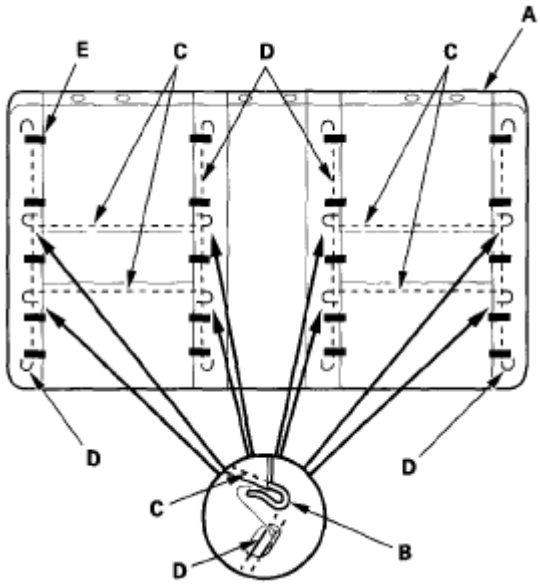


Fig. 99: Removing Seat-Back Cover

9. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
- Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

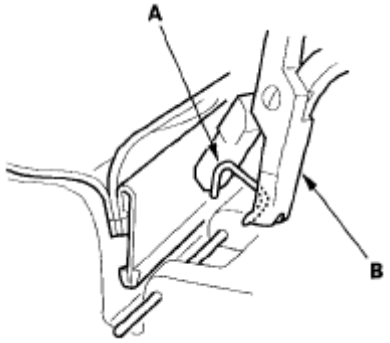


Fig. 100: Installing Rear Seat-Back Cover Of Seat-Back - Fold Down - 2-Door

SEAT-BACK - FOLD DOWN - 4-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat-back (see **REAR SEAT REMOVAL/INSTALLATION**).
2. Remove the head restraint.
3. Remove the screw, then remove the center belt guide (A).

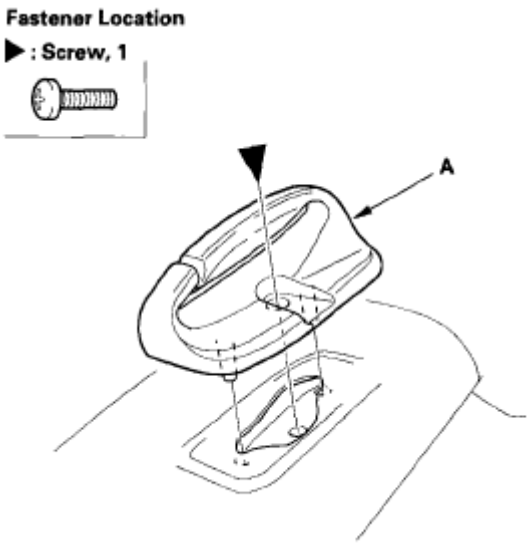


Fig. 101: Removing Center Belt Guide

4. Release the lower hook (A), and clips.

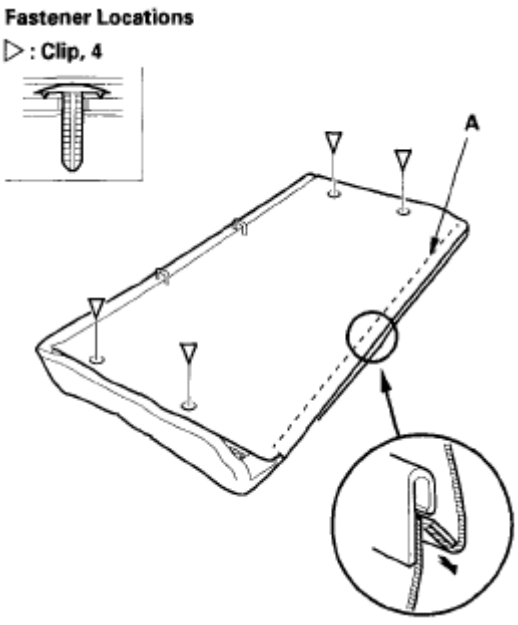


Fig. 102: Releasing Lower Hook And Clips

5. Pull back the seat-back cover (A), then release the hook strips (B).

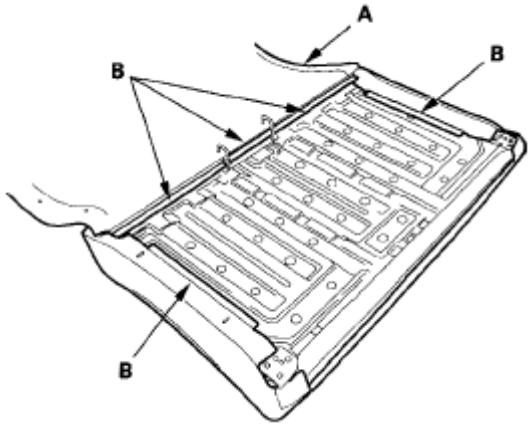


Fig. 103: Releasing Hook Strips Pulling Back Seat-Back Cover

6. Pull out the seat-back frame (A) from the pad (B), then pull out the head restraint guides (C) while pinching the end of the guides, and remove them.

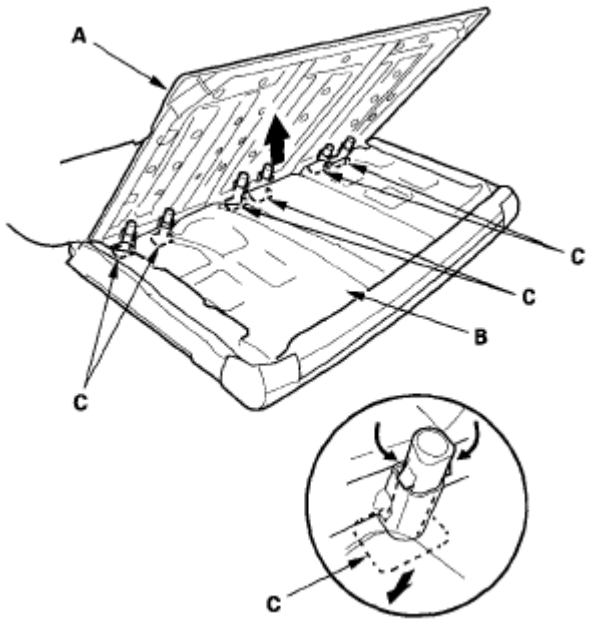


Fig. 104: Removing Head Restraint Guides Pinching End Of Guides

7. Remove the seat-back cover and pad from the seat-back frame.
8. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.

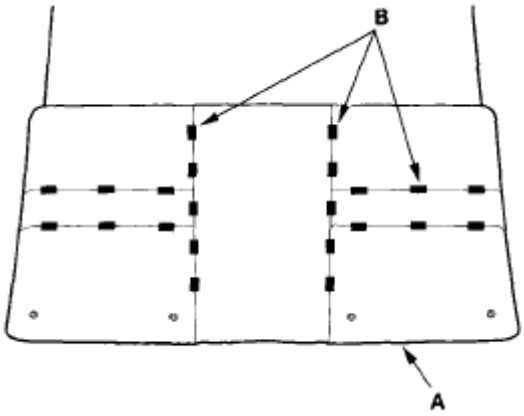


Fig. 105: Removing Seat-Back Cover

9. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
- Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

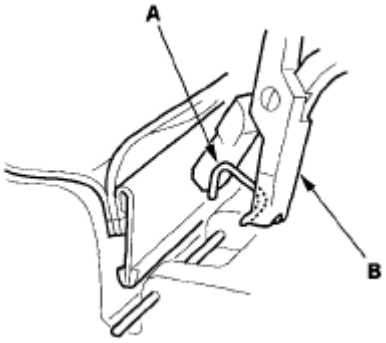


Fig. 106: Installing Rear Seat-Back Cover Of Seat-Back - Fold Down - 4-Door

SEAT-BACK - SPLIT FOLD DOWN - 2-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat-back (see **SEAT-BACK - SPLIT FOLD DOWN**).
2. Remove these head restraint.
3. Left seat-back: Remove the screw, then remove the center belt guide (A).

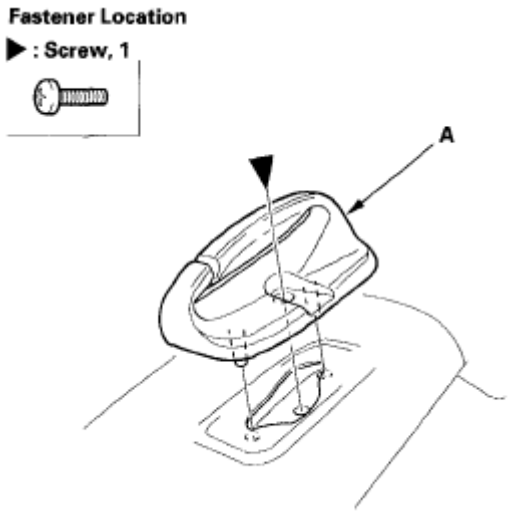


Fig. 107: Removing Center Belt Guide

4. Release the velcro fastener (A), the lower hook (B), and clips.

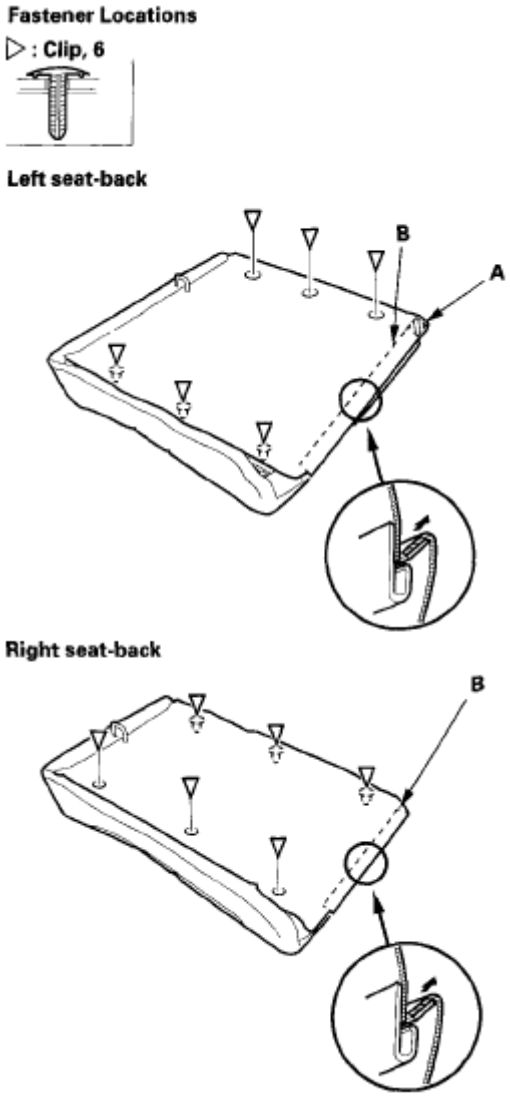


Fig. 108: Releasing Velcro Fastener, Lower Hook And Clips

5. Pull back the seat-back cover (A), then release the hook strips (B).

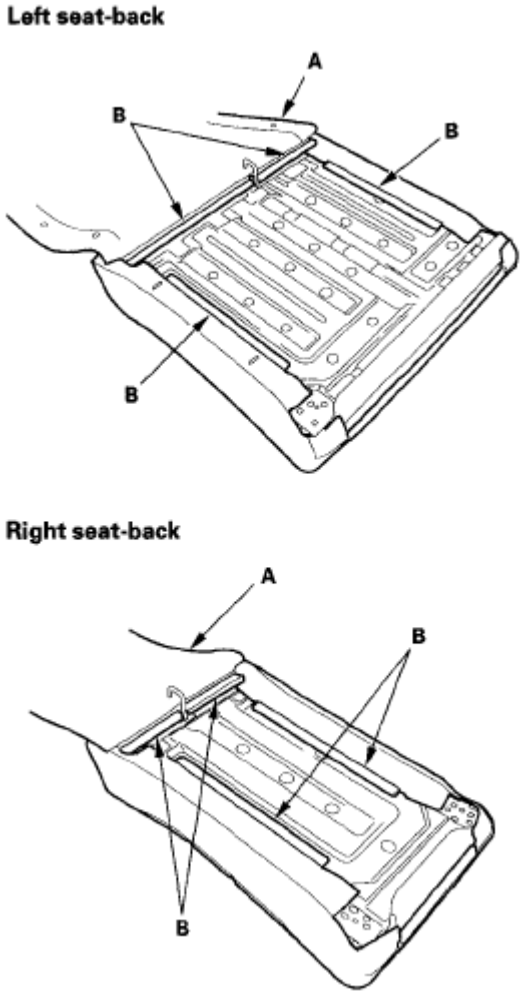


Fig. 109: Releasing Hook Strips Pulling Back Seat-Back Cover

6. Pull out the seat-back frame (A) from the pad (B), then pull out the head restraint guides (C) while pinching the end of the guides, and remove them. The left seat-back is shown; the right seat-back is similar.

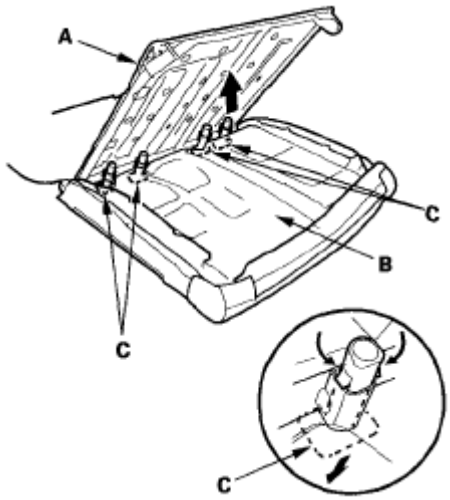
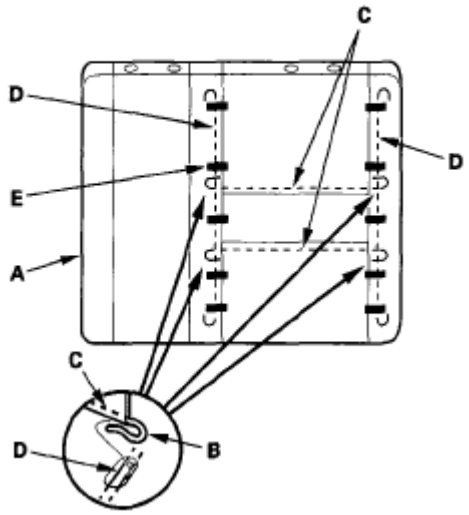


Fig. 110: Removing Head Restraint Guides Pinching End Of Guides

7. Remove the seat-back cover and pad from the seat-back frame.
8. Pull back the edge of the seat-back cover (A) all the way around, and release the hooks (B) of the horizontal wires (C) from the vertical wires (D) on the pad, and remove the clips (E), then remove the seat-back cover.

Left seat-back



Right seat-back

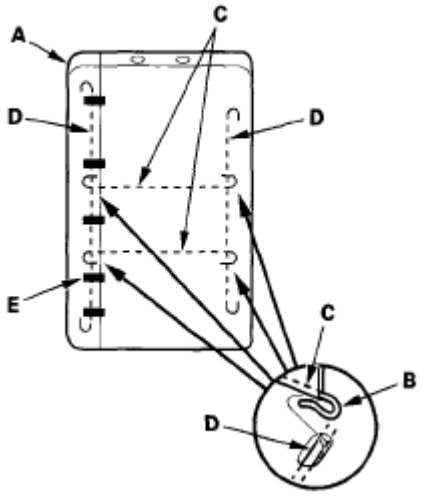


Fig. 111: Removing Seat-Back Cover

9. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
- Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

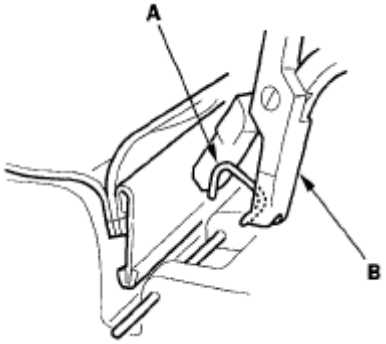


Fig. 112: Installing Rear Seat-Back Cover Of Seat-Back - Split Fold Down - 2-Door

SEAT-BACK - SPLIT FOLD DOWN - 4-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat-back (see **SEAT-BACK - SPLIT FOLD DOWN**).
2. Remove these items:
   - Armrest (see **REAR SEAT ARMREST REPLACEMENT**)
   - Head restraint
3. Left seat-back: Remove the screws, then remove the center belt guide (A).

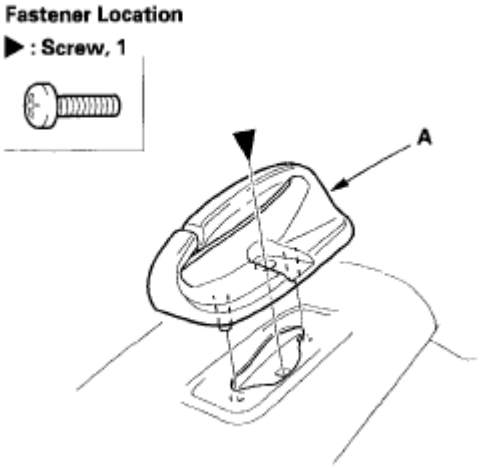


Fig. 113: Removing Center Belt Guide

4. Left seat-back: Pull out the center portion of the armrest back panel (A) to release upper edge of the armrest back panel.

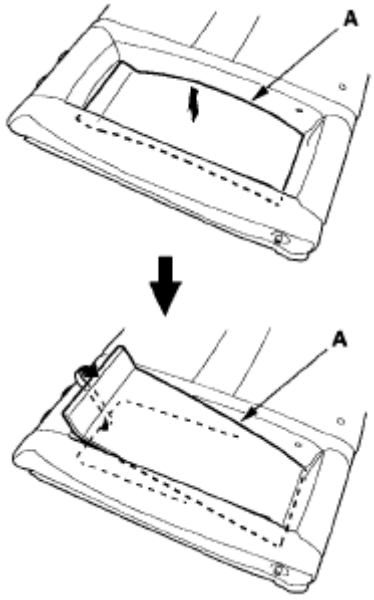


Fig. 114: Releasing Upper Edge Of Armrest Back Panel Pulling Out Center Portion Of Armrest Back Panel

5. Left seat-back: Pull out the armrest back panel (A) to release the hook (B) from the seat-back frame and hook (C) from the seat-back cover.

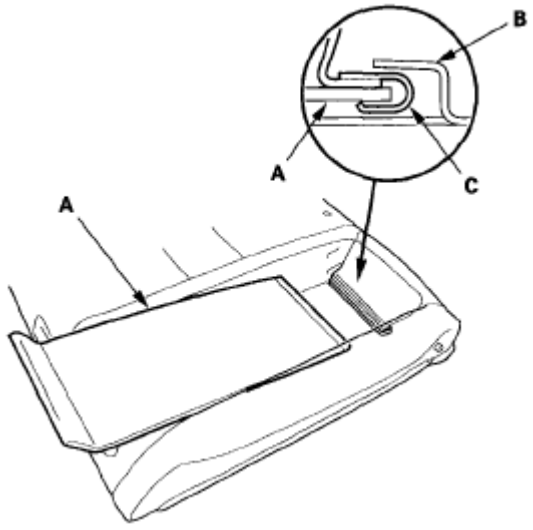


Fig. 115: Releasing Hook From Seat-Back Frame And Hook From Seat-Back Cover

6. Release the lower hook (A), and clips (B, C).

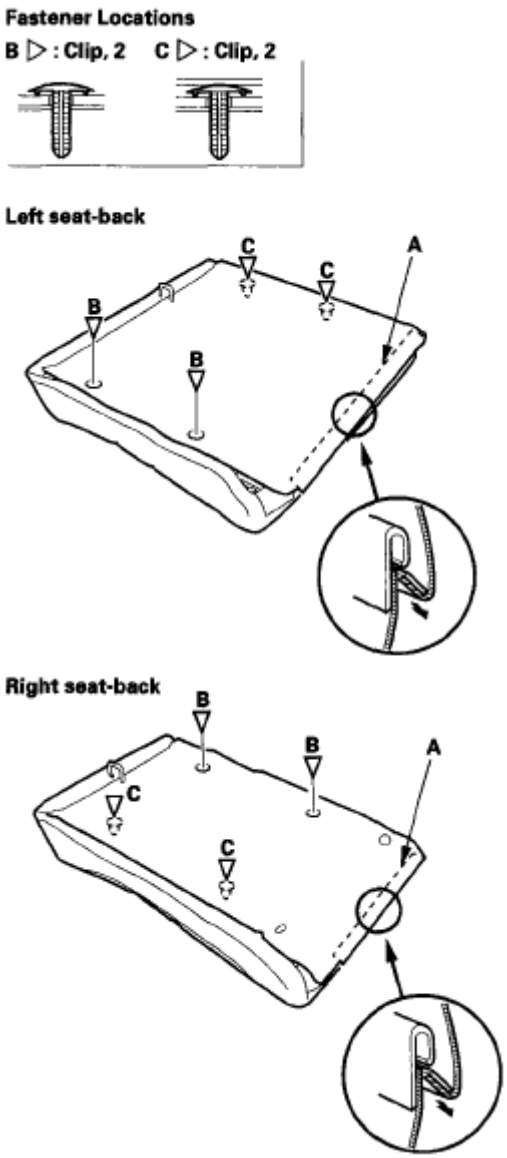
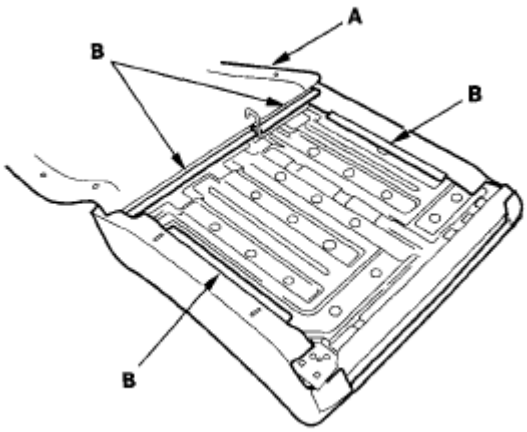


Fig. 116: Releasing Lower Hook And Clips

7. Pull back the seat-back cover (A), then release the hook strips (B).

Left seat-back



Right seat-back

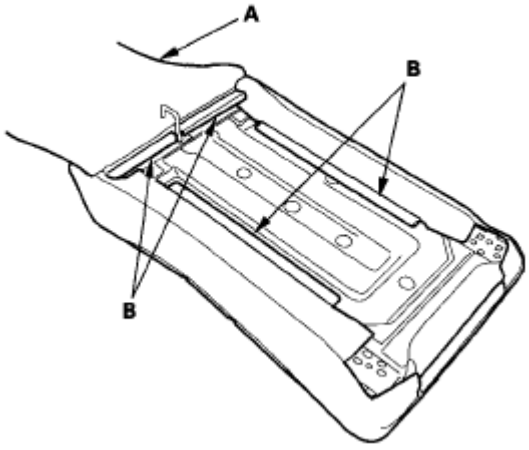


Fig. 117: Releasing Hook Strips Pulling Back Seat-Back Cover

8. Pull out the seat-back frame (A) from the pad (B), then pull out the head restraint guides (C) while pinching the end of the guides, and remove them. The left seat-back is shown; the right seat-back is similar.

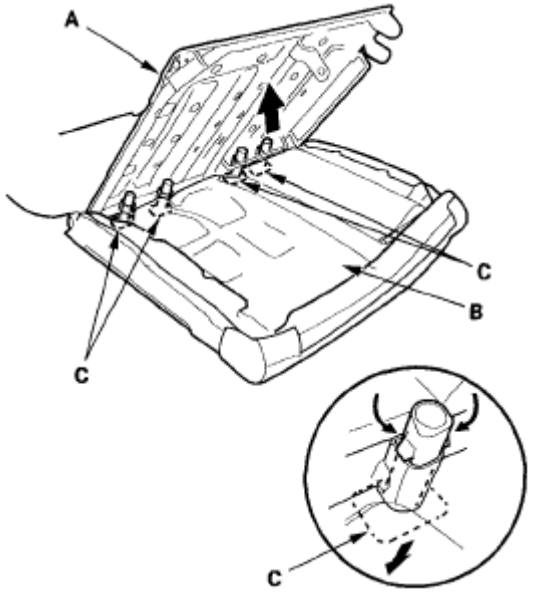


Fig. 118: Removing Head Restraint Guides Pinching End Of Guides

9. Remove the seat-back cover and pad from the seat-back frame.
10. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.

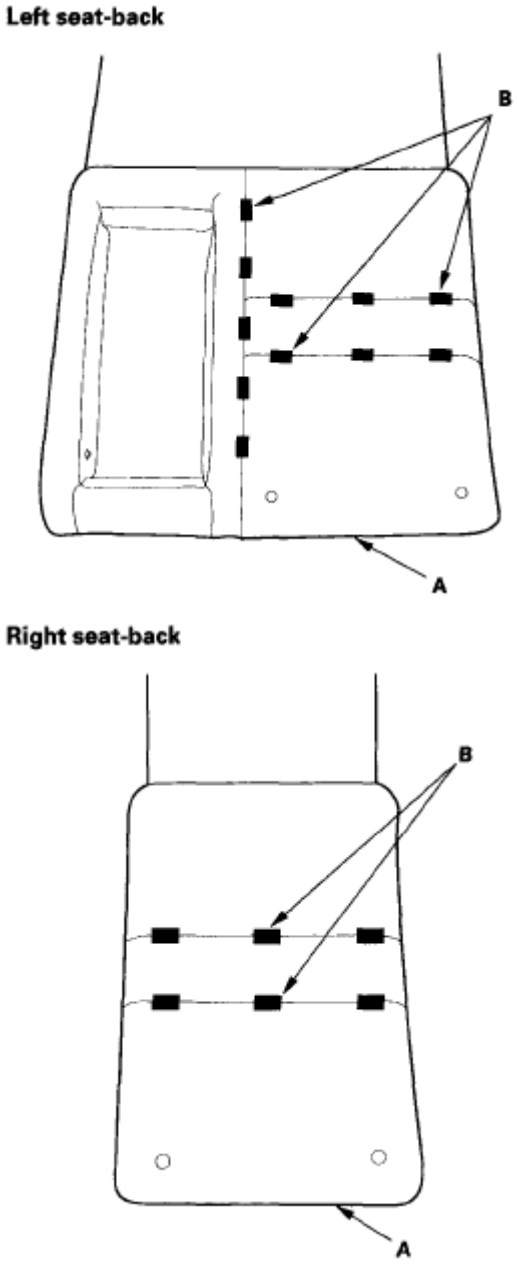


Fig. 119: Removing Seat-Back Cover

11. Install the cover in the reverse order of removal, and note these items:
    - To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips.
    - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

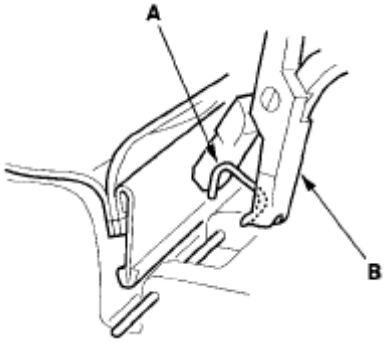


Fig. 120: Installing Rear Seat-Back Cover Of Seat-Back - Split Fold Down - 4-door

REAR SEAT SIDE BOLSTER COVER REPLACEMENT

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the seat side bolster (see **SEAT SIDE BOLSTER - 4-DOOR**).
2. Release all the hook strips (A), and fold back the seat side bolster cover (B), and release the cover from the hooks (C).

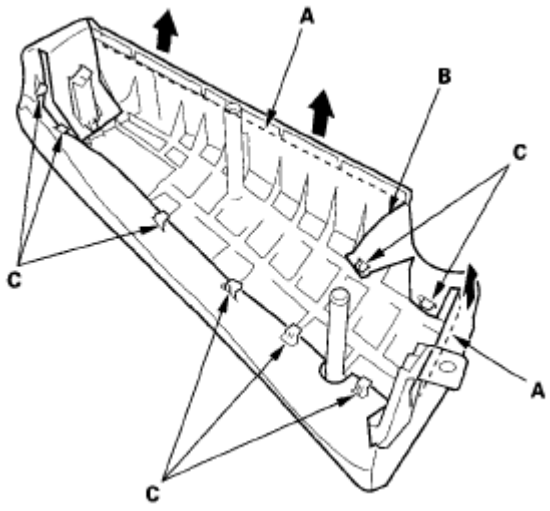


Fig. 121: Releasing Rear Seat Side Bolster Cover From Hooks

3. Install the cover in the reverse order of removal, and to prevent wrinkles when installing a side bolster cover, make sure the material is stretched evenly over the pad before securing the hook strips and staples.

REAR SEAT CUSHION COVER REPLACEMENT

2-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat cushion (see **SEAT CUSHION**).
2. From the back of the seat-back, release the clips (A), then remove the insulator (B).

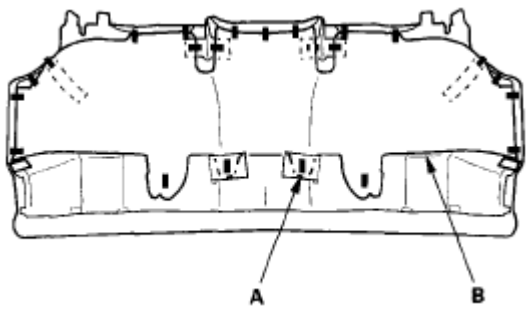


Fig. 122: Removing Insulator

3. Release all the clips (A), in the seat cushion cover (B) through the holes in the seat cushion pad, and fold back the seat cushion cover.

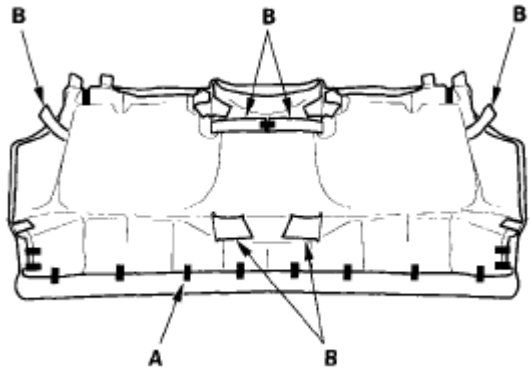


Fig. 123: Releasing All Clips In Seat Cushion Cover

4. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover (B).

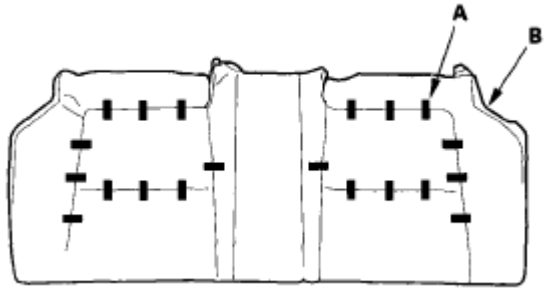


Fig. 124: Removing Seat Cushion Cover

5. Install the cover in the reverse order of removal, and note these items:
   - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

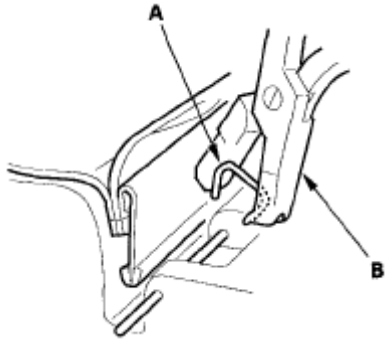


Fig. 125: Installing Rear Seat Cushion Cover (2-Door)

4-DOOR

NOTE:

- **Take care not to tear the seams or damage the seat covers.**
- **Put on gloves to protect your hands.**

1. Remove the seat cushion (see **SEAT CUSHION**).
2. From the back of the seat-back, pass both lower retainers (A) through the slots in the seat cushion pad, and release all the clips (B), and fold back the seat cushion cover.

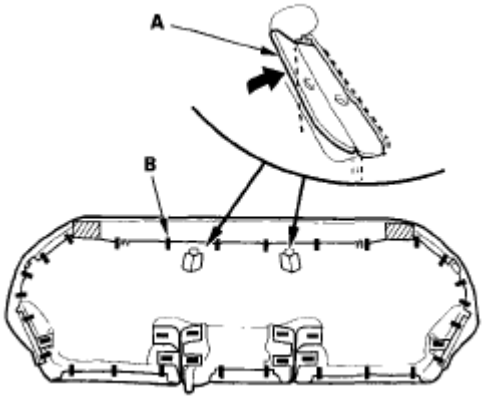


Fig. 126: Folding Back Seat Cushion Cover

3. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), from the seat cushion cover (B) through the hole in the seat cushion pad, then remove the seat cushion cover.

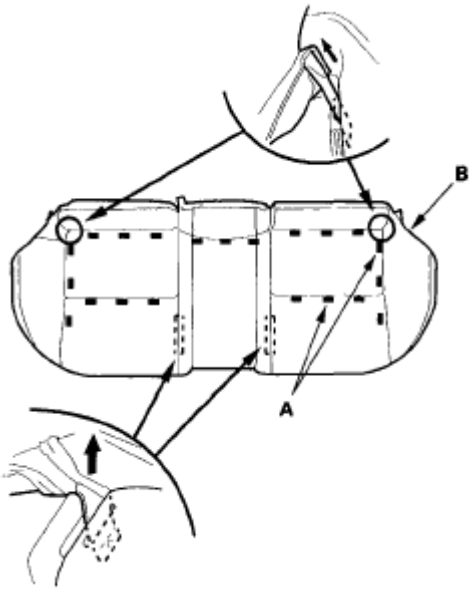


Fig. 127: Removing Seat Cushion Cover

4. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips.
- Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).

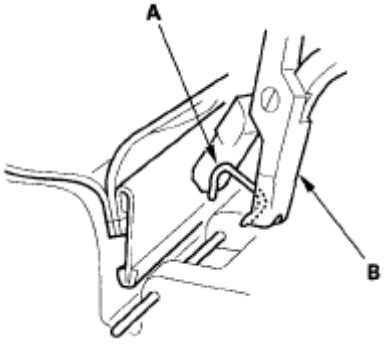


Fig. 128: Installing Rear Seat Cushion Cover (4-Door)

REAR SEAT ARMREST COVER REPLACEMENT

FOR SOME MODELS - 4-DOOR

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the armrest from the seat-back (see **REAR SEAT ARMREST REPLACEMENT**).
2. Remove the armrest beverage holder from the armrest (see **REAR SEAT ARMREST BEVERAGE HOLDER REPLACEMENT**).
3. Release the clips (A) and hook strip (B), and pull back the armrest cover (C) all the way around.

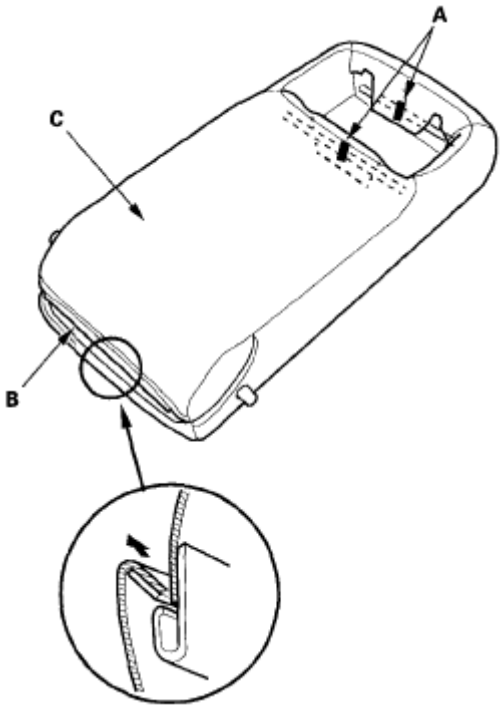


Fig. 129: Releasing Clips & Hooks And Pulling Back Armrest Cover

4. Release the armrest cover from the armrest pivot portions (A), then remove it from the pad (B).

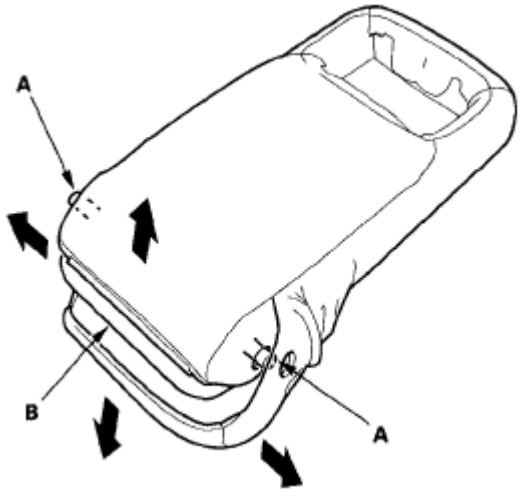


Fig. 130: Removing Rear Seat Armrest Cover

5. Install the cover in the reverse order of removal. To prevent wrinkles when installing an armrest cover, make sure the material is stretched evenly over the pad before securing the hooks and hook strips.

2006-08 ACCESSORIES & EQUIPMENT

Glass - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

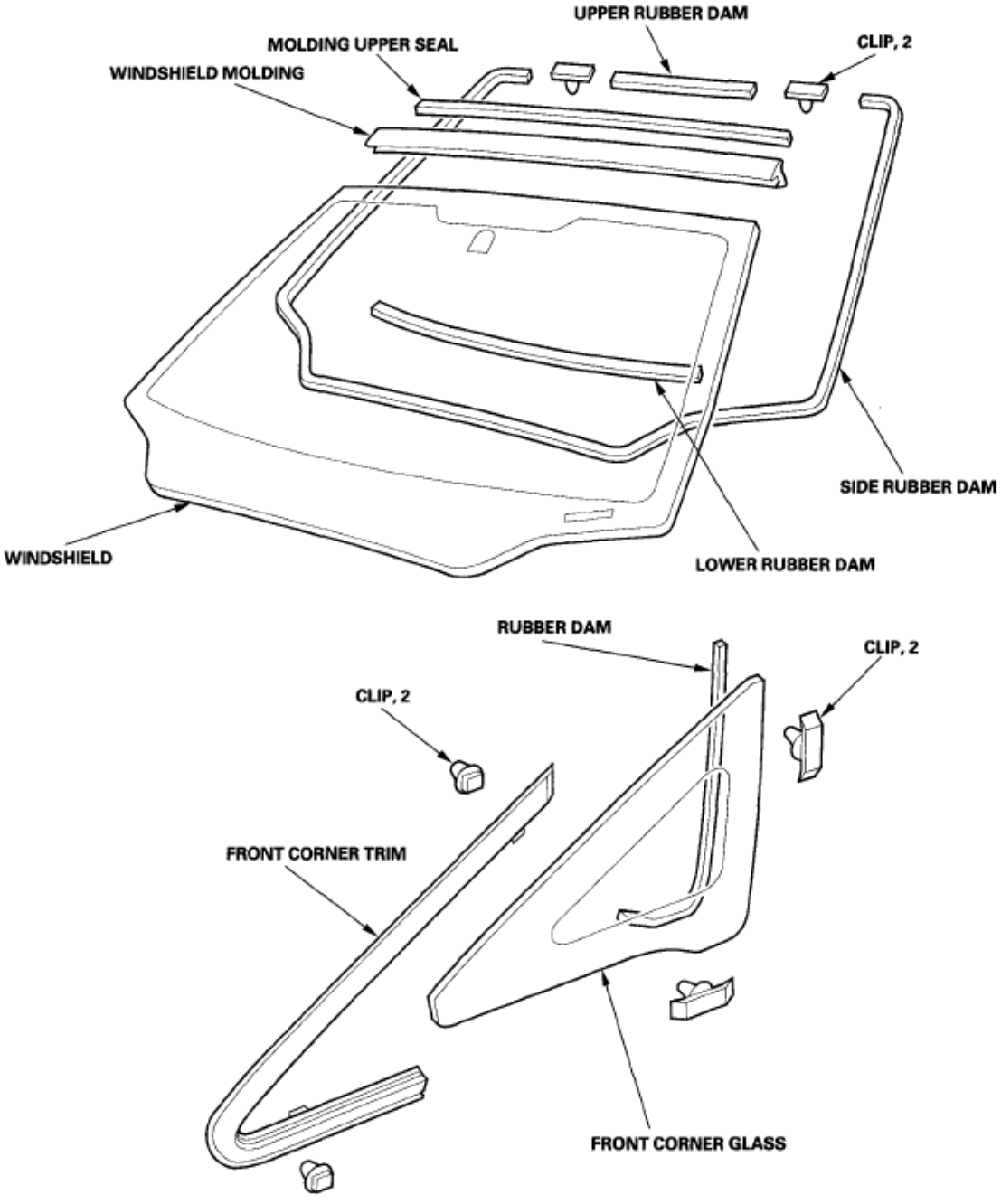


Fig. 1: Exploded View Of Glass

2-door

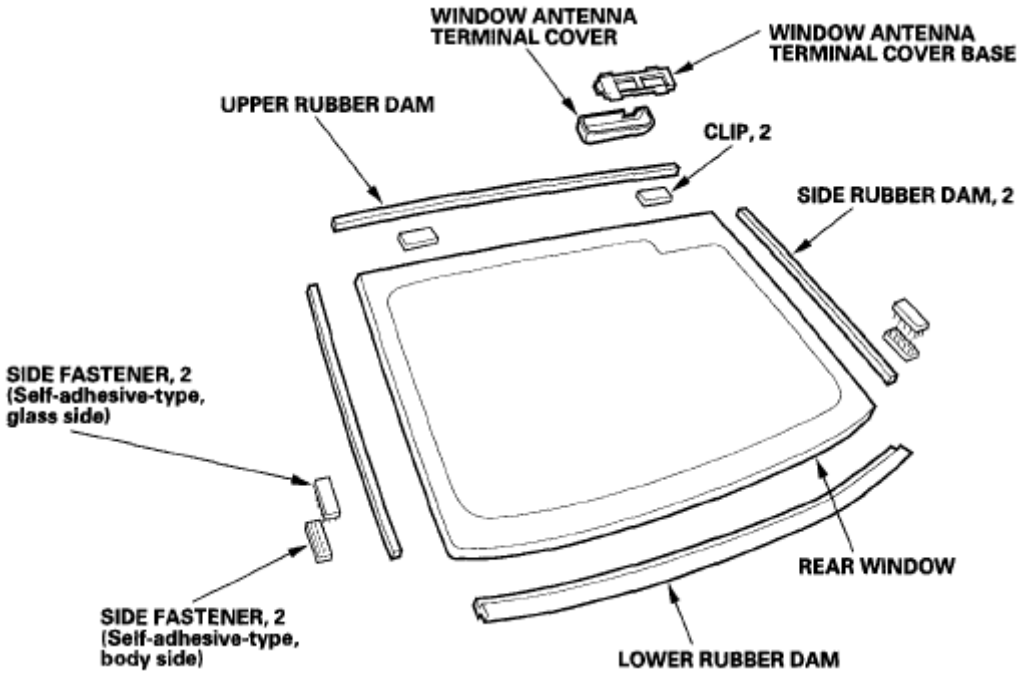


Fig. 2: Exploded View Of Glass (2-Door)

4-door

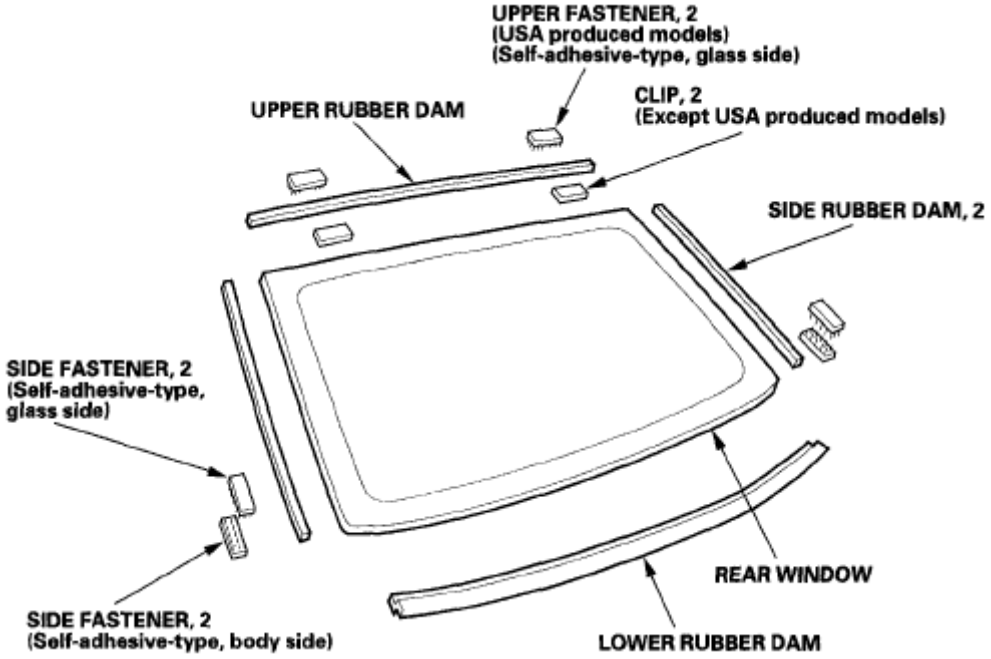


Fig. 3: Exploded View Of Glass (4-Door)

2-door

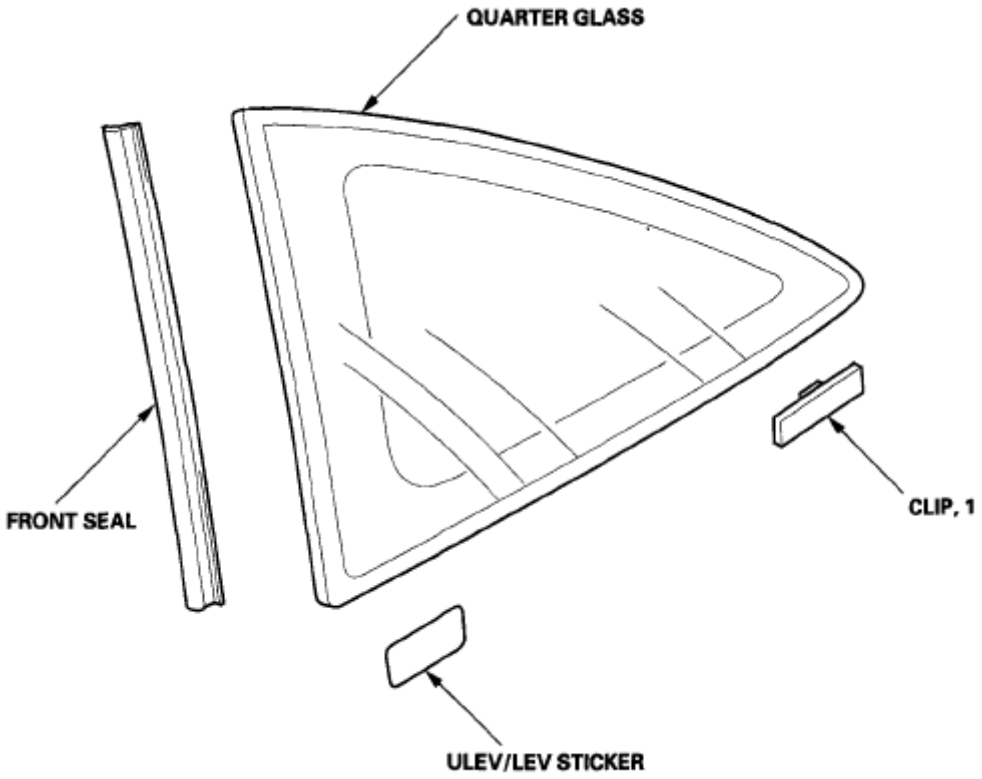


Fig. 4: Exploded View Of Quarter Glass (2-Door)

WINDSHIELD REPLACEMENT

NOTE:

- **Put on gloves to protect your hands.**
- **Wear eye protection while cutting the glass adhesive with a piano wire.**
- **Use seat covers to avoid damaging the seat.**
- **When replacing a broken windshield a commercially available windshield cutter can be efficiently used for cutting the adhesive. For details, follow the instructions of the tool manufacturer.**

1. Remove these items:
   - Windshield wiper arms:
     - 2-door (see **2-DOOR**)
     - 4-door (see **4-DOOR**)
   - Cowl covers (see **COWL COVER REPLACEMENT**)
   - Rearview mirror (see **REARVIEW MIRROR REPLACEMENT**)
   - A-pillar trim, both sides (see **TRIM REMOVAL/INSTALLATION - PILLAR AREAS**)
   - Roof moldings (see **ROOF MOLDING REPLACEMENT**)
2. Remove the molding (A) from the upper edge of the windshield (B). If necessary, cut the molding with a utility knife.

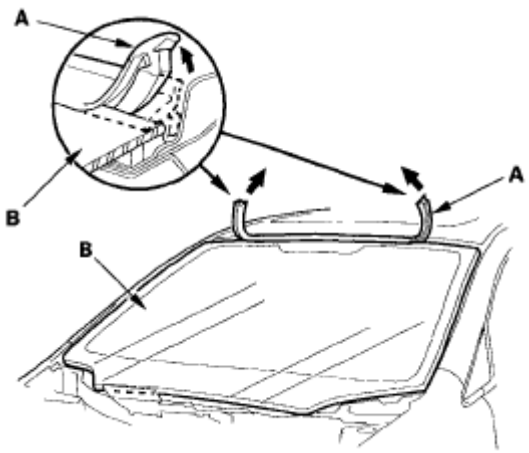


Fig. 5: Removing Molding From Upper Edge Of Windshield

3. If the old windshield will be reinstalled, make alignment marks across the glass and body with a grease pencil.
4. Pull down the front portion of the headliner (see **HEADLINER REMOVAL/INSTALLATION**). Take care not to bend the headliner excessively, or you may crease or break it.
5. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam and adhesive from inside the vehicle at the corner portion of the windshield. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
6. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.

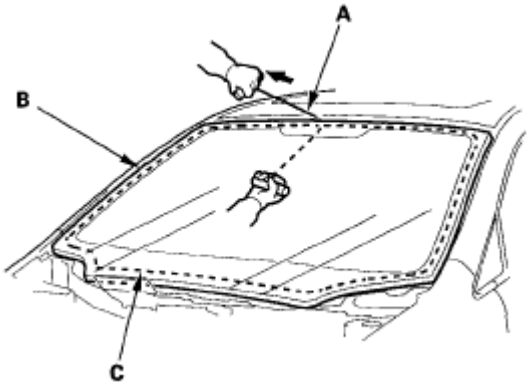


Fig. 6: Cutting Through Rubber Dam And Adhesive Around Windshield

Cutting positions

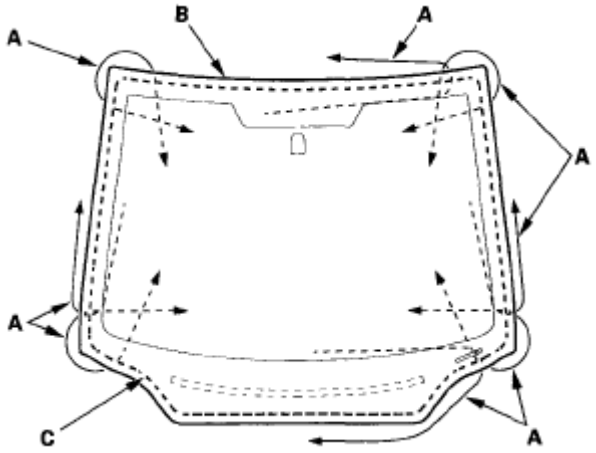


Fig. 7: Identifying Cutting Positions

7. Carefully remove the windshield.
8. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:
    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the rubber dam and fasteners from the body.
    - Replace the dashboard seal with a new one.
9. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.
10. If the old windshield will be reinstalled, use a putty knife to scrape off the old adhesive, the fasteners and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.
11. Attach the upper rubber dam (A), side rubber dam (B), and clips (C) with adhesive tape to the inside face of the windshield (D) as shown in **Fig. 8**:
    - Be sure the rubber dam and clips line up with the alignment marks (E).
    - Be sure the convex portion (F) of the left and right clips toward left.
    - Be careful not to touch the windshield where adhesive will be applied.

Rubber dams adhesive tape:

Thickness 0.16 mm (0.006 in.)
Width 3.5 mm (0.14 in.)

Clips adhesive tape:

Thickness 0.4 mm (0.016 in.)
Width 10 mm (0.39 in.)

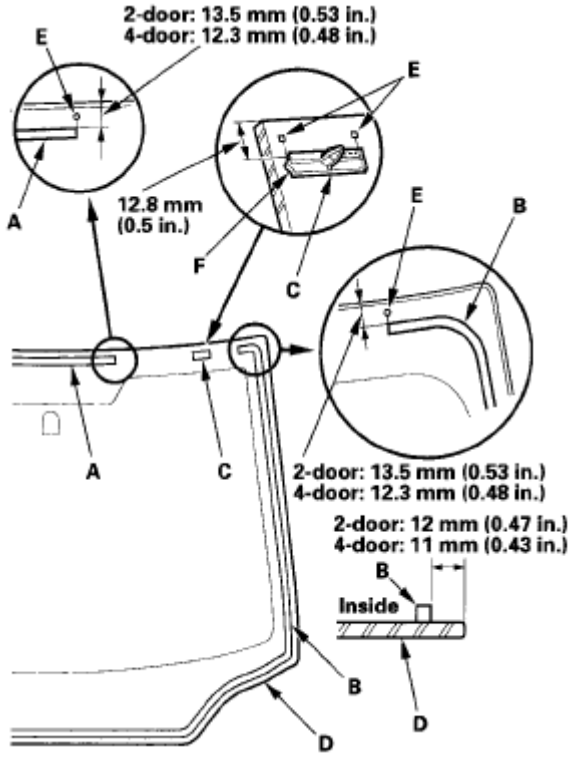


Fig. 8: Attaching Upper Rubber Dam, Side Rubber Dam And Clips With Adhesive Tape To Inside Face Of Windshield (With Specifications)

12. Attach the molding (A) with adhesive tape (B) to the upper edge of the windshield (C). Be careful not to touch the windshield where adhesive will be applied.

    Molding adhesive tape: Thickness 0.8 mm (0.03 in.) Width 4 mm (0.16 in.)

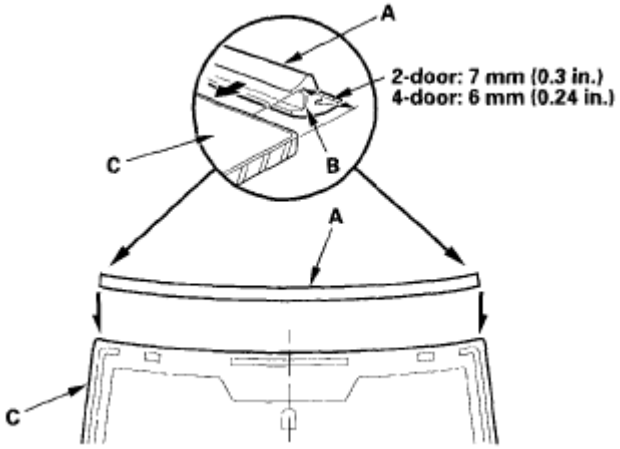


Fig. 9: Attaching Molding With Adhesive Tape To Upper Edge Of Windshield (With Specifications)

13. Apply primer to the molding (A), then attach the molding upper seal (B) with adhesive tape to the inside surface of the molding as shown.

    Seals adhesive tape: Thickness 0.16 mm (0.006 in.) Width 7 mm (0.28 in.)

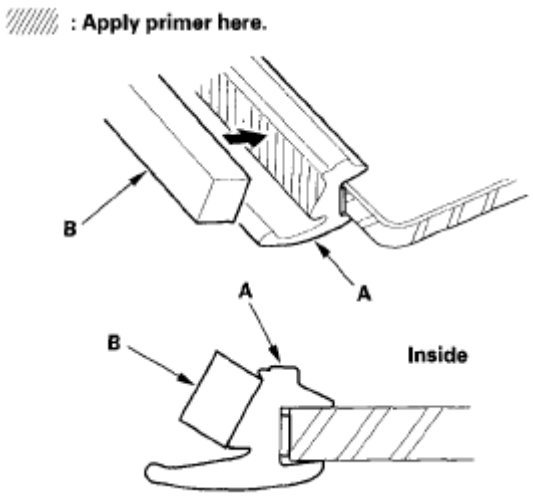


Fig. 10: Applying Primer To Molding

14. Attach the lower rubber dam (A) with body side adhesive tape to the body as shown. Do not peel the glass side adhesive backing.

    Rubber dam adhesive tape:

    Thickness 0.16 mm (0.006 in.)
    Width 5 mm (0.2 in.)

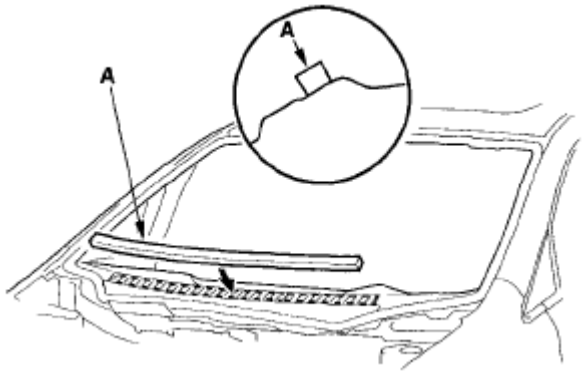


Fig. 11: Attaching Lower Rubber Dam With Body Side Adhesive Tape To Body

15. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Make sure both clips (B) contact with the edge of the body holes. Be careful not to touch the windshield where adhesive will be applied.

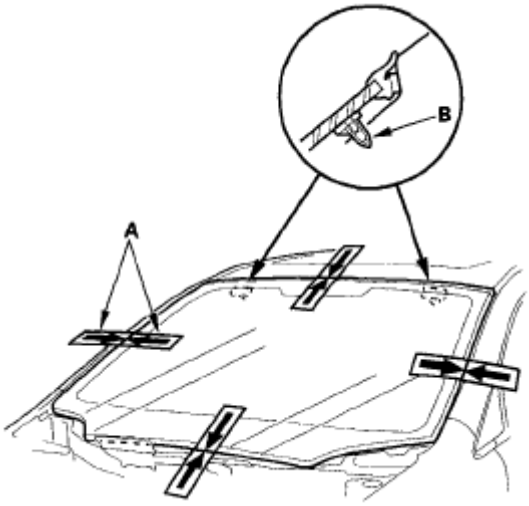


Fig. 12: Making Alignment Marks Across Windshield And Body With Grease Pencil

16. Remove the windshield.
17. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the dams (B) and molding (C) as shown, then lightly wipe it off with gauze or cheesecloth:
    - Apply glass primer to the molding.
    - Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
    - Keep water, dust, and abrasive materials away from primed surfaces.

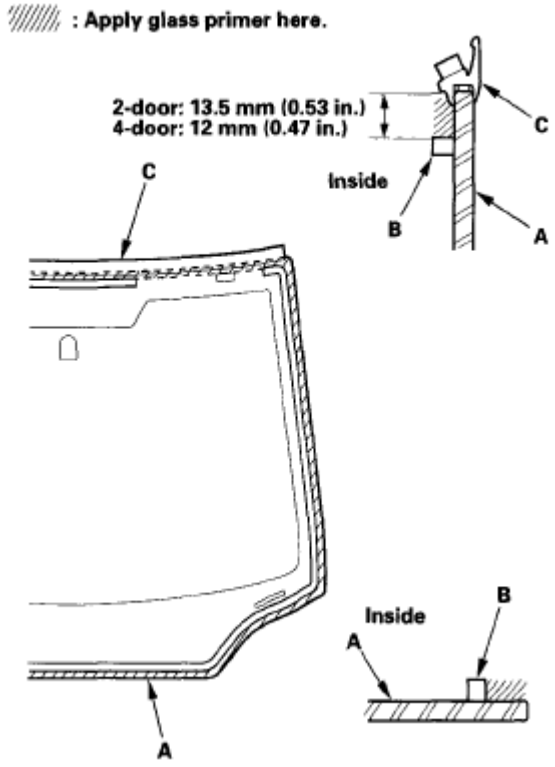


Fig. 13: Applying Glass Primer Around Edge Of Windshield Between Dams And Molding (With Specifications)

18. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:
    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surfaces with your hands.

Apply body primer to shaded area shown in illustrations.

2-door

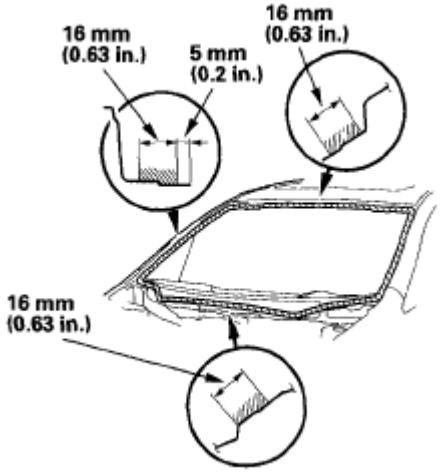


Fig. 14: Applying Body Primer To Exposed Paint (2-Door) (With Specifications)

4-door

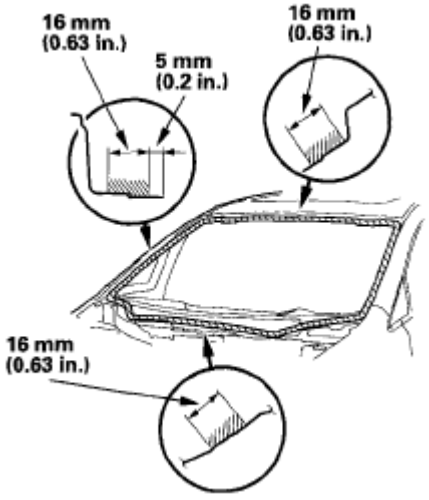


Fig. 15: Applying Body Primer To Exposed Paint (4-Door) (With Specifications)

19. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.

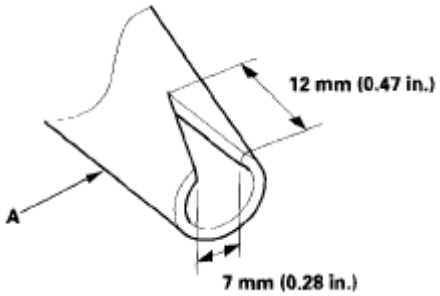


Fig. 16: Cutting "V" In End Of Nozzle (With Specifications)

20. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and molding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

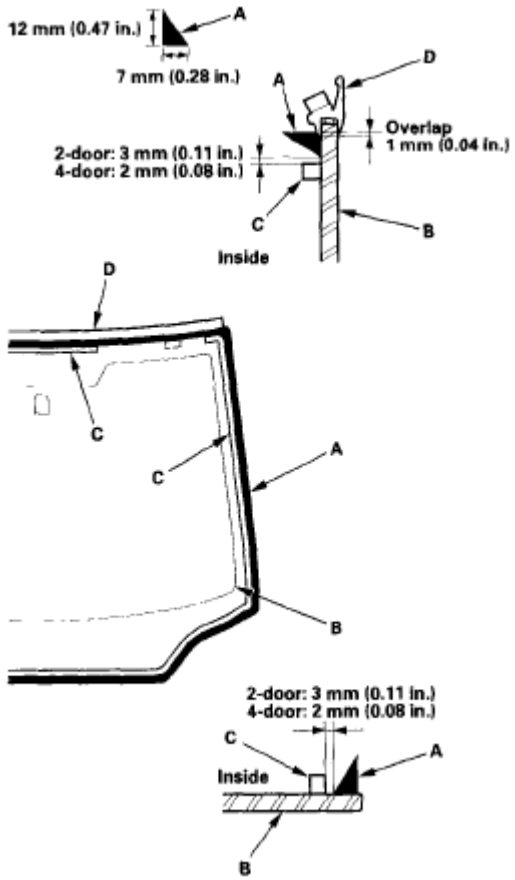


Fig. 17: Running Bead Of Adhesive Around Edge Of Windshield Between Dams And Molding (With Specifications)

21. Pull out the glass side adhesive backing away from the lower rubber dam.
22. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 15, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the

adhesive is dry.

23. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.
24. After the adhesive has dried, spray water over the windshield and check for leaks. Mark the leaking areas, let the windshield dry, then seal with sealant:
    - Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
    - Keep the windshield dry for the first hour after installation.
25. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- **Slam the doors with all the windows rolled up.**
- **Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).**

FRONT CORNER GLASS REPLACEMENT

4-DOOR

NOTE:

- **Put on gloves to protect your hands.**
- **Wear eye protection while cutting the glass adhesive.**
- **Use seat covers to avoid damaging any surface.**

1. Remove the A-pillar trim (see **TRIM REMOVAL/INSTALLATION - PILLAR AREAS**).
2. From inside the vehicle, use a knife (A) to cut through the front corner glass adhesive (B) all the way around. Apply protective tape along the edge of the entire front corner glass opening flange.

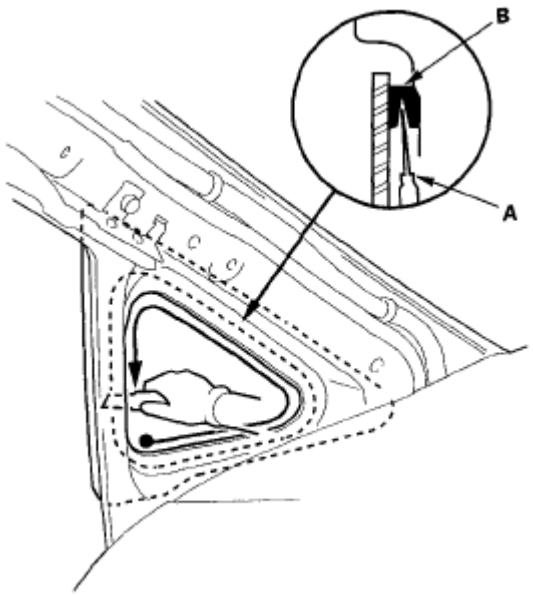


Fig. 18: Cutting Through Front Corner Glass Adhesive Using Knife

3. From outside the vehicle, pry the front corner glass clips (A) and the front corner trim clips (B), then carefully remove the glass (C) and trim (D) together. The trim has not be attached to the glass.

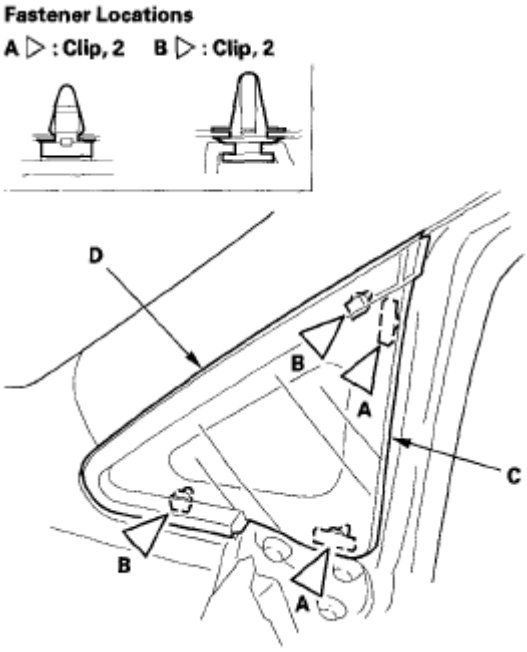


Fig. 19: Prying Front Corner Glass Clips And Trim Clips

4. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire front corner glass opening flange:
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - If any of the clips are broken, remove them from the body.
5. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
6. If the old front corner glass will be reinstalled, use a putty knife to scrape off the old adhesive from the front corner glass. Clean the inside face of the front corner glass and the edge of the glass with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.
7. Attach the rubber dam (A) and clips (B) with adhesive tape to the inside face of the front corner glass (C) as shown in **Fig. 20**.

   Be careful not to touch the front corner glass where adhesive will be applied.

   Rubber dam adhesive tape:

   Thickness 0.16 mm (0.006 in.)
   Width 3 mm (0.12 in.)

   Clip adhesive tape:

Thickness 1.2 mm (0.047 in.)
Width 9 mm (0.35 in.)

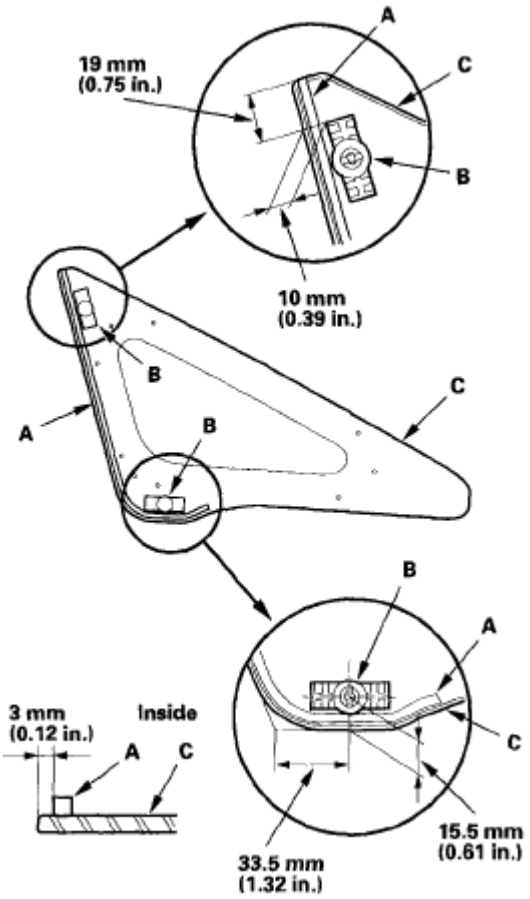


Fig. 20: Attaching Rubber Dam And Clips With Adhesive Tape To Inside Face Of Front Corner Glass (With Specifications)

8. With a sponge, apply a light coat of glass primer to the inside face of the front corner glass (A) as shown in **Fig. 21**, then lightly wipe it off with gauze or cheesecloth:
    - With the printed dots (B) on the front corner glass as a guide, apply the glass primer to both lower corner portions of the front corner glass.
    - Do not apply body primer to the front corner glass, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do the adhesive may not bond to the front corner glass properly, causing a leak after the front corner glass is installed.
    - Keep water, dust, and abrasive materials away from primed surface.

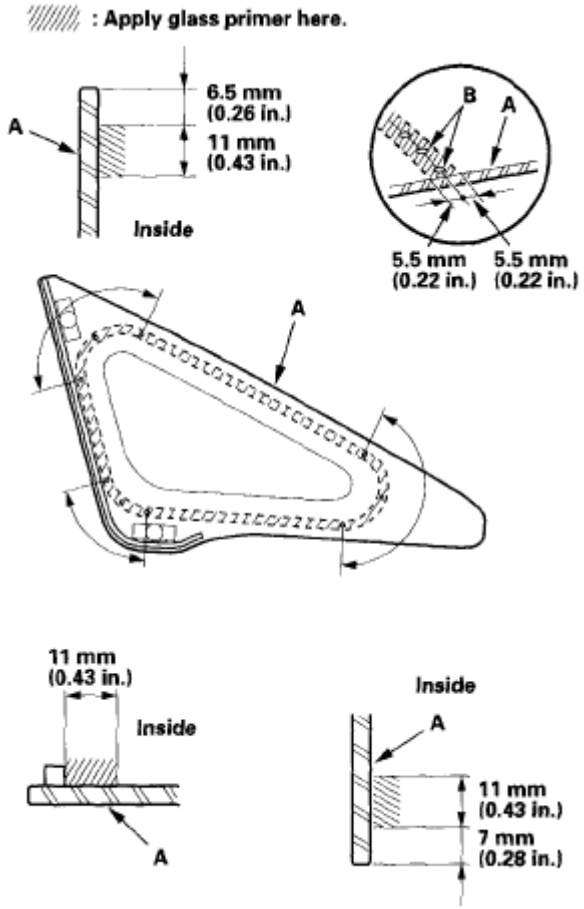


Fig. 21: Applying Glass Primer To Inside Face Of Front Corner Glass (With Specifications)

9. With a sponge, apply a light coat of body primer to the original adhesive remaining around the front corner glass opening flange. Let the body primer dry for at least 10 minutes:
    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.
    - Mask off the dashboard before painting the flange.

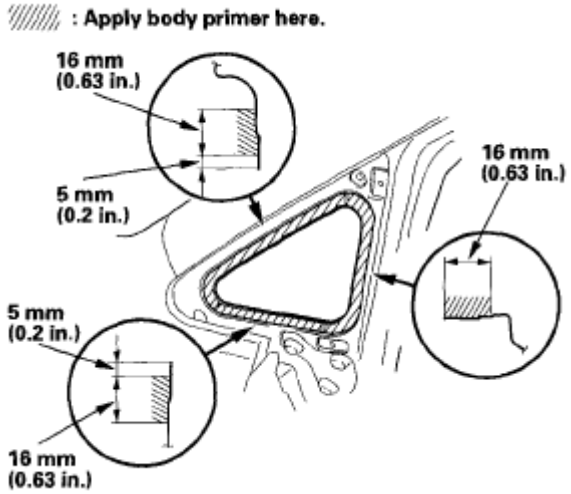


Fig. 22: Applying Body Primer To Original Adhesive Around Front Corner Glass Opening Flange (With Specifications)

10. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.

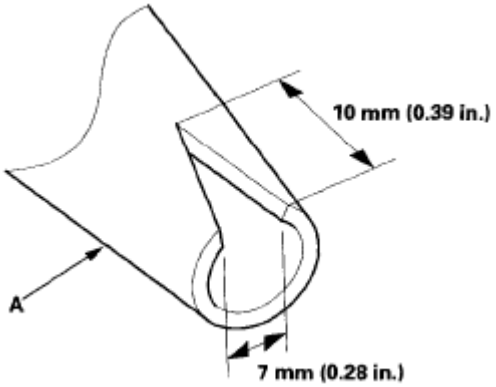


Fig. 23: Cutting "V" In End Of Nozzle (With Specifications)

11. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the front corner glass (B) as shown:
    - With the printed dots (C) on the front corner glass as a guide, apply the adhesive to both side portions of the front corner glass.
    - Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

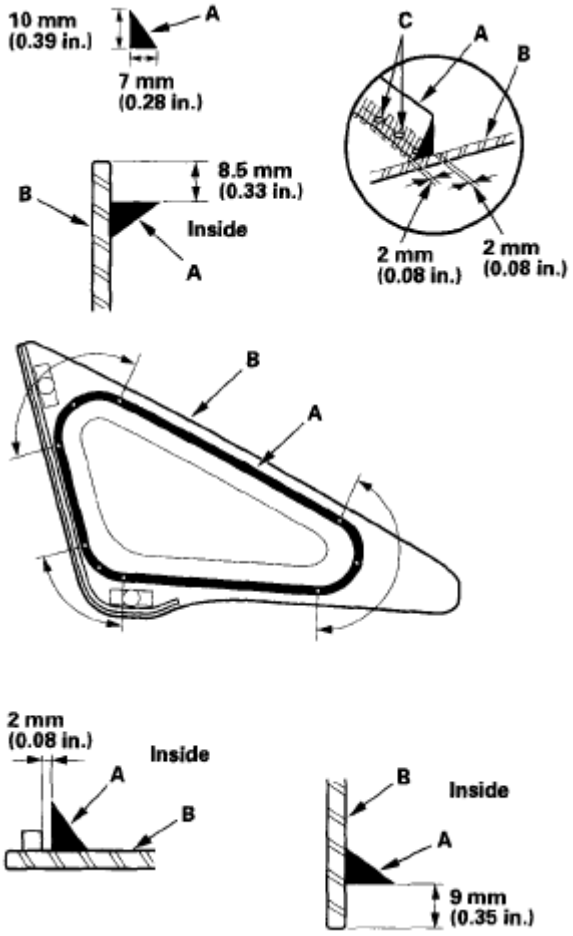


Fig. 24: Running Bead Of Adhesive Around Front Corner Glass (With Specifications)

12. Set the front corner glass (A) to the front corner trim (B) quickly. Be careful not to touch the front corner glass where adhesive will be spread.

NOTE: Make sure that there is no clearance between the sash and front lower sash.

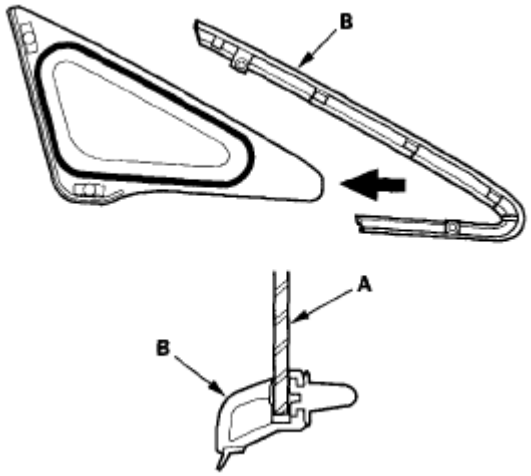


Fig. 25: Setting Front Corner Glass To Front Corner Trim

13. Use a suction cup to hold the front corner glass (A) over the opening while holding the front corner trim (B) by the other hand, align the clips, and set it down on the adhesive. Lightly push on the front corner glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

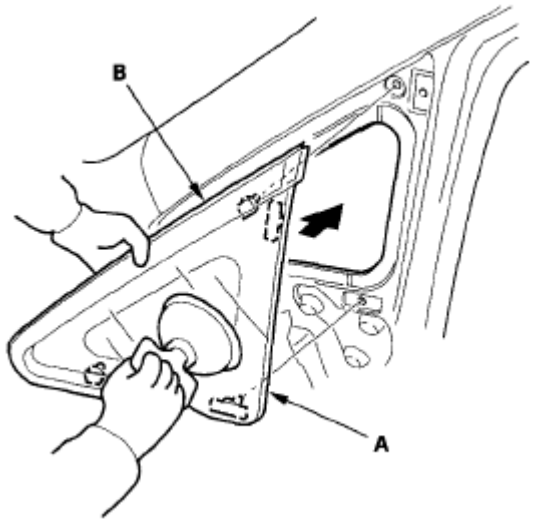


Fig. 26: Using Suction Cup To Hold Front Corner Glass Over Opening

14. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the front corner glass, wipe with a soft shop towel dampened with alcohol.
15. After the adhesive has dried, spray water over the front corner glass and check for leaks. Mark the leaking areas, let the front corner glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after front corner glass installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
16. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- **Slam the doors with all the windows rolled up.**
- **Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).**

REAR WINDOW REPLACEMENT

2-DOOR

NOTE:

- **Put on gloves to protect your hands.**
- **Wear eye protection while cutting the glass adhesive with a piano wire.**
- **Use seat covers to avoid damaging any surfaces.**
- **Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.**

1. Remove these items:
   - Trunk lid
   - Rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
   - Rear shelf extension (see **REAR SHELF EXTENSION - 2-DOOR**)
   - Quarter pillar trim (see **QUARTER PILLAR TRIM - 2-DOOR**)
2. Remove the window antenna terminal cover (A) from the window antenna terminal cover base (B), and disconnect the window antenna connector (C).

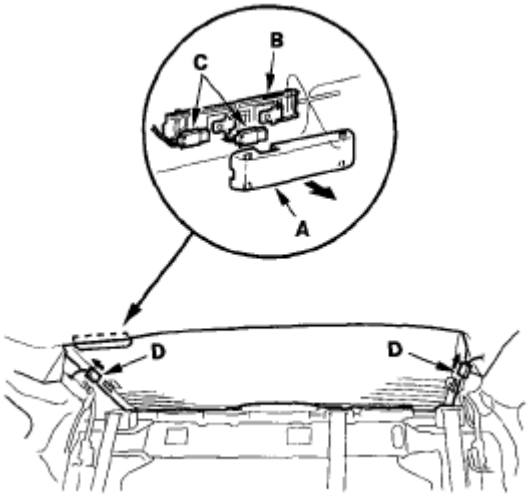


Fig. 27: Removing Terminal Cover From Window Antenna Terminal Cover Base

3. Disconnect the rear window defogger connectors (D).
4. If the old rear window will be reinstalled, make alignment marks across the glass and body with a grease pencil.
5. Pull down the rear portion of the headliner (A) by detaching the clips (B). Take care not to bend the headliner excessively, or you may crease or break it.

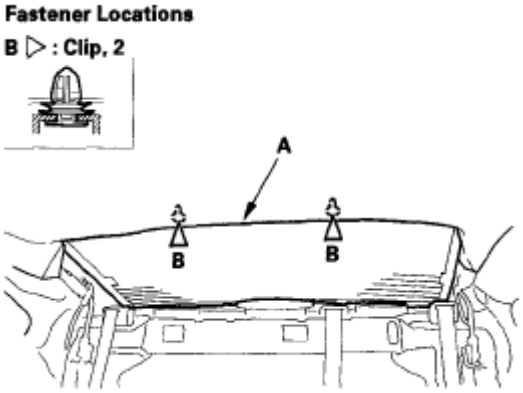


Fig. 28: Detaching Clips To Remove Rear Portion Of Headliner

6. Apply protective tape along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
7. Remove the lower rubber dam (A) from the lower edge of the rear window (B). If necessary, cut the

molding with a utility knife.

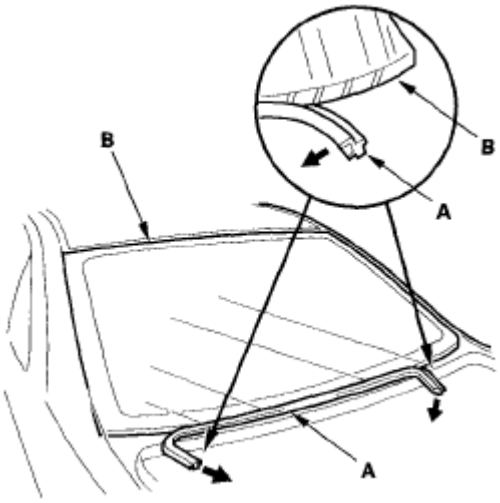


Fig. 29: Removing Lower Rubber Dam From Lower Edge Of Rear Window

8. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire rear window.

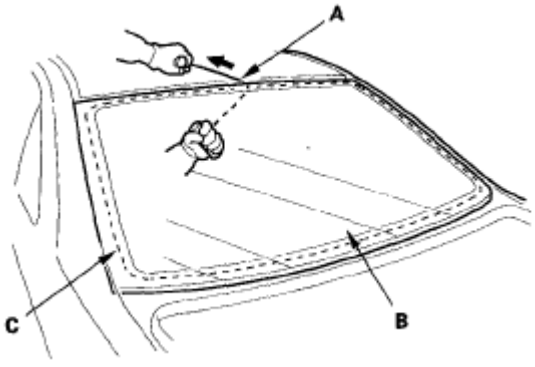


Fig. 30: Pulling Piano Wire Back And Forth In Sawing Motion

Cutting positions

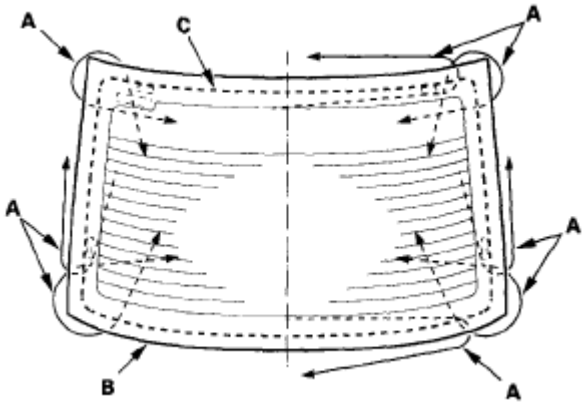


Fig. 31: Identifying Cutting Positions

9. Carefully remove the rear window.
10. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the fasteners from the body.
11. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
12. If the old rear window will be reinstalled, use a putty knife to scrape off the old adhesive, the moldings and the fasteners from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.
13. Attach the window antenna terminal cover base (A) with adhesive tape to the inside face of the rear window (B) as shown. Apply primer to the inside face of the rear window as shown. Be careful not to touch the rear window where adhesive will be applied.

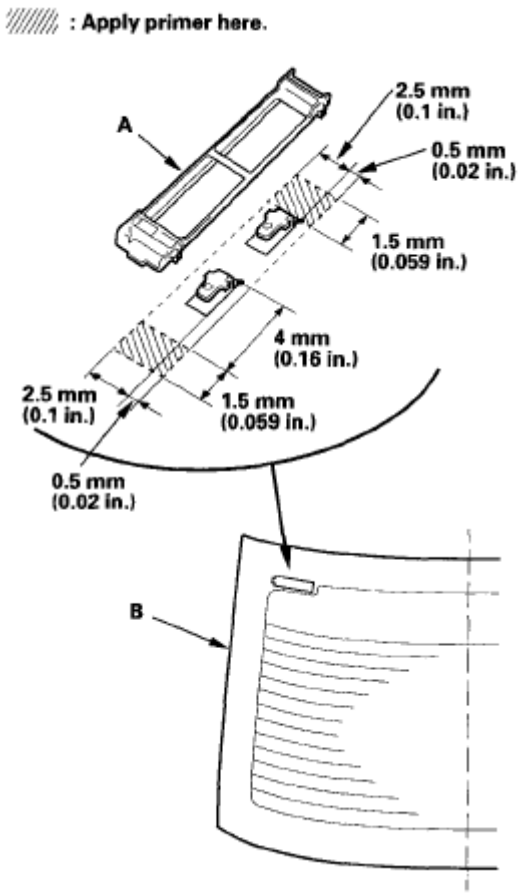


Fig. 32: Identifying Antenna Terminal Cover Base With Adhesive Tape To Inside Face Of Rear Window (With Specifications)

14. Apply primer to the edge of the rear window (A) where the lower rubber dam adhesive tape will be attached as shown. Attach the lower rubber dam (B) with adhesive tape (C) to the lower edge of the

rear window:

- After installing the rubber dam, cut the ends (D) of the rubber dam as shown.
- Be careful not to touch the windshield where adhesive will be applied.

Rubber dams adhesive tape:

Thickness 0.2 mm (0.008 in.)
Width 4 mm (0.16 in.)

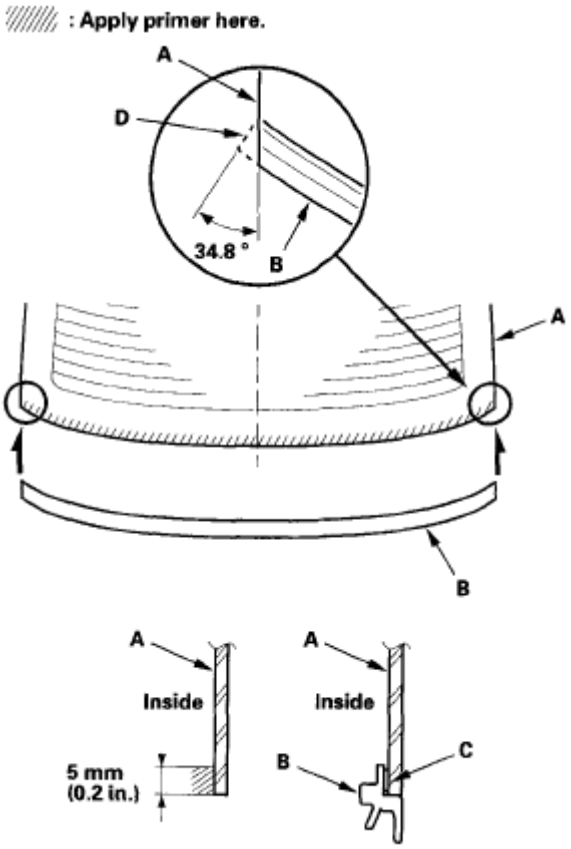


Fig. 33: Applying Primer To Edge Of Rear Window (With Specifications)

15. Attach the upper rubber dams (A), side rubber dam (B), clips (C), and fasteners (D) with adhesive tape to the inside face of the rear window (E) as shown in **Fig. 34**:
    - First attach the upper rubber dam, then attach the side rubber dams around the edge of the rear window. Be sure the top of the side rubber dam contacts with the bottom of the upper rubber dam. If necessary, cut the rubber dam.
    - Be sure the clips, and fasteners line up with the alignment marks (F).
    - Be careful not to touch the rear window where adhesive will be applied.

Rubber dams adhesive tape:

Thickness 0.16 mm (0.006 in.)
Width 4 mm (0.16 in.)

Clips adhesive tape:

Thickness 0.4 mm (0.016 in.)
Width 10 mm (0.39 in.)

Fasteners adhesive tape:

Thickness 0.8 mm (0.03 in.)
Width 7 mm (0.28 in.)

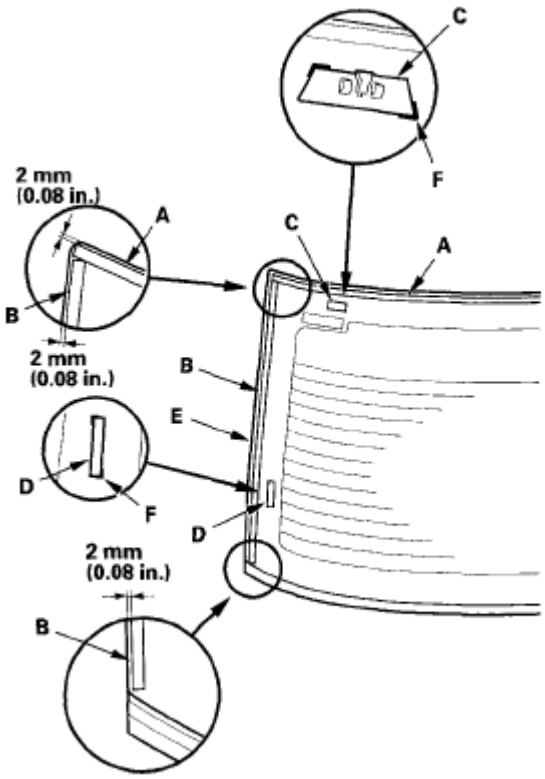


Fig. 34: Attaching Upper Rubber Dams, Side Rubber Dam, Clips And Fasteners With Adhesive Tape To Inside Face Of Rear Window (With Specifications)

16. Attach the fasteners (A) with adhesive tape to the rear window opening flange of the body on both sides.

Fasteners adhesive tape:

Thickness 0.8 mm (0.031 in.)
Width 9 mm (0.35 in.)

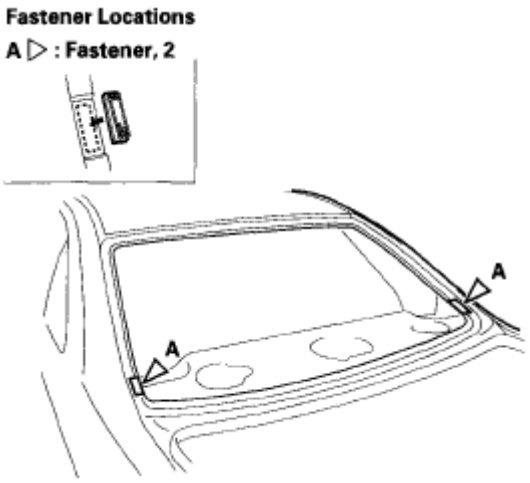


Fig. 35: Attaching Fasteners With Adhesive Tape To Rear Window Opening Flange

17. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window and body with a grease pencil at the four points shown. Make sure both upper clips (B) are in the body holes. Be careful not to touch the rear window where adhesive will be applied.

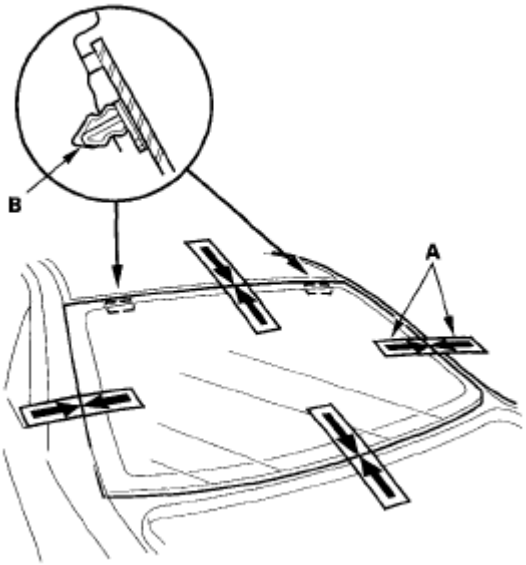


Fig. 36: Making Alignment Marks Across Rear Window And Body

18. Remove the rear window.
19. With a sponge, apply a light coat of glass primer along the edge of the rear window (A) between the dams (B) as shown, then lightly wipe it off with gauze or cheesecloth:
    - Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
    - Keep water, dust, and abrasive materials away from primed surfaces.

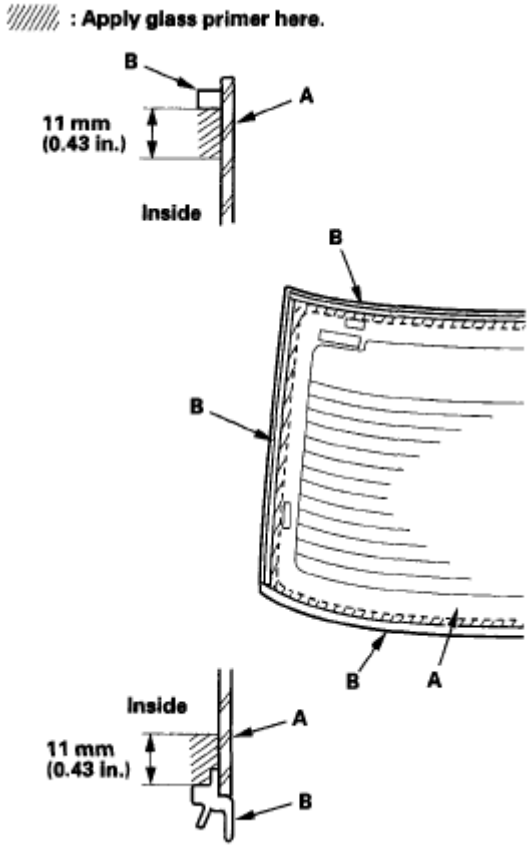


Fig. 37: Applying Glass Primer Along Edge Of Rear Window Between Dams (With Specifications)

20. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:
    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surfaces with your hands.

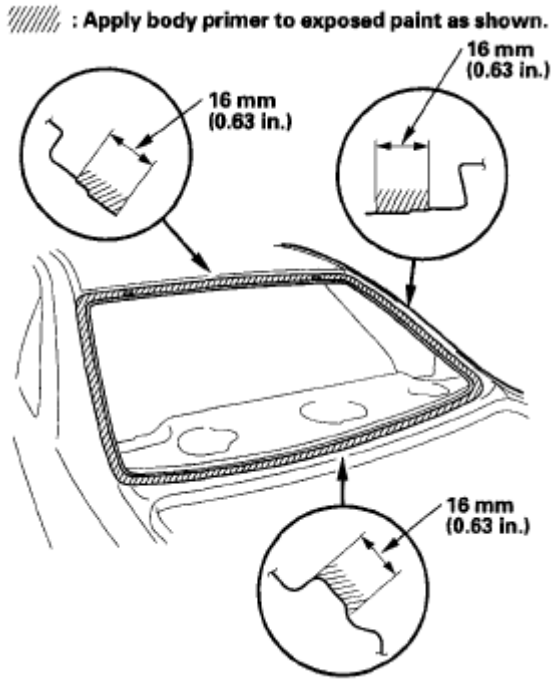


Fig. 38: Applying Body Primer To Any Exposed Paint (With Specifications)

21. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.

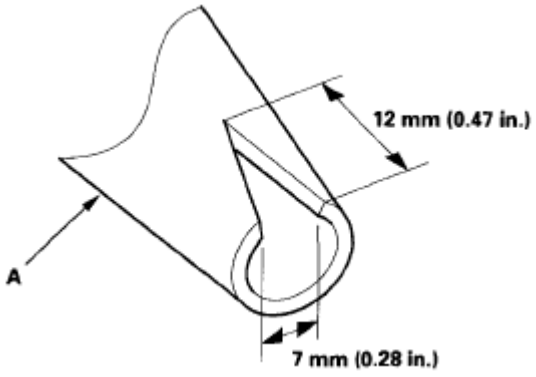


Fig. 39: Cutting "V" In End Of Nozzle (With Specifications)

22. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window (B) between the dams (C) as shown.

    Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

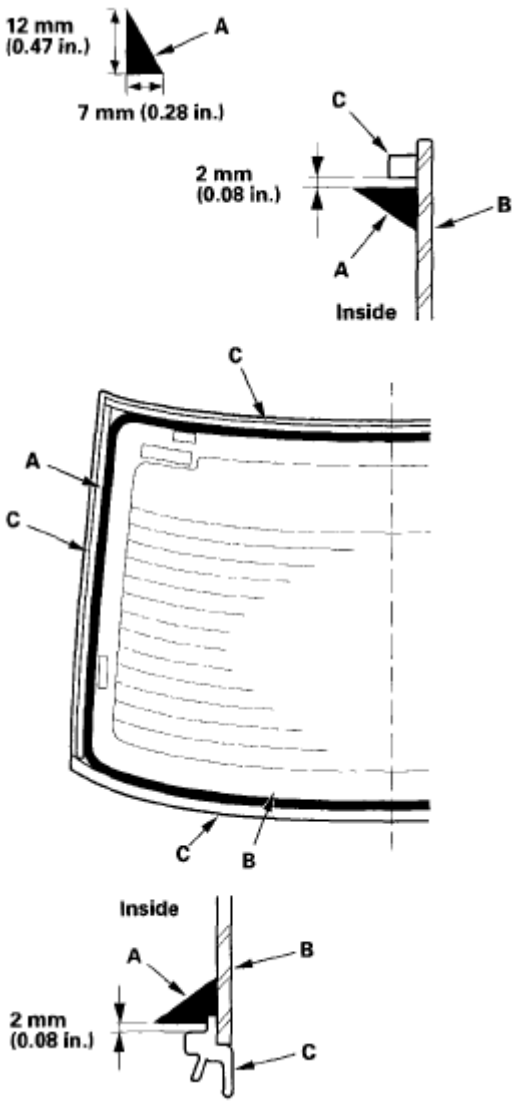


Fig. 40: Running Bead Of Adhesive Around Edge Of Rear Window Between Dams (With Specifications)

23. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 17, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

24. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
25. After the adhesive has dried, spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
26. Reinstall all remaining removed parts.

NOTE: **Advise the customer not to do the following things for 2 to 3 days:**

- **Slam the doors with all the windows rolled up.**
- **Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).**

4-DOOR

NOTE:

- **Put on gloves to protect your hands.**
- **Wear eye protection while cutting the glass adhesive with a piano wire.**
- **Use seat covers to avoid damaging any surfaces.**
- **Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.**

1. Remove these items:
   - Trunk lid
   - C-pillar trim (see **C-PILLAR TRIM - 4-DOOR**)
   - Rear shelf (see **REAR SHELF EXTENSION - 2-DOOR**)
2. Disconnect the window antenna connectors (A) and rear window defogger connectors (B).

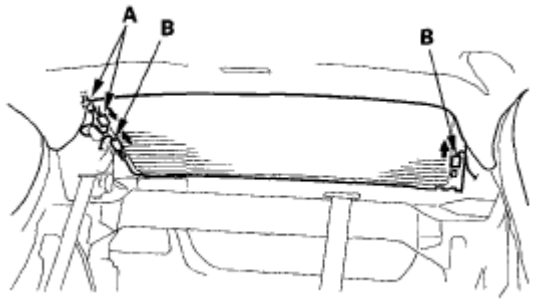


Fig. 41: Disconnecting Window Antenna Connectors And Rear Window Defogger Connectors

3. If the old rear window will be reinstalled, make alignment marks across the glass and body with a grease pencil.
4. Pull down the rear portion of the headliner (A) by detaching the clips (B). Take care not to bend the headliner excessively, or you may crease or break it.

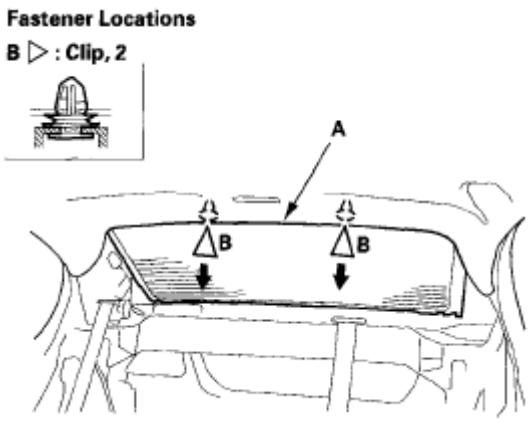


Fig. 42: Detaching Clips To Remove Rear Portion Of Headliner

5. Apply protective tape along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
6. Remove the lower rubber dam (A) from the lower edge of the rear window (B). If necessary, cut the molding with a utility knife.

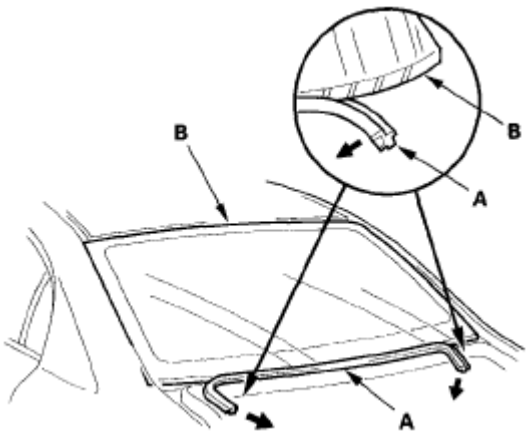


Fig. 43: Removing Lower Rubber Dam From Lower Edge Of Rear Window

7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire rear window.

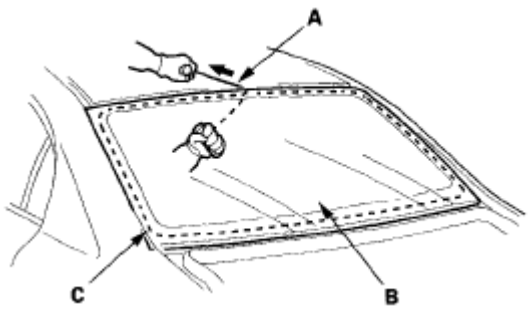


Fig. 44: Pulling Piano Wire Back And Forth In Sawing Motion

Cutting positions

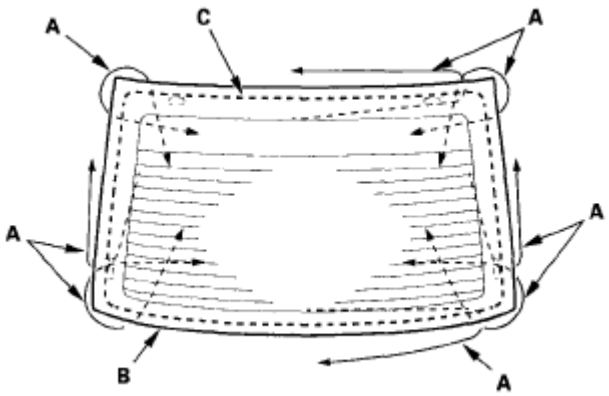


Fig. 45: Identifying Cutting Positions

8. Carefully remove the rear window.
9. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the fasteners from the body.
10. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
11. If the old rear window will be reinstalled, use a putty knife to scrape off the old adhesive, the moldings and the fasteners from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.
12. Apply primer to the edge of the rear window (A) where the lower rubber dam adhesive tape will be attached as shown. Attach the lower rubber dam (B) with adhesive tape (C) to the lower edge of the rear window:
    - After installing the rubber dam, cut the ends (D) of the rubber dam as shown.
    - Be careful not to touch the windshield where adhesive will be applied.

Molding adhesive tape:

Thickness 0.2 mm (0.008 in.)
Width 4 mm (0.16 in.)

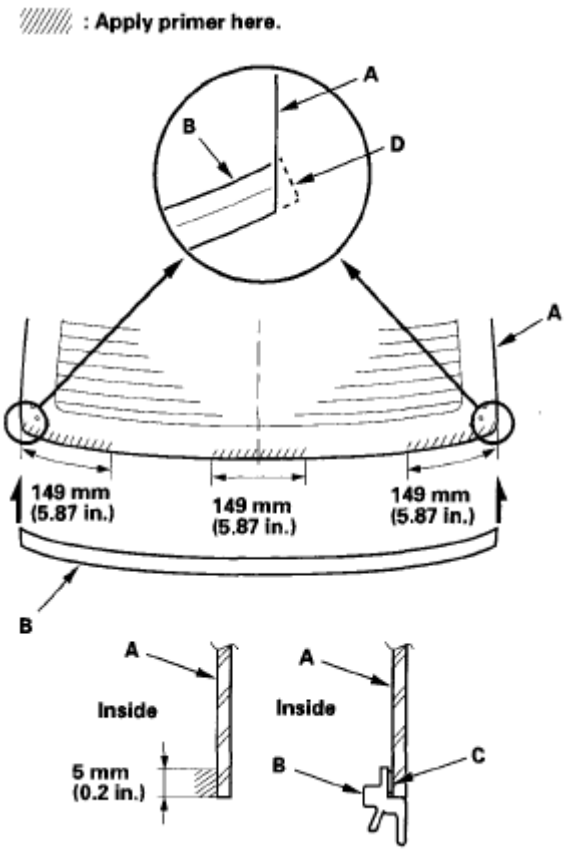


Fig. 46: Applying Primer To Edge Of Rear Window (With Specifications)

13. Attach the upper rubber dams (A), side rubber dams (B), clips (C) (except USA produced models), upper fasteners (D) (USA produced models), and side fasteners (E) with adhesive tape to the inside face of the rear window (F) as shown in **Fig. 47**:
    - First attach the upper rubber dam, then attach the side rubber dams around the edge of the rear window. Be sure the top of the side rubber dam contacts with the bottom of the upper rubber dam. If necessary, cut the rubber dam.
    - Be sure the clips, and fasteners line up with the alignment marks (G).
    - Be careful not to touch the rear window where adhesive will be applied.

    Rubber dams adhesive tape:

    Thickness 0.16 mm (0.006 in.)
    Width 5 mm (0.2 in.)

    Clips adhesive tape:

    Thickness 0.4 mm (0.016 in.)
    Width 13 mm (0.51 in.)

    Upper fasteners adhesive tape:

    Thickness 0.4 mm (0.016 in.)
    Width 11.4 mm (0.45 in.)

Side fasteners adhesive tape:

Thickness 0.8 mm (0.03 in.)
Width 7 mm (0.28 in.)

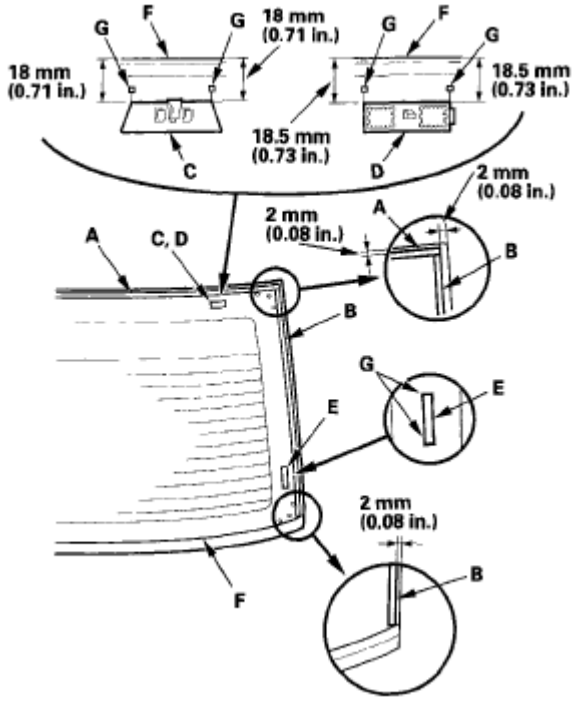


Fig. 47: Attaching Upper Rubber Dams, Side Rubber Dams And Clips (With Specifications)

14. Attach the fasteners (A) with adhesive tape to the rear window opening flange of the body on both sides.

Fasteners adhesive tape:

Thickness 0.8 mm (0.031 in.)
Width 9 mm (0.35 in.)

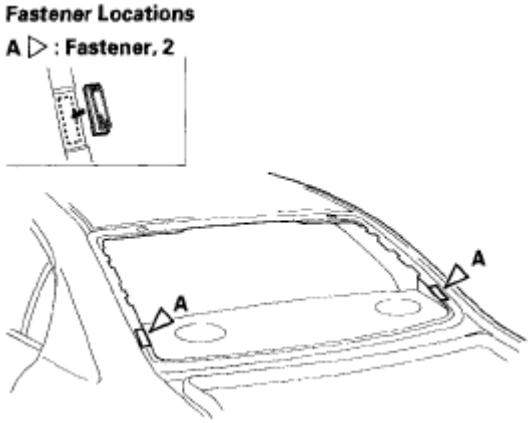


Fig. 48: Attaching Fasteners With Adhesive Tape To Rear Window Opening Flange

15. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window and body with a grease pencil at the four points shown. Make sure both clips (B) are in the body holes (except USA produced models).

    Make sure both pins (C) from the upper fasteners (D) contact with the edge of the body holes (USA produced models). Be careful not to touch the rear window where adhesive will be applied.

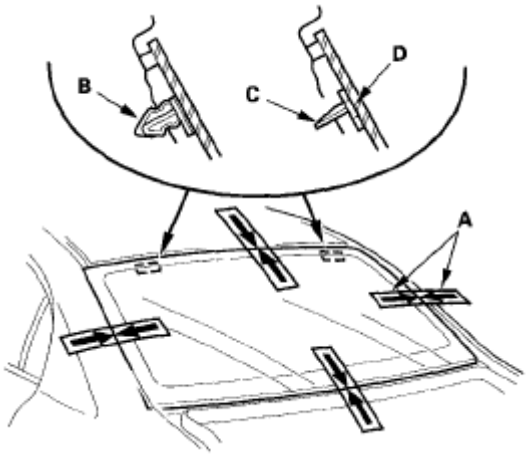


Fig. 49: Making Alignment Marks Across Rear Window And Body

16. Remove the rear window.
17. With a sponge, apply a light coat of glass primer along the edge of the rear window (A) between the dams (B) as shown, then lightly wipe it off with gauze or cheesecloth:
    - With the printed dots (D) on the rear window as a guide, apply the glass primer to both lower corner portions of the rear window.
    - Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
    - Keep water, dust, and abrasive materials away from primed surfaces.

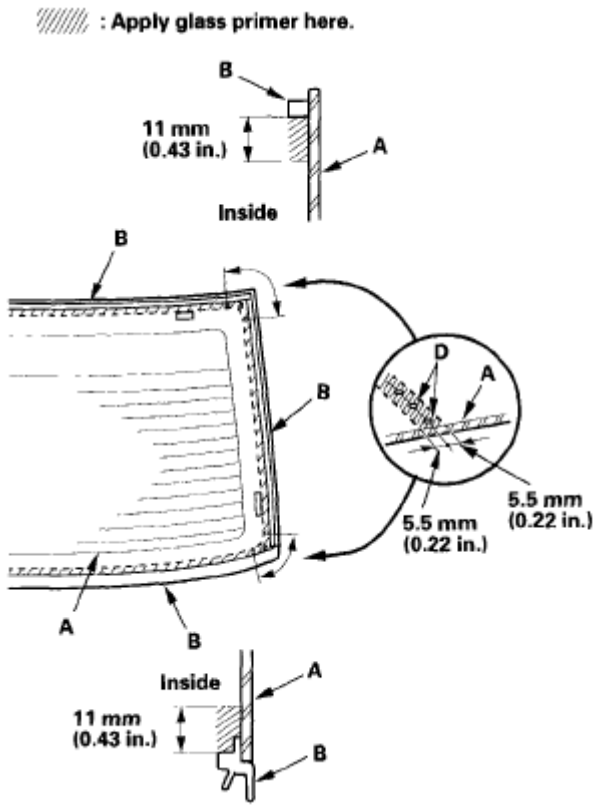


Fig. 50: Applying Glass Primer Along Edge Of Rear Window Between Dams (With Specifications)

18. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:
    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surfaces with your hands.

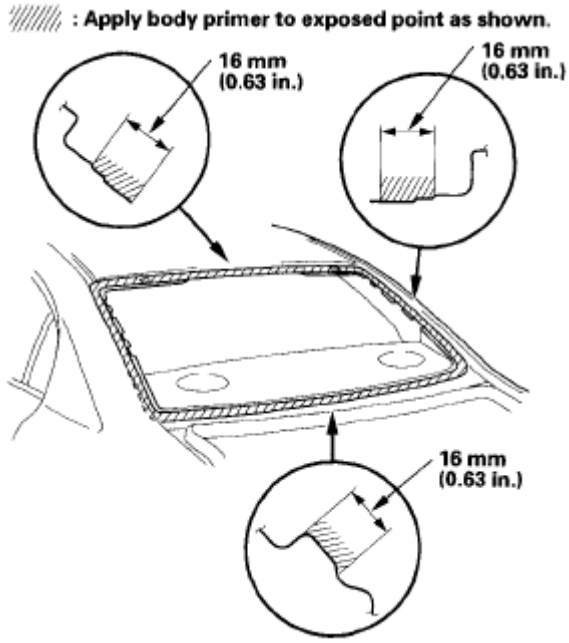


Fig. 51: Applying Body Primer To Any Exposed Paint (With Specifications)

19. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.

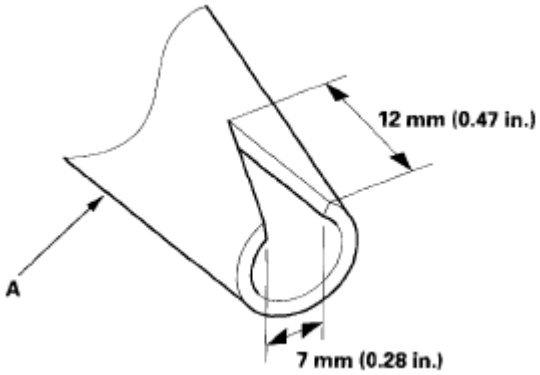


Fig. 52: Cutting "V" In End Of Nozzle (With Specifications)

20. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window (B) between the dams (C) as shown:
    - With the printed dots (D) on the rear window as a guide, apply the adhesive to both side portions of the rear window.
    - Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

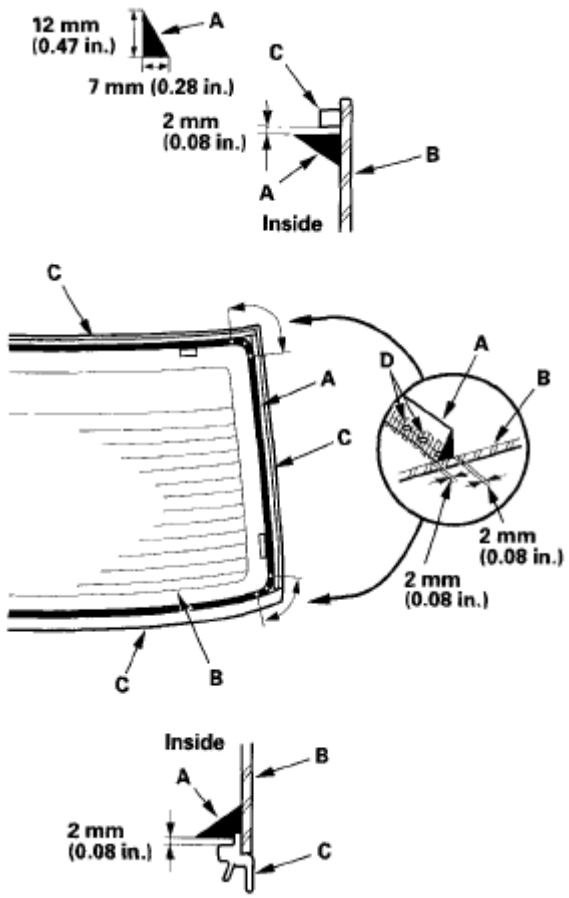


Fig. 53: Running Bead Of Adhesive Around Edge Of Rear Window Between Dams (With Specifications)

21. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 15, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
23. After the adhesive has dried, spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
24. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- **Slam the doors with all the windows rolled up.**
- **Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).**

QUARTER GLASS REPLACEMENT

2-DOOR

NOTE:

- **Put on gloves to protect your hands.**
- **Use seat covers to avoid damaging any surface.**

1. Remove these items:
   - Rear seat cushion (see **SEAT CUSHION**)
   - Rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
   - Rear shelf extension (see **REAR SHELF EXTENSION - 2-DOOR**)
   - Rear side trim panel, as needed (see **2-DOOR**)
   - Front seat belt upper anchor (see step 7 in **FRONT SEAT BELT - 2-DOOR**)
   - Quarter pillar trim (see **QUARTER PILLAR TRIM - 2-DOOR**)
2. Apply protective tape along the inside and outside edges of the body, and along the edge of the headliner. Using an awl, make a hole through the adhesive from inside the vehicle. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
3. Remove the front seal (A) from the front edge of the quarter glass (B). If necessary, cut the front seal with a utility knife.

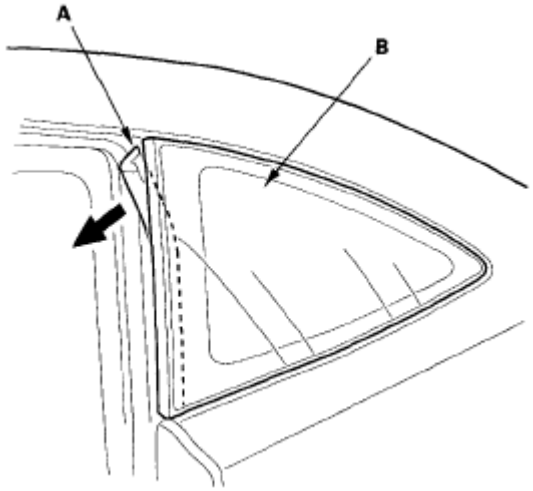


Fig. 54: Removing Front Seal From Front Edge Of Quarter Glass

4. Carefully cut through the adhesive (A) at the rear corner portion of the quarter glass (B) with a utility knife. With a helper on the outside, pull the piano wire (C) back and forth in a sawing motion. Hold the piano wire as close to the quarter glass as possible to prevent damage to the body, and carefully cut through the adhesive around the entire quarter glass:
   - If the quarter glass is to be reinstalled, take care not to damage the molding (D).
   - If the molding is damaged, replace the quarter glass, molding, and clips (E) as an assembly.
   - If any of the clips are broken, the quarter glass can be reinstalled using butyl tape (refer to step 11).

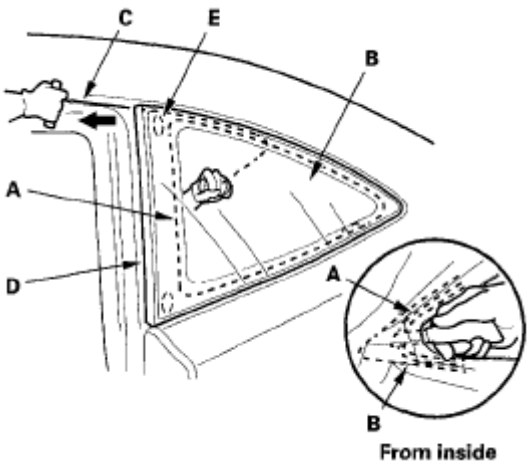


Fig. 55: Pulling Piano Wire Back And Forth In Sawing Motion

Cutting positions

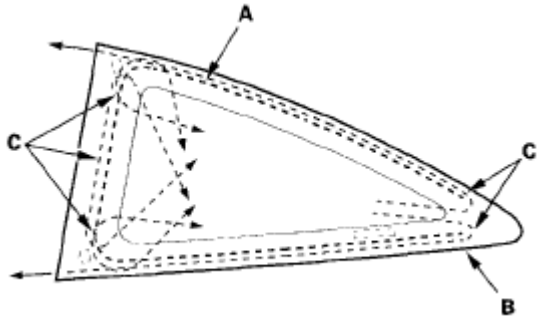


Fig. 56: Identifying Cutting Positions

5. Carefully remove the quarter glass.
6. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire quarter glass opening flange:
    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the clips and fastener from the body.
7. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
8. If the old quarter glass will be reinstalled, use a putty knife to scrape off the old adhesive, any broken clips, and the fastener from the glass. Clean the inside face and the edge of the glass with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.
9. Set the quarter glass in the opening. Make an alignment mark (A) to the quarter glass with a grease pencil as shown where the clip will be installed.

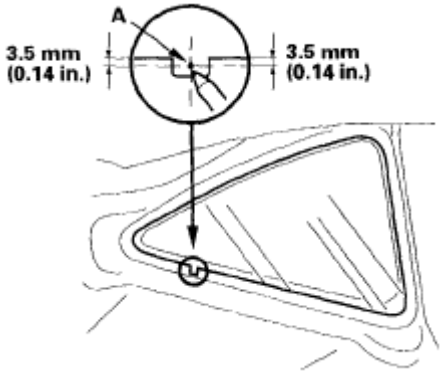


Fig. 57: Making Alignment Mark To Quarter Glass (With Specifications)

10. Remove the quarter glass.
11. If the old quarter glass will be reinstalled (and either clip is broken off the molding), apply a light coat of primer, then apply butyl tape (A) to the molding (B) as shown. Attach the clip (C) with adhesive tape to the inside face of the quarter glass (D):
    - Be sure the clip line up with alignment mark (E) you made in step 9.
    - Be careful not to touch the quarter glass where adhesive will be applied.
    - Do not peel the separator off the butyl tape.

    Clip adhesive tape:

    Thickness 0.4 mm (0.016 in.)
    Width 7.5 mm (0.3 in.)

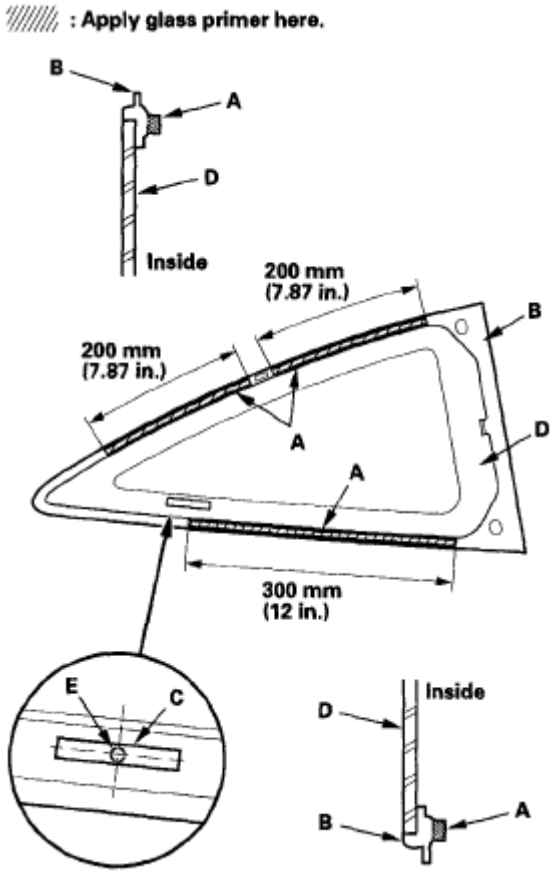


Fig. 58: Applying Butyl Tape To Molding (With Specifications)

12. Attach the front seal (A) with adhesive tape (B) onto the molding (C).

Seal adhesive tape:

Thickness 0.8 mm (0.031 in.)
Width 7 mm (0.28 in.)

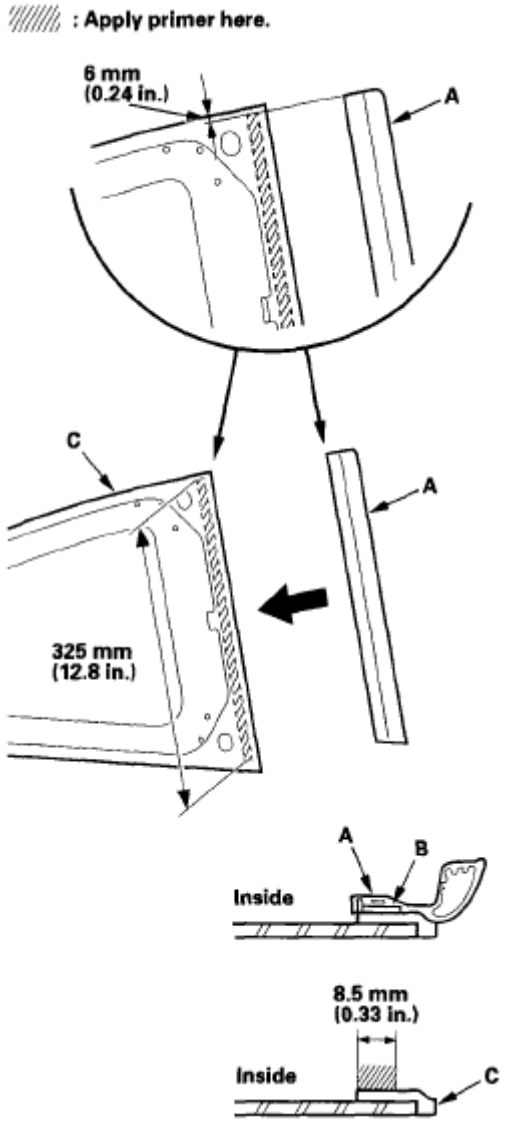


Fig. 59: Attaching Front Seal With Adhesive Tape Onto Molding (With Specifications)

13. If the old quarter glass will be reinstalled (and either clip is broken off the molding), seal the body holes with pieces of urethane tape (A). Then set the quarter glass upright in the opening, and make alignment marks (B) across the quarter glass and body with a grease pencil at the three points shown. Be careful not to touch the quarter glass where adhesive will be applied.

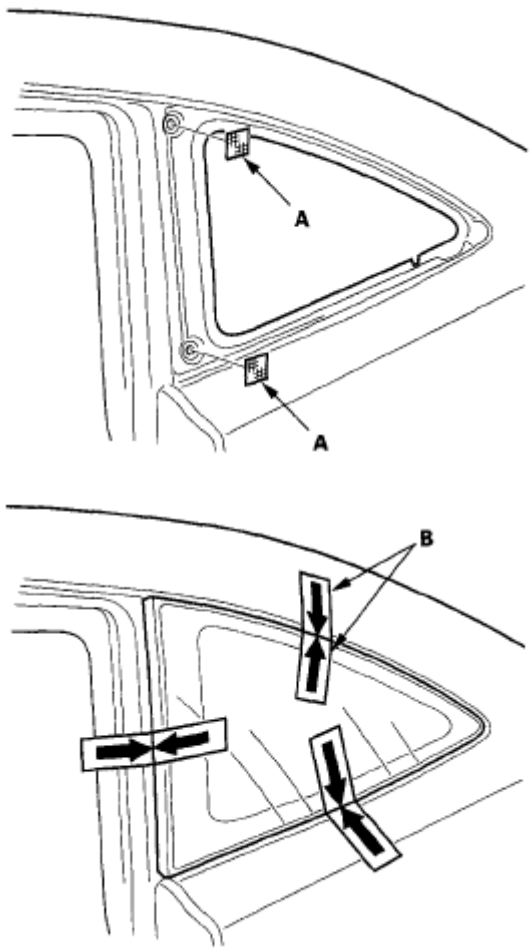


Fig. 60: Sealing Body Holes With Pieces Of Urethane Tape

14. Remove the quarter glass.
15. With a sponge, apply a light coat of glass primer along the edge of the front seal (A) and molding (B) as shown, then lightly wipe it off with gauze or cheesecloth:
    - With the printed dots (C) on the quarter glass (D) as a guide, apply the glass primer to the front portion of the quarter glass.
    - Do not apply body primer to the quarter glass, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the quarter glass properly, causing a leak after the quarter glass is installed.
    - Keep water, dust, and abrasive materials away from primed surfaces.

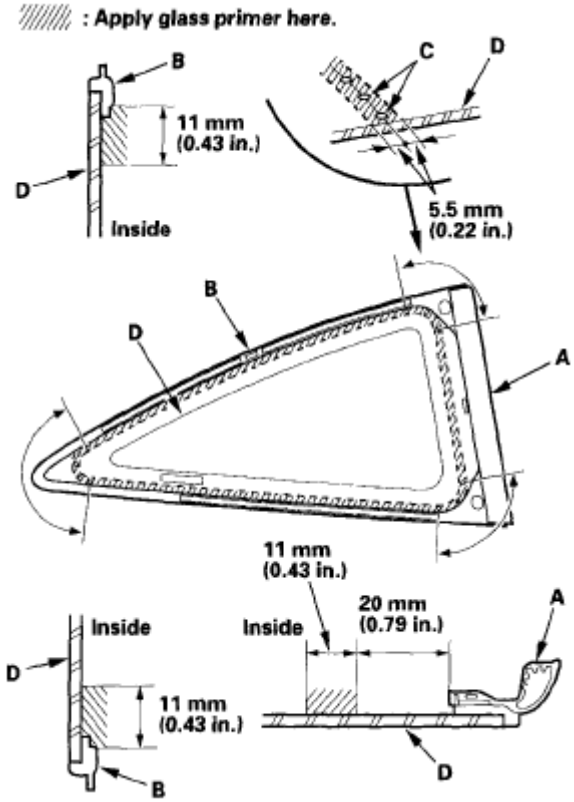


Fig. 61: Applying Glass Primer Along Edge Of Front Seal And Molding (With Specifications)

16. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:
    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponges.
    - Never touch the primed surfaces with your hands.

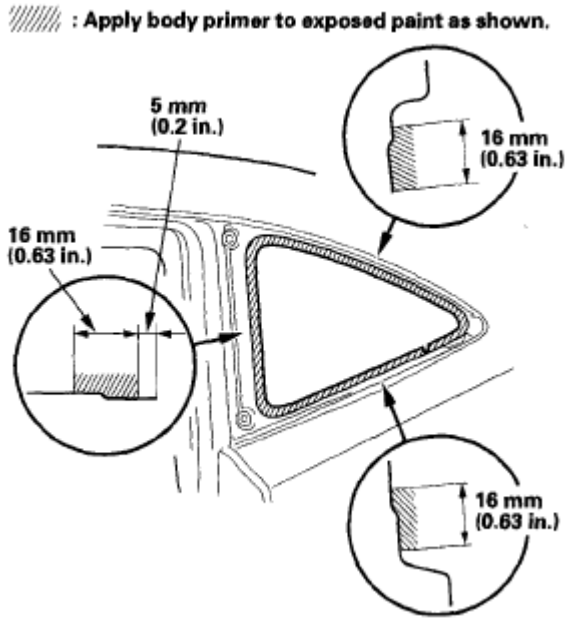


Fig. 62: Applying Body Primer To Any Exposed Paint (With Specifications)

17. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.

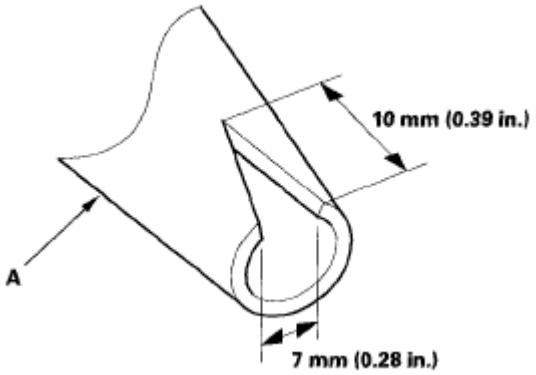


Fig. 63: Cutting "V" In End Of Nozzle (With Specifications)

18. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the front seal (B) and molding (C) as shown. With the glass primer (D) you applied in step 15 on the quarter glass (E) as a guide, apply the adhesive to the upper and lower corner portions of the quarter glass. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

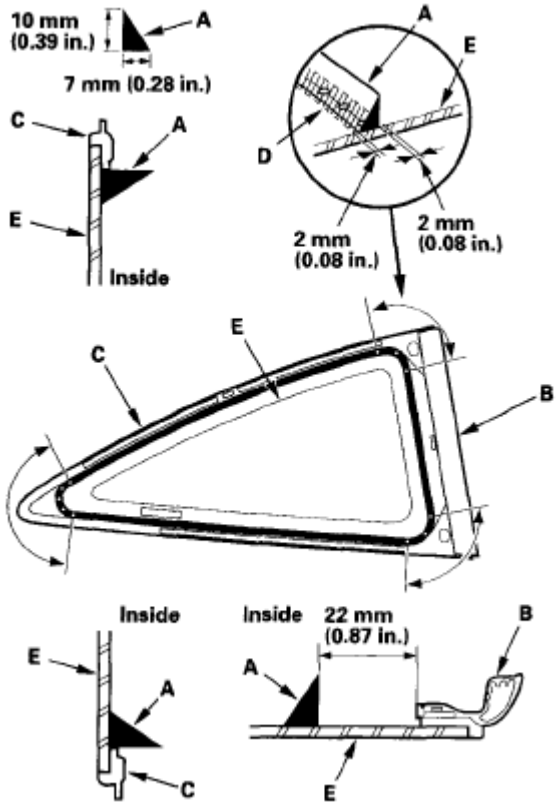


Fig. 64: Running Bead Of Adhesive Around Edge Of Front Seal And Molding (With Specifications)

19. Using suction cups (A) to hold the quarter glass (B) over the opening, align the clips or the alignment

marks (C) made in step 13, and set it down on the adhesive. Lightly push on the quarter glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

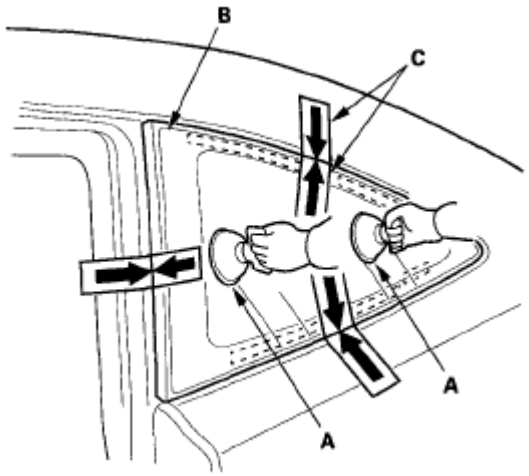


Fig. 65: Holding Quarter Glass Using Suction Cups

20. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the quarter glass, wipe with a soft shop towel dampened with alcohol.
21. After the adhesive has dried, spray water over the quarter glass window and check for leaks. Mark the leaking areas, let the quarter glass window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after quarter glass window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
22. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- **Slam the doors with all the windows rolled up.**
- **Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).**

2006-08 ACCESSORIES & EQUIPMENT

Power Windows - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

4-door

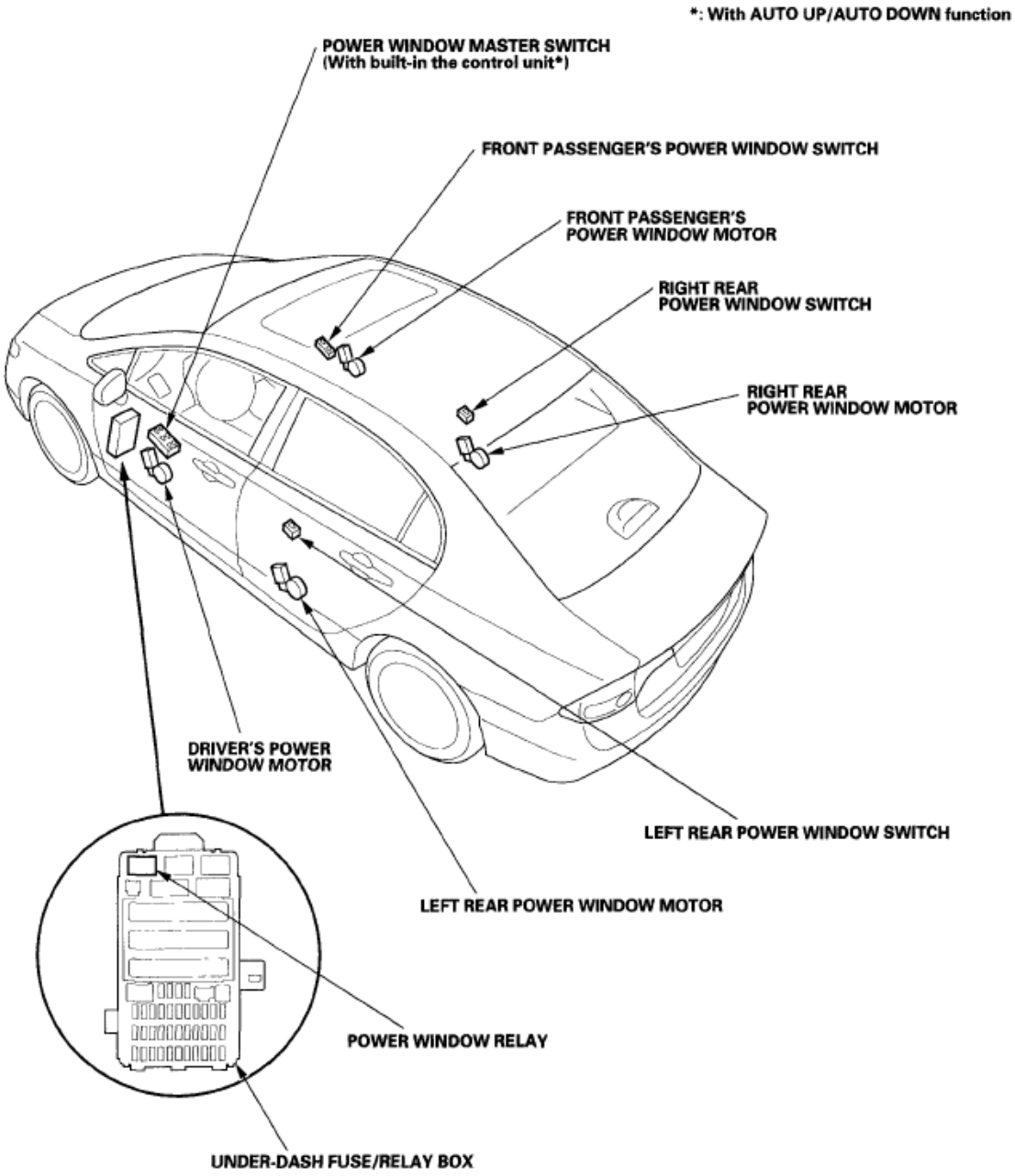


Fig. 1: Locating Power Windows Components (4-Door)
Courtesy of HONDA

2-door

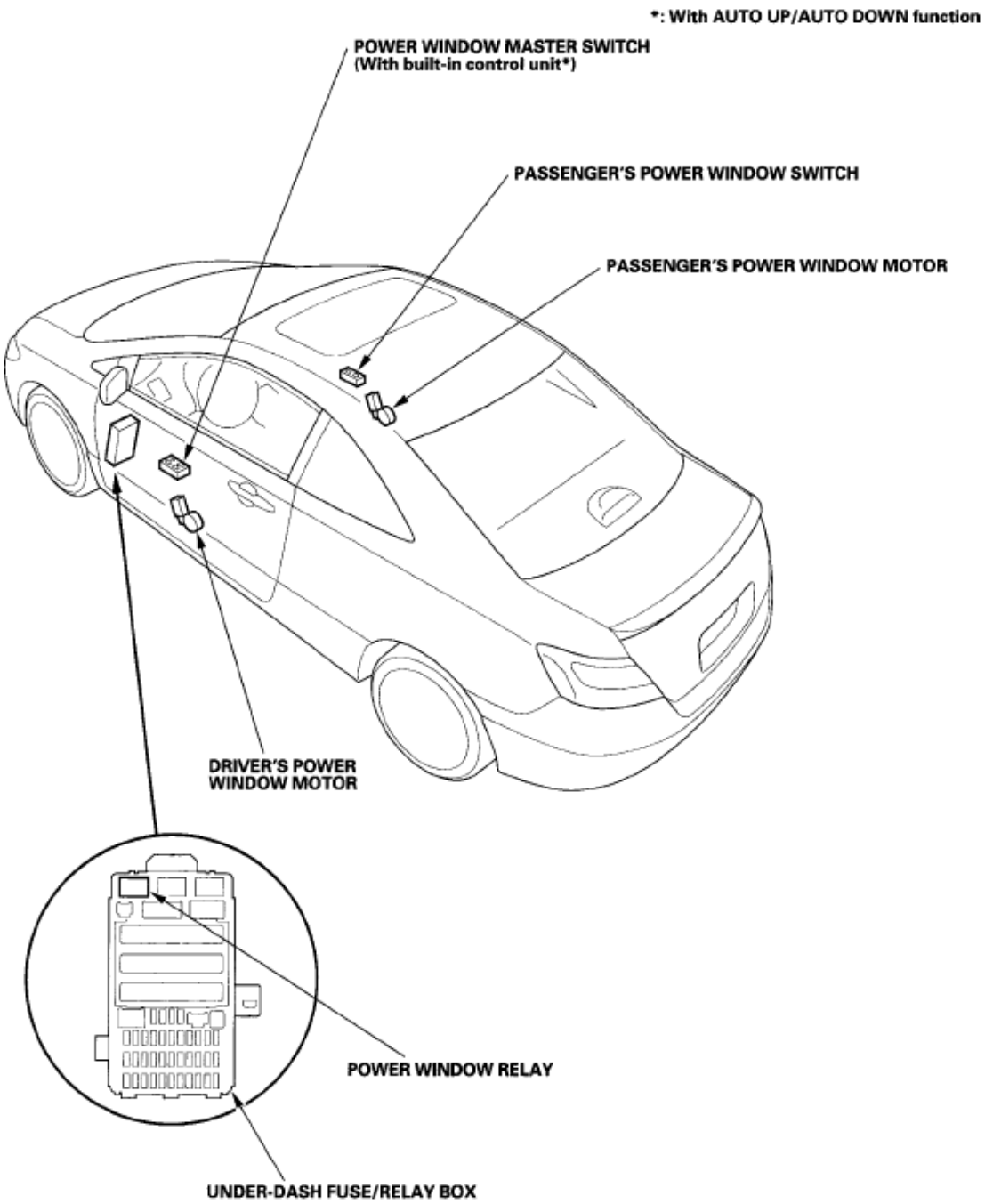


Fig. 2: Locating Power Windows Components (2-Door)
Courtesy of HONDA

SYSTEM DESCRIPTION

AUTO REVERSE OPERATION (EXCEPT DX AND DX-G MODELS)

The system is composed of the power window master switch and the driver's power window motor.

The driver's power window motor incorporates a pulser which generates pulses during the motor's operation and sends the pulses to the driver's power window control unit. As soon as the power window control unit detects no pulses from the pulser, the driver's power window control unit makes the power window motor

stop and reverse. If the window is more than halfway closed, it will reverse to half open position. If the window is less than halfway closed, it will stop and reverse about 2 inches. This is to prevent pinching an obstacle during auto-up operation. The auto reverse operation is not active when the switch is held in the up position.

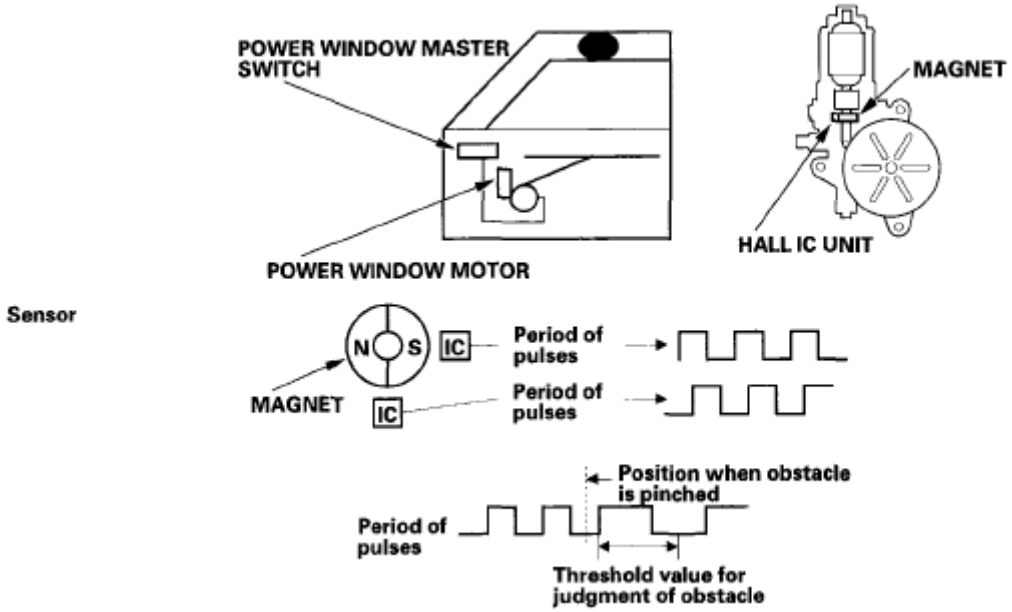


Fig. 3: Auto Reverse Operation System Description (Except DX And DX-G Models)
Courtesy of HONDA

CIRCUIT DIAGRAM

4-door (With AUTO UP/AUTO DOWN Function)

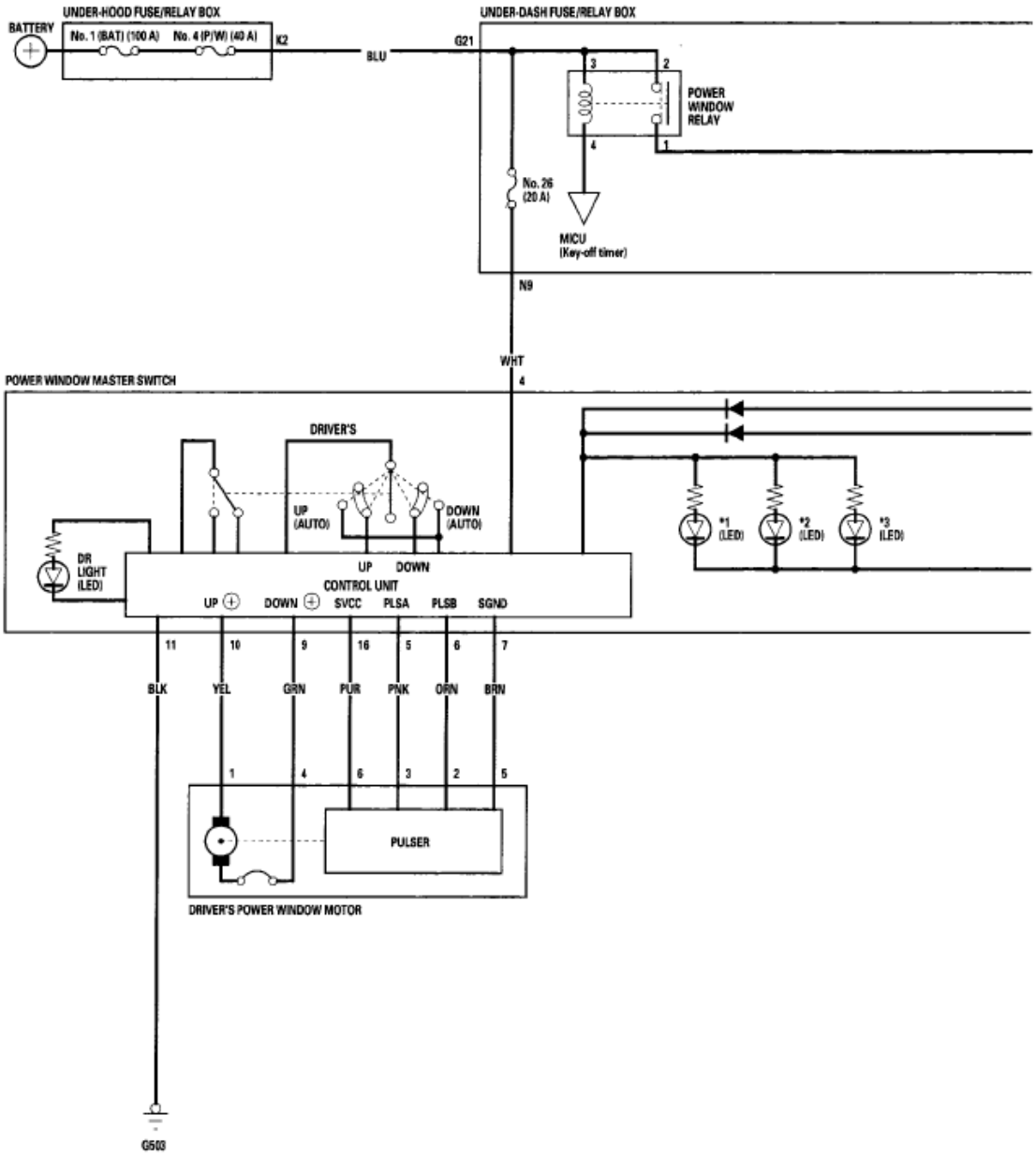


Fig. 4: Power Windows Circuit Diagram - 4-Door (With AUTO UP /AUTO DOWN Function) (1 Of 2)
Courtesy of HONDA

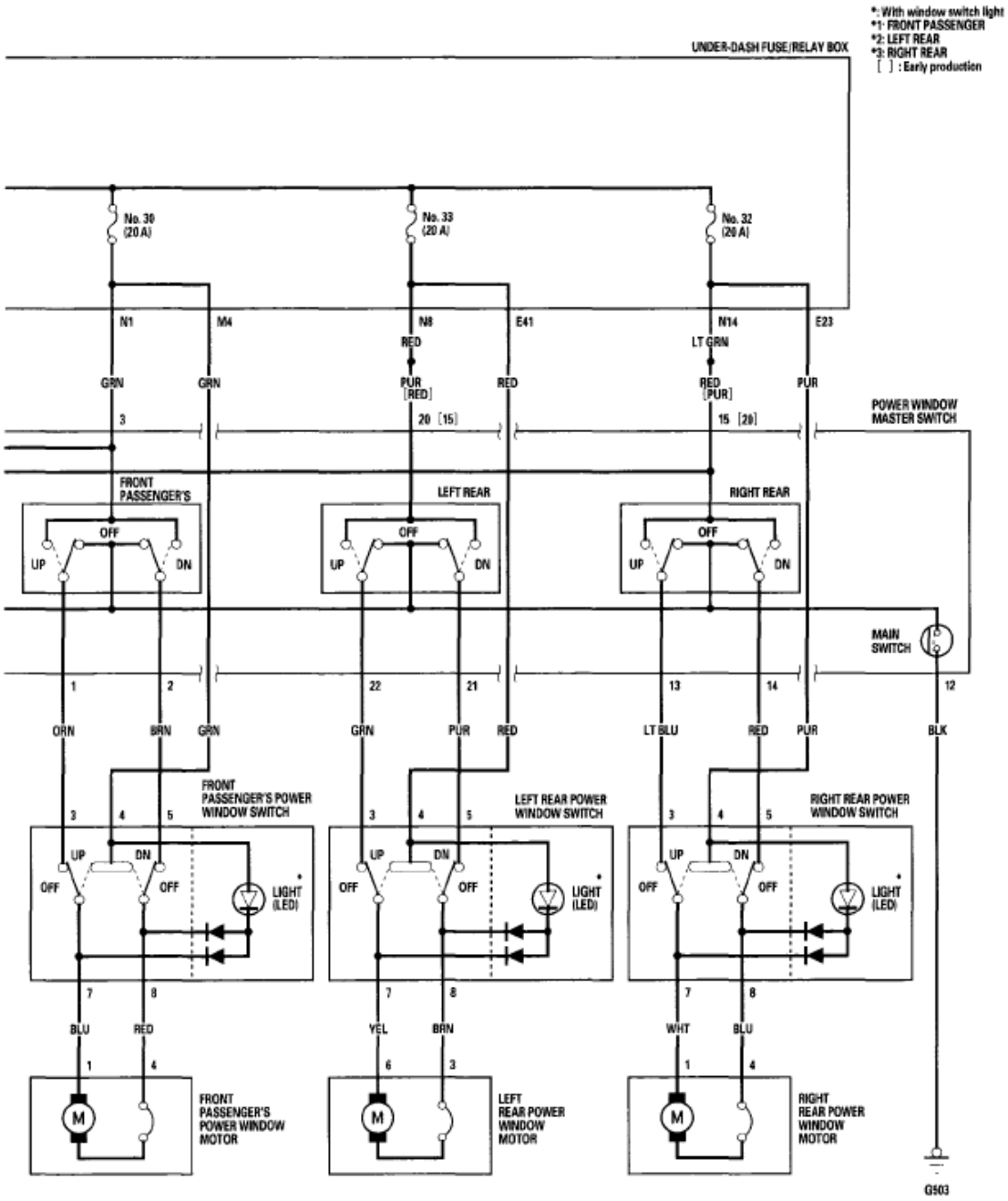


Fig. 5: Power Windows Circuit Diagram - 4-Door (With AUTO UP /AUTO DOWN Function) (2 Of 2)
Courtesy of HONDA

4-door (Without AUTO UP/AUTO DOWN Function)

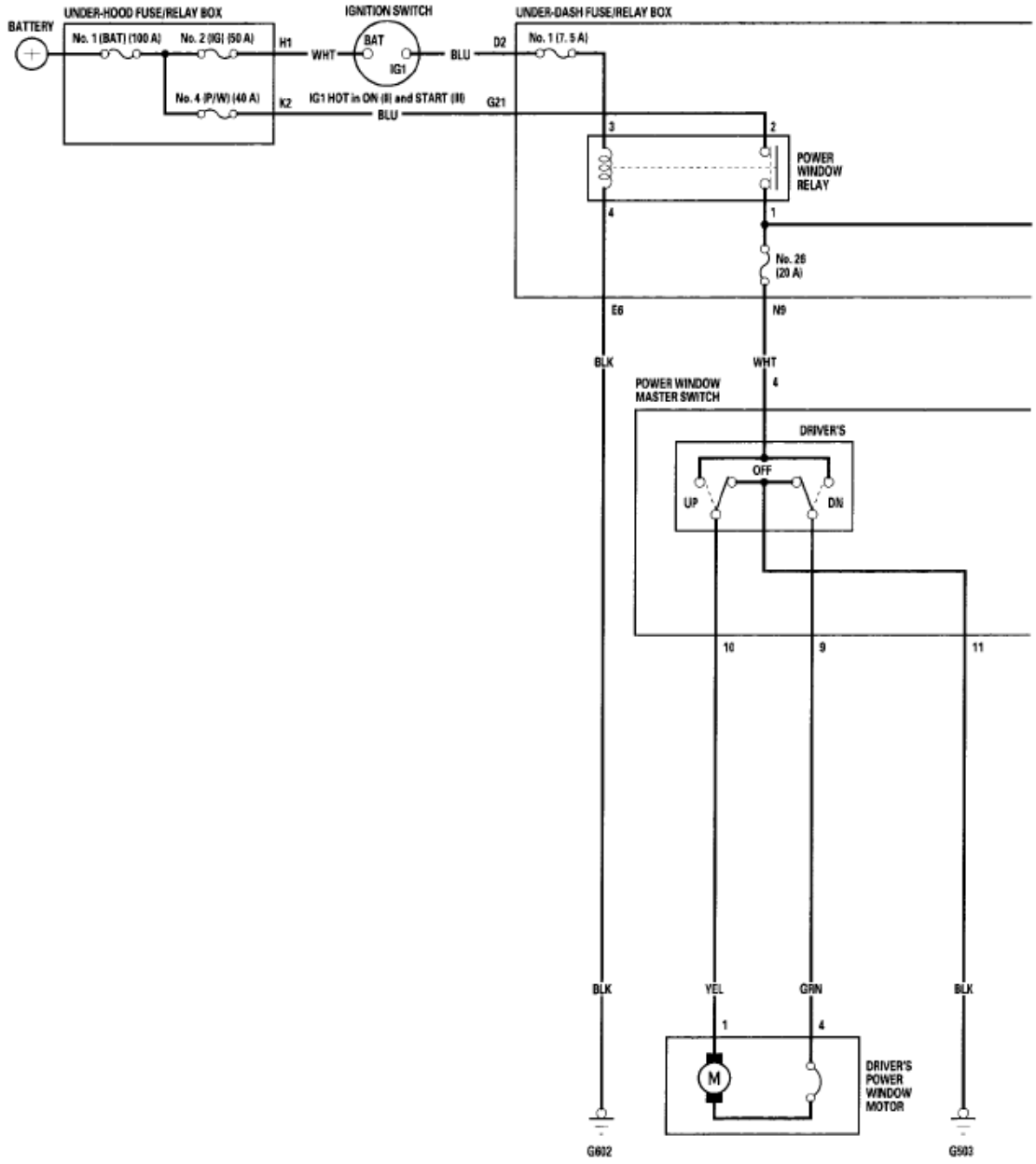


Fig. 6: Power Windows Circuit Diagram - 4-Door (Without AUTO UP /AUTO DOWN Function) (1 Of 2)
Courtesy of HONDA

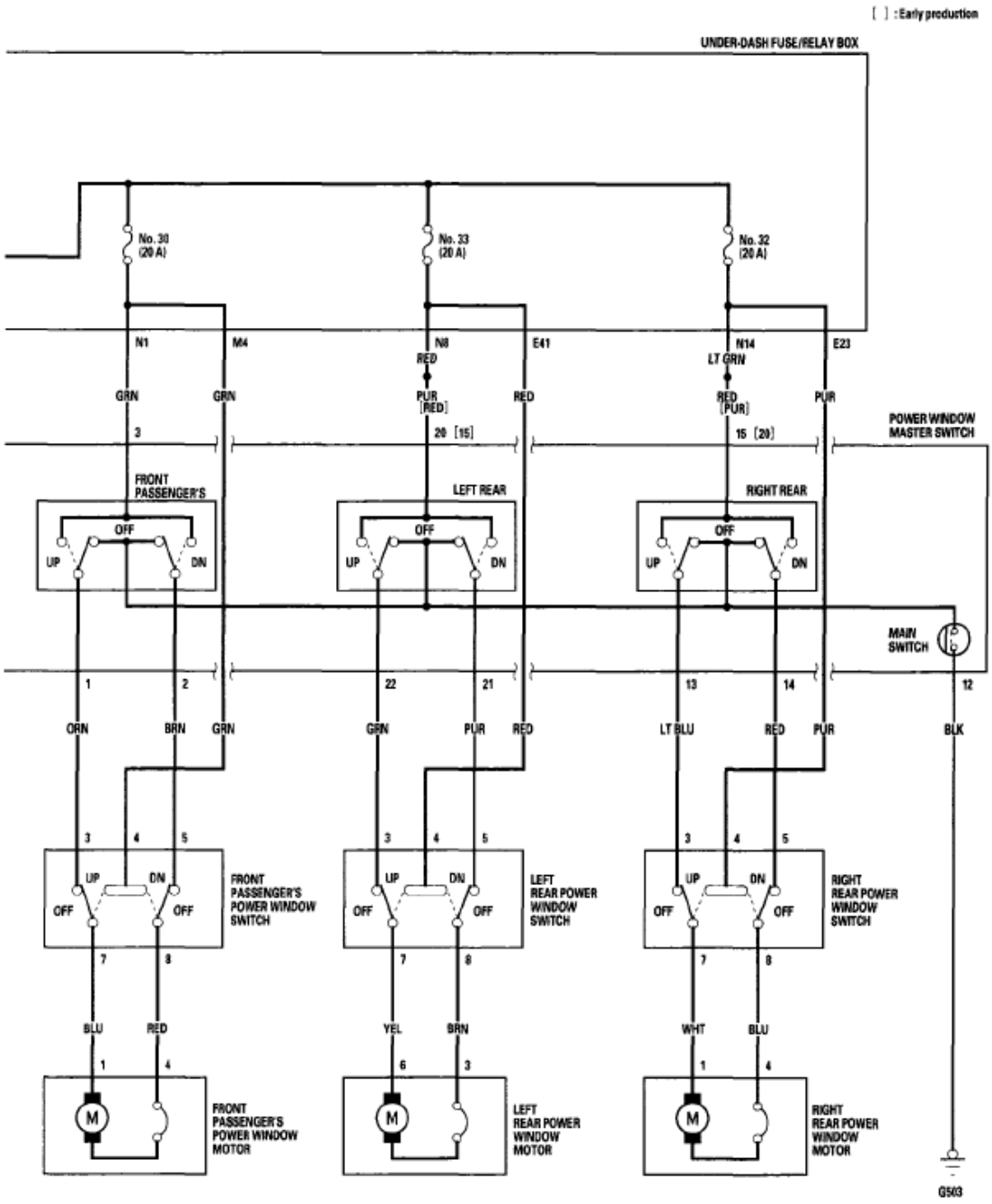


Fig. 7: Power Windows Circuit Diagram - 4-Door (Without AUTO UP /AUTO DOWN Function) (2 Of 2)
Courtesy of HONDA

2-door (With AUTO UP/AUTO DOWN Function)

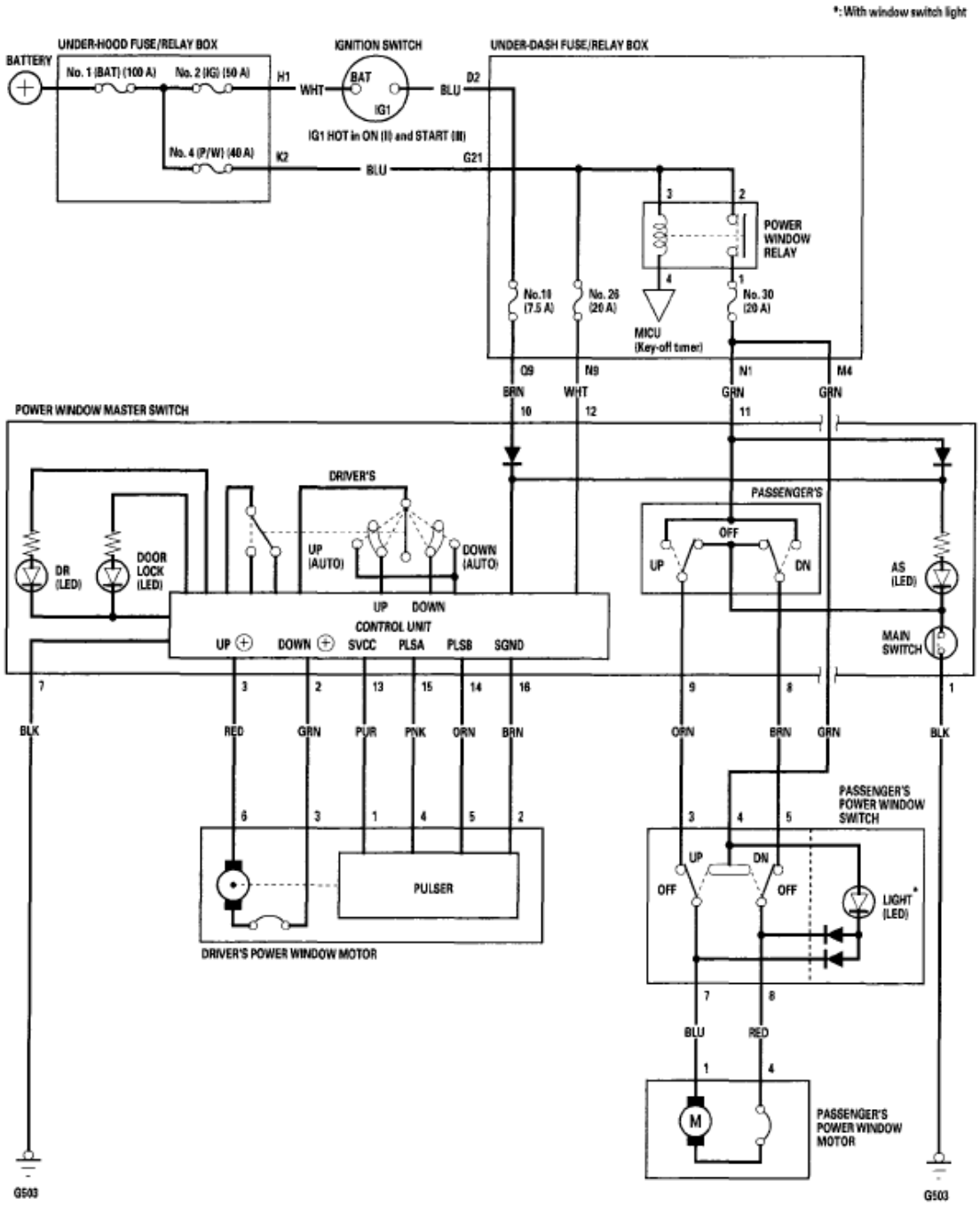


Fig. 8: Power Windows Circuit Diagram - 2-Door (With AUTO UP /AUTO DOWN Function)
Courtesy of HONDA

2-door (Without AUTO UP/AUTO DOWN Function)

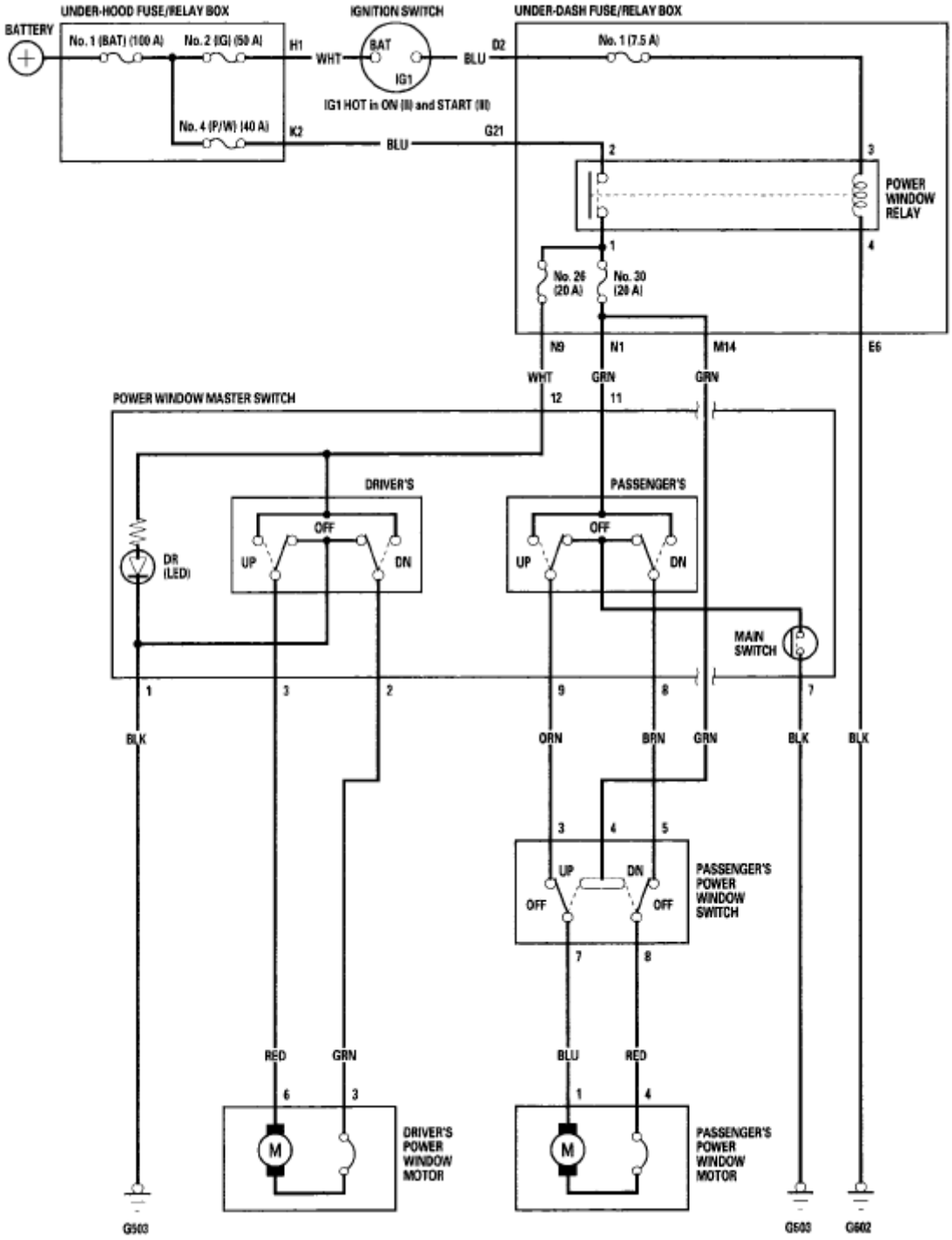


Fig. 9: Power Windows Circuit Diagram - 2-Door (Without AUTO UP /AUTO DOWN Function)
Courtesy of HONDA

MASTER SWITCH INPUT TEST

4-DOOR WITH AUTO UP/AUTO DOWN FUNCTION

NOTE: **The power window control unit is built into the power window master switch, and it only controls the driver's window operations.**

1. Remove the master switch (A) (see **MASTER SWITCH TEST/REPLACEMENT**).

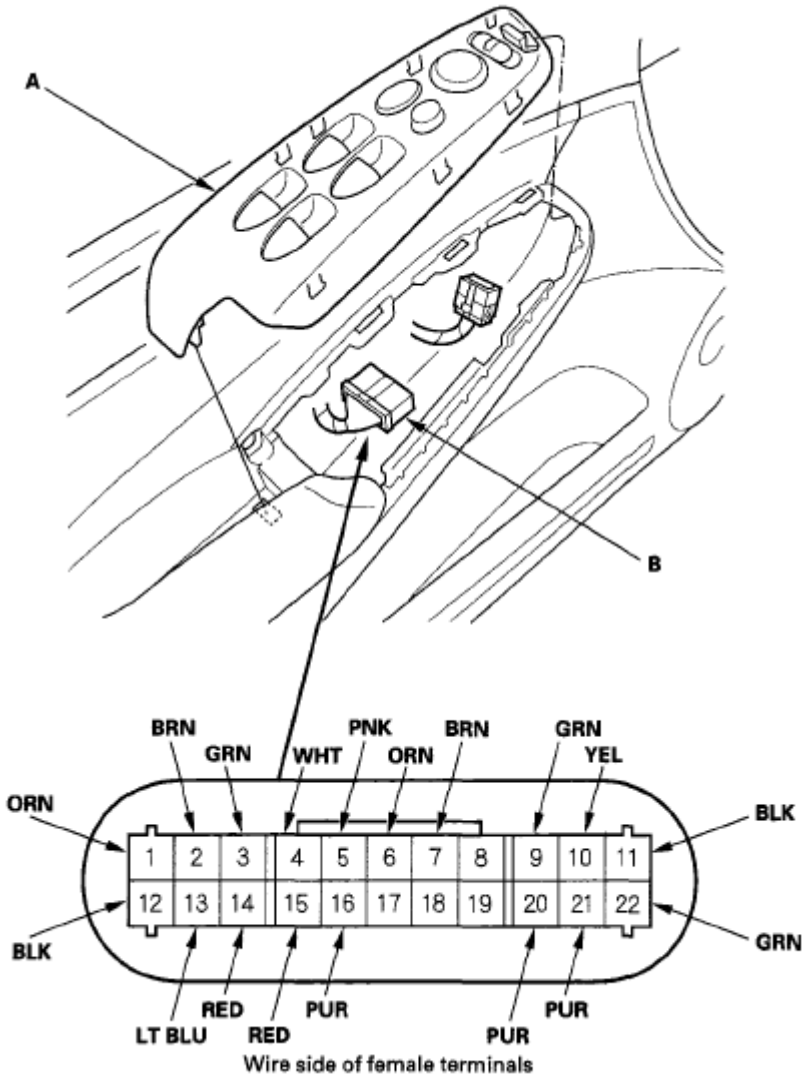


Fig. 10: Removing Master Switch
Courtesy of HONDA

2. Disconnect the 22P connector (B) from the master switch.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, make the following input tests at the connector.
     - If a test indicates a problem, find and correct the cause, then recheck the system.
     - If all the input tests prove OK, the power window master switch must be faulty; replace it.
4. With the master switch still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

MASTER SWITCH INPUT TEST (DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
9	GRN	Connect the No. 4 and the No. 9 terminals and No. 10 and No. 11 terminals momentarily with jumper wires	Check driver's power window motor operation: The window should go down.	• Faulty driver's power window motor • An open in the wire
10	YEL	Connect the No. 4 and the No. 10 terminals and No. 9 and No. 11 terminals momentarily with jumper wires	Check driver's power window motor operation: The window should go up.	
1	ORN	Connect the No. 3 and the No. 2 terminals and No. 1 and No. 12 terminals momentarily with jumper wires	Check front passenger's power window motor operation: The window should go down.	• Faulty front passenger's power window motor • Faulty front passenger's power window switch • An open in the wire
2	BRN	Connect the No. 3 and the No. 1 terminals and No. 2 and No. 12 terminals momentarily with jumper wires	Check front passenger's power window motor operation: The window should go down.	
13	LT BLU	Connect the No. 20 and the No. 14 terminals and No. 13 and No. 12 terminals momentarily with jumper wires	Check front passenger's power window motor operation: The window should go down.	• Faulty right rear power window motor • Faulty right rear power window switch • An open in the wire
14	RED	Connect the No. 20 and the No. 13 terminals and No. 14 and No. 12 terminals momentarily with jumper wires	Check right rear power window motor operation: The window should go down.	
21	PUR	Connect the No. 15 and the No. 21 terminals and No. 22 and No. 12 terminals momentarily with jumper wires	Check left rear power window motor operation: The window should go down.	• Faulty left rear power window motor • Faulty left rear power window switch • An open in the wire
22	GRN	Connect the No. 15 and the No. 22 terminals and No. 21 and No. 12 terminals momentarily with jumper wires	Check left rear power window motor operation: The window should go down.	

5. Reconnect the 22P connector to the power window master switch. Turn the ignition switch ON (II), and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

MASTER SWITCH INPUT TEST (RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
				• Blown No. 30 (20 A) fuse in the

				under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
3	GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	
4	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 26 (20 A) fuse in the under-hood fuse/relay box • An open in the wire
15 [20]	RED	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 32 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
20 [15]	PUR	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 33 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
7	BRN	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
11	BLK	Ignition switch ON (II), and driver's window moving up and down	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
12	BLK	Ignition switch ON (II), main switch ON, and a passenger's window moving up and down	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
				• Faulty power

16	PUR	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	window master switch • Short to ground in the wire
5	PNK	Ignition switch ON (II), and driver's power window switch moving up or down	Check for voltage between the No. 5 and No. 7 terminals: There should be 0 V-about 5 V -0 V-about 5 V repeatedly (a digital voltmeter should reads about 2.5 V while the window moves).	• Faulty power window master switch • Faulty driver's power window motor • An open in the wire • Short to ground in the wire
6	ORN	Ignition switch ON (II), and driver's power window switch moving up or down	Check for voltage between the No. 6 and No. 7 terminals: There should be 0 V-about 5 V -0 V- about 5 V repeatedly (a digital voltmeter should reads about 2.5 V while the window moves).	
[ ] : early production				

6. Reset the power window control unit (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

2-DOOR WITH AUTO UP/AUTO DOWN FUNCTION

NOTE: The power window control unit is built into the power window master switch, and it only controls the driver's window operations.

1. Remove the door panel (see **DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 16P connector (A) from the master switch (B).

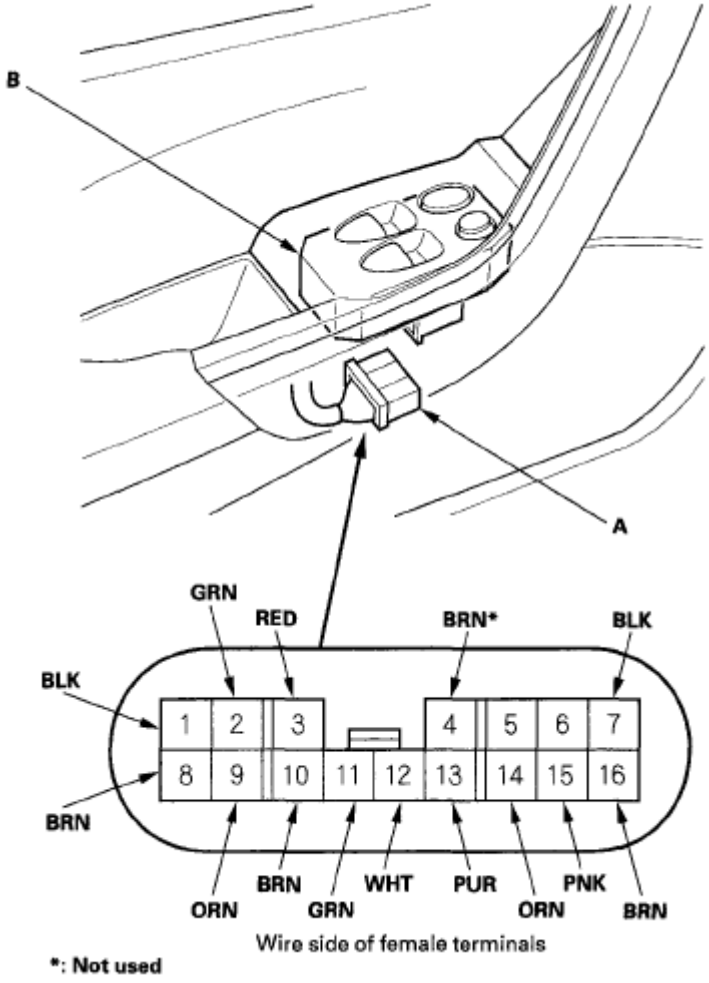


Fig. 11: Disconnecting 16P Connector
Courtesy of HONDA

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, make the following input tests at the connector.
     - If a test indicates a problem, find and correct the cause, then recheck the system.
     - If all the input tests prove OK, the power window master switch must be faulty; replace it.
4. With the master switch still disconnected, make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

MASTER SWITCH INPUT TEST (DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	GRN	Connect the No. 12 and the No. 2 terminals and No. 3 and No. 7 terminals momentarily with jumper wires.	Check driver's window motor operation: The window should go down.	• Faulty driver's power window motor

3	YEL	Connect the No. 12 and the No. 3 terminals and No. 2 and No. 7 terminals momentarily with jumper wires.	Check driver's window motor operation: The window should go up.	• An open in the wire
8	BRN	Connect the No. 12 and the No. 8 terminals and No. 9 and No. 1 terminals momentarily with jumper wires.	Check passenger's window motor operation: The window should go down.	• Faulty passenger's power window motor • Faulty passenger's power window switch • An open in the wire
9	ORN	Connect the No. 12 and the No. 9 terminals and No. 8 and No. 1 terminals momentarily with jumper wires.	Check passenger's window motor operation: The window should go down.	

5. Reconnect the 16P connector to the power window master switch. Turn the ignition switch ON (II), and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

MASTER SWITCH INPUT TEST (RECONNECTED)

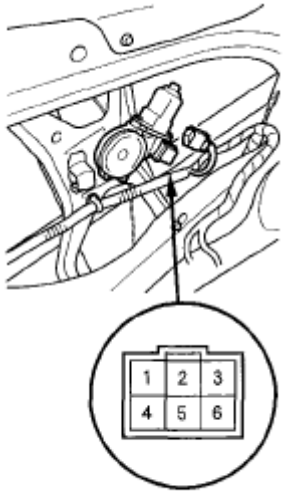
Cavity	Wire	Test condition	Test: Desired result	Possible cause H result is not obtained
10	BRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
11	GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 30 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
12	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 26 (20 A) fuse in the under-hood fuse/relay box • An open in the wire
1	BLK	Ignition switch ON (II), main switch ON, and passenger's	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503)

		window moving, up and down		• An open in the wire
7	BLK	Ignition switch ON (II), and driver's window moving up and down	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
16	BRN	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
13	PUR	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Faulty power window master switch • Short to ground in the wire
14	ORN	Ignition switch ON (II), and driver's power window switch moving up or down	Check for voltage between the No. 14 and No. 16 terminals: There should be 0 V-about 5 V -0 V-about 5 V repeatedly (a digital voltmeter should reads about 2.5 V while the window moves).	• Faulty power window master switch • Faulty driver's power window motor • An open in the wire • Short to ground in the wire
15	PNK	Ignition switch ON (II), and driver's power window switch moving up or down	Check for voltage between the No. 15 and No. 16 terminals: There should be 0 V-about 5 V -0 V-about 5 V repeatedly (a digital voltmeter should reads about 2.5 V while the window moves).	

6. Reset the power window control unit (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

DRIVER'S POWER WINDOW MOTOR TEST

1. Remove the door panel.
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 6P connector from the driver's power window motor.



Terminal side of male terminals

Fig. 12: Disconnecting 6P Connector
Courtesy of HONDA

Motor Test

3. Test the motor in each direction by connecting battery power and ground according to **Fig. 13** . When the motor stops running, disconnect one lead immediately.

Direction \ Terminal	1 [6]	4 [3]
UP	⊕	⊖
DOWN	⊖	⊕

[ ] : 2-door

Fig. 13: Testing Motor In Each Direction Table
Courtesy of HONDA

4. If the motor does not run or fails to run smoothly, replace it.

Pulser Test (With AUTO UP/AUTO DOWN)

5. Reconnect the 6P connector to the driver's power window motor.
6. Turn the ignition switch ON (II).
7. Check for voltage between the terminals.
   - There should be battery voltage between the No. 6 [No. 1] (+) and No. 5 [No. 2] (-) terminals.

     [ ] : 2-door

   - Connect an analog voltmeter between the No. 3 [No. 4] (+) and No. 5 [No. 2] (-) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter reads about 2.5 V).

     [ ] : 2-door

- Connect an analog voltmeter between the No. 2 [No. 5] (+) and No. 5 [No. 2] (-) terminals, and run the power window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter reads about 2.5 V).

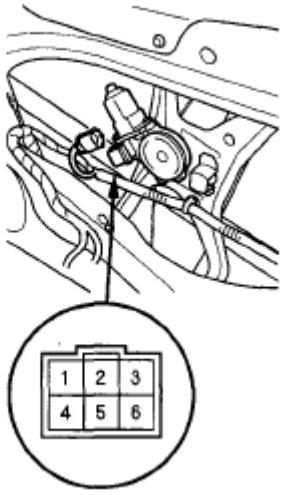
  [ ] : 2-door

8. If the voltage is not as specified, do the power window switch input test:
   - 4-door: terminals No. 5, 6,7, and 16 (see **4-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**).
   - 2-door: terminals No. 13,14,15, and 16 (see **2-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**).
9. If the switch is OK, replace the power window motor.
10. Reset the power window control unit (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

PASSENGER'S POWER WINDOW MOTOR TEST

1. Remove the door panel.
   - 4-door (see **FRONT DOOR PANEL REMOVAL/INSTALLATION**).
   - 2-door (see **DOOR PANEL REMOVAL/INSTALLATION**).
2. Disconnect the 6P connector from the power window motor.

Front passenger's



Rear (4-door)

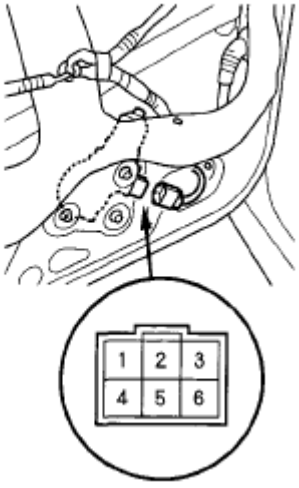


Fig. 14: Disconnecting 6P Connector
Courtesy of HONDA

3. Test the motor by connecting battery power and ground according to **Fig. 15** . When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1 [6]	4 [3]
UP	⊕	⊖
DOWN	⊖	⊕

[ ] : Left rear power window motor

Fig. 15: Testing Motor Connecting Battery Power And Ground Table
Courtesy of HONDA

4. If the motor does not run or fails to run smoothly, replace it.

MASTER SWITCH TEST/REPLACEMENT

4-DOOR

1. Carefully pry out the master switch (A).

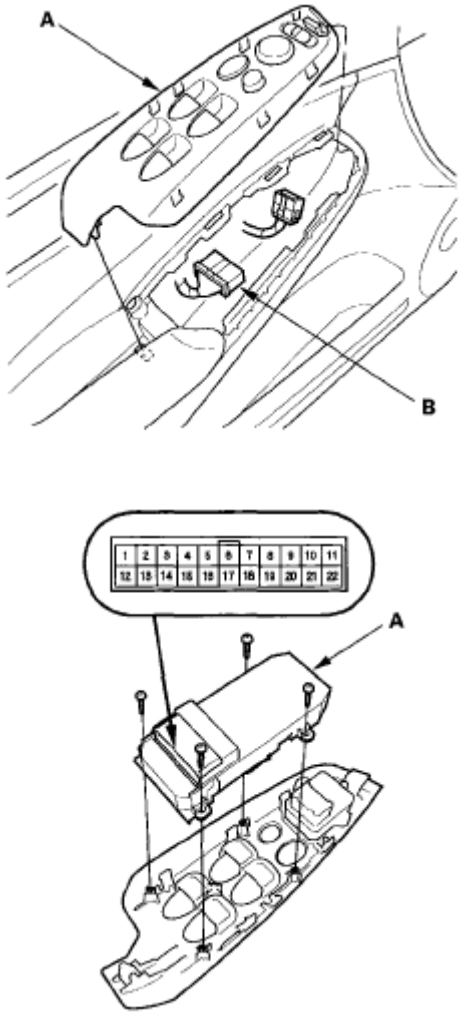


Fig. 16: Prying Master Switch
Courtesy of HONDA

2. Disconnect the 22P connector (B) from the power window master switch.
3. Check for continuity between the terminals in each switch position according to **Fig. 17**, **Fig. 18**, **Fig. 19** and **Fig. 20** .

Driver's Switch (With AUTO UP/AUTO DOWN)

The driver's switch is combined with the control unit, so you cannot isolate the switch to test it. Instead, run the master switch input test procedures (see **4-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**). If the tests are normal, the driver's switch must be faulty. Replace the switch.

Driver's Switch (Without AUTO UP/AUTO DOWN)

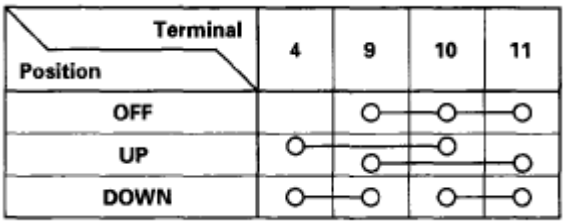


Fig. 17: Drives's Switch (Without AUTO UP/AUTO DOWN) Continuity Table
Courtesy of HONDA

Front Passenger's Switch

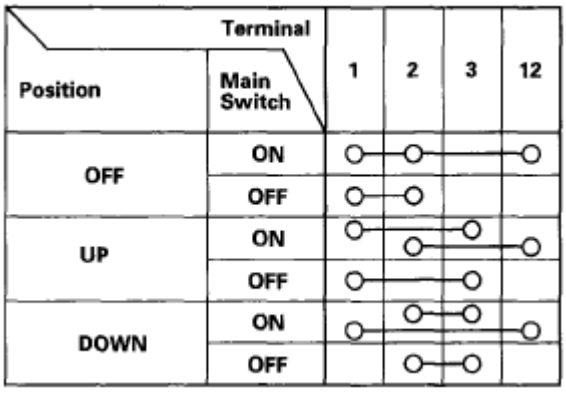
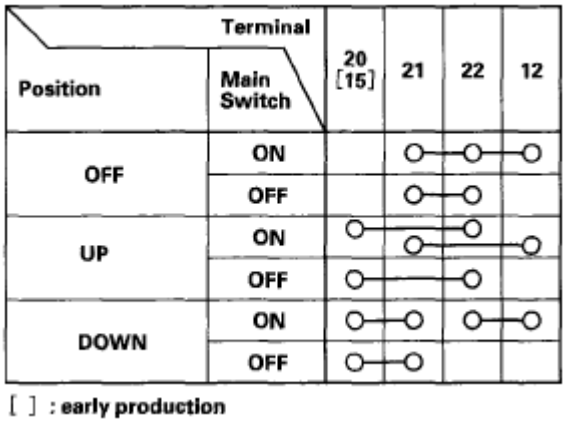


Fig. 18: Front Passenger's Switch Terminals Continuity Table
Courtesy of HONDA

Left Rear Switch



[ ] : early production

Fig. 19: Left Rear Switch Continuity Table
Courtesy of HONDA

Right Rear Switch

Position	Terminal / Main Switch	13	14	15 [20]	12
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○		○	
			○		○
	OFF	○		○	
DOWN	ON	○		○	○
	OFF		○	○	

[ ] : early production

Fig. 20: Right Rear Switch Continuity Table
Courtesy of HONDA

4. If the continuity is not as specified, remove the screws and replace the switch.
5. Install the switch in the reverse order of removal.

2-DOOR

1. Remove the power window master switch, and disconnect the 16P connector from the switch (see **DOOR PANEL REMOVAL/INSTALLATION**).

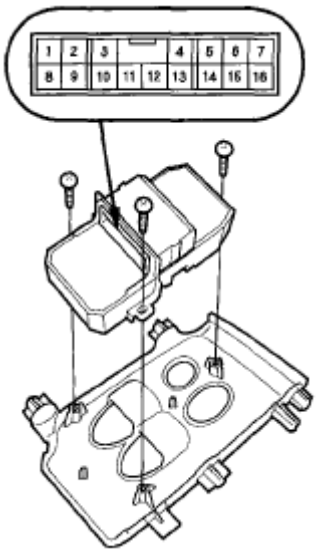


Fig. 21: Disconnecting 16P Connector
Courtesy of HONDA

2. Check for continuity between the terminals in each switch position according to **Fig. 22** and **Fig. 23** .

Driver's Switch (With AUTO UP/AUTO DOWN)

The driver's switch is combined with the control unit, so you cannot isolate the switch to test it. Instead, run the master switch input test procedures (see **2-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**). If the tests are normal, the driver's switch must be faulty.

Driver's Switch (Without AUTO UP/AUTO DOWN)

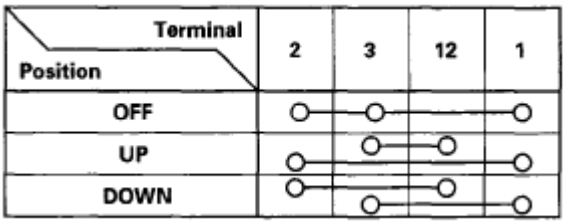


Fig. 22: Driver's Switch (Without AUTO UP/AUTO DOWN) Continuity Table
Courtesy of HONDA

Passenger's Switch

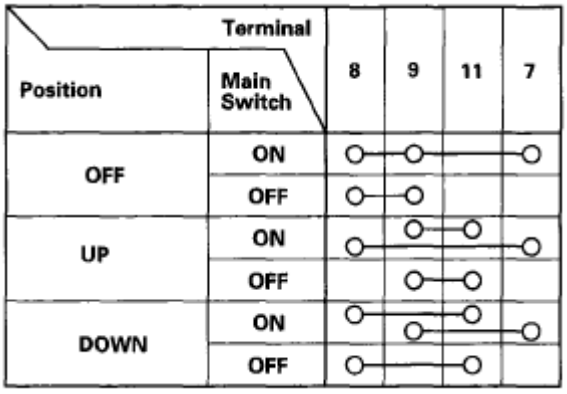


Fig. 23: Passenger Switch Continuity Table
Courtesy of HONDA

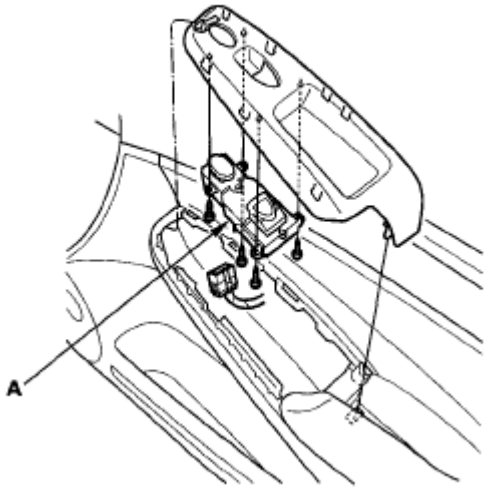
3. If the continuity is not as specified, remove the screws and replace the switch.
4. Install the switch in the reverse order of removal.

PASSENGER'S POWER WINDOW SWITCH TEST/REPLACEMENT

1. 4-door: Remove the passenger's switch (A).

   2-door: Remove the passenger's switch (see **DOOR PANEL REMOVAL/INSTALLATION**).

Front passenger's



Rear

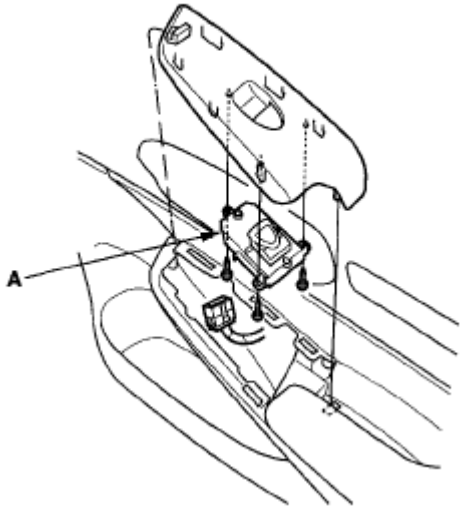


Fig. 24: Removing Passenger's Switch
Courtesy of HONDA

NOTE: 4-door front passenger's door shown.

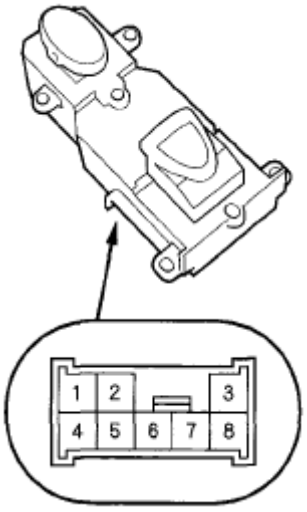


Fig. 25: Identifying 4-Door Front Passenger Door Connector
Courtesy of HONDA

2. Check for continuity between the terminals in each switch position according to **Fig. 26** .

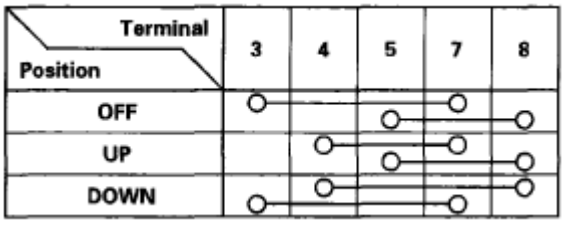


Fig. 26: Checking Continuity Between Passenger's Power Window Switch Table
Courtesy of HONDA

3. Connect battery power to the No. 4 terminal and ground the No. 7 (or No. 8) terminal. The switch light should come on.
4. If the continuity or switch light tests is not as specified, remove the screws and replace the switch.
5. Install the switch in the reverse order of removal.

RESETTING THE POWER WINDOW CONTROL UNIT

WITH AUTO UP/AUTO DOWN FUNCTION

Resetting the driver's power window is required when any of the following have occurred:

- Power window regulator replacement or repair
- Power window motor replacement or repair
- Driver's door glass replacement or repair
- Window run channel replacement or repair
- Power is removed from the power window control unit while the power window timer is ON.

1. Turn the ignition switch ON (II).

2. Move the driver's window all the way down by using the driver's window DOWN switch.
3. Open the driver's door.

NOTE: Steps 4 - 7 must be done within 5 seconds of each other.

4. Turn the ignition switch OFF.
5. Push and hold the driver's window DOWN switch.
6. Turn the ignition switch ON (II).
7. Release the driver's window DOWN switch.
8. Repeat step 4 - 7 three more times.
9. Wait 1 second.
10. Check if the AUTO UP and AUTO DOWN functions still work. If they do, the auto function has not been cleared; go back to step 1. If they do not, go to step 11.
11. Move the driver's window all the way down by using the driver's window DOWN switch.
12. Pull up and hold the driver's window UP switch until the window reaches the fully closed position, then continue to hold the switch for 1 second.
13. Confirm that the power window control unit is reset by using the driver's window AUTO UP and AUTO DOWN functions.

    If the window still does not work in AUTO, repeat the procedure several times, paying close attention to the 5 second time limit between steps. If it still does not work, refer to **MASTER SWITCH INPUT TEST** :

    - 4-door (see **4-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**)
    - 2-door (see **2-DOOR WITH AUTO UP/AUTO DOWN FUNCTION**)

2006-08 ACCESSORIES & EQUIPMENT

Wipers/Washers - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

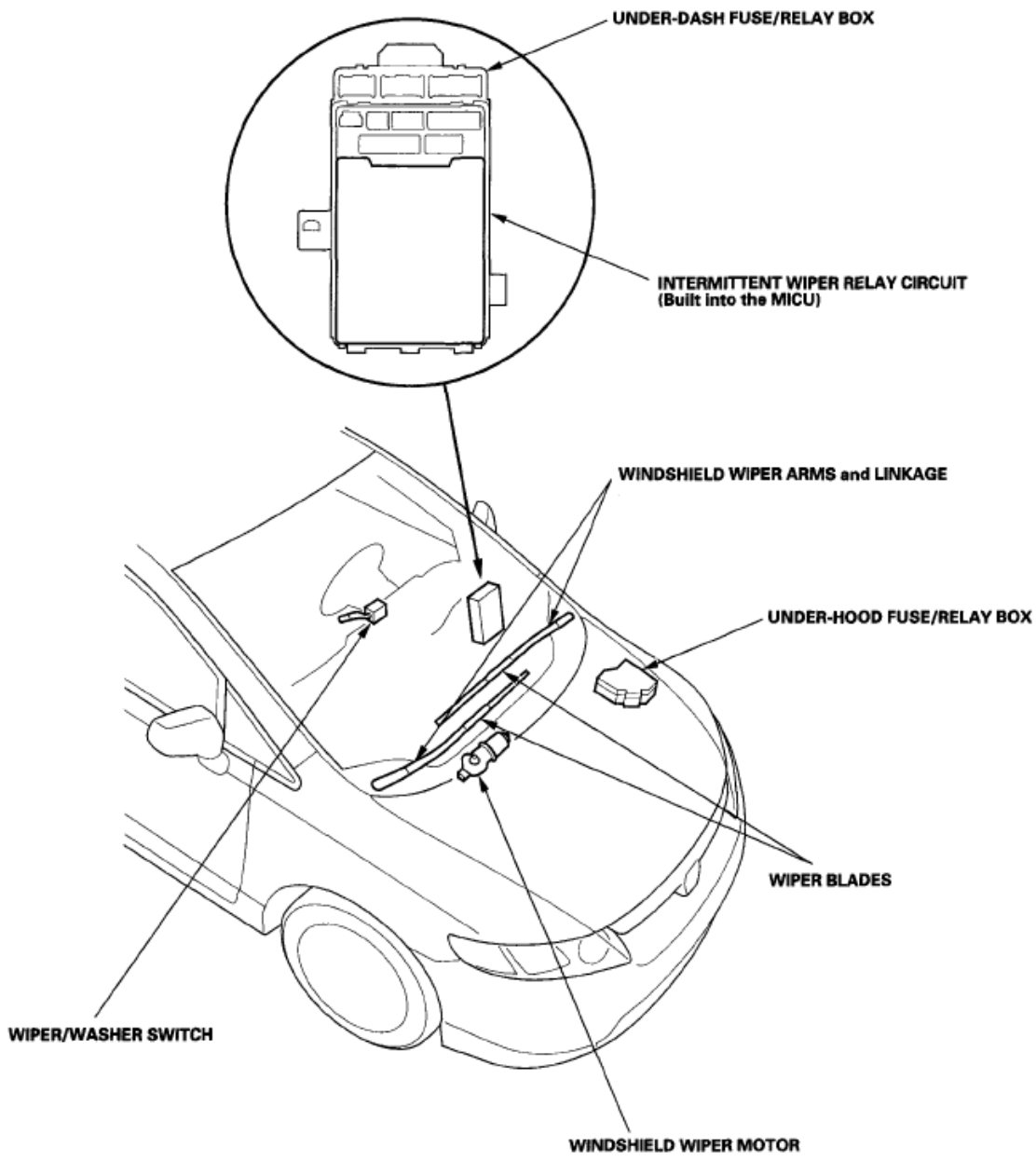


Fig. 1: Locating Wipers/Washers Components (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

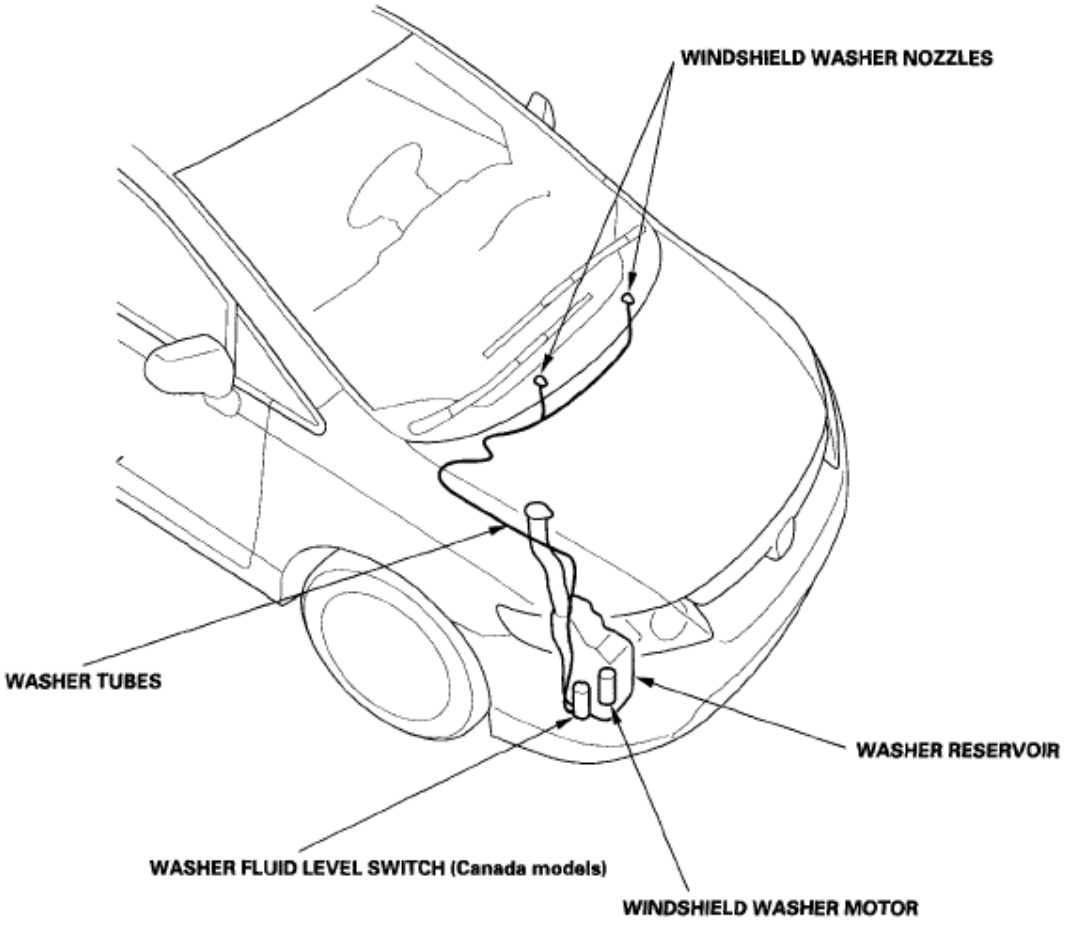


Fig. 2: Locating Wipers/Washer Components (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

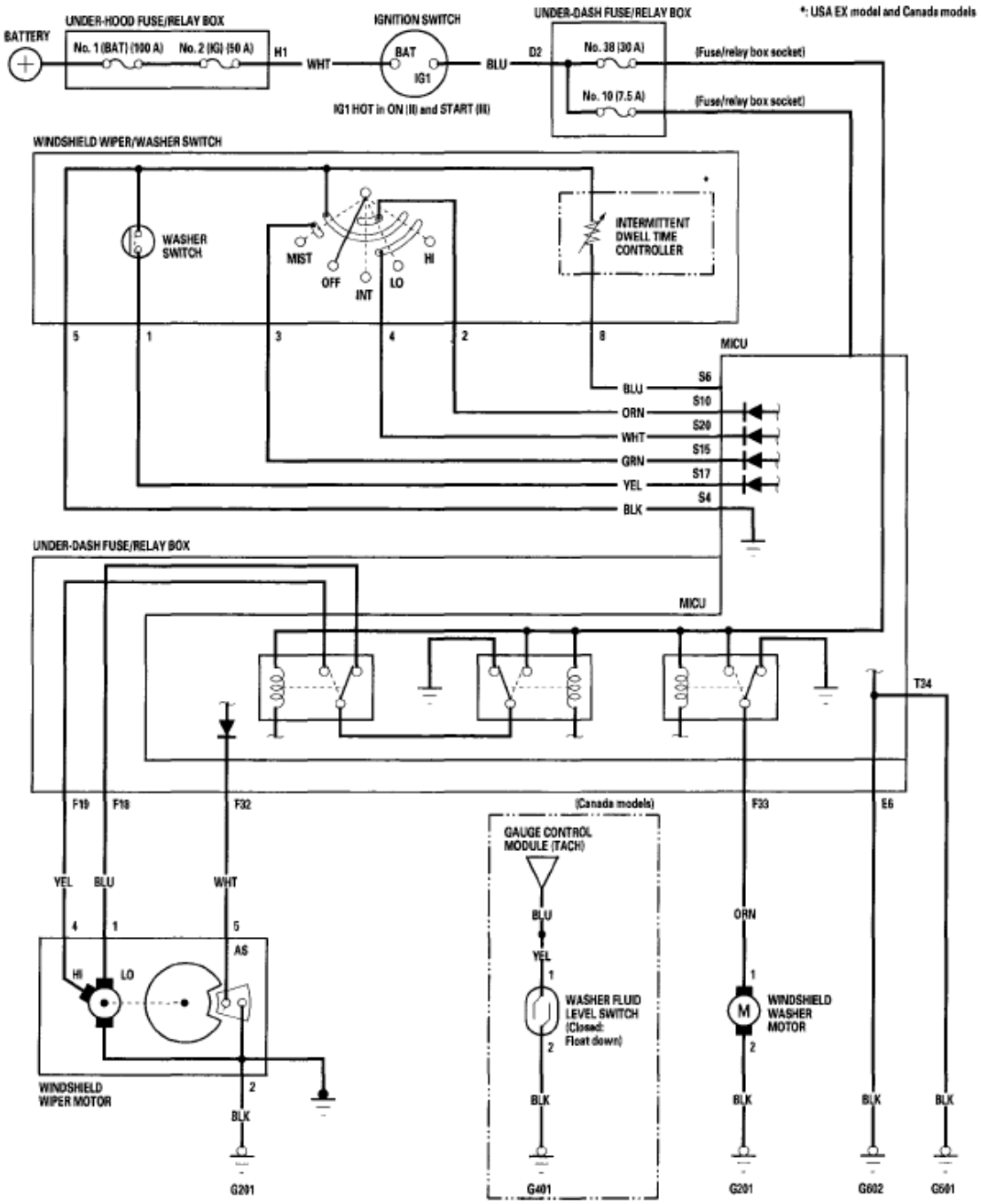


Fig. 3: Wipers/Washers Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC B1077: WINDSHIELD WIPER (AS) SIGNAL ERROR

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A).

1. Clear the DTCs with the HDS.

2. Turn the ignition switch OFF, and then back ON (II).
3. Turn the wiper switch to LOW or HIGH for at least 15 seconds, then turn the switch OFF.

   Does the windshield wiper motor run normally?

   YES - Go to step 4.

   NO - Go to step 12.

4. Check for DTCs with the HDS.

   Is DTC B1077 indicated?

   YES - Go to step 5.

   NO - Intermittent failure. The windshield wiper system is OK at this time. Check for loose or poor connections.

5. Turn the ignition switch OFF.
6. Do the wiper motor test (see **WIPER/WASHER SWITCH TEST**).

   Does the wiper motor run normally?

   YES - Go to step 7.

   NO - Replace the windshield wiper motor and recheck.

7. Disconnect the under-dash fuse/relay box connector F (34P) and windshield wiper motor 5P connector.
8. Check for continuity between the No. 5 terminal of the windshield wiper motor 5P connector and No. 32 terminal of the under-dash fuse/relay box connector F (34P).

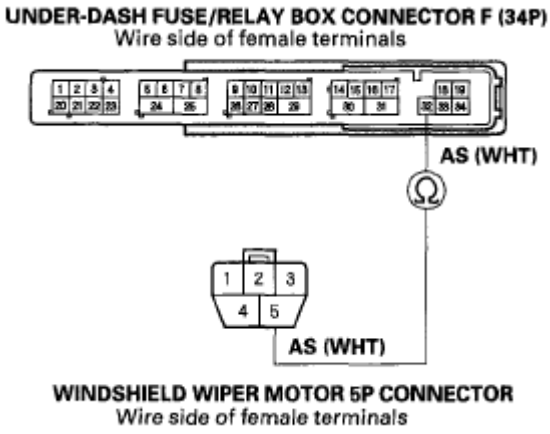


Fig. 4: Checking Continuity Between No. 5 Terminal Of Windshield Wiper Motor 5P Connector And No. 32 Terminal Of Under-Dash Fuse/Relay Box Connector F (34P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 9.

NO - Repair an open in the WHT wire.

9. Check for continuity between the No. 5 terminal of the windshield wiper motor 5P connector and body ground.

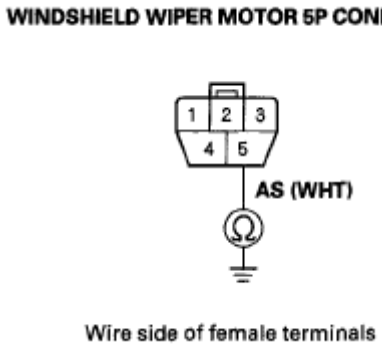


Fig. 5: Checking Continuity Between No. 5 Terminal Of Windshield Wiper Motor 5P Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair a short in the WHT wire.

NO - Go to step 10.

10. Turn the ignition switch ON (II).
11. Check for voltage between the No. 5 terminal of the windshield wiper motor 5P connector and body ground.

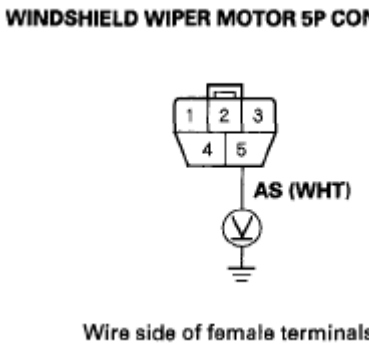


Fig. 6: Checking Voltage Between No. 5 Terminal Of Windshield Wiper Motor 5P Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there voltage?

YES - Repair a short to power in the WHT wire.

NO - Faulty MICU; replace the under-dash fuse/relay box.

12. Turn the ignition switch OFF.
13. Check the No. 38 (30 A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES - Go to step 14.

    NO - Replace the fuse and recheck the system.

14. Do the wiper motor test (see **WIPER/WASHER SWITCH TEST**).

    Does the wiper motor run normally?

    YES - Go to step 15.

    NO - Replace the windshield wiper motor and recheck.

15. Reconnect the windshield wiper motor 5P connector.
16. Check the voltage between the No. 18 (LO) and No. 19 (HI) terminals of the under-dash fuse/relay box connector F (34P) and body ground with the wiper switch in the corresponding position individually.

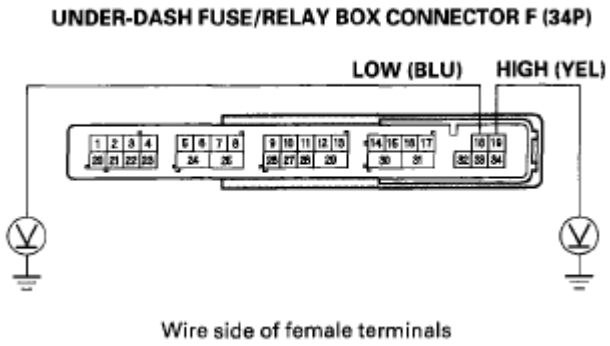


Fig. 7: Checking Voltage Between No. 18 (LO) And No. 19 (HI) Terminals Of Under-Dash Fuse/Relay Box Connector F (34P) And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 17.

NO - Faulty MICU; replace the under-dash fuse/relay box.

17. Check the voltage between the No. 2 terminal of the windshield wiper motor 5P connector and body ground.

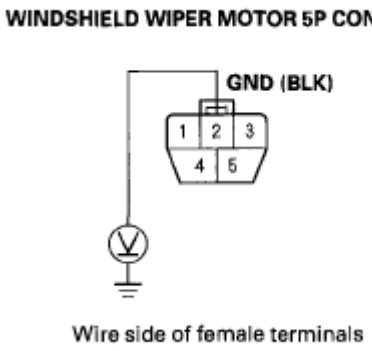


Fig. 8: Checking Voltage Between No. 2 Terminal Of Windshield Wiper Motor 5P Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 1 V?

YES - Repair an open in the BLU (LO) or YEL (HI) wire.

NO - Repair an open in the BLK wire or poor ground (G201).

MICU INPUT TEST

1. Before troubleshooting the wiper/washer system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**), and check the No. 10 (7.5 A) and No. 38 (30 A) fuses in the under-dash fuse/relay box.
2. Disconnect the under-dash fuse/relay box connectors E, F, S, and T.

NOTE: All connector views are shown from wire side of female terminals.

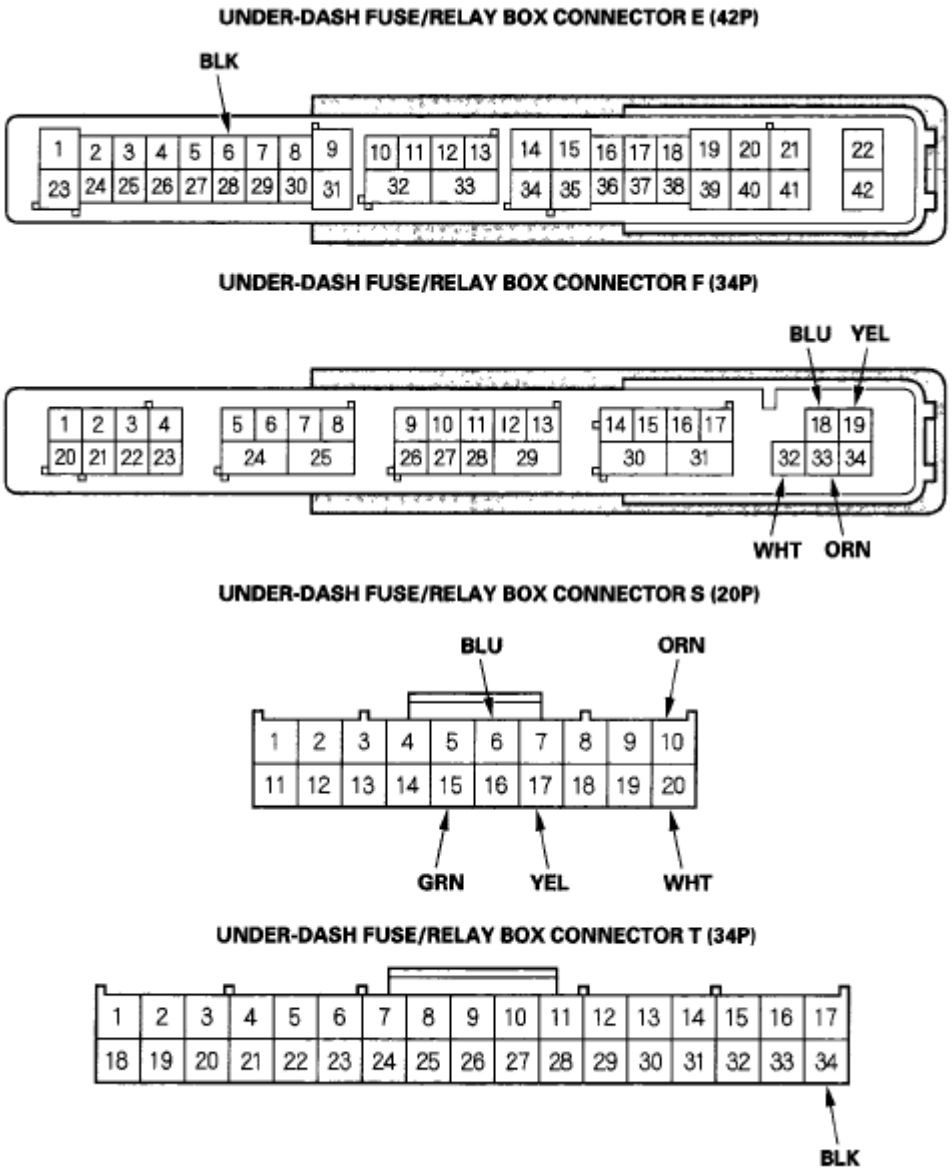


Fig. 9: Identifying Under-Dash Fuse/Relay Box Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.
4. With the connectors still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

MICU INPUT TEST (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
			Connect battery power to the F18	• Poor ground (G201)

F18	BLU	Under all conditions	terminal: The wiper motor should run at low speed.	• Faulty windshield wiper motor • An open in the wire
F19	YEL	Under all conditions	Connect battery power to the F19 terminal: The wiper motor should run at high speed.	• Poor ground (G201) • Faulty windshield wiper motor • An open in the wire
F32	WHT	Under all conditions (disconnect the wiper motor 5P connector)	Check for continuity between the F32 terminal and wiper motor 5P connector No. 5 terminal: There should be continuity.	An open in the wire
F33	ORN	Under all conditions	Connect battery power to the F33 terminal: The windshield washer motor should run.	• Poor ground (G201) • Faulty windshield washer motor • An open in the wire
S6(1)	BLU	Wiper/washer switch (intermittent dwell timer) turned	Check resistance between S6 and S4 terminals: There resistance should vary from about 0 to 1 kohms.	• Faulty wiper/washer switch • An open in the wire • Short to ground in the wire
(1) USA EX model and Canada models				

5. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

MICU INPUT TEST (CONNECTORS RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the

				wire
S10	ORN	Ignition switch ON (II), wiper/washer switch (INT) ON	Check for voltage between S10 and S4 terminals, and S20 and S4 terminals: There should be less than 1 V.	• Faulty wiper/washer switch • An open in the wire
		Ignition switch ON (II), wiper/washer switch OFF	Check for voltage between S10 and S4 terminals, and S20 and S4 terminals: There should be 5 V or more.	• Faulty wiper/washer switch • Short to ground in the wire
S15	GRN	Ignition switch ON (II), wiper/washer switch (MIST) ON	Check for voltage between S15 and S4 terminals: There should be less than 1 V.	• Faulty wiper/washer switch • An open in the wire in the wire
		Ignition switch ON (II), wiper/washer switch (MIST) OFF	Check for voltage between S15 and S4 terminals: There should be 5 V or more.	• Faulty wiper/washer switch • Short to ground in the wire
S17	YEL	Ignition switch ON (II), washer switch ON	Check for voltage between S17 and S4 terminals: There should be less than 1 V.	• Faulty wiper/washer switch • An open in the wire
		Ignition switch ON (II), washer switch OFF	Check for voltage between S17 and S4 terminals: There should be 5 V or more.	• Faulty wiper/washer switch • Short to ground in the wire
S20	WHT	Ignition switch ON (II), wiper/washer switch (LOW) ON	Check for voltage between S20 and S4 terminals: There should be less than 1 V.	• Faulty wiper/washer switch • An open in the wire
		Ignition switch ON (II), wiper/washer switch OFF	Check for voltage between S20 and S4 terminals: There should be 5 V or more.	• Faulty wiper/washer switch • Short to ground in the wire
		Ignition switch ON (II), wiper/washer switch (HIGH) ON	Check for voltage between S20 and S4 terminals: There should be less than 1 V.	• Faulty wiper/washer switch • An open in the

				wire
	WHT	Ignition switch ON (II), wiper/washer switch OFF	Check for voltage between S20 and S4 terminals: There should be 5 V or more.	• Faulty wiper/washer switch • Short to ground in the wire

WIPER/WASHER SWITCH TEST

1. Remove the wiper/washer switch (see **WIPER/WASHER SWITCH REPLACEMENT**).
2. Disconnect the dashboard wire harness 8P connector (A) from the wiper/washer switch (B).

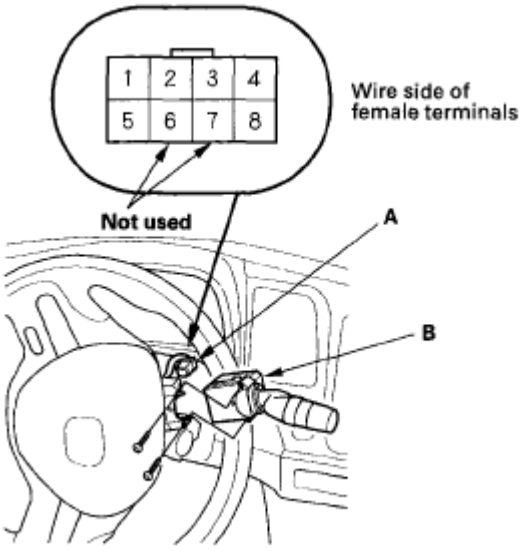


Fig. 10: Disconnecting Dashboard Wire Harness 8P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the terminals in each switch position according to **Fig. 11** .

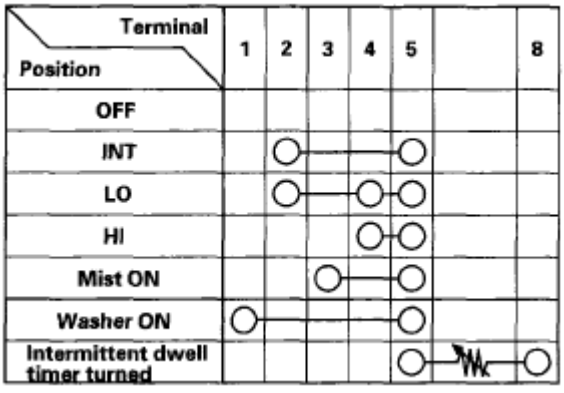


Fig. 11: Checking Continuity Between Wiper/Washer Switch Terminals Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the continuity is not as specified, replace the switch.

WIPER MOTOR TEST

1. Remove the wiper arms.
   - 4-door (see **4-DOOR**)
   - 2-door (see **2-DOOR**)

   NOTE: Carefully remove the wiper arms so that they do not touch the hood.

2. Remove the hood seal and cowl cover.
3. Disconnect the 5P connector (A) from the wiper motor (B).

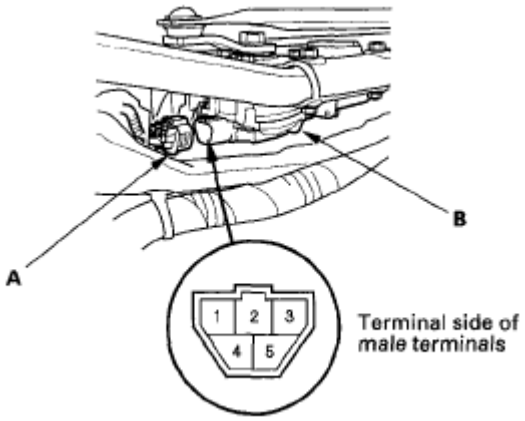


Fig. 12: Disconnecting 5P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Test the motor by connecting battery power to the No. 1 terminal and ground to the No. 2 terminal of the wiper motor 5P connector.

   The motor should run at low speed. If the motor does not run or fails to run smoothly, replace the motor.

5. Test the motor by connecting battery power to the No. 4 terminal and ground to the No. 2 terminal of the wiper motor 5P connector.

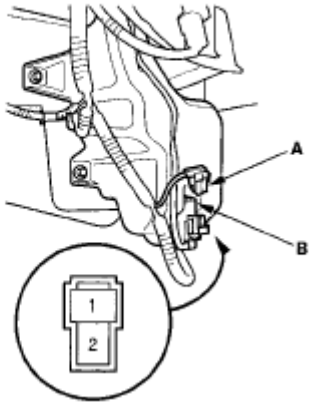
   The motor should run at high speed. If the motor does not run, or fails to run smoothly, replace the motor.

6. Connect an analog ohmmeter to the No. 5 and No. 2 terminals, and run the motor at low or high speed. The needle of the ohmmeter should pulse. If it dose not, replace the motor.

WASHER MOTOR TEST

1. Remove the right inner fender.
   - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
   - 4-door (see **4-DOOR**)
2. Disconnect the 2P connector (A) from the washer motor (B).

4-door



2-door

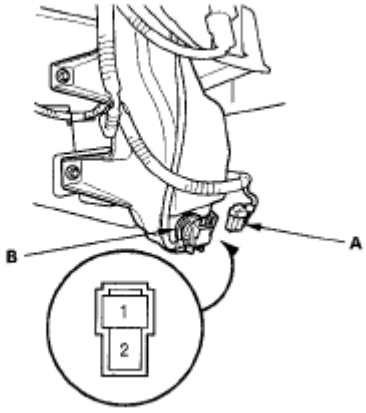


Fig. 13: Disconnecting 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 2 terminal of the washer motor. The motor should run.
    - If the motor does not run, or fails to run smoothly, replace it.
    - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

WASHER FLUID LEVEL SWITCH TEST

CANADA MODELS

1. Remove the right inner fender.
    - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
    - 4-door (see **4-DOOR**)
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).

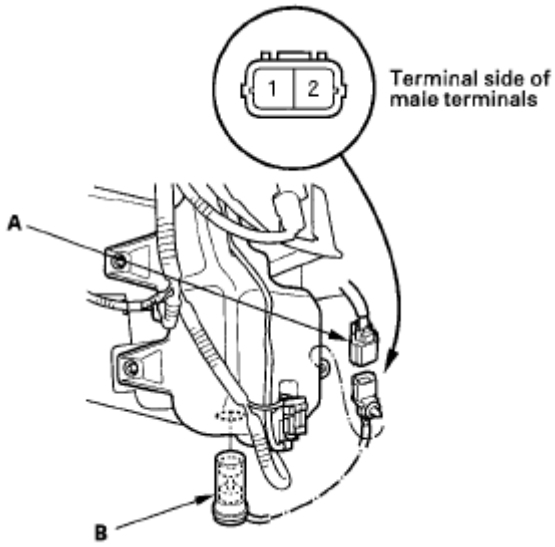


Fig. 14: Disconnecting 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the washer fluid level switch from the washer reservoir.

NOTE: Fluid may flow out of the opening.

4. Check for continuity between the No. 1 and No. 2 terminals in each float position.
   - There should be continuity when the float is down.
   - There should be no continuity when the float is up.
5. If the continuity is not as specified, replace the switch.

WIPER MOTOR REPLACEMENT

4-DOOR

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).

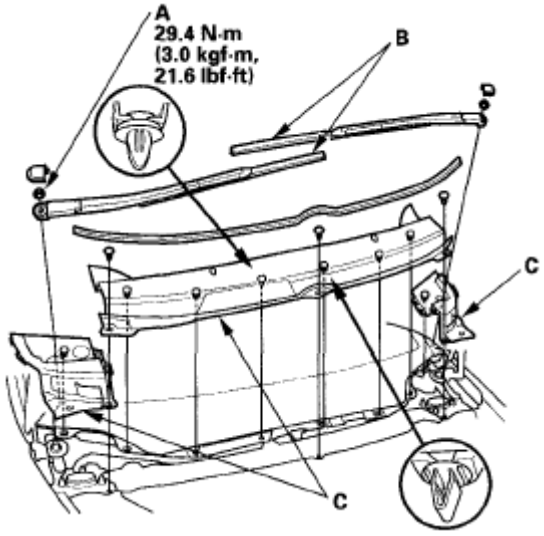


Fig. 15: Removing Windshield Wiper Arms (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the cowl covers (C).
3. Remove the bolts and the under-cowl panel (A).

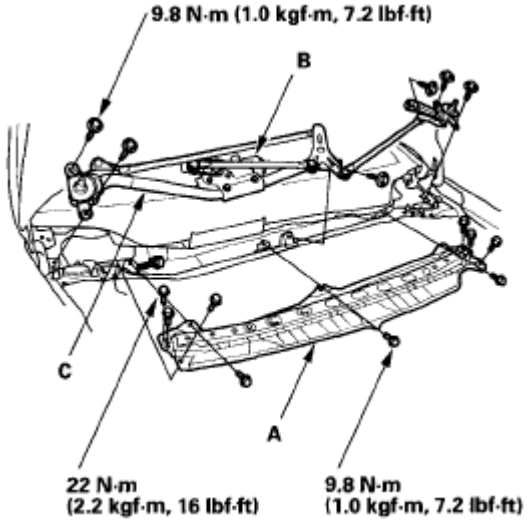


Fig. 16: Removing Under-Cowl Panel (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the 5P connector from the wiper motor (B), then remove the six bolts and wiper linkage assembly (C).
5. Make sure the mark (A) on the link (B) is aligned with the mark (C) on the windshield wiper linkage (D).

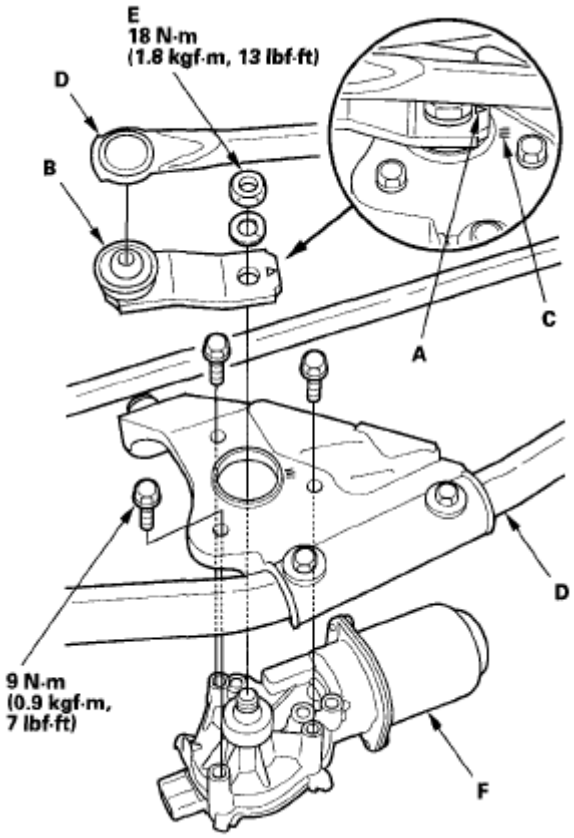


Fig. 17: Aligning Mark On Windshield Wiper Linkage (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the nut (E), and separate the link and windshield wiper linkage.
7. Remove the three bolts, and separate the windshield wiper linkage from the wiper motor (F).
8. Install in the reverse order of removal, and note these items:
   - Align the marks of the link and the linkage to install the linkage with the original adjustment.
   - Apply multipurpose grease to the moving parts.
   - Before installing the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
9. After installation, adjust the wiper arms (see **WIPER ARM/NOZZLE ADJUSTMENT**).

2-DOOR

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).

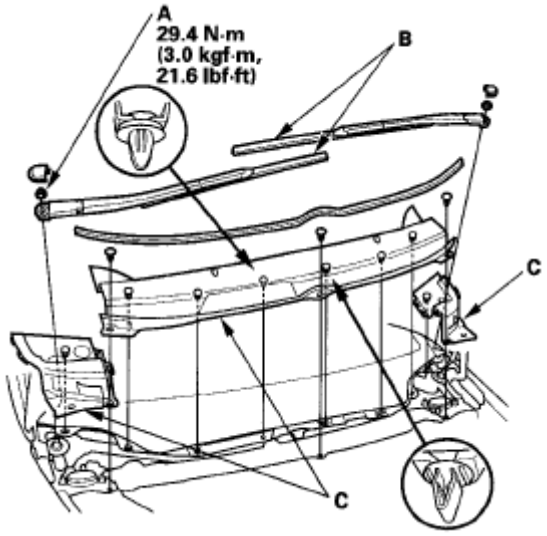


Fig. 18: Removing Windshield Arms (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the cowl covers (C).
3. Remove the bolts and the under-cowl panel (A).

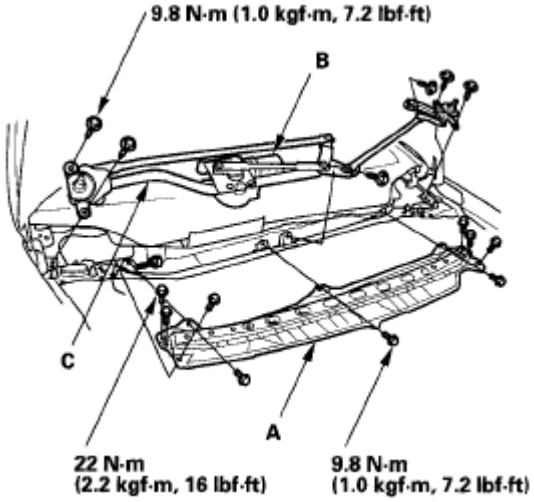


Fig. 19: Removing Under-Cowl Panel (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the 5P connector from the wiper motor (B), then remove the six bolts and wiper linkage assembly (C).
5. Make sure the mark (A) on the link (B) is aligned with the mark (C) on the windshield wiper linkage (D).

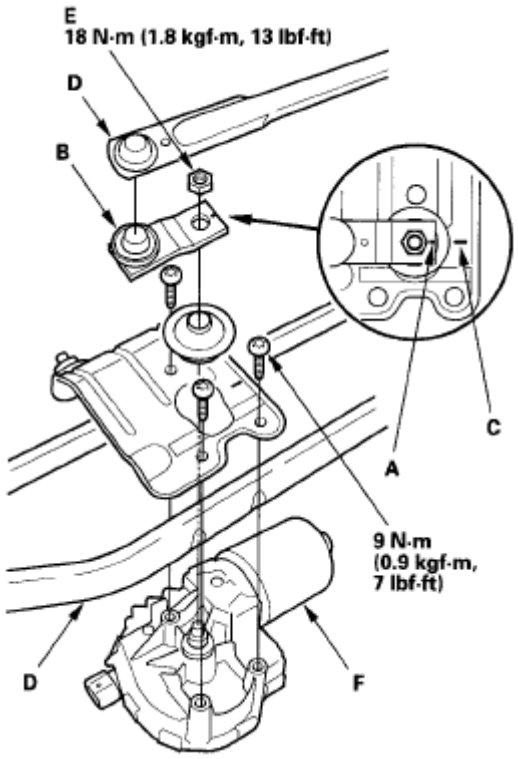


Fig. 20: Aligning Mark On Windshield Wiper Linkage (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the nut (E), and separate the link and windshield wiper linkage.
7. Remove the three bolts, and separate the windshield wiper linkage from the wiper motor (F).
8. Install in the reverse order of removal, and note these items:
   - Align the marks of the link and the linkage to install the linkage with the original adjustment.
   - Apply multipurpose grease to the moving parts.
   - Before installing the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
9. After installation, adjust the wiper arms (see **WIPER ARM/NOZZLE ADJUSTMENT**).

WIPER/WASHER SWITCH REPLACEMENT

1. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the dashboard wire harness 8P connector (A) from the wiper/washer switch (B).

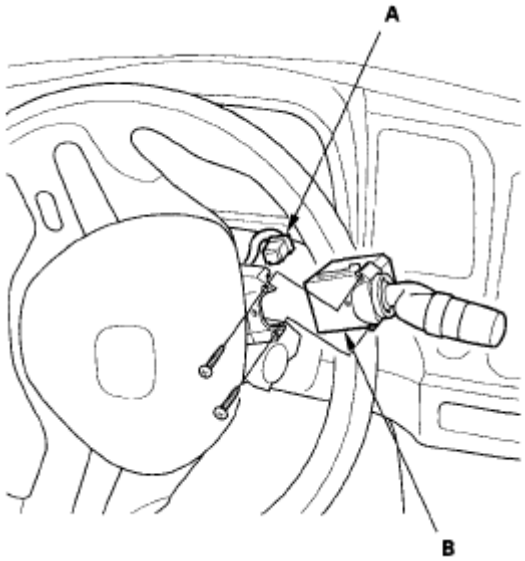


Fig. 21: Disconnecting Dashboard Wire Harness 8P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

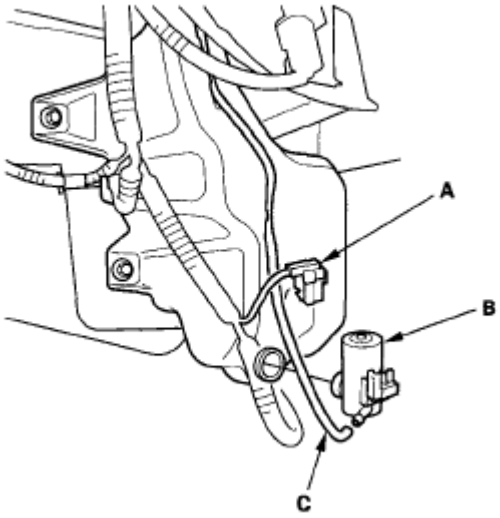
4. Remove the two screws, then slide out the wiper/washer switch.
5. Install the switch in the reverse order of removal.

WASHER RESERVOIR REPLACEMENT

1. Remove the right inner fender.
   - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
   - 4-door (see **4-DOOR**)
2. Disconnect the 2P connector(s) (A) from the windshield washer motor (B) and the washer fluid level switch*.

   *: Canada models

4-door



2-door

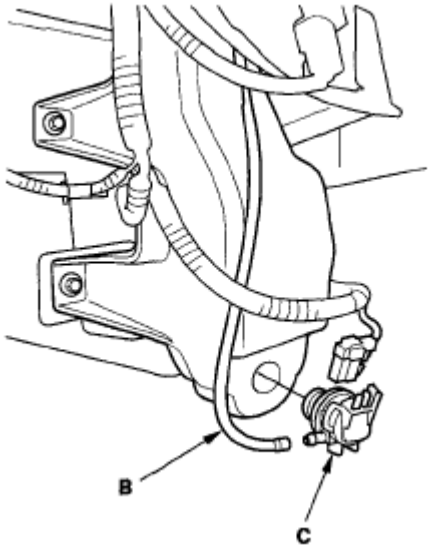


Fig. 22: Disconnecting 2P Connector(s)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the windshield washer tube (C).
4. Remove the bolts (A) and the clip (B), then remove the washer reservoir.

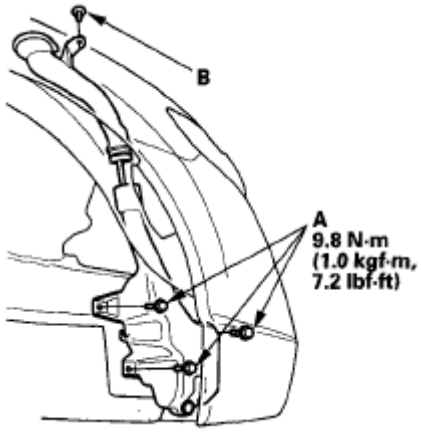


Fig. 23: Removing Washer Reservoir (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install in the reverse order of removal.

WIPER BLADE REPLACEMENT

4-DOOR

1. Lift the wiper arm off the windshield, raising the driver's side first, then the passenger's side.
2. Remove the cover (A), by squeezing the two tabs and pulling it straight out.

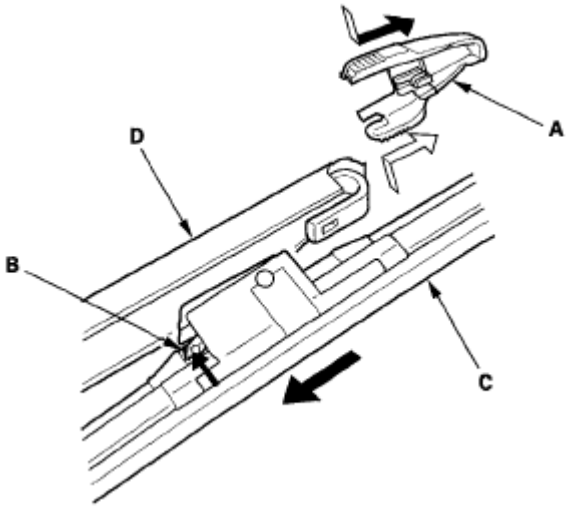


Fig. 24: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Press and hold the tab (B) and slide the wiper blade (C) toward the tabs until it releases from the wiper arm (D).
4. Find the side of the blade labeled "LOCK" (A), then pull back the end of the blade and slide out the old rubber (B).

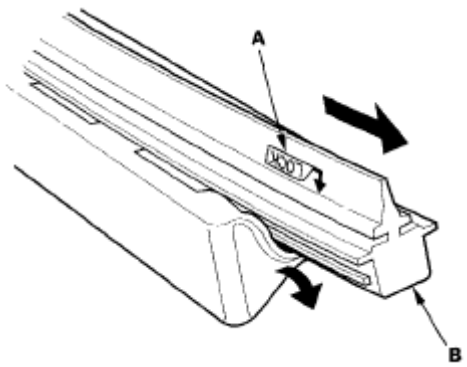


Fig. 25: Identifying "LOCK" Blade Label
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install a new rubber in the reverse order of removal.
6. Install the wiper blades onto the windshield wiper arms in the reverse order of removal.
7. Test by turning on the wipers. If the blades slip, turn off the wipers and seat the attachments more firmly.

2-DOOR

1. Pull up the wiper arms from the windshield.
2. Push the tab (A) and remove the wiper blade (B) from the wiper arm (C).

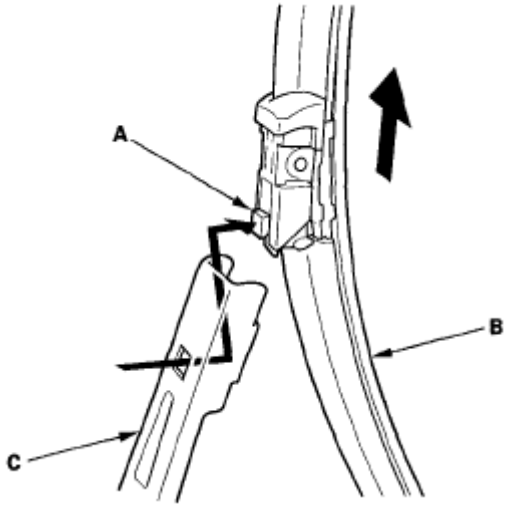


Fig. 26: Removing Wiper Blade
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the stopper (A), then pull and remove the old rubber (B).

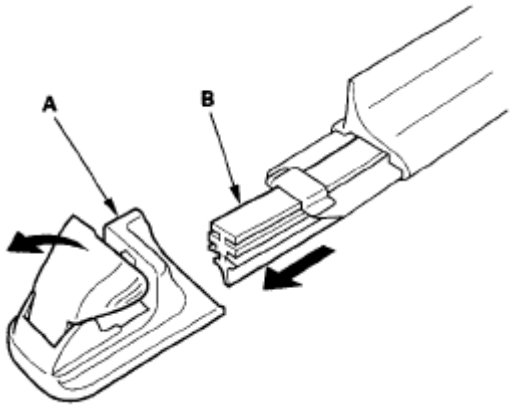


Fig. 27: Removing Stopper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install a new rubber in the reverse order of removal.
5. Install the wiper blades onto the windshield wiper arms in the reverse order of removal.
6. Test by turning on the wipers. If the blades slip, turn off the wipers and seat the attachments more firmly.

WIPER ARM/NOZZLE ADJUSTMENT

Wiper arms stop position

1. When the wiper arms stop at the automatic stop position, confirm that they are at the standard position.

2-door

a: Position at about 1.1 in. (29 mm) from the top of cowl cover (A)
b: Position at about 4.1 in. (106 mm) from the top of cowl cover (A)

4-door

a: Position at about 0.9 in. (23 mm) from the top of cowl cover (A)
b: Position at about 3.8 in. (96 mm) from the top of cowl cover (A)

Washer nozzle position

2. When you turn on the washers, confirm 50% or more of the washer fluid lands within the spray area. If the spray area is not within the standard positions, adjust the nozzles.

2-door

c: Position at about 11.8 in. (302 mm) from the top of the black ceramic area (B) at the lower windshield
d: Position at about 11.8 in. (302 mm) from the top of the black ceramic area (B) at the lower windshield

e: Position at about 9.8 in. (250 mm) from the windshield center line (C)

4-door

c: Position at about 7.6 in. (192 mm) from the top of the black ceramic area (B) at the lower windshield

d: Position at about 7.6 in. (192 mm) from the top of the black ceramic area (B) at the lower windshield

e: Position at about 9.8 in. (250 mm) from the windshield center line (C)

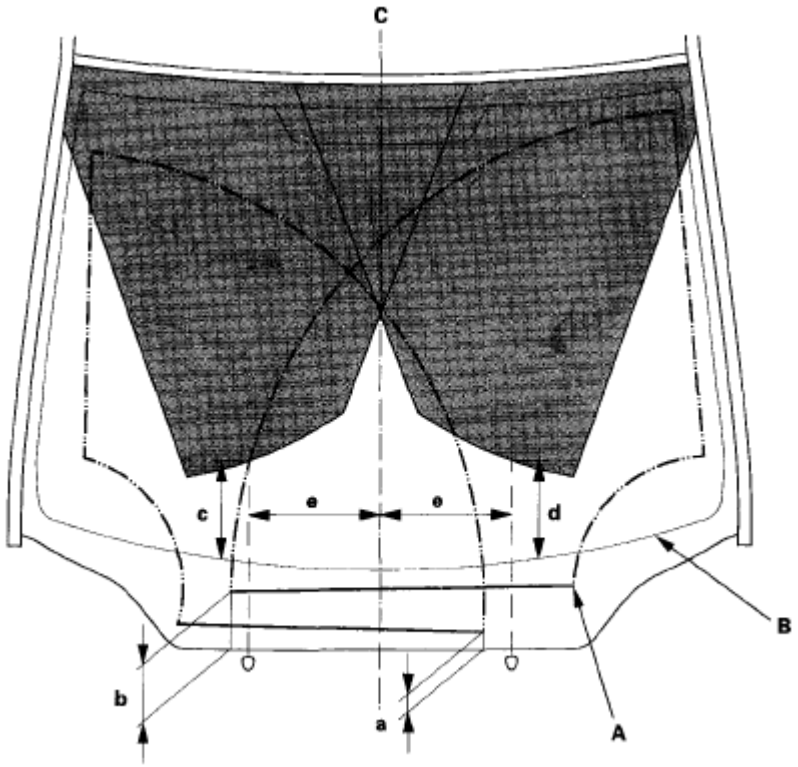


Fig. 28: Adjusting Wiper Arm/Nozzle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WASHER TUBE REPLACEMENT

1. Remove the right inner fender.
   - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
   - 4-door (see **4-DOOR**)
2. Remove the washer nozzles and clips, then remove the tubes.

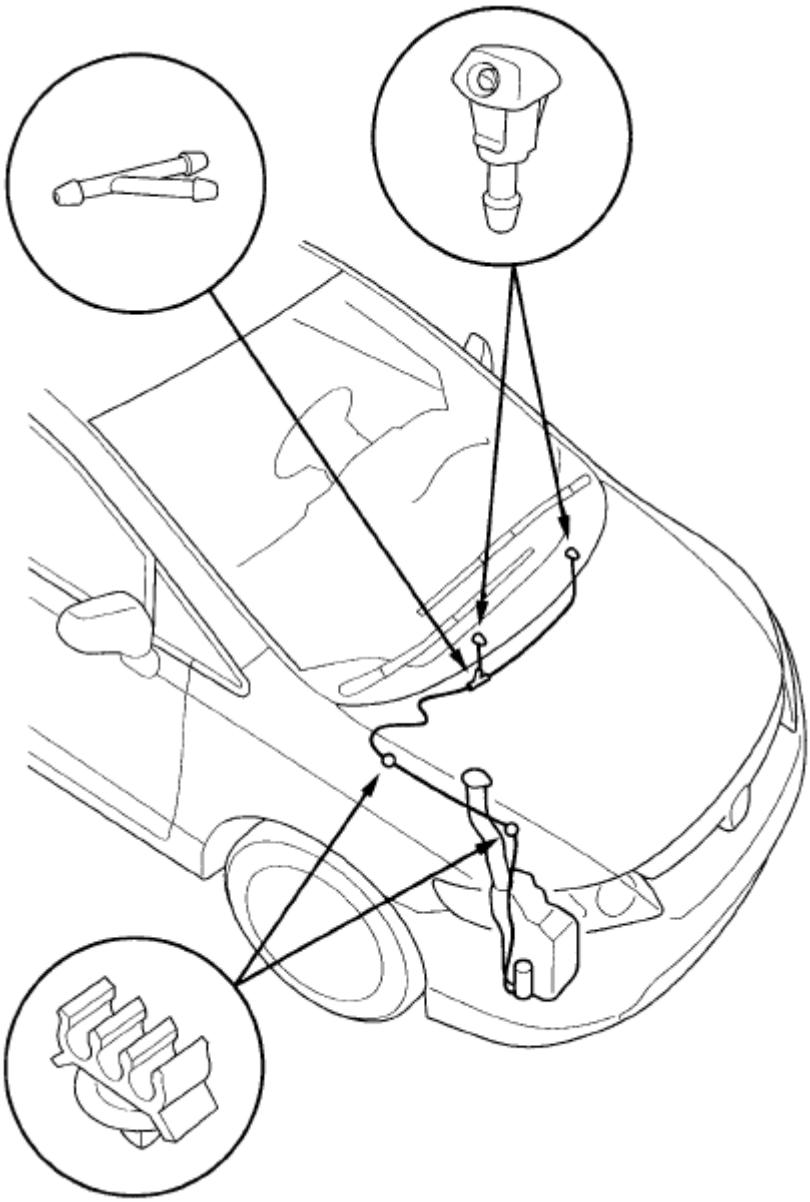


Fig. 29: Removing Washer Nozzles And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install in the reverse order of removal. Take care not to pinch the washer tube. Check the windshield washer operation.

2006-08 BRAKES

ABS System - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

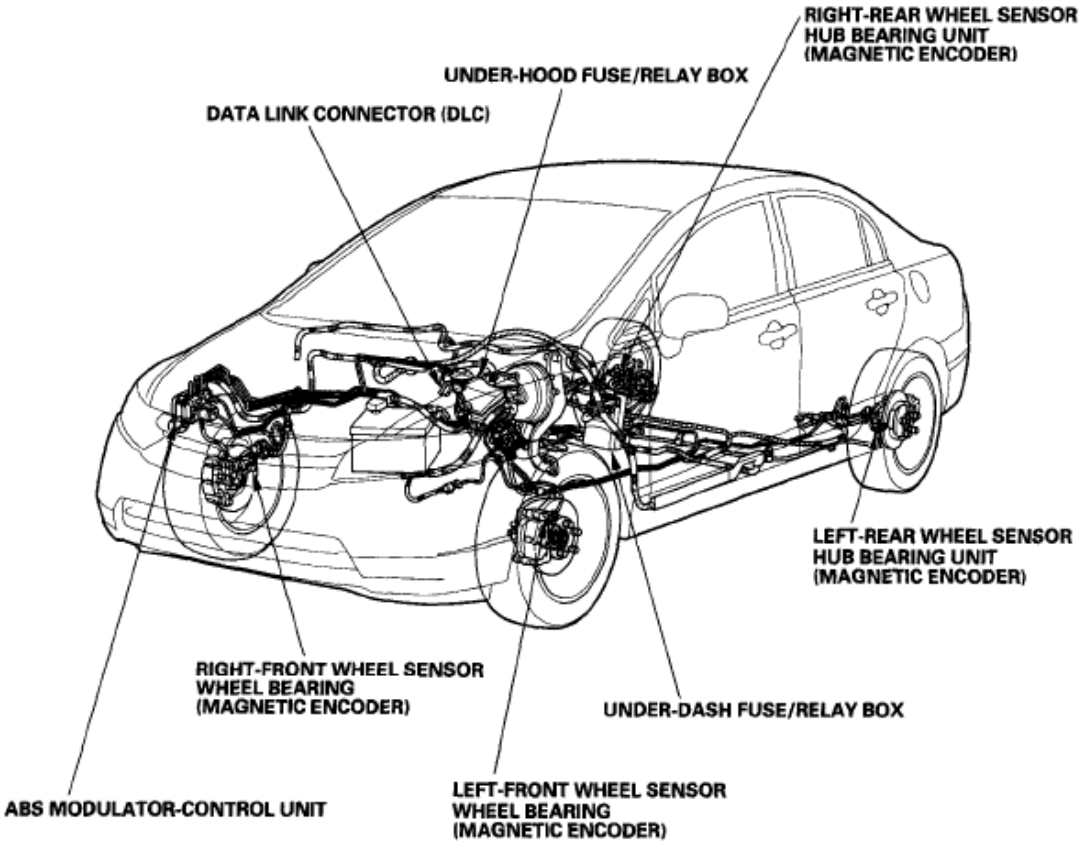


Fig. 1: Locating ABS Components

GENERAL TROUBLESHOOTING INFORMATION

SYSTEM INDICATOR

This system has two indicators:

- ABS indicator (A)
- Brake system indicator (B)

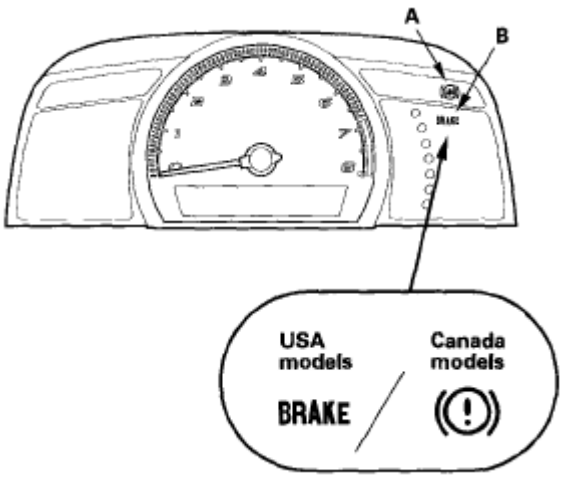


Fig. 2: Identifying ABS And Brake System Indicators

When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch ON (II), then goes off.

When the system detects a problem, a DTC will be set and, depending upon the failure, the ABS modulator-control unit will determine which indicator(s) will be turned on. If the problem goes away (system returns to normal), the indicator(s) will be controlled in the following way depending upon the DTC that was set:

- The indicator(s) will come on and stay on when the ignition switch is ON (II).
- The indicator(s) will automatically go off.
- The indicator(s) will go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel sensors fail, the brake system indicator will come on.

DIAGNOSTIC TROUBLE CODE (DTC)

- The memory can hold all DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be canceled by disconnecting the battery. Do the specified procedures to clear the DTCs.

SELF-DIAGNOSIS

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis: Done right after the ignition switch is turned ON (II) and until the ABS indicator goes off.
  - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, the ABS modulator-control unit shifts to fail-safe mode.

KICKBACK

The pump motor operates when the ABS modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

PUMP MOTOR

- The pump motor operates when the ABS modulator-control unit is functioning.
- The ABS modulator-control unit checks the pump motor operation during regular diagnosis when the vehicle is driven over 10 mph (15 km/h) the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without ABS (see **BRAKE SYSTEM BLEEDING**).

HOW TO TROUBLESHOOT DTCS

The troubleshooting procedures assume that the cause of the problem is still present and the ABS indicator is still on. Following a troubleshooting procedure for a code that has been cleared and does not reset can result in incorrect diagnosis.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS indicator came on, such as during ABS operation, after ABS operation, when vehicle was traveling at a certain speed, etc.
2. When the ABS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS indicator does not come on.
4. Check for other unit DTCs which are connected via F-CAN, if there are DTCs that are related to F-CAN, the most likely cause was that the ignition switch was turned ON (II) with the ABS modulator-control unit connector disconnected. Clear the DTCs. Check for PGM-FI and ABS codes, and troubleshoot those first.

INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the indicator(s) of the system does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the indicators were on but then went out, the original problem may have been intermittent.

HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

1. If the system indicators stay on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

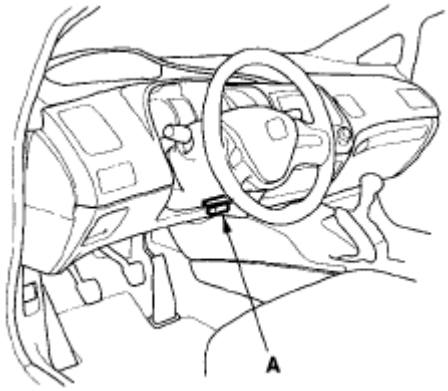


Fig. 3: Connecting HDS To DLC

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit: Except Si model (see **DLC CIRCUIT TROUBLESHOOTING**), Si model (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check the diagnostic trouble code (DTC) and note it. Also check the on board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- **The HDS communication will be stopped when the vehicle speed is at 31 mph (50 km/h) or more.**
- **The HDS can read the DTC, current data, and other system data.**
- **For specific operations, refer to the Help menu that came with the HDS.**

HOW TO RETRIEVE DTCS

1. With the ignition switch to LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit: Except Si model (see **DLC CIRCUIT TROUBLESHOOTING**), Si model (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the **DTC TROUBLESHOOTING**.
5. Turn the ignition switch to LOCK (0).

HOW TO CLEAR DTCS

1. With the ignition switch to LOCK (0), connect the HDS to the data link connector (DLC) under the

driver's side of the dashboard.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit: Except Si model (see **DLC CIRCUIT TROUBLESHOOTING**), Si model (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Clear the DTC(s) by following the screen prompts on the HDS.
5. Turn the ignition switch to LOCK (0).

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX

DTC		Detection Item	ABS Indicator	Brake System Indicator
11	-13	Right-front wheel sensor circuit malfunction	ON	ON/OFF(1)
12	-11	Right-front wheel sensor electrical noise or intermittent interruption	ON	ON/OFF(1)
	-12	Right-front wheel sensor short to the other sensor circuit	ON	ON/OFF(1)
	-21	Right-front wheel sensor installation error	ON	ON/OFF(1)
	-22	Right-front wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)
	-23	Right-front wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)
13	-13	Left-front wheel sensor circuit malfunction	ON	ON/OFF(1)
14	-11	Left-front wheel sensor electrical noise or intermittent interruption	ON	ON/OFF(1)
	-12	Left-front wheel sensor short to the other sensor circuit	ON	ON/OFF(1)
	-21	Left-front wheel sensor installation error	ON	ON/OFF(1)
	-22	Left-front wheel	ON	ON/OFF(1)

		sensor installation error (19 mph (30 km/h) or more)		
	-23	Left-front wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)
15	-13	Right-rear wheel sensor circuit malfunction	ON	ON/OFF(1)
16	-11	Right-rear wheel sensor electrical noise or intermittent interruption	ON	ON/OFF(1)
	-12	Right-rear wheel sensor short to the other sensor circuit	ON	ON/OFF(1)
	-21	Right-rear wheel sensor installation error	ON	ON/OFF(1)
	-22	Right-rear wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)
	-23	Right-rear wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)
17	-13	Left-rear wheel sensor circuit malfunction	ON	ON/OFF(1)
18	-11	Left-rear wheel sensor electrical noise or intermittent interruption	ON	ON/OFF(1)
	-12	Left-rear wheel sensor short to the other sensor circuit	ON	ON/OFF(1)
	-21	Left-rear wheel sensor installation error	ON	ON/OFF(1)
	-22	Left-rear wheel sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)
	-23	Left-rear wheel sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)

21	-11	Right-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)
22	-11	Left-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)
23	-11	Right-rear magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)
24	-11	Left-rear magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)
31	-01	ABS right-front inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS right-front inlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS right-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS right-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
32	-01	ABS right-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS right-front outlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS right-front outlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS right-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
33	-01	ABS left-front inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS left-front inlet	ON	ON

		solenoid valve malfunction (solenoid pulse)		
	-22	ABS left-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS left-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
34	-01	ABS left-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS left-front outlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS left-front outlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS left-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
35	-01	ABS right-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS right-rear inlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS right-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS right-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
36	-01	ABS right-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS right-rear outlet solenoid valve	ON	ON

		malfunction (solenoid pulse)		
	-22	ABS right-rear outlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS right-rear outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
37	-01	ABS left-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS left-rear inlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS left-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS left-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
38	-01	ABS left-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON
	-21	ABS left-rear outlet solenoid valve malfunction (solenoid pulse)	ON	ON
	-22	ABS left-rear outlet solenoid valve malfunction (solenoid speculative)	ON	ON
	-23	ABS left-rear outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON
41	-21	Right-front wheel lock	ON	ON/OFF(1)
42	-21	Left-front wheel lock	ON	ON/OFF(1)
43	-21	Right-rear wheel lock	ON	ON/OFF(1)
44	-21	Left-rear wheel lock	ON	ON/OFF(1)
51	-11	Motor lock	ON	OFF

	-12	Motor lock circuit malfunction	ON	OFF
	-13	Motor relay OFF malfunction	ON	OFF
52	-12	Motor stuck OFF	ON	OFF
53	-01	Motor relay stuck ON 1	ON	OFF
	-12	Motor relay stuck ON 2	ON	OFF
54	-03	Fail-safe relay 1 stuck ON	ON	ON
	-04	Fail-safe relay 1 stuck OFF (initial)	ON	ON
	-21	Fail-safe relay 1 stuck OFF (main)	ON	ON
61	-01	Modulator-control unit initial IG low voltage	ON	ON
	-21	Modulator-control unit power source low voltage 1	ON	ON
	-22	Modulator-control unit power source low voltage 2	ON	OFF
	-23	Modulator-control unit power source low voltage 3	ON	ON
62	-21	Modulator-control unit IG high voltage	ON	ON
71	-21	Right-front or left-rear different diameter tire malfunction	ON	ON
	-22	Left-front or right-rear different diameter tire malfunction	ON	ON
	-23	Right-front and right-rear different diameter tire malfunction	ON	ON
	-24	Left-front and left-rear different diameter tire malfunction	ON	ON
	-25	Right-front and left-front different diameter tire	ON	ON

		malfunction		
	-26	Right-rear and left-rear different diameter tire malfunction	ON	ON
81	-01	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-05	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-06	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-08	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-11	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-14	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-23	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-30	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-31	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-32	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-51	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-52	Central processing unit (CPU) internal circuit malfunction	ON	ON
	-71	Central processing unit (CPU) internal circuit malfunction	ON	OFF
86	-01	F-CAN bus-off malfunction	OFF	OFF
	-24	F-CAN communication with	OFF	OFF

		engine malfunction		
	-25	F-CAN communication with engine malfunction	OFF	OFF
	-FF	F-CAN communication with ABS malfunction	OFF	OFF
(1) Brake system indicator turns ON when 2 or more wheel sensors fail.				

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure
HDS does not communicate with the ABS modulator-control unit or the vehicle	Troubleshoot the DLC circuit: Except Si model (see **DLC CIRCUIT TROUBLESHOOTING**), Si model (see **DLC CIRCUIT TROUBLESHOOTING**).
ABS indicator does not come on	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good ABS modulator-control unit, then recheck. If it is OK, replace the original ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).
ABS indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).
Brake system indicator does not come on	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good ABS modulator-control unit, then recheck. If it is OK, replace the original ABS modulator-control unit; Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).
Brake system indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).
ABS indicator and brake system indicator do not go off at the same time	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

SYSTEM DESCRIPTION

ABS MODULATOR-CONTROL UNIT INPUTS AND OUTPUTS FOR 25P CONNECTOR

Wire side of female terminals

Fig. 4: Identifying ABS Modulator-Control Unit Inputs And Outputs For 25P Connector

ABS MODULATOR-CONTROL UNIT INPUTS AND OUTPUTS FOR 25P CONNECTOR

Terminal number	Wire color	Terminal sign	Description	Measurement (Disconnect the ABS modulator-control unit 25P connector)		
				Terminal	Conditions	Results
1	WHT	CAN-H	F-CAN communication circuit	-	-	-
2	GRN	FR+B	Detects right-front wheel sensor signal	-	-	-
3	GRY	FL-GND	Detects left-front wheel sensor signal	-	-	-
5	PUR	RL-GND	Detects left-rear wheel sensor signal	-	-	-
6	LT GRN	RR+B	Detects right-rear wheel sensor signal	-	-	-
8	WHT	FSR+B	Power source for the fail-safe relay	8-GND	At all times	Battery voltage
9	RED	MR+B	Power source for the motor relay	9-GND	At all times	Battery voltage
10	LT BLU	K-LINE	Communication with HDS	-	-	-
12	ORN	FL+B	Detects left-front wheel sensor signal	-	-	-
14	BLU	RL+B	Detects left-rear wheel sensor signal	-	-	-
15	WHT	RR-GND	Detects right-rear wheel sensor signal	-	-	-
16	GRY	IG1	Power source for activating the system	16-GND	Ignition switch	ON (II) Battery voltage
17	RED	CAN-L	F-CAN communication circuit	-	-	-
18	PNK	FR-GND	Detects right-front wheel sensor signal	-	-	-
24	BLK	GND	Ground for the ABS modulator-control unit	24-GND	At all times	Continuity

25	BLK	MR-GND	Ground for the pump motor	25-GND	At all times	Continuity

SYSTEM OUTLINE

This system is composed of the ABS modulator-control unit, the wheel sensors, and the system indicators in the gauge control module. The ABS modulator-control unit controls the anti-lock brake and the brakes distribution functions.

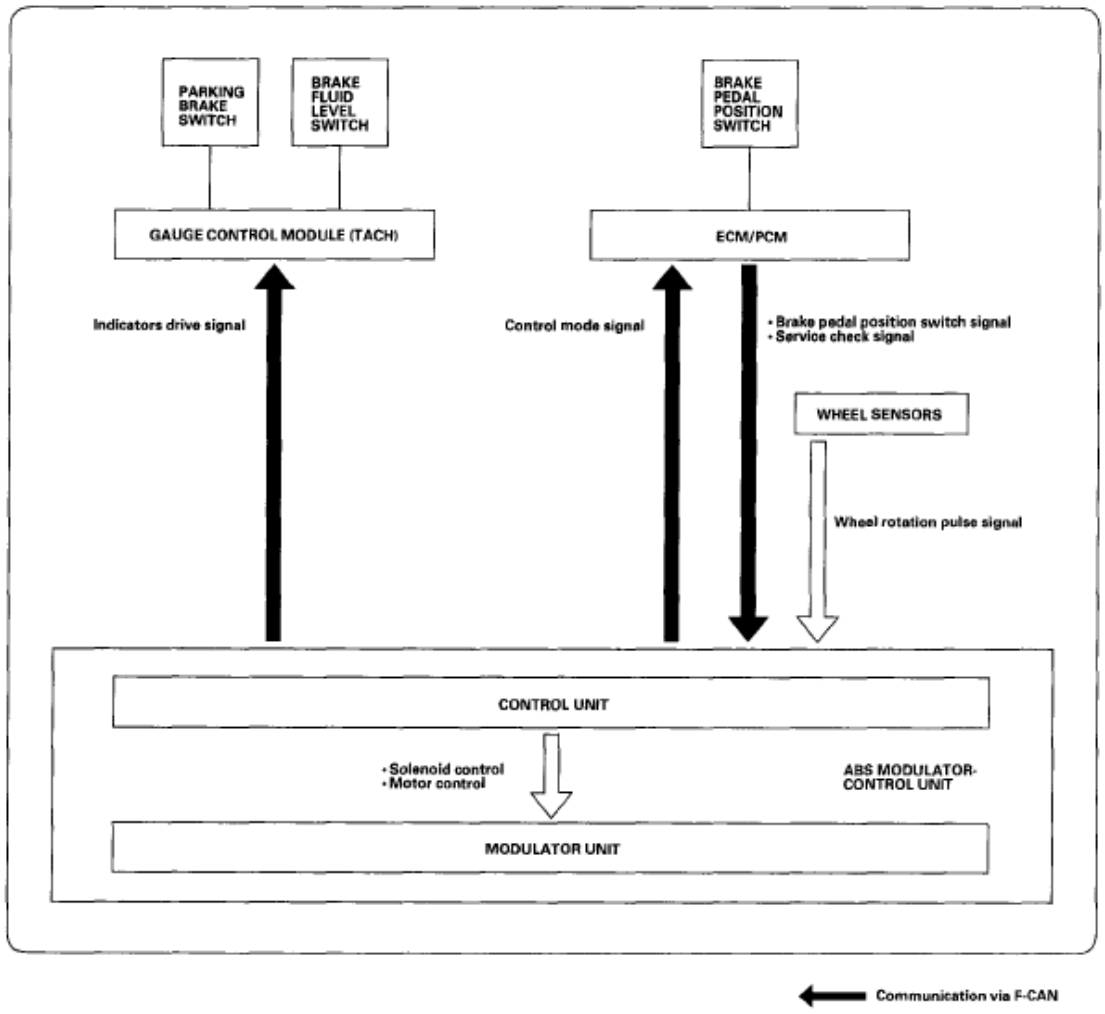


Fig. 5: Identifying ABS Modulator-Control Unit System Outline

ABS FEATURES

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, then it controls the brake fluid pressure to reach the target slip rate.

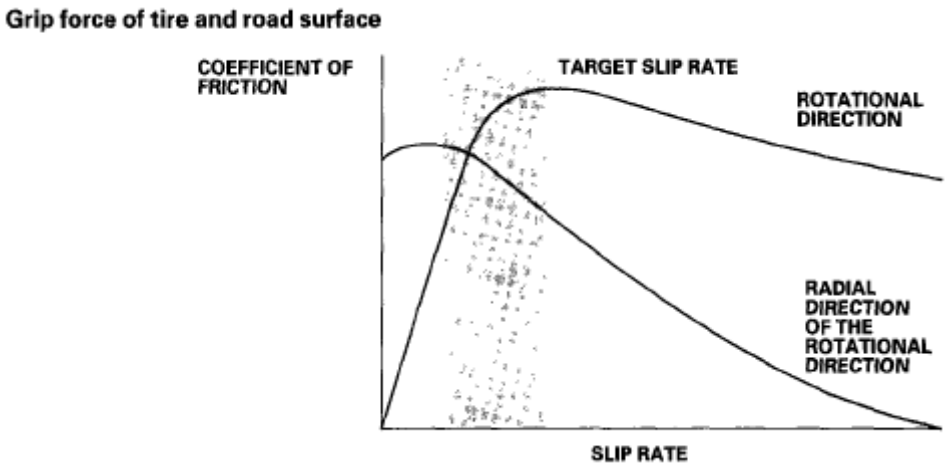


Fig. 6: Identifying Grip Force Of Tire And Road Surface

The control unit detects the wheel speed based on the wheel sensor signals it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.

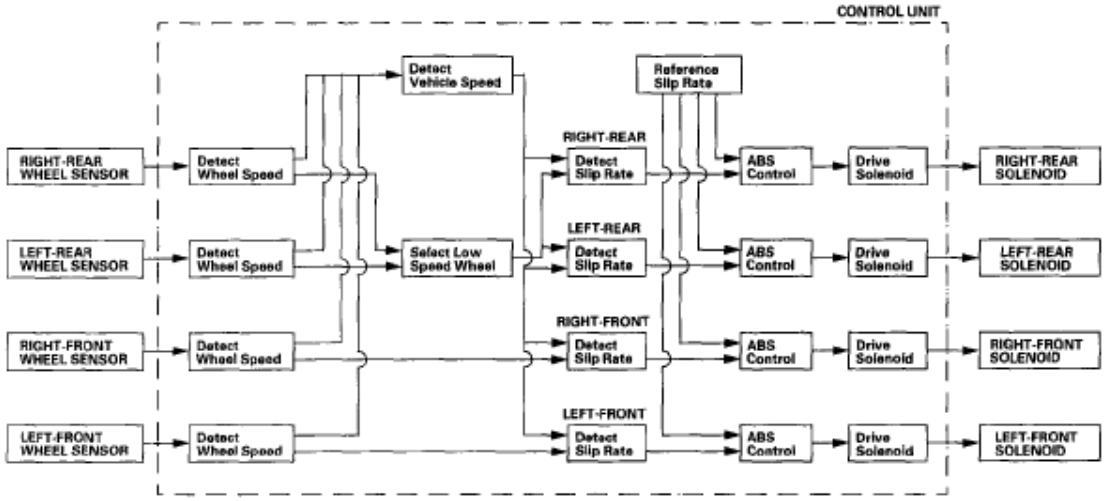


Fig. 7: Identifying Hydraulic Control Unit Flow Diagram

EBD FEATURES

The electronic brake distribution (EBD) feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the ABS modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the ABS modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, there is kickback at the

brake pedal.

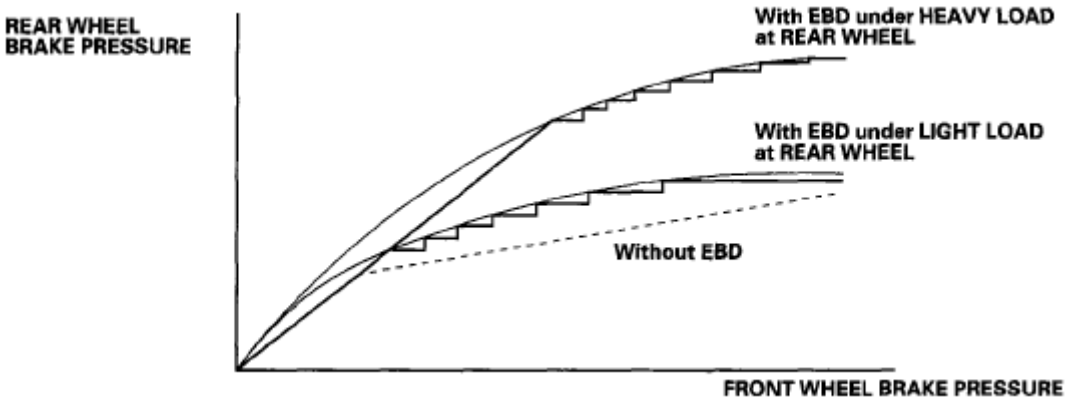


Fig. 8: Identifying Rear Wheel Brake Pressure

MODULATOR UNIT

The ABS modulator consists of the inlet solenoid valve, the outlet solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber. The modulator reduces the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder. The hydraulic control has three modes; pressure intensifying, pressure retaining, and pressure reducing. The hydraulic circuit is an independent four channel type; one channel for each wheel.

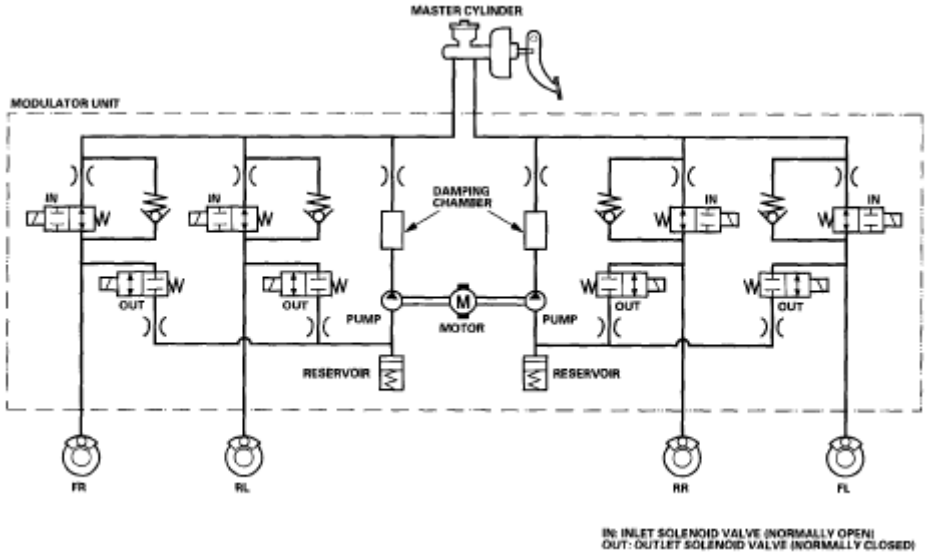


Fig. 9: Identifying Modulator Unit Circuit Diagram

MODES AND INLET/OUTLET SOLENOID VALVE POSITION

Mode	Inlet Solenoid Valve	Outlet Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	closed	closed	Caliper fluid is retained by the inlet and outlet valves.

Pressure reducing mode	closed	open	• Caliper fluid flows through the outlet valve to the reservoir. • The motor pumps the reservoir fluid through the damping chamber to the master cylinder (1).
(1) The motor will keep running until the operation of the one anti-lock brake control is finished with the first pressure reducing mode.			

CIRCUIT DIAGRAM

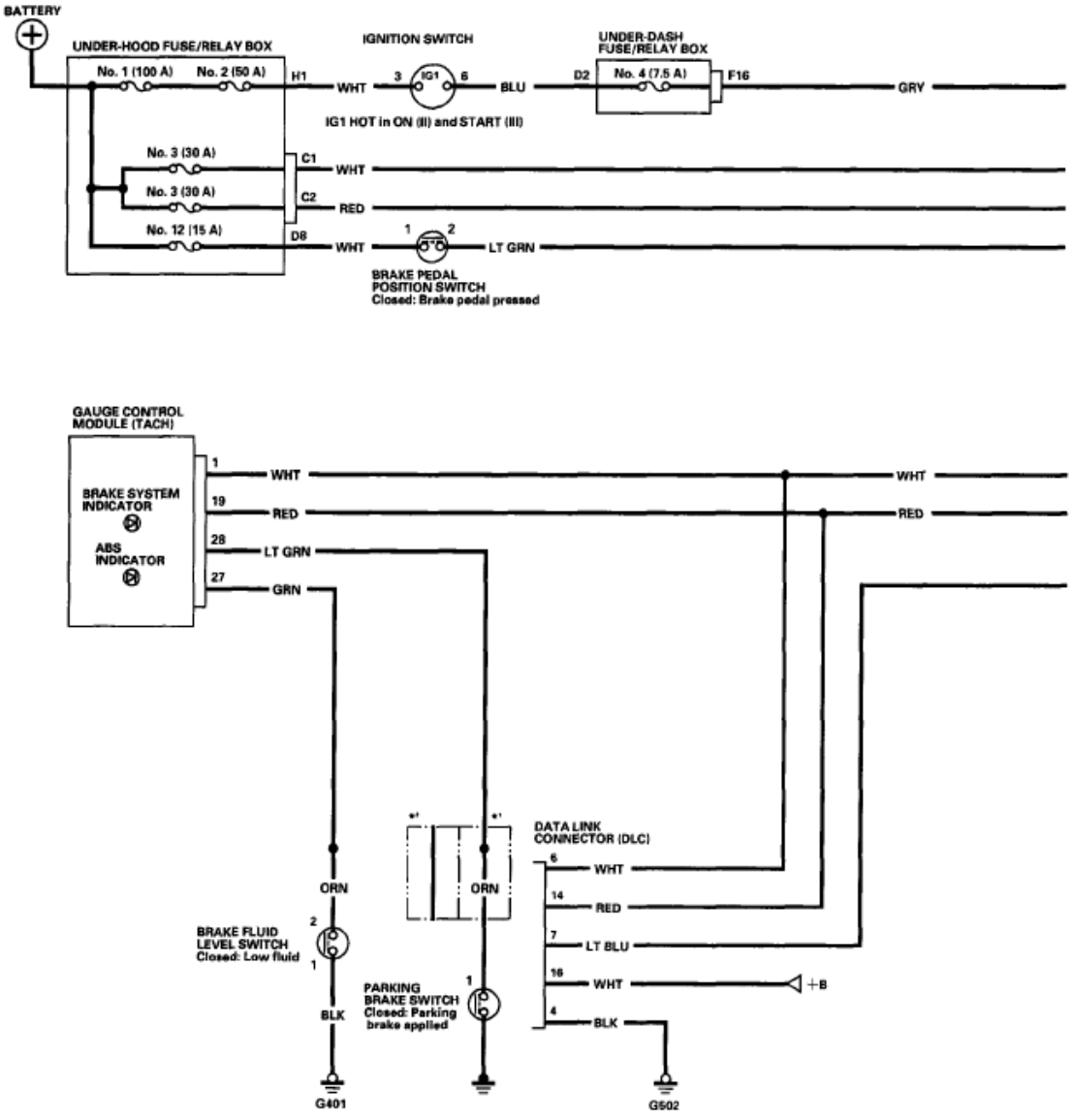


Fig. 10: Anti-Lock Brake System Circuit Diagram (1 Of 3)

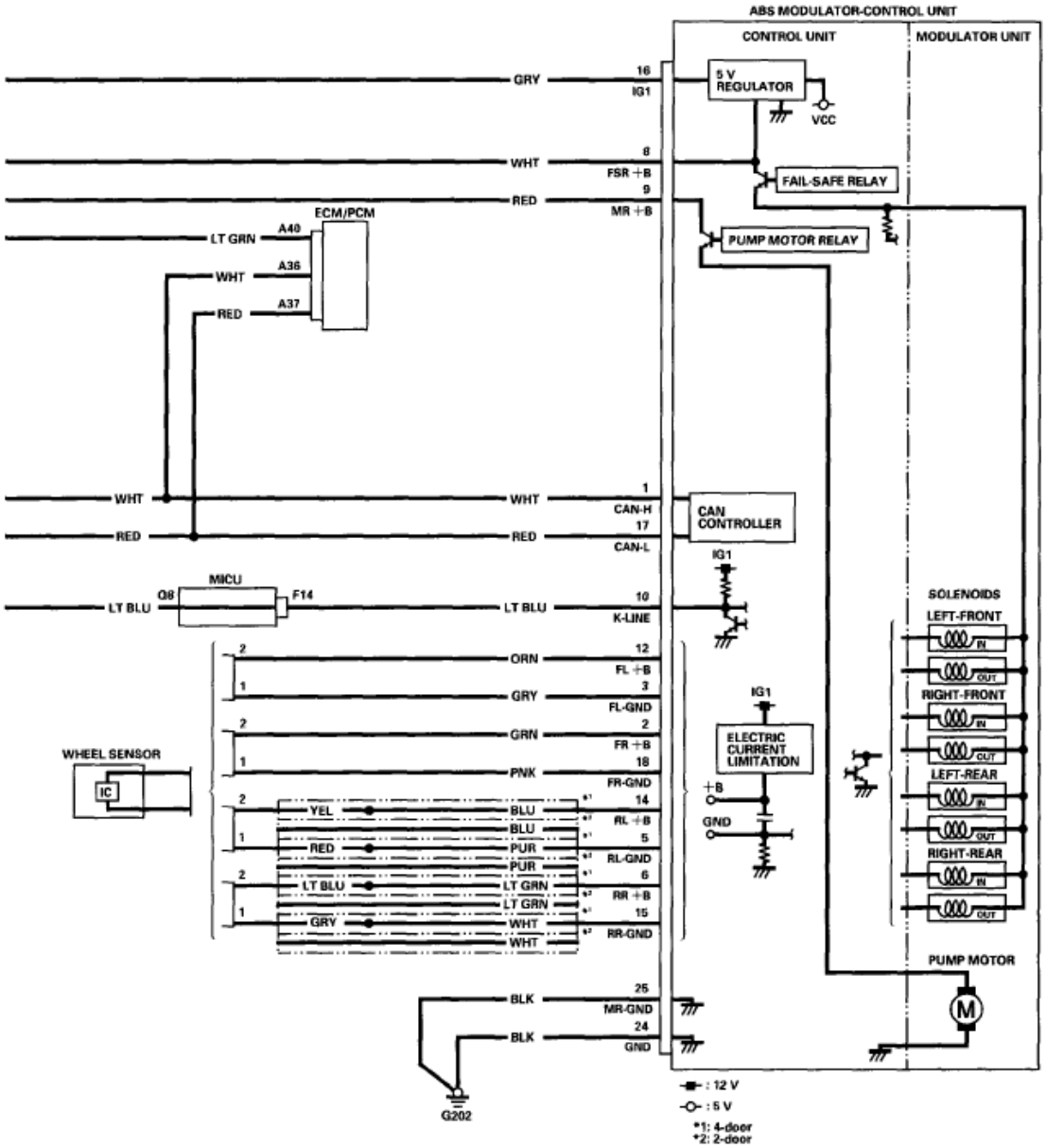


Fig. 11: Anti-Lock Brake System Circuit Diagram (2 Of 3)

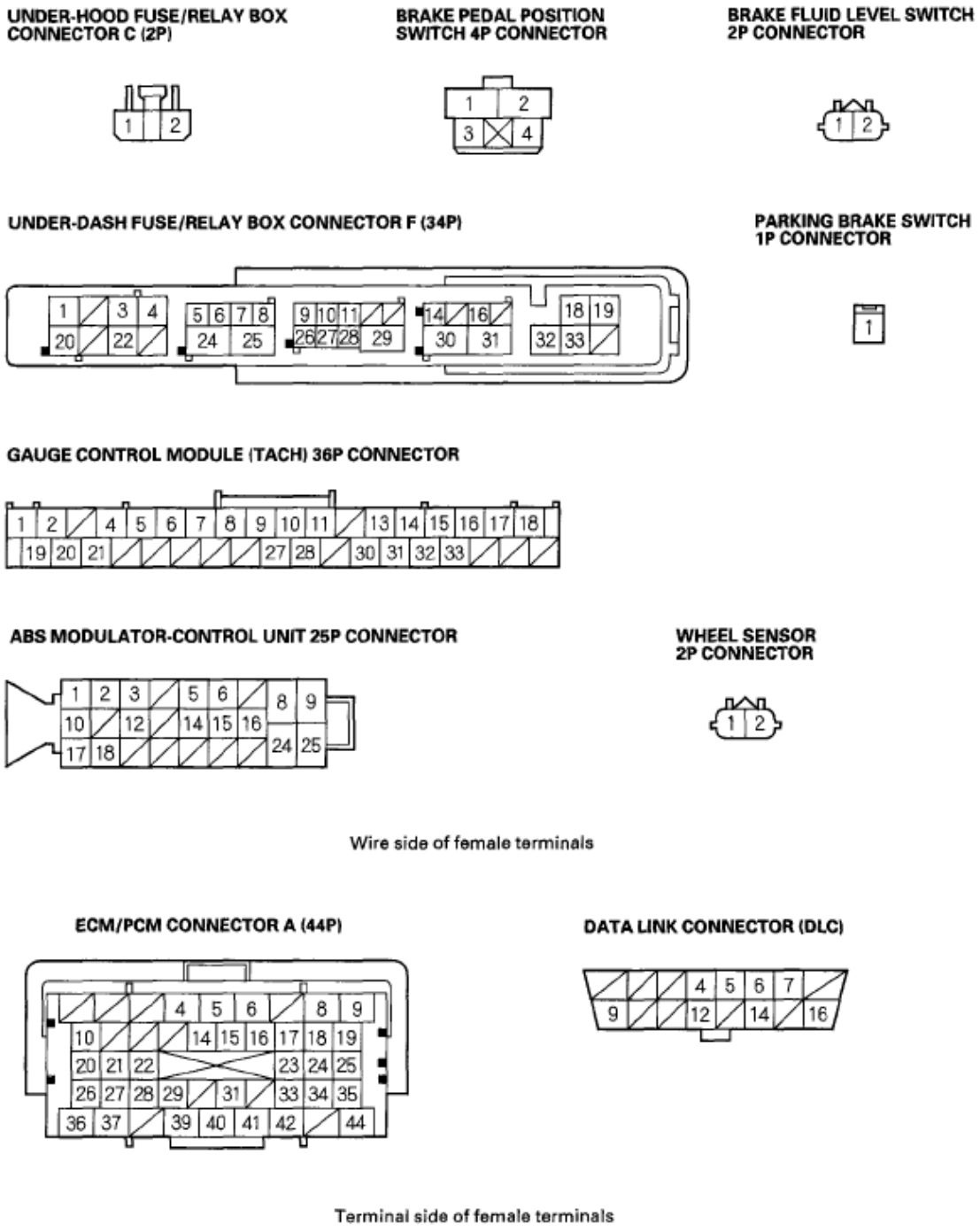


Fig. 12: Anti-Lock Brake System Circuit Diagram (3 Of 3)

DTC TROUBLESHOOTING

DTC 11-13: RIGHT-FRONT WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 13-13: LEFT-FRONT WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 15-13: RIGHT-REAR WHEEL SENSOR CIRCUIT MALFUNCTION; DTC 17-13: LEFT-REAR WHEEL SENSOR CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ABS modulator-control unit 25P connector.
7. Check for continuity between the appropriate ABS modulator-control unit 25P connector wheel sensor +B and GND terminals (see **ABS MODULATOR-CONTROL UNIT 25P CONNECTOR WHEEL SENSOR +B AND GND**), then check for continuity between the same terminals and reverse the positive and negative tester probes.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR WHEEL SENSOR +B AND GND

DTC	ABS Modulator-control Unit 25P Connector Terminal No.	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

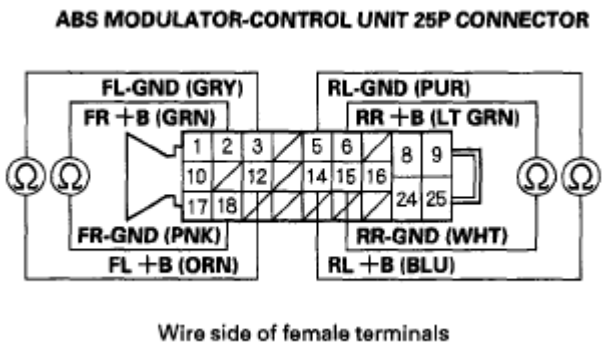


Fig. 13: Checking Continuity Between Appropriate ABS Modulator-Control Unit 25P Connector Wheel Sensor +B And GND Terminals

Is there continuity in both directions?

YES - Go to step 8.

NO - If there is no continuity in either direction, go to step 10. If there is continuity in only one direction, go to step 12.

8. Disconnect the appropriate wheel sensor 2P connector.
9. On the sensor side, check for continuity between appropriate wheel sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the positive and

negative tester probes.

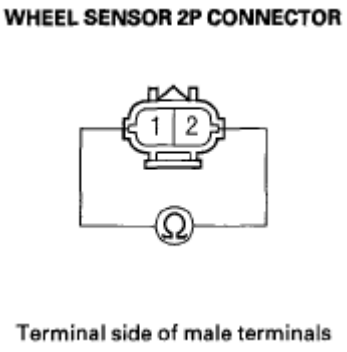


Fig. 14: Checking Continuity Between Appropriate Wheel Sensor 2P Connector Terminals No. 1 And No. 2

Is there continuity in both directions?

YES - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO - Repair short in the wire between the appropriate wheel sensor and the ABS modulator-control unit.

10. Disconnect the appropriate wheel sensor 2P connector.
11. On the sensor side, check for continuity between appropriate wheel sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the positive and negative tester probes.

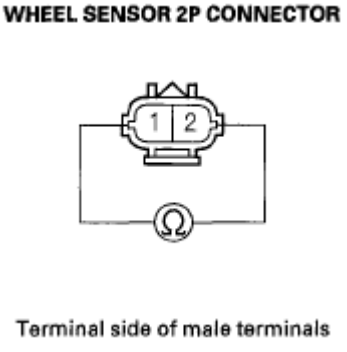


Fig. 15: Checking Continuity Between Appropriate Wheel Sensor 2P Connector Terminals No. 1 And No. 2

Is there continuity in only one direction?

YES - Repair open in the wire between the appropriate wheel sensor and the ABS modulator-control unit.

NO - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

12. Check for continuity between body ground and the appropriate ABS modulator-control unit 25P connector terminal (see table).

BODY GROUND AND APPROPRIATE ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL

DTC	ABS Modulator-control Unit 25P Connector Terminal No.	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

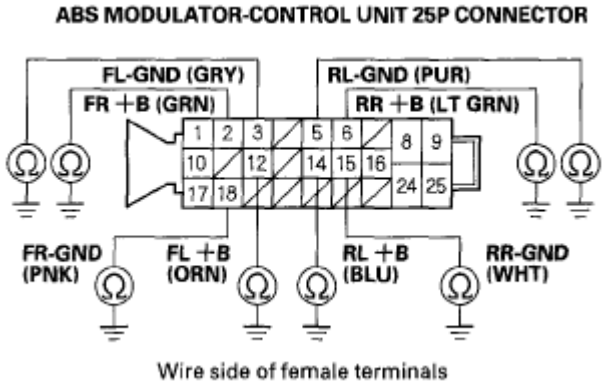


Fig. 16: Checking Continuity Between Body Ground And Appropriate ABS Modulator-Control Unit 25P Connector Terminal

Is there continuity?

YES - Go to step 13.

NO - Go to step 15.

13. Disconnect the appropriate wheel sensor 2P connector.
14. On the sensor side, check for continuity between body ground and appropriate wheel sensor 2P connector terminal No. 1 and No. 2 individually.

NOTE: Check the wheel sensor while mounted on the vehicle.

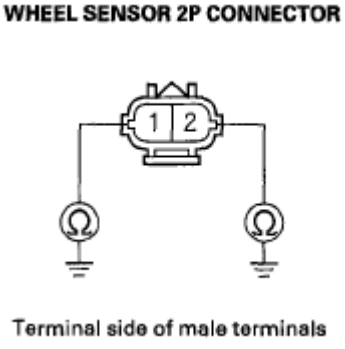


Fig. 17: Checking Continuity Between Body Ground And Appropriate Wheel Sensor 2P Connector Terminal No. 1 And No. 2

Is there continuity?

YES - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO - Repair short to body ground in the wire between the appropriate wheel sensor and the ABS modulator-control unit.

15. Turn the ignition switch ON (II).
16. Measure voltage between body ground and the appropriate ABS modulator-control unit 25P connector terminal (see **BODY GROUND AND APPROPRIATE ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL**).

BODY GROUND AND APPROPRIATE ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL

DTC	ABS Modulator-control Unit 25P Connector Terminal No.	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

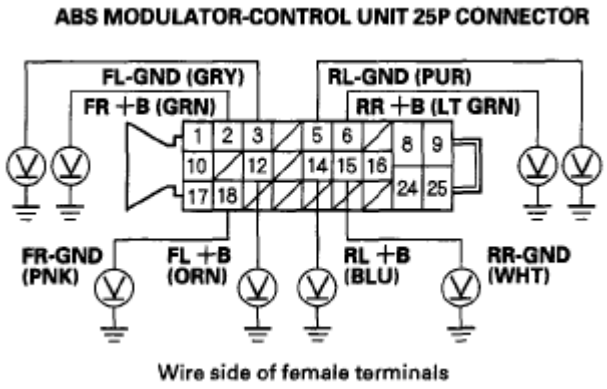


Fig. 18: Measuring Voltage Between Body Ground And Appropriate ABS Modulator-Control Unit 25P Connector Terminal

Is there 0.1 V or more?

YES - Repair short to power in the wire between the appropriate wheel sensor and the ABS modulator-control unit.

NO - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

DTC 12-11: RIGHT-FRONT WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 14-11: LEFT-FRONT WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 16-11: RIGHT-REAR WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 18-11: LEFT-REAR WHEEL SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket

devices installed in the vehicle when these DTCs are indicated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES - If the DTC 12-12,14-12,16-12 or 18-12 is indicated at same time, do the DTC 12-12,14-12, 16-12 or 18-12 troubleshooting (see **DTC 12-12: RIGHT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 14-12: LEFT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 16-12: RIGHT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 18-12: LEFT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT**). If DTC 12-12,14-12,16-12 or 18-12 is not indicated, go to step 5.

   NO - Troubleshoot the indicated DTC. If there are no DTCs indicated, there may be an intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

   WHEEL SENSOR

DTC	Appropriate Wheel Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

   Is the wheel sensor installation OK?

   YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

   NO - Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-12: RIGHT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 14-12: LEFT-FRONT WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 16-12: RIGHT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 18-12: LEFT-REAR WHEEL SENSOR SHORT TO THE OTHER SENSOR CIRCUIT

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

NOTE: Drive the vehicle on the road, not on the lift.

4. Check for DTCs with the HDS.

   Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ABS modulator-control unit 25P connector.
7. Check for continuity between the appropriate ABS modulator-control unit 25P connector wheel sensor +B terminals (see **ABS MODULATOR-CONTROL UNIT 25P CONNECTOR WHEEL SENSOR +B TERMINALS**).

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR WHEEL SENSOR +B TERMINALS

DTC	ABS Modulator-control Unit 25P Connector Terminal No.			
	Appropriate Terminal	Other Terminals		
12-12	No. 2	No. 12	No. 6	No. 14
14-12	No. 12	No. 2	No. 6	No. 14
16-12	No. 6	No. 2	No. 12	No. 14
18-12	No. 14	No. 2	No. 12	No. 6

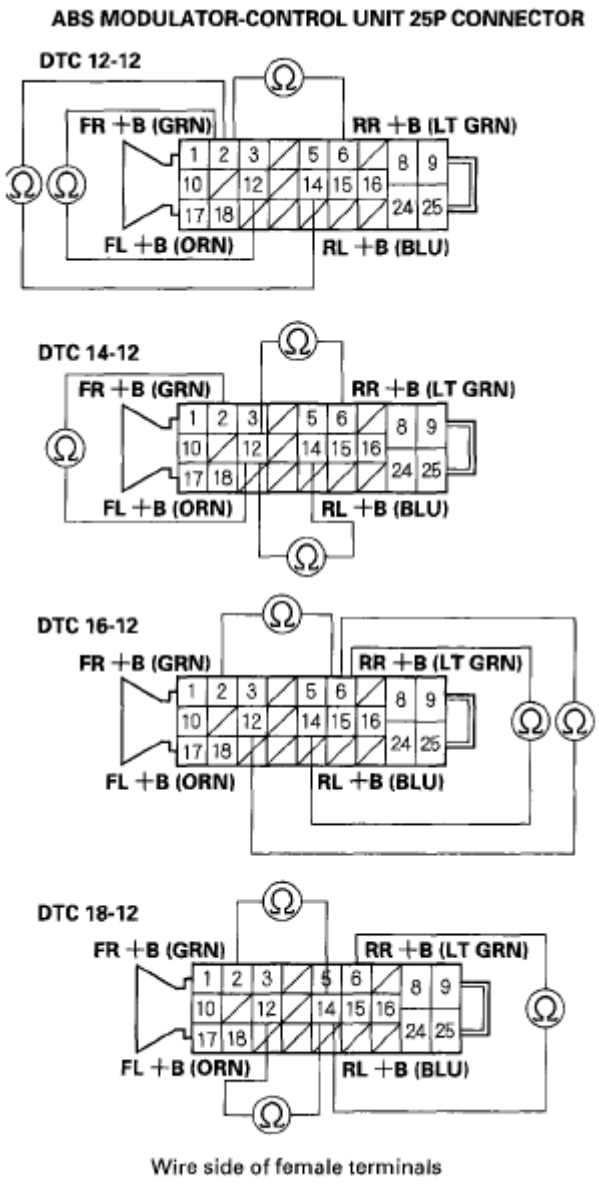


Fig. 19: Checking Continuity Between Appropriate ABS Modulator-Control Unit 25P Connector Wheel Sensor +B Terminals

Is there continuity?

YES - Repair short in the wires between the appropriate wheel sensor and the ABS modulator-control unit.

NO - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

DTC 12-21: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR; DTC 14-21: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR; DTC 16-21: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR; DTC 18-21: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR

1. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h).

   NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the ABS DATA LIST with the HDS.

   Are all four the same indicated value?

   YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

   NO - Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

   WHEEL SENSOR

DTC	Appropriate Wheel Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

   Is the wheel sensor installation OK?

   YES - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

   NO - Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-22: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 14-22: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 16-22: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 18-22: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE)

1. Test-drive the vehicle. Drive the vehicle between 19 mph (30 km/h) and 31 mph (50 km/h) for 70 seconds or more.

   NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the ABS DATA LIST with the HDS.

   Are all four the same indicated value?

   YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel

sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

NO - Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

WHEEL SENSOR

DTC	Appropriate Wheel Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

Is the wheel sensor installation OK?

YES - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO - Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 12-23: RIGHT-FRONT WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 14-23: LEFT-FRONT WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 16-23: RIGHT-REAR WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 18-23: LEFT-REAR WHEEL SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H))

1. Test-drive the vehicle. Drive the vehicle between 1 mph (1 km/h) and 9 mph (15 km/h) in a straight line.

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the ABS DATA LIST with the HDS.

Are all four the same indicated value?

YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

NO - Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

WHEEL SENSOR

DTC	Appropriate Wheel Sensor
12-23	Right-front
14-23	Left-front
16-23	Right-rear
18-23	Left-rear

Is the wheel sensor installation OK?

YES - Replace the appropriate wheel sensor (see **WHEEL SENSOR REPLACEMENT**).

NO - Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 21-11: RIGHT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 22-11: LEFT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 23-11: RIGHT-REAR MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 24-11: LEFT-REAR MAGNETIC ENCODER MALFUNCTION (PULSE MISSING)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

NOTE: Drive the vehicle on the road, not on the lift.

4. Check for DTCs with the HDS.

Is DTC 21-11,22-11,23-11, and/or 24-11 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Inspect the appropriate magnetic encoder for debris or cracks.

MAGNETIC ENCODER

DTC	Appropriate Magnetic Encoder	Note
21-11	Right-front	Remove the driveshaft outboard joint from the appropriate wheel hub (see **KNUCKLE/HUB REPLACEMENT**).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit: Disc brake type (see **HUB BEARING UNIT**

24-11	Left-rear	**REPLACEMENT-DISC BRAKE TYPE**), drum brake type (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).

Is the magnetic encoder surface OK?

YES - Replace the wheel bearing (front) or the hub bearing unit (rear):

- Front: Replace the front wheel bearing (see **KNUCKLE/HUB REPLACEMENT**).
- Rear (disc brake type): Replace the rear hub bearing unit (see **HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE**).
- Rear (drum brake type): Replace the hub bearing unit (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).

NO - Clean off dust or dirt from the appropriate magnetic encoder surface on the wheel bearing or the hub bearing unit, then go to step 1 and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit.

DTC 31-XX*: ABS RIGHT-FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 32-XX*: ABS RIGHT-FRONT OUTLET SOLENOID VALVE MALFUNCTION; DTC 33-XX*: ABS LEFT-FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 34-XX*: ABS LEFT-FRONT OUTLET SOLENOID VALVE MALFUNCTION; DTC 35-XX*: ABS RIGHT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 36-XX*: ABS RIGHT-REAR OUTLET SOLENOID VALVE MALFUNCTION; DTC 37-XX*: ABS LEFT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 38-XX*: ABS LEFT-REAR OUTLET SOLENOID VALVE MALFUNCTION

*:Subcode

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

SOLENOID VALVE MALFUNCTION

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01,32-01,33-01, 34-01,35-01,36-01, 37-01,38-01
21	Solenoid Pulse	31-21,32-21,33-21, 34-21,35-21,36-21, 37-21,38-21
22	Solenoid Speculative	31-22,32-22, 33-22, 34-22,35-22,36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23

Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Intermittent failure, the system is OK at this time.

DTC 41-21: RIGHT-FRONT WHEEL LOCK; DTC 42-21: LEFT-FRONT WHEEL LOCK; DTC 43-21: RIGHT-REAR WHEEL LOCK; DTC 44-21: LEFT-REAR WHEEL LOCK

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
- The ABS continues to operate for a long time.
- Snow build-up on the wheel sensor.
- Misadjusted brake switch
- Contaminated brake fluid

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Turn the appropriate wheel by hand.

   APPROPRIATE WHEEL

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front
43-21	Right-rear
44-21	Left-rear

   Is there brake drag?

   YES - Repair the brake drag.

   NO - Go to step 3.

3. Check that the appropriate wheel sensor is properly mounted (see **WHEEL SENSOR REPLACEMENT**).

   Is the wheel sensor installation OK?

   YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** . If the vehicle continues to code, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

   NO - Reinstall the wheel sensor, and check the mounting position (see **WHEEL SENSOR REPLACEMENT**).

DTC 51-11: MOTOR LOCK; DTC 51-13: MOTOR RELAY OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Wait 5 seconds.
5. Operate each SOLENOID in the ABS FUNCTION TEST five times with the HDS.
6. Check for DTCs with the HDS.

Is DTC 51-11 or 51-13 indicated?

YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Intermittent failure, the system is OK at this time.

DTC 51-12: MOTOR LOCK CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 51-12 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 MTR (30 A) fuse in the under-hood fuse/relay box.

Is the fuse blown?

YES - Go to step 7.

NO - Reinstall the checked fuse, then go to step 9.

7. Disconnect the ABS modulator-control unit 25P connector.
8. Check for continuity between ABS modulator-control unit 25P connector terminal No. 9 and body ground.

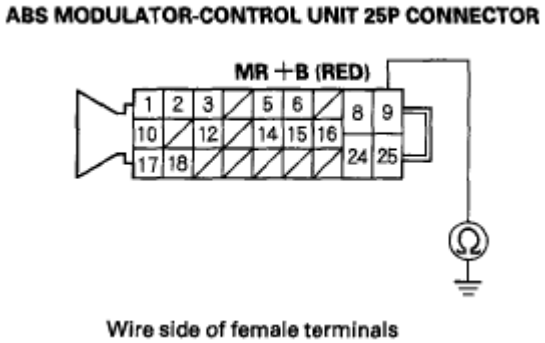


Fig. 20: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 9 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the No. 3 MTR (30 A) fuse in the understood fuse/relay box and the ABS modulator-control unit.

NO - Install a new No. 3 MTR (30 A) fuse in the under-hood fuse/relay box, then go to step 10.

9. Disconnect the ABS modulator-control unit 25P connector.
10. Measure voltage between ABS modulator-control unit 25P connector terminal No. 9 and body ground.

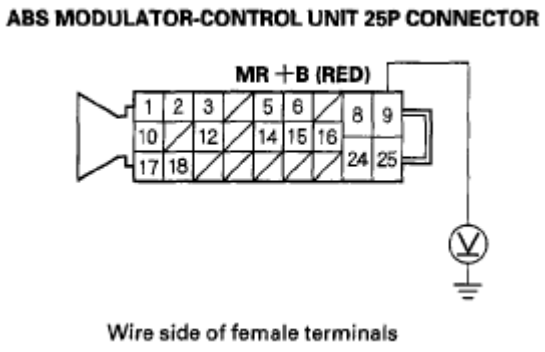


Fig. 21: Measuring Voltage Between ABS Modulator-Control Unit 25P Connector Terminal No. 9 And Body Ground

Is there battery voltage?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the No. 3 MTR (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit.

DTC 52-12: MOTOR STUCK OFF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Operate each SOLENOID in the ABS FUNCTION TEST five times with the HDS.
5. Check for DTCs with the HDS.

Is DTC 52-12 indicated?

YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Intermittent failure, the system is OK at this time.

DTC 53-01: MOTOR RELAY STUCK ON 1; DTC 53-12: MOTOR RELAY STUCK ON 2

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 53-01 or 53-12 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ABS modulator-control unit 25P connector.
7. Check for continuity between ABS modulator-control unit 25P connector terminal No. 25 and body ground.

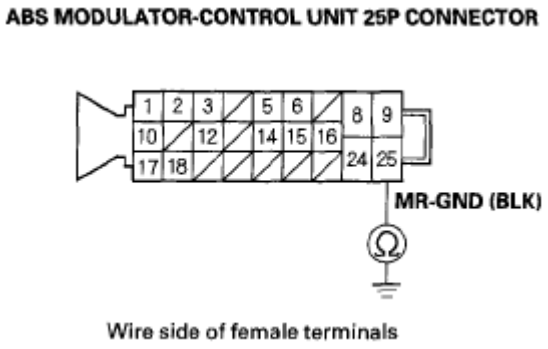


Fig. 22: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 25 And Body Ground

Is there continuity?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the ABS modulator-control unit and body ground (G202).

DTC 54-03: FAIL-SAFE RELAY 1 STUCK ON

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 54-03 indicated?

   YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI**

MODEL), Si model (see **REMOVAL - SI MODEL**).

NO - Intermittent failure, the system is OK at this time.

DTC 54-04: FAIL-SAFE RELAY 1 STUCK OFF (INITIAL); DTC 54-21: FAIL-SAFE RELAY 1 STUCK OFF (MAIN)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 54-04 or 54-21 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 FSR (30 A) fuse in the under-hood fuse/relay box.

   Is the fuse blown?

   YES - Go to step 7.

   NO - Reinstall the checked fuse, then go to step 9.

7. Disconnect the ABS modulator-control unit 25P connector.
8. Check for continuity between ABS modulator-control unit 25P connector terminal No. 8 and body ground.

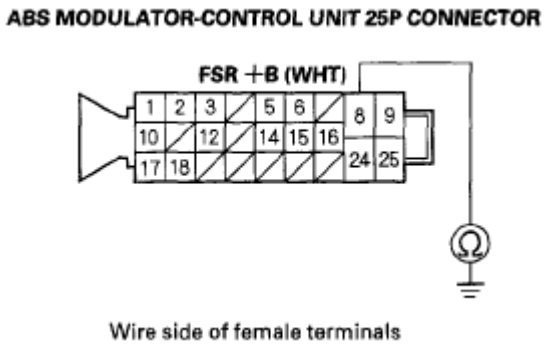


Fig. 23: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 8 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the No. 3 FSR (30 A) fuse in the under-hood

fuse/relay box and the ABS modulator-control unit.

NO - Install a new No. 3 FSR (30 A) fuse in the under-hood fuse/relay box, then go to step 10.

9. Disconnect the ABS modulator-control unit 25P connector.
10. Measure voltage between ABS modulator-control unit 25P connector terminal No. 8 and body ground.

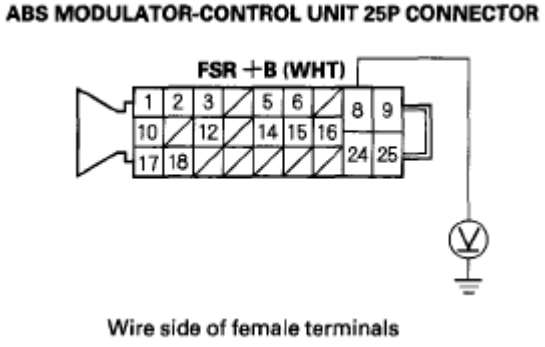


Fig. 24: Measuring Voltage Between ABS Modulator-Control Unit 25P Connector Terminal No. 8 And Body Ground

Is there battery voltage?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the No. 3 FSR (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit.

DTC 61-01: MODULATOR-CONTROL UNIT INITIAL IG LOW VOLTAGE; DTC 61-21: MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 1; DTC 61-22: MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 2; DTC 61-23: MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 3

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Check and note BATTERY voltage in the ABS DATA LIST with the HDS. If the voltage listed is 0

V, go to step 8, otherwise go to step 6.

6. Using a voltmeter, measure and note the voltage between the battery terminals.

NOTE: If the voltage is below 9.5 V, check the battery (see BATTERY TEST), and troubleshoot the alternator regulator circuit: Except Si model (see ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING), Si model (see ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING).

7. Compare the voltage noted in step 5 to the voltage in step 6.

Is the difference between the two voltage readings less then 3 V?

YES - Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** . If the code resets after clearing, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the ABS modulator-control unit 25P connector.
10. Measure voltage between ABS modulator-control unit 25P connector terminal No. 8 and body ground.

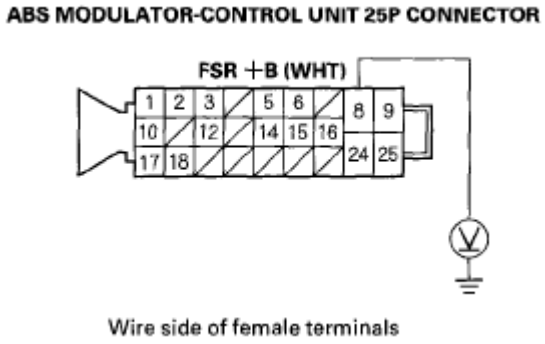


Fig. 25: Measuring Voltage Between ABS Modulator-Control Unit 25P Connector Terminal No. 8 And Body Ground

Is there battery voltage?

YES - Go to step 11.

NO - Repair open in the wire between the No. 3 FSR (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit.

11. Turn the ignition switch ON (II).

12. Measure voltage between ABS modulator-control unit 25P connector terminal No. 16 and body ground.

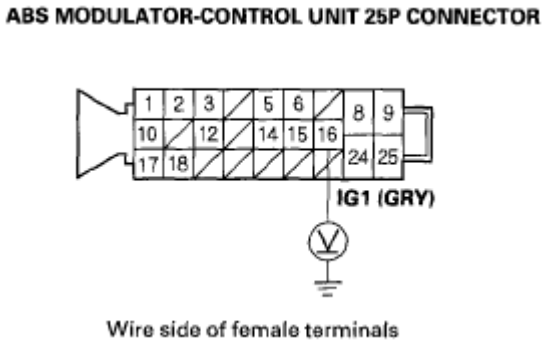


Fig. 26: Measuring Voltage Between ABS Modulator-Control Unit 25P Connector Terminal No. 16 And Body Ground

Is there battery voltage?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the ABS modulator-control unit.

DTC 62-21: MODULATOR-CONTROL UNIT IG HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 62-21 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time.

5. Using a voltmeter, measure the voltage between the battery terminals. Compare the voltage measured at the battery with the voltage shown in the ABS DATA LIST with the HDS.

   Is there a voltage difference of 3 V or more?

   YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

   NO - Check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit: Except Si model (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**), Si model (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). Also

check for loose terminals in the ABS modulator-control unit 25P connector. If it is OK, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

DTC 71-21: RIGHT-FRONT OR LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-22: LEFT-FRONT OR RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-23: RIGHT-FRONT AND RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-24: LEFT-FRONT AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-25: RIGHT-FRONT AND LEFT-FRONT DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-26: RIGHT-REAR AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION

NOTE: The DTC will be indicated when the vehicle has a different diameter tire(s) compared to the other tire(s).

DIFFERENT DIAMETER TIRE MALFUNCTION

DTC	Sectional	Note
71-21	Right-front or left-rear	
71-22	Left-front or right-rear	
71-23	Right-front and right-rear	
71-24	Left-front and left-rear	
71-25	Right-front and left-front	
71-26	Right-rear and left-rear	

1. Check the tires for proper inflation (see **WHEEL ALIGNMENT**).
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0).
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, or 71-26 indicated?

YES - Replace all four tires with the proper size (see **WHEEL ALIGNMENT**).

NO - Intermittent failure, the system is OK at this time.

DTC 81-XX*: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

* : Subcode (Except DTC 81-11, 81-51, and 81-52)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 81-xx indicated?

YES - If the DTC 81-11, 81-51, or 81-52 is indicated at the same time, do the DTC 81-11,81-51, or 81-52 troubleshooting (see **DTC 81-xx*: Central Processing Unit (CPU) Internal Circuit Malfunction**). If DTC 81-11, 81-51, or 81-52 is not indicated, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Intermittent failure, the system is OK at this time.

DTC 81-11: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-51: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-52: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 81-11, 81-51, or 81-52 indicated?

YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Intermittent failure, the system is OK at this time.

DTC 86-01: F-CAN BUS-OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 86-01 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Disconnect the HDS from the data link connector (DLC).
9. Disconnect the gauge control module (tach) 36P connector.
10. Disconnect SRS unit connector A (28P).
11. With EPS: Disconnect EPS control unit connector D (28P).

12. With TPMS: Disconnect the TPMS control unit 20P connector.
13. Disconnect the ABS modulator-control unit 25P connector.
14. Check for continuity between the ABS modulator-control unit 25P connector terminals No. 1 and No. 17 and body ground individually.

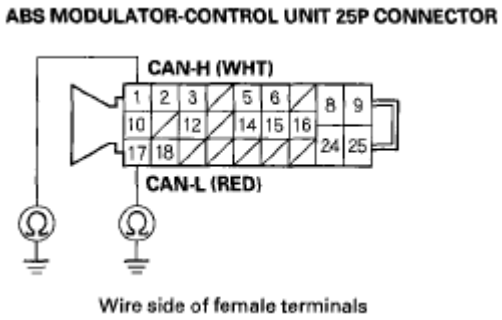


Fig. 27: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminals No. 1 And No. 17 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the ECM/PCM, the gauge control module (tach), the data link connector (DLC), the SRS unit, the EPS control unit (if equipped), the TPMS control unit (if equipped), and the ABS modulator-control unit.

NO - Go to step 15.

15. Check for continuity between body ground and the ABS modulator-control unit 25P connector terminals No. 1 and No. 17 individually.

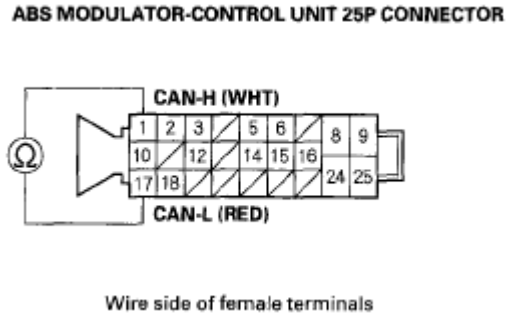


Fig. 28: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminals No. 1 And No. 17

Is there continuity?

YES - Repair short in the wires between ABS modulator-control unit 25P connector terminals No. 1 (CAN-H line) and No. 17 (CAN-L line).

NO - Go to step 16.

16. Check for continuity between ABS modulator-control unit 25P connector terminal and ECM/PCM

connector A (44P) terminal (see **ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL AND ECM/PCM CONNECTOR A (44P) TERMINAL**).

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL AND ECM/PCM CONNECTOR A (44P) TERMINAL

Sign	Connector Terminal No.	
	ABS Modulator-control Unit	ECM/PCM
CAN-L	17	37
CAN-H	1	36

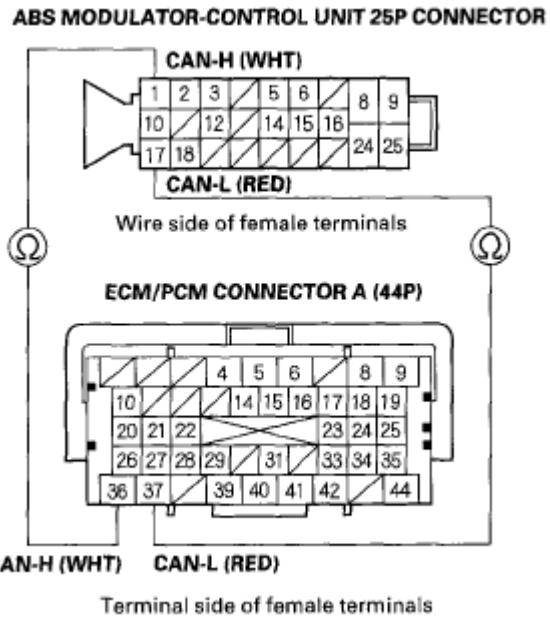


Fig. 29: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal And ECM/PCM Connector A (44P) Terminal

Is there continuity?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the ECM/PCM and the ABS modulator-control unit.

DTC 86-24: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-25: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h) or more.
5. Check for DTCs with the HDS.

Is 86-24, and/or 86-25 DTC indicated?

YES - Go to step 6.

NO - Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

6. Turn the ignition switch to LOCK (0).
7. Short the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Disconnect the ABS modulator-control unit 25P connector.
10. Check for continuity between ABS modulator-control unit 25P connector terminal and ECM/PCM connector A (44P) terminal (see **ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL AND ECM/PCM CONNECTOR A (44P) TERMINAL**).

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL AND ECM/PCM CONNECTOR A (44P) TERMINAL

Sign	Connector Terminal No.	
	ABS Modulator-control Unit	ECM/PCM
CAN-L	17	37
CAN-H	1	36

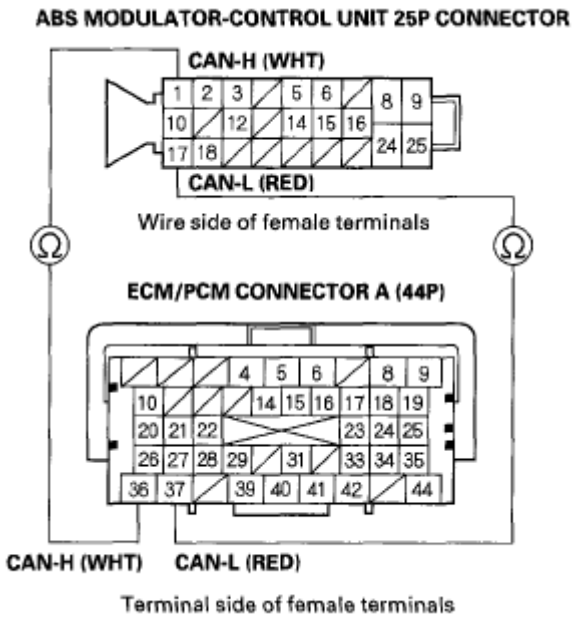


Fig. 30: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal And ECM/PCM Connector A (44P) Terminal

Is there continuity?

YES - Check for loose terminals in ECM/PCM connector A (44P) and at ABS modulator-control unit 25P connector. If necessary, substitute a known-good ECM/PCM, then go to step 1 and recheck. If no DTCs are indicated, replace the original ECM/PCM: Except Si model (see **ECM/PCM REPLACEMENT**), Si model (see **ECM REPLACEMENT**). If DTCs are indicated, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model

(see **REMOVAL - SI MODEL**).

NO - Repair open in the wire between the ECM/PCM and the ABS modulator-control unit.

DTC 86-FF: F-CAN COMMUNICATION WITH ABS MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-FF Indicated?

   YES - Replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

   NO - Intermittent failure, the system is OK at this time.

SYMPTOM TROUBLESHOOTING

ABS INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Check for the communication between the vehicle and the HDS.

   Is there the communication?

   YES - Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then recheck. If it is OK, replace the original gauge control module (tach) (see **TACHOMETER**).

   NO - If the HDS does not communicate with all the systems of the vehicle, troubleshoot the DLC circuit: Except Si model (see **DLC CIRCUIT TROUBLESHOOTING**), Si model (see **DLC CIRCUIT TROUBLESHOOTING**). If the HDS does not communicate with only ABS, go to step 2.

2. Turn the ignition switch to LOCK (0).
3. Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse blown?

   YES - Install the new No. 4 (7.5 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the ABS modulator-control unit. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

   NO - Reinstall a checked fuse, then go to step 4.

4. Disconnect the ABS modulator-control unit 25P connector.

5. Turn the ignition switch ON (II).
6. Measure voltage between ABS modulator-control unit 25P connector terminal No. 16 and body ground.

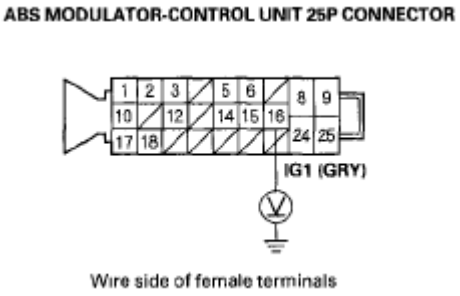


Fig. 31: Measuring Voltage Between ABS Modulator-Control Unit 25P Connector Terminal No. 16 And Body Ground

Is there battery voltage?

YES - Go to step 7.

NO - Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the ABS modulator-control unit.

7. Turn the ignition switch to LOCK (0).
8. Check for continuity between ABS modulator-control unit 25P connector terminal No. 24 and body ground.

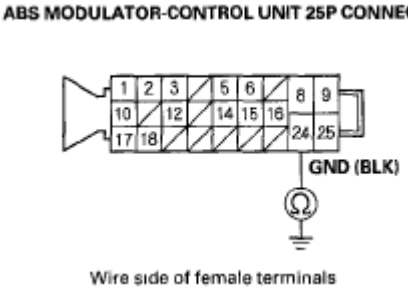


Fig. 32: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 24 And Body Ground

Is there continuity?

YES - Check for loose terminals in the ABS modulator-control unit 25P connector, clean terminal G202 and recheck. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

NO - Repair open in the wire between the ABS modulator-control unit and body ground (G202).

BRAKE SYSTEM INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the brake system indicator for several seconds when the ignition switch is turned ON (II).

   Does the indicator come on then go off?

   YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

   NO - Go to step 4.

4. Check the BRAKE INDICATOR in the ABS DATA LIST with the HDS.

   Does it indicate OFF?

   YES - Go to step 5.

   NO - Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**), and retest.

5. Turn the ignition switch to LOCK (0).
6. Check the brake fluid level in the master cylinder reservoir tank.

   Is brake fluid level OK?

   YES - Go to step 7.

   NO - Do the brake pad inspection: Front (except Si model) (see **INSPECTION - EXCEPT SI MODEL**), front (Si model) (see **INSPECTION - SI MODEL**), rear (disc brake type) (see **REAR BRAKE PAD INSPECTION AND REPLACEMENT**), and add the brake fluid, then go to step 1 and recheck.

7. Disconnect the brake fluid level switch 2P connector.
8. Turn the ignition switch ON (II).

   Does the brake system indicator go off?

   YES - Replace the brake fluid reservoir tank (brake fluid level switch is included) (see **MASTER CYLINDER INSPECTION**).

   NO - Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Disconnect the gauge control module (tach) 36P connector.
11. Check for continuity between brake fluid level switch 2P connector terminal No. 2 and body ground.

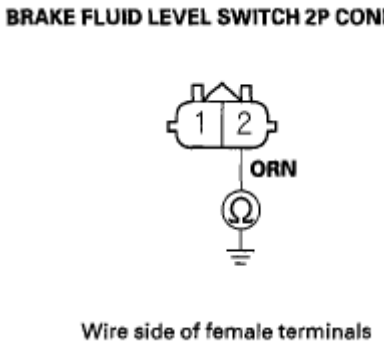


Fig. 33: Checking Continuity Between Brake Fluid Level Switch 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the gauge control module (tach) and the brake fluid level switch.

NO - Go to step 12.

12. Reconnect the gauge control module (tach) 36P connector.
13. Disconnect the parking brake switch IP connector.
14. Turn the ignition switch ON (II).

Does the brake system indicator go off?

YES - Replace the parking brake switch (see **PARKING BRAKE CABLE REPLACEMENT**).

NO - Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Disconnect the gauge control module (tach) 36P connector.
17. Check for continuity between parking brake switch 1P connector terminal No. 1 and body ground.

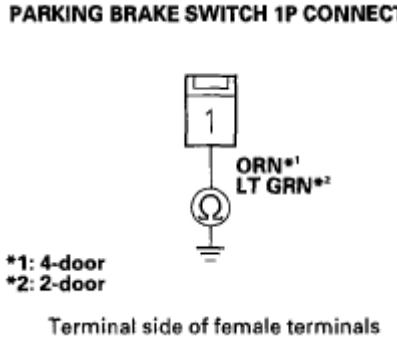


Fig. 34: Checking Continuity Between Brake Fluid Level Switch 2P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the gauge control module (tach) and the parking brake switch.

NO - Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1 and recheck. If it is OK, replace the original gauge control module (tach) (see **TACHOMETER**).

ABS INDICATOR AND BRAKE SYSTEM INDICATOR DO NOT GO OFF AT THE SAME TIME

NOTE: Check for gauge DTCs with the HDS (see HOW TO CHECK FOR DTCS WITH THE HONDA DIAGNOSTIC SYSTEM (HDS)). If gauge DTCs are stored, troubleshoot those DTCs first.

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the ABS indicator and the brake system indicator for several seconds when the ignition switch is turned ON (II).

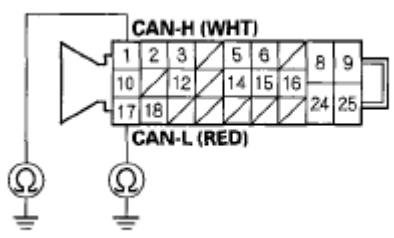
   Do the indicators come on then go off?

   YES - Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the ABS modulator-control unit 25P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** .

   NO - Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Short the SCS line with the HDS.
6. Disconnect ECM/PCM connector A (44P).
7. Disconnect the HDS from the data link connector (DLC).
8. Disconnect the gauge control module (tach) 36P connector.
9. Disconnect SRS unit connector A (28P).
10. With EPS: Disconnect EPS control unit connector D (28P).
11. With TPMS: Disconnect the TPMS control unit 20P connector.
12. Disconnect the ABS modulator-control unit 25P connector.
13. Check for continuity between the ABS modulator-control unit 25P connector terminals No. 1, and No. 17 and body ground individually.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Fig. 35: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminals No. 1 & No. 17 And Body Ground

Is there continuity?

YES - Repair short to body ground in the wire between the ECM/PCM, the gauge control module (tach), the data link connector (DLC), the SRS unit, the EPS control unit (if equipped), the TPMS control unit (if equipped), and the ABS modulator-control unit.

NO - Go to step 14.

14. Check for continuity between ABS modulator-control unit 25P connector terminals No. 1 and No. 17.

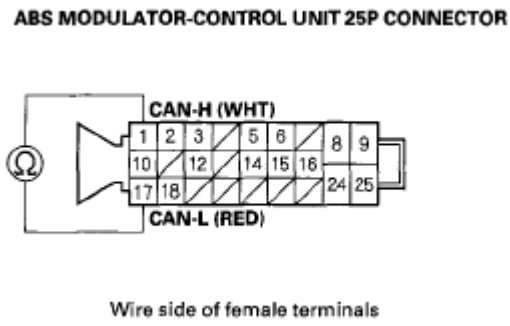


Fig. 36: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminals No. 1 And No. 17

Is there continuity?

YES - Repair short in the wire between ABS modulator-control unit 25P connector terminals No. 1 (CAN-H line) and No. 17 (CAN-L line).

NO - Go to step 15.

15. Check for continuity between ABS modulator-control unit 25P connector terminal and gauge control module (tach) 36P connector terminal (see table).

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR TERMINAL AND GAUGE CONTROL MODULE (TACH) 36P CONNECTOR TERMINAL

Sign	Connector Terminal No.	
	ABS Modulator-control Unit	Gauge Control Module (Tach)
CAN-L	17	19
CAN-H	1	1

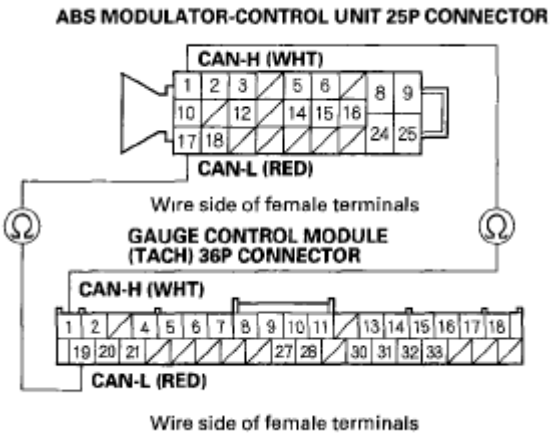


Fig. 37: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal And Gauge Control Module (Tach) 36P Connector Terminal

Is there continuity?

YES - Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1 and recheck. If it is OK, replace the original gauge control module (tach) (see **TACHOMETER**). If DTCs are indicated, replace the ABS modulator-control unit: Except Si model (see **REMOVAL - EXCEPT SI MODEL**), Si model (see **REMOVAL - SI MODEL**).

NO - Repair open in the wire between the gauge control module (tach) and the ABS modulator-control unit.

ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION

NOTE:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.**
- **Be careful not to damage or deform the brake lines during removal and installation.**
- **To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.**

REMOVAL - EXCEPT SI MODEL

1. Disconnect the ABS modulator-control unit 25P connector (A) by pulling up the lock (B); the connector disconnects itself.

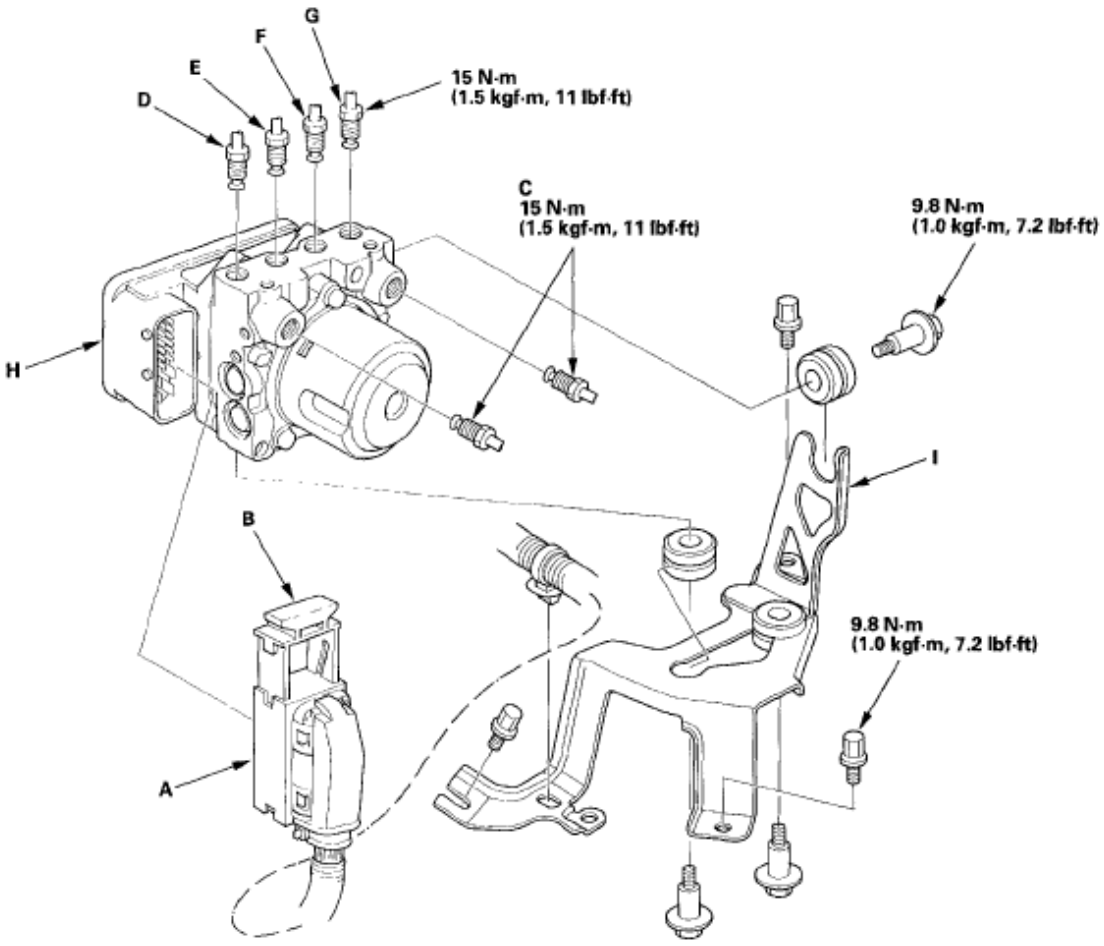


Fig. 38: Removal And Installation Of ABS Modulator-Control Unit (With Specifications)

2. Disconnect the six brake lines from the ABS modulator-control unit.

NOTE: Brake lines are connected to the master cylinder (C) and to the right-front (D), the left-rear (E), the right-rear (F) and the left-front (G) brake system.

3. Remove the ABS modulator-control unit (H) with the bracket (I) from the body.
4. Remove the ABS modulator-control unit from the bracket.

INSTALLATION - EXCEPT SI MODEL

1. Install the ABS modulator-control unit on the bracket.
2. Install the bracket with the ABS modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the ABS modulator-control unit 25P connector to the ABS modulator-control unit.
5. Lower the lock of the ABS modulator-control unit 25P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).

7. Start the engine, and check that the ABS indicator goes off.
8. Test-drive the vehicle, and check that the ABS indicator does not come on.

NOTE: If the brake pedal is spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again (see BRAKE SYSTEM BLEEDING).

REMOVAL - SI MODEL

1. Disconnect the ABS modulator-control unit 25P connector (A) by pulling up the lock (B); the connector disconnects itself.

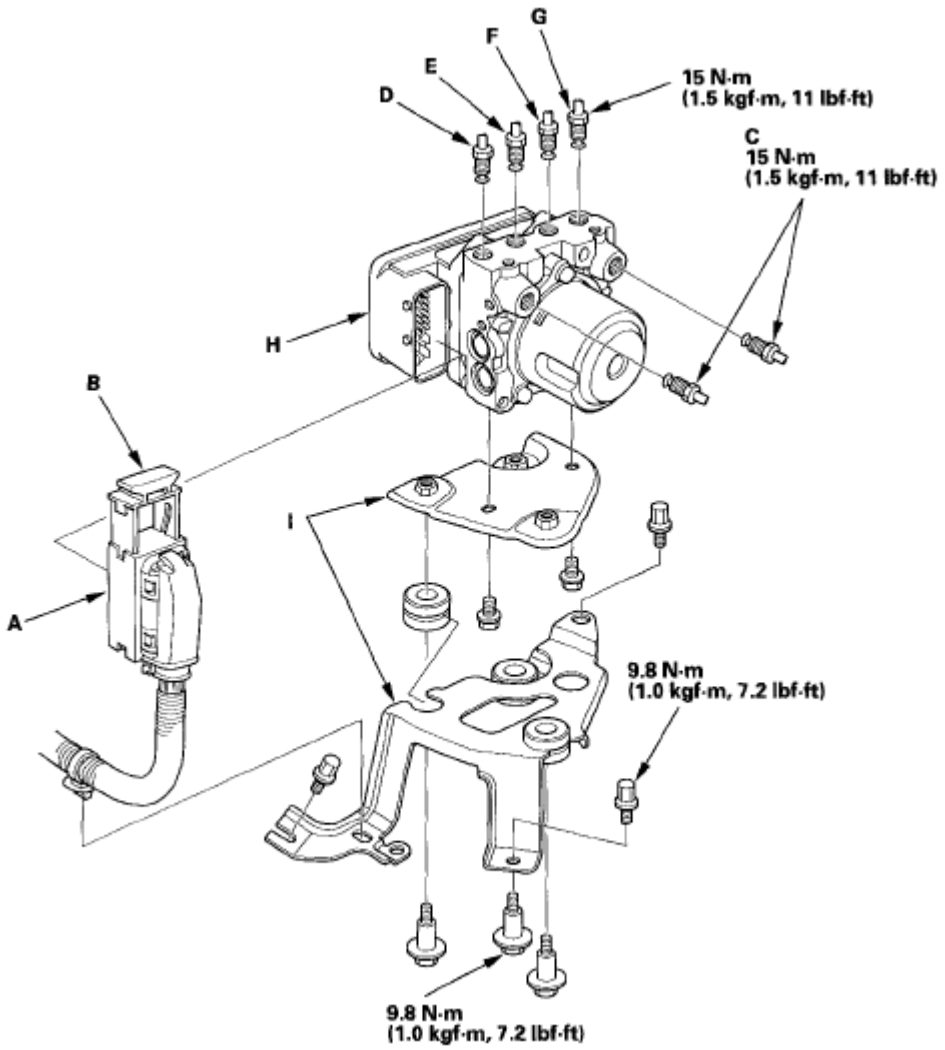


Fig. 39: Disconnecting ABS Modulator-Control Unit 25P Connector (With Specifications)

2. Disconnect the six brake lines from the ABS modulator-control unit.

NOTE: Brake lines are connected to the master cylinder (C) and to the right-front (D), the left-rear (E), the right-rear (F) and the left-front (G) brake system.

3. Remove the ABS modulator-control unit (H) with the brackets (I) from the body.
4. Remove the ABS modulator-control unit from the brackets.
5. Separate the bracket if necessary.

INSTALLATION - SI MODEL

1. Install the ABS modulator-control unit on the brackets.
2. Install the bracket with the ABS modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the ABS modulator-control unit 25P connector to the ABS modulator-control unit.
5. Lower the lock of the ABS modulator-control unit 25P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).
7. Start the engine, and check that the ABS indicator goes off.
8. Test-drive the vehicle, and check that the ABS indicator does not come on.

NOTE: If the brake pedal is spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again (see BRAKE SYSTEM BLEEDING).

WHEEL SENSOR REPLACEMENT

FRONT

1. Release the clamp (A), then disconnect the wheel sensor connector (B).

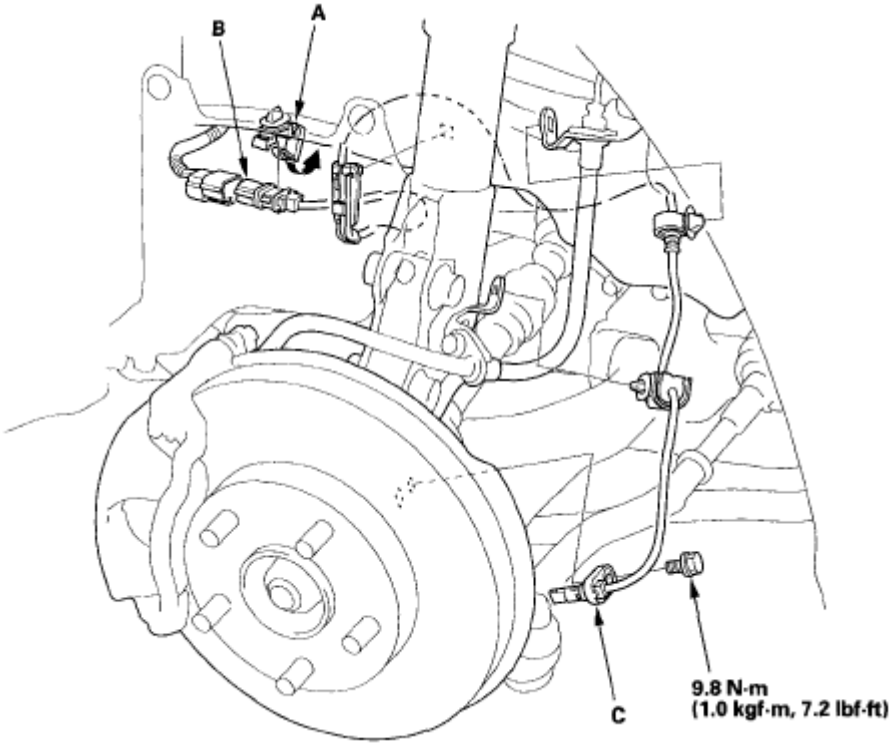


Fig. 40: Disconnecting Wheel Sensor Connector (With Specifications)

2. Remove the clips, the bolt, and the wheel sensor (C).
3. Install the wheel sensor in the reverse order of removal, and note these items:
    - Install the sensor carefully to avoid twisting the wires.
    - If the wheel sensor comes in contact with the wheel bearing, it is faulty.
4. Start the engine, and check that the ABS indicator goes off.
5. Test-drive the vehicle, and check that the ABS indicator does not come on.

REAR

1. Release the clamp (A), then disconnect the wheel sensor connector (B).

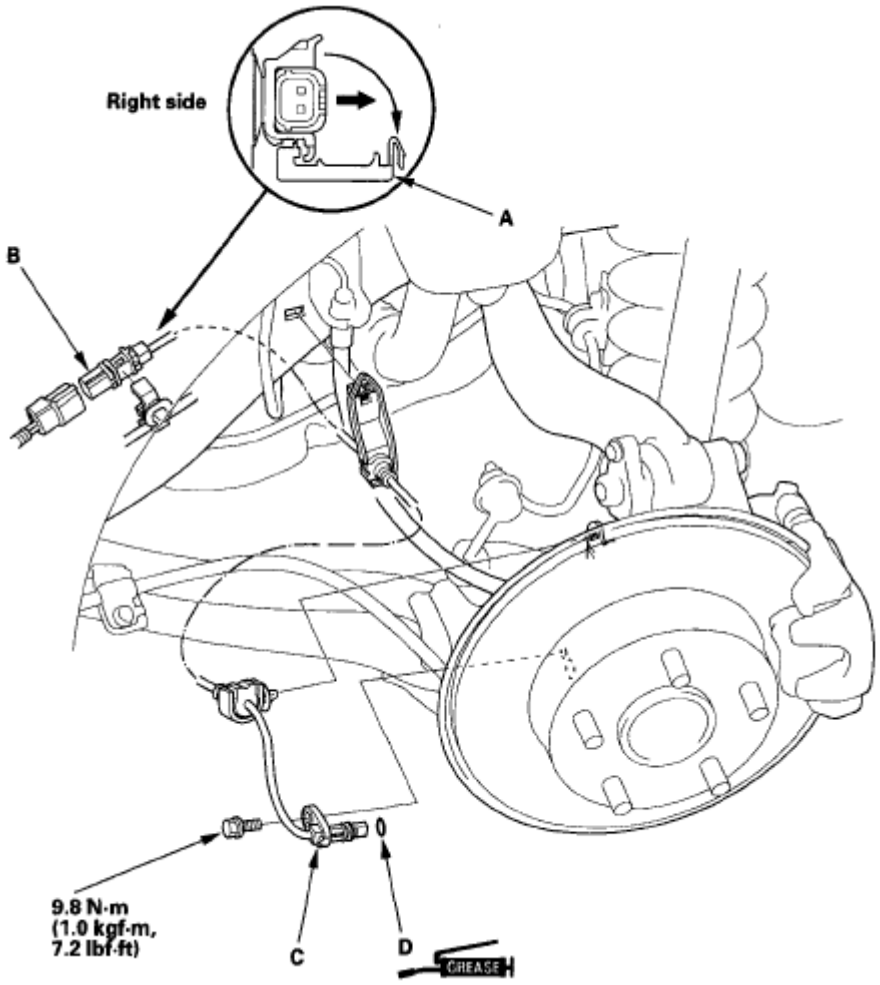


Fig. 41: Disconnecting Wheel Sensor Connector (With Specifications)

2. Remove the clips, the bolt, and the wheel sensor (C).
3. Install the wheel sensor in the reverse order of removal, and note these items:
    - Apply multipurpose grease to the O-ring (D).
    - Install the sensor carefully to avoid twisting the wires.
    - If the wheel sensor comes in contact with the hub bearing unit, it is faulty.
4. Start the engine, and check that the ABS indicator goes off.
5. Test-drive the vehicle, and check that the ABS indicator does not come on.

2006-08 GENERAL INFORMATION

Specifications - Civic (All Except GX & Hybrid)

STANDARDS AND SERVICE LIMITS

ENGINE ELECTRICAL (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE ELECTRICAL (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12V	
	Firing order		1-3-4-2	
Spark plug	Type		NGK:IZFR6K11S DENSO:SKJ20DR-M11S	
	Gap		1.0-1.1 mm (0.039-0.043 in.)	-
Ignition timing	At idle Check the red mark	M/T (in neutral)	8±2° BTDC	
		A/T (in N or P position)	8±2 ° BTDC	
Drive belt	Tension		Auto-tensioner	
Alternator	Output	At 13.5 V and normal engine temperature	90 A	
	Coil (rotor) resistance	At 68°F (20°C)	1.84-2.10 ohms	
	Slip ring O.D.		22.7 mm (0.89 in.)	21.2 mm (0.83 in.)
	Brush length		19.0 mm (0.75 in.)	5.0 mm (0.20 in.)
	Brush spring tension		3.3-4.1 N (0.34-0.42 kgf, 0.75-0.93 lbf)	
Starter	Output		1.0 kW	
	Commutator mica depth	M/T	0.50-0.80 mm (0.020-0.031 in.)	0.2 mm (0.008 in.)
		A/T		
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.	M/T	28.0 mm (1.10 in.)	27.0 mm (1.06 in.)
		A/T		
	Brush length	M/T	14.0-14.5 mm (0.55-0.57 in.)	9.0 mm (0.35 in.)
		A/T		
	Brush spring tension		13.7-17.7 N (1.40-1.80 kgf, 3.09-3.97 lbf)	

ENGINE ELECTRICAL (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE ELECTRICAL (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12V	
	Firing order		1-3-4-2	
Spark plug	Type		NGK:IFR7G11KS DENSO:SK22PR-M11S	
	Gap		1.0-1.1 mm (0.039-0.043 in.)	-
Ignition timing	At idle Check the red mark		8±2° BTDC	
Drive belt	Tension		Auto-tensioner	
Alternator	Output	At 13.5 V and normal engine temperature	105 A	
	Coil (rotor) resistance	At 68 °F (20 °C)	3.2-4.0 ohms	
	Slip ring O.D.		14.4 mm (0.57 in.)	14.0 mm (0.55 in.)
	Brush length		10.5 mm (0.41 in.)	1.5 mm (0.06 in.)
	Brush spring tension		3.2 N (0.33 kgf, 0.7 lbf)	
Starter	Output		1.0 kW	
	Commutator mica depth		0.40-0.50 mm (0.016-0.020 in.)	0.15 mm (0.006 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0-28.1 mm (1.102-1.106 in.)	27.5 mm (1.083 in.)
	Brush length		11.1-11.5 mm (0.44-0.45 in.)	9.0 mm (0.35 in.)
	Brush spring tension		13.7-17.7 N (1.40-1.80 kgf, 3.09-3.97 lbf)	

ENGINE ASSEMBLY (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE ASSEMBLY (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New
Compression	Pressure Check the engine with the starter cranking	Minimum	880 kPa (9.0 kgf/cm^2 , 128 psi)
		Maximum variation	200 kPa (2.0 kgf/cm^2 , 28 psi)

ENGINE ASSEMBLY (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE ASSEMBLY (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New
Compression	Pressure Check the	Minimum	930 kPa (9.5 kgf/cm^2 ,

	engine with the starter cranking		135 psi)
		Maximum variation	200 kPa (2.0 kgf/cm^2 , 28 psi)

CYLINDER HEAD (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - CYLINDER HEAD (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		-	0.08 mm (0.003 in.)
	Height		114.95-115.05 mm (4.526-4.530 in.)	-
Camshaft	End play		0.050-0.250 mm (0.002-0.010 in.)	0.4 mm (0.02 in.)
	Camshaft-to-holder oil clearance		0.045-0.084 mm (0.0018-0.0033 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	Intake, primary	35.754 mm (1.4076 in.)	-
		Intake, secondary A	35.358 mm (1.3920 in.)	-
		Intake, secondary B	36.027 mm (1.4184 in.)	-
		Exhaust	35.813 mm (1.4100 in.)	-
Valve	Clearance (cold)	Intake	0.18-0.22 mm (0.007-0.009 in.)	-
		Exhaust	0.23-0.27 mm (0.009-0.011 in.)	-
	Stem O.D.	Intake	5.48-5.49 mm (0.2157-0.2161 in.)	5.45 mm (0.215 in.)
		Exhaust	5.45-5.46 mm (0.2146-0.2150 in.)	5.42 mm (0.213 in.)
	Stem-to-guide clearance	Intake	0.02-0.05 mm (0.0008-0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.05-0.08 mm (0.0020-0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	0.85-1.15 mm (0.033-0.045 in.)	1.6 mm (0.06 in.)
		Exhaust	1.25-1.55 mm (0.049-0.061 in.)	2.0 mm (0.08 in.)
	Stem installed height	Intake	67.2-67.4 mm (2.646-2.654 in.)	67.7 mm (2.665 in.)
		Exhaust	58.4-58.6 mm (2.299-2.307 in.)	58.9 mm (2.319 in.)
Valve spring	Free length	Intake	55.31 mm (2.178	-

			in.)	
		Exhaust	56.97 mm (2.243 in.)	-
Valve guide	I.D.	Intake	5.51-5.53 mm (0.217-0.218 in.)	5.55 mm (0.219 in.)
		Exhaust	5.51-5.53 mm (0.217-0.218 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	18.25-18.75 mm (0.719-0.738 in.)	-
		Exhaust	18.25-18.75 mm (0.719-0.738 in.)	-
Rocker arm	Arm-to-shaft clearance	Intake	0.019-0.050 mm (0.0007-0.0020 in.)	0.08 mm (0.0031 in.)
		Exhaust	0.019-0.050 mm (0.0007-0.0020 in.)	0.08 mm (0.0031 in.)

CYLINDER HEAD (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - CYLINDER HEAD (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		-	0.05 mm (0.002 in.)
	Height		103.95-104.05 mm (4.093-4.096 in.)	-
Camshaft	End play		0.05-0.20 mm (0.002-0.008 in.)	0.4 mm (0.02 in.)
	Camshaft-to-holder oil clearance	No. 1 journal	0.030-0.069 mm (0.001-0.003 in.)	0.15 mm (0.006 in.)
		No. 2, 3, 4, 5 journals	0.060-0.099 mm (0.002-0.004 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	Intake, primary	32.791 mm (1.2910 in.)	-
		Intake, mid	35.534 mm (1.3990 in.)	-
		Intake, secondary	32.678 mm (1.2865 in.)	-
		Exhaust, primary	32.772 mm (1.2902 in.)	-
		Exhaust, mid	34.768 mm (1.3688 in.)	-
		Exhaust, secondary	32.661 mm (1.2859 in.)	-
Valve	Clearance (cold)	Intake	0.21-0.25 mm (0.008-0.010 in.)	-
		Exhaust	0.25-0.29 mm	-

			(0.010-0.011 in.)	
	Stem O.D.	Intake	5.475-5.485 mm (0.2156-0.2159 in.)	5.445 mm (0.214 in.)
		Exhaust	5.450-5.460 mm (0.2146-0.2150 in.)	5.420 mm (0.213 in.)
	Stem-to-guide clearance	Intake	0.030-0.055 mm (0.0012-0.0022 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055-0.080 mm (0.0022-0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25-1.55 mm (0.049-0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25-1.55 mm (0.049-0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	44.0-44.5 mm (1.73-1.75 in.)	44.7 mm (1.76 in.)
		Exhaust	44.1-44.6 mm (1.74-1.76 in.)	44.8 mm (1.76 in.)
Valve spring	Free length	Intake	NIPPON HATSUJO: 47.57 mm (1.8728 in.)	-
			CHUO HATSUJO: 47.58 mm (1.8732 in.)	
		Exhaust	NIPPON HATSUJO: 49.64 mm (1.954 in.)	-
			CHUO HATSUJO: 49.63 mm (1.954 in.)	
Valve guide	I.D.	Intake	5.515-5.530 mm (0.2171-0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515-5.530 mm (0.2171-0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	15.2-16.2 mm (0.598-0.638 in.)	-
		Exhaust	15.5-16.5 mm (0.610-0.650 in.)	-
Rocker arm	Arm-to-shaft clearance		0.025-0.052 mm (0.0010-0.0020 in.)	0.08 mm (0.003 in.)

ENGINE BLOCK (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE BLOCK (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)

	Bore diameter		81.000-81.015 mm (3.1890-3.1896 in.)	81.070 mm (3.1917 in.)
	Bore taper		-	0.05 mm (0.002 in.)
	Reboring limit		-	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 14 mm (0.55 in.) from bottom of skirt		80.980-80.990 mm (3.1881-3.1886 in.)	80.98 mm (3.186 in.)
	Clearance in cylinder		0.010-0.035 mm (0.0004-0.0014 in.)	0.05 mm (0.002 in.)
	Ring groove width	Top	1.23-1.24 mm (0.048-0.049 in.)	1.26 mm (0.050 in.)
		Second	1.22-1.23 mm (0.047-0.048 in.)	1.25 mm (0.049 in.)
		Oil	2.005-2.020 mm (0.0789-0.0795 in.)	2.05 mm (0.081 in.)
Piston ring	Ring-to-groove clearance	Top	0.045-0.070 mm (0.0018-0.0028 in.)	0.13 mm (0.005 in.)
		Second	0.035-0.060 mm (0.0014-0.0024 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20-0.35 mm (0.008-0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40-0.55 mm (0.016-0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20-0.70 mm (0.008-0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		19.960-19.964 mm (0.7858-0.7860 in.)	19.960 mm (0.7858 in.)
	Pin-to-piston clearance		-0.004 to +0.003 mm (-0.00016 to +0.00012 in.)	0.006 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005-0.015 mm (0.0002-0.0006 in.)	0.02 mm (0.0008 in.)
	Small-end bore diameter		19.969-19.975 mm (0.7862-0.7864 in.)	-
	Large-end bore diameter		48.0 mm (1.89 in.)	-
	End play installed on		0.15-0.35 mm	0.45 mm (0.018

	crankshaft		(0.006-0.014 in.)	in.)
Crankshaft	Main journal diameter		54.976-55.000 mm (2.1644-2.1654 in.)	-
	Rod journal diameter		44.976-45.000 mm (1.7707-1.7716 in.)	-
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10-0.35 mm (0.004-0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.03 mm (0.0012 in.) max.	0.04 mm (0.0016 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance		0.018-0.034 mm (0.0007-0.0013 in.)	0.045 mm (0.0018 in.)
	Rod bearing clearance		0.024-0.042 mm (0.0009-0.0017 in.)	0.055 mm (0.0022 in.)

ENGINE BLOCK (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE BLOCK (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter	A or I	86.010-86.020 mm (3.3862-3.3866 in.)	86.070 mm (3.3886 in.)
		B or II	86.000-86.010 mm (3.3858-3.3862 in.)	86.070 mm (3.3886 in.)
	Bore taper		-	0.05 mm (0.002 in.)
	Reboring limit		-	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 11 mm (0.4 in.) from bottom of skirt	No letter or A	85.980-85.990 mm (3.3850-3.3854 in.)	85.930 mm (3.3831 in.)
		Letter B	85.970-85.980 mm (3.3846-3.3850 in.)	85.920 mm (3.3827 in.)
	Clearance in cylinder		0.020-0.040 mm (0.0008-0.0016 in.)	0.05 mm (0.002 in.)
	Ring groove width	Top	1.220-1.230 mm	1.25 mm (0.049

			(0.0481-0.0484 in.)	in.)
		Second	1.220-1.230 mm (0.0481-0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.005-2.025 mm (0.0789-0.0797 in.)	2.05 mm (0.081 in.)
Piston ring	Ring-to-groove clearance	Top	0.045-0.070 mm (0.0018-0.0028 in.)	0.13 mm (0.005 in.)
		Second	0.040-0.065 mm (0.0016-0.0026 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20-0.35 mm (0.008-0.014 in.)	0.60 mm (0.024 in.)
		Second	0.50-0.65 mm (0.020-0.026 in.)	0.75 mm (0.030 in.)
		Oil	0.20-0.70 mm (0.008-0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.961-21.965 mm (0.8646-0.8648 in.)	21.953 mm (0.8643 in.)
	Pin-to-piston clearance		-0.005 to +0.002 mm (-0.00020 to +0.00008 in.)	0.005 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005-0.015 mm (0.0002-0.0006 in.)	0.02 mm (0.0008 in.)
	Small-end bore diameter		21.970-21.976 mm (0.8650-0.8652 in.)	-
	Large-end bore diameter		51.0 mm (2.01 in.)	-
	End play installed on crankshaft		0.15-0.30 mm (0.006-0.012 in.)	0.40 mm (0.016 in.)
Crankshaft	Main journal diameter	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	54.984-55.008 mm (2.1648-2.1657 in.)	-
		No. 3 journal	54.976-55.000 mm (2.1644-2.1654 in.)	-
	Rod journal diameter		44.976-45.000 mm (1.7707-1.7717 in.)	-
	Rod/main journal		0.005 mm (0.0002	0.010 mm

	taper		in.) max.	(0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10-0.35 mm (0.004-0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.03 mm (0.0012 in.) max.	0.04 mm (0.0016 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	0.017-0.041 mm (0.0007-0.0016 in.)	0.050 mm (0.0020 in.)
		No. 3 journal	0.025-0.049 mm (0.0010-0.0019 in.)	0.055 mm (0.0022 in.)
	Rod bearing clearance		0.032-0.066 mm (0.0013-0.0026 in.)	0.077 mm (0.0030 in.)

ENGINE LUBRICATION (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE LUBRICATION (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	4.5 L (4.8 US qt)	
		Oil change including filter	3.7 L (3.9 US qt)	
		Oil change without filter	3.5 L (3.7 US qt)	
Oil pump	Inner-to-outer rotor clearance		0.02-0.16 mm (0.001-0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.100-0.175 mm (0.0039-0.0069 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor axial clearance		0.02-0.07 mm (0.001-0.003 in.)	0.12 mm (0.005 in.)
	Oil pressure with oil temperature at 176°F (80°C)	At idle	70 kPa (0.7 kgf/cm^2 psi)	
		At 3,000 rpm	340 kPa (3.5 kgf/cm^2 , 50 psi)	

ENGINE LUBRICATION (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - ENGINE LUBRICATION (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.5 L (5.8 US qt)	
		Oil change including filter	4.4 L (4.6 US qt)	
		Oil change without filter	4.2 L (4.4 US qt)	

Oil pump	Inner-to-outer rotor clearance		0.06-0.16 mm (0.002-0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.15-0.21 mm (0.006-0.008 in.)	0.23 mm (0.009 in.)
	Pump housing-to-outer rotor axial clearance		0.035-0.070 mm (0.0013-0.0028 in.)	0.12 mm (0.005 in.)
	Balancer shafts, journal diameter	No. 1 journal, front shaft	19.938-19.950 mm (0.7850-0.7854 in.)	19.92 mm (0.784 in.)
		No. 1 journal, rear shaft	23.938-23.950 mm (0.9424-0.9429 in.)	23.92 mm (0.942 in.)
		No. 2 journal, front and rear shaft	32.949-32.961 mm (1.2972-1.2977 in.)	32.93 mm (1.296 in.)
	Balancer shafts, journal taper		0.005 mm (0.0002 in.) max.	-
	Balancer shafts, end play	Front	0.063-0.108 mm (0.0025-0.0043 in.)	0.14 mm (0.0055 in.)
		Rear	0.063-0.108 mm (0.0025-0.0043 in.)	0.14 mm (0.0055 in.)
	Balancer shafts, shaft-to-bearing clearance	No. 1 journal, front shaft	0.050-0.082 mm (0.0020-0.0032 in.)	0.10 mm (0.004 in.)
		No. 1 journal, rear shaft	0.050-0.082 mm (0.0020-0.0032 in.)	0.10 mm (0.004 in.)
		No. 2 journal, front and rear shaft	0.060-0.120 mm (0.0024-0.0047 in.)	0.15 mm (0.006 in.)
	Balancer shaft bearings, I.D.	No. 1 journal, front shaft	20.000-20.020 mm (0.7874-0.7882 in.)	20.03 mm (0.789 in.)
		No. 1 journal, rear shaft	24.000-24.020 mm (0.9449-0.9457 in.)	24.03 mm (0.946 in.)
		No. 2 journal, front and rear shaft	33.021-33.069 mm (1.3000-1.3019 in.)	33.09 mm (1.303 in.)
	Relief valve, oil pressure with oil temperature at 176 °F (80 °C)	At idle	70 kPa (0.7 kgf/cm^2 , 10 psi) min.	
		At 3,000 rpm	300 kPa (3.1 kgf/cm^2 , 44 psi) min.	

COOLING SYSTEM (R18A1 ENGINE)

STANDARDS AND SERVICE LIMITS - COOLING SYSTEM (R18A1 ENGINE)

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacity (includes engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/Coolant Type 2	M/T: engine overhaul	6.5 L (1.72 US gal)
		A/T engine overhaul	6.7 L (1.77 US gal)
		M/T: coolant change	5.2 L (1.37 US gal)
		A/T coolant change	5.3 L (1.40 US gal)
		M/T: engine overhaul	6.5 L (1.72 US gal)
		A/T engine overhaul	7.1 L (1.88 US gal)
		M/T: coolant change	5.2 L (1.37 US gal)

		A/T: coolant change	5.5 L (1.45 US gal)
Reservoir	Coolant capacity		0.4 L (0.11 US gal)
Radiator cap	Opening pressure		93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi)
Thermostat	Opening temperature	Begins to open	176-183°F (80-84°C)
		Fully open	203°F (951)
	Valve lift at fully open		8.0 mm (0.31 in.) min.

COOLING SYSTEM (K20Z3 ENGINE)

STANDARDS AND SERVICE LIMITS - COOLING SYSTEM (K20Z3 ENGINE)

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacities (including engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/Coolant Type 2	Engine overhaul	6.8 L (1.80 US gal)
		Coolant change	4.5 L (1.19 US gal)
Reservoir	Coolant capacity		0.4 L (0.11 US gal)
Radiator cap	Opening pressure		93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi)
Thermostat	Opening temperature	Begins to open	169-176°F (76-80°C)
		Fully open	194°F (90°C)
	Valve lift at fully open		8.0 mm (0.31 in.)

FUEL AND EMISSIONS (R18A1)

STANDARDS AND SERVICE LIMITS - FUEL AND EMISSIONS

Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected		380-430 kPa (3.9-4.4 kgf/cm^2 , 55-63 psi)
Fuel tank	Capacity		50 L (13.2 US gal)
Engine idle (USA models)	Idle speed without load	A/T (in N or P position), M/T (in neutral)	670 50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window defogger ON, and headlights on high beam)	A/T (in N or P position), M/T (in neutral)	710 50 rpm
Engine idle (Canada models)	Idle speed without load	A/T (in N or P position), M/T (in neutral)	750 50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window	A/T (in N or P position), M/T (in neutral)	750 50 rpm

	defogger ON, and headlights on high beam)		

FUEL AND EMISSIONS (K20Z3)

STANDARDS AND SERVICE LIMITS - FUEL AND EMISSIONS

Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected	K20Z3 engine	330-380 kPa (3.4-3.9 kgf/cm^2 , 48-55 psi)
Fuel tank	Capacity		50 L (13.2 US gal)
Engine idle	Idle speed without load	In neutral	750 50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window defogger ON, and headlights on high beam)	In neutral	750 50 rpm

CLUTCH

STANDARDS AND SERVICE LIMITS - CLUTCH

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch pedal	Height from the floor		157 mm (6.18 in.)	-
	Stroke		130-140 mm (5.12-5.51 in.)	-
	Play		10-18 mm (0.39-0.71 in.)	-
	Disengagement height from the floor		77 mm (3.03 in.) min.	-
Flywheel	Runout on clutch mating surface		0.05 mm (0.002 in.) max.	0.15 mm (0.006 in.)
Clutch disc	Rivet head depth	5M/T model	1.35-1.95 mm (0.053-0.077 in.)	0.2 mm (0.01 in.)
		6M/T model	1.65-2.25 mm (0.065-0.089 in.)	0.7 mm (0.03 in.)
	Thickness	5M/T model	7.8-8.4 mm (0.30-0.33 in.)	6.0 mm (0.24 in.)
		6M/T model	8.3-8.9 mm (0.33-0.35 in.)	6.0 mm (0.24 in.)
Pressure plate	Warpage		0.03 mm (0.001 in.) max.	0.15 mm (0.006 in.)
	Height if diaphragm spring fingers	Measured with clutch alignment disc, clutch alignment shaft, remover handle, and	0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)

		feeler gauge		

MANUAL TRANSMISSION AND M/T DIFFERENTIAL (5-SPEED)

STANDARDS AND SERVICE LIMITS - MANUAL TRANSMISSION AND M/T DIFFERENTIAL (5-SPEED)

Item	Measurement	Qualification	Standard or New	Service Limit
Manual transmission fluid	Capacity Use Honda MTF	Fluid change	1.4 L (1.5 US qt)	
		Overhaul	1.6 L (1.7 US qt)	
Mainshaft	End play		0.11-0.18 mm (0.004-0.007 in.)	Adjust
	Diameter of bushing contact area		18.800-18.850 mm (0.7402-0.7421 in.)	18.75 mm (0.738 in.)
	Diameter of distance collar contact area		28.992-29.005 mm (1.1414-1.1419 in.)	28.93 mm (1.139 in.)
	Diameter of ball bearing contact area (clutch housing side)		25.977-25.990 mm (1.0227-1.0232 in.)	25.92 mm (1.020 in.)
	Diameter of needle bearing contact area		34.984-35.000 mm (1.3773-1.3780 in.)	34.93 mm (1.375 in.)
	Diameter of ball bearing contact area (transmission housing side)		24.987-25.000 mm (0.9837-0.9843 in.)	24.93 mm (0.981 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th, and 5th gear	I.D.		39.009-39.025 mm (1.5358-1.5364 in.)	38.95 mm (1.533 in.)
	End play	3rd	0.06-0.21 mm (0.002-0.008 in.)	0.30 mm (0.012 in.)
		4th	0.06-0.19 mm (0.002-0.007 in.)	0.28 mm (0.011 in.)
		5th	0.06-0.14 mm (0.002-0.006 in.)	0.23 mm (0.009 in.)
	Thickness	3rd	27.02-27.07 mm (1.064-1.066 in.)	26.95 mm (1.061 in.)
		4th	25.52-25.57 mm (1.005-1.007 in.)	25.45 mm (1.002 in.)
		5th	22.42-22.47 mm (0.883-0.885 in.)	22.35 mm (0.880 in.)
Mainshaft 4th and 5th gear distance collar	I.D.		29.014-29.024 mm (1.1423-1.1427 in.)	29.03 mm (1.423 in.)
	O.D.		34.989-35.000	34.94 mm

			mm (1.3775-1.3780 in.)	(1.376 in.)
	Length	A	48.97-49.03 mm (1.9279-1.9303 in.)	-
		B	22.53-22.56 mm (0.887-0.888 in.)	-
MBS distance collar	I.D.		25.00-25.10 mm (0.984-0.988 in.)	28.02 mm (1.103 in.)
	Length		24.03-24.08 mm (0.946-0.948 in.)	-
Countershaft	Diameter of needle bearing contact area (clutch housing side)		34.000-34.015 mm (1.3386-1.3392 in.)	33.95 mm (1.337 in.)
	Diameter of distance collar contact area		38.987-39.000 mm (1.5349-1.5354 in.)	38.94 mm (1.533 in.)
	Diameter of ball bearing contact area (transmission housing side)		26.020-26.033 mm (1.0244-1.0249 in.)	25.97 mm (1.022 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	35 mm shim-to-bearing inner race clearance		0.04-0.10 mm (0.0016-0.0039 in.)	Adjust
Countershaft 1st and 2nd gear	I.D.		48.509-48.525 mm (1.9098-1.9104 in.)	48.58 mm (1.913 in.)
	End play	1st	0.06-0.21 mm (0.002-0.008 in.)	0.25 mm (0.010 in.)
		2nd	0.06-0.14 mm (0.002-0.006 in.)	0.23 mm (0.009 in.)
	Thickness	1st	27.42-27.47 mm (1.080-1.081 in.)	-
		2nd	26.42-26.47 mm (1.040-1.042 in.)	-
Countershaft 1st and 2nd gear distance collar	I.D.		39.00-39.01 mm (1.5354-1.5358 in.)	39.02 mm (1.536 in.)
	O.D.		44.489-44.5 mm (1.7515-1.7520 in.)	44.44 mm (1.750 in.)
	Length	1st	21.53-21.58 mm (0.843-0.849 in.)	-
		2nd	26.53-26.56 mm (1.044-1.046 in.)	-

Reverse idler gear	I.D.		18.016-18.043 mm (0.7090-0.7104 in.)	18.08 mm (0.712 in.)
	Gear-to-reverse gear shaft clearance		0.032-0.077 mm (0.001-0.003 in.)	0.14 mm (0.006 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.655-1.334 mm (0.026-0.053 in.)	0.4 mm (0.016 in.)
Shift fork	Finger thickness	1-2	6.7-6.9 mm (0.26-0.27 in.)	-
		3-4,5	7.4-7.6 mm (0.29-0.30 in.)	-
	Fork-to-synchro sleeve clearance		0.35-0.65 mm (0.014-0.026 in.)	1.0 mm (0.039 in.)
Reverse shift fork	Finger width		14.7-14.9 mm (0.579-0.587 in.)	-
	Fork-to-reverse idler gear clearance		0.20-0.60 mm (0.007-0.024 in.)	1.2 mm (0.047 in.)
Shift arm	I.D.		14.013-14.058 mm (0.552-0.553 in.)	-
	Shift arm-to-shift piece clearance		0.20-0.61 mm (0.008-0.024 in.)	0.7 mm (0.028 in.)
	Shift arm-to-shift lever clearance		0.013-0.085 mm (0.0005-0.0033 in.)	-
Select lever	Finger width		14.85-14.95 mm (0.585-0.589 in.)	-
Change lever	O.D.		13.941-13.968 mm (0.549-0.550 in.)	-
	Interlock to select lever clearance		0.032-0.136 mm (0.001-0.005 in.)	-
Shift piece	I.D.		14.000-14.068 mm (0.5512-0.5539 in.)	-
	Shift piece groove width		16.00-16.20 mm (0.630-0.638 in.)	-
	Shift piece finger width		15.9-16.0 mm (0.626-0.630 in.)	-
	Shift piece-to-shift fork clearance		0.2-0.5 mm (0.008-0.020 in.)	-
M/T differential carrier	Pinion shaft contact area I.D.		18.010-18.028 mm (0.7091-0.7098 in.)	-
	Carrier-to-pinion shaft clearance		0.027-0.057 mm (0.0011-0.0022 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.025-28.045	-

			mm (1.1033-1.1041 in.)	
M/T differential pinion gear	Backlash		0.05-0.15 mm (0.002-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.059-0.095 mm (0.0023-0.0037 in.)	0.15 mm (0.006 in.)
80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0-0.10 mm (0-0.0039 in.)	Adjust

MANUAL TRANSMISSION AND M/T DIFFERENTIAL (6-SPEED)

STANDARDS AND SERVICE LIMITS - MANUAL TRANSMISSION AND M/T DIFFERENTIAL (6-SPEED)

Item	Measurement	Qualification	Standard or New	Service Limit
Manual transmission fluid	Capacity Use Honda MTF	Fluid change	1.5 L (1.6 US qt)	
		Overhaul	1.7 L (1.8 US qt)	
Mainshaft	End play		0.11-0.17 mm (0.004-0.007 in.)	Adjust
	Diameter of bushing contact area		20.80-20.85 mm (0.819-0.821 in.)	20.75 mm (0.817 in.)
	Diameter of distance collar contact area		31.984-32.000 mm (1.2594-1.2598 in.)	31.93 mm (1.257 in.)
	Diameter of ball bearing contact area (clutch housing side)		27.977-27.990 mm (1.1015-1.1020 in.)	27.92 mm (1.099 in.)
	Diameter of needle bearing contact area		38.984-39.000 mm (1.5348-1.5354 in.)	38.93 mm (1.533 in.)
	Diameter of ball bearing contact area (transmission housing side)		27.987-28.000 mm (1.1019-1.1024 in.)	27.93 mm (1.100 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th, and 5th gear	I.D.		44.009-44.025 mm (1.7326-1.7333 in.)	44.08 mm (1.735 in.)
	End play		0.06-0.16 mm (0.002-0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92-23.97 mm (0.941-0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 6th gear	I.D.		40.009-40.025	40.08 mm

			mm (1.5752-1.5758 in.)	(1.578 in.)
	End play		0.06-0.16 mm (0.002-0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92-23.97 mm (0.941-0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 4th and 5th gear distance collar	I.D.		32.00-32.01 mm (1.2598-1.2602 in.)	32.02 mm (1.261 in.)
	O.D.		38.989-39.000 mm (1.5350-1.5354 in.)	38.94 mm (1.533 in.)
	Length	A	51.95-52.05 mm (2.045-2.049 in.)	-
		B	24.03-24.08 mm (0.946-0.948 in.)	-
Mainshaft 6th gear distance collar	I.D.		28.00-28.01 mm (1.102-1.103 in.)	28.02 mm (1.103 in.)
	O.D.		34.989-35.000 mm (1.3775-1.3779 in.)	34.940 mm (1.3756 in.)
	Length		24.03-24.08 mm (0.946-0.948 in.)	-
Countershaft	Diameter of needle bearing contact area (clutch housing side)		35.000-35.015 mm (1.3780-1.3785 in.)	34.95 mm (1.3760 in.)
	Diameter of distance collar contact area		39.937-39.950 mm (1.5723-1.5728 in.)	39.883 mm (1.5702 in.)
	Diameter of ball bearing contact area (transmission housing side)		30.020-30.033 mm (1.1819-1.1824 in.)	29.97 mm (1.180 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	35 mm shim-to-bearing inner race clearance		0.04-0.10 mm (0.0016-0.0039 in.)	Adjust
Countershaft 1st and 2nd gear	I.D.		52.010-52.029 mm (2.0476-2.0484 in.)	52.08 mm (2.050 in.)
	End play		0.06-0.16 mm (0.002-0.006 in.)	0.25 mm (0.010 in.)
	Thickness	1st	22.92-22.97 mm (0.902-0.904 in.)	22.87 mm (0.900 in.)
		2nd	27.92-27.97 mm	27.87 mm

			(1.099-1.101 in.)	(1.097 in.)
Countershaft 1st and 2nd gear distance collar	I.D.		39.95-39.96 mm (1.5728-1.5732 in.)	39.97 mm (1.574 in.)
	O.D.		46.989-47.000 mm (1.8499-1.8504 in.)	46.94 mm (1.848 in.)
	Length	1st	23.03-23.08 mm (0.907-0.909 in.)	-
		1st	28.03-28.08 mm (1.104-1.106 in.)	-
Reverse idler gear	I.D.		20.016-20.043 mm (0.7880-0.7891 in.)	20.90 mm (0.832 in.)
	Gear-to-reverse gear shaft clearance		0.036-0.084 mm (0.0014-0.0033 in.)	0.16 mm (0.006 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.70-1.49 mm (0.028-0.059 in.)	0.4 mm (0.016 in.)
Double cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70-1.19 mm (0.028-0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50-1.04 mm (0.020-0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear clearance	Ring pushed against gear	0.95-1.68 mm (0.037-0.066 in.)	0.6 mm (0.024 in.)
Triple cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70-1.19 mm (0.028-0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50-1.04 mm (0.020-0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear clearance	Ring pushed against gear	0.95-1.68 mm (0.037-0.066 in.)	0.6 mm (0.024 in.)
Shift fork	Finger thickness		7.4-7.6 mm (0.29-0.30 in.)	-
	Fork-to-synchro sleeve clearance		0.35-0.65 mm (0.014-0.026 in.)	1.0 mm (0.039 in.)
Reverse shift fork	Finger width		13.4-13.7 mm (0.527-0.539 in.)	-
	Fork-to-reverse idler gear clearance		0.20-0.59 mm (0.007-0.024 in.)	1.3 mm (0.051 in.)
Shift arm	I.D.		13.973-14.000 mm (0.5501-0.5512 in.)	-
	Finger width		16.9-17.0 mm (0.665-0.669 in.)	-
	Shift arm-to-shift fork clearance		0.2-0.5 mm (0.007-0.020 in.)	0.62 mm (0.024 in.)
Select lever	Finger width		14.85-14.95 mm (0.585-0.589 in.)	-

Change lever	Shaft-to-select lever clearance		0.05-0.25 mm (0.002-0.010 in.)	0.50 mm (0.020 in.)
	Groove width		15.00-15.10 mm (0.591-0.594 in.)	-
	Shaft-to-shift arm clearance		0.013-0.070 mm (0.0005-0.0028 in.)	0.1 mm (0.004 in.)
M/T differential carrier	Pinion shaft contact area I.D.		18.010-18.028 mm (0.7091-0.7098 in.)	-
	Carrier-to-pinion shaft clearance		0.027-0.057 mm (0.0011-0.0022 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.025-28.045 mm (1.1033-1.1041 in.)	-
M/T differential pinion gear	Backlash		0.05-0.15 mm (0.002-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.059-0.095 mm (0.0023-0.0037 in.)	0.15 mm (0.006 in.)
80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0-0.10 mm (0-0.004 in.)	Adjust

AUTOMATIC TRANSMISSION AND A/T DIFFERENTIAL

STANDARDS AND SERVICE LIMITS - AUTOMATIC TRANSMISSION AND A/T DIFFERENTIAL (1 OF 3)

Item	Measurement	Qualification	Standard or New	Service Limit
Automatic transmission fluid	Capacity Use Honda ATF-Z1	Fluid change	2.4 L (2.5 US qt)	
		Overhaul	5.9 L (6.2 US qt)	
ATF pressure	Line pressure	At 2,000 rpm in P or N position	900-960 kPa (9.2-9.8 kgf/cm^2 , 130-140 psi)	850 kPa (8.7 kgf/cm^2 , 120 psi)
	1st clutch pressure	At 2,000 rpm in 1 position	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)
	2nd clutch pressure	At 2,000 rpm in 2 position	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)
	3rd clutch pressure	At 2,000 rpm in 3rd gear in D3 position	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)

	4th clutch pressure	At 2,000 rpm in 4th gear in D position	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)
	5th clutch pressure	At 2,000 rpm in 5th gear in D position	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)
Torque converter	Stall speed Check with vehicle on level ground		2,670 rpm	2,520-2,820 rpm
Clutch	Clutch end-plate-to-top disc clearance	1st	1.62-1.82 mm (0.064-0.072 in.)	-
		2nd and 4th	0.7-0.9 mm (0.028-0.035 in.)	-
		3rd and 5th	0.93-1.13 mm (0.037-0.044 in.)	-
	Clutch return spring free length	1st	36.0 mm (1.42 in.)	34.5 mm (1.36 in.)
		2nd and 4th	39.4 mm (1.55 in.)	37.4 mm (1.47 in.)
		3rd and 5th	45.15 mm (1.778 in.)	43.0 mm (1.69 in.)
	Clutch disc thickness	1st, 3rd, and 5th	1.94 mm (0.076 in.)	-
		2nd and 4th	1.96 mm (0.077 in.)	-
	Clutch plate thickness	1st, 3rd, 4th, and 5th	1.6 mm (0.063 in.)	When discolored
		2nd	2.0 mm (0.079 in.)	When discolored
	Clutch waved-plate height 1st, 3rd, and 5th clutches		0.07-0.20 mm (0.003-0.008 in.)	0.05 mm (0.002 in.)
	1st, 3rd, and 5th clutch end-plate thickness	Markl	2.1 mm (0.082 in.)	When discolored
		Mark 2	2.2 mm (0.086 in.)	When discolored
		Mark 3	2.3 mm (0.090 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored
	2nd and 4th clutch end-plate thickness	Mark AC or AM	2.1 mm (0.082 in.)	When discolored
		Mark AD or AN	2.2 mm (0.086 in.)	When discolored
		Mark AE or AP	2.3 mm (0.090 in.)	When discolored
		Mark AF or AQ	2.4 mm (0.094 in.)	When discolored
		Mark AG or AR	2.5 mm (0.098 in.)	When discolored
		Mark AH or AS	2.6 mm (0.102 in.)	When discolored
		Mark AJ or AT	2.7 mm (0.106 in.)	When discolored
		Mark AK or AU	2.8 mm (0.110 in.)	When discolored

		Mark AL or AV	2.9 mm (0.114 in.)	When discolored
ATF pump	ATF pump thrust clearance		0.03-0.06 mm (0.001-0.002 in.)	0.07 mm (0.003 in.)
	ATF pump gear-to-body clearance	Drive gear	0.210-0.265 mm (0.008-0.010 in.)	-
		Driven gear	0.070-0.125 mm (0.003-0.005 in.)	-
	ATF pump driven gear I.D.		14.016-14.034 mm (0.5518-0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980-13.990 mm (0.5504-0.5508 in.)	When worn or damaged
Stator shaft	Needle bearing contact I.D.	Torque converter side	27.000-27.021 mm (1.063-1.064 in.)	When worn or damaged
		ATF pump side	29.000-29.021 mm (1.1417-1.1426 in.)	-
	Sealing ring contact area I.D.		29.000-29.021 mm (1.1417-1.1426 in.)	29.05 mm (1.144 in.)
Reverse shift fork	Fork finger thickness		5.90-6.00 mm (0.232-0.236 in.)	5.40 mm (0.213 in.)
Park gear and pawl			-	When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000-14.010 mm (0.5512-0.5526 in.)	When worn or damaged
	Shift fork shaft valve bore I.D.		37.000-37.039 mm (1.4567-1.4582 in.)	37.045 mm (1.4585 in.)
Regulator valve body	Sealing ring contact I.D.		29.000-29.021 mm (1.1417-1.1426 in.)	29.05 mm (1.144 in.)
Mainshaft	Diameter of needle bearing contact area	At stator shaft	22.984-23.000 mm (0.905-0.906 in.)	When worn or damaged
		At 5th gear collar	32.975-32.991 mm (1.298-1.300 in.)	When worn or damaged
		At 3rd gear	46.983-46.999 mm (1.8497-1.8503 in.)	When worn or damaged
	I.D. of gears	5th gear	37.000-37.016 mm (1.456-1.457 in.)	When worn or damaged
		3rd gear	52.000-52.019	When worn or

			mm (2.047-2.048 in.)	damaged
	End play	5th gear	015-0.27 mm (0.006-0.106 in.)	-
		3rd gear	0.04-0.10 mm (0.002-0.004 in.)	-
	40 x 63 mm thrust washer thickness	No. 1	3.750 mm (0.1476 in.)	When worn or damaged
		No. 2	3.775 mm (0.1486 in.)	When worn or damaged
		No. 3	3.800 mm (0.1496 in.)	When worn or damaged
		No. 4	3.825 mm (0.1506 in.)	When worn or damaged
		No. 5	3.850 mm (0.1516 in.)	When worn or damaged
		No. 6	3.875 mm (0.1526 in.)	When worn or damaged
		No. 7	3.900 mm (0.1535 in.)	When worn or damaged
		No. 8	3.925 mm (0.1545 in.)	When worn or damaged
		No. 9	3.950 mm (0.1555 in.)	When worn or damaged
		No. 10	3.975 mm (0.1565 in.)	When worn or damaged
		No. 11	4.000 mm (0.1575 in.)	When worn or damaged
	5th gear collar length		60.4-60.5 mm (2.380-2.381 in.)	-
	5th gear collar flange thickness		3.70-3.85 mm (0.146-0.152 in.)	When worn or damaged
	Sealing ring thickness		1.91-1.97 mm (0.0752-0.0776 in.)	1.86 mm (0.0732 in.)
	Width of sealing ring groove		2.025-2.060 mm (0.0797-0.0811 in.)	2.080 mm (0.0819 in.)
	3rd clutch feed pipe O.D.		7.97-7.98 mm (0.3138-0.3142 in.)	7.95 mm (0.313 in.)
	Feed pipe bushing I.D.		8.000-8.015 mm (0.3150-0.3156 in.)	8.030 mm (0.3161 in.)
Countershaft	Diameter of needle bearing contact area	At torque converter housing	33.504-33.517 mm (1.3191-1.3196 in.)	When worn or damaged
		At 5th gear	32.986-32.999	When worn or

			mm (1.287-1.299 in.)	damaged
		Reverse selector hub	35.983-35.999 mm (1.4167-1.4173 in.)	When worn or damaged
	I.D. of gears	5th gear	39.000-39.016 mm (1.535-1.536 in.)	When worn or damaged
		Reverse gear	42.000-42.016 mm (1.6535-1.6542 in.)	When worn or damaged
	End play	5th gear	0.64-0.87 mm (0.025-0.034 in.)	-
		Reverse gear	0.10-0.25 mm (0.0039-0.0098 in.)	-
	Reverse selector hub width		29.25-29.45 mm (1.1516-1.1595 in.)	-
	Collar, 33.2 x 40 x 26 mm length		25.95-26.00 mm (1.022-1.024 in.)	-
	Reverse selector hub O.D.		55.87-55.90 mm (2.200-2.201 in.)	When worn or damaged
Secondary shaft	Diameter of needle bearing contact area	1st gear	30.986-30.999 mm (1.2199-1.2204 in.)	When worn or damaged
		2nd gear	42.986-42.999 mm (1.6924-1.6929 in.)	When worn or damaged
		4th gear collar	34.975-34.991 mm (1.3770-1.3776 in.)	When worn or damaged
	I.D. of gears	1st gear	38.000-38.016 mm (1.4961-1.4967 in.)	When worn or damaged
		2nd gear	49.000-49.016 mm (1.9291-1.9298 in.)	When worn or damaged
		4th gear	41.000-41.016 mm (1.6142-1.6148 in.)	When worn or damaged
	End play	1st gear	0.04-0.12 mm (0.002-0.005 in.)	-
		2nd gear	0.04-0.12 mm (0.002-0.005 in.)	-
		4th gear	0.10-0.22 mm (0.004-0.009 in.)	-
	31 x 54 mm thrust	No. 1	3.925 mm (0.1545	When worn or

	washer thickness		in.)	damaged
		No. 2	3.950 mm (0.1555 in.)	When worn or damaged
		No. 3	3.975 mm (0.1565 in.)	When worn or damaged
		No. 4	4.000 mm (0.1575 in.)	When worn or damaged
		No. 5	4.025 mm (0.1585 in.)	When worn or damaged
		No. 6	4.050 mm (0.1594 in.)	When worn or damaged
		No. 7	4.075 mm (0.1604 in.)	When worn or damaged
		No. 8	4.100 mm (0.1614 in.)	When worn or damaged
		No. 9	4.125 mm (0.1624 in.)	When worn or damaged
		No. 10	4.150 mm (0.1634 in.)	When worn or damaged
		No. 11	4.175 mm (0.1644 in.)	When worn or damaged
		No. 12	4.200 mm (0.1654 in.)	When worn or damaged
		No. 13	4.225 mm (0.1663 in.)	When worn or damaged
		No. 14	4.250 mm (0.1673 in.)	When worn or damaged
		No. 15	4.275 mm (0.1683 in.)	When worn or damaged
		No. 16	4.300 mm (0.1693 in.)	When worn or damaged
		No. 17	4.325 mm (0.1703 in.)	When worn or damaged
	43 x 54.5 mm thrust washer thickness	No. 1	2.900 mm (0.114 in.)	When worn or damaged
		No. 2	2.925 mm (0.115 in.)u	When worn or damaged
		No. 3	2.950 mm (0.116 in.)	When worn or damaged
		No. 4	2.975 mm (0.117 in.)	When worn or damaged
		No. 5	3.000 mm (0.118 in.)	When worn or damaged
		No. 6	3.025 mm (0.119 in.)	When worn or damaged
		No. 7	3.050 mm (0.120 in.)	When worn or damaged

		No. 8	3.075 mm (0.121 in.)	When worn or damaged
		No. 9	3.100 mm (0.122 in.)	When worn or damaged
		No. 10	3.125 mm (0.123 in.)	When worn or damaged
		No. 11	3.150 mm (0.124 in.)	When worn or damaged
		No. 12	3.175 mm (0.125 in.)	When worn or damaged
		No. 13	3.200 mm (0.126 in.)	When worn or damaged
	4th gear collar length		32.9-33.0 mm (1.295-1.299 in.)	-
	4th gear collar flange thickness		3.75-3.90 mm (0.148-0.154 in.)	When worn or damaged
	Sealing ring thickness		1.87-1.97 mm (0.074-0.078 in.)	1.82 mm (0.072 in.)
	Width of sealing ring groove		2.025-2.060 mm (0.0797-0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.	2nd clutch	6.97-6.98 mm (0.2744-0.2748 in.)	6.95 mm (0.2736 in.)
		4th clutch	11.47-11.48 mm (0.4516-0.4520 in.)	11.45 mm (0.4508 in.)
	Clutch feed pipe bushing O.D.	2nd clutch	7.018-7.030 mm (0.2763-0.2768 in.)	7.045 mm (0.2774 in.)
		4th clutch	11.500-11.518 mm (0.4528-0.4553 in.)	11.530 mm (0.4539 in.)
	ATF guide collar I.D. at sealing ring contact area		21.200-21.221 mm (0.8346-0.8355 in.)	21.25 mm (0.8366 in.)
Idler gear shaft	End cover bearing contact area		30.003-30.013 mm (1.1812-1.1816 in.)	When worn or damaged
	Cotters thickness		1.39-1.42 mm (0.0547-0.0559 in.)	-
Reverse idler gear	Reverse idler gear shaft O.D. at needle bearing contact area		14.99-15.00 mm (0.5902-0.5906 in.)	When worn or damaged
	I.D.		20.001-20.014 mm (0.7874-0.7880 in.)	When worn or damaged

	I.D. of reverse idler gear shaft contact area on transmission housing		14.800-14.818 mm (0.5827-0.5834 in.)	-
	I.D. of reverse idler gear shaft holder		14.800-14.824 mm (0.5827-0.5836 in.)	When worn or damaged

STANDARDS AND SERVICE LIMITS - AUTOMATIC TRANSMISSION AND A/T DIFFERENTIAL (2 OF 3)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body spring (see **MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**)	Cut valve B spring		0.8 mm (0.031 in.)	9.9 mm (0.290 in.)	27.3 mm (1.074 in.)	8.0
	Shift valve A spring		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	23.7 mm (0.933 in.)	9.7
	Shift valve C spring		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	23.7 mm (0.933 in.)	9.7
	Relief valve spring		1.0 mm (0.039 in.)	9.6 mm (0.378 in.)	34.1 mm (1.343 in.)	10.2
	Lock-up control valve spring		0.6 mm (0.024 in.)	7.1 mm (0.280 in.)	31.2 mm (1.228 in.)	11.2
	Cooler check valve spring		0.85 mm (0.033 in.)	6.6 mm (0.260 in.)	27.0 mm (1.063 in.)	11.3
	Shift valve D spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Servo control valve spring		0.8 mm (0.031 in.)	9.9 mm (0.290 in.)	27.3 mm (1.075 in.)	8.0
Regulator valve body spring (see **REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**)	Stator reaction spring		4.5 mm (0.177 in.)	35.4 mm (1.394 in.)	30.3 mm (1.193 in.)	1.92
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Regulator valve spring B		1.6 mm (0.063 in.)	9.2 mm (0.362 in.)	44.0 mm (1.732 in.)	12.5
	Torque converter check valve spring		1.2 mm (0.047 in.)	8.6 mm (0.339 in.)	33.8 mm (1.331 in.)	12.2
	Lock-up shift valve spring		1.0 mm (0.039 in.)	6.6 mm (0.260 in.)	35.5 mm (1.398 in.)	18.2
	1st accumulator spring B		2.4 mm (0.094 in.)	12.2 mm (0.480 in.)	35.0 mm (1.378 in.)	7.7
	1st accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	50.1 mm (1.972 in.)	6.7
	4th accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9
Servo body spring (see **SERVO**	Cut valve A spring		0.9 mm (0.035 in.)	9.9 mm (0.390 in.)	22.3 mm (0.878 in.)	6.9

BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY)	Shift valve B spring		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	23.7 mm (0.933 in.)	9.7
	5th accumulator spring A		2.5 mm (0.098 in.)	16.6 mm (0.654 in.)	46.9 mm (1.846 in.)	7.8
	5th accumulator spring B		1.9 mm (0.075 in.)	10.0 mm (0.394 in.)	38.5 mm (1.516 in.)	10.6
	2nd accumulator spring A		1.8 mm (0.071 in.)	14.6 mm (0.575 in.)	43.8 mm (1.724 in.)	7.9
	2nd accumulator spring B		1.85 mm (0.073 in.)	9.4 mm (0.370 in.)	32.5 mm (1.280 in.)	8.7
	3rd accumulator spring A		1.8 mm (0.071 in.)	14.6 mm (0.575 in.)	43.8 mm (1.724 in.)	7.9
	3rd accumulator spring B		1.85 mm (0.073 in.)	9.4 mm (0.370 in.)	32.5 mm (1.280 in.)	8.7

STANDARDS AND SERVICE LIMITS - AUTOMATIC TRANSMISSION AND A/T DIFFERENTIAL (3 OF 3)

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.010-18.028 mm (0.709-0.710 in.)	-
	Carrier-to-pinion shaft clearance		0.027-0.057 mm (0.001-0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		26.025-26.045 mm (1.024-1.025 in.)	-
	Carrier-to-driveshaft clearance		0.045-0.086 mm (0.002-0.003 in.)	0.12 mm (0.005 in.)
	Final driven gear backlash	(References)	0.085-0.142 mm (0.003-0.006 in.)	0.2 mm (0.008 in.)
A/T differential pinion gear	Backlash		0.05-0.15 mm (0.002-0.006 in.)	-
	I.D.		18.042-18.066 mm (0.7103-0.7113 in.)	-
	Pinion gear-to-pinion shaft clearance		0.059-0.095 mm (0.002-0.004 in.)	0.12 mm (0.005 in.)

STEERING (ELECTRONIC POWER STEERING)

STANDARDS AND SERVICE LIMITS - STEERING (EPS)

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge with engine running		0-10 mm (0-0.39 in.)
	Starting load measured at outside edge with engine running		34 N (3.5 kgf, 7.7 lbf)

Gearbox	Angle of rack guide screw loosened from locked position		7 ° ± 3°

STEERING (HYDRAULIC POWER STEERING)

STANDARDS AND SERVICE LIMITS - STEERING (POWER STEERING)

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge with engine running		0-10 mm (0-0.39 in.)
	Starting load measured at outside edge with engine running		34 N (3.5 kgf, 7.7 lbf)
Gearbox	Angle of rack guide screw loosened from locked position		15° ± 5°
Pump	Output pressure with shut-off valve closed		7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi)
Power steering fluid	Capacity Use Honda Power Steering Fluid	Fluid change	0.26 L (0.27 US qt, 0.22 lmp qt)
		System overhaul	0.8 L (0.85 US qt, 0.70 lmp)

SUSPENSION

STANDARDS AND SERVICE LIMITS - SUSPENSION

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0°00' ± 30'	
		Rear (without "C" marks on the rear upper arm)	-1° 30'$^{+1°\ 05'}$ -0° 45'	
		Rear (with "C" marks on the rear upper arm)	-0° 45'$^{+1°\ 05'}$ -0° 45'	
	Caster	Front	7°00'±1°	
	Total toe-in	Front	0±2 mm (0±0.08 in.)	
		Rear	2^{+2} -1mm ($0.08^{+0.08}$ -0.04 in.)	
	Front wheel turning angle (DX, DX-G)	Inward	40°06' ± 2°	
		Outward	31 °55' (Reference)	
	Front wheel turning angle (Except DX, DX-G)	Inward	38° 46' ±2°	
		Outward	31 ° 14' (Reference)	
Wheel	Steel wheel runout	Axial	0-1.0 mm (0-0.04 in.)	2.0 mm (0.08 in.)
		Radial	0-1.0 mm (0-0.04	1.5 mm (0.06 in.)

			in.)	
	Aluminum wheel runout	Axial	0-0.7 mm (0-0.03 in.)	2.0 mm (0.08 in.)
		Radial	0-0.7 mm (0-0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0-0.05 mm (0-0.002 in.)	
		Rear	0-0.05 mm (0-0.002 in.)	

BRAKES

STANDARDS AND SERVICE LIMITS - BRAKES

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbf) of force		8 to 10 clicks	
Brake pedal	Pedal height (carpet removed)	M/T model	153 mm (6 in.)	
		A/T model	158 mm (6 1/4 in.)	
	Free play		1-5 mm (1/16-3/16 in.)	
Brake disc	Thickness	Front (except Si)	20.9-21.1 mm (0.82-0.83 in.)	19.0 mm (0.75 in.)
		Front (Si)	24.9-25.1 mm (0.98-0.99 in.)	23.0 mm (0.91 in.)
		Rear	8.9-9.1 mm (0.35-0.36 in.)	8.0 mm (0.31 in.)
	Runout		-	0.04 mm (0.0016 in.)
	Parallelism		-	0.015 mm (0.0006 in.)
Brake pad	Pad thickness	Front (except Si)	9.6-10.2 mm (0.38-0.40 in.)	1.6 mm (0.06 in.)
		Front (Si)	9.0-9.7 mm (0.35-0.38 in.)	1.6 mm (0.06 in.)
		Rear	8.3-9.4 mm (0.33-0.37 in.)	1.6 mm (0.06 in.)
Rear brake (drum brake)	Brake drum I.D.		199.9-200 mm (7.870-7.874 in.)	201 mm (7.91 in.)
	Brake shoe lining thickness		4.0 mm (0.16 in.)	2.0 mm (0.08 in.)

AIR CONDITIONING

STANDARDS AND SERVICE LIMITS - AIR CONDITIONING

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a(R-134a)
	Capacity of system		400-450 g (14.1-15.8 oz)

Refrigerant oil	Type		SP-10 (P/N 38897-P13-A01 or 38899-P13-A01)
	Capacity of components	Condenser	50 mL (1 2/3 fl.oz, 1.8 lmp oz)
		Evaporator	40 mL (1 1/3 fl.oz, 1.4 lmp oz)
		Each Line and hose	10 mL (1/3 fl.oz, 0.4 lmp oz)
		Compressor	75-85 mL (2 1/2-2 5/6 fl.oz, 2.6-3.0 lmp oz)
Compressor	Field coil resistance	At 68 °F (20 °C)	3.15-3.45 ohms
	Pulley-to-pressure plate clearance		0.35-0.65 mm (0.014-0.026 in.)

DESIGN SPECIFICATIONS

STANDARDS AND SERVICE LIMITS - DESIGN SPECIFICATIONS

Item	Measurement	Qualification	Specification
DIMENSIONS: 4-door	Overall length		4,489 mm (176.7 in.)
	Overall width		1,752 mm (69.0 in.)
	Overall height		1,435 mm (56.5 in.)
	Wheelbase		2,700 mm (106.3 in.)
	Track	Front	1,499 mm (59.0 in.)
		Rear	1,528 mm (60.2 in.)
	Ground clearance		154 mm (6.1 in.)
	Seating capacity		Five (5)
DIMENSIONS: 2-door	Overall length		4,440 mm (174.8 in.)
	Overall width		1,751 mm (68.9 in.)
	Overall height		1,359 mm (53.5 in.)
	Wheelbase		2,650 mm (104.3 in.)
	Track	Front	1,499 mm (59.0 in.)
		Rear	1,526 mm (60.1 in.)
	Ground clearance		154 mm (6.1 in.)
	Seating capacity		Five (5)
WEIGHT	Gross Vehicle Weight Rating: 4-door (GVWR)	DX, DX-G, and LX	1,665 kg (3,671 lbs)
		EX	1,695 kg (3,737 lbs)
		Si	See
	Gross Vehicle Weight Rating: 2-door (GVWR)	DX, DX-G, and LX	1,645 kg (3,627 lbs)
		EX	1,665 kg (3,671 lbs)
		Si	1,725 kg (3,803 lbs)
R18A1 engine	Type		Water cooled, 4-stroke SOHC i-VTEC gasoline engine
	Cylinder arrangement		Inline 4-cylinder,

			transverse
	Bore and stroke		81.0 x 87.3 mm (3.19 x 3.44 in.)
	Displacement		1,799 cm^3 (110 cu in.)
	Compression ratio		10.5
	Valve train		Chain drive, SOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,800 rpm	52.3 L (55.3 US qt, 46.0 lmp qt)/minute
	Water pump displacement	At 6,000 rpm	104 L (110 US qt, 110 lmp qt)/minute
	Fuel required		Regular UNLEADED gasoline with 87 Pump Octane Number or higher
K20Z3 engine	Type		Water cooled, 4-stroke DOHC i-VTEC gasoline engine
	Cylinder arrangement		Inline 4-cylinder, transverse
	Bore and stroke		86 x 86 mm (3.39 x 3.39 in.)
	Displacement		1,998 cm^3 (122 cu in.)
	Compression ratio		11.0
	Valve train		Chain drive, DOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm	54.3 L (57.4 US qt, 47.8 lmp qt)/minute
	Water pump displacement	At 6,000 rpm	82 L (87 US qt, 72 lmp qt)/minute
	Fuel required		Premium UNLEADED gasoline with 91 Pump Octane Number or higher
STARTER	Type		Gear Reduction
	Nominal output		1.0 kW
	Nominal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Counterclockwise as viewed from drive end
CLUTCH	Clutch		Single plate dry,

			diaphragm spring
	Clutch friction material surface area	R18A1 engine model	221 cm^2 (34.22 sq in.)
		K20Z3 engine model	174 cm^2 (28.99 sq in.)
MANUAL TRANSMISSION (5-speed)	Type		Synchronized, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.142
		2nd	1.750
		3rd	1.241
		4th	0.969
		5th	0.805
		Reverse	3.230
	Final reduction	Type	Single helical gear
		Gear ratio	4.111
MANUAL TRANSMISSION (6-speed)	Type		Synchronized, 6-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.267
		2nd	2.130
		3rd	1.517
		4th	1.147
		5th	0.921
		6th	0.659
		Reverse	3.583
	Final reduction	Type	Single helical gear
		Gear ratio	4.765
AUTOMATIC TRANSMISSION	Type		Electronically controlled automatic, 5-speed forward, 1 reverse, 3-element torque converter with lock-up clutch
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.666
		2nd	1.534
		3rd	1.021
		4th	0.720
		5th	0.524
		Reverse	1.956
	Final reduction	Type	Single helical gear
		Gear ratio	4.437
STEERING (EPS)	Type		Rack and pinion with electrical power-assisted
	Overall ratio		13.62
	Turns, lock-to-lock		2.65

	Steering wheel diameter		360 mm (14.0 in.)
STEERING (Power Steering)	Type		Hydraulic power assisted rack and pinion
	Overall ratio		13.73
	Turns, lock-to-lock		2.67
	Steering wheel diameter		360 mm (14.0 in.)
SUSPENSION	Type	Front	Independent strut with stabilizer, coil spring
		Rear	Independent double wishbone with stabilizer, coil spring
	Shock absorber	Front and rear	Telescopic, hydraulic, nitrogen gas-filled
TIRES	Size of front and rear	DX, DX-G	P195/65+R 15 89H
		EX, LX	P205/55R16 89H
		Si	P215/45R17 89V or 215/45ZR17 91W
	Size of spare	Except Si	T125/70D15 95M
		Si (ABS model)	T125/70D16 96M
		Si (VSA model)	T135/80D16 101M
WHEEL ALIGNMENT	Camber	Front	0° 00'
		Rear (without "C" marks on the rear upper arm)	-1° 30'
		Rear (with "C" marks on the rear upper arm)	-0° 45'
	Caster	Front	7° 00'
	Total toe-in	Front	0 mm (0 in.)
		Rear	2 mm (0.08 in.)
	Front wheel turning angle (DX, DX-G)	Inward	40° 06'
		Outward (reference)	31° 55'
	Front wheel turning angle (except DX, DX-G)	Inward	38° 46'
		Outward (reference)	31° 14'
BRAKES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear (disc)	Power-assisted self-adjusting solid disc
		Rear (drum)	Power-assisted self-adjusting solid drum
	Type of parking brake		Mechanical actuating, rear wheels
	Pad friction surface area	Front (except Si)	37.5 cm^2 (5.81 sq in.) x 2
		Front (Si)	33.8 cm^2 (5.24 sq in.) x

			2
		Rear	20.6 cm^2 (3.19 sq in.) x 2
	Shoe friction surface area	Rear	57.6 cm^2 (8.93 sq in.) x 2
AIR CONDITIONING	Compressor	Type	Scroll
		Capacity	77.1 mL (4.7 cu in.)/rev.
		Maximum speed	10,000 rpm
		Lubricant capacity	75 mL (2 1/2 fl-oz)
		Lubricant type	SP-10
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Stabilized swirling flow
		Motor type	220 W/12V
		Speed control	Infinite variable
		Maximum capacity	470 m^3 (16.571 cu ft)/h
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, single plate, poly V-belt drive
		Electrical power consumption at 68 °F (20 ° F)	42 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Capacity	400-450 g (14.1-15.8 oz)
ELECTRICAL RATINGS	Battery	R18A1 engine, USA models	12V-45 Ah/20 HR (12 V-36 Ah/5 HR)
		K20Z3 engine, Canada models	12 V-47 Ah/20 HR (12 V-38 Ah/5HR)
	Fuses	Under-hood fuse/relay box	100 A, 80 A,70 A, 50 A, 40 A, 30 A, 20 A, 15 A, 10A, 7.5 A
		Under-dash fuse/relay box	30 A, 20 A, 15 A, 10 A, 7.5 A
	Light bulbs	Headlight high beam	12V-60W
		Headlight low beam	12V-51W
		Front side marker/parking/turn signal lights	2-door: 12V-28/5W (two filaments) Amber color 4-door: 12V-21/5W (two filaments) Amber color
		Rear turn signal lights	12V-21W Amber color
		Brake/Taillights	12V-21/5W (two filaments)
		Inner taillights	12V-5W (4-door)
		Rear side marker light	12V-5W
		High mount brake light	12V-21W (Except Si)

			12V-LED (Si)
		Back-up lights	12V-21W
		License plate light	2-door: 12V-3 CP 4-door: 12V-5W
		Ceiling lights	12V-5W
		Individual map light	12V-8W
		Trunk light	12V-5W
		Gauge lights	12V-LED (non-replaceable)
		Indicator lights	12V-LED, 14V-0.56W, 0.84 W
	Washer reservoir	Capacity (USA models)	2.5 L (2.6 US qt)
		Capacity (Canada models)	4.5 L (4.8 US qt)

BODY SPECIFICATIONS

4-door:

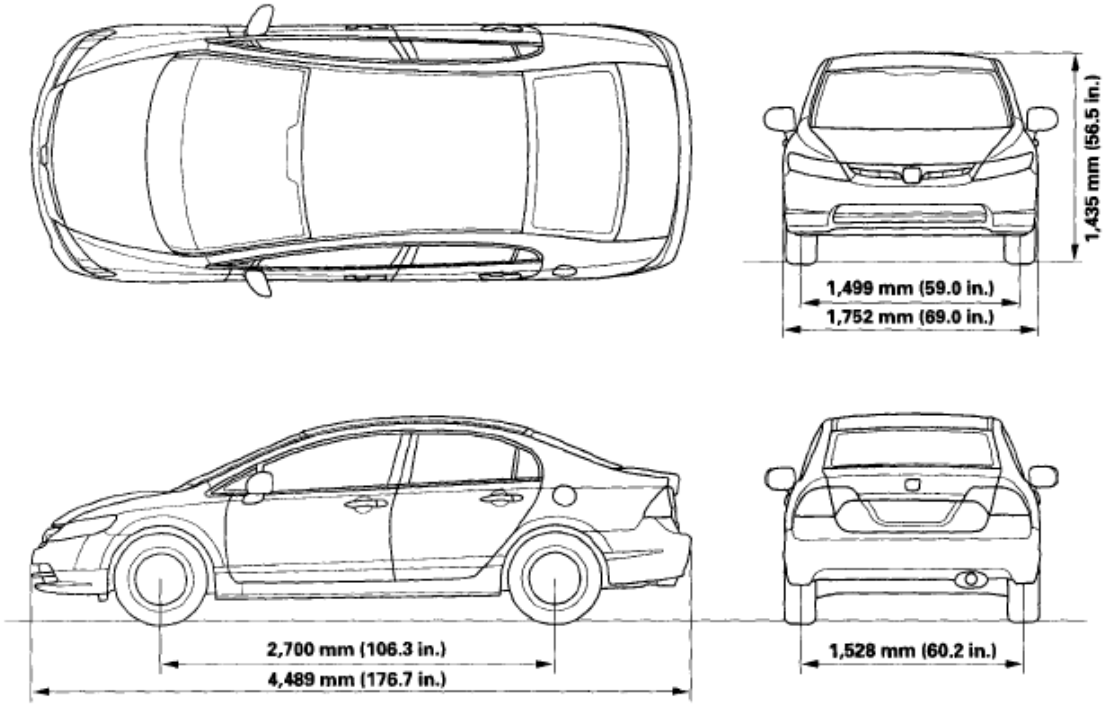


Fig. 1: Identifying Body Specifications (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door:

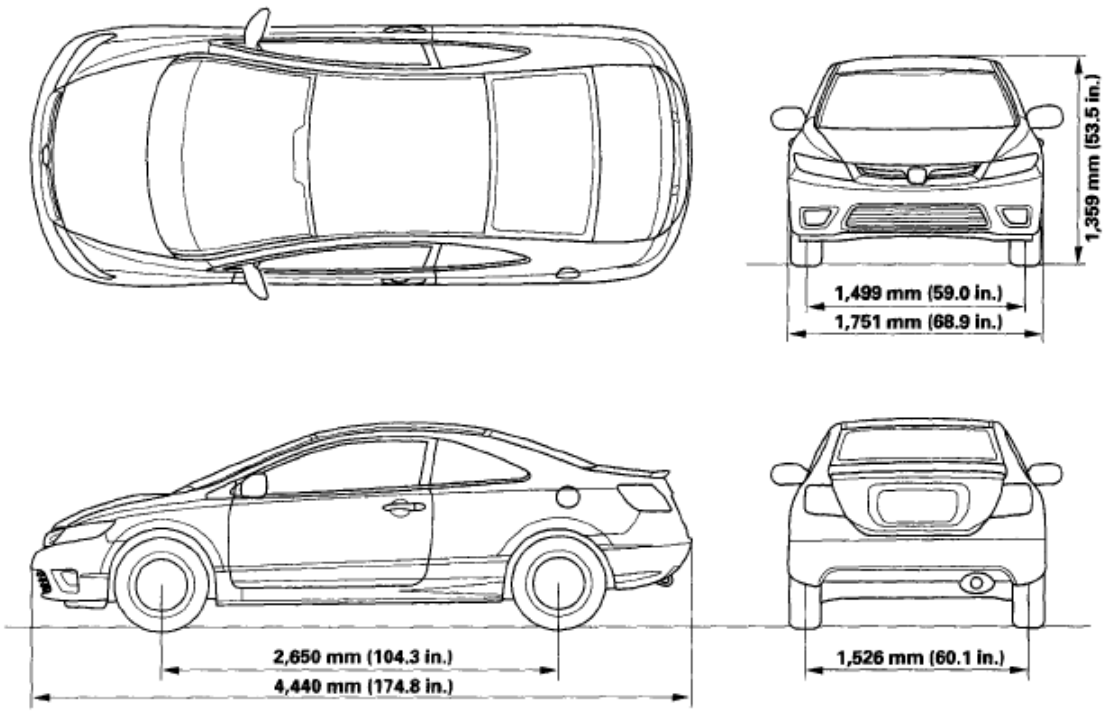


Fig. 2: Identifying Body Specifications (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-08 BRAKES

VSA System - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

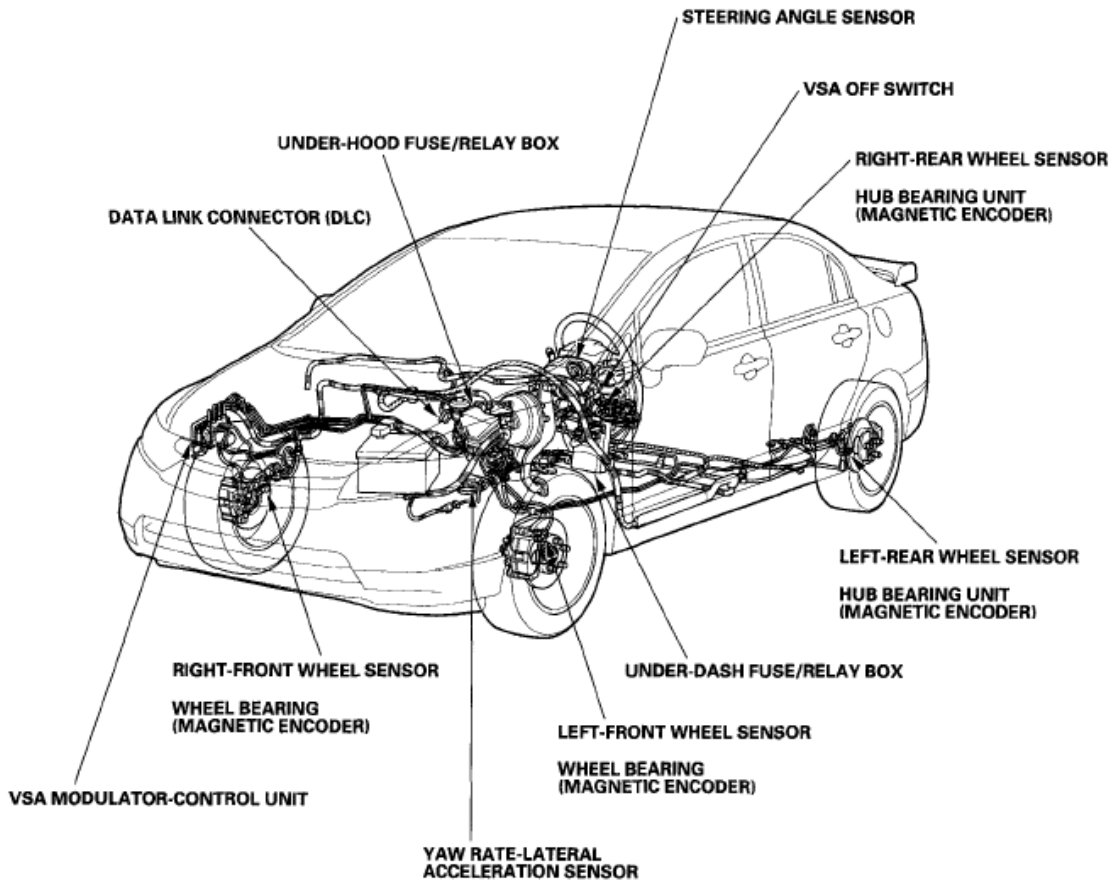


Fig. 1: Locating VSA System Components

GENERAL TROUBLESHOOTING INFORMATION

SYSTEM INDICATOR

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)

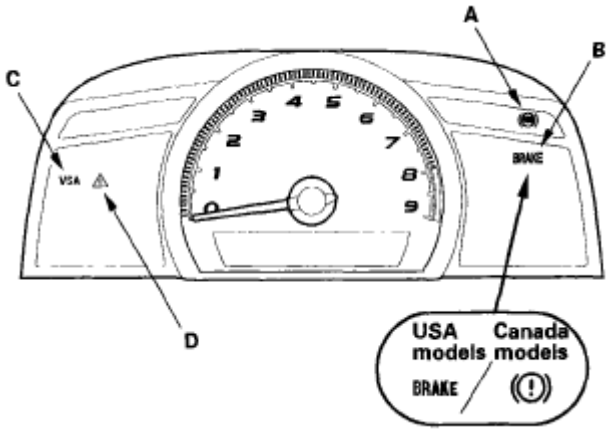


Fig. 2: Identifying System Indicator

When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch ON (II), then goes off.

When the system detects a problem, a DTC will be set and, depending upon the failure, the VSA modulator-control unit will determine which indicator(s) will be turned on. If the problem goes away (system returns to normal), the indicator(s) will be controlled in the following way depending upon the DTC that was set:

- The indicator(s) will come on and stay on when the ignition switch is ON (II).
- The indicator(s) will automatically go off.
- The indicator(s) will go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel speed sensors fail, the brake system indicator will come on.

VSA Indicator

The VSA indicator comes on when the VSA function is lost.

VSA Activation Indicator

The VSA activation indicator blinks when the VSA function is activating. The VSA activation indicator comes on, when the VSA is off, or the VSA function is lost.

DIAGNOSTIC TROUBLE CODE (DTC)

- The memory can hold all DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be canceled by disconnecting the battery. Do the specified procedures to clear the DTCs.

SELF-DIAGNOSIS

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis: Done right after the ignition switch is turned ON (II) and until the ABS and VSA indicators go off.
  - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

KICKBACK

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

PUMP MOTOR

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation during regular diagnosis when the vehicle is driven over 10 mph (15 km/h) the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without VSA system (see **BRAKE SYSTEM BLEEDING**).

HOW TO TROUBLESHOOT DTCS

The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following a troubleshooting procedure for a code that has been cleared and does not reset can result in incorrect diagnosis.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during VSA system operation, after VSA system operation, when vehicle was traveling at a certain speed, etc.
2. When the ABS or VSA indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS and VSA indicators do not come on.
4. Check for other unit DTCs which are connected via F-CAN, if there are DTCs that are related to F-

CAN, the most likely cause was that the ignition switch was turned ON (II) with the VSA modulator-control unit connector disconnected. Clear the DTCs. Check for PGM-FI and VSA codes, and troubleshoot those first.

INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the indicator(s) of the system does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the indicators were on but then went out, the original problem may have been intermittent.

HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

1. If the system indicators stay on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

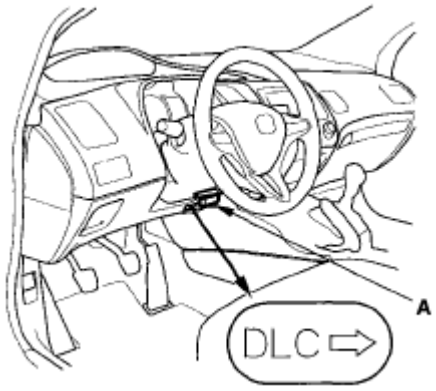


Fig. 3: Identifying DLC Connector

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check the diagnostic trouble code (DTC) and note it. Also check the on board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- **The HDS communication will be stopped when the vehicle speed is at 31 mph (50 km/h) or more.**
- **The HDS can read the DTC, current data, and other system data.**
- **For specific operations, refer to the Help menu that came with the HDS.**

HOW TO RETRIEVE DTCS

1. With the ignition switch to LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't

troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the **DTC TROUBLESHOOTING**.
5. Turn the ignition switch to LOCK (0).

HOW TO CLEAR DTCS

1. With the ignition switch to LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Clear the DTC(s) by following the screen prompts on the HDS.
5. Turn the ignition switch to LOCK (0).

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator
11	-13	Right-front wheel speed sensor circuit malfunction	ON	ON/OFF(1)	ON	ON
12	-11	Right-front wheel speed sensor electrical noise or intermittent interruption	ON	ON/OFF(1)	ON	ON
	-12	Right-front wheel speed sensor short to the other sensor circuit	ON	ON/OFF(1)	ON	ON
	-21	Right-front wheel speed sensor installation error	ON	ON/OFF(1)	ON	ON
	-22	Right-front wheel speed sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)	ON	ON
	-23	Right-front wheel speed	ON	ON/OFF(1)	ON	ON

		sensor installation error (0 to 9 mph (0 to 15 km/h))				
13	-13	Left-front wheel speed sensor circuit malfunction	ON	ON/OFF(1)	ON	ON
14	-11	Left-front wheel speed sensor electrical noise or intermittent interruption	ON	ON/OFF(1)	ON	ON
	-12	Left-front wheel speed sensor short to the other sensor circuit	ON	ON/OFF(1)	ON	ON
	-21	Left-front wheel speed sensor installation error	ON	ON/OFF(1)	ON	ON
	-22	Left-front wheel speed sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)	ON	ON
	-23	Left-front wheel speed sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)	ON	ON
15	-13	Right-rear wheel speed sensor circuit malfunction	ON	ON/OFF(1)	ON	ON
16	-11	Right-rear wheel speed sensor electrical noise or intermittent interruption	ON	ON/OFF(1)	ON	ON
	-12	Right-rear wheel speed sensor short to the other sensor circuit	ON	ON/OFF(1)	ON	ON
	-21	Right-rear wheel speed sensor installation error	ON	ON/OFF(1)	ON	ON
	-22	Right-rear wheel speed sensor installation error	ON	ON/OFF(1)	ON	ON

		(19 mph (30 km/h) or more)				
	-23	Right-rear wheel speed sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)	ON	ON
17	-13	Left-rear wheel speed sensor circuit malfunction	ON	ON/OFF(1)	ON	ON
18	-11	Left-rear wheel speed sensor electrical noise or intermittent interruption	ON	ON/OFF(1)	ON	ON
	-12	Left-rear wheel speed sensor short to the other sensor circuit	ON	ON/OFF(1)	ON	ON
	-21	Left-rear wheel speed sensor installation error	ON	ON/OFF(1)	ON	ON
	-22	Left-rear wheel speed sensor installation error (19 mph (30 km/h) or more)	ON	ON/OFF(1)	ON	ON
	-23	Left-rear wheel speed sensor installation error (0 to 9 mph (0 to 15 km/h))	ON	ON/OFF(1)	ON	ON
21	-11	Right-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)	ON	ON
22	-11	Left-front magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)	ON	ON
23	-11	Right-rear magnetic encoder malfunction (pulse missing)	ON	ON/OFF(1)	ON	ON
24	-11	Left-rear	ON	ON/OFF(1)	ON	ON

		magnetic encoder malfunction (pulse missing)				
25	-11	Yaw rate sensor internal circuit malfunction (initial)	OFF	OFF	ON	ON
	-12	Yaw rate sensor internal circuit malfunction (open, short)	OFF	OFF	ON	ON
	-13	Yaw rate sensor communication error	OFF	OFF	ON	ON
	-14	Yaw rate/lateral acceleration sensor circuit high voltage	OFF	OFF	ON	ON
	-15	Yaw rate/lateral acceleration sensor circuit low voltage	OFF	OFF	ON	ON
	-16	Yaw rate/lateral acceleration sensor internal circuit malfunction (keep alive memory (KAM) error)	OFF	OFF	ON	ON
	-21	Yaw rate sensor neutral position malfunction	OFF	OFF	ON	ON
	-22	Yaw rate sensor stuck	OFF	OFF	ON	ON
	-23	Yaw rate sensor circuit intermittent interruption	OFF	OFF	ON	ON
	-24	Yaw rate sensor gain low	OFF	OFF	ON	ON
	-25	Yaw rate sensor gain high	OFF	OFF	ON	ON
26	-11	Lateral acceleration sensor internal circuit malfunction	OFF	OFF	ON	ON

		(initial)				
	-12	Lateral acceleration sensor internal circuit malfunction (open, short)	OFF	OFF	ON	ON
	-13	Lateral acceleration sensor communication error	OFF	OFF	ON	ON
	-21	Lateral acceleration sensor neutral position malfunction	OFF	OFF	ON	ON
	-22	Acceleration sensor stuck	OFF	OFF	ON	ON
	-23	Lateral acceleration sensor circuit intermittent interruption	OFF	OFF	ON	ON
	-24	Lateral acceleration sensor gain low	OFF	OFF	ON	ON
	-25	Lateral acceleration sensor gain high	OFF	OFF	ON	ON
27	-11	Steering angle sensor DIAG signal error (initial)	OFF	OFF	ON	ON
	-21	Steering angle sensor stuck neutral position	OFF	OFF	ON	ON
	-22	Steering angle sensor stuck offset position	OFF	OFF	ON	ON
	-23	Steering angle sensor counter malfunction	OFF	OFF	ON	ON
	-24	Steering angle sensor exchange malfunction	OFF	OFF	ON	ON
	-26	Steering angle sensor DIAG signal error	OFF	OFF	ON	ON

		(main)				
31	-01	ABS right-front inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS right-front inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS right-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS right-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
32	-01	ABS right-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS right-front outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS right-front outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS right-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
33	-01	ABS left-front inlet solenoid valve	ON	ON	ON	ON

		malfunction (solenoid initial pulse)				
	-21	ABS left-front inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS left-front inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS left-front inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
34	-01	ABS left-front outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS left-front outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS left-front outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS left-front outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
35	-01	ABS right-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS right-rear	ON	ON	ON	ON

		inlet solenoid valve malfunction (solenoid pulse)				
	-22	ABS right-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS right-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
36	-01	ABS right-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS right-rear outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS right-rear outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS right-rear outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
37	-01	ABS left-rear inlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS left-rear inlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON

	-22	ABS left-rear inlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS left-rear inlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
38	-01	ABS left-rear outlet solenoid valve malfunction (solenoid initial pulse)	ON	ON	ON	ON
	-21	ABS left-rear outlet solenoid valve malfunction (solenoid pulse)	ON	ON	ON	ON
	-22	ABS left-rear outlet solenoid valve malfunction (solenoid speculative)	ON	ON	ON	ON
	-23	ABS left-rear outlet solenoid valve malfunction (solenoid stuck ON)	ON	ON	ON	ON
41	-21	Right-front wheel lock	ON	ON/OFF(1)	ON	ON
42	-21	Left-front wheel lock	ON	ON/OFF(1)	ON	ON
43	-21	Right-rear wheel lock	ON	ON/OFF(1)	ON	ON
44	-21	Left-rear wheel lock	ON	ON/OFF(1)	ON	ON
51	-11	Motor lock	ON	OFF	ON	ON
	-12	Motor lock circuit malfunction	ON	OFF	ON	ON
	-13	Motor relay OFF malfunction	ON	OFF	ON	ON

52	-12	Motor stuck OFF	ON	OFF	ON	ON
53	-01	Motor relay stuck ON 1	ON	OFF	ON	ON
	-12	Motor relay stuck ON 2	ON	OFF	ON	ON
54	-03	Fail-safe relay 1 stuck ON	ON	ON	ON	ON
	-04	Fail-safe relay 1 stuck OFF (initial)	ON	ON	ON	ON
	-21	Fail-safe relay 1 stuck OFF (main)	ON	ON	ON	ON
56	-01	Initial VIG FET stuck OFF	ON	ON	ON	ON
	-02	Initial VIG FET stuck ON	ON	ON	ON	ON
	-11	VIG FET stuck OFF	ON	ON	ON	ON
61	-01	VSA modulator-control unit initial IG low voltage	ON	ON	ON	ON
	-21	VSA modulator-control unit power source low voltage 1	ON	ON	ON	ON
	-22	VSA modulator-control unit power source low voltage 2	ON	OFF	ON	ON
	-23	VSA modulator-control unit power source low voltage 3	ON	ON	ON	ON
62	-21	VSA modulator-control unit IG high voltage	ON	ON	ON	ON
64	-11	Steering angle sensor power circuit short	OFF	OFF	ON	ON
	-12	Steering angle sensor power circuit open	OFF	OFF	ON	ON
65	-21	Brake fluid level stuck ON	OFF	OFF	ON	ON
66	-11	Pressure sensor	OFF	OFF	ON	ON

		(inside of VSA modulator-control unit) malfunction				
	-12	Pressure sensor (inside of VSA modulator-control unit) malfunction	OFF	OFF	ON	ON
	-13	Pressure sensor (inside of VSA modulator-control unit) malfunction	OFF	OFF	ON	ON
	-14	Pressure sensor (inside of VSA modulator-control unit) malfunction	OFF	OFF	ON	ON
	-15	Pressure sensor (inside of VSA modulator-control unit) malfunction	OFF	OFF	ON	ON
	-16	Pressure sensor (inside of VSA modulator-control unit) malfunction	OFF	OFF	ON	ON
68	-21	Brake pedal position switch stuck OFF	OFF	OFF	ON	ON
	-22	Brake pedal position switch stuck ON	OFF	OFF	ON	ON
71	-21	Right-front or left-rear different diameter tire malfunction	ON	ON	ON	ON
	-22	Left-front or right-rear different diameter tire malfunction	ON	ON	ON	ON
	-23	Right-front and right-rear different diameter tire	ON	ON	ON	ON

		malfunction				
	-24	Left-front and left-rear different diameter tire malfunction	ON	ON	ON	ON
	-25	Right-front and left-front different diameter tire malfunction	ON	ON	ON	ON
	-26	Right-rear and left-rear different diameter tire malfunction	ON	ON	ON	ON
	-27	Right-front or left-rear different diameter tire malfunction	OFF	OFF	ON	ON
	-28	Left-front or right-rear different diameter tire malfunction	OFF	OFF	ON	ON
	-29	Right-front and right-rear different diameter tire malfunction	OFF	OFF	ON	ON
	-2A	Left-front and left-rear different diameter tire malfunction	OFF	OFF	ON	ON
	-2B	Right-front and left-front different diameter tire malfunction	OFF	OFF	ON	ON
	-2C	Right-rear and Left-rear different diameter tire malfunction	OFF	OFF	ON	ON
81	-01	Central processing unit (CPU) internal	ON	ON	ON	ON

	circuit malfunction				
-02	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-03	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-05	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-06	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-07	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-08	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-11	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-12	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-13	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-14	Central processing unit	ON	ON	ON	ON

	(CPU) internal circuit malfunction				
-21	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-22	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-23	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-31	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-32	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-33	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-35	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-36	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-37	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-38	Central	ON	ON	ON	ON

	processing unit (CPU) internal circuit malfunction				
-39	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-3A	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-3C	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-3D	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-3E	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-40	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-41	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-42	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-51	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON

-52	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-53	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-54	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-55	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-56	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-57	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-58	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-59	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-61	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
-71	Central processing unit (CPU) internal circuit malfunction	ON	OFF	ON	ON

	-80	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
83	-13	ECM communication error	OFF	OFF	ON	ON
	-14	ECM communication error	OFF	OFF	ON	ON
84	-21	VSA sensor neutral position not writing	OFF	OFF	ON	ON
86	-01	F-CAN bus-off malfunction	OFF	OFF	ON	ON
	-11	F-CAN communication with ECM malfunction	OFF	OFF	ON	ON
	-21	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	-22	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	-23	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	-24	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	-25	F-CAN communication with engine malfunction	OFF	OFF	ON	ON
	-31	F-CAN communication with gauge control module malfunction	OFF	OFF	ON	ON
	-41	F-CAN communication with EAT malfunction	OFF	OFF	ON	ON

	-71	F-CAN communication with yaw rate-lateral acceleration sensor malfunction	OFF	OFF	ON	ON
107	-22	Central processing unit (CPU) internal circuit malfunction	OFF	OFF	OFF	ON
108	-21	Steering angle sensor malfunction	OFF	OFF	OFF	ON
112	-01	Central processing unit (CPU) internal circuit malfunction	ON	ON	ON	ON
121	-01	VSA solenoid valve malfunction	ON	ON	ON	ON
	-02	VSA solenoid valve malfunction	ON	ON	ON	ON
	-11	VSA solenoid valve malfunction	ON	ON	ON	ON
	-21	VSA solenoid valve malfunction	ON	ON	ON	ON
	-24	VSA solenoid valve malfunction	ON	ON	ON	ON
122	-01	VSA solenoid valve malfunction	ON	ON	ON	ON
	-21	VSA solenoid valve malfunction	ON	ON	ON	ON
	-22	VSA solenoid valve malfunction	ON	ON	ON	ON
	-23	VSA solenoid valve malfunction	ON	ON	ON	ON
123	-01	VSA solenoid valve	ON	ON	ON	ON

		malfunction				
	-02	VSA solenoid valve malfunction	ON	ON	ON	ON
	-11	VSA solenoid valve malfunction	ON	ON	ON	ON
	-21	VSA solenoid valve malfunction	ON	ON	ON	ON
	-24	VSA solenoid valve malfunction	ON	ON	ON	ON
124	-01	VSA solenoid valve malfunction	ON	ON	ON	ON
	-21	VSA solenoid valve malfunction	ON	ON	ON	ON
	-22	VSA solenoid valve malfunction	ON	ON	ON	ON
	-23	VSA solenoid valve malfunction	ON	ON	ON	ON

(1) Brake system indicator turns ON when two or more wheel speed sensors fail.

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

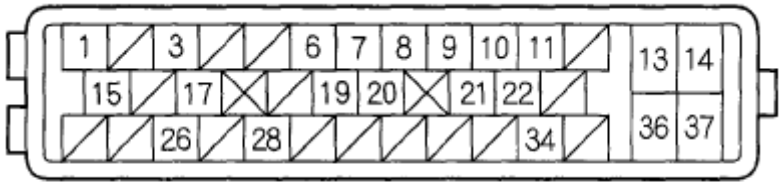
SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure
HDS does not communicate with the VSA modulator-control unit or the vehicle	Troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
ABS indicator does not come on	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
ABS indicator or VSA indicator does not go off,	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-**

and no DTCs are stored	**DIAGNOSTIC FUNCTION**).
Brake system indicator does not come on	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
Brake system indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).
VSA indicator does not come on	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
VSA activation indicator does not come on at start-up (bulb check)	1. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
VSA activation indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**). 3. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
ABS indicator, brake system indicator, and VSA indicator do not go off at same time	1. Symptom Troubleshooting (see **SYMPTOM TROUBLESHOOTING**). 2. Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

SYSTEM DESCRIPTION

VSA MODULATOR-CONTROL UNIT INPUTS AND OUTPUTS FOR 37P CONNECTOR



Wire side of female terminals

Fig. 4: Identifying VSA Modulator-Control Unit Inputs And Outputs For 37P Connector

SYSTEM DESCRIPTION

Terminal number	Wire color	Terminal sign	Description	Measurement (Disconnect the VSA modulator-control unit 37P connector)		
				Terminals	Conditions	Results
1	RED	CAN-L	F-CAN communication circuit	-	-	-
3	BLU	STR-D	Detects steering angle sensor signal			
6	PNK	FR-GND	Detects right-front wheel speed sensor signal			
7	ORN	SVCC	Power source for the steering angle sensor			
8	PUR	RL-GND	Detects left-rear wheel speed sensor signal			
9	LTGRN	RR+B	Detects right-rear wheel speed sensor signal			
10	BRN	SGND	Ground for the steering angle sensor			
11	RED(1) GRY(2)	FL-GND	Detects left-front wheel speed sensor signal			
13	WHT	FSR+B	Power source for the fail-safe relay	13-GND	At all times	Battery voltage
14	RED	MR+B	Power source for the motor relay	14-GND	At all times	Battery voltage
15	WHT	CAN-H	F-CAN communication circuit	-	-	-
17	PUR	STR-B	Detects steering angle sensor signal			
19	GRN	FR+B	Detects right-front wheel speed sensor signal			
20	YEL(1) (2)BLU	RL+B	Detects left-rear wheel speed sensor signal			
	BLU(1)		Detects right-rear			

21	WHT(2)	RR-GND	wheel speed sensor signal			
22	WHT(1) ORN(2)	FL+B	Detects left-front wheel speed sensor signal			
26	LTBLU	K-LINE	Communication with HDS			
28	GRY	IG1	Power source for activating the system	28-GND	Ignition switch ON (II)	Battery voltage
34	GRN	STR-A	Detects steering angle sensor signal	-	-	-
36	BLK	GND	Ground for the VSA modulator-control unit	36-GND	At all times	Continuity
37	BLK	MR-GND	Ground for the pump motor	37-GND	At all times	Continuity
(1) 4-door (2) 2-door						

System Outline

This system is composed of the VSA modulator-control unit, the wheel speed sensor, the steering angle sensor, and the yaw rate-lateral acceleration sensor, and the system indicators in the gauge control module (tach). The VSA modulator-control unit controls the ABS, EBD, TCS, VSA, and brake assist with the brake pressure of each wheel and the engine torque.

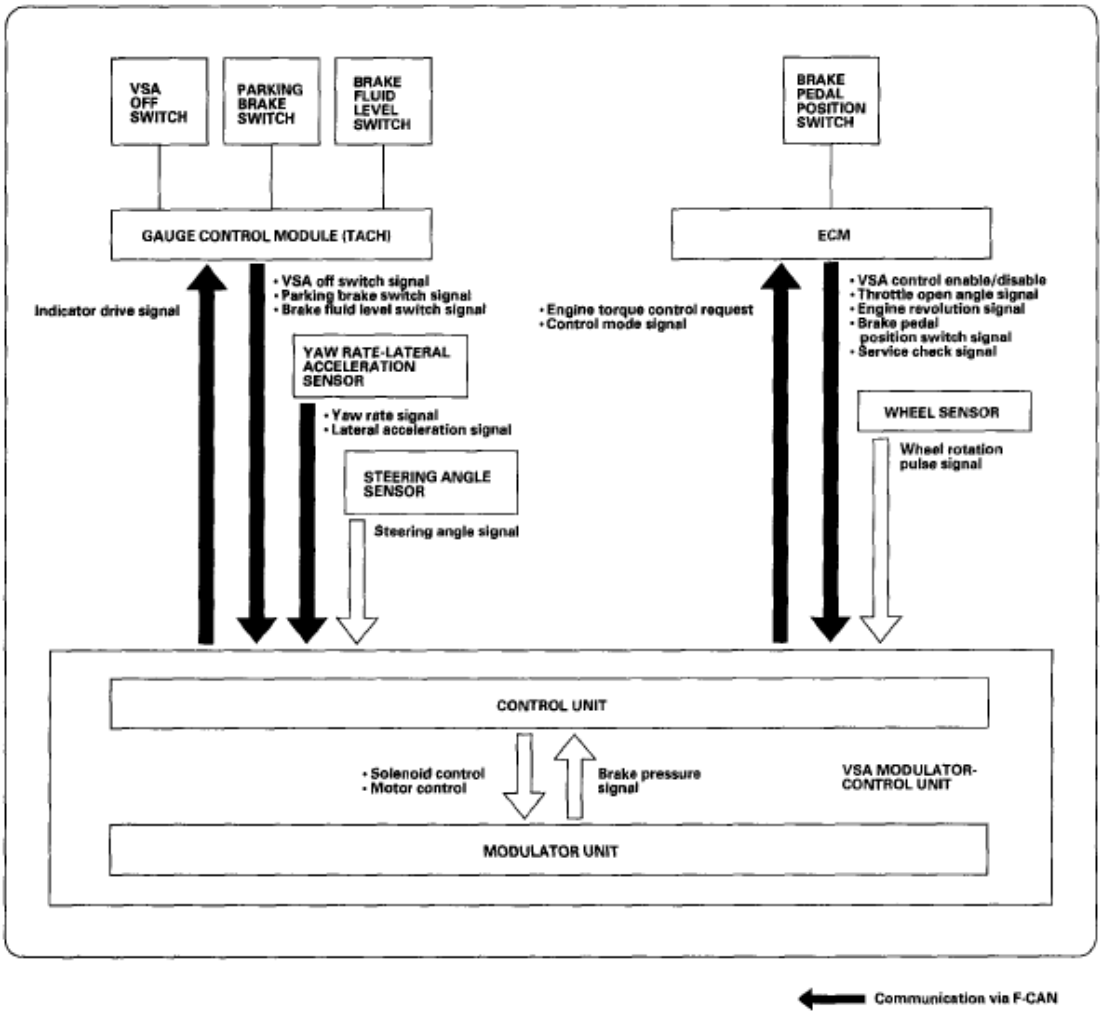


Fig. 5: Identifying VSA System Outline

ABS Features

Anti-lock control

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface

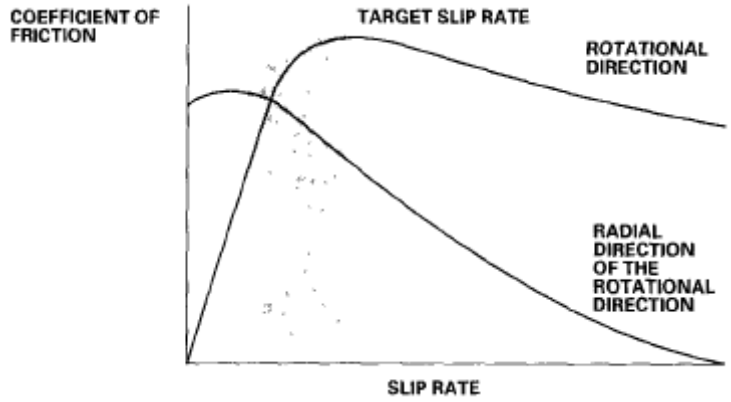


Fig. 6: Identifying Grip Force Of Tire And Road Surface Graph

Main Control

The control unit detects the wheel speed based on the wheel speed sensor signals it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.

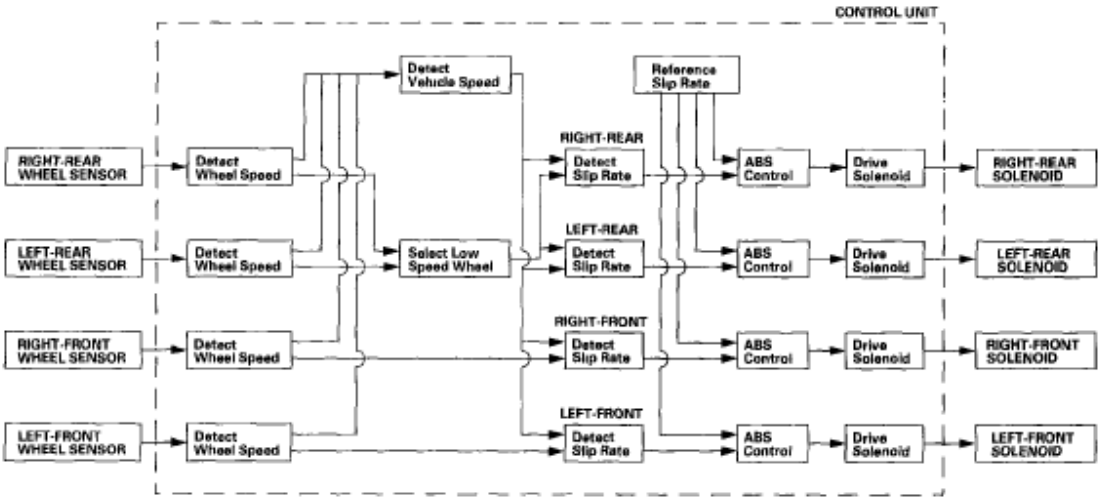


Fig. 7: Identifying Hydraulic Control Unit Graph

EBD Features

The electronic brake distribution (EBD) feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel speed sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the VSA modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases and approaches the front wheel speed, the VSA modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, there is

kickback at the brake pedal.

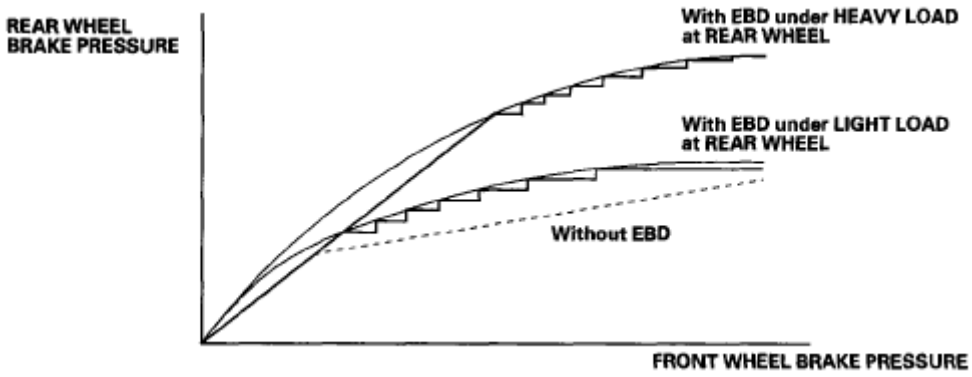


Fig. 8: Identifying Electronic Brake Distribution Graph

TCS Features

When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel and sends engine torque control request to the ECM to slow the spinning wheel and keep traction.

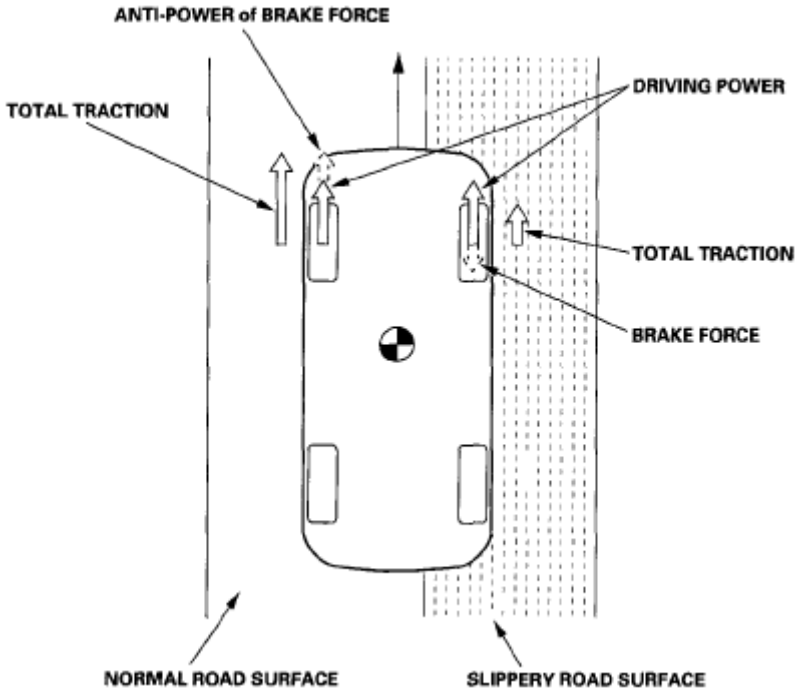


Fig. 9: Identifying Total Traction

VSA System Features

Oversteer control

Applies the brake to the front and rear outside wheels

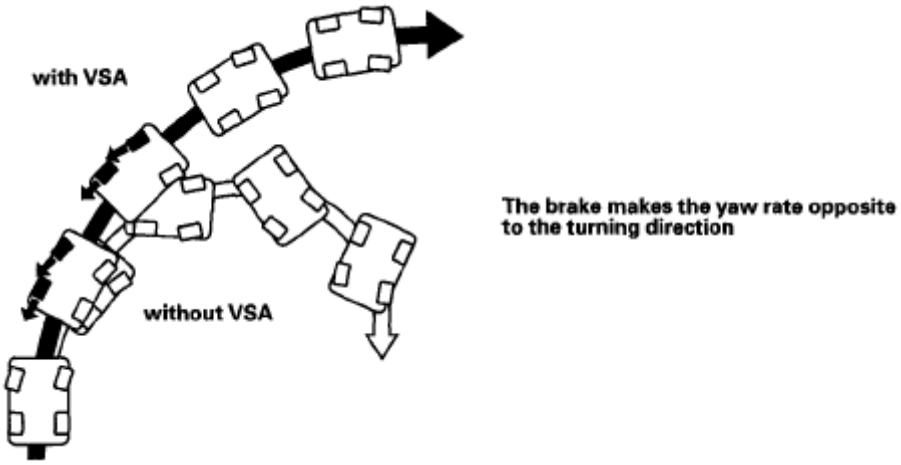


Fig. 10: Identifying VSA System - Oversteer Control

Understeer control

- Applies the brake to the front and rear inside wheels
- Controls the engine torque when accelerating

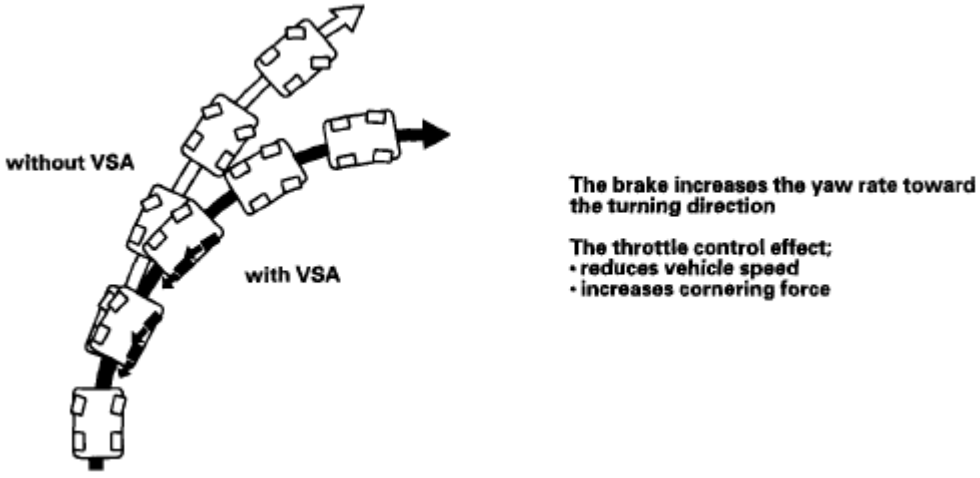


Fig. 11: Identifying VSA System - Understeer Control

Brake Assist Features

Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.

Each time the ignition switch is turned ON (II), the VSA modulator-control unit learns the current driver's normal braking characteristics by monitoring the brake pressure sensor and the brake pedal position switch at each stop. Using these inputs and their values, the VSA modulator-control unit is able to learn the driver's normal braking habits, and then determine the difference between a normal stop and a panic stop for the individual driver of the vehicle. If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a learned threshold in less than a learned amount of time, the VSA modulator-control unit engages brake assist. Because the brake system pressure crossed the threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.

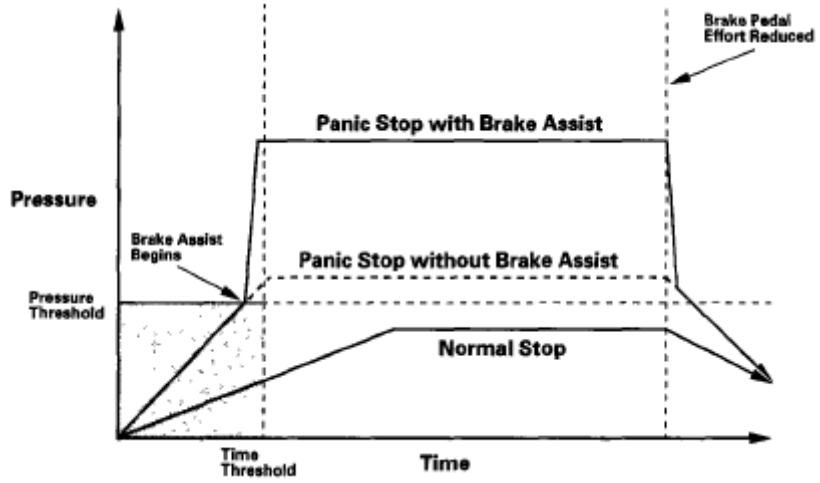


Fig. 12: Identifying Brake Assist Features

Modulator Unit

The modulator unit consists of the inlet solenoid valve, the outlet solenoid valve, the VSA NO (normally open) solenoid valve, the VSA NC (normally closed) solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber.

The hydraulic control has three modes at ABS action; pressure intensifying, pressure retaining, and pressure reducing.

And pressure adding mode is combined at TCS, VSA, and brake assist action.

The hydraulic circuit is an independent four channel type; one channel for each wheel.

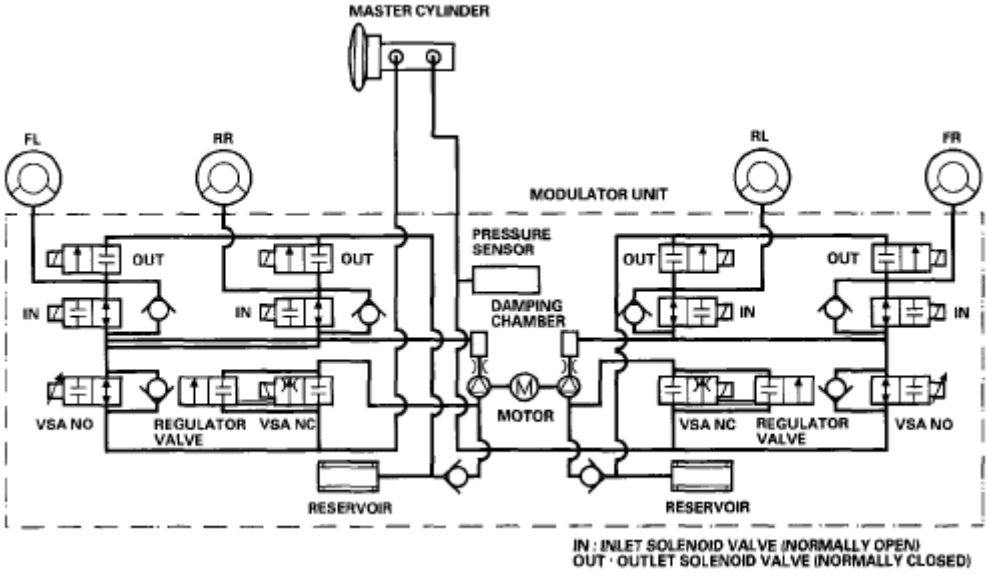


Fig. 13: Identifying Modulator Unit Diagram

VALVE REFERENCE

	VSA	VSA	Inlet	Outlet	

Mode	NO Valve	NC Valve	Solenoid Valve	Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	open	closed	closed	closed	Caliper fluid is retained by the inlet and outlet valves.
Pressure reducing mode	open	closed	closed	open	• Caliper fluid flows through the outlet valve to the reservoir. • The motor pumps the reservoir fluid through the damping chamber to the master cylinder (1).
Pressure adding mode	closed	open	open	closed	• Master cylinder fluid is pumped out by pump with motor through VSA NC valve to the caliper. • Caliper fluid pressure exceed master cylinder pressure.
(1) The motor will keep running until the operation of the one anti-lock brake control is finished with the first pressure reducing mode.					

CIRCUIT DIAGRAM

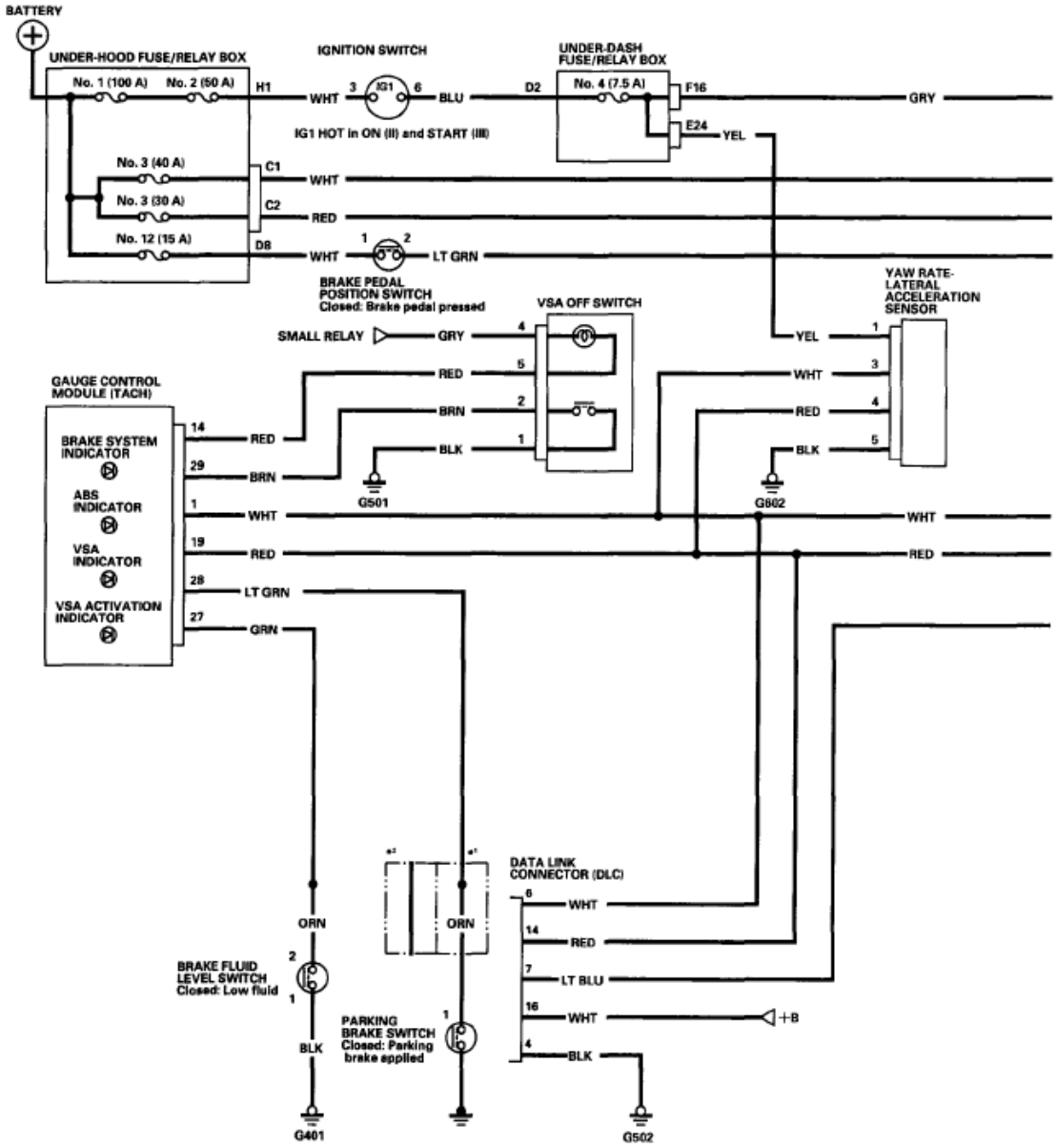


Fig. 14: Identifying VSA System Circuit Diagram (1 Of 3)

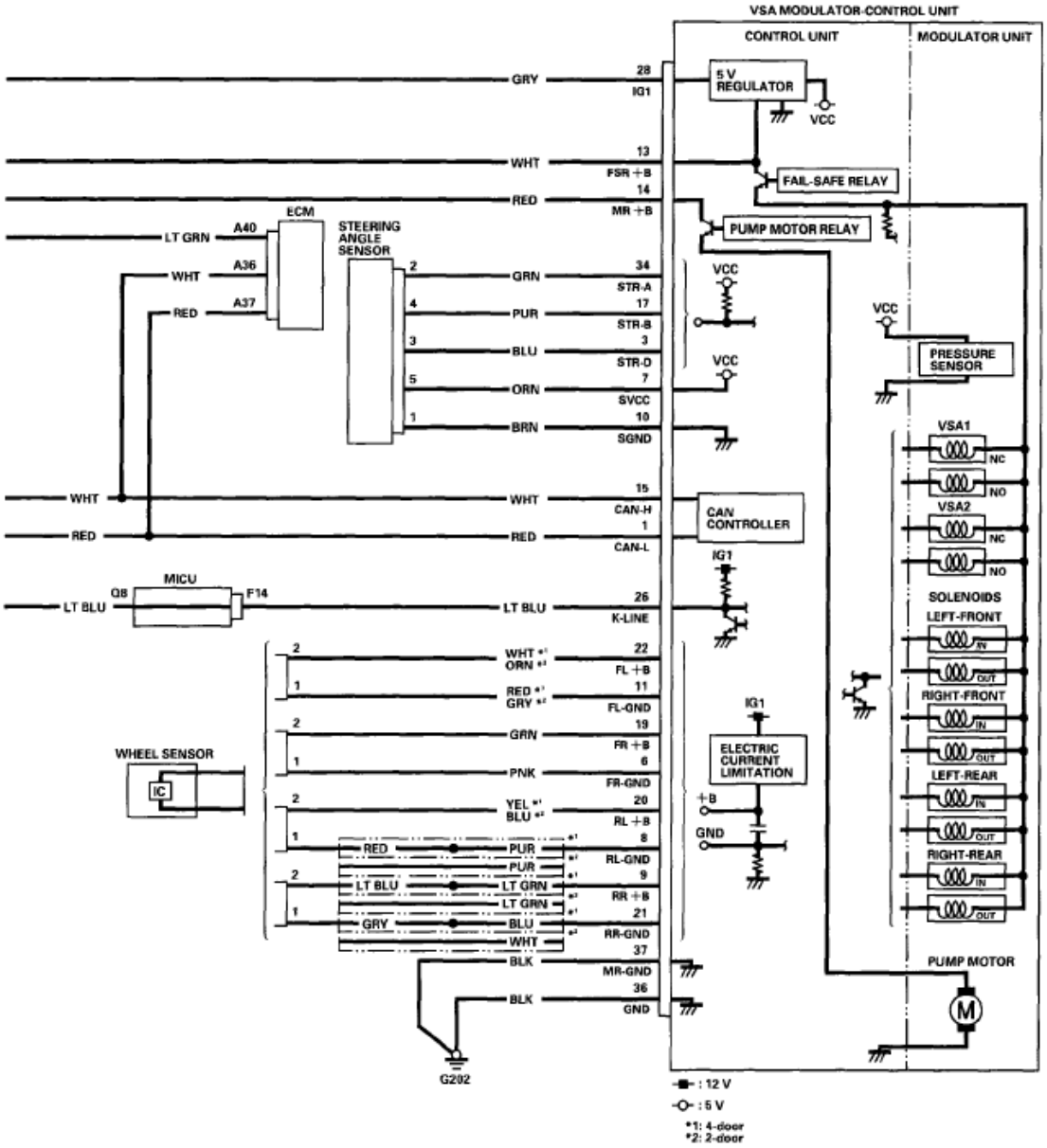


Fig. 15: Identifying VSA System Circuit Diagram (2 Of 3)

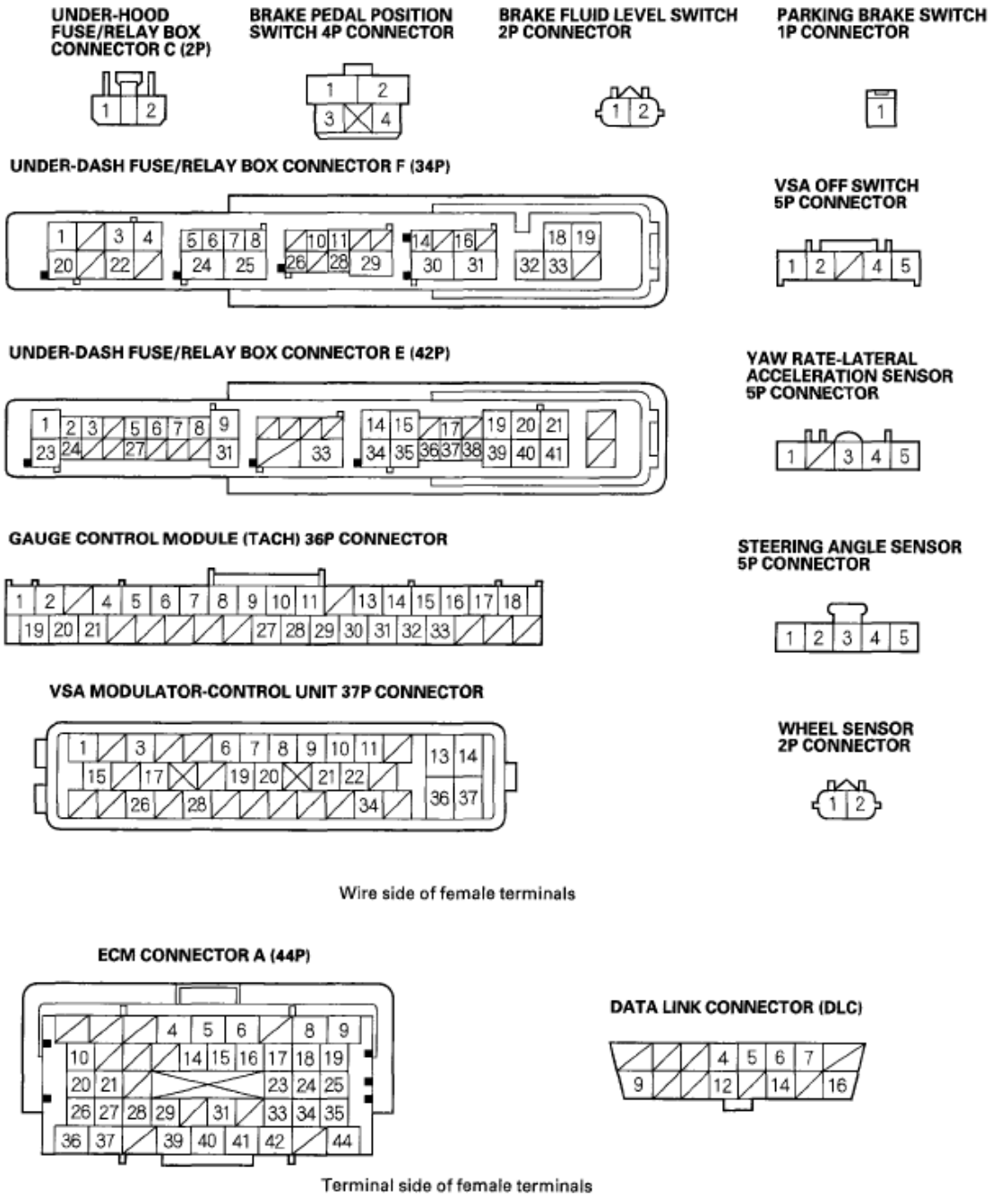


Fig. 16: Identifying VSA System Circuit Diagram (3 Of 3)

DTC TROUBLESHOOTING

DTC 11-13: RIGHT-FRONT WHEEL SPEED SENSOR CIRCUIT MALFUNCTION; DTC 13-13: LEFT-FRONT WHEEL SPEED SENSOR CIRCUIT MALFUNCTION; DTC 15-13: RIGHT-REAR WHEEL SPEED SENSOR CIRCUIT MALFUNCTION; DTC 17-13: LEFT-REAR WHEEL SPEED SENSOR CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.

4. Check for DTCs with the HDS.

   Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel speed sensor +B and GND terminals (see table), then check for continuity between the same terminals and reverse the positive and negative tester probes.

DTC REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

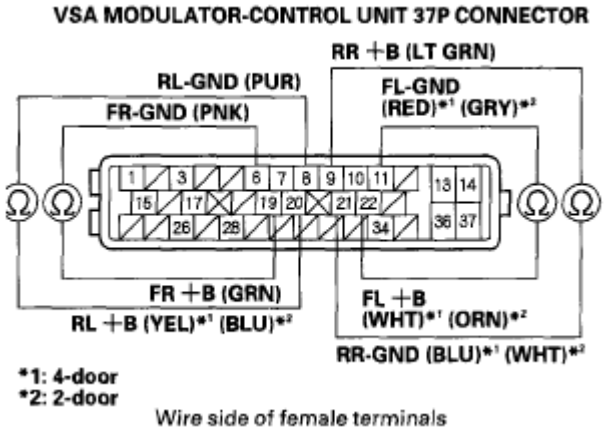


Fig. 17: Checking Continuity Between Appropriate VSA Modulator-Control Unit 37P Connector Wheel Speed Sensor +B

Is there continuity in both directions?

YES -Go to step 8.

NO -If there is no continuity in either direction, go to step 10. If there is continuity in only one direction, go to step 12.

8. Disconnect the appropriate wheel speed sensor 2P connector.
9. On the sensor side, check for continuity between appropriate wheel speed sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the

positive and negative tester probes.

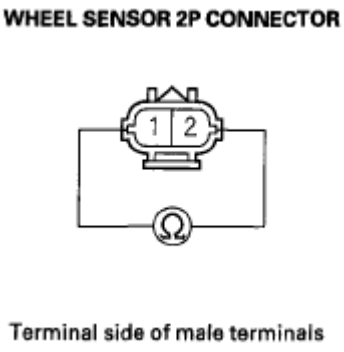


Fig. 18: Checking Continuity Between Appropriate Wheel Speed Sensor 2P Connector Terminals No. 1 And No. 2

Is there continuity in both direction?

YES -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

NO -Repair short in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.

10. Disconnect the appropriate wheel speed sensor 2P connector.
11. On the sensor side, check for continuity between appropriate wheel speed sensor 2P connector terminals No. 1 and No. 2, then check for continuity between the same terminals and reverse the positive and negative tester probes.

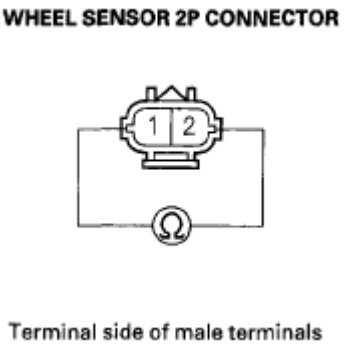


Fig. 19: Checking Continuity Between Appropriate Wheel Speed Sensor 2P Connector Terminals No. 1 And No. 2

Is there continuity in only one direction?

YES -Repair open in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.

NO -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

12. Check for continuity between body ground and the appropriate VSA modulator-control unit 37P connector terminal (see table).

DTC REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

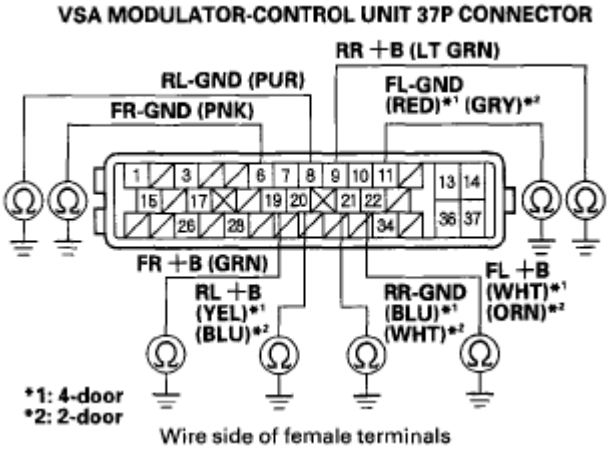


Fig. 20: Checking Continuity Between Body Ground And Appropriate VSA Modulator-Control Unit 37P Connector Terminal

Is there continuity?

YES -Go to step 13.

NO -Go to step 15.

13. Disconnect the appropriate wheel speed sensor 2P connector.
14. On the sensor side, check for continuity between body ground and appropriate wheel speed sensor 2P connector terminal No. 1 and No. 2 individually.

NOTE: Check the wheel speed sensor while mounted on the vehicle

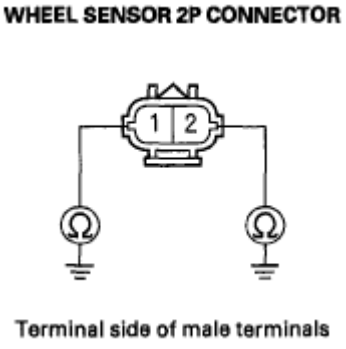


Fig. 21: Checking Continuity Between Body Ground And Appropriate Wheel Speed Sensor 2P Connector Terminal No. 1 And No. 2

Is there continuity?

YES -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

NO -Repair short to body ground in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.

15. Turn the ignition switch ON (II).
16. Measure voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminal (see table).

DTC REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

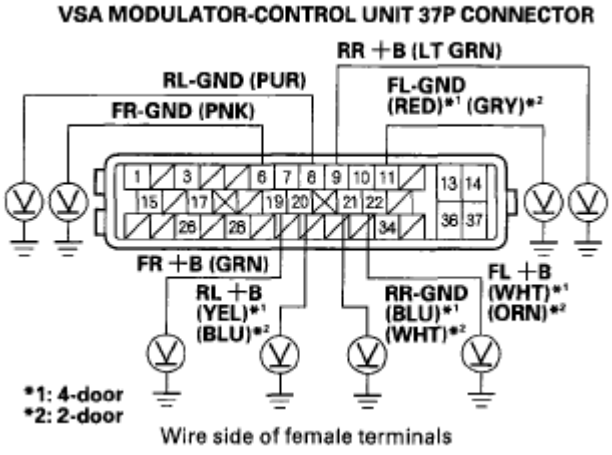


Fig. 22: Measuring Voltage Between Body Ground And Appropriate VSA Modulator-Control Unit 37P Connector Terminal

Is there 0.1 V or more?

YES -Repair short to power in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

DTC 12-11: RIGHT-FRONT WHEEL SPEED SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 14-11: LEFT-FRONT WHEEL SPEED SENSOR

ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 16-11: RIGHT-REAR WHEEL SPEED SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION; DTC 18-11: LEFT-REAR WHEEL SPEED SENSOR ELECTRICAL NOISE OR INTERMITTENT INTERRUPTION

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket devices installed in the vehicle when these DTC are indicated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES -lf the DTC 12-12,14-12,16-12, or 18-12 is indicated at the same time, do the DTC 12-12, 14-12,16-12, or 18-12 troubleshooting (see **DTC 12-12: Right-front Wheel Speed Sensor Short to the Other Sensor Circuit; DTC 14-12: Left-front Wheel Speed Sensor Short to the Other Sensor Circuit; DTC 16-12: Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit; DTC 18-12: Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit**). If DTC 12-12, 14-12,16-12 or 18-12 is not indicated, go to step 5.

   NO -Troubleshoot the indicated DTC. If there are no DTCs indicated, there may be an intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Check that the appropriate wheel speed sensor is properly mounted (see **WHEEL SPEED SENSOR REPLACEMENT**).

   DTC REFERENCE

DTC	Appropriate Wheel Speed Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

   Is the wheel speed sensor installation OK?

   YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

   NO -Reinstall the wheel speed sensor, and check the mounting position (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC 12-12: RIGHT-FRONT WHEEL SPEED SENSOR SHORT TO THE OTHER SENSOR

CIRCUIT; DTC 14-12: LEFT-FRONT WHEEL SPEED SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 16-12: RIGHT-REAR WHEEL SPEED SENSOR SHORT TO THE OTHER SENSOR CIRCUIT; DTC 18-12: LEFT-REAR WHEEL SPEED SENSOR SHORT TO THE OTHER SENSOR CIRCUIT

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

   NOTE: Drive the vehicle on the road, not on the lift.

4. Check for DTCs with the HDS.

   Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Disconnect VSA modulator-control unit 37P connector.
7. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel speed sensor +B terminals (see table).

DTC REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminal No.			
	Appropriate Terminal	Other Terminals		
12-12	No. 19	No. 22	No. 9	No. 20
14-12	No. 22	No. 19	No. 9	No. 20
16-12	No. 9	No. 19	No. 22	No. 20
18-12	No. 20	No. 19	No. 22	No. 9

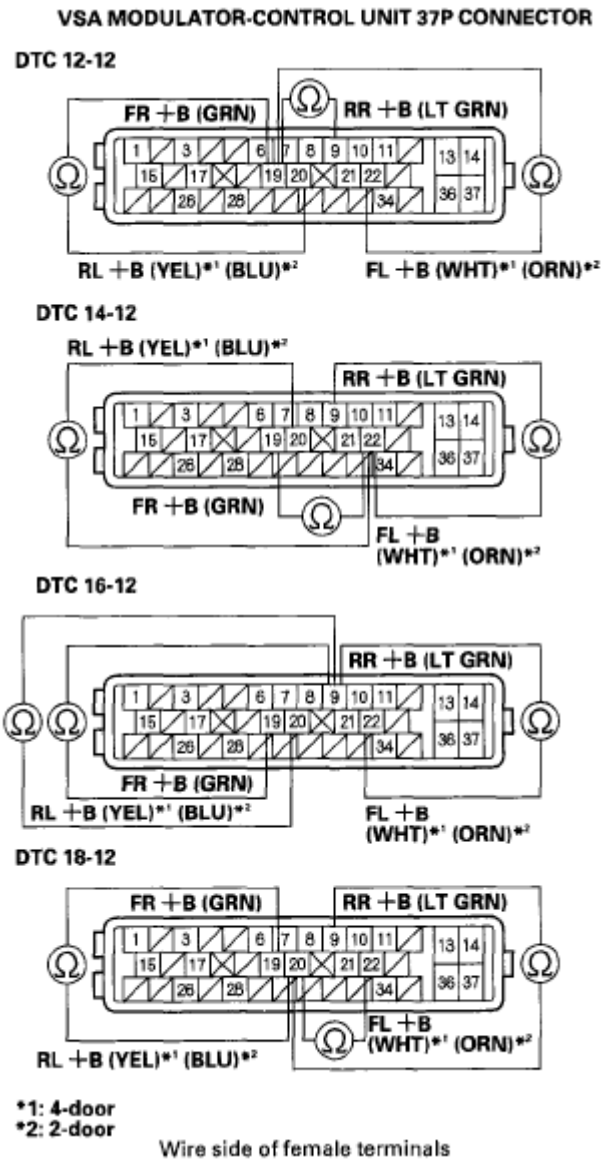


Fig. 23: Checking Continuity Between Appropriate VSA Modulator-Control Unit 37P Connector Wheel Speed Sensor +B Terminals

Is there continuity?

YES -Repair short in the wires between the appropriate wheel speed sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

DTC 12-21: RIGHT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR; DTC 14-21: LEFT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR; DTC 16-21: RIGHT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR; DTC 18-21: LEFT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR

1. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h).

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

   Are all four the same indicated value?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel speed sensor is properly mounted (see **WHEEL SPEED SENSOR REPLACEMENT**).

   DTC REFERENCE

DTC	Appropriate Wheel Speed Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

   Is the wheel speed sensor installation OK?

   YES -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

   NO -Reinstall the wheel speed sensor, and check the mounting position (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC 12-22: RIGHT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 14-22: LEFT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 16-22: RIGHT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE); DTC 18-22: LEFT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR (19 MPH (30 KM/H) OR MORE)

1. Test-drive the vehicle. Drive the vehicle between 19 mph (30 km/h) and 31 mph (50 km/h) for 70 seconds or more.

   NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

   Are all four the same indicated value?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel speed sensor is properly mounted (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC REFERENCE

DTC	Appropriate Wheel Speed Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

Is the wheel speed sensor installation OK?

YES -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

NO -Reinstall the wheel speed sensor, and check the mounting position (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC 12-23: RIGHT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 14-23: LEFT-FRONT WHEEL SPEED SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 16-23: RIGHT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H)); DTC 18-23: LEFT-REAR WHEEL SPEED SENSOR INSTALLATION ERROR (0 TO 9 MPH (0 TO 15 KM/H))

1. Test-drive the vehicle. Drive the vehicle between 1 mph (1 km/h) and 9 mph (15 km/h) in a straight line.

NOTE: Drive the vehicle on the road, not on the lift.

2. Check the RF, LF, RR, LR WHEEL SPD in the VSA DATA LIST with the HDS.

Are all the same indicated values?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Check that the appropriate wheel speed sensor is properly mounted (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC REFERENCE

DTC	Appropriate Wheel Speed Sensor

12-23	Right-front
14-23	Left-front
16-23	Right-rear
18-23	Left-rear

Is the wheel speed sensor installation OK?

YES -Replace the appropriate wheel speed sensor (see **WHEEL SPEED SENSOR REPLACEMENT**).

NO -Reinstall the wheel speed sensor, and check the mounting position (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC 21-11: RIGHT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 22-11: LEFT-FRONT MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 23-11: RIGHT-REAR MAGNETIC ENCODER MALFUNCTION (PULSE MISSING); DTC 24-11: LEFT-REAR MAGNETIC ENCODER MALFUNCTION (PULSE MISSING)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle at 13 mph (20 km/h) or more, and go a distance of 328 ft (100 m) or more.

NOTE: Drive the vehicle on the road, not on the lift.

4. Check for DTCs with the HDS.

Is DTC 21-11, 22-11,23-11, and/or 24-11 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Inspect the appropriate magnetic encoder for debris or cracks.

DTC REFERENCE

DTC	Appropriate Magnetic Encoder	Note
21-11	Right-front	Remove the driveshaft outboard joint from the appropriate wheel hub (see **KNUCKLE/HUB REPLACEMENT**).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit (see **HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE**).
24-		

11	Left-rear	

Is the magnetic encoder surface OK?

YES -Replace the wheel bearing (front) or the hub bearing unit (rear):

- Front: Replace the front wheel bearing (see **KNUCKLE/HUB REPLACEMENT**).
- Rear: Replace the rear hub bearing unit (see **HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE**).

NO -Clean off dust or dirt from the appropriate magnetic encoder surface on the wheel bearing or the hub bearing unit, then go to step 1 and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit.

DTC 25-11: YAW RATE SENSOR INTERNAL CIRCUIT MALFUNCTION (INITIAL); DTC 25-12: YAW RATE SENSOR INTERNAL CIRCUIT MALFUNCTION (OPEN, SHORT); DTC 25-13: YAW RATE SENSOR COMMUNICATION ERROR; DTC 25-16: YAW RATE/LATERAL ACCELERATION SENSOR INTERNAL CIRCUIT MALFUNCTION (KEEP ALIVE MEMORY (KAM) ERROR); DTC 25-21: YAW RATE SENSOR NEUTRAL POSITION MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 25-11, 25-12, 25-13, 25-16, or 25-21 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 25-14: YAW RATE/LATERAL ACCELERATION SENSOR CIRCUIT HIGH VOLTAGE; DTC 25-15: YAW RATE/LATERAL ACCELERATION SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 25-14, or 25-15 indicated?

YES -lf the DTC 61-01,61-21,61-22,61-23, and/or 62-21 is indicated at the same time, check the battery performance (see **BATTERY TEST**), and do the alternator and regulator circuit

troubleshooting (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). If the DTC 61-01, 61-21,61-22, 61-23, and/or 62-21 is not indicated at the same time, replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 25-22: YAW RATE SENSOR STUCK

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch to LOCK (0).
5. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h) or more.
6. Check for DTCs with the HDS.

   Is DTC 25-22 indicated?

   YES -Go to step 7.

   NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.

7. Check the LATERAL ACCELERATION SENSOR and YAW RATE S in the VSA DATA LIST with the HDS.

   Is there 0 °/s indicated?

   YES -Go to step 8.

   NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

8. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

   Does the indicated value change?

   YES -Intermittent failure, the system is OK at this time.

   NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 25-23: YAW RATE SENSOR CIRCUIT INTERMITTENT INTERRUPTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION**

MEMORIZATION).

4. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
5. Wait 10 seconds or more.
6. Check for DTCs with the HDS.

Is DTC 25-23 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 25-24: YAW RATE SENSOR GAIN LOW; DTC 25-25: YAW RATE SENSOR GAIN HIGH; DTC 26-24: LATERAL ACCELERATION SENSOR GAIN LOW; DTC 26-25: LATERAL ACCELERATION SENSOR GAIN HIGH

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Test-drive the vehicle. Drive the vehicle at 10 mph (15 km/h)or more.
5. Check for DTCs with the HDS.

Is DTC 25-24, 25-25, 26-24, or 26-25 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 26-11: LATERAL ACCELERATION SENSOR INTERNAL CIRCUIT MALFUNCTION (INITIAL); DTC 26-12: LATERAL ACCELERATION SENSOR INTERNAL CIRCUIT MALFUNCTION (OPEN, SHORT); DTC 26-13: LATERAL ACCELERATION SENSOR COMMUNICATION ERROR; DTC 26-21: LATERAL ACCELERATION SENSOR NEUTRAL POSITION MALFUNCTION; DTC 26-23: LATERAL ACCELERATION SENSOR CIRCUIT INTERMITTENT INTERRUPTION

NOTE: While doing this troubleshooting, avoid vibration or shaking of the vehicle.

1. Park the vehicle on a flat and level surface.
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
5. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
6. Wait 15 seconds or more.
7. Check for DTCs with the HDS.

Is DTC 26-11, 26-12, 26-13, 26-21, or 26-23 indicated?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 26-22: ACCELERATION SENSOR STUCK

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 26-22 indicated?

   YES -Go to step 5.

   NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time.

5. Check the LATERAL ACCELERATION SENSOR and YAW RATE S in the VSA DATA LIST with the HDS.

   Is there 0 °/s indicated?

   YES -Go to step 6.

   NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

6. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

   Does the indicated value change?

   YES -Intermittent failure, the system is OK at this time.

   NO -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

DTC 27-11: STEERING ANGLE SENSOR DIAG SIGNAL ERROR (INITIAL); DTC 27-26: STEERING ANGLE SENSOR DIAG SIGNAL ERROR (MAIN)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 27-11, or 27-26 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between steering angle sensor 5P connector terminal No. 3 and body ground.

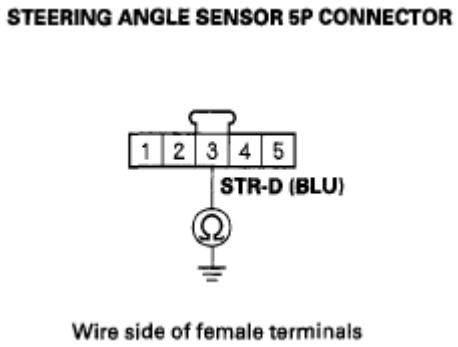


Fig. 24: Checking Continuity Between Steering Angle Sensor 5P Connector Terminal No. 3 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 9.

9. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually.

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Steering Angle Sensor
STR-D	3	3
SVCC	7	5
SGND	10	1

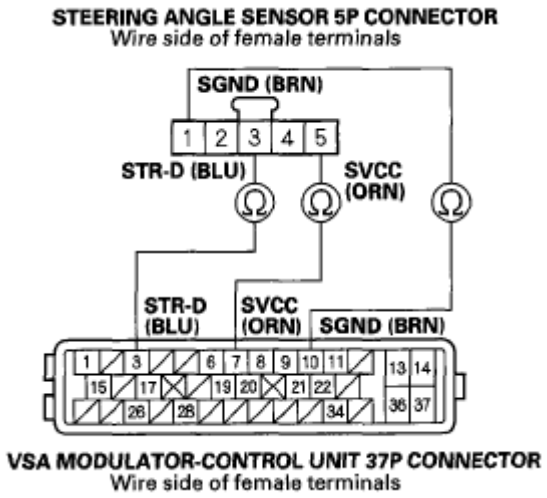


Fig. 25: Checking Continuity Between VSA Modulator-Control Unit And Steering Angle Sensor Connector Terminal

Is there continuity?

YES -Go to step 10.

NO -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

10. Turn the ignition switch ON (II).
11. Measure voltage between steering angle sensor 5P connector terminal No. 3 and body ground.

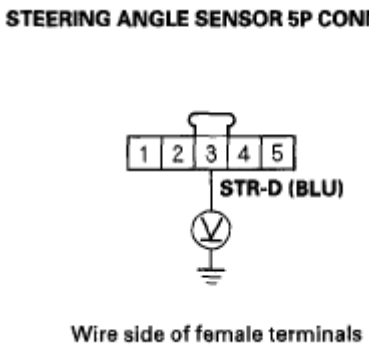


Fig. 26: Measuring Voltage Between Steering Angle Sensor 5P Connector Terminal No. 3 And Body Ground

Is there 0.1 V or more?

YES -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 27-21: STEERING ANGLE SENSOR STUCK NEUTRAL POSITION; DTC 27-22: STEERING ANGLE SENSOR STUCK OFFSET POSITION

1. Turn the ignition switch ON (II).
2. Turn the steering wheel left and right at 90 degree or more. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

   Is there ±90° or more?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Disconnect the steering angle sensor 5P connector.
5. Disconnect the VSA modulator-control unit 37P connector.
6. Check for continuity between body ground and steering angle sensor 5P connector terminals No. 2 and No. 4 individually.

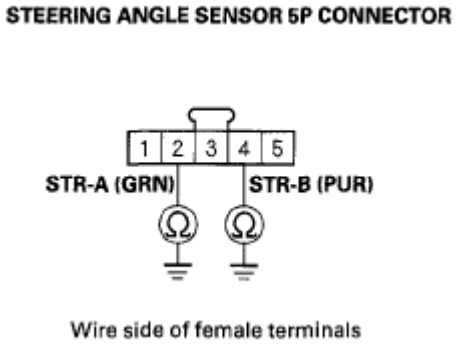


Fig. 27: Checking Continuity Between Body Ground And Steering Angle Sensor 5P Connector Terminals No. 2 And No. 4

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 7.

7. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually.

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Steering Angle Sensor
STR-A	34	2
STR-B	17	4
SVCC	7	5
SGND	10	1

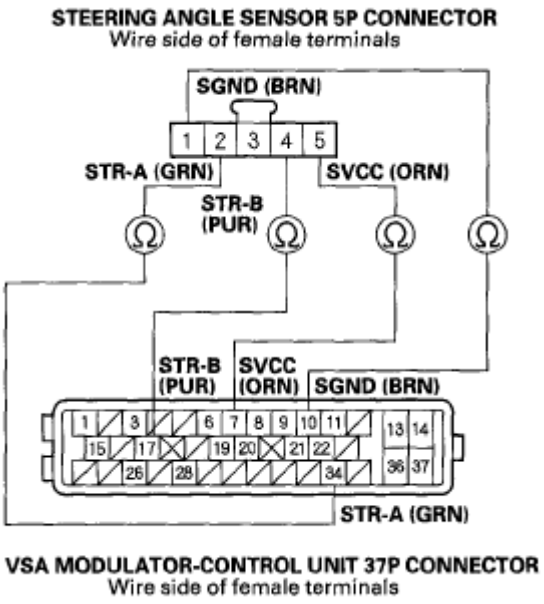


Fig. 28: Checking Continuity Between VSA Modulator-Control Unit And Steering Angle Sensor 5P Connector Terminal

Is there continuity?

YES -Go to step 8.

NO -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

8. Check for continuity between steering angle sensor 5P connector terminals No. 2 and No. 4.

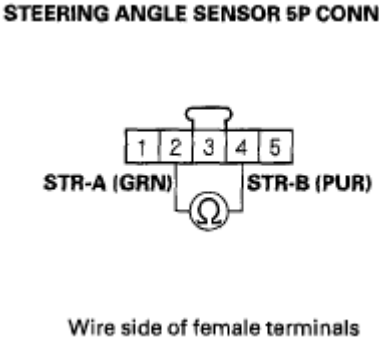


Fig. 29: Checking Continuity Between Steering Angle Sensor 5P Connector Terminals No. 2 And No. 4

Is there continuity?

YES -Repair short in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 9.

9. Check for continuity between steering angle sensor 5P connector terminals No. 5 and No. 2, No. 5 and No. 4 individually.

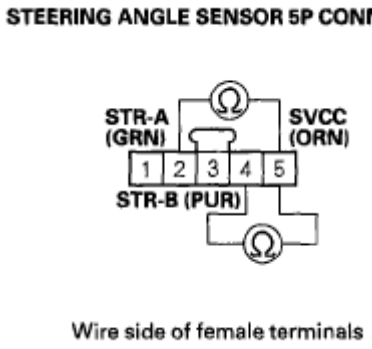


Fig. 30: Checking Continuity Between Steering Angle Sensor 5P Connector Terminals No. 5 And No. 2, No. 5 And No. 4

Is there continuity?

YES -Repair short in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 10.

10. Check for continuity between steering angle sensor 5P connector terminals No. 1 and No. 2, No. 1 and No. 4 individually.

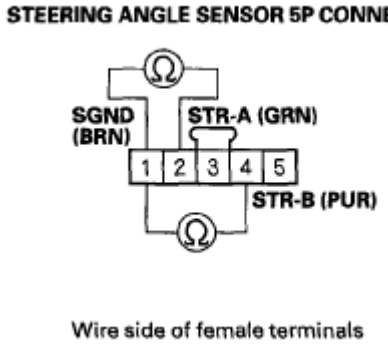


Fig. 31: Checking For Continuity Between Steering Angle Sensor 5P Connector Terminals No. 1 And No. 2

Is there continuity?

YES -Repair short in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Go to step 11.

11. Turn the ignition switch ON (II).
12. Measure voltage between body ground and steering angle sensor 5P connector terminals No. 2 and No. 4 individually.

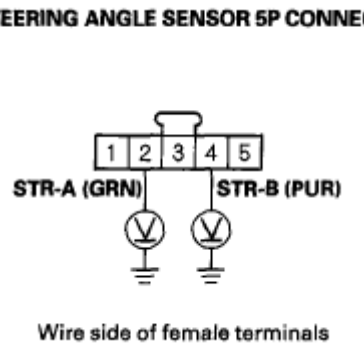


Fig. 32: Measuring Voltage Between Body Ground And Steering Angle Sensor 5P Connector Terminals No. 2 And No. 4

Is there 0.1 V or more?

YES -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 27-23: STEERING ANGLE SENSOR COUNTER MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Turn the steering wheel from lock to lock.
5. Check for DTCs with the HDS.

Is DTC 27-23 indicated?

YES -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

NO -Intermittent failure, the system is OK at this time.

DTC 27-24: STEERING ANGLE SENSOR EXCHANGE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Turn the steering wheel 1 turn. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

Is there about 288-432 °?

YES -Intermittent failure, the system is OK at this time.

NO -Replace the steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).

DTC 31-XX*: ABS RIGHT-FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 32-XX*: ABS RIGHT-FRONT OUTLET SOLENOID VALVE MALFUNCTION; DTC 33-XX*: ABS LEFT-FRONT INLET SOLENOID VALVE MALFUNCTION; DTC 34-XX*: ABS LEFT-FRONT OUTLET

SOLENOID VALVE MALFUNCTION; DTC 35-XX*: ABS RIGHT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 36-XX*: ABS RIGHT-REAR OUTLET SOLENOID VALVE MALFUNCTION; DTC 37-XX*: ABS LEFT-REAR INLET SOLENOID VALVE MALFUNCTION; DTC 38-XX*: ABS LEFT-REAR OUTLET SOLENOID VALVE MALFUNCTION

*: Subcode

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

DTC REFERENCE

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01, 32-01, 33-01, 34-01, 35-01, 36-01, 37-01, 38-01
21	Solenoid Pulse	31-21, 32-21, 33-21, 34-21, 35-21, 36-21, 37-21, 38-21
22	Solenoid Speculative	31-22, 32-22, 33-22, 34-22, 35-22, 36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23

Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 41-21: RIGHT-FRONT WHEEL LOCK; DTC 42-21: LEFT-FRONT WHEEL LOCK; DTC 43-21: RIGHT-REAR WHEEL LOCK; DTC 44-21: LEFT-REAR WHEEL LOCK

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
- The ABS or VSA continues to operate for a long time.
- Snow build-up on the wheel speed sensor.
- Misadjusted brake switch.
- Contaminated brake fluid.

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Turn the appropriate wheel by hand.

DTC REFERENCE

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front
43-21	Right-rear
44-21	Left-rear

Is there brake drag?

YES -Repair the brake drag.

NO -Go to step 3.

3. Check the appropriate wheel speed sensor is properly mounted (see **WHEEL SPEED SENSOR REPLACEMENT**).

Is the wheel speed sensor installation OK?

YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see). If the vehicle continues to code, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Reinstall the wheel speed sensor, and check the mounting position (see **WHEEL SPEED SENSOR REPLACEMENT**).

DTC 51-11: MOTOR LOCK; DTC 51-13: MOTOR RELAY OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Wait 5 seconds.
5. Operate SOLENOID or VSA in the VSA FUNCTION TEST five times with the HDS.
6. Check for DTCs with the HDS.

Is DTC 51-11 or 51-13 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 51-12: MOTOR LOCK CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check the DTCs with the HDS.

Is DTC 51-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA

modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 MTR (30 A) fuse in the under-hood fuse/relay box.

   Is the fuse blown?

   YES -Go to step 7.

   NO -Reinstall the checked fuse, then go to step 9.

7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

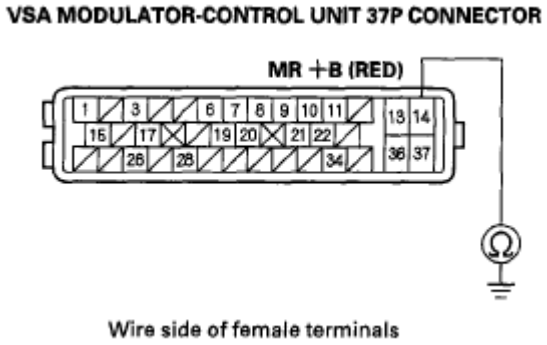


Fig. 33: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal No. 14 And Body Ground

   Is there continuity?

   YES -Repair short to body ground in the wire between the No. 3 MTR (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

   NO -Install the new No. 3 MTR (30 A) fuse in the under-hood fuse/relay box, then go to step 10.

9. Disconnect the VSA modulator-control unit 37P connector.
10. Measure voltage between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

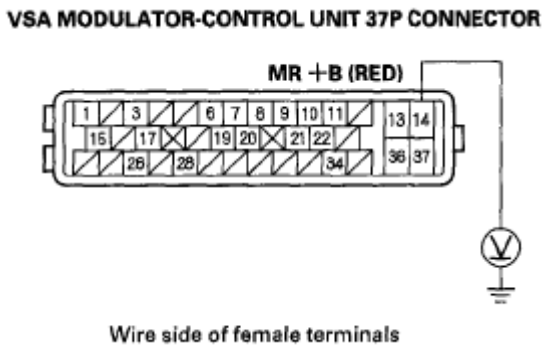


Fig. 34: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 14 And Body Ground

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 3 MTR (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

DTC 52-12: MOTOR STUCK OFF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Operate each SOLENOID or VSA in the VSA FUNCTION TEST five times with the HDS.
5. Check for DTCs with the HDS.

Is DTC 52-12 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 53-01: MOTOR RELAY STUCK ON 1; DTC 53-12: MOTOR RELAY STUCK ON 2

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 53-01 or 53-12 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between VSA modulator-control unit 37P connector terminal No. 37 and body ground.

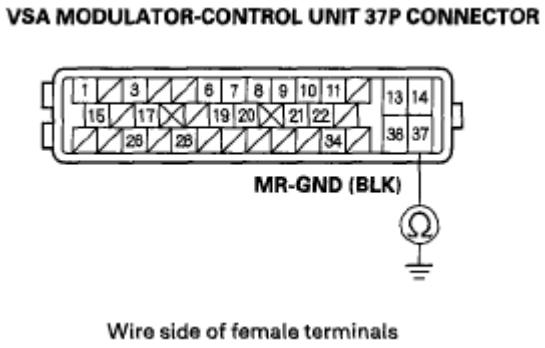


Fig. 35: Checking For Continuity Between VSA Modulator-Control Unit 37P Connector Terminal No. 37 And Body Ground

Is there continuity?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the VSA modulator-control unit and body ground (G202).

DTC 54-03: FAIL-SAFE RELAY 1 STUCK ON; DTC 54-04: FAIL-SAFE RELAY 1 STUCK OFF (INITIAL); DTC 54-21: FAIL-SAFE RELAY 1 STUCK OFF (MAIN)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 54-03, 54-04, or 54-21 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 56-01: INITIAL VIG FET STUCK OFF; DTC 56-02: INITIAL VIG FET STUCK ON; DTC 56-11: VIG FET STUCK OFF

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 56-01, 56-02, or 56-11 indicated?

   YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Intermittent failure, the system is OK at this time.

DTC 61-01: VSA MODULATOR-CONTROL UNIT INITIAL IG LOW VOLTAGE; DTC 61-21: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 1; DTC 61-22: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 2; DTC 61-23: VSA MODULATOR-CONTROL UNIT POWER SOURCE LOW VOLTAGE 3

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Check and note BATTERY voltage in the VSA DATA LIST with the H DS. If the voltage listed is 0 V, go to step 8, otherwise go to step 6.
6. Using a voltmeter, measure and note the voltage between the battery terminals.

   NOTE: If the voltage is below 9.5 V, check the battery (see BATTERY TEST), and troubleshoot the alternator regulator circuit (see ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING).

7. Compare the voltage noted in step 5 to the voltage in step 6.

   Is the difference between the two voltage readings less then 3 V?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see). If the code resets after clearing, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT**

REMOVAL AND INSTALLATION), and retest.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the VSA modulator-control unit 37P connector.
10. Measure voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

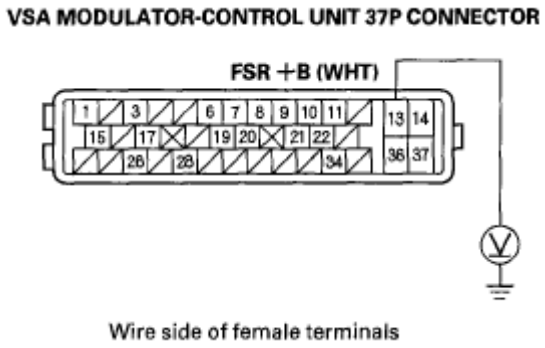


Fig. 36: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 13 And Body Ground

Is there battery voltage?

YES -Go to step 11.

NO -Repair open in the wire between the No. 3 FSR (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit.

11. Turn the ignition switch ON (II).
12. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

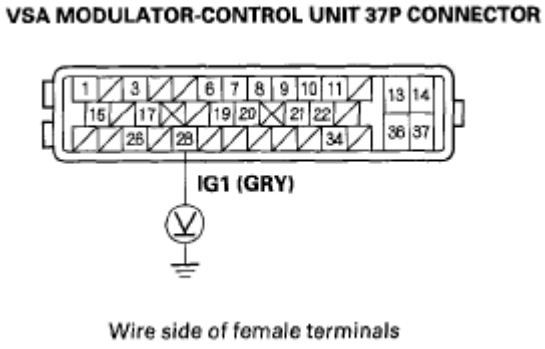


Fig. 37: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 28 And Body Ground

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit.

DTC 62-21: VSA MODULATOR-CONTROL UNIT IG HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 62-21 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time.

5. Using a voltmeter, measure the voltage between the battery terminals. Compare the voltage measured at the battery with the voltage shown in the VSA DATA LIST with the HDS.

   Is there a voltage difference of 3 V or more?

   YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). Also check for loose terminals in the VSA modulator-control unit 37P connector. If it is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 64-11: STEERING ANGLE SENSOR POWER CIRCUIT SHORT

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 64-11 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between steering angle sensor 5P connector terminal No. 5 and body ground.

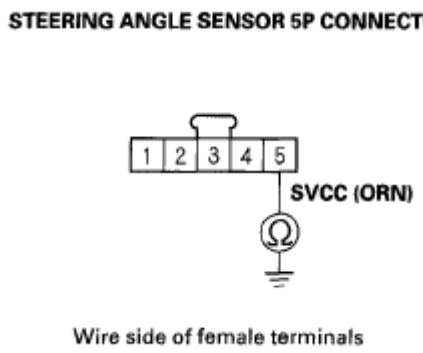


Fig. 38: Checking Continuity Between Steering Angle Sensor 5P Connector Terminal No. 5 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 64-12: STEERING ANGLE SENSOR POWER CIRCUIT OPEN

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 64-12 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector.
8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 7 and steering angle sensor 5P connector terminal No. 5.

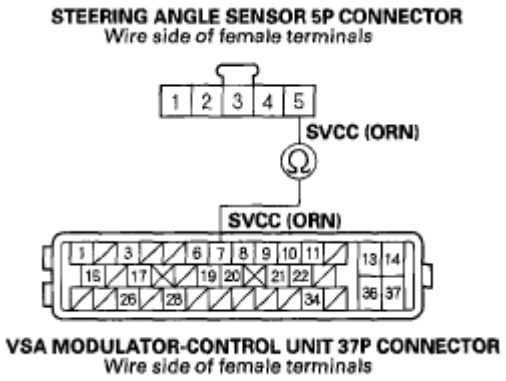


Fig. 39: Checking Continuity Between VSA Modulator-Control Unit 7 And Steering Angle Sensor 5P Connector Terminal No. 5

Is there continuity?

YES -Go to step 9.

NO -Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.

9. Turn the ignition switch ON (II).
10. Measure voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

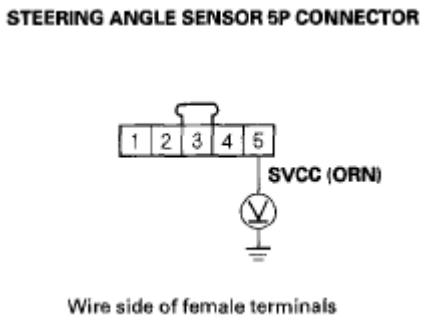


Fig. 40: Measuring Voltage Between Steering Angle Sensor 5P Connector Terminal No. 5 And Body Ground

Is there 0.1 V or more?

YES -Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit.

NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

DTC 65-21: BRAKE FLUID LEVEL STUCK ON

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.

4. Check for DTCs with the HDS.

   Is DTC 65-21 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time.

5. Release the parking brake.
6. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
7. Check the brake system indicator in the gauge control module (tach).

   Does the indicator come on then go off?

   YES -Go to step 8.

   NO -Go to step 9.

8. Check the FLUID LEVEL in the VSA DATA LIST with the HDS while moving the brake fluid reservoir tank float.

   Does it indicate ON when the float is lowered and OFF when the float is raised?

   YES -Intermittent failure, the system is OK at this time.

   NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

9. Check the brake fluid level in the master cylinder reservoir tank.

   Is the brake fluid level OK?

   YES -Go to step 10.

   NO -Do the brake pad inspection: Front (see **INSPECTION - SI MODEL**), rear (see **REAR BRAKE PAD INSPECTION AND REPLACEMENT**), check for brake fluid leaks or replace worn pads, then go to step 1 and recheck.

10. Check the FLUID LEVEL in the VSA DATA LIST with the HDS while moving the brake fluid reservoir tank float.

    Does it indicate ON when the float is lowered and OFF when the float raised?

    YES -Go to step 11.

    NO -Replace the brake fluid reservoir tank (brake fluid level switch is included) (see **MASTER CYLINDER INSPECTION**).

11. Turn the ignition switch to LOCK (0).

12. Disconnect the gauge control module (tach) 36P connector.
13. Disconnect the brake fluid level switch 2P connector.
14. Check for continuity between brake fluid level switch 2P connector terminal No. 2 and body ground.

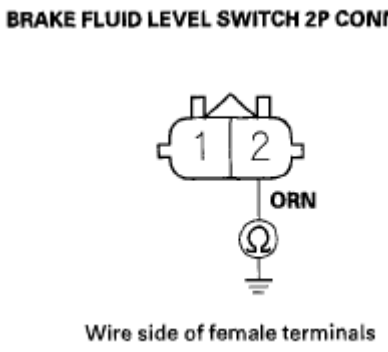


Fig. 41: Checking Continuity Between Brake Fluid Level Switch 2P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the gauge control module (tach) and the brake fluid level switch.

NO -Substitute a known-good gauge control module (tach), then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see **REPLACEMENT**).

DTC 66-11: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-12: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-13: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-14: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION; DTC 66-16: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 66-11, 66-12, 66-13, 66-14, or 66-16 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 66-15: PRESSURE SENSOR (INSIDE OF VSA MODULATOR-CONTROL UNIT) MALFUNCTION

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).

2. Turn all four wheels by hand.

   Is there brake drag?

   YES -Repair the brake drag.

   NO -Go to step 3.

3. Check the PRESSURE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does the indicated value change?

   YES -Intermittent failure, the system is OK at this time.

   NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 68-21: BRAKE PEDAL POSITION SWITCH STUCK OFF

1. Turn the ignition switch ON (II).
2. Check the BRK PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is there 10 MPa or less?

   YES -Go to step 3.

   NO -Check for brake drag or a miss-adjusted brake pedal position switch. If they are normal, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when pedal is released?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the brake pedal position switch 4P connector, ECM connector A (44P), and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Disconnect the brake pedal position switch 4P connector.
6. Connect brake pedal position switch 4P connector terminal No. 1 and No. 2 to with a jumper wire.

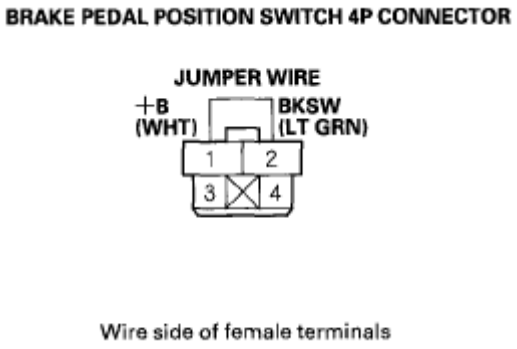


Fig. 42: Identifying Brake Pedal Position Switch 4P Connector Terminal No. 1 And No. 2 To With Jumper Wire

7. Turn the ignition switch ON (II).
8. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS.

   Does it indicate ON?

   YES -Check the brake pedal position switch adjustment (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). If it is OK, replace the brake pedal position switch.

   NO -Go to step 9.

9. Disconnect the jumper wire.
10. Turn the ignition switch to LOCK (0).
11. Short the SCS line with the HDS.
12. Disconnect ECM connector A (44P).
13. Check for continuity between brake pedal position switch 4P connector terminal No. 2 and ECM connector A (44P) terminal No. 40.

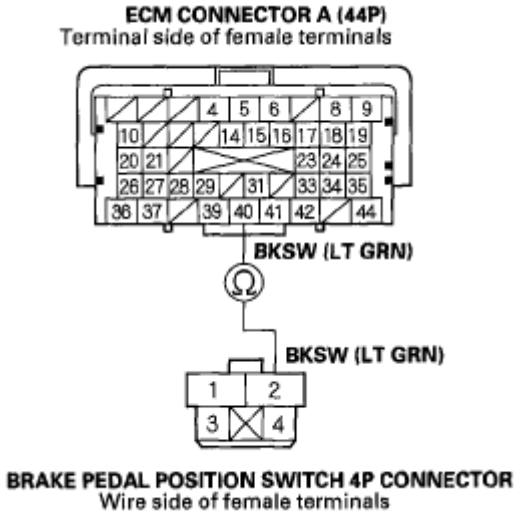


Fig. 43: Checking Continuity Between Brake Pedal Position Switch 4P Connector And ECM Connector A (44P)

Is there continuity?

YES -Substitute a known-good ECM, then go to step 1 and recheck. If DTCs are not indicated, replace the original ECM (see **ECM REPLACEMENT**).

NO -Repair open in the wire between the ECM and the brake pedal position switch.

DTC 68-22: BRAKE PEDAL POSITION SWITCH STUCK ON

1. Turn the ignition switch ON (II).
2. Check the BRK PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is 10 MPa or more?

   YES -Check brake pedal height (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**). If the brake pedal height is OK, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Go to step 3.

3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

   YES -Intermittent failure, the system is OK at this time.

   NO -Go to step 4.

4. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS, and disconnect the brake pedal position switch 4P connector.

   Does the indicator change from ON to OFF?

   YES -Replace the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

   NO -Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Turn the ignition switch ON (II).
9. Measure voltage between brake pedal position switch 4P connector terminal No. 2 and body ground.

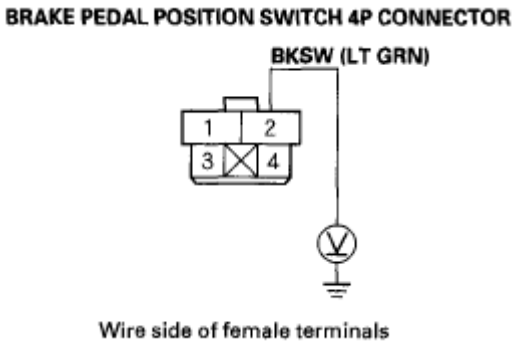


Fig. 44: Measuring Voltage Between Brake Pedal Position Switch 4P Connector Terminal No. 2 And Body Ground

Is there 0.1 V or more?

YES -Repair short to power in the wire between the ECM and the brake pedal position switch.

NO -Substitute a known-good ECM, then go to step 1 and recheck. If DTCs are not indicated, replace the original ECM (see **ECM REPLACEMENT**).

DTC 71-21: RIGHT-FRONT OR LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-22: LEFT-FRONT OR RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-23: RIGHT-FRONT AND RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-24: LEFT-FRONT AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-25: RIGHT-FRONT AND LEFT-FRONT DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-26: RIGHT-REAR AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-27: RIGHT-FRONT OR LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-28: LEFT-FRONT OR RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-29: RIGHT-FRONT AND RIGHT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-2A: LEFT-FRONT AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-2B: RIGHT-FRONT AND LEFT-FRONT DIFFERENT DIAMETER TIRE MALFUNCTION;
DTC 71-2C: RIGHT-REAR AND LEFT-REAR DIFFERENT DIAMETER TIRE MALFUNCTION

NOTE: The DTC will be indicated when the vehicle has a different diameter tire(s) compared to the other tire(s).

DTC REFERENCE

DTC	Sectional	Note
71-21	Right-front or left-rear	
71-22	Left-front or right-rear	
71-23	Right-front and right-rear	
71-24	Left-front and left-rear	
71-25	Right-front and left-front	
71-26	Right-rear and left-rear	
71-27	Right-front or left-rear	
71-28	Left-front or right-rear	
71-29	Right-front and right-rear	
71-2A	Left-front and left-rear	

71-2B	Right-front and left-front	
71-2C	Right-rear and left-rear	

1. Check the tires for proper inflation (see **WHEEL ALIGNMENT**).
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0).
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

   Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, 71-26, 71-27, 71-28, 71-29, 71-2A, 71-2B, or 71-2C indicated?

   YES -Replace all four tires with the proper size (see **WHEEL ALIGNMENT**).

   NO -Intermittent failure, the system is OK at this time.

DTC 81-XX*: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

* : Subcode (Except DTC 81-11,81-3D, 81-3E, 81-51, 81-52,81-53,81-54,81-55, 81-56,81-57,81-58, and 81-59)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81-xx indicated?

   YES -If the DTC 81-11,81-3D,81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57,81-58, or 81-59 is indicated at the same time, do the DTC 81-11, 81-52,81-54,81-56, or 81-58 troubleshooting (see **DTC 81-xx*: Central Processing Unit (CPU) Internal Circuit Malfunction**), DTC 81-51,81-53,81-55, or 81-57 troubleshooting (see **DTC 81-51: Central Processing Unit (CPU) Internal Circuit Malfunction; DTC 81-53: Central Processing Unit (CPU) Internal Circuit Malfunction; DTC 81-55: Central Processing Unit (CPU) Internal Circuit Malfunction; DTC 81-57: Central Processing Unit (CPU) Internal Circuit Malfunction**), or DTC 81-3D, 81-3E, or 81-59 troubleshooting (see **DTC 81-3D: Central Processing Unit (CPU) Internal Circuit Malfunction; DTC 81-3E: Central Processing Unit (CPU) Internal Circuit Malfunction; DTC 81-59: Central Processing Unit (CPU) Internal Circuit Malfunction**). If DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is not indicated. Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Intermittent failure, the system is OK at this time.

DTC 81-11: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-52: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-54: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-56: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-58:

CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

   Is DTC 81-11, 81-52, 81-54, 81-56, or 81-58 indicated?

   YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -Intermittent failure, the system is OK at this time.

DTC 81-51: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-53: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-55: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-57: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

   Is DTC 81-51, 81-53, 81-55, or 81-57 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminals (see table).

DTC REFERENCE

DTC	VSA Modulator-control Unit 37P Connector Terminals No.
81-51	No. 19
81-53	No. 22
81-55	No. 9
81-57	No. 20

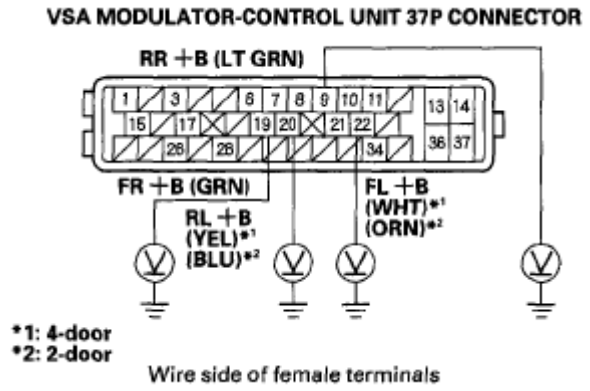


Fig. 45: Measuring Voltage Between Body Ground And Appropriate VSA Modulator-Control Unit 37P Connector Terminals

Is there 0.1 V or more?

YES -Repair short to power in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit.

NO -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

DTC 81-3D: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-3E: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION; DTC 81-59: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Turn the steering wheel from lock to lock.
5. Check for DTCs with the HDS.

Is DTC 81-3D, 81-3E, or 81-59 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

DTC 83-13: ECM COMMUNICATION ERROR; DTC 83-14: ECM COMMUNICATION ERROR

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.
4. Check for DTCs with the HDS.

Is DTC 83-13, or 83-14 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between ECM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle.
10. Check for DTCs with the HDS.

Is DTC 83-13, 83-14 indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Replace the original ECM (see **ECM REPLACEMENT**).

DTC 84-21: VSA SENSOR NEUTRAL POSITION NOT WRITING

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
5. Check for DTCs with the HDS.

Is DTC 84-21 indicated?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -The system is OK at this time.

DTC 86-01: F-CAN BUS-OFF MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 86-01 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for loose terminals between ECM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Disconnect the HDS from the data link connector (DLC).
9. Disconnect the gauge control module (tach) 36P connector.
10. Disconnect SRS unit connector A (28P).
11. With EPS: Disconnect EPS control unit connector D (28P).
12. With TPMS: Disconnect the TPMS control unit 20P connector.
13. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
14. Disconnect the VSA modulator-control unit 37P connector.
15. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15 and body ground individually.

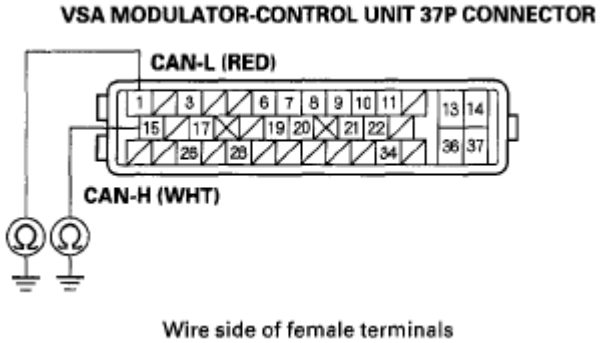


Fig. 46: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No. 1 And No. 15 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the ECM/PCM, the gauge control module (tach), the data link connector (DLC), the SRS unit, the EPS control unit (if equipped), the TPMS control unit (if equipped), and the yaw rate-lateral acceleration sensor, and the VSA modulator-control unit.

NO -Go to step 16.

16. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15.

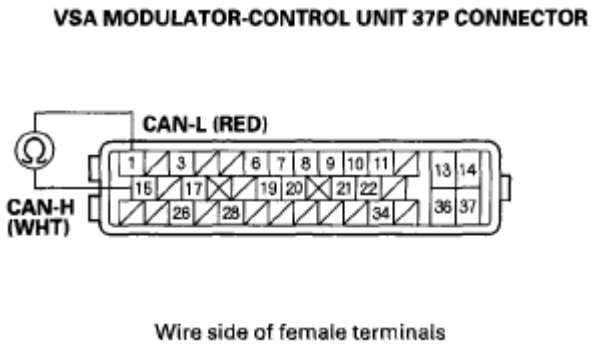


Fig. 47: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No. 1 And No. 15

Is there continuity?

YES -Repair short in the wire between VSA modulator-control unit 37P connector terminals No. 1 (CAN-L line) and No. 15 (CAN-H line).

NO -Go to step 17.

17. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM connector A (44P) terminal (see table).

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	ECM
CAN-L	1	37
CAN-H	15	36

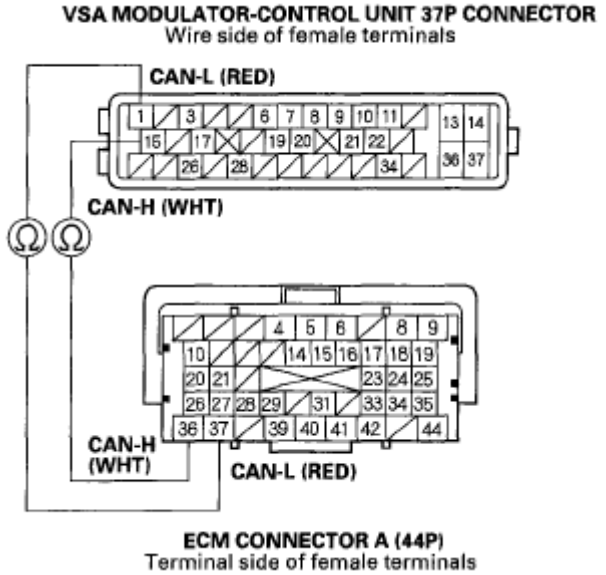


Fig. 48: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal And ECM Connector A (44P) Terminal

Is there continuity?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the ECM and the VSA modulator-control unit.

DTC 86-11: F-CAN COMMUNICATION WITH ECM MALFUNCTION; DTC 86-21: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-22: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-23: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-24: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-25: F-CAN COMMUNICATION WITH ENGINE MALFUNCTION; DTC 86-41: F-CAN COMMUNICATION WITH EAT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Test-drive the vehicle. Drive the vehicle at 7 mph (10 km/h) or more.
5. Check for DTCs with the HDS.

   Is 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 DTC indicated?

   YES -If the DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting (see **DTC 86-01: F-CAN Bus-off Malfunction**). If 86-01 is not indicated, go to step 6.

   NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between ECM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

6. Turn the ignition switch to LOCK (0).
7. Short the SCS line with the HDS.
8. Disconnect ECM connector A (44P).
9. Disconnect the VSA modulator-control unit 37P connector.
10. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM connector A (44P) terminal (see table).

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	ECM
CAN-L	1	37
CAN-H	15	36

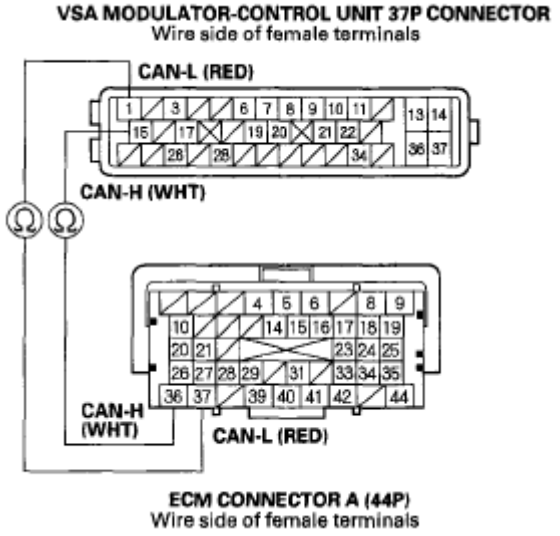


Fig. 49: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal And ECM Connector A (44P) Terminal

Is there continuity?

YES -Check for loose terminals in ECM connector A (44P) and at the VSA modulator-control unit 37P connector. If necessary, substitute a known-good ECM, then go to step 1 and recheck. If no DTCs are indicated, replace the original ECM (see **ECM REPLACEMENT**). If DTCs are indicated, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the ECM and the VSA modulator-control unit.

DTC 86-31: F-CAN COMMUNICATION WITH GAUGE CONTROL MODULE MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

   Is 86-31 DTC indicated?

   YES -If the DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting (see **DTC 86-01: F-CAN Bus-off Malfunction**). If 86-01 is not indicated, go to step 5.

   NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

5. Turn the ignition switch ON (II).

   Do the gauge indicators come on?

YES -Go to step 6.

NO -Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

6. Turn the ignition switch to LOCK (0).
7. Disconnect the gauge control module (tach) 36P connector.
8. Disconnect the VSA modulator-control unit 37P connector.
9. Check for continuity between the VSA modulator-control unit 37P connector terminal and gauge control module (tach) 36P connector terminal (see table).

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Gauge Control Module (Tach)
CAN-L	1	19
CAN-H	15	1

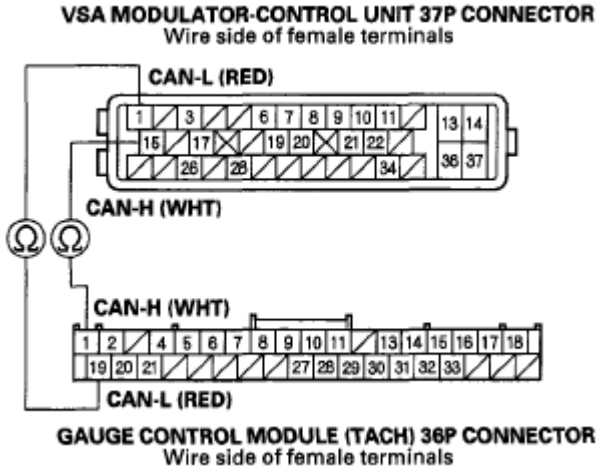


Fig. 50: Checking Continuity Between VSA Modulator-Control Unit And Gauge Control Module 36P Connector Terminal

Is there continuity?

YES -Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1 and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see **REPLACEMENT**). If DTC 86-31 resets, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the gauge control module (tach) and the VSA modulator-control unit.

DTC 86-71: F-CAN COMMUNICATION WITH YAW RATE-LATERAL ACCELERATION SENSOR MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Check for DTCs with the HDS.

   Is 86-71 DTC indicated?

   YES -If the DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting (see **DTC 86-01: F-CAN Bus-off Malfunction**). If 86-01 is not indicated, go to step 4.

   NO -If any DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. Check for loose terminals at the yaw rate-lateral acceleration sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

4. Turn the ignition switch to LOCK (0).
5. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
6. Disconnect the VSA modulator-control unit 37P connector.
7. Check for continuity between the VSA modulator-control unit 37P connector terminal and the yaw rate-lateral acceleration sensor 5P connector terminal (see table).

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Yaw Rate-lateral Acceleration Sensor
CAN-L	1	4
CAN-H	15	3

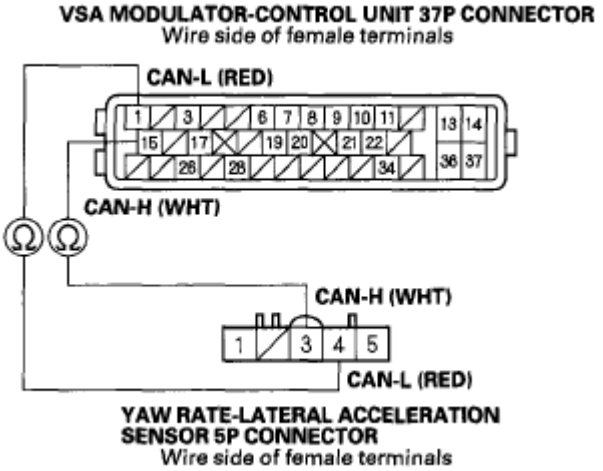


Fig. 51: Checking Continuity Between VSA Modulator-Control Unit And YAW Rate-Lateral Acceleration Sensor 5P Connector Terminal

Is there continuity?

YES -Go to step 8.

NO -Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit.

8. Turn the ignition switch ON (II).

9. Measure voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 1 and body ground.

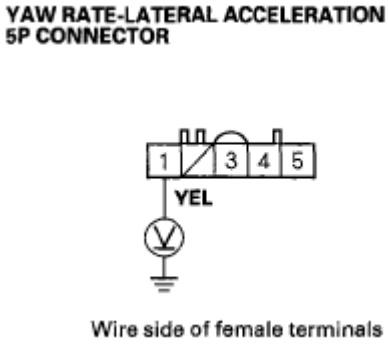


Fig. 52: Measuring Voltage Between YAW Rate-Lateral Acceleration Sensor 5P Connector Terminal And Body Ground

Is there battery voltage?

YES -Go to step 10.

NO -Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 4 (7.5 A) fuse and yaw rate-lateral acceleration sensor.

10. Turn the ignition switch to LOCK (0).
11. Reconnect the yaw rate-lateral acceleration sensor 5P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 5 and body ground.

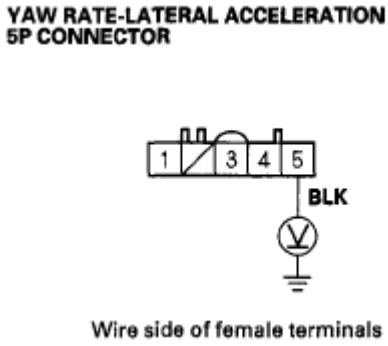


Fig. 53: Measuring Voltage Between YAW Rate-Lateral Acceleration Sensor 5P Connector Terminal And Body Ground

Is there 0.1 V or less?

YES -Replace the yaw rate-lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO -Repair open in the wire between the yaw rate-lateral acceleration sensor and body ground (G602).

DTC 107-22: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch to LOCK (0) to cool the VSA modulator-control unit, and wait 1 hour or more.
2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 107-22 indicated?

   YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

   NO -The system is OK at this time.

DTC 108-21: STEERING ANGLE SENSOR MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

   Is DTC 108-21 indicated?

   YES -Go to step 6.

   NO -Intermittent failure, the system is OK at this time.

6. Turn the ignition switch to LOCK (0).
7. Substitute a known-good steering angle sensor (see **STEERING ANGLE SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).
11. Test-drive the vehicle.
12. Check for DTCs with the HDS.

    Is DTC 108-21 indicated?

    YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

    NO -Replace the original steering angle sensor (see **STEERING ANGLE SENSOR**

REPLACEMENT).

DTC 112-01: CENTRAL PROCESSING UNIT (CPU) INTERNAL CIRCUIT MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the VSA modulator-control unit 37P connector.
5. Measure voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

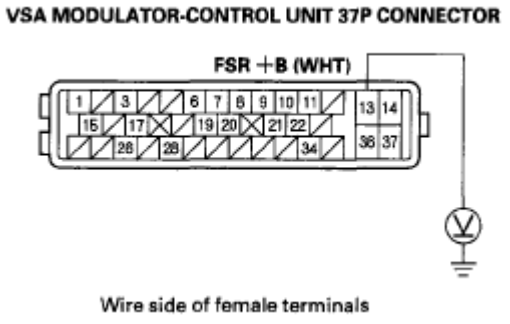


Fig. 54: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 13 And Body Ground

Is there battery voltage?

YES -Go to step 6.

NO -Check the battery performance (see **BATTERY TEST**), and troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

6. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

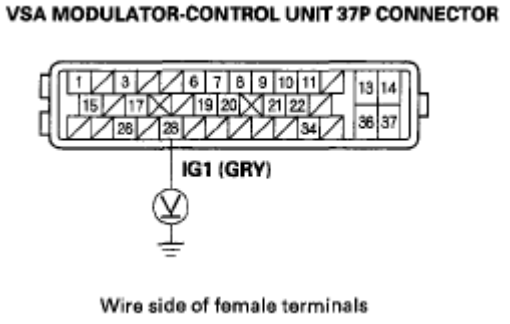


Fig. 55: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 28 And Body Ground

Is there 0 V?

YES -Go to step 7.

NO -Repair short to power in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse-relay box and the VSA modulator-control unit.

7. Turn the ignition switch ON (II).
8. Measure voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

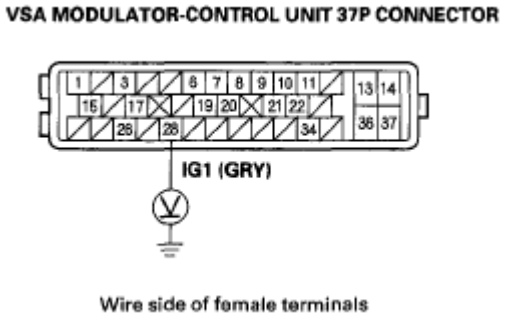


Fig. 56: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 28 And Body Ground

Is there battery voltage?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse-relay box and the VSA modulator-control unit.

DTC 121-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 122-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 123-XX*: VSA SOLENOID VALVE MALFUNCTION; DTC 124-XX*: VSA SOLENOID VALVE MALFUNCTION

*: Subcode

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it ON (II) again.
4. Check for DTCs with the HDS.

CONNECTOR TERMINAL DESCRIPTION

DTC		Sectional	Valve
121	-01	Right-front and left-rear	Regulator
	-02		
	-11		
	-21		
	-24		
	-01		

122	-21		Suction
	-22		
	-23		
123	-01	Left-front and right-rear	Regulator
	-02		
	-11		
	-21		
	-24		
124	-01		Suction
	-21		
	-22		
	-23		

Is DTC 121-xx, 122-xx, 123-xx, or 124-xx indicated?

YES -Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the system is OK at this time.

SYMPTOM TROUBLESHOOTING

ABS indicator or VSA indicator does not go off, and no DTCs are stored

1. Check for the communication between the vehicle and the HDS.

   Is there the communication?

   YES -Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then recheck. If it is OK, replace the original gauge control module (tach) (see **REPLACEMENT**).

   NO -If the HDS does not communicate with all the system of the vehicle, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**). If the HDS does not communicate with only VSA, go to step 2.

2. Turn the ignition switch to LOCK (0).
3. Check the No. 4 (7.5 A) fuse in the under-dash fuse/ relay box.

   Is the fuse blown?

   YES -Install the new No. 4 (7.5 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

   NO -Reinstall the checked fuse, then go to step 4.

4. Disconnect the VSA modulator-control unit 37P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between VSA modulator-control unit 37P terminal No. 28 and body ground.

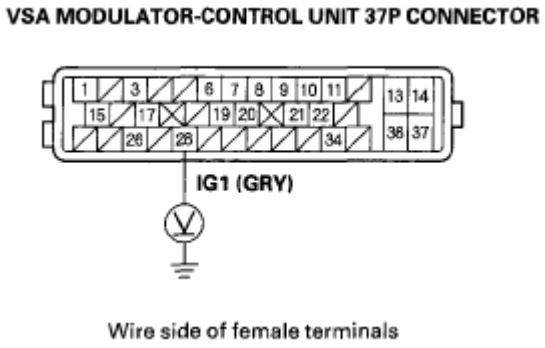


Fig. 57: Measuring Voltage Between VSA Modulator-Control Unit 37P Terminal No. 28 And Body Ground

Is there battery voltage?

YES -Go to step 7.

NO -Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit.

7. Turn the ignition switch to LOCK (0).
8. Check for continuity between VSA modulator-control unit 37P terminal No. 36 and body ground.

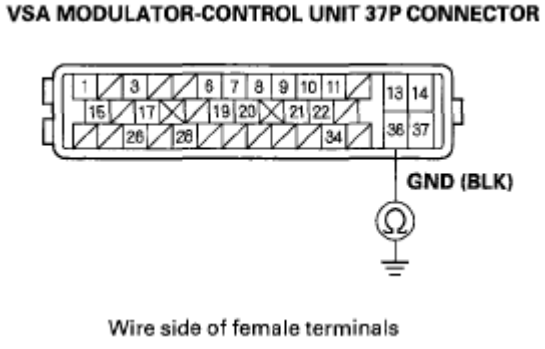


Fig. 58: Checking Continuity Between VSA Modulator-Control Unit 37P Terminal No. 36 And Body Ground

Is there continuity?

YES -Check for loose terminals in the VSA modulator-control unit 37P connector, clean terminal G202 and recheck. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

NO -Repair open in the wire between the VSA modulator-control unit and body ground (G202).

BRAKE SYSTEM INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the brake system indicator for several seconds when the ignition switch is turned ON (II).

   Does the indicator come on then go off?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 4.

4. Check the BRAKE INDICATOR in the VSA DATA LIST with the HDS.

   Does it indicate OFF?

   YES -Go to step 5.

   NO -Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**), and retest.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the parking brake switch 1P connector.
7. Turn the ignition switch ON (II).

   Does the brake system indicator go off?

   YES -Replace the parking brake switch (see **PARKING BRAKE CABLE REPLACEMENT**).

   NO -Go to step 8.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the gauge control module (tach) 36P connector.
10. Check for continuity between parking brake switch 1P connector terminal No. 1 and body ground.

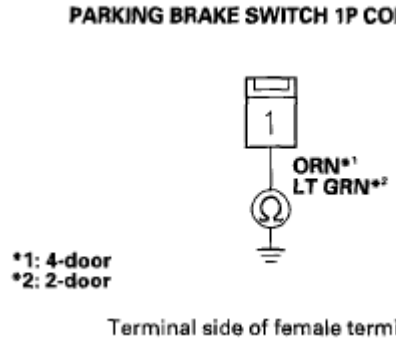


Fig. 59: Checking Continuity Between Parking Brake Switch 1P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the gauge control module (tach) and the parking brake switch.

NO -Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1 and recheck. If it is OK, replace the original gauge control module (tach) (see **REPLACEMENT**).

VSA activation indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II).
2. Check the VSA activation indicator for several seconds when the ignition switch is turned ON (II).

   Does the indicator come on then go off?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the VSA OFF switch 5P connector, the gauge control module (tach) 36P connector, and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 3.

3. Check the VSA OFF SWITCH in the VSA DATA LIST with the HDS while pushing the VSA OFF switch.

   Does the indicator change from ON (OFF) to OFF (ON)?

   YES -Do the gauge control module troubleshooting (see **SELF-DIAGNOSTIC FUNCTION**).

   NO -Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Check the VSA OFF switch (see **VSA OFF SWITCH TEST**).

   Is the VSA off switch OK?

   YES -Go to step 6.

   NO -Replace the VSA OFF switch (see **VSA OFF SWITCH TEST**).

6. Disconnect the gauge control module (tach) 36P connector.
7. Disconnect the VSA OFF switch 5P connector.
8. Check for continuity between VSA OFF switch 5P connector terminal No. 2 and body ground.

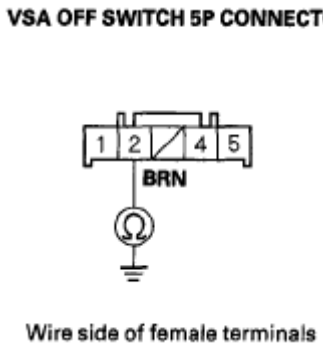


Fig. 60: Checking Continuity Between VSA Off Switch 5P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the gauge control module (tach) and the VSA OFF switch.

NO -Substitute a known-good VSA modulator-control unit, then go to step 1 and recheck. If it is OK, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

ABS indicator, brake system indicator, and VSA indicator do not go off at same time

NOTE: Check for gauge DTCs with the HDS (see WIRE COLOR CODES). If goluges DTCs are stored, troubleshoot those DTCs first.

1. Release the parking brake.
2. Turn the ignition switch ON (II).
3. Check the ABS indicator, brake system indicator and the VSA indicator for several seconds when the ignition switch is turned ON (II).

   Do the indicators come on then go off?

   YES -Intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the VSA modulator-control unit 37P connector. Refer to **INTERMITTENT FAILURES TROUBLESHOOTING** (see).

   NO -Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Short the SCS line with the HDS.
6. Disconnect ECM connector A (44P).
7. Disconnect the HDS from the data link connector (DLC).
8. Disconnect the gauge control module (tach) 36P connector.
9. Disconnect SRS unit connector A (28P).
10. Disconnect EPS control unit connector D (28P).
11. With TPMS: Disconnect the TPMS control unit 20P connector.

12. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
13. Disconnect the VSA modulator-control unit 37P connector.
14. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15 and body ground individually.

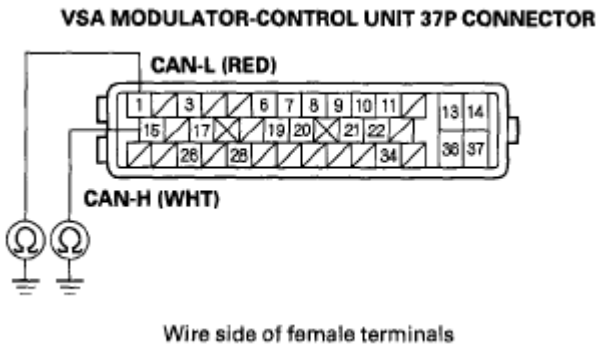


Fig. 61: Checking Continuity Between VSA Modulator-Control Unit And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the ECM/PCM, the gauge control module (tach), the data link connector (DLC), the SRS unit, the EPS control unit (if equipped), the TPMS control unit (if equipped), and the yaw rate-lateral acceleration sensor, and the VSA modulator-control unit.

NO -Go to step 15.

15. Check for continuity between VSA modulator-control unit 37P connector terminals No. 1 and No. 15.

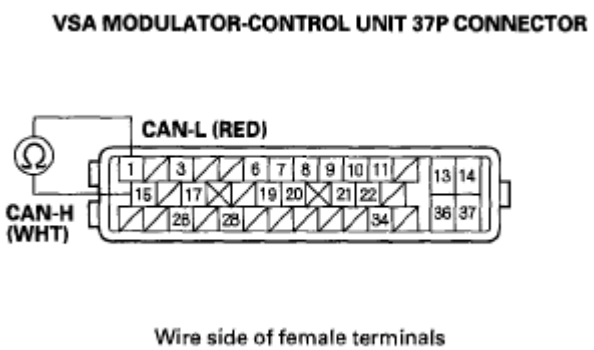


Fig. 62: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No. 1 And No. 15

Is there continuity?

YES -Repair short in the wire between VSA modulator-control unit 37P connector terminals No. 1 (CAN-L line) and No. 15 (CAN-H line).

NO -Go to step 16.

16. Check for continuity between VSA modulator-control unit 37P connector terminal and gauge control

module (tach) 36P connector terminal (see table).

CONNECTOR TERMINAL DESCRIPTION

Sign	Connector Terminal No.	
	VSA Modulator-control Unit	Gauge Control Module (Tach)
CAN-L	1	19
CAN-H	15	1

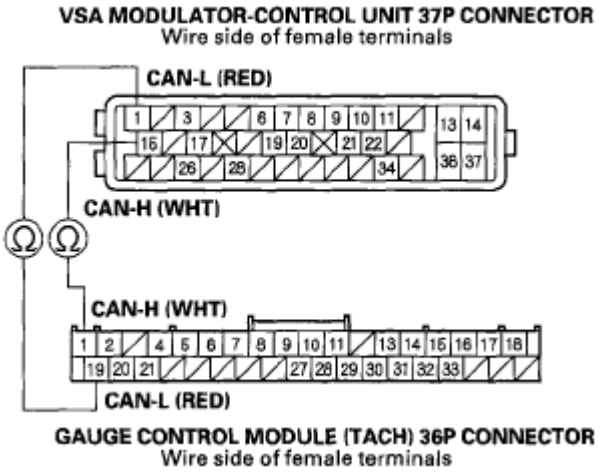


Fig. 63: Checking Continuity Between VSA Modulator-Control Unit And Gauge Control Module Connector Terminal

Is there continuity?

YES -Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1 and recheck. If it is OK, replace the original gauge control module (tach) (see **REPLACEMENT**). If DTCs are indicated, replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO -Repair open in the wire between the gauge control module (tach) and the VSA modulator-control unit.

STEERING ANGLE SENSOR REPLACEMENT

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
2. Remove the steering column covers and the cable reel (see **CABLE REEL REPLACEMENT**).
3. Remove the combination switch assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
4. Remove the combination light switch (A) and the wiper/washer switch (B).

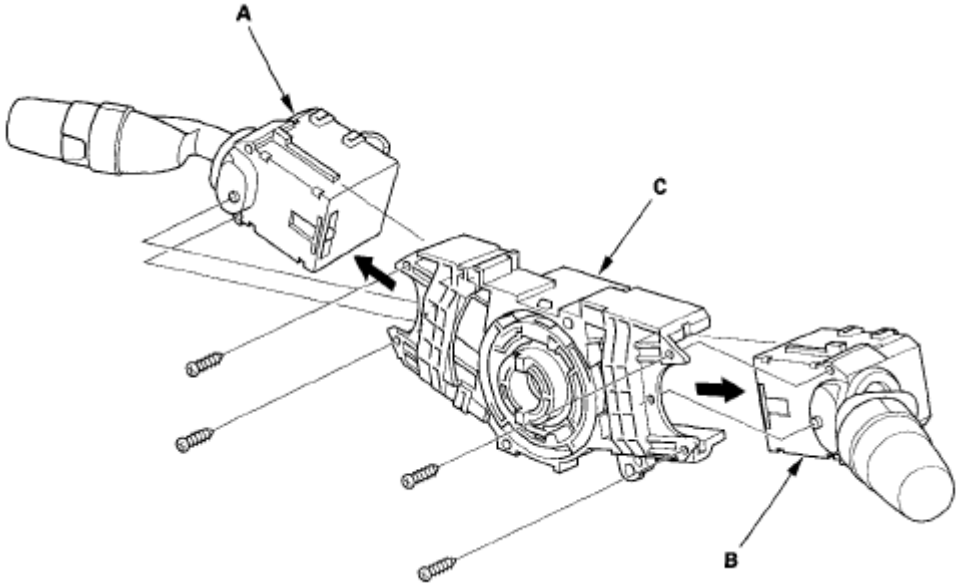


Fig. 64: Identifying Steering Angle Sensor

5. Replace the combination switch (C).
6. Install the combination switch in the reverse order of removal.

NOTE:

- **Do not remove the steering angle sensor from the combination switch body.**
- **When install the cable reel, set the turn signal cancelling sleeve position (see INSTALLATION).**

YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT

NOTE:

- **Do not damage or drop the sensor as it is sensitive.**
- **Do not use an air or electric impact tool.**

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Remove the yaw rate-lateral acceleration sensor (A) fixing bolts.

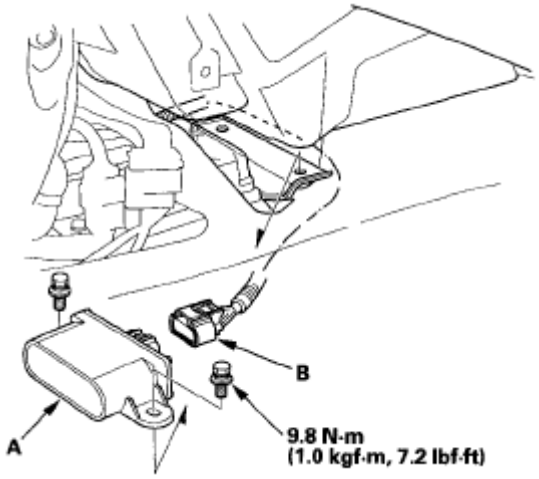


Fig. 65: Identifying YAW Rate-Lateral Acceleration Sensor Fixing Bolts

3. Pull out the yaw rate-lateral acceleration sensor, then disconnect the sensor connector (B).
4. Install the sensor in the reverse order of removal.
5. Do the VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION MEMORIZATION**).

VSA SENSOR NEUTRAL POSITION MEMORIZATION

NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface.
2. With the ignition switch to LOCK (0), connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.

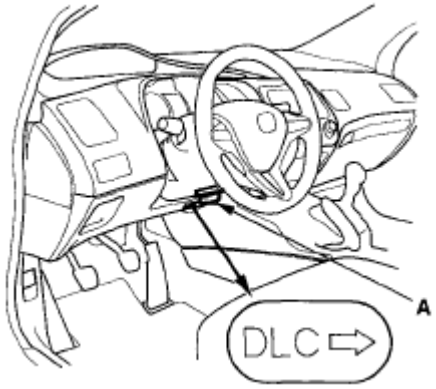


Fig. 66: Identifying DLC

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
5. Select VSA ADJUSTMENT with the HDS, and follow the screen prompts.

NOTE: See the HDS Help menu for specific instructions.

6. Turn the ignition switch to LOCK (0).

VSA OFF SWITCH TEST

1. Remove the driver's dashboard lower cover (see **DRIVER's DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Push out the VSA OFF switch (A) from the back of the instrument panel.

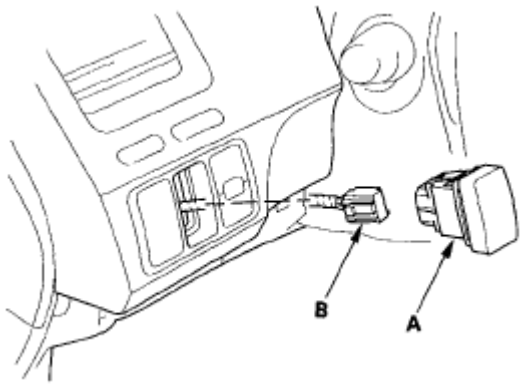


Fig. 67: Identifying VSA Off Switch (A) From Back Of Instrument Panel

3. Disconnect the VSA OFF switch 5P connector (B).
4. Check for continuity between VSA OFF switch 5P connector terminals No. 1 and No. 2. There should be continuity when the switch is pressed, and no continuity when the switch is released.

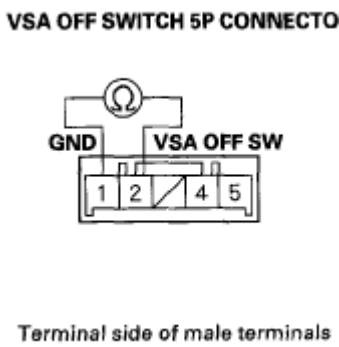


Fig. 68: Checking Continuity Between VSA Off Switch 5P Connector Terminals No. 1 And Switch

5. Check for continuity between VSA OFF switch 5P connector terminals No. 4 and No. 5. There should be continuity at all times.

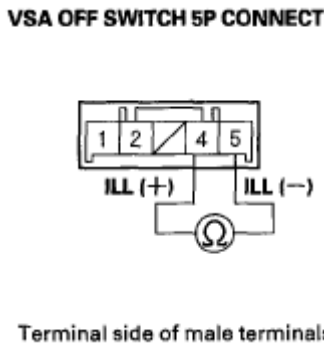


Fig. 69: Checking Continuity Between VSA Off Switch 5P Connector Terminals No. 4 And No. 5

VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION

NOTE:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.**
- **Be careful not to damage or deform the brake lines during removal and installation.**
- **To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.**

Removal

1. Disconnect the VSA modulator-control unit 37P connector (A) by pushing the lock (B) and pulling down the lever (C); the connector disconnects it self.

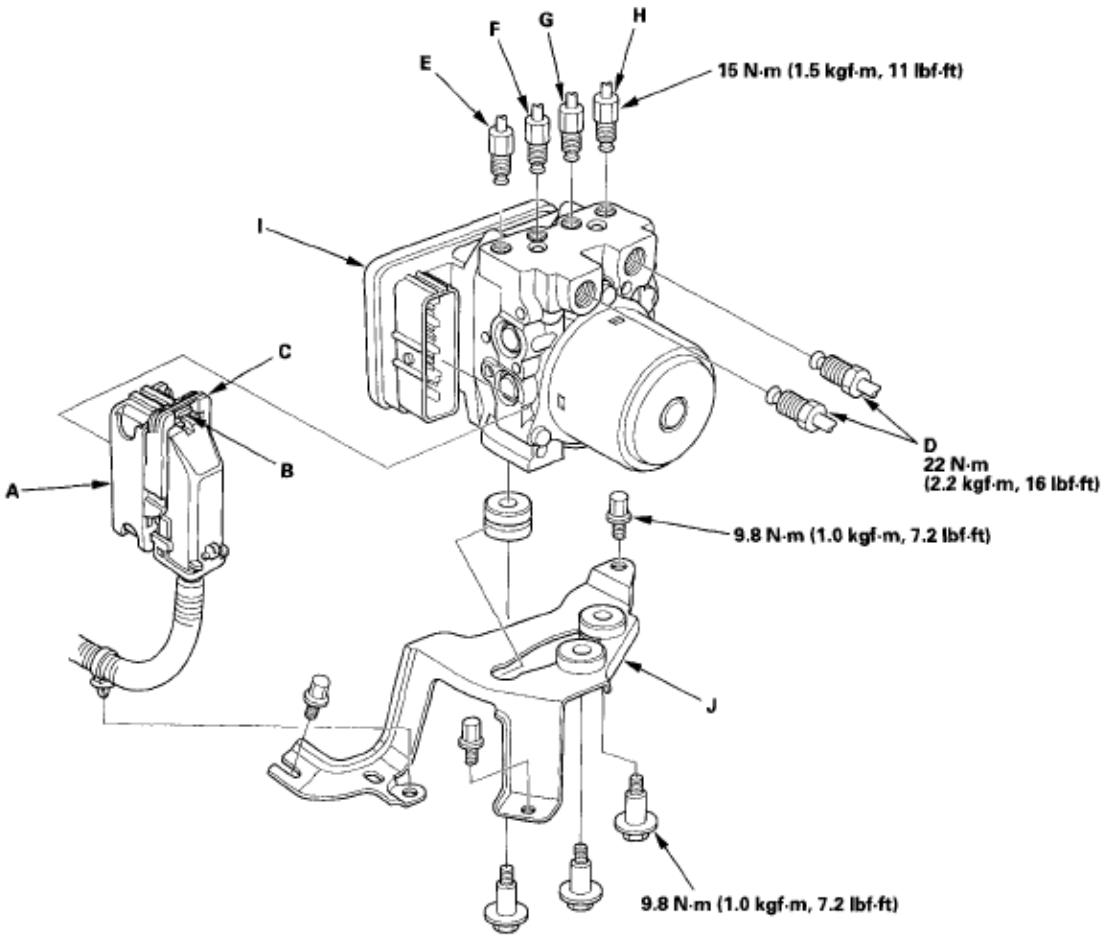


Fig. 70: Identifying VSA Modulator-Control Unit Components (With Torque Specifications)

2. Disconnect the six brake lines from the VSA modulator-control unit.

NOTE: Brake lines are connected to the master cylinder (D) and to the right-front (E), the left-rear (F), the right-rear (G), and the left-front (H) brake systems.

3. Remove the VSA modulator-control unit (I) with the bracket (J) from the body.
4. Remove the VSA modulator-control unit from the bracket.

Installation

1. Install the VSA modulator-control unit on the bracket.
2. Install the bracket with the VSA modulator-control unit to body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the VSA modulator-control unit 37P connector to the VSA modulator-control unit.
5. Pull up the lever of the VSA modulator-control unit 37P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).
7. Perform VSA sensor neutral position memorization (see **VSA SENSOR NEUTRAL POSITION**

MEMORIZATION).

8. Start the engine, and check that the ABS and the VSA indicators go off.
9. Test-drive the vehicle, and check that the ABS, and the VSA indicators do not come on.

NOTE: If the brake pedal is spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again (see BRAKE SYSTEM BLEEDING).

WHEEL SPEED SENSOR REPLACEMENT

FRONT

1. Release the clamp (A), then disconnect the wheel speed sensor connector (B).

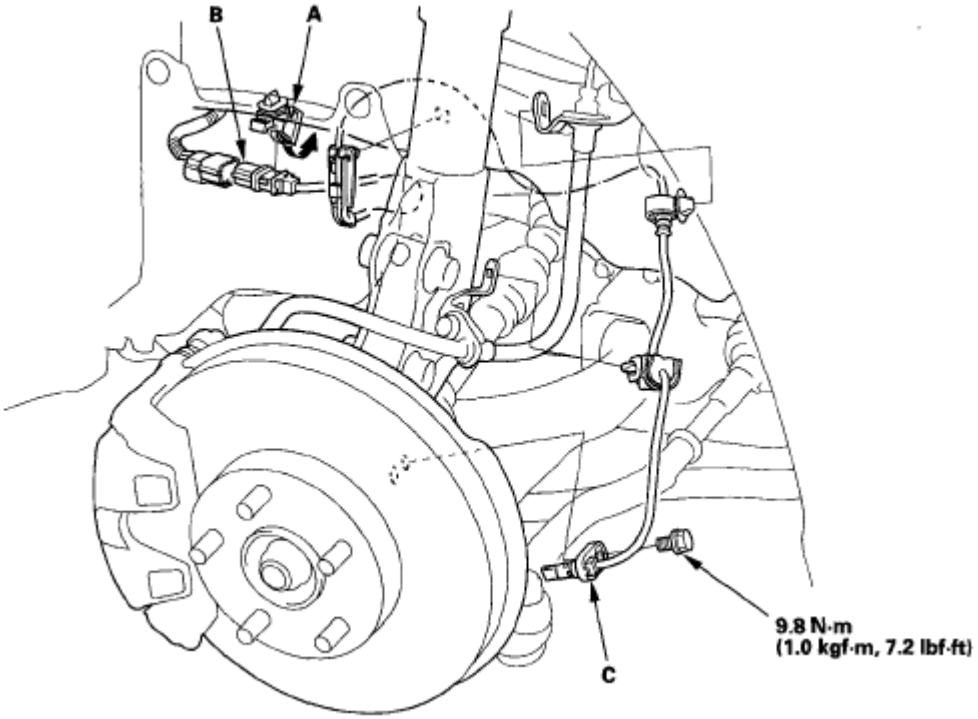


Fig. 71: Identifying Wheel Speed Sensor (Front) (With Torque Specifications)

2. Remove the clips, the bolt, and the wheel speed sensor (C).
3. Install the wheel speed sensor in the reverse order of removal, and note these items:
   - Install the sensor carefully to avoid twisting the wires.
   - If the wheel speed sensor comes in contact with the wheel bearing, it is faulty.
4. Start the engine, and check that the ABS and the VSA indicators go off.
5. Test-drive the vehicle, and check that the ABS and the VSA indicators do not come on.

REAR

1. Release the clamp (A), then disconnect the wheel speed sensor connector (B).

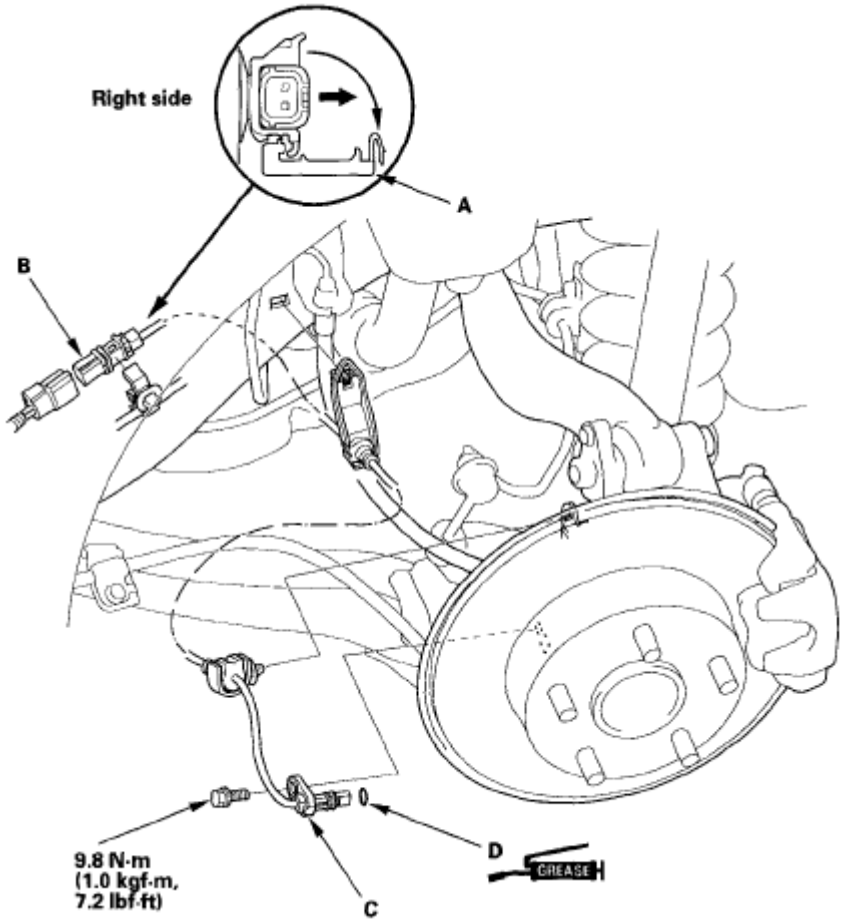


Fig. 72: Identifying Wheel Speed Sensor Connector (Rear) (With Torque Specifications)

2. Remove the clips, the bolt, and the wheel speed sensor (C).
3. Install the wheel speed sensor in the reverse order of removal, and note these items:
    - Apply multipurpose grease to the O-ring (D).
    - Install the sensor carefully to avoid twisting the wires.
    - If the wheel speed sensor comes in contact with the hub bearing unit, it is faulty.
4. Start the engine, and check that the ABS and the VSA indicators go off.
5. Test-drive the vehicle, and check that the ABS and the VSA indicators do not come on.

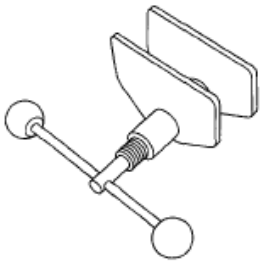
2006-08 BRAKES

Conventional Brake Components - Civic (Except Hybrid)

SPECIAL TOOLS

NOTE: **Refer to the CONVENTIONAL BRAKE COMPONENTS (GX) (SUPPLEMENT) article for additional information for the GX model.**

Ref. No.	Tool Number	Description	Qty
①	07AAE-SEPA101	Brake Caliper Piston Compressor	1



①

Fig. 1: Identifying Special Tools

COMPONENT LOCATION INDEX

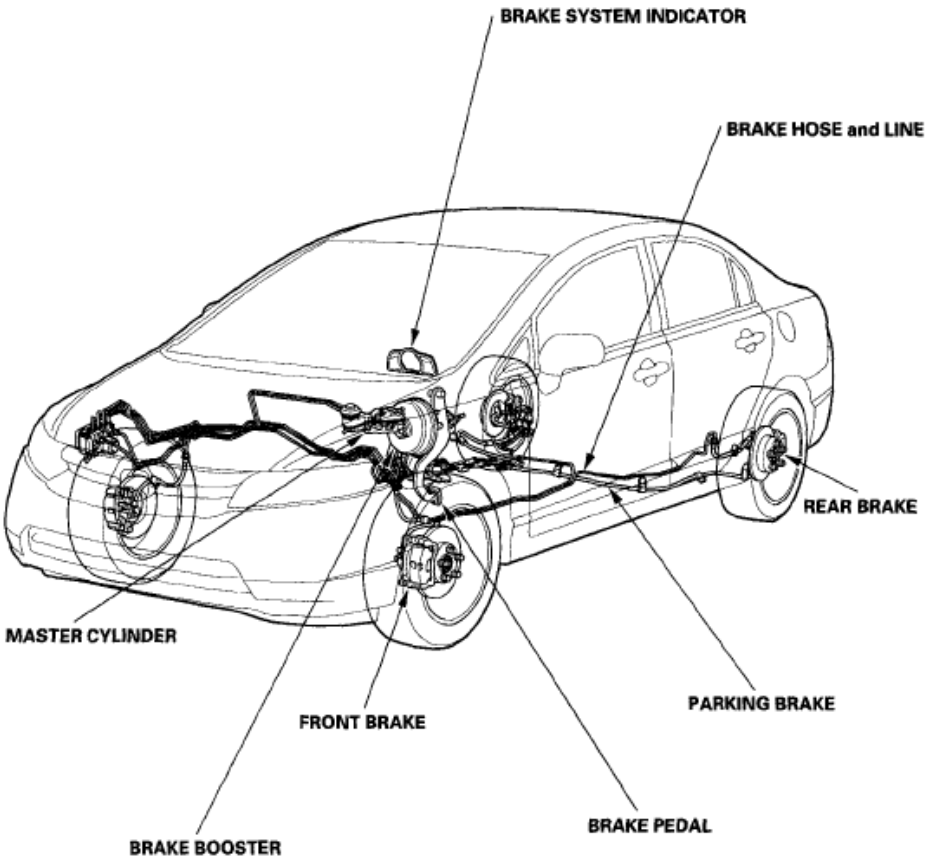


Fig. 2: Locating Conventional Brake Component

BRAKE SYSTEM INSPECTION AND TEST

Inspect the brake system components listed. Repair or replace any parts that are leaking or damaged.

BRAKE SYSTEM COMPONENT INSPECTIONS REFERENCE

Component	Procedure	Also check for
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir tank, reservoir union or master cylinder body. • Lines, reservoir tank hose and grommets, and their joints. • Between master cylinder and booster.	Bulging seat at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections.	Bulging, twisted, or bent lines.

	• Hoses and lines, also inspect for twisting or damage.	
Caliper	Look for damage or signs of fluid leakage at: • Piston seal. • Banjo bolt connections. • Bleed screw.	Seized or sticking caliper pins.
Wheel Cylinder	Look for damage or signs of fluid leakage at: • Wheel cylinder. • Line joints. • Bleed Screw.	
ABS or VSA Modulator-control Unit	Look for damage or signs of fluid leakage at: • Line joints. • Modulator-control unit.	

BRAKE SYSTEM TEST

Brake pedal sinks/fades when braking

1. Set the parking brake, and start the engine, then turn off the A/C switch. Allow the engine to warm up to normal operating temperature (radiator fan comes on twice).
2. Attach a 50 mm (2 in.) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.
3. With the transmission M/T in neutral position, A/T in P or N position, press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind the brake pedal, then pull the tape up to the steering wheel. Note the measurement between the brake pedal and the reference mark on the steering wheel.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.
   - If the measurement increases 10 mm (3/8 in.) or less, the master cylinder is OK.
   - If the measurement increases more than 10 mm (3/8 in.), replace the master cylinder.

SYMPTOM TROUBLESHOOTING

RAPID BRAKE PAD WEAR, VEHICLE VIBRATION (AFTER A LONG DRIVE), OR HIGH, HARD BRAKE PEDAL

NOTE: Make sure that the caliper pins are installed correctly.

The upper caliper pin B and lower caliper pin A are different. If the pins are installed in the wrong location, it will cause, vibration, and or uneven or rapid pad wear, or possibly uneven tire wear. For proper caliper pin location: Except Si model (see **EXCEPT SI MODEL**), Si model (see **SI MODEL**).

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.
2. With the engine running, raise the vehicle on a lift, and spin all four wheels by hand.

   Is there brake drag at any of the wheels?

   YES - Go to step 3.

   NO - Look for other causes of the pad wear, high pedal, or vehicle vibration.

3. Turn the engine off, pump the brake pedal to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

   Is there brake drag at any of the wheels?

   YES - Go to step 4.

   NO - Replace the brake booster: Except Si model (see **EXCEPT SI MODEL**), Si model (see **SI MODEL**).

4. Without removing the brake lines, unbolt and separate the master cylinder from the booster, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES - Go to step 5.

   NO - Check the brake pedal position switch adjustment and pedal free play (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES - Go to step 6.

   NO - Replace the master cylinder (see **MASTER CYLINDER REPLACEMENT**).

6. Loosen the bleed screws at each caliper or wheel cylinder, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES - Disassemble and repair the caliper or wheel cylinder on the wheel(s) with brake drag.

   NO - Look for and replace any damaged brake lines. If all brake lines are OK, replace the ABS or

VSA modulator-control unit: ABS (except Si model) (see **REMOVAL - EXCEPT SI MODEL**), ABS (Si model) (see **REMOVAL - SI MODEL**), VSA (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT

PEDAL HEIGHT

1. Turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.

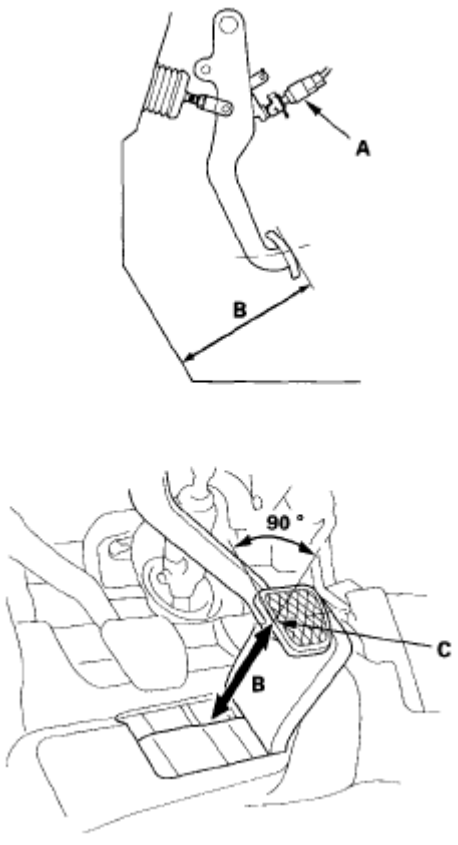


Fig. 3: Turning Brake Pedal Position Switch Counterclockwise

2. Pull back the carpet and find the cutout in the insulator. Lift up the insulator cutout and measure the pedal height (B) at the middle of the left side center of the pedal pad (C) to the floor.

   Standard pedal height (with carpet removed):

   M/T model: 153 mm (6 in.)
   A/T model: 158 mm (6 1/4 in.)

3. Loosen the pushrod locknut (A), and screw the pushrod (B) in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.

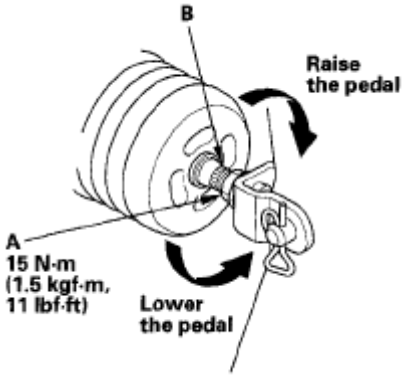


Fig. 4: Loosening Pushrod Locknut (With Specifications)

Brake Pedal Position Switch Clearance

4. Pull up on the brake pedal, then push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Then, turn the brake pedal position switch 45° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to 0.7 mm (0.03 in.) by locking the switch. Make sure the brake lights go off when the pedal is released.

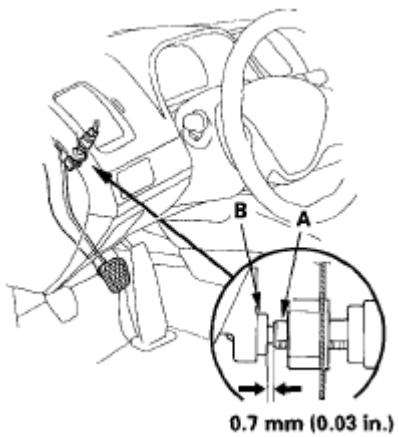


Fig. 5: Identifying Brake Pedal Position Switch

5. Check the brake pedal free play.

PEDAL FREE PLAY

1. With the ignition switch OFF, inspect the pedal free play (A) on the pedal pad (B) by pushing the pedal by hand. If the brake pedal free play is insufficient, it may result in excessive brake drag.

   Free play: 1-5 mm (1/16-3/16 in.)

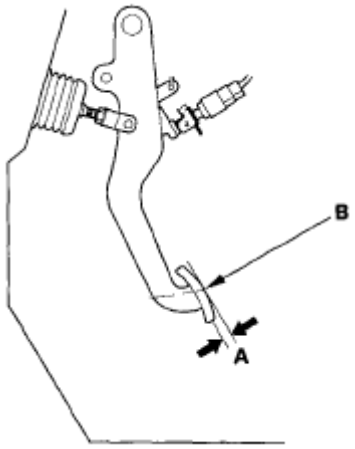


Fig. 6: Inspecting Pedal Free Play On Pedal Pad Pushing Pedal

PARKING BRAKE INSPECTION AND ADJUSTMENT

INSPECTION

1. Pull the parking brake lever (A) with 196 N (20 kgf, 44 lbf) of force to fully apply the parking brake. The parking brake lever should be locked within the specified number of clicks.

   Lever locked clicks: 8 to 10

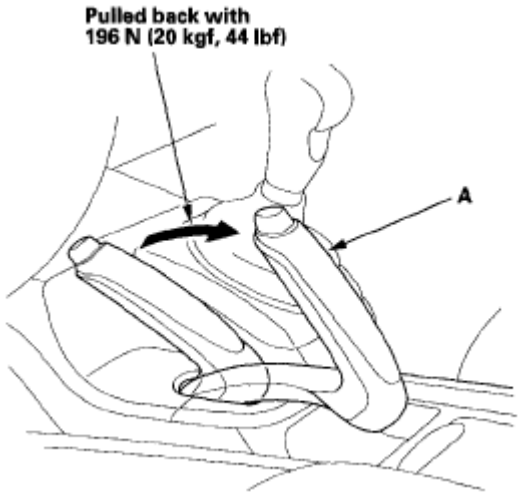


Fig. 7: Inspecting Parking Brake (With Specifications)

2. If the number of lever clicks is excessive, adjust the parking brake.

ADJUSTMENT - REAR DISC BRAKE TYPE

1. Remove the center console panel (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Release the parking brake lever fully.
3. Loosen the parking brake adjusting nut (A).

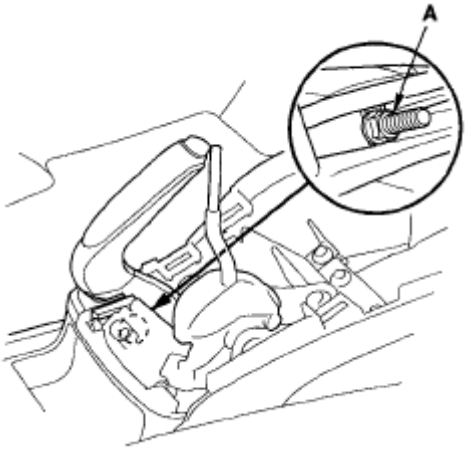


Fig. 8: Loosening Parking Brake Adjusting Nut

4. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
5. Remove the rear wheels.
6. Make sure the parking brake lever (A) on the rear brake caliper contacts the stop pin (B).

NOTE: The parking brake lever will only contact the stop pin when the parking brake adjusting nut is loosened.

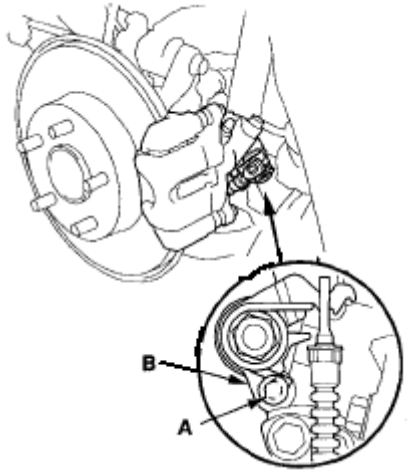


Fig. 9: Making Sure Parking Brake Lever On Rear Brake Caliper Contacts Stop Pin

7. Install the rear wheels.
8. Pull the parking brake lever 1 click.
9. Tighten the parking brake adjusting nut until the parking brakes drag slightly when the rear wheels are turned.
10. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
11. Make sure the parking brakes are fully applied when the parking brake lever is pulled all the way (8 to 10 clicks).
12. Install the center console panel (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

ADJUSTMENT - REAR DRUM BRAKE TYPE

1. Remove the center console panel (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Release the parking brake lever fully.
3. Loosen the parking brake adjusting nut (A).

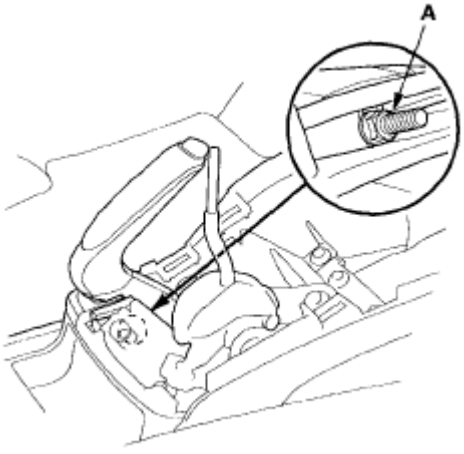


Fig. 10: Loosening Parking Brake Adjusting Nut

4. Press the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.
5. Pull the parking brake lever 1 click.
6. Tighten the parking brake adjusting nut until the parking brakes drag slightly when the rear wheels are turned.
7. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
8. Make sure the parking brakes are fully applied when the parking brake lever is pulled all the way (8 to 10 clicks).
9. Install the center console panel (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

BRAKE SYSTEM BLEEDING

NOTE:

- **Do not reuse the drained fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.**
- **Do not mix different brands of brake fluid; they may not be compatible.**
- **Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.**
- **Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **The reservoir connected to the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake system. Add fluid as required.**

1. Make sure the brake fluid level in the reservoir (A) is at the MAX (upper) level line (B).

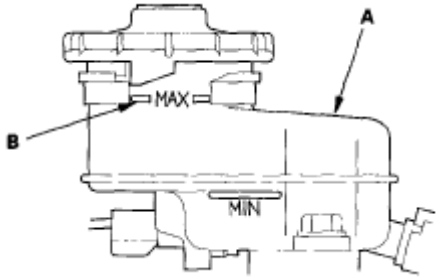


Fig. 11: Identifying Brake Fluid Level In Reservoir Is At MAX (Upper) Level Line

2. Have someone slowly pump the brake pedal several times, then apply steady pressure.
3. Start the bleeding at the driver's side of the front brake system.

NOTE: Bleed the calipers or the wheel cylinders in the sequence shown.

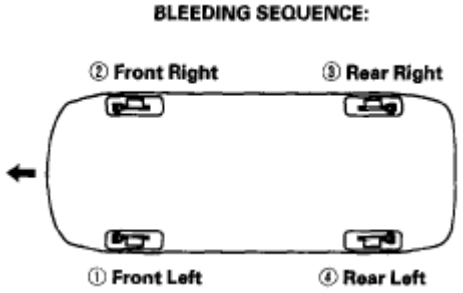


Fig. 12: Bleeding Calipers Or Wheel Cylinder In Sequence

4. Attach a length of clear drain tube (A) to the bleed screw (B), then, loosen the bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

Front

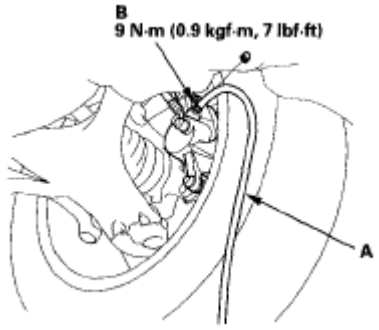


Fig. 13: Attaching Clear Drain Tube To Bleed Screw (Front) (With Specifications)

Rear-disc type

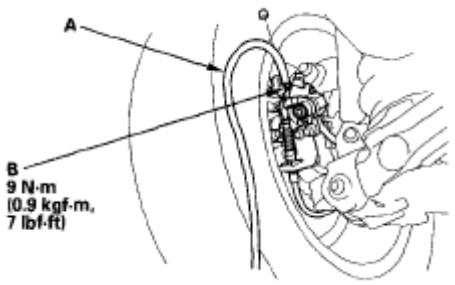


Fig. 14: Attaching Clear Drain Tube To Bleed Screw (Rear-Disc Type) (With Specifications)

Rear-drum type

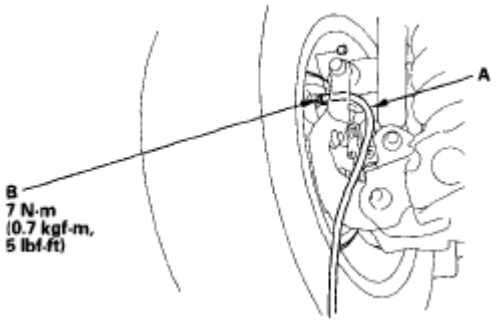


Fig. 15: Attaching Clear Drain Tube To Bleed Screw (Rear-Drum Type) (With Specifications)

5. Refill the master cylinder reservoir to the MAX (upper) level line.
6. Repeat the procedure for each brake circuit until no air bubbles are in the fluid.

BRAKE SYSTEM INDICATOR CIRCUIT DIAGRAM

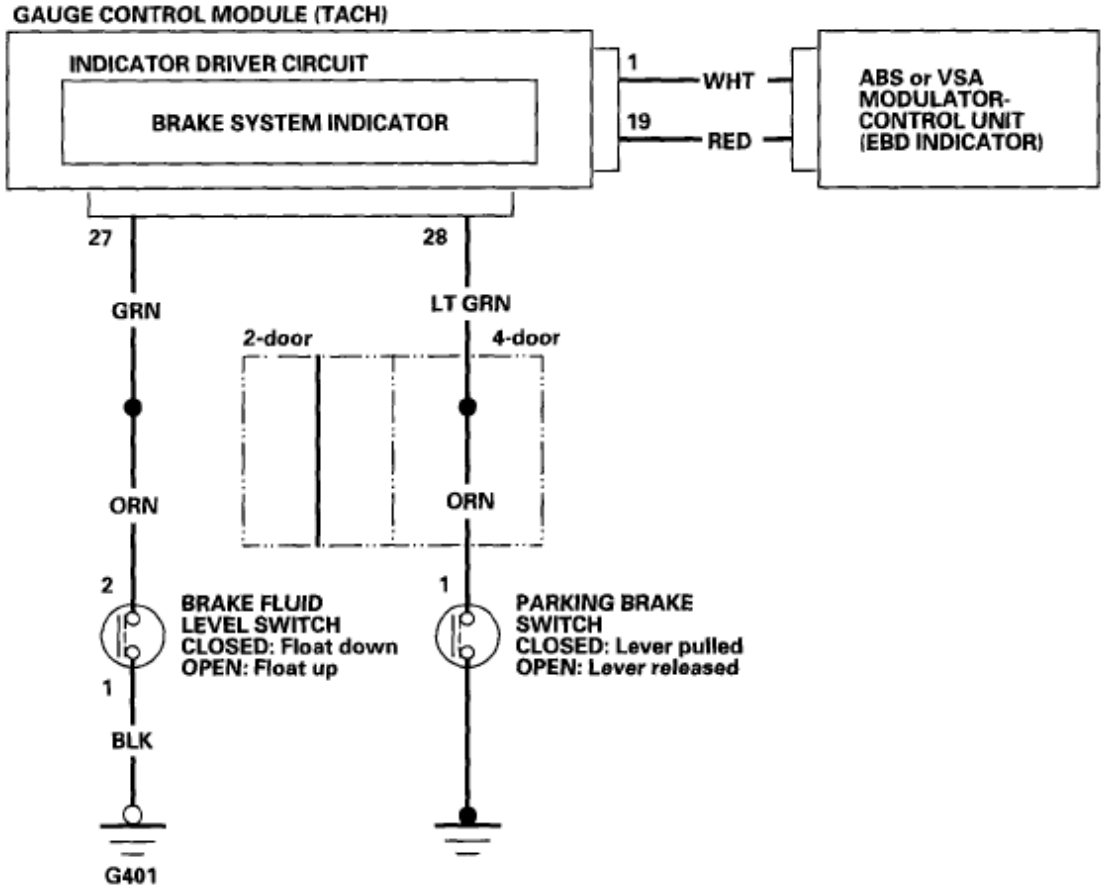


Fig. 16: Identifying Brake System Indicator Circuit Diagram

PARKING BRAKE SWITCH TEST

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Disconnect the parking brake switch connector (A) from the parking brake switch (B).

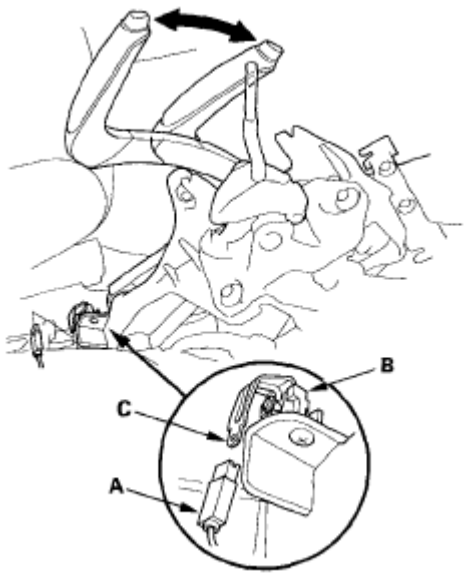


Fig. 17: Disconnecting Parking Brake Switch Connector From Parking Brake Switch

3. Check for continuity between the positive terminal (C) and body ground.
   - With the parking brake lever pulled, there should be continuity.
   - With the parking brake lever released, there should be no continuity.

NOTE:

- **If both the ABS indicator and the brake system indicator come on at the same time, check the ABS or VSA system first: ABS (see GENERAL TROUBLESHOOTING INFORMATION), VSA (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the parking brake switch and fluid level switch are OK, but the brake system indicator does not function, check the ABS or VSA system: ABS (see GENERAL TROUBLESHOOTING INFORMATION), VSA (see GENERAL TROUBLESHOOTING INFORMATION).**

4. Install the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

BRAKE FLUID LEVEL SWITCH TEST

Check for continuity between the terminals (1) and (2) with the float in the down position and in the up position.

NOTE:

- **Remove the brake fluid completely from the reservoir. With the float down, there should be continuity.**
- **Fill the reservoir with brake fluid to the MAX (upper) level (A). With the float up, there should be no continuity.**
- **If both the ABS indicator and the brake system indicator come on at same time, check the ABS or VSA system first: ABS (see GENERAL TROUBLESHOOTING INFORMATION), VSA (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the parking brake switch and fluid level switch are OK, but brake system indicator does not function, check the ABS or VSA system: ABS (see GENERAL TROUBLESHOOTING INFORMATION), VSA (see GENERAL TROUBLESHOOTING INFORMATION).**

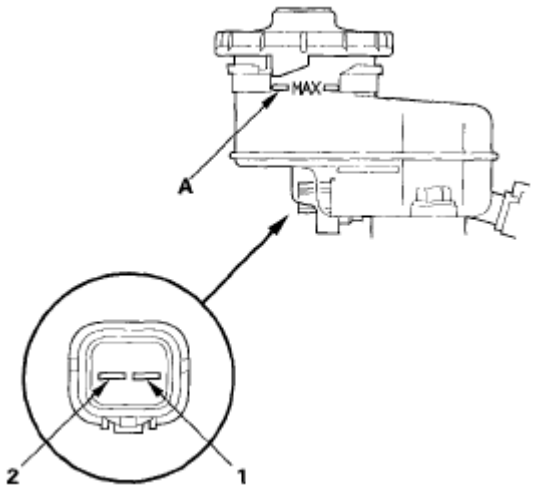


Fig. 18: Testing Brake Fluid Level Switch

FRONT BRAKE PAD INSPECTION AND REPLACEMENT

Special Tools Required

Brake caliper piston compressor 07AAE-SEPA101

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

INSPECTION - EXCEPT SI MODEL

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Check the thickness (A) of the inner pad (B) and outer pad (C). Do not include the thickness of the backing plate.

   Brake pad thickness:

   Standard: 9.6-10.2 mm (0.38-0.40 in.)
   Service limit: 1.6 mm (0.06 in.)

   Inner pad

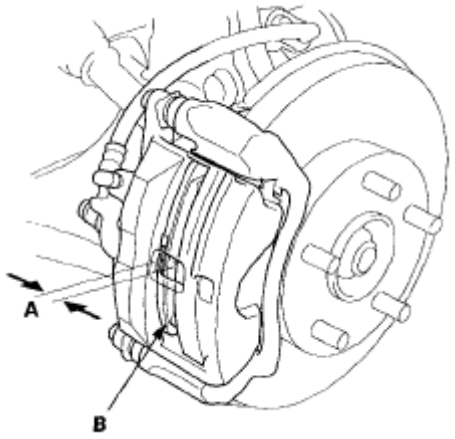


Fig. 19: Identifying Inner Pad Thickness

Outer pad

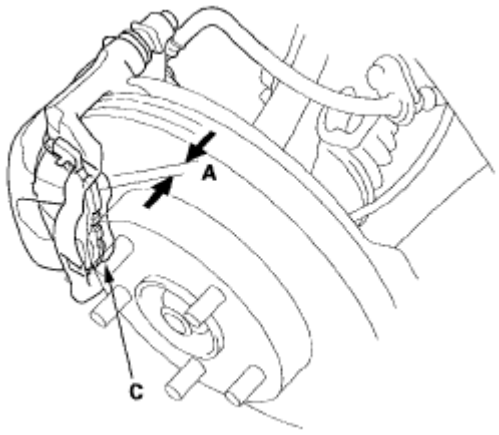


Fig. 20: Identifying Outer Pad Thickness

4. If the brake pad thickness is less than the service limit, replace the front brake pads as a set.

REPLACEMENT - EXCEPT SI MODEL

1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
3. Remove the front wheels.
4. Remove the flange bolt (A), and pivot the caliper (B) up out of the way. Check the hose and pin boots for damage and deterioration.

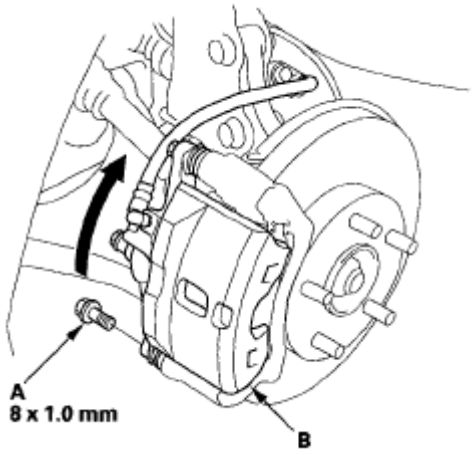


Fig. 21: Removing Flange Bolt And Pivot Caliper

5. Remove the pad shims (A) and brake pads (B).

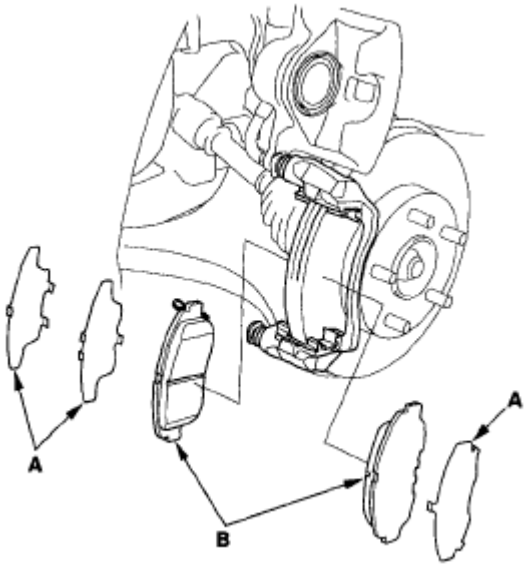


Fig. 22: Removing Pad Shims And Brake Pads

6. Remove the pad retainers (A).

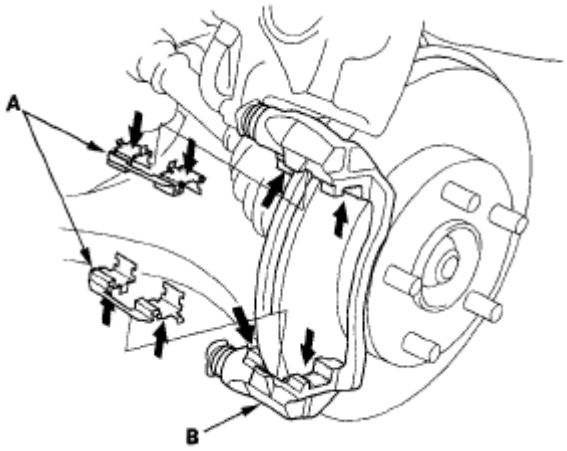


Fig. 23: Removing Pad Retainers

7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.
8. Check the brake disc for damage and cracks.
9. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainers on their mating surfaces (indicated by the arrows) against the caliper bracket.
10. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the discs and pads.
11. Mount the brake caliper piston compressor (A) on the caliper body (B).

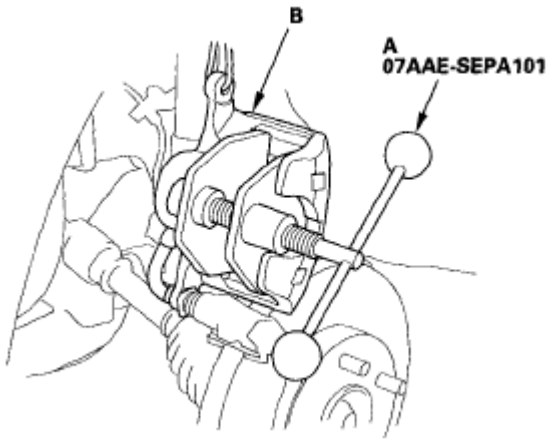


Fig. 24: Mounting Brake Caliper Piston Compressor On Caliper Body

12. Press in the piston with the brake caliper piston compressor so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir.

13. Remove the brake caliper piston compressor.
14. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B) and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs or brake pads reduce stopping ability. Keep

grease and assembly paste off the brake discs and brake pads.

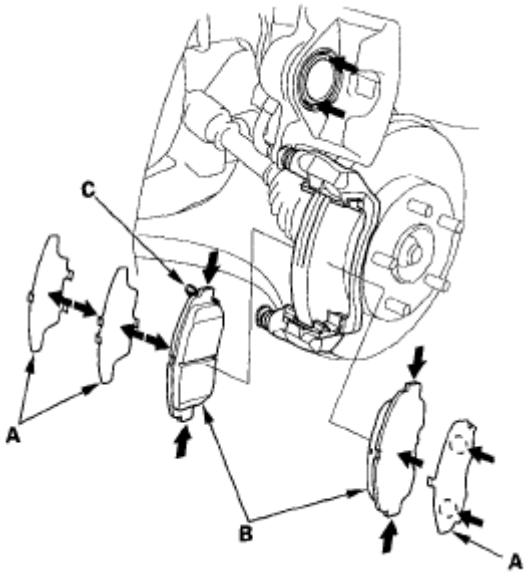


Fig. 25: Applying Assembly Paste To Pad Shims And Brake Pads

15. Install the brake pads and pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.
16. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque.

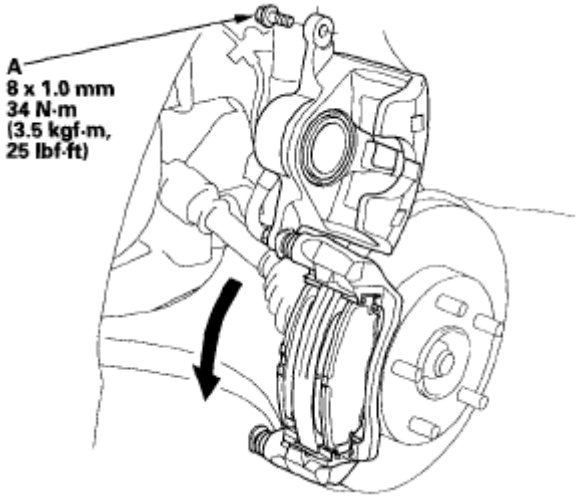


Fig. 26: Installing Flange Bolt (With Specifications)

17. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

18. Add brake fluid as needed.

19. After installation, check for leaks at the hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks (see **BRAKE HOSE AND LINE INSPECTION**).

INSPECTION - SI MODEL

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Check the thickness (A) of the inner pad (B) and outer pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:

Standard: 9.0-9.7 mm (0.35-0.38 in.)
Service limit: 1.6 mm (0.06 in.)

Inner pad

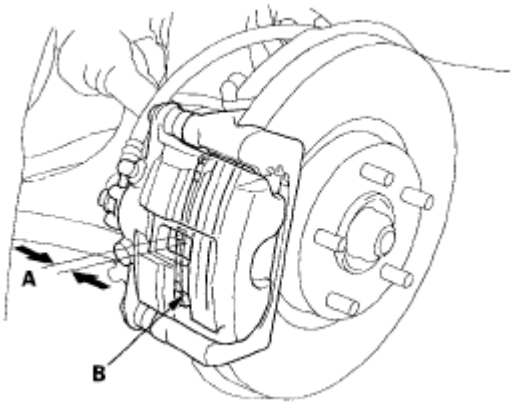


Fig. 27: Checking Inner Pad Thickness

Outer pad

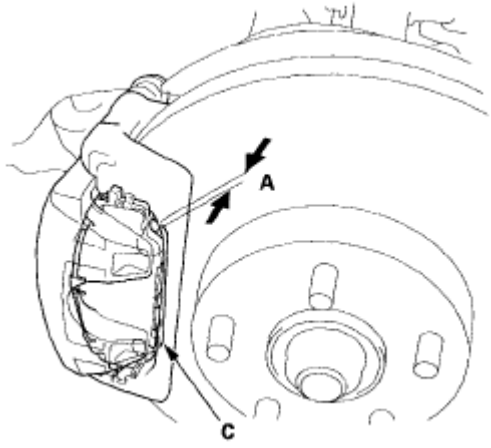


Fig. 28: Checking Outer Pad Thickness

4. If the brake pad thickness is less than the service limit, replace the front brake pads as a set.

REPLACEMENT - SI MODEL

1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
3. Remove the front wheels.
4. Remove the flange bolt (A) while holding the caliper pin (B) with a wrench. Be careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.

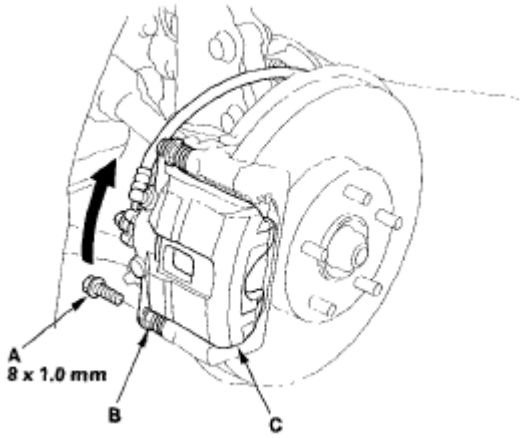


Fig. 29: Removing Flange Bolt Holding Caliper Pin With Wrench

5. Remove the pad shims (A) and brake pads (B).

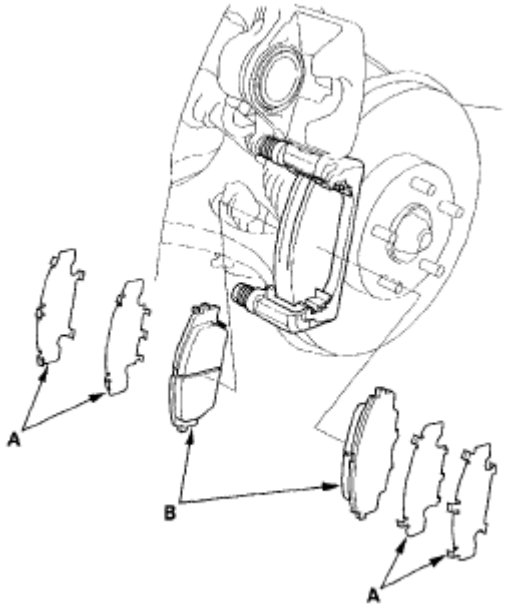


Fig. 30: Removing Pad Shims And Brake Pads

6. Remove the pad retainers (A).

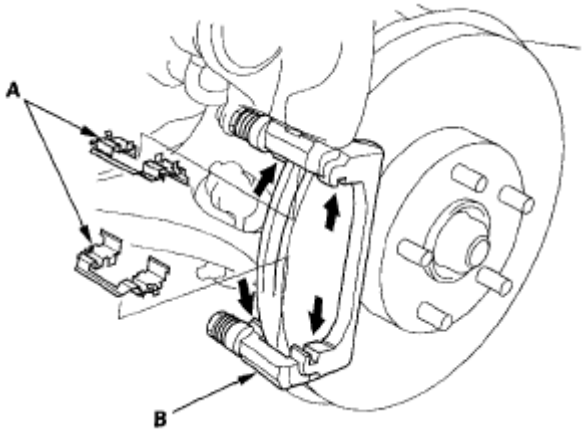


Fig. 31: Removing Pad Retainers

7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.
8. Check the brake disc for damage and cracks.
9. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainers on their mating surfaces (indicated by the arrows) against the caliper bracket.
10. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the discs and pads.
11. Mount the brake caliper piston compressor (A) on the caliper body (B).

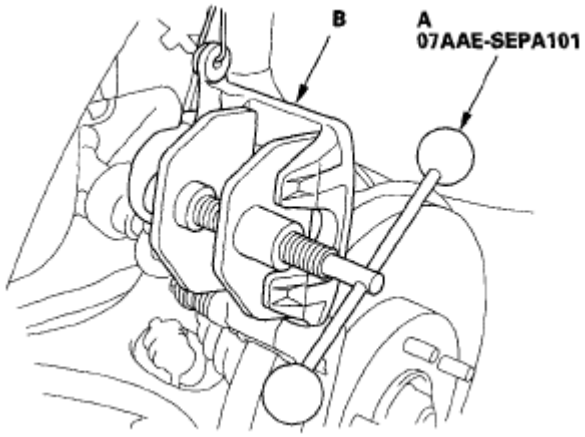


Fig. 32: Mounting Brake Caliper Piston Compressor On Caliper Body

12. Press in the piston with the brake caliper piston compressor so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir.

13. Remove the brake caliper piston compressor.
14. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B) and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs or brake pads reduce stopping ability. Keep grease and assembly paste off the brake discs and brake pads.

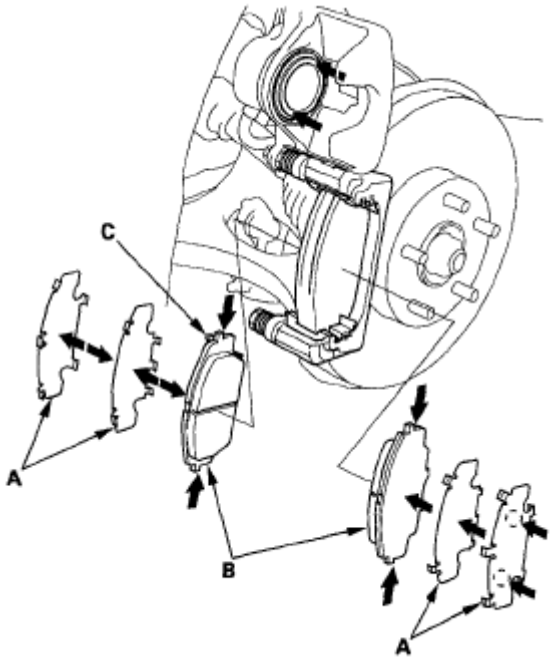


Fig. 33: Applying Assembly Paste To Pad Side Of Shims And Brake Pads

15. Install the brake pads and pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.
16. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B), with a wrench. Be careful not to damage the pin boot.

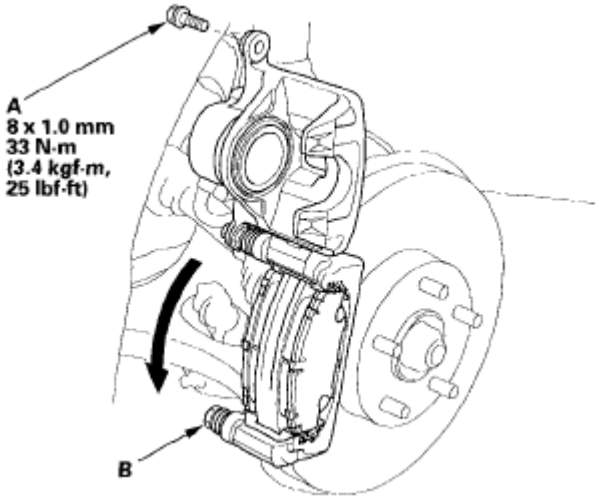


Fig. 34: Installing Flange Bolt (With Specifications)

17. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

18. Add brake fluid as needed.
19. After installation, check for leaks at the hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks (see **BRAKE HOSE AND LINE INSPECTION**).

FRONT BRAKE DISC INSPECTION

RUNOUT

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Remove the brake pads: Except Si model (see **REPLACEMENT - EXCEPT SI MODEL**), Si model (see **REPLACEMENT - SI MODEL**).
4. Inspect the brake disc surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.

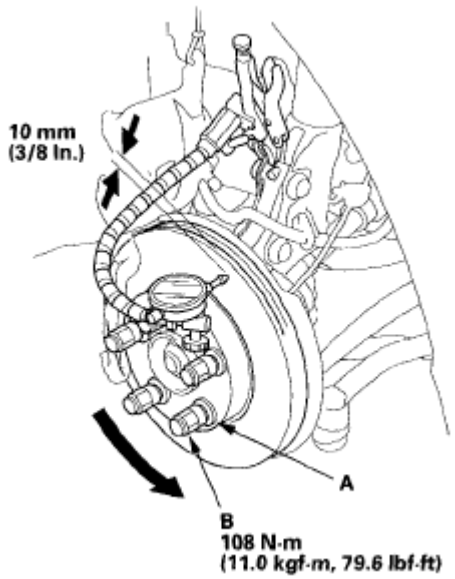


Fig. 35: Installing Flat Washers And Wheel Nuts (With Specifications)

6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

   Brake disc runout:

   Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc is beyond the service limit, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

   Max. refinishing limit:

Except Si model: 19.0 mm (0.75 in.)

Si model: 23.0 mm (0.91 in.)

NOTE:

- **If the brake disc is beyond the service limit for refinishing, replace it (see KNUCKLE/HUB REPLACEMENT).**
- **A new brake disc should be refinished if its runout is greater than 0.04 mm (0.0016 in.).**

THICKNESS AND PARALLELISM

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Remove the brake pads: Except Si model (see **REPLACEMENT - EXCEPT SI MODEL**), Si model (see **REPLACEMENT - SI MODEL**).
4. Using a micrometer, measure the brake disc thickness at eight points, about 45° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:

   Standard:

   Except Si model: 20.9-21.1 mm (0.82-0.83 in.)

   Si model: 24.9-25.1 mm (0.98-0.99 in.)

   Max. refinishing limit:

   Except Si model: 19.0 mm (0.75 in.)

   Si model: 23.0 mm (0.91 in.)

   Brake disc parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.

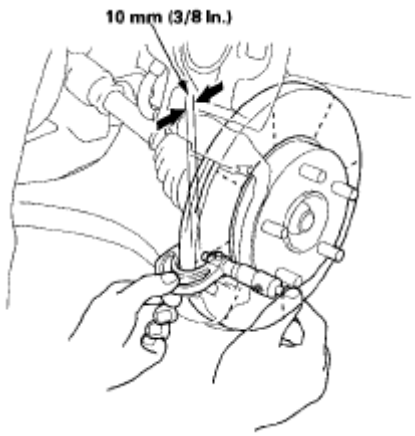


Fig. 36: Measuring Brake Disc Thickness At Eight Points By Micrometer

5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see KNUCKLE/HUB REPLACEMENT).

FRONT BRAKE CALIPER OVERHAUL

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

EXCEPT SI MODEL

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If the these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.

- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the pistons, piston seal grooves, and caliper bores with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

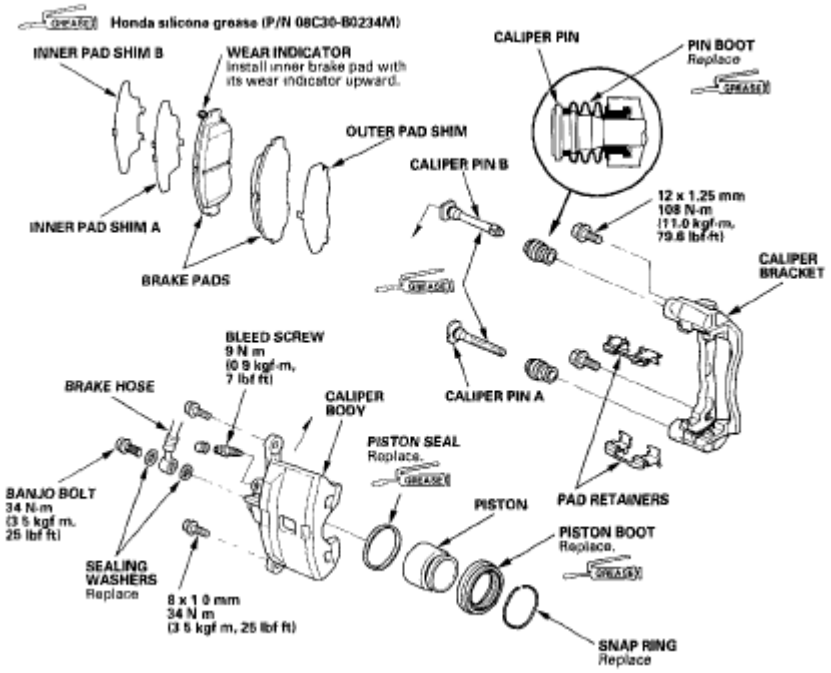


Fig. 37: Exploded View Of Front Brake Caliper Overhaul (Except Si Model) (With Specifications)

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

SI MODEL

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If the these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the pistons, piston seal grooves, and caliper bores with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

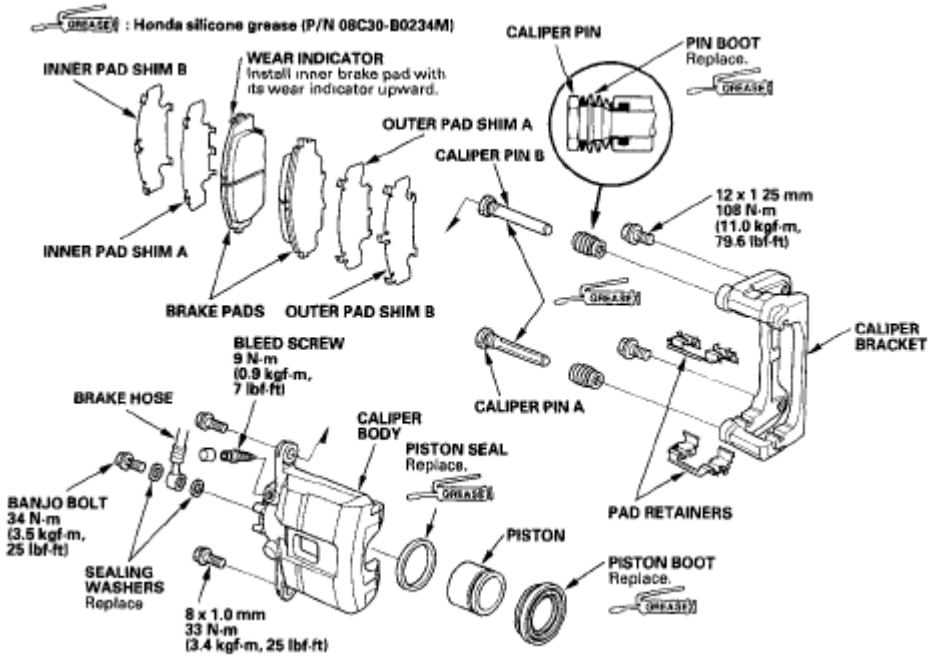


Fig. 38: Exploded View Of Front Brake Caliper Overhaul (Si Model) (With Specifications)

MASTER CYLINDER REPLACEMENT

NOTE:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.**
- **Be careful not to damage or deform the brake lines during removal and installation.**
- **To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent.**

1. Remove the air cleaner: Except Si model (see **AIR CLEANER REMOVAL/INSTALLATION**), Si model (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Remove the reservoir cap and brake fluid from the master cylinder reservoir with a syringe.
3. Disconnect the brake fluid level switch connector (A).

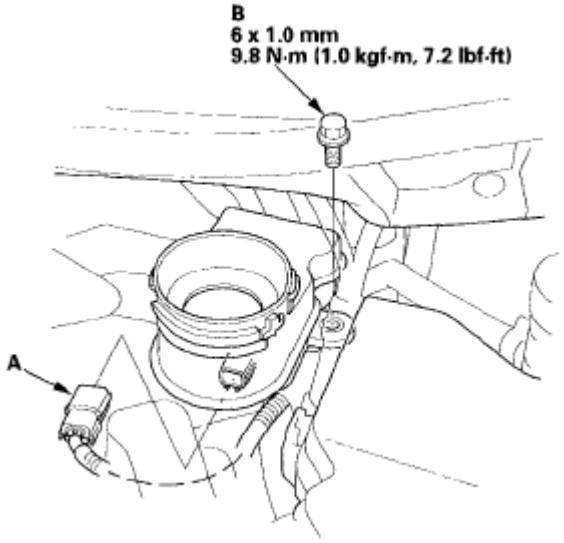


Fig. 39: Disconnecting Brake Fluid Level Switch Connector (With Specifications)

4. Remove the reservoir tank mounting bolt (B).
5. Disconnect the brake lines (A) from the master cylinder (B). To prevent spills, cover the hose joints with rags or shop towels.

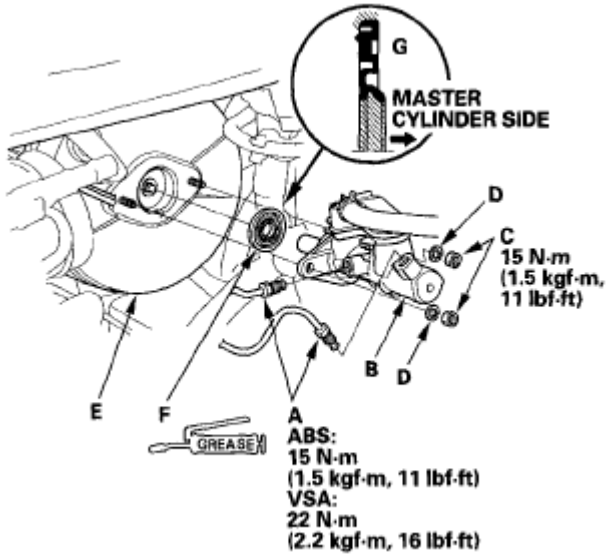


Fig. 40: Disconnecting Brake Lines From Master Cylinder (With Specifications)

6. Remove the master cylinder mounting nuts (C) and washers (D).
7. Remove the master cylinder from the brake booster (E). Be careful not to bend or damage the brake lines when removing the master cylinder.
8. Remove the rod seal (F) from the master cylinder.

NOTE: During installation, set the new rod seal onto the master cylinder with its grooved side (G) toward the master cylinder.

9. Install the master cylinder in the reverse order of removal, and note these items:
   - Use a new rod seal on reassembly.
   - Coat the inner bore lip and outer circumference of the new rod seal with the Shin-Etsu silicone grease (P/N 08798-9013).
   - Check the brake pedal height and free play after installing the master cylinder, and adjust if necessary (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).
10. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).
11. Spin the wheels to check for brake drag.

MASTER CYLINDER INSPECTION

1. Inspect and note these items:
   - Before reassembling, check that all parts are free of dirt and other foreign particles.
   - Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
   - Do not allow dirt or foreign matter to contaminate the brake fluid.

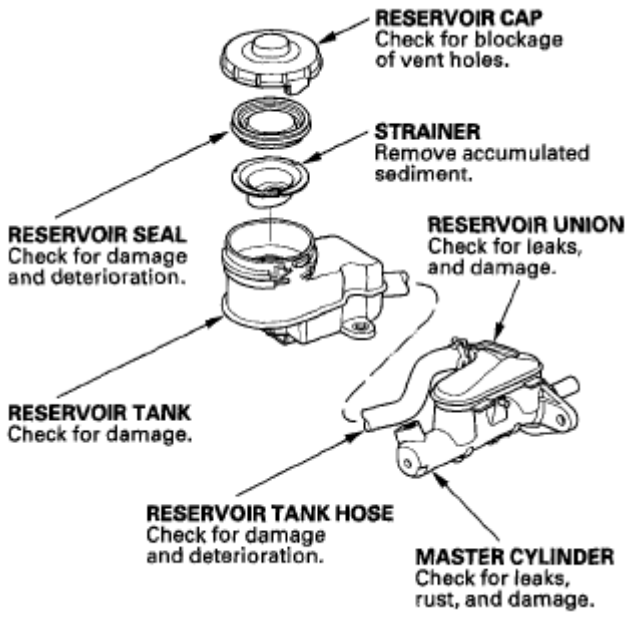


Fig. 41: Inspecting Master Cylinder

2. If the reservoir tank hose was disconnected, install the reservoir tank (A) and the reservoir tank hose (B) to the reservoir union (C).

NOTE:
- **Align the "TRIANGLE" marks (D) on the reservoir tank and reservoir union with the paint marks (E) on the hose.**
- **Position the direction of the clamp (F).**

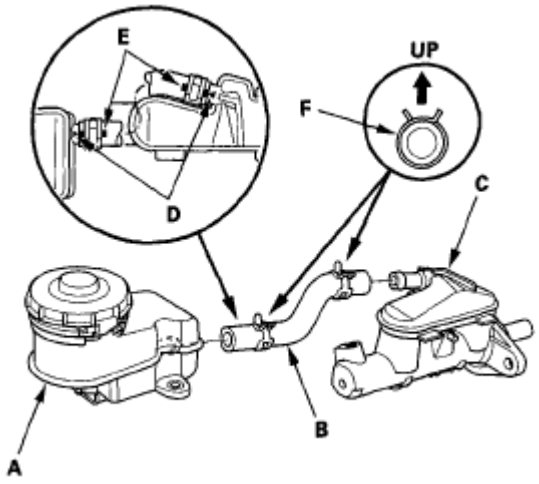


Fig. 42: Installing Reservoir Tank And Hose To Reservoir Union

BRAKE BOOSTER TEST

FUNCTIONAL TEST

1. With the engine stopped, press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard, and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing internally, or the brake system is leaking. Inspect the brake hoses and lines (see **BRAKE HOSE AND LINE INSPECTION**).
2. Start the engine with the brake pedal pressed. If the brake pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, do the leak test.
3. Do the brake system test (see **BRAKE SYSTEM INSPECTION AND TEST**).

LEAK TEST

1. Press the brake pedal with the engine running, then stop the engine. If the brake pedal height does not vary while pressed for 30 seconds, the vacuum booster is OK. If the pedal height rises go to step 6. If it does not rise go to step 2.
2. Start the engine and let it idle for 30 seconds. Turn the ignition switch off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. Does the pedal rise on each consecutive application? If it rises the booster is OK. If it does not go to step 3.
3. Disconnect the brake booster vacuum hose (A) at the booster. The check valve is built into the hose.

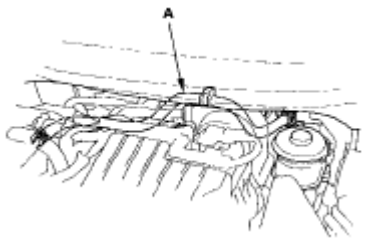


Fig. 43: Disconnecting Brake Booster Vacuum Hose At Booster

4. Start the engine, and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest. If vacuum is found, go to step 5.
5. With the engine off, reconnect the vacuum hose to the brake booster.
6. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.
7. Turn the ignition switch off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.
    - If the pedal position does not vary inspect the seal between the master cylinder and booster. If the seal is OK, replace the brake booster.
    - If the pedal position varies, replace the brake booster vacuum hose/check valve assembly.

BRAKE BOOSTER REPLACEMENT

EXCEPT SI MODEL

1. Remove the master cylinder (see **MASTER CYLINDER REPLACEMENT**).
2. Disconnect the brake booster vacuum hose (A) from the brake booster (B).

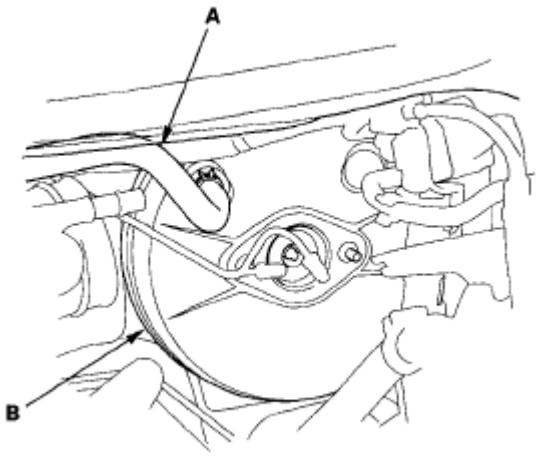


Fig. 44: Disconnecting Brake Booster Vacuum Hose From Brake Booster

3. Remove the engine wire harness clamps (A).

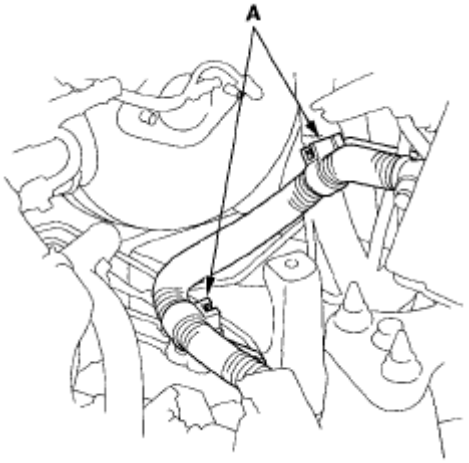


Fig. 45: Removing Engine Wire Harness Clamps

4. Remove the heater hoses (A) from the clamp (B).

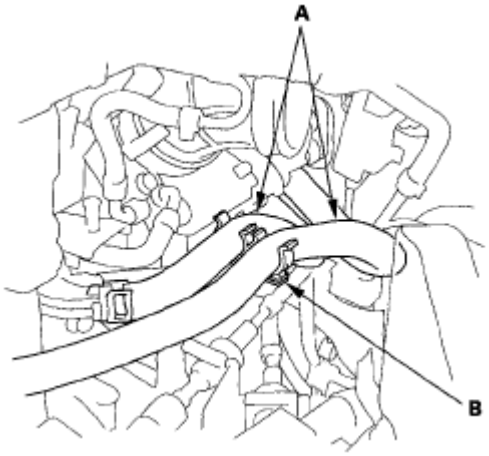


Fig. 46: Removing Heater Hoses From Clamp

5. Remove the lock pin (A) and the joint pin (B), then disconnect the yoke from the brake pedal.

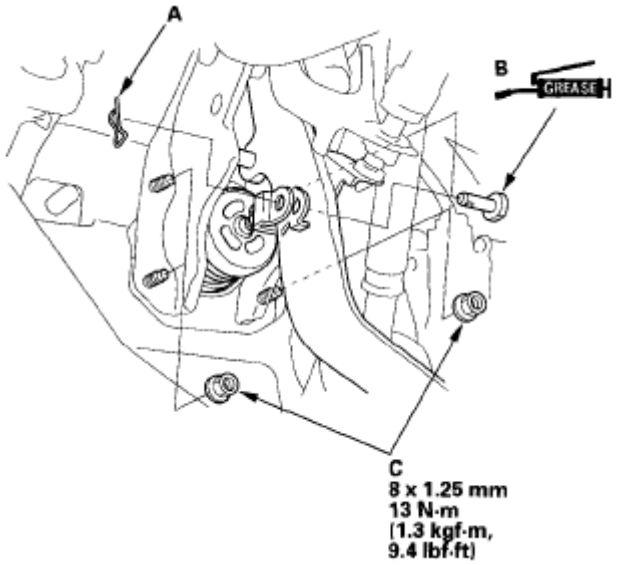


Fig. 47: Removing Lock Pin And Joint Pin (With Specifications)

6. Remove the brake booster mounting nuts (C).
7. Pull the brake booster (A) forward.

NOTE:

- **Be careful not to damage the booster surfaces and the threads on the booster studs.**
- **Be careful not to bend or damage the brake lines.**

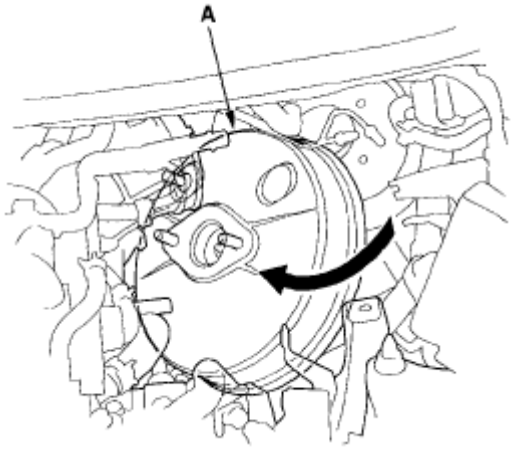


Fig. 48: Pulling Brake Booster Forward

8. Remove the brake booster (A) by pulling it out and turning it, and remove it from the engine compartment.

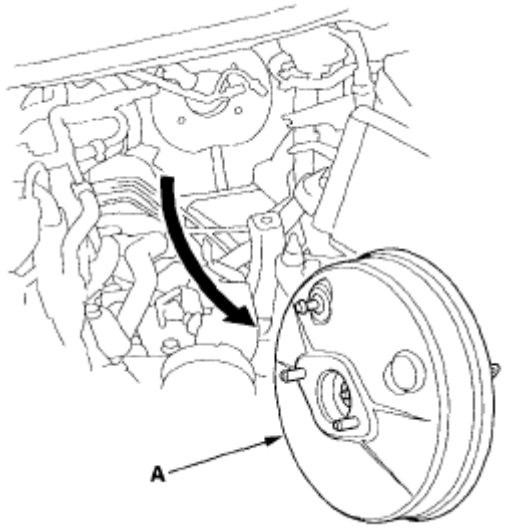


Fig. 49: Removing Brake Booster

9. Install the brake booster in the reverse order of removal, and note these items:
   - Install the master cylinder after installing the brake booster (see **MASTER CYLINDER REPLACEMENT**).
   - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).
   - Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).

SI MODEL

1. Remove the master cylinder (see **MASTER CYLINDER REPLACEMENT**).
2. Disconnect the brake booster vacuum hose (A) from the brake booster (B).

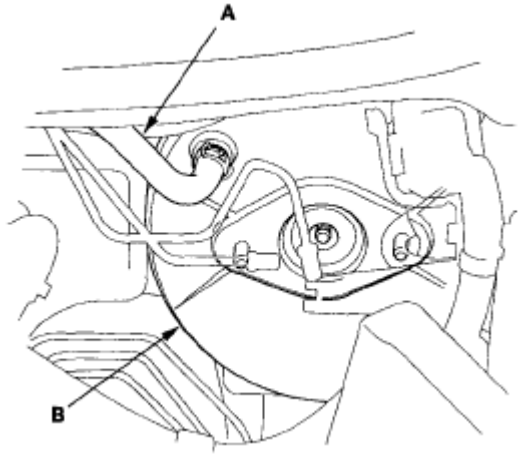


Fig. 50: Disconnecting Brake Booster Vacuum Hose

3. Remove the engine wire harness clamps (A).

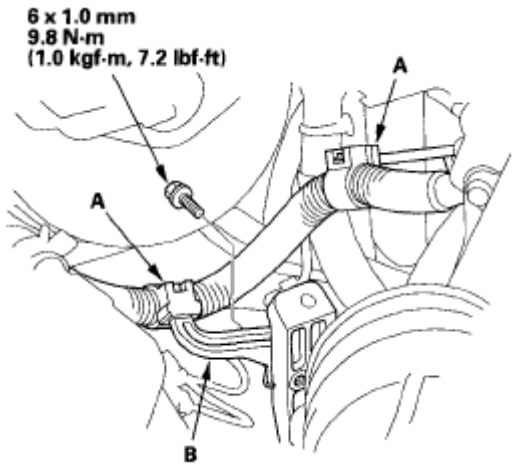


Fig. 51: Removing Engine Wire Harness Clamps (With Specifications)

4. Remove the air cleaner bracket (B).
5. Remove the lock pin (A) and the joint pin (B), then disconnect the yoke from the brake pedal.

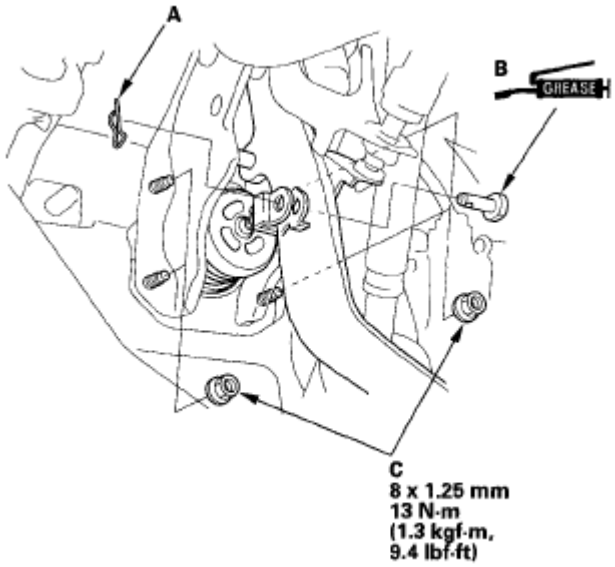


Fig. 52: Removing Lock Pin And Joint Pin (With Specifications)

6. Remove the brake booster mounting nuts (C).
7. Pull the brake booster (A) forward.

NOTE:

- **Be careful not to damage the booster surfaces and the threads on the booster studs.**
- **Be careful not to bend or damage the brake lines.**

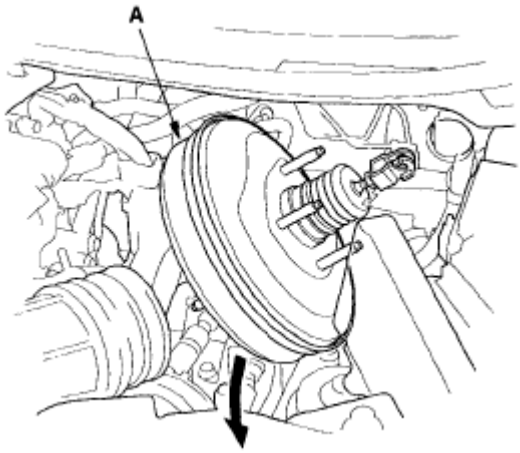


Fig. 53: Pulling Brake Booster Forward

8. Remove the brake booster by pulling it out and turning it, and remove it from the engine compartment.
9. Install the brake booster in the reverse order of removal, and note these items:
   - Install the master cylinder after installing the brake booster (see **MASTER CYLINDER REPLACEMENT**).
   - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).
   - Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).

REAR BRAKE PAD INSPECTION AND REPLACEMENT

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

INSPECTION

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Check the thickness (A) of the inner pad (B) and outer pad (C). Do not include the thickness of the backing plate.

   Brake pad thickness:

   Standard: 8.3-9.4 mm (0.33-0.37 in.)
   Service limit: 1.6 mm (0.06 in.)

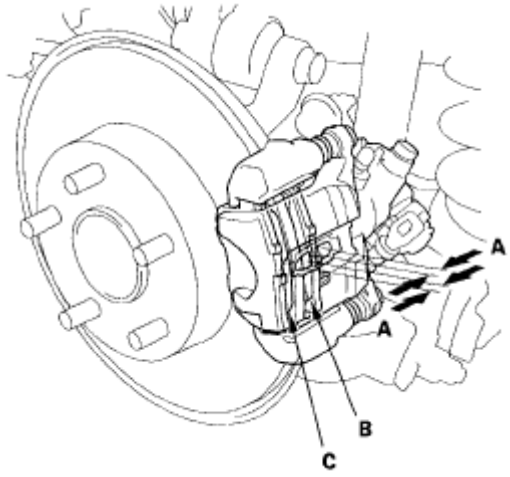


Fig. 54: Checking Thickness Of Inner Pad And Outer Pad

4. If the brake pad thickness is less than the service limit, replace all the rear brake pads as a set.

REPLACEMENT

1. Remove some brake fluid from the master cylinder.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
3. Remove the rear wheels.
4. Remove the brake hose mounting bolt (A).

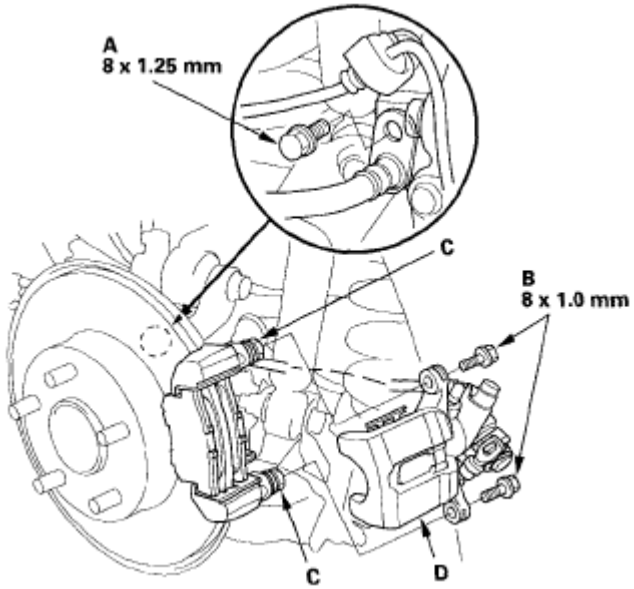


Fig. 55: Removing Brake Hose Mounting Bolt

5. Remove the flange bolts (B) while holding respective caliper pin (C) with a wrench. Be careful not to damage the pin boot, and remove the caliper (D). Check the hose and pin boots for damage and deterioration.

NOTE: Do not twist the brake hose and the parking brake cable to prevent damage.

6. Remove the pad shims (A) and brake pads (B).

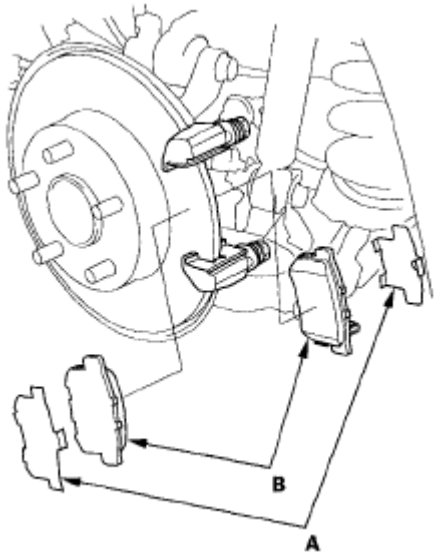


Fig. 56: Removing Pad Shims And Brake Pads

7. Remove the pad retainers (A).

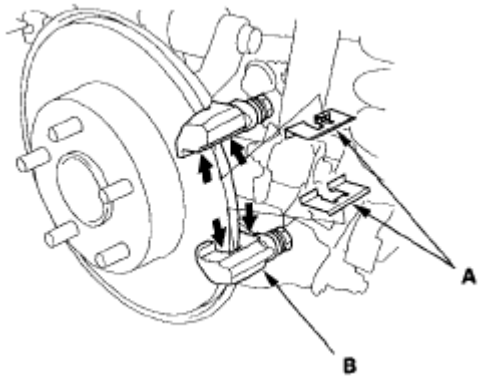


Fig. 57: Removing Pad Retainers

8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.
9. Check the brake disc for damage and cracks.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainers on their mating surfaces (indicated by the arrows) against the caliper bracket.
11. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the discs and pads.
12. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs or brake pads reduce stopping ability. Keep assembly paste off the brake discs and pads.

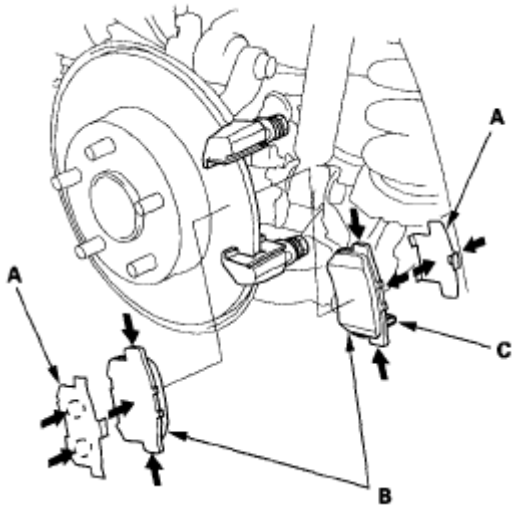


Fig. 58: Applying Assembly Paste To Pad Side Of Shims And Brake Pads

13. Install the brake pads and pad shims correctly. Install the brake pad with the wear indicator (C) on the bottom inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a temporary loss of braking efficiency.
14. Rotate the caliper piston (A) clockwise into the cylinder, then align the cutout (B) in the piston with the tab (C) on the inner pad by turning the piston back. Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.

NOTE: Be careful when moving the piston back in the caliper; brake fluid might overflow from the master cylinder's reservoir.

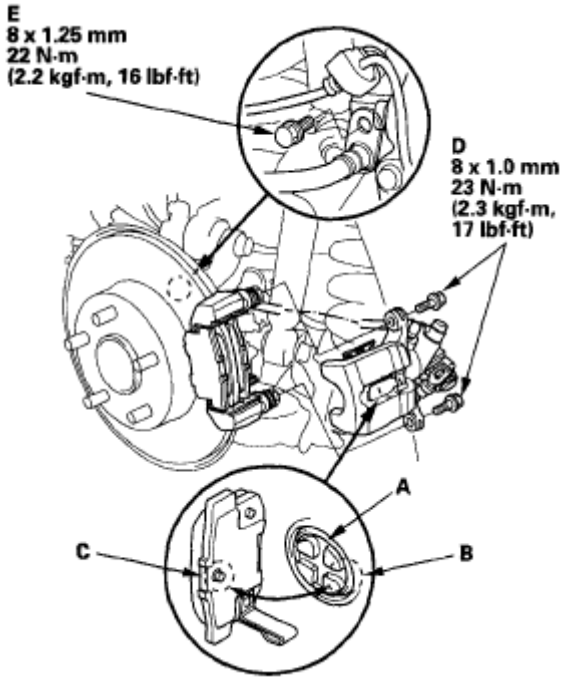


Fig. 59: Rotating Caliper Piston Clockwise Into Cylinder

15. Install the caliper. Install the flange bolts (D), and tighten it to the specified torque while holding

respective caliper pin with a wrench. Be careful not to damage the pin boots.

16. Install the brake hose mounting bolt (E).
17. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

18. Add brake fluid as needed.
19. After installation, check for leaks at the hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks (see **BRAKE HOSE AND LINE INSPECTION**).

REAR BRAKE DISC INSPECTION

RUNOUT

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Remove the brake pads (see **REAR BRAKE PAD INSPECTION AND REPLACEMENT**).
4. Inspect the brake disc surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.

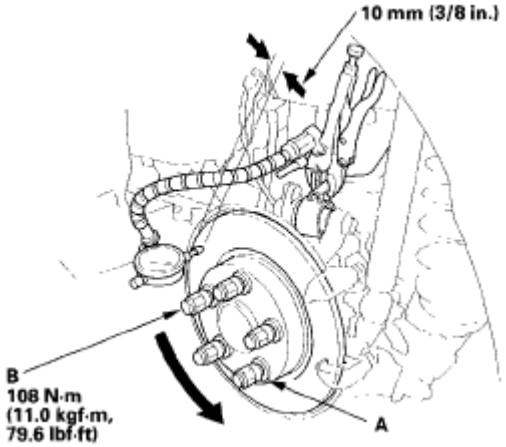


Fig. 60: Installing Suitable Flat Washer And Wheel Nuts (With Specifications)

6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

Brake disc runout:

Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc is beyond the service limit, refinish the brake disc with an on-car brake lathe. The

Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

Max. refinishing limit: 8.0 mm (0.31 in.)

NOTE:

- **If the brake disc is beyond the service limit for refinishing, replace it (see HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE).**
- **A new brake disc should be refinished if its runout is greater than 0.04 mm (0.0016 in.).**

THICKNESS AND PARALLELISM

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Remove the brake pads (see **REAR BRAKE PAD INSPECTION AND REPLACEMENT**).
4. Using a micrometer, measure the brake disc thickness at eight points, about 45° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:

   Standard: 8.9-9.1 mm (0.35-0.36 in.)
   Max. refinishing limit: 8.0 mm (0.31 in.)

   Brake disc parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.

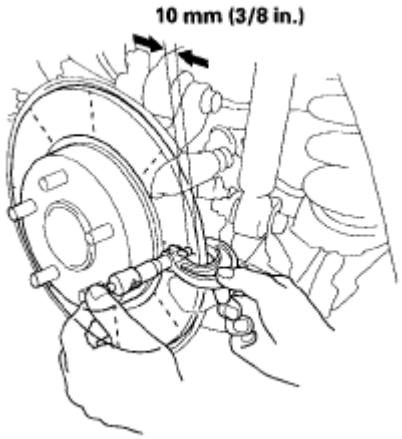


Fig. 61: Measuring Brake Disc Thickness

5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-Way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

NOTE: **If the brake disc is beyond the service limit for refinishing, replace it (see HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE).**

REAR BRAKE CALIPER OVERHAUL

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets into the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

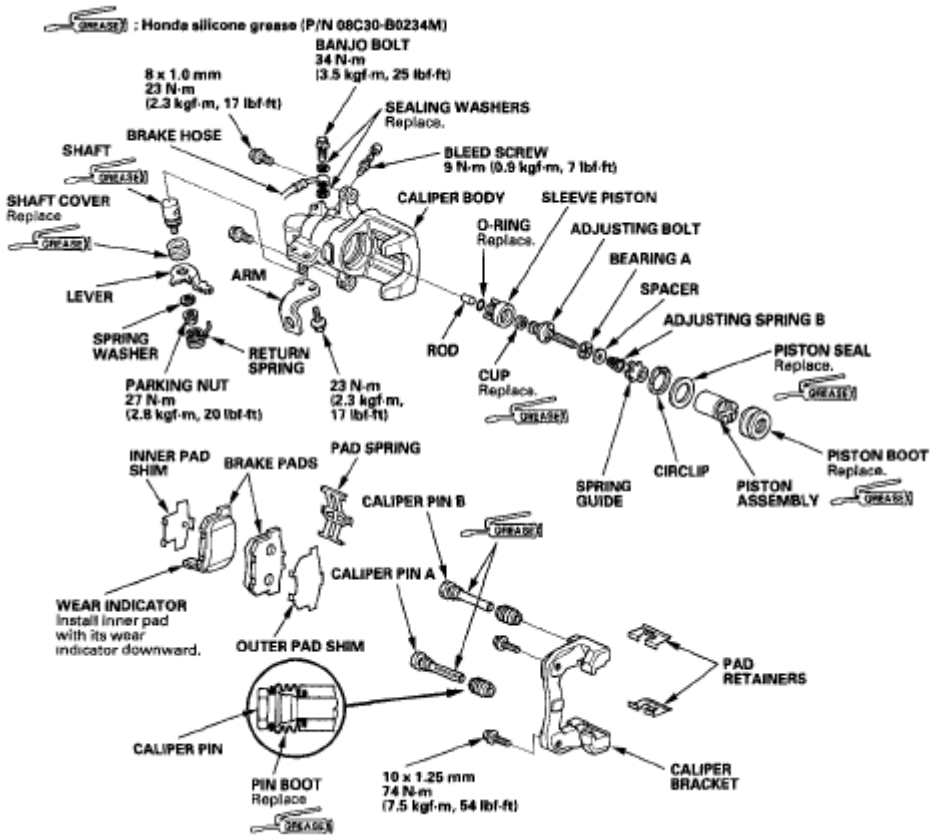


Fig. 62: Exploded View Of Rear Brake Caliper Overhaul (With Specifications)

REAR DRUM BRAKE INSPECTION

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Release the parking brake, and remove the brake drum (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).

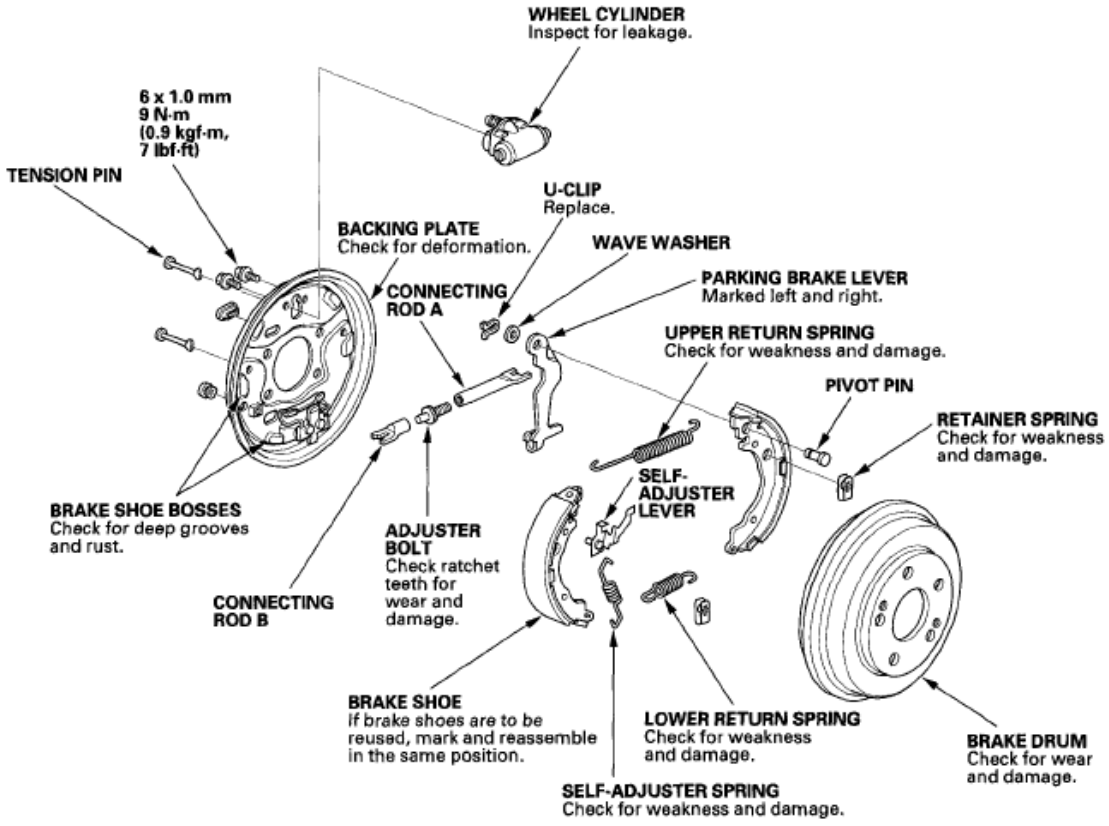


Fig. 63: Identifying Rear Drum Brake (With Specifications)

4. Check the wheel cylinder (A) for leakage.

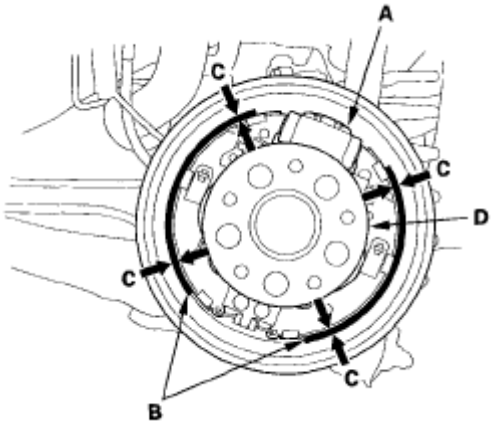


Fig. 64: Checking Wheel Cylinder For Leakage

5. Check the brake linings (B) for cracking, glazing, wear, and contamination.

NOTE: Contaminated brake linings or drums reduce stopping ability.

6. Measure the brake lining thickness (C). Measurement does not include brake shoe thickness.

Brake lining thickness:

Standard: 4.0 mm (0.16 in.)

Service limit: 2.0 mm (0.08 in.)

7. If the brake lining thickness is less than the service limit, replace the brake shoes as a set.
8. Check the hub (D) for smooth operation. If it requires servicing, replace the hub bearing unit (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).
9. Measure the inside diameter of the brake drum with inside vernier calipers.

Drum inside diameter:

Standard: 199.9-200 mm (7.870-7.874 in.)

Service limit: 201 mm (7.91 in.)

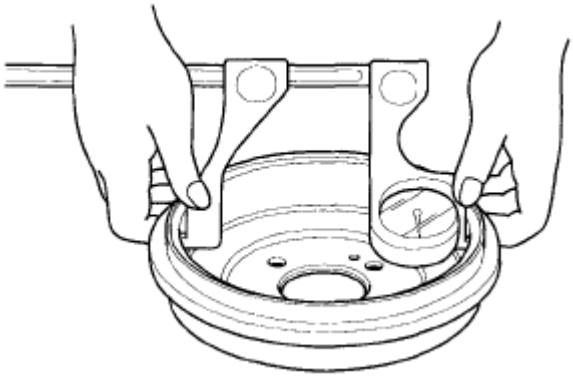


Fig. 65: Measuring Drum Inside Diameter

10. If the inside diameter of the brake drum is more than the service limit, replace the brake drum.
11. Check the brake drum for scoring, grooves, corrosion, and cracks.

REAR BRAKE SHOE REPLACEMENT

CAUTION: Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- **Avoid breathing dust particles.**
- **Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.**

DISASSEMBLY

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Release the parking brake, and remove the brake drum (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).
4. Remove the tension pins (A) by pushing respective retainer spring (B) and turning the pin.

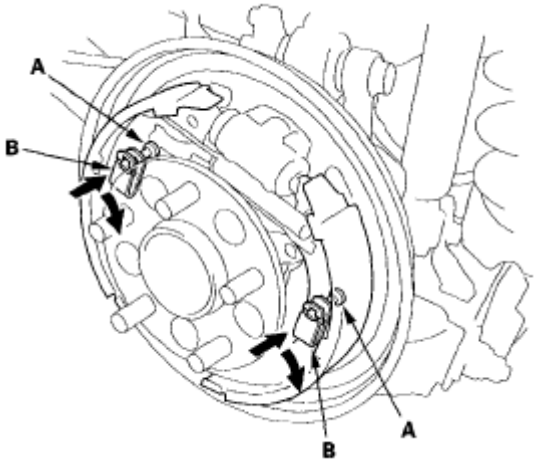


Fig. 66: Removing Tension Pins Pushing Respective Retainer Spring And Turning Pin

5. Remove the lower return spring (A), and remove the brake shoe assembly over the hub.

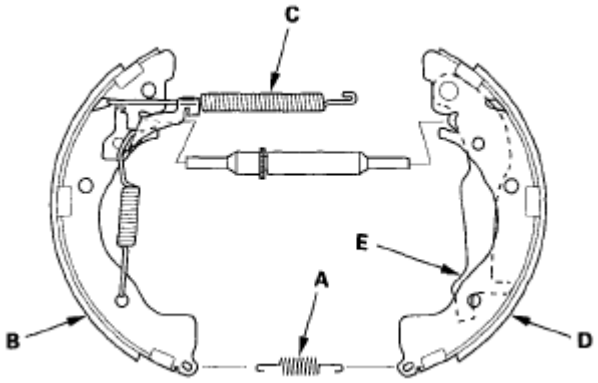


Fig. 67: Removing Lower Return Spring

6. Remove the forward brake shoe (B) by removing the upper return spring (C), and disassemble the brake shoe assembly.
7. Remove the rearward brake shoe (D) by disconnecting the parking brake cable from the parking brake lever (E).
8. Remove the U-clip (A), wave washer (B), and pivot pin (C), and separate the parking brake lever (D) from the brake shoe (E).

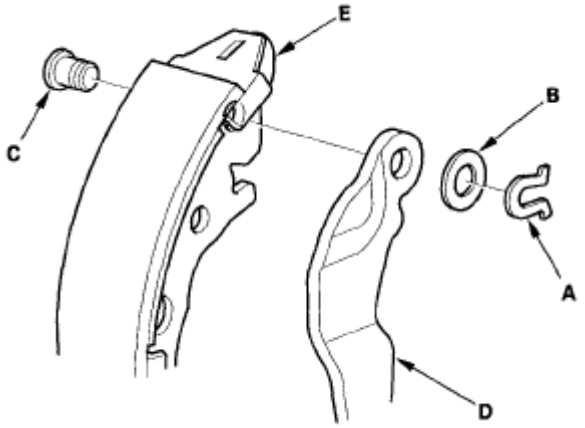


Fig. 68: Removing U-Clip, Wave Washer And Pivot Pin

REASSEMBLY

1. Apply rubber grease to the sliding surface of the pivot pin (A) for the rearward brake shoe (B).

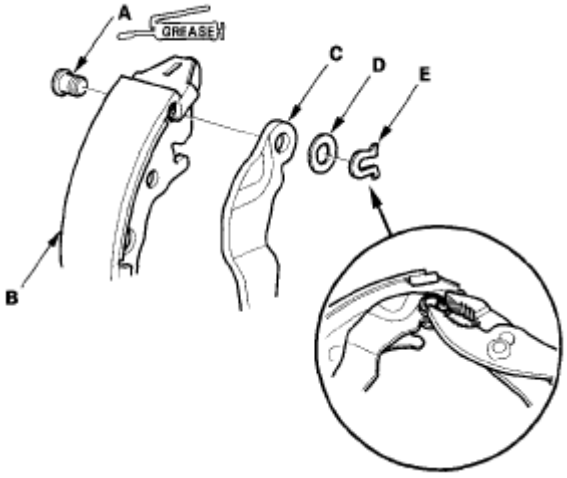


Fig. 69: Applying Grease To Sliding Surface Of Pivot Pin

2. Install the parking brake lever (C) and the wave washer (D) on the pivot pin, and secure with a new U-clip (E).

NOTE: Pinch the U-clip securely to prevent the parking brake lever from coming out of the brake shoe.

3. Connect the parking brake cable to the parking brake lever.
4. Apply a thin coat of rubber grease to the connecting rod ends (A), and the sliding surfaces (B) as shown. Wipe off any excess. Keep grease off the brake linings.

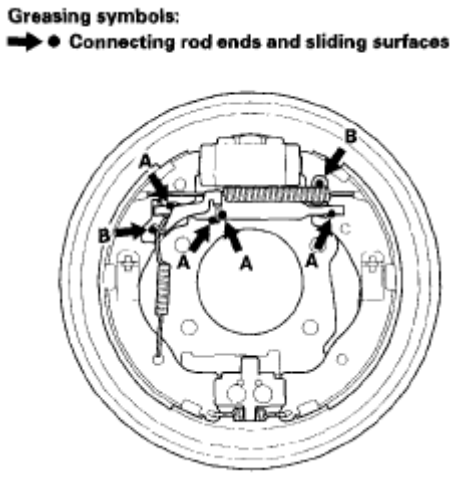


Fig. 70: Applying Coat Of Rubber Grease To Connecting Rod Ends

5. Apply a thin coat of Molykote 44MA grease to the shoe ends (A) and to the edge of the shoe surfaces (B) that make contact the backing plate as shown. Wipe off any excess. Keep grease off the brake linings.

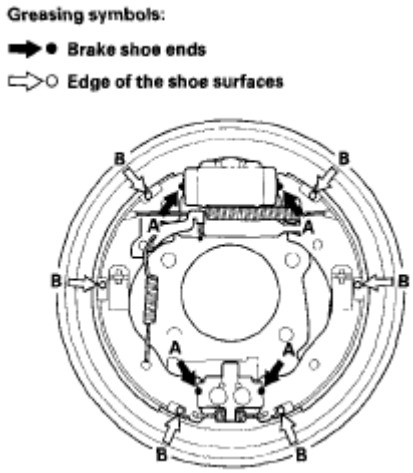


Fig. 71: Applying Grease To Shoe Ends And Edge Of Shoe Surfaces

6. Install connecting rods A and B on the adjuster bolt (C).

NOTE:

- **Clean the threaded portions of connecting rod A and the sliding surface of connecting rod B, then coat them with rubber grease.**
- **Shorten connecting rod A by fully turning the adjuster bolt.**

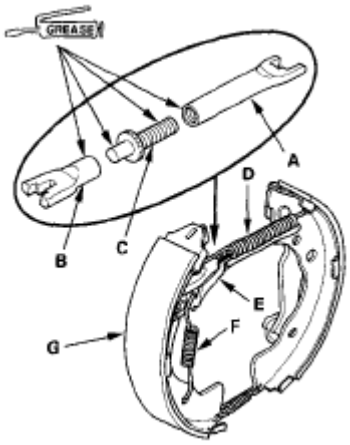


Fig. 72: Installing Connecting Rods A And B On Adjuster Bolt

7. Assemble the brake shoes, the upper return spring (D), and the connecting rods with the adjuster bolt against the backing plate, then install the self-adjuster lever (E) and the self-adjuster spring (F) on the forward brake shoe (G).
8. Install the tension pins (A) and the retainer springs (B) by pushing in respective spring and turning each pin.

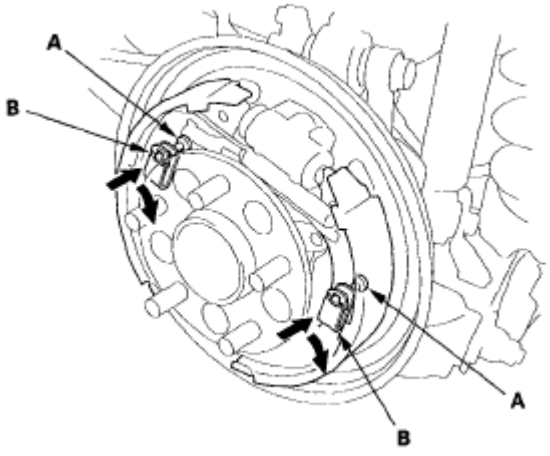


Fig. 73: Installing Tension Pins And Retainer Springs

9. Install the lower return spring.

NOTE: Make sure the brake shoes positioning on the brake shoe bosses of the backing plate, and fitting the top of the brake shoes onto the wheel cylinder pistons.

10. Install the brake drum.

NOTE: Before installing the brake drum, clean the mating surface of the rear hub and the inside of the brake drum.

11. Install the rear wheels.

12. Press the brake pedal several times to make sure the brakes work and to set the self-adjusting brake.

NOTE: Engagement of the brakes may require a greater pedal stroke immediately after the brake shoes have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

13. Do the parking brake adjustment (see **PARKING BRAKE INSPECTION AND ADJUSTMENT**).

REAR WHEEL CYLINDER REPLACEMENT

NOTE:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **To prevent spills, cover the hose joints with rags or shop towels.**

1. Remove the brake shoes (see **REAR BRAKE SHOE REPLACEMENT**).
2. Disconnect the brake line (A) from the wheel cylinder (B).

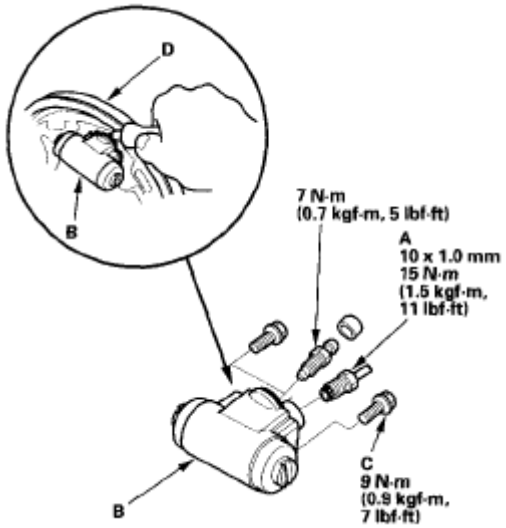


Fig. 74: Disconnecting Brake Line From Wheel Cylinder (With Specifications)

3. Remove the bolts (C) and the wheel cylinder from the backing plate.

NOTE: Use the special bolts on reassembly.

4. Apply Cemedine 366E sealant or equivalent between the wheel cylinder and backing plate (D), and install the wheel cylinder, then connect the brake line.
5. Install the brake shoes (see **REAR BRAKE SHOE REPLACEMENT**).
6. Bleed the brake system (see **BRAKE SYSTEM BLEEDING**).
7. Do the parking brake inspection and adjustment (see **PARKING BRAKE INSPECTION AND ADJUSTMENT**).
8. Spin the wheels to check for brake drag.
9. After installation, check for leaks at hose and line joints or connections, and retighten if necessary.

Test-drive the vehicle, then check for leaks (see **BRAKE HOSE AND LINE INSPECTION**).

BRAKE PEDAL REPLACEMENT

1. Disconnect the brake pedal position switch connector (A).

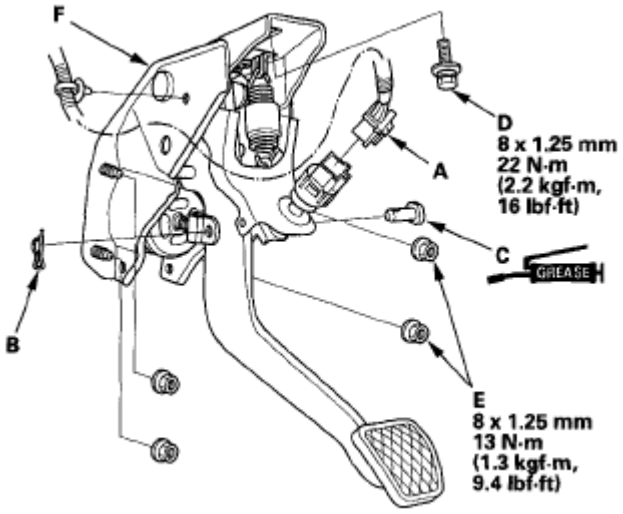


Fig. 75: Disconnecting Brake Pedal Position Switch Connector (With Specifications)

2. Remove the lock pin (B) and joint pin (C).
3. Remove the brake pedal bracket mounting bolt (D) and nuts (E).
4. Remove the brake pedal with bracket (F).
5. Install in the reverse order of removal.
6. Do the brake pedal and brake pedal position switch adjustment (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

BRAKE HOSE AND LINE INSPECTION

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and the ABS or VSA modulator-control unit for damage and leaks.

MASTER CYLINDER AND ABS OR VSA MODULATOR-CONTROL UNIT

Connection Point	Component	Connected to	Specified Torque Value	Note
A	Front brake caliper	Brake hose	34 N.m (3.5 kgf.m, 25 lbf.ft)	Banjo bolt
		Bleed screw	9 N.m (0.9 kgf.m, 7 lbf.ft)	
	Rear brake caliper (disc type)	Brake hose	34 N.m (3.5 kgf.m, 25 lbf.ft)	Banjo bolt
		Bleed screw	9 N.m (0.9 kgf.m, 7	

			lbf.ft)	
B	Rear wheel cylinder (drum type)	Brake line	15 N.m (1.5 kgf.m, 11 lbf.ft)	Flare nut
		Bleed screw	7 N.m (0.7 kgf.m, 5 lbf.ft)	
C	Brake hose	Brake line	15 N.m (1.5 kgf.m, 11 lbf.ft)	Flare nut
D	Master cylinder (ABS)	Brake line	15 N.m (1.5 kgf.m, 11 lbf.ft)	Flare nut
	Master cylinder (VSA)		22 N.m (2.2 kgf.m, 16 lbf.ft)	
E	ABS modulator-control unit	Brake line	15 N.m (1.5 kgf.m, 11 lbf.ft)	Flare nut
	VSA modulator-control unit	Brake line (10 mm nut)	15 N.m (1.5 kgf.m, 11 lbf.ft)	
		Brake line (12 mm nut)	22 N.m (2.2 kgf.m, 16 lbf.ft)	
F	4-way joint	Brake line	15 N.m (1.5 kgf.m, 11 lbf.ft)	Flare nut

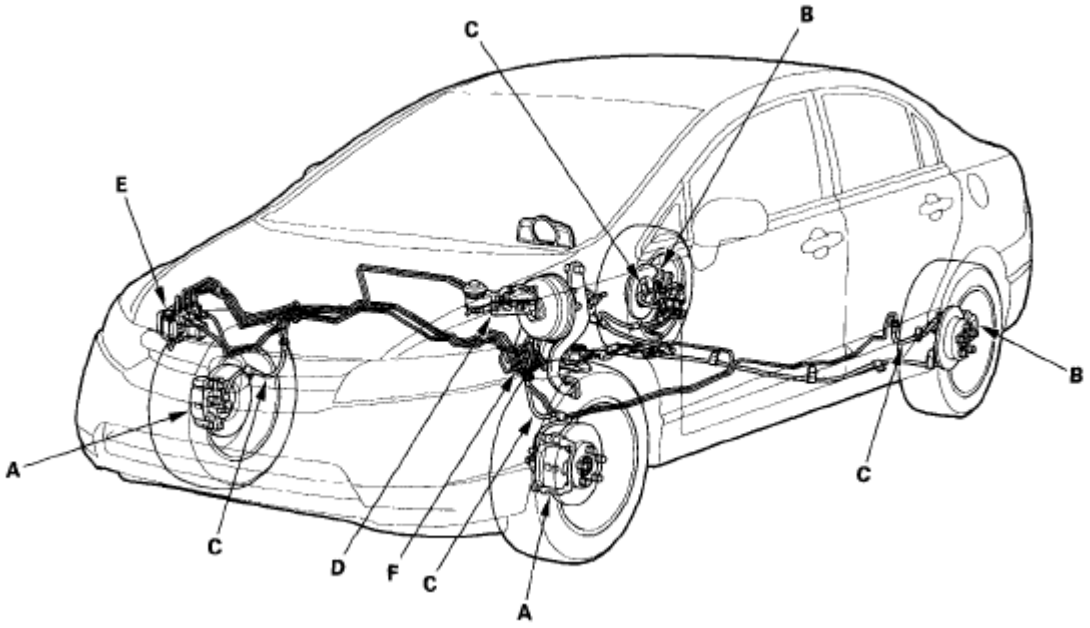


Fig. 76: Inspecting Brake Hose And Line

BRAKE HOSE REPLACEMENT

NOTE:

- **Before reassembling, check that all parts are free of dirt and other foreign particles.**
- **Replace parts with new ones whenever specified to do so.**
- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.**

- **To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.**
- **The illustrations show only the front of the vehicle except where the procedure is different for the rear.**

REMOVAL

1. Disconnect the brake hose (A) from the brake line (B) using a 10 mm flare-nut wrench (C).

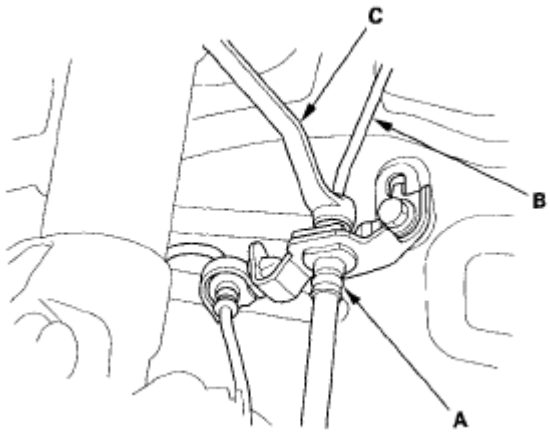


Fig. 77: Disconnecting Brake Hose From Brake Line

2. With clip type: Remove and discard the brake hose clip (A) from the brake hose (B).

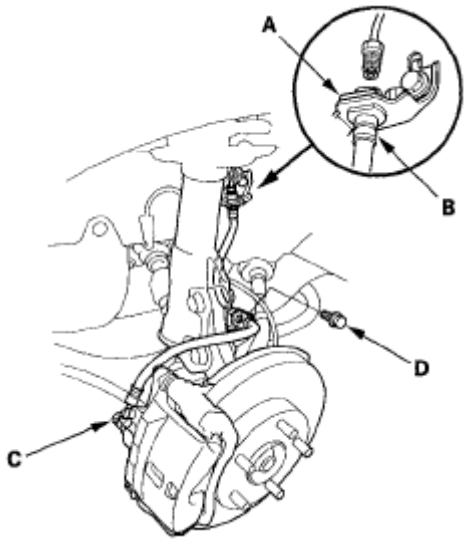


Fig. 78: Removing And Discarding Brake Hose Clip (Clip Type)

3. Disc brake type: Remove the banjo bolt (C), and disconnect the brake hose from the caliper.
4. Remove the brake hose mounting bolt(s) (D), then remove the brake hose.

NOTE: Without clip type: Remove the brake hose with the bracket.

INSTALLATION

1. Install the brake hose (A) with the mounting bolt (B).

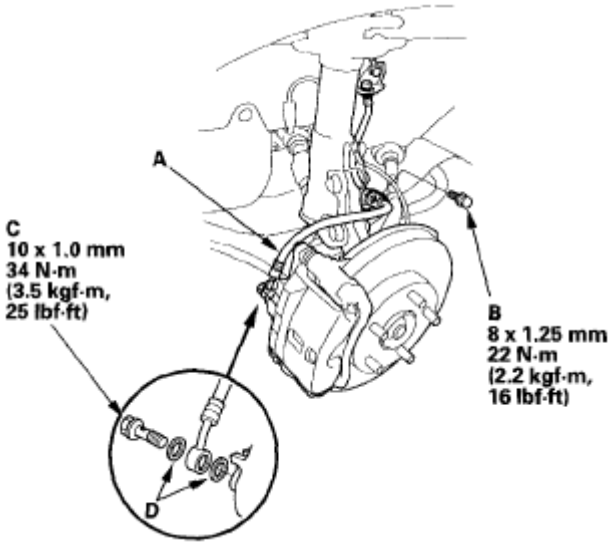


Fig. 79: Installing Brake Hose (With Specifications)

2. Disc brake type: Connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).
3. Position the brake hose ends (A).

NOTE:

- **With clip type: Install the brake hose on the brake hose bracket (B) with a new brake hose clip (C).**
- **Without clip type: Install the brake hose bracket (D) to the frame.**

With clip type

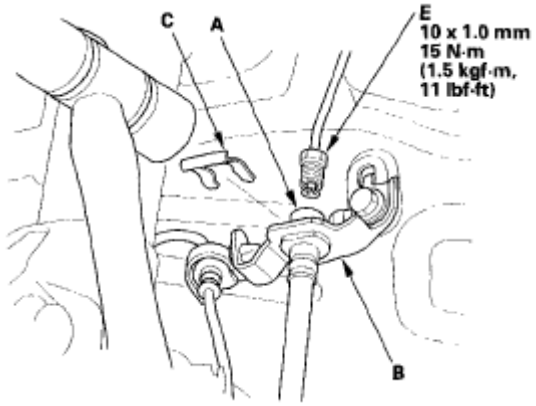


Fig. 80: Installing Brake Hose On Brake Hose Bracket (With Clip Type) (With Specifications)

Without clip type

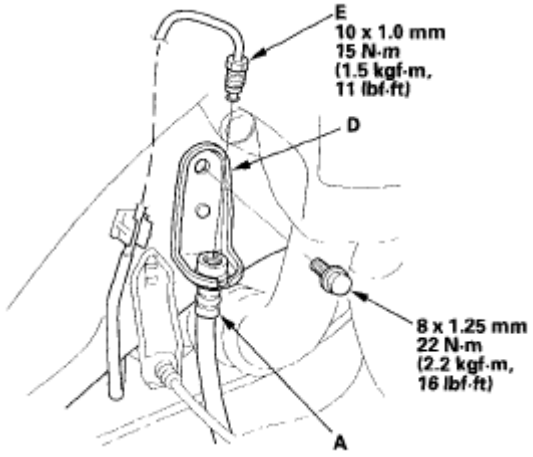


Fig. 81: Installing Brake Hose Bracket To Frame (Without Clip Type) (With Specifications)

4. Connect the brake line (E) to the brake hose.
5. After installing the brake hose, bleed the brake system (see **BRAKE SYSTEM BLEEDING**).
6. Do the following check:
    - Check the brake hose and line joint for leaks, and tighten if necessary.
    - Check the brake hoses for interference and twisting.

PARKING BRAKE CABLE REPLACEMENT

EXPLODED VIEW

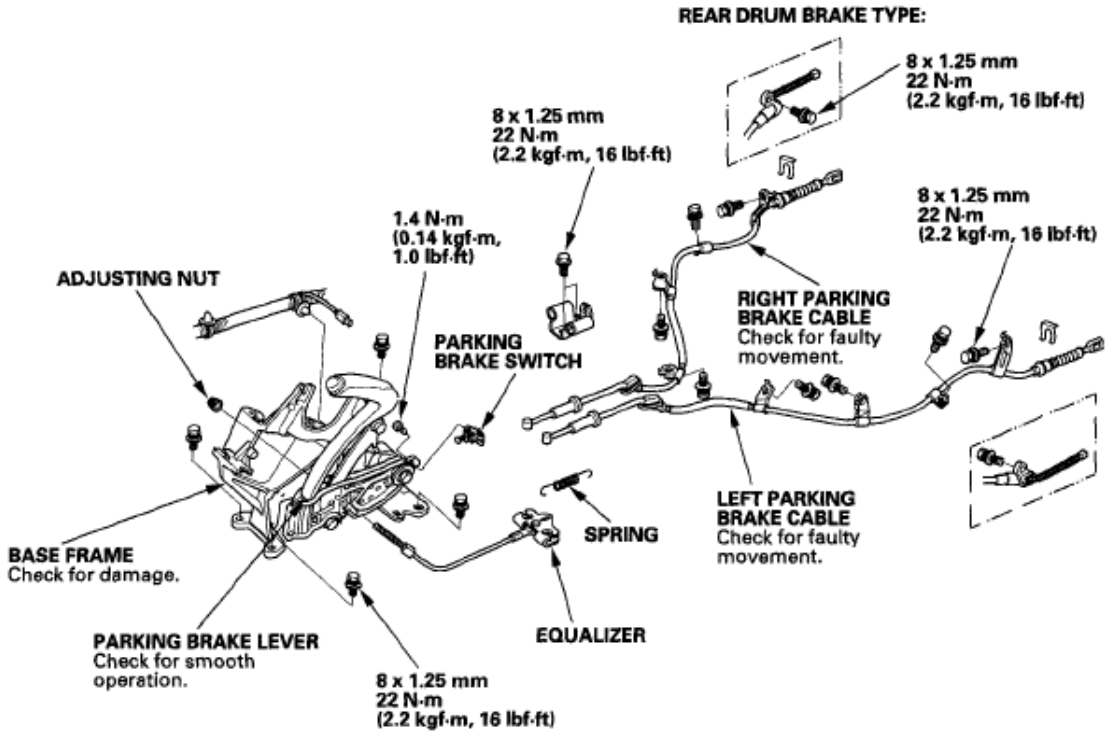


Fig. 82: Exploded View Of Conventional Brake (With Specifications)

NOTE:

- **The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.**
- **Refer to Fig. 82 as needed during this procedure.**

REAR DISC BRAKE TYPE

1. Release the parking brake lever fully.
2. Loosen the parking brake cable adjustment nut (see **ADJUSTMENT - REAR DISC BRAKE TYPE**).
3. Remove the parking brake cable clip (A) from the brake cable (B).

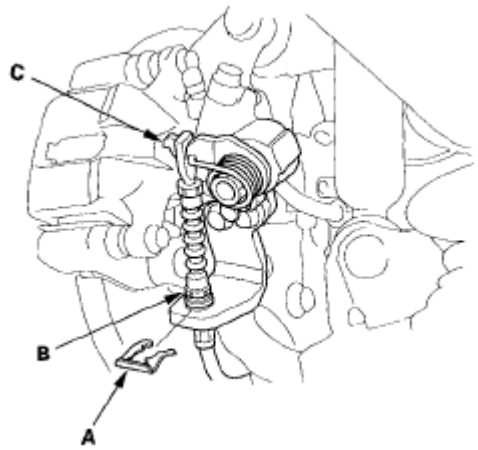


Fig. 83: Removing Parking Brake Cable Clip

4. Disconnect the parking brake cable from the lever (C).
5. Remove the parking brake cable mounting hardware, then remove the cable.
6. Install the parking brake cable in the reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable.
   - Make sure the parking brake cable clip is fully seated on the cable housing.
   - Do the parking brake adjustment (see **ADJUSTMENT - REAR DISC BRAKE TYPE**).

REAR DRUM BRAKE TYPE

1. Loosen the parking brake cable adjustment nut (see **ADJUSTMENT - REAR DRUM BRAKE TYPE**).
2. Remove the brake drum and shoes, and disconnect the parking brake cable from the parking brake lever (see **REAR BRAKE SHOE REPLACEMENT**).
3. Remove the flange bolt (A) and parking brake cable (B) from the backing plate (C).

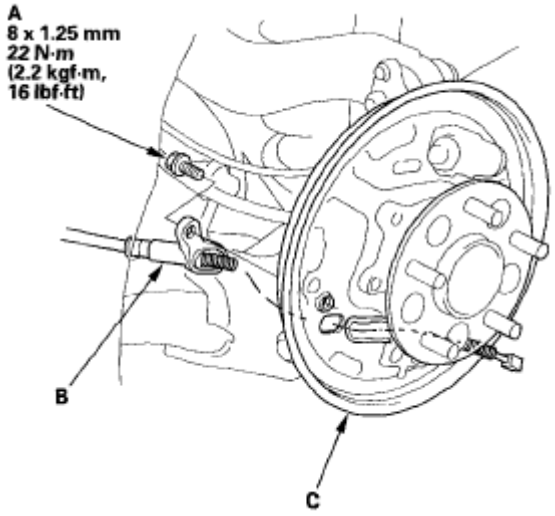


Fig. 84: Removing Flange Bolt And Parking Brake Cable (With Specifications)

4. Reinstall the parking brake cable in the reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable.
   - Connect the parking brake cable to the brake lever, and install the brake shoes and drum (see **REAR BRAKE SHOE REPLACEMENT**).
   - Do the parking brake adjustment (see **ADJUSTMENT - REAR DRUM BRAKE TYPE**). Apply the parking brake firmly 10 times then adjust it again.

PARKING BRAKE LEVER GRIP AND COVER REPLACEMENT

REMOVAL

Lever Grip

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Pull up the parking brake fully (8 to 10 clicks).
3. Start at the front edge (A), peel lever grip away from lever cap (B). Continue to peel the grip from the lever to gain access to the hooks (C).

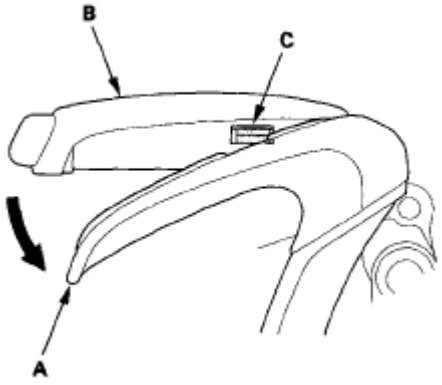


Fig. 85: Peeling Lever Grip Away From Lever Cap

4. Push in both sides of the hook (A) on the lever cap (B), and remove the lever cap and the pushrod (C) with the knob (D).

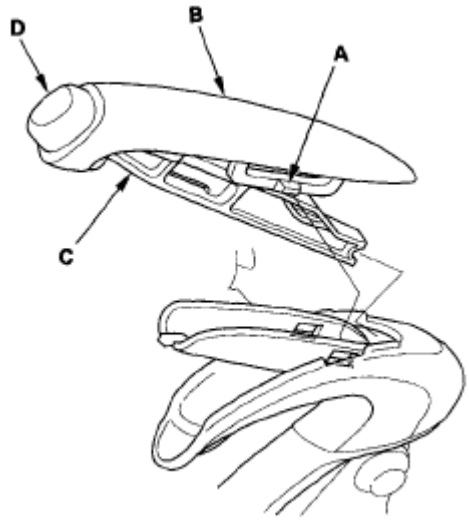
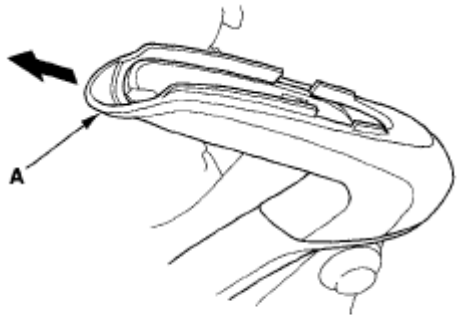


Fig. 86: Removing Lever Cap And Pushrod With Knob

5. Remove the lever grip (A) by sliding it up.



Lever Cover

Fig. 87: Removing Lever Grip

Lever Cover

6. Remove the clip (A) on the driver's side of the parking brake lever cover (B).

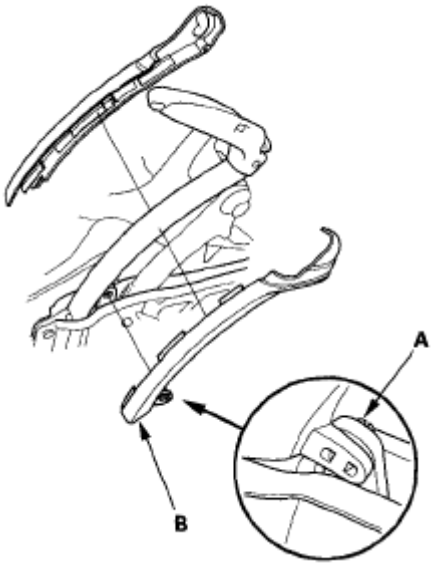


Fig. 88: Removing Clip On Driver's Side

7. Separate the parking brake lever covers, and remove them.

INSTALLATION

Lever Cover

1. Install the clip (A) on driver's side of the parking brake lever cover (B) to the lever (C).

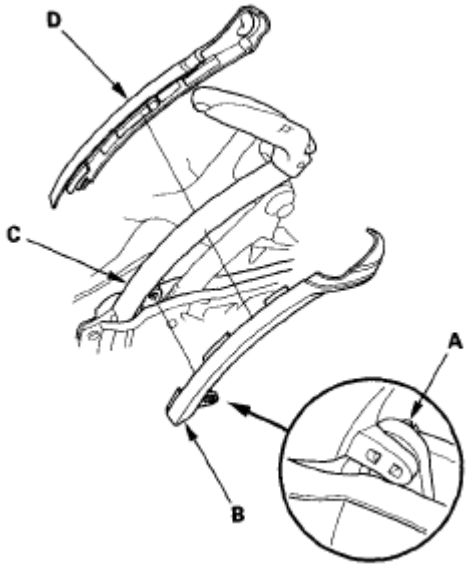


Fig. 89: Installing Clip On Driver's Side Of Parking Brake Lever Cover To Lever

2. Install the passenger's side of the parking brake lever cover (D), and squeeze both sides of the cover together.

Lever Grip

3. Install a new lever grip (A) by sliding it over the cover.

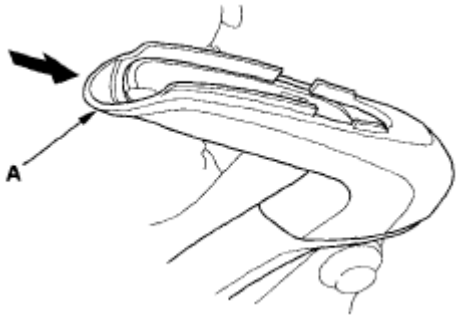


Fig. 90: Installing Lever Grip Sliding Over Cover

4. Install a new lever cap (A) on to the lever by aligning the notch (B) in the cap with the tab (C) on the lever.

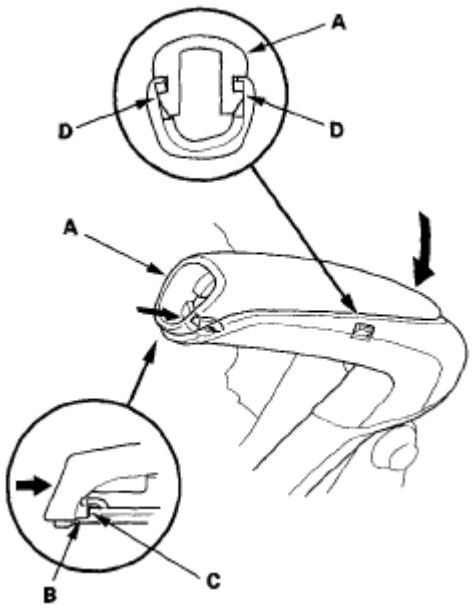


Fig. 91: Installing Lever Cap On To Lever

5. With the lever cap and grip in position, push down on the cap to lock the hooks (D) into place.
6. Carefully peel back the front edge (A) of the lever grip, and apply a small amount of gel type super glue (B). Carefully push the grip back into place and wait a minute for the glue to adhere.

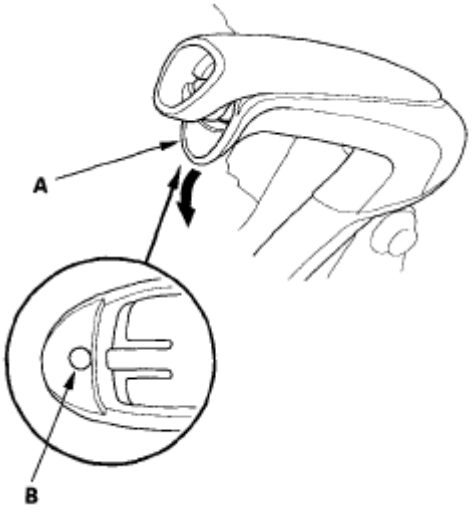


Fig. 92: Peeling Back Front Edge Of Lever Grip

7. Install a new pushrod (A) with the knob (B), and push them into the parking brake lever (C).

NOTE: Do not use the removed pushrod and knob.

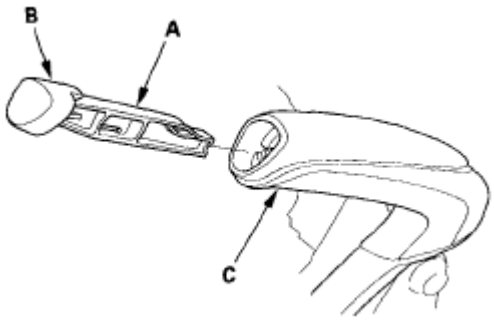


Fig. 93: Installing Pushrod With Knob

8. Release and pull the parking brake about 10 times.
9. Check the push knob play of about 0.08 in (2 mm.) and that the parking brake lever moves smoothly, then do the parking brake inspection (see **PARKING BRAKE INSPECTION AND ADJUSTMENT**).
10. Install the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

BRAKE PEDAL COVER REPLACEMENT

NOTE: This procedure is for models equipped with a metal brake cover.

1. Cover the carpet under the brake pedal to prevent metal shaving from getting on carpet.
2. Center-punch each of the rivets (A), and drill their heads off with a 0.12 in (3 mm.) drill bit (B).

NOTE: Do not drill the brake pedal plate (C).

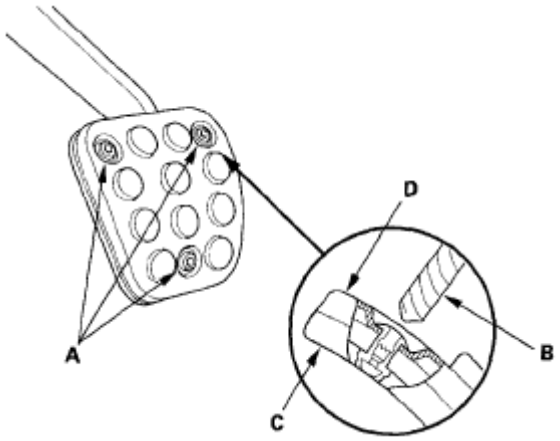


Fig. 94: Center-Punching Each Rivets

3. Remove the brake pedal cover (D).
4. Install the brake pedal cover (A) with the rivets (B) firmly.

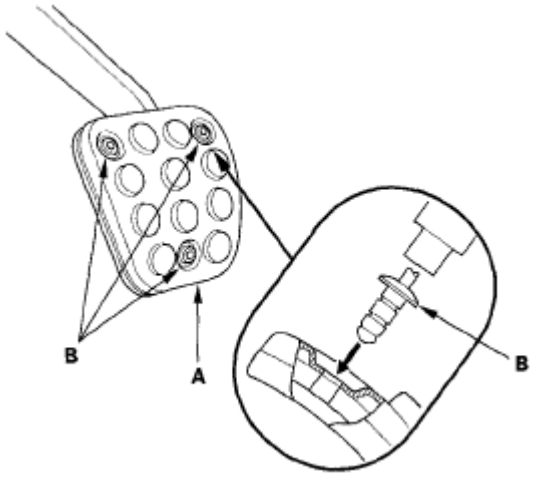


Fig. 95: Installing Brake Pedal Cover With Rivets

5. Make sure the brake pedal cover is fastened on the brake pedal by a hand.

PRELIMINARY SERVICE SPECIFICATIONS

Honda - 2006-07 Civic

BRAKES

BRAKE FLUID SPECIFICATIONS

CAUTION: Use Honda DOT3 (P/N 08798-9008) brake fluid. Use of non-Honda fluid can cause corrosion and decrease life of the brake system.

BRAKE SERVICE SPECIFICATIONS

Except Hybrid

BRAKE SPECIFICATIONS (EXCEPT HYBRID)

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbf) of force		8 to 10 clicks	
Brake pedal	Pedal height (carpet removed)	M/T model	153 mm (6 in.)	
		A/T model	158 mm (6 1/4 in.)	
	Free play		1-5 mm (1/16-3/16 in.)	
Brake disc	Thickness	Front (except Si)	20.9-21.1 mm (0.82-0.83 in.)	19.0 mm (0.75 in.)
		Front (Si)	24.9-25.1 mm (0.98-0.99 in.)	23.0 mm (0.91 in.)
		Rear	8.9-9.1 mm (0.35-0.36 in.)	8.0 mm (0.31 in.)
	Runout		-	0.04 mm (0.0016 in.)
	Parallelism		-	0.015 mm (0.0006 in.)
Brake pad	Pad thickness	Front (except Si)	9.6-10.2 mm (0.38-0.40 in.)	1.6 mm (0.06 in.)
		Front (Si)	9.0-9.7 mm (0.35-0.38 in.)	1.6 mm (0.06 in.)
		Rear	8.3-9.4 mm (0.33-0.37 in.)	1.6 mm (0.06 in.)
Rear brake (drum brake)	Brake drum I.D.		199.9-200 mm (7.870-7.874 in.)	201 mm (7.91 in.)
	Brake shoe lining thickness		4.0 mm (0.16 in.)	2.0 mm (0.08 in.)

Hybrid

BRAKES SPECIFICATIONS (HYBRID)

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake lever	Distance traveled when pulled with 196 N (20 kgf, 44 lbf) of force		8 to 10 clicks	
Brake pedal	Pedal height (carpet removed)		158 mm (6 7/32 in.)	
	Free play		1-5 mm (0.04-0.20 in.)	
Brake disc	Thickness	Front	20.9-21.1 mm (0.82-0.83 in.)	19.0 mm (0.75 in.)
	Runout	Front	-	0.10 mm (0.004 in.)
	Parallelism	Front	-	0.015 mm (0.0006 in.)
Brake pad	Thickness	Front	9.5-10.5 mm (0.37-0.41 in.)	1.0 mm (0.04 in.)
Brake drum	I.D.	Rear	219.9-220.0 mm (8.657-8.661 in.)	221 mm (8.70 in.)
Brake shoe	Lining thickness	Rear	4.5 mm (0.18 in.)	2.0 mm (0.08 in.)

WHEEL ALIGNMENT

EXCEPT HYBRID

SUSPENSION SERVICE LIMITS CHART (EXCEPT HYBRID)

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0°00' ± 30'	
		Rear	-1° 30'$^{+1°\ 05'}$ -0° 45'	
	Caster	Front	7°00'±1°	
	Total toe-in	Front	0±2 mm (0±0.08 in.)	
		Rear	2^{+2} -1mm (0.08$^{+0.08}$ -0.04 in.)	
	Front wheel turning angle (DX, DX-G)	Inward	40°06' ± 2°	
		Outward	31 °55' (Reference)	
	Front wheel turning angle (Except DX, DX-G)	Inward	38° 46' ±2°	
		Outward	31 ° 14' (Reference)	
Wheel	Steel wheel runout	Axial	0-1.0 mm (0-0.04 in.)	2.0 mm (0.08 in.)
		Radial	0-1.0 mm (0-0.04 in.)	1.5 mm (0.06 in.)
	Aluminum wheel runout	Axial	0-0.7 mm (0-0.03 in.)	2.0 mm (0.08 in.)
		Radial	0-0.7 mm (0-0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0-0.05 mm (0-0.002 in.)	

		Rear	0-0.05 mm (0-0.002 in.)

HYBRID

SUSPENSION SERVICE LIMITS CHART (HYBRID)

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	-0°03'+/-30'	
		Rear	-1°39'$^{+1°06'}_{-0°45'}$	
	Camber (Maximum difference left to right)	Front	0°35'	
	Caster	Front	7°06'+/-1°	
	Total Toe-in	Front	0+/-2 mm (0+/-0.08 in.)	
		Rear	2^{+2}_{-1} mm ($0.08^{+0.08}_{-0.04}$ in.)	
	Front wheel turning angle	Inward wheel	39°53'+/-2°	
		Outward wheel	31 °48'(reference)	
Wheel	Runout	Axial	0-0.7 mm (0-0.03 in.)	2.0 mm (0.08 in.)
		Radial	0-0.7 mm (0-0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0-0.05 mm (0-0.002 in.)	
		Rear	0-0.05 mm (0-0.002 in.)	
Tire	Front and rear size		P195/65R15 89S	
	Spare tire size		P125/70D15 95M	
	Pressure	Front/Rear	220 kPa (2.2 kgf/cm^2 , 32 psi)	
		Spare	420 kPa (4.2 kgf/cm^2 , 60 psi)	

A/C SYSTEM

EXCEPT HYBRID

A/C SYSTEM SPECIFICATIONS (EXCEPT HYBRID)

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a(R-134a)
	Capacity of system		400-450 g (14.1-15.8 oz)
Refrigerant oil	Type		SP-10 (P/N 38897-P13-A01 or 38899-P13-A01)
	Capacity of components	Condenser	50 mL (1 2/3 fl.oz, 1.8 lmp oz)
		Evaporator	40 mL (1 1/3 fl.oz, 1.4 lmp oz)
		Each Line and hose	10 mL (1/3 fl.oz, 0.4 lmp oz)
		Compressor	75-85 mL (2 1/2-2 5/6

			fl.oz, 2.6-3.0 lmp oz)
Compressor	Field coil resistance	At 68 °F (20 °C)	3.15-3.45 ohms
	Pulley-to-pressure plate clearance		0.35-0.65 mm (0.014-0.026 in.)

HYBRID

A/C SYSTEM SPECIFICATIONS (HYBRID)

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity or system		400-450 g (14.1-15.9 oz)
Refrigerant oil	Type		SANDEN SE-10Y (P/N 38899-RCJ-J01)
	Capacity of components	Condenser	50 mL (12/3 fl oz)
		Evaporator	40 mL (1 1/3 fl oz)
		Each line and hose	10 mL (1/3 fl oz)
		Receiver	10 mL (1/3 fl oz)
		Compressor	130-150 mL (4 1/3-5 fl oz)
Compressor	Field coil resistance	At 68 °F (20 °C)	3.05-3.35 ohms
	Pulley-to-armature plate clearance		0.5+/-0.15 mm (0.02+/-0.006 in.)

SPARK PLUGS

R18A1 ENGINE

SPARK PLUG SPECIFICATIONS (R18A1 ENGINE)

Item	Type	Gap
Spark Plug	NGK:IZFR6K11S DENSO:SKJ20DR-M11S	1.0-1.1 mm (0.039-0.043 in.)

K20Z3 ENGINE

SPARK PLUG SPECIFICATIONS (K20Z3 ENGINE)

Item	Type	Gap
Spark Plug	NGK:IFR7G11KS DENSO:SK22PR-M11S	1.0-1.1 mm (0.039-0.043 in.)

HYBRID

SPARK PLUG SPECIFICATIONS (HYBRID)

Item	Type	Gap
Spark Plug	NGK: ILFR6J11K DENSO: SK20HPR-L11	1.0-1.1 mm (0.039-0.043 in.)

2006-08 DRIVELINE/AXLES

Driveline/Axle - Civic (All Except Hybrid)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07GAD-PH70201	Oil Seal Driver	1
②	07NAF-SR30101	Half Shaft Base	1
③	07XAC-001010A	Threaded Adapter, 22 x 1.5 mm	1
④	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑤	07746-0010400	Attachment, 52 x 55 mm	1
⑥	07746-0030400	Attachment, 35 mm I.D.	1
⑦	07749-0010000	Driver	1
⑧	07947-SB00100	Oil Seal Driver	1

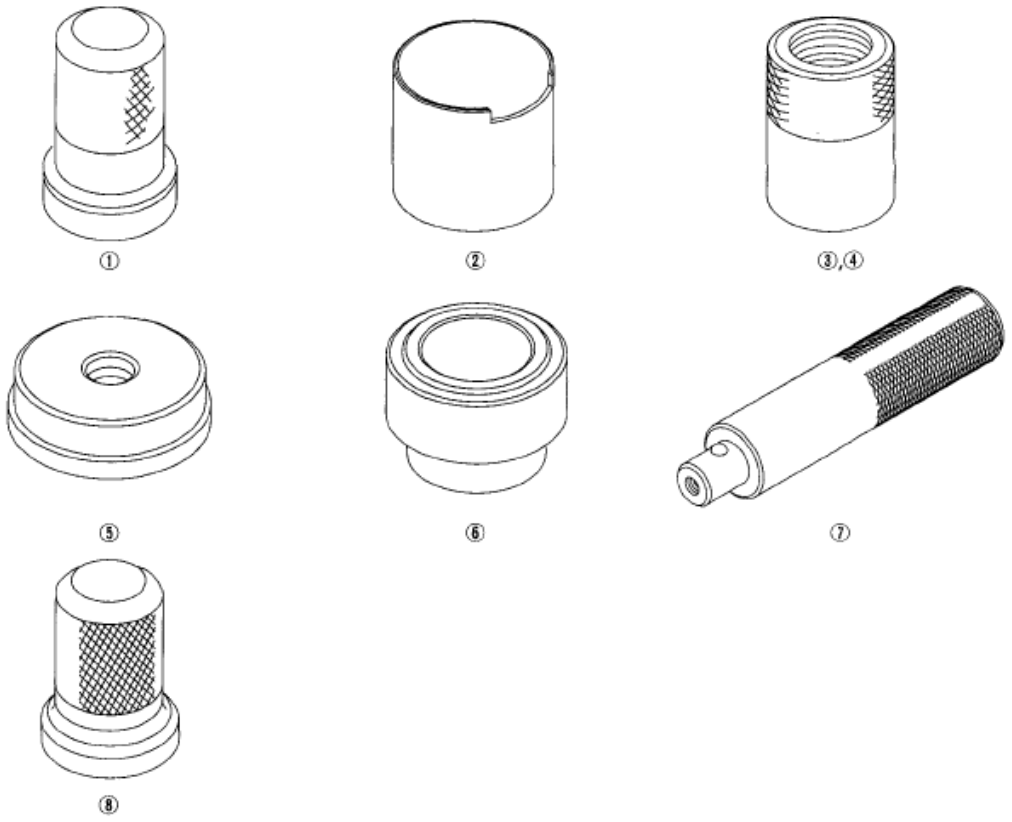


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

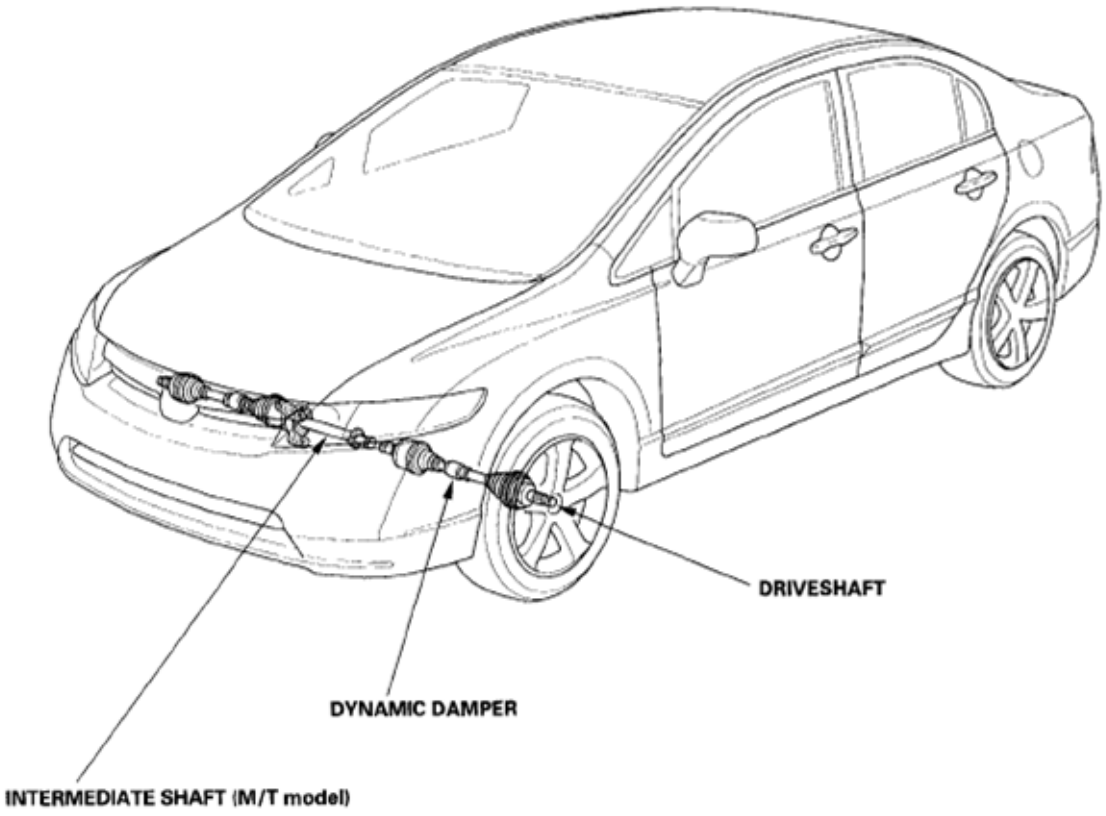


Fig. 2: Identifying Driveline/Axle Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVESHAFT INSPECTION

1. Check the inboard boot (A) and the outboard boot (B) for cracks, damage, leaking grease, and loose boot bands (C). If any damage is found, replace the boot and boot bands.

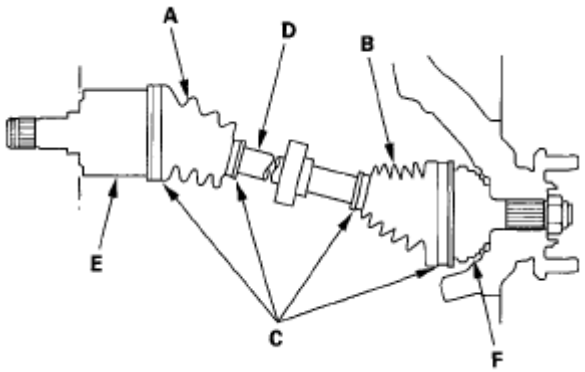


Fig. 3: Checking Inboard Boot And Outboard Boot For Cracks, Damage, Leaking Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the driveshaft (D) for cracks and damage. If any damage is found, replace the driveshaft.
3. Check the inboard joint (E) and the outboard joint (F) for cracks and damage. If any damage is found,

replace the inboard joint or the outboard joint as an assembly.

4. Hold the inboard joint and turn the front wheel by hand, then make sure the joint is not excessively loose. If necessary, replace the inboard joint or the outboard joint as an assembly.

DRIVESHAFT REMOVAL

1. Raise the vehicle on the hoist.
2. Remove the front wheels.
3. Lift up the locking tab (A) on the spindle nut (B), then remove the nut.

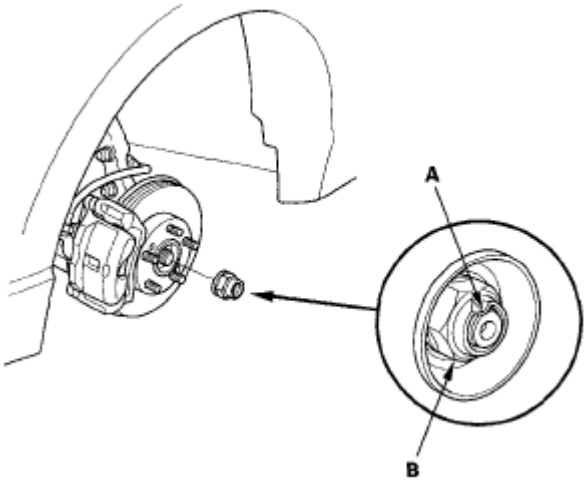


Fig. 4: Identifying Driveshaft Spindle Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Drain the transmission fluid. Reinstall the drain plug with a new washer:
   - 5-speed Manual transmission (except Si) (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**)
   - 6-speed Manual transmission (Si) (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
   - Automatic transmission (see **ATF REPLACEMENT**)
5. Remove the nuts and bolt, then separate the lower arm with a prybar.

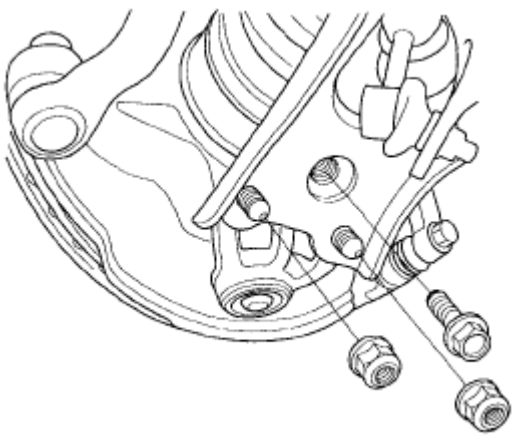


Fig. 5: Identifying Lower Arm Nuts And Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the driveshaft outboard joint from the front wheel hub using a plastic hammer.

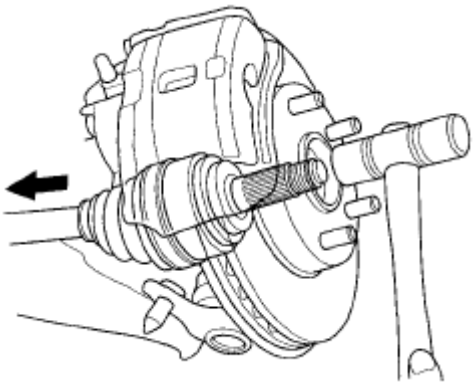


Fig. 6: Taping Driveshaft Outboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Pull the knuckle outward, and remove the driveshaft outboard joint from the front wheel hub.

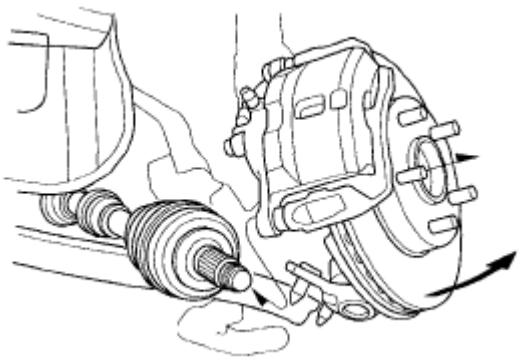


Fig. 7: Identifying Driveshaft Outboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft using a drift and hammer (M/T model). Pry the inboard joint (B) from the transmission housing with a prybar (A/T model). Remove the driveshaft as an assembly.

NOTE: Do not pull on the driveshaft (C) or the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the oil seal.

M/T model:

M/T model:

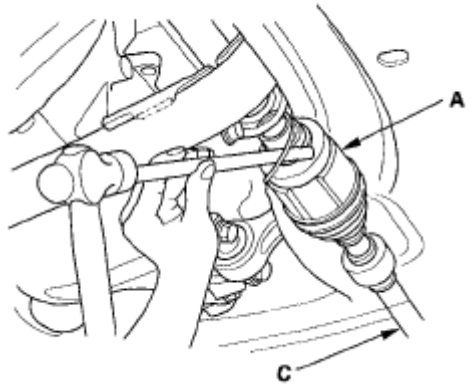


Fig. 8: Taping Inboard Joint - M/T Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T model:

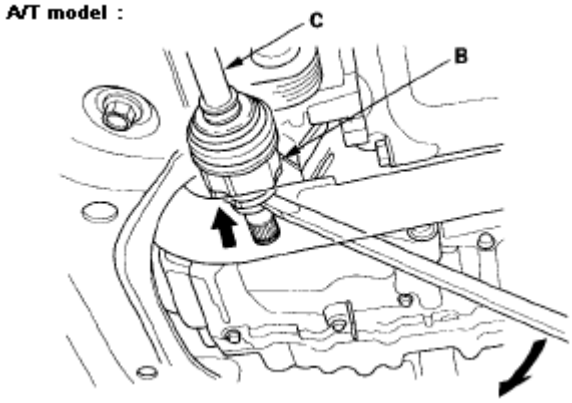


Fig. 9: Prying Inboard Joint - A/T Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Left driveshaft: Pry the inboard joint (A) from the transmission housing with a prybar. Remove the driveshaft as an assembly.

NOTE: Do not pull on the driveshaft (B) or the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the oil seal.

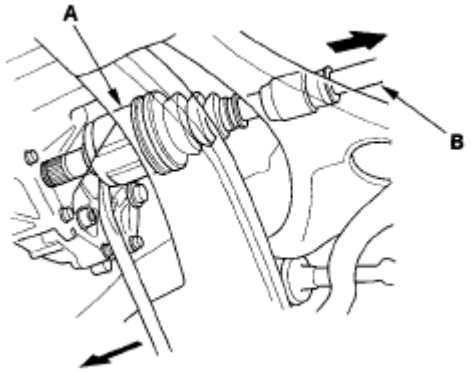


Fig. 10: Pulling Driveshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVESHAFT DISASSEMBLY

Special Tools Required

- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8"-18 UNF, commercially available

INBOARD JOINT SIDE

1. Remove the set ring (A) from the inboard joint.

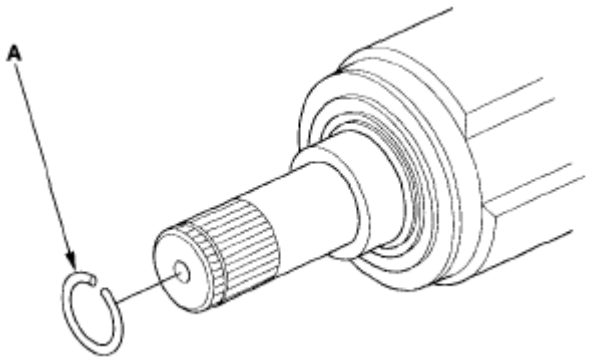


Fig. 11: Identifying Set Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the boot bands. Be careful not to damage the boot.
    - If the boot band is a welded type (A), cut the boot band.
    - If the boot band is a double loop type (B), lift up the band bend (C), and push it into the clip (D).
    - If the boot band is a low profile type (E), pinch the boot band using the commercially available boot band pliers (F).

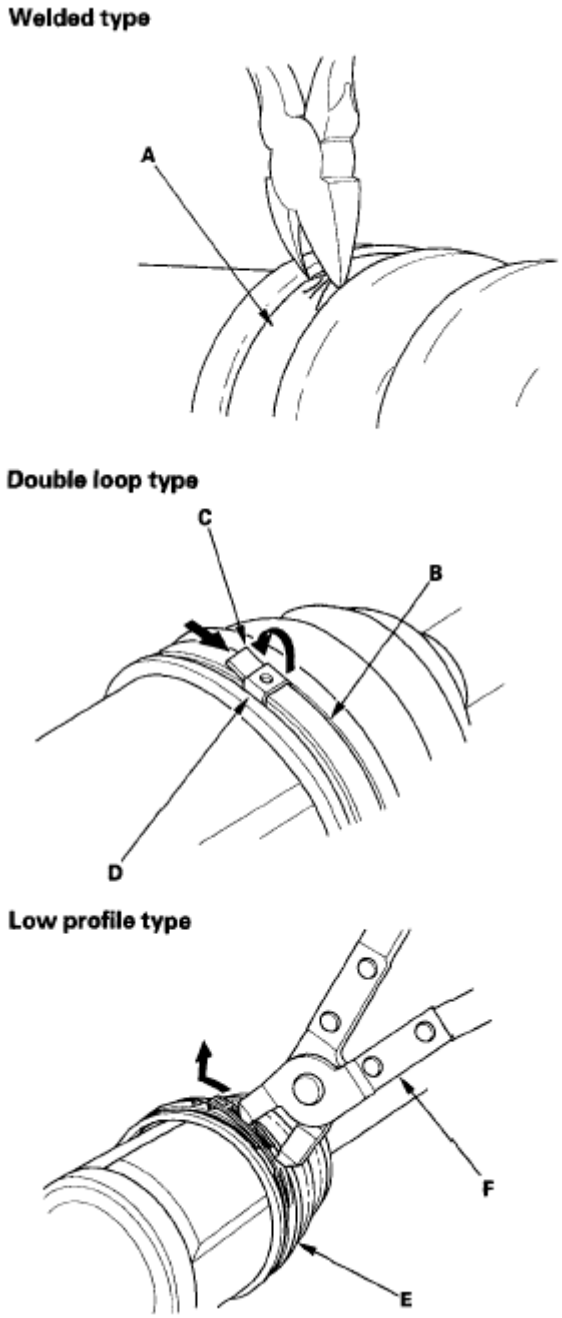


Fig. 12: Identifying Boot Band - Welded Type
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make marks (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.

NOTE: Do not engrave or scribe marks on the rolling surfaces.

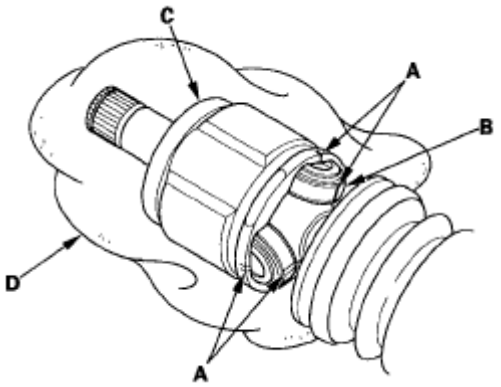


Fig. 13: Identifying Scribe Marks On Rolling Surfaces
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Use a paint pen to make marks (A) on the rollers (B) and spider (C) to identify the locations of the rollers on the spider, then remove the rollers.

NOTE: Do not engrave or scribe marks on the rolling surfaces.

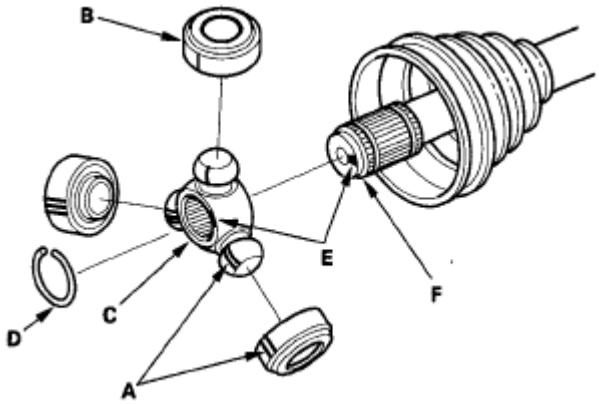


Fig. 14: Identifying Driveshaft Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the circlip (D).
6. Mark (E) the spider and driveshaft (F) to identify the position of the spider on the shaft.
7. Remove the spider.
8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging to the boot.

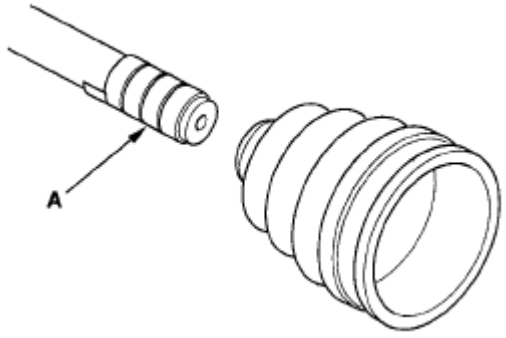


Fig. 15: Identifying Driveshaft Vinyl Tape
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the inboard boot. Be careful not to damage the boot.
10. Remove the vinyl tape.

Outboard Joint Side:

1. Remove the boot bands (A). Lift up the three tabs (B) with a screwdriver. Be careful not to damage the boot.

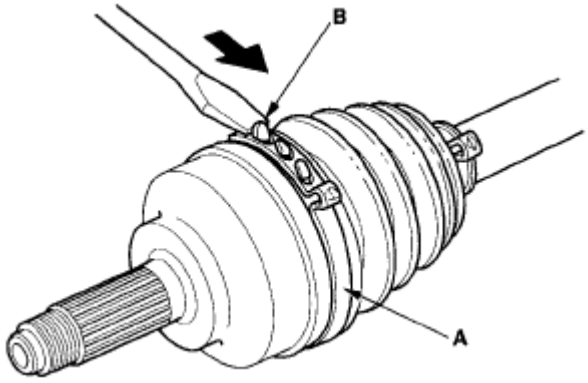


Fig. 16: Identifying Boot Bands
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.

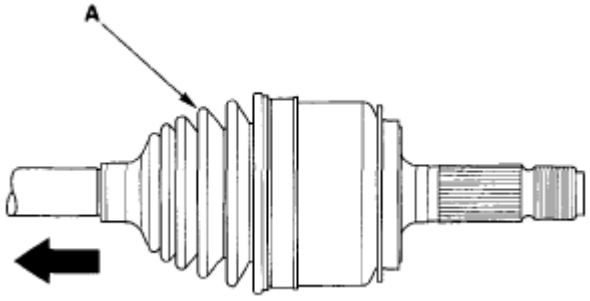


Fig. 17: Identifying Outboard Boot
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint rim (C).

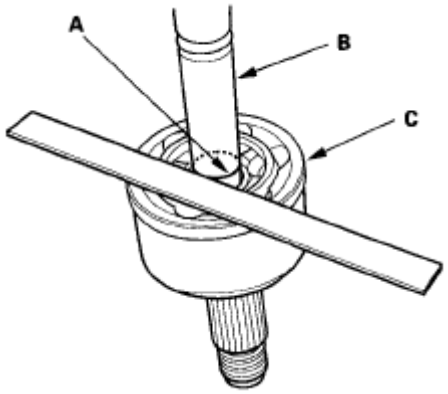


Fig. 18: Identifying Make A Mark On Driveshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Securely clamp the driveshaft in a bench vise with a shop towel.

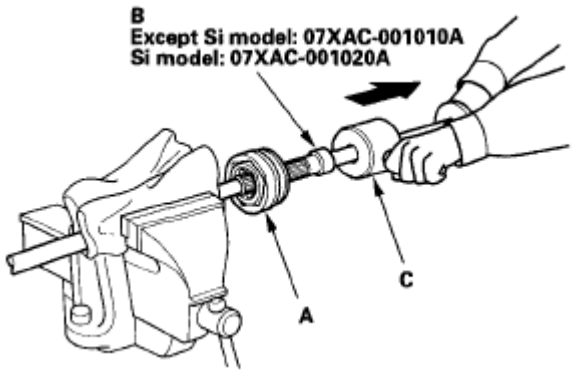


Fig. 19: Clamping Driveshaft In Bench Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the outboard joint (A) using the threaded adapter (B) and a commercially available 5/8"-18 UNF slide hammer (C).
7. Remove the driveshaft from the bench vise.
8. Remove the stop ring from the driveshaft.

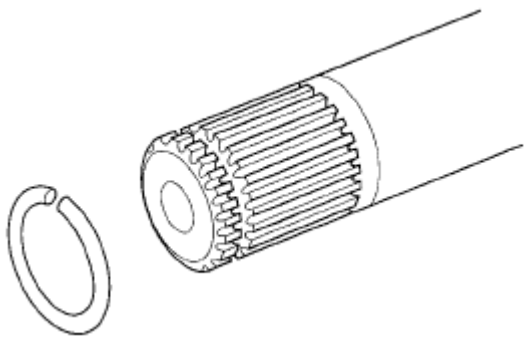


Fig. 20: Identifying Stop Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging to the boot.

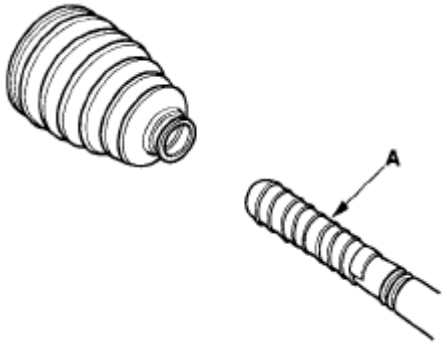


Fig. 21: Identifying Driveshaft Vinyl Tape
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

DYNAMIC DAMPER REPLACEMENT

1. Remove the inboard joint (see **INBOARD JOINT SIDE**).
2. Remove the double loop band or low profile bands (see step 2).
    - If the band is a welded type, cut the band.
    - If the band is a double loop type, lift up the band bend, and push it into the clip.
    - If the band is a low profile type, pinch the band using a commercially available boot band pliers.
3. Remove the dynamic damper. Type A

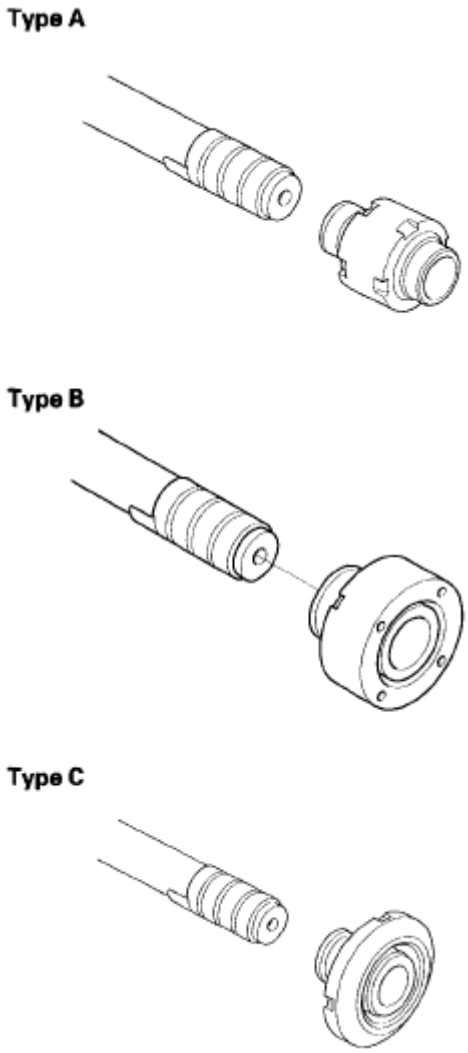


Fig. 22: Identifying Dynamic Damper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DYNAMIC DAMPER TYPE

Model	Factory		Type
5-speed M/T Model (Except Si)	Suzuka Factory	Right	Type A
		Left	Type A
	Except Suzuka Factory	Right	Type A
		Left	Type A
6-speed M/T Model (Si)		Right	Type B
		Left	Type B
A/T Model	Suzuka Factory	Right	Type A
		Left	Type C
	Except Suzuka Factory	Right	Type A
		Left	Type C

4. Install the new dynamic damper and adjust the position of the new dynamic damper to these measurements

NOTE: Be careful not to swap the dynamic damper.

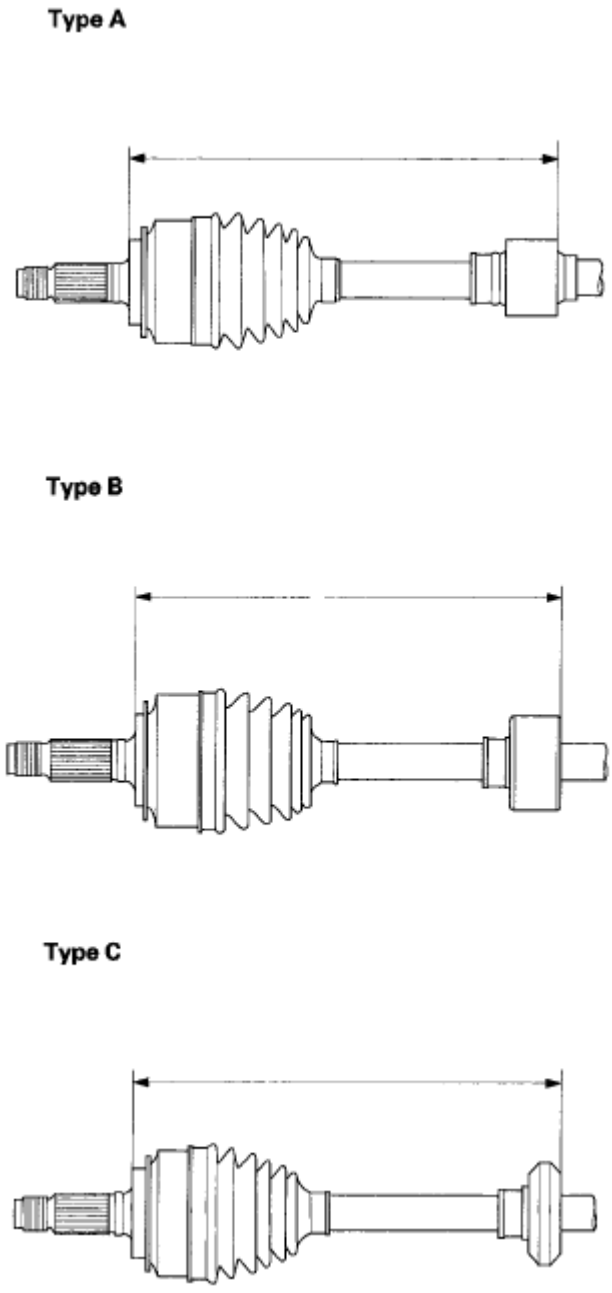


Fig. 23: Identifying Dynamic Damper Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DYNAMIC DAMPER POSITION

Model	Factory		Type	Measurement
5-speed M/T Model (Except Si)	Suzuka Factory	Right	Type A	292.5-297.5 mm (11.70-11.90 in.)
		Left	Type A	292.5-297.5 mm (11.70-11.90 in.)
	Except Suzuka	Right	Type A	293.0-297.0 mm (11.72-11.88 in)

	Factory	Left	Type A	293.0-297.0 mm (11.72-11.88 in.)
6-speed M/T Model (Si)		Right	Type B	284.0-288.0 mm (11.18-11.34 in.)
		Left	Type B	284.0-288.0 mm (11.18-11.34 in.)
A/T Model	Suzuka Factory	Right	Type A	558.0-563.0 mm (22.32-22.52 in.)
		Left	Type C	274.5-279.5 mm (10.98-11.18 in.)
	Except Suzuka Factory	Right	Type A	558.5-562.5 mm (22.34-22.50 in.)
		Left	Type C	275.0-279.0 mm (11.00-11.18 in.)

5. Install the dynamic damper band (see step 10).
6. Install the inboard joint (see **INBOARD JOINT SIDE**).

DRIVESHAFT REASSEMBLY

EXPLODED VIEW

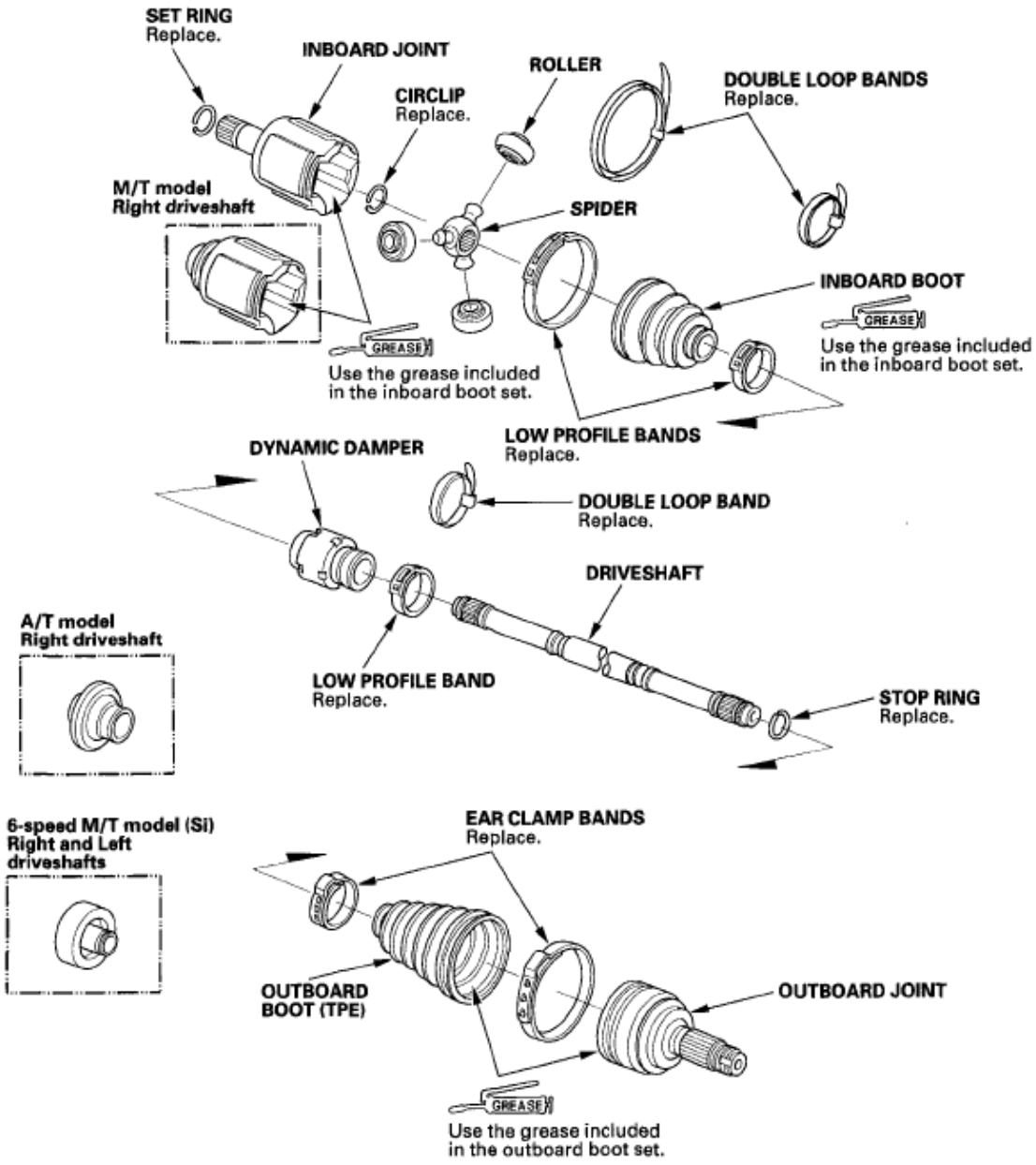


Fig. 24: Exploded View Of Driveshaft Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Boot band tool, KD-3191 or equivalent commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent commercially available

NOTE: Refer to the exploded view, as needed, during this procedure. See Fig. 24.

INBOARD JOINT SIDE

1. Wrap the splines with vinyl tape (A) to prevent damaging to the inboard boot.

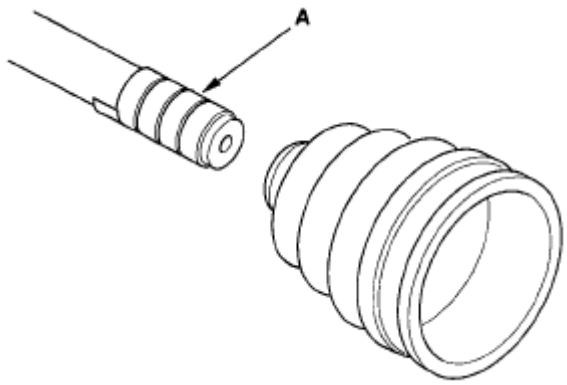


Fig. 25: Identifying Splines With Vinyl Tape
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.
3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.

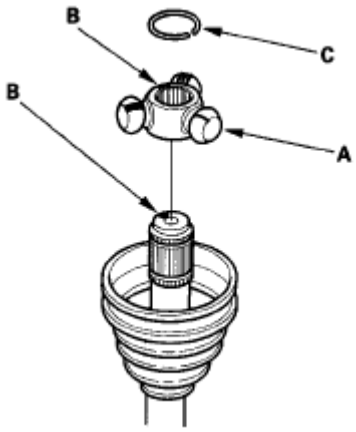


Fig. 26: Aligning Marks On Spider Of Driveshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Fit the circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.
5. Fit the rollers (A) onto the spider (B) with the high shoulders facing outward, and note these items:
    - Reinstall the rollers in their original positions on the spider by aligning the marks (C) you made.
    - Hold the driveshaft pointed up to prevent the rollers from falling off.

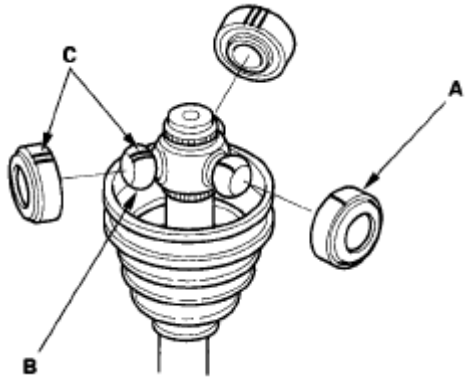


Fig. 27: Identifying Marks Driveshaft Spider
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Pack the inboard joint with the joint grease included in the new in board boot set.

   Grease quantity

   Inboard joint

   5-speed M/T model (except Si):

   130-140 g {4.6-4.9 oz)

   6-speed M/T model(Si):

   180-200 g (6.3-7.0 oz)

   A/T model:

   100-110 g (3.5-3.9 oz)

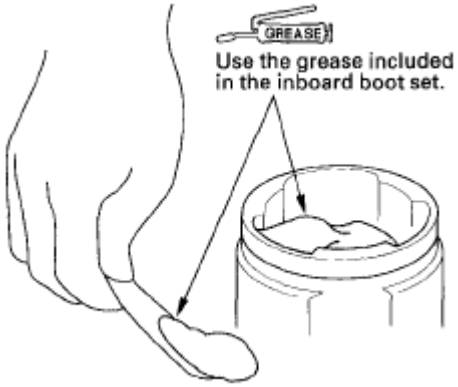


Fig. 28: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Fit the inboard joint onto the driveshaft and note these items:
   - Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.

- Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.

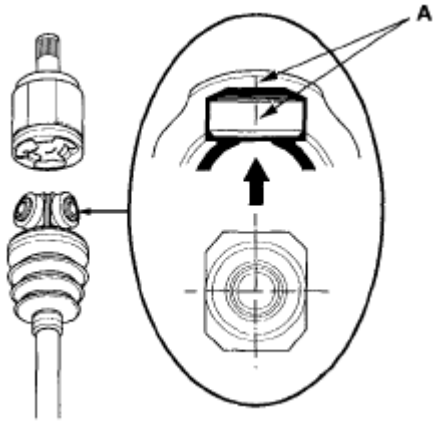


Fig. 29: Identifying Marks On Inboard Joint And Rollers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Fit the boot (A) ends onto the driveshaft (B) and the inboard joint (C).

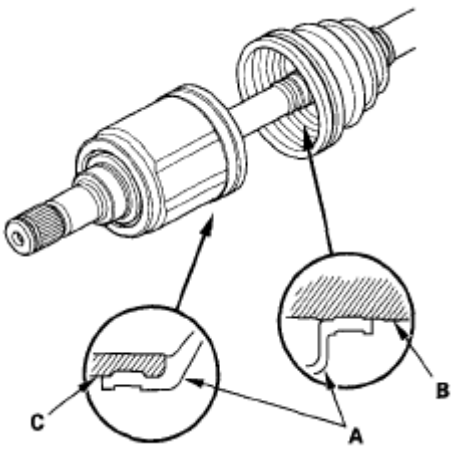


Fig. 30: Locating Driveshaft And Inboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Adjust the length of the driveshaft to the figure that is on the chart, then adjust the boots to halfway between full compression and full extension.

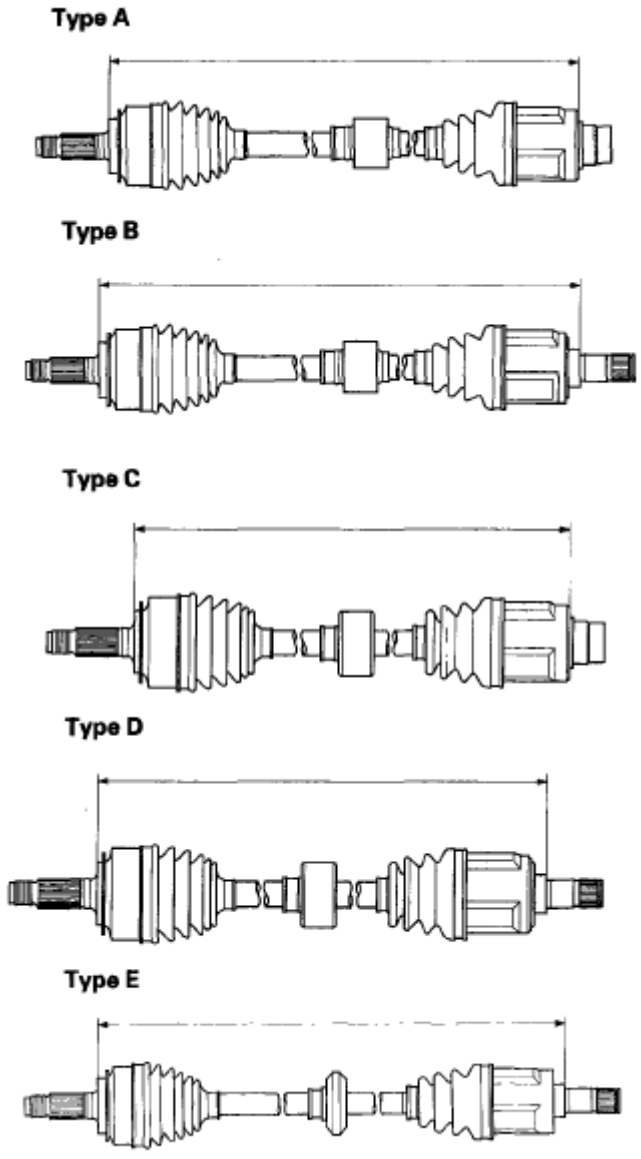


Fig. 31: Identifying Driveshaft Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVESHAFT LENGTH (5-SPEED M/T MODEL (EXCEPT SI))

Factory		Type	Measurement
Japan-Produced	Right	Type A	487.0-502.0 mm (19.88-20.08 in.)
	Left	Type B	509.0-514.0 mm (20.36-20.56 in.)
North America-Produced	Right	Type A	493.0-498.0 mm (19.72-19.92 in.)
	Left	Type B	505.0-510.0 mm (20.20-20.40 in.)

DRIVESHAFT LENGTH (6-SPEED M/T MODEL (SI))

Factory		Type	Measurement
	Right	Type C	486.0-491.8 mm (19.17-19.36 in.)
	Left	Type D	510.7-515.7 mm (20.11-20.30 in.)

DRIVESHAFT LENGTH (A/T MODEL)

Factory		Type	Measurement
Japan-Produced	Right	Type B	803.0-808.0 mm (32.12-32.32 in.)
	Left	Type E	511.0-516.0 mm (20.44-20.64 in.)
North America-Produced	Right	Type B	807.0-812.0 mm (32.28-32.48 in.)
	Left	Type E	507.0-512.0 mm (20.28-20.48 in.)

10. Install new double loop bands (replacement part only).
11. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

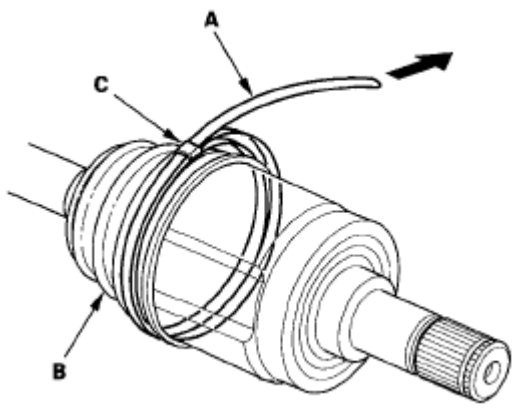


Fig. 32: Twisting In Direction Of Forward Rotation Of Driveshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Pull up the slack in the band by hand.
13. Mark a position (A) on the band 10-14 mm (0.4-0.6 in.) from the clip (B).

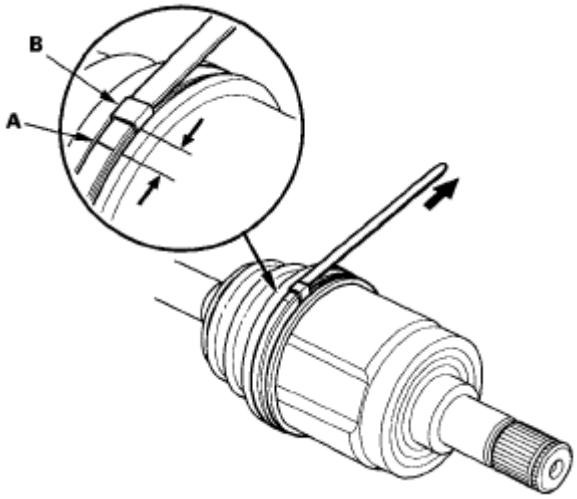


Fig. 33: Identifying Mark Position On Band From Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Thread the free end of the band through the nose section of the commercially available boot band tool (A), and into the slot on the winding mandrel

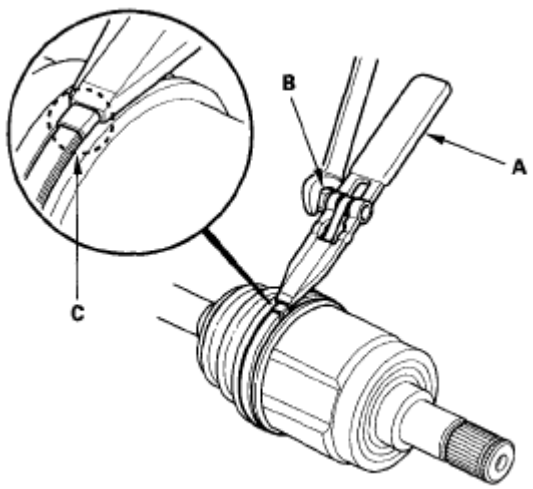


Fig. 34: Tightening Band Until Marked Spot
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Using a wrench on the winding mandrel of the boot band tool, tighten the band until the marked spot (C) on the band meets the edge of the clip.
16. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

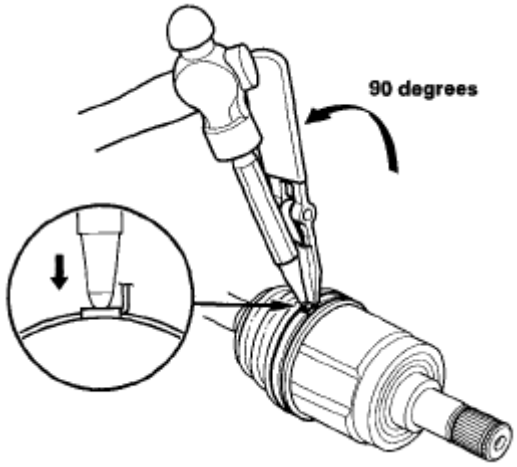


Fig. 35: Lifting Up Boot Band Tool To Bend
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5-10 mm (0.2-0.4 in.) tail protruding from the clip.

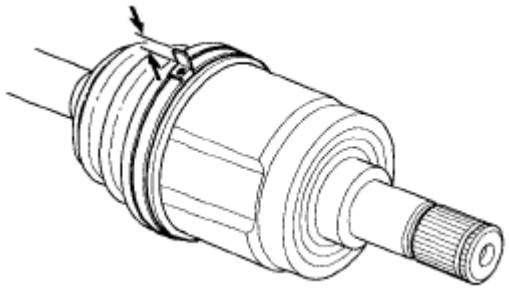


Fig. 36: Identifying Band Tail Protruding
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Bend the band end (A) by tapping it down with a hammer.

NOTE:

- **Make sure the band and clip do not interfere with anything on the vehicle and the band does not move.**
- **Remove any grease remaining on the surrounding surfaces.**

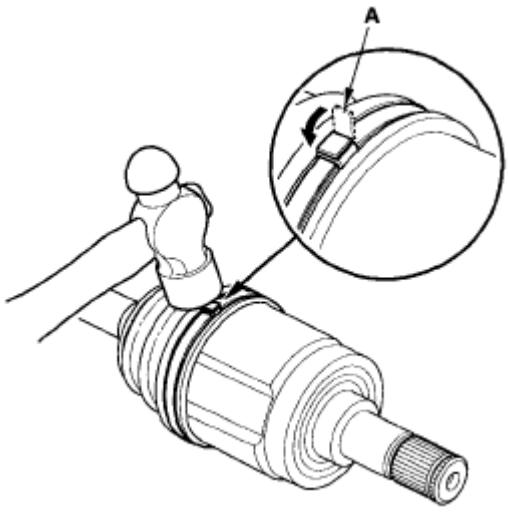


Fig. 37: Tapping Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Repeat steps 11 through 18 for the band on the other end of the boot.

OUTBOARD JOINT SIDE

1. Wrap the splines with vinyl tape (A) to prevent damaging to the outboard boot.

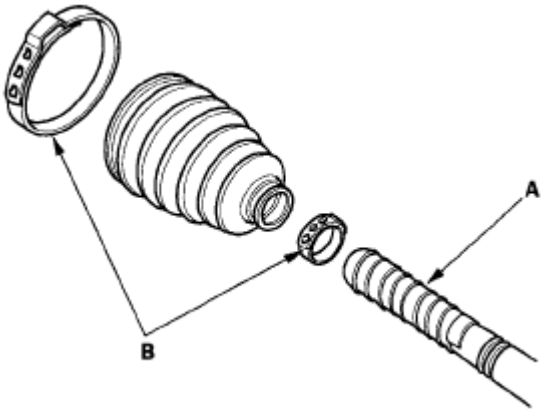


Fig. 38: Identifying Clamp Bands And Splines With Vinyl Tape
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.
3. Install the new stop ring into the driveshaft groove (A).

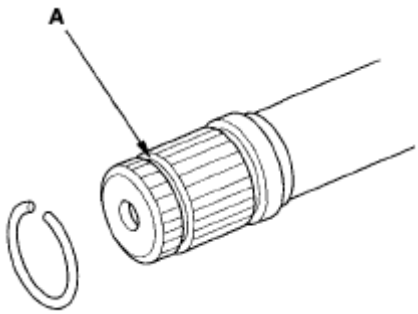


Fig. 39: Identifying Stop Ring Into Driveshaft Groove
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Pack about 35 g (1.2 oz) grease included in the new outboard boot set into the driveshaft hole in the outboard joint.

NOTE: If you are installing a new outboard joint, the grease is already installed.

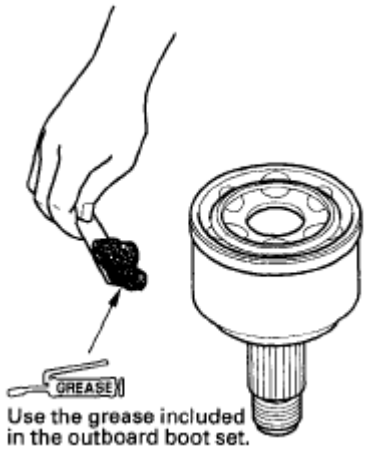


Fig. 40: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.

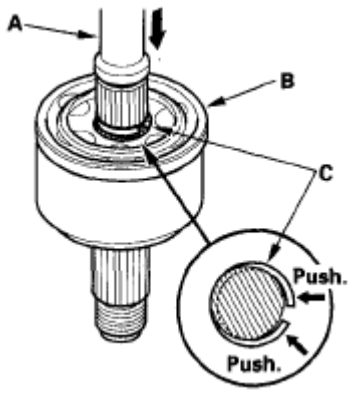


Fig. 41: Locating Driveshaft Stop Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit them from a height of about 10 cm (4 in.) onto a had surface.

NOTE: Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.

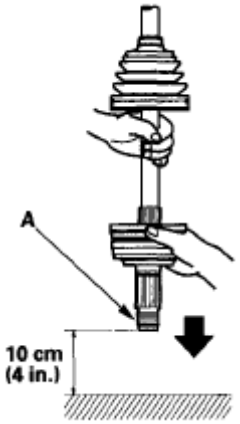


Fig. 42: Locating Threaded Section Of Outboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Check the alignment of the paint mark (A) you made with the outboard joint rim (B).

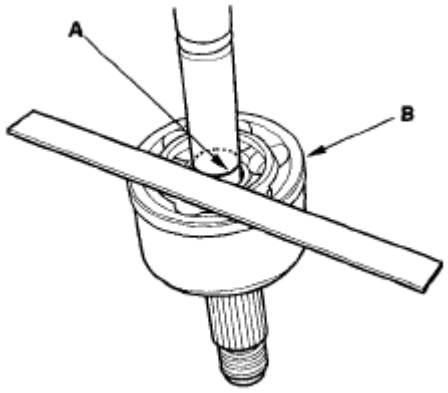


Fig. 43: Checking Alignment Of Paint Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Pack the outboard joint (A) with the remaining grease included in the new outboard boot set.

Total grease quantity

Outboard joint

5-speed M/T model (except Si):

105-115 g (3.7-4.0 oz)

6-speed M/T model (Si):

110-130 g (3.8-4.5 oz)

A/T model:

95-105 g (3.4-3.7 oz)

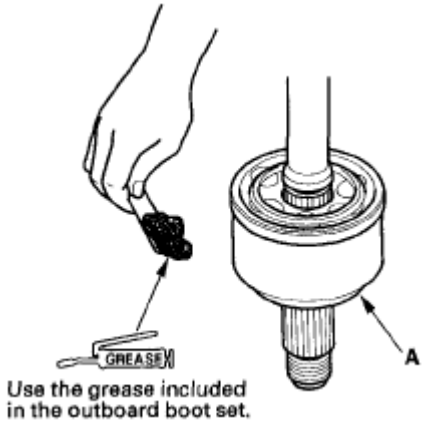


Fig. 44: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).

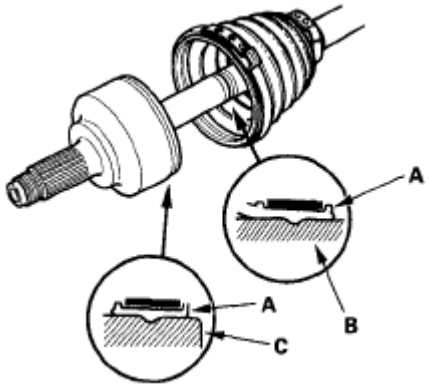


Fig. 45: Identifying Outboard Joint Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Adjust the length of the driveshaft to the figure as shown, then adjust the boots to halfway between full compression and full extension.

    Doing this prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

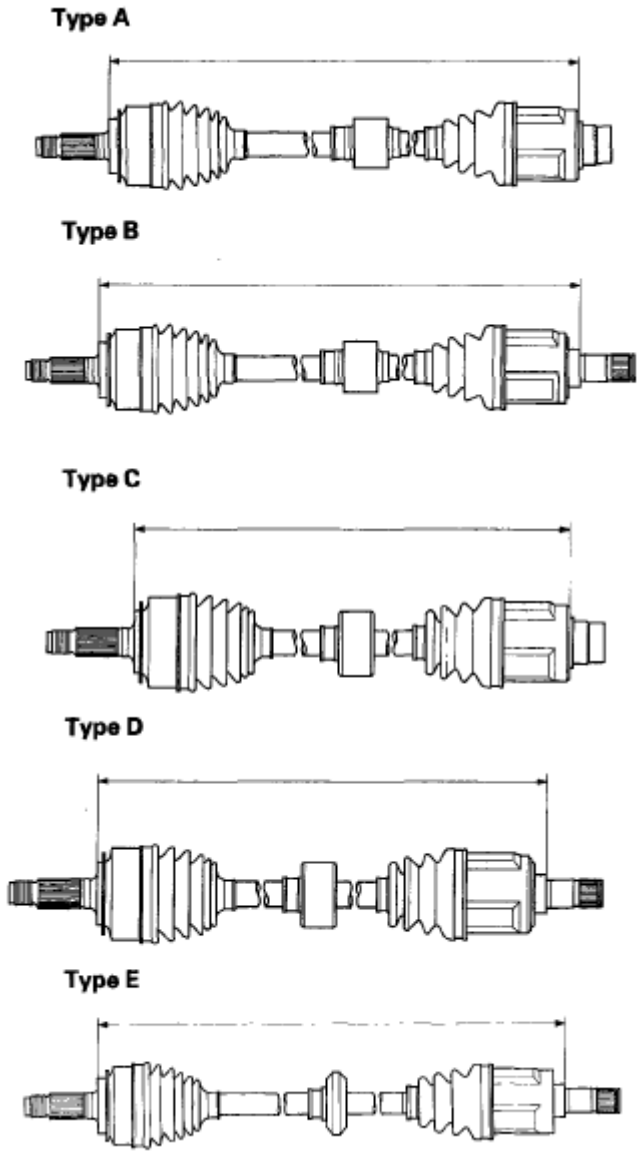


Fig. 46: Identifying Driveshaft Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVESHAFT LENGTH (5-SPEED M/T MODEL (EXCEPT SI))

Factory		Type	Measurement
Japan-Produced	Right	Type A	487.0-502.0 mm (19.88-20.08 in.)
	Left	Type B	509.0-514.0 mm (20.36-20.56 in.)
North America-Produced	Right	Type A	493.0-498.0 mm (19.72-19.92 in.)
	Left	Type B	505.0-510.0 mm (20.20-20.40 in.)

DRIVESHAFT LENGTH (6-SPEED M/T MODEL (SI))

Factory		Type	Measurement
	Right	Type C	486.0-491.8 mm (19.17-19.36 in.)
	Left	Type D	510.7-515.7 mm (20.11-20.30 in.)

DRIVESHAFT LENGTH (A/T MODEL)

Factory		Type	Measurement
Japan-Produced	Right	Type B	803.0-808.0 mm (32.12-32.32 in.)
	Left	Type E	511.0-516.0 mm (20.44-20.64 in.)
North America-Produced	Right	Type B	807.0-812.0 mm (32.28-32.48 in.)
	Left	Type E	507.0-512.0 mm (20.28-20.48 in.)

11. Close the ear portion (A) of the band with a commercially available boot band pliers Kent Moore J-35910 or equivalent (B).

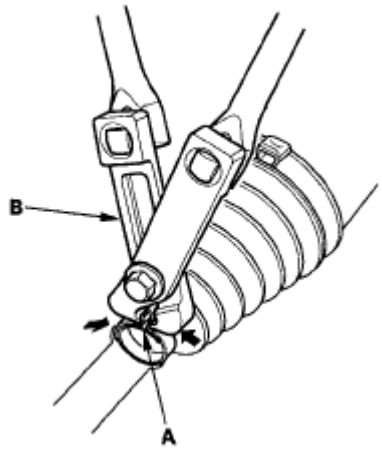


Fig. 47: Closing Portion Of Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band tighter.

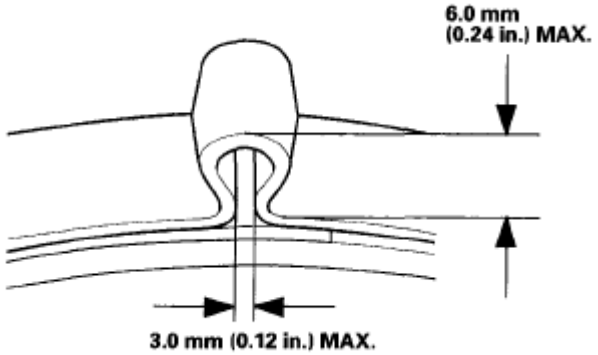


Fig. 48: Identifying Clearance Between Closed Ear Portion Of Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Repeat steps 11 and 12 for the band on the other end of the boot.

DRIVESHAFT INSTALLATION

NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are not dusty or dirty.

1. Apply about 5 g (0.18 oz) moly 60 paste (P/N 08734-0001) to the contact area of the outboard joint and the front wheel bearing.

NOTE: The paste helps to prevent noise and vibration.

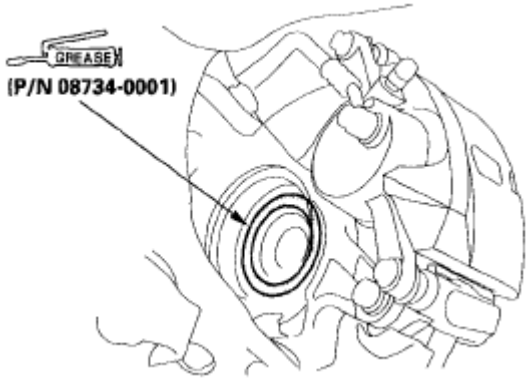


Fig. 49: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new set ring onto the set ring groove of the driveshaft.

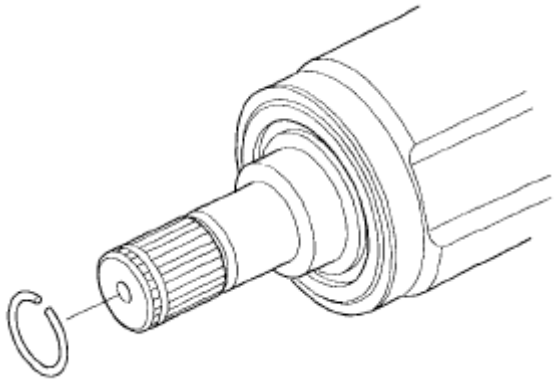


Fig. 50: Identifying Driveshaft Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. M/T model: Apply specified grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2-3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

   Grease quantity

   5-speed M/T model (except Si):

   0.5-1.0 g (0.02-0.04 oz)

   6-speed M/T model (Si):

   2.0-3.0 g (0.08-0.12 oz)

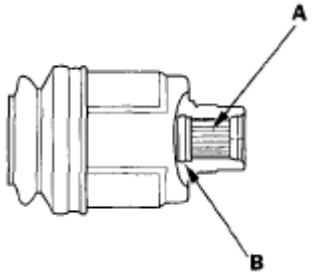


Fig. 51: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

5. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) (M/T model) until the set ring (D) locks in the groove (E).

   NOTE: Insert the driveshaft horizontally to prevent damaging the differential oil seal.

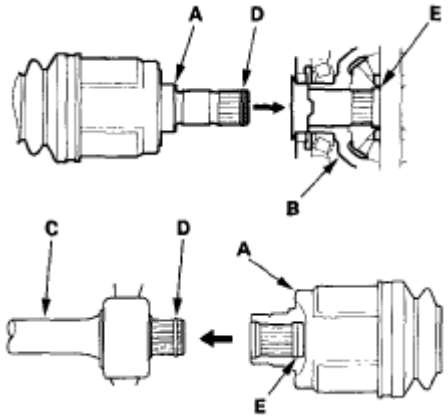


Fig. 52: Inserting Inboard Of Driveshaft Into Differential
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the outboard joint (A) into the front hub (B).

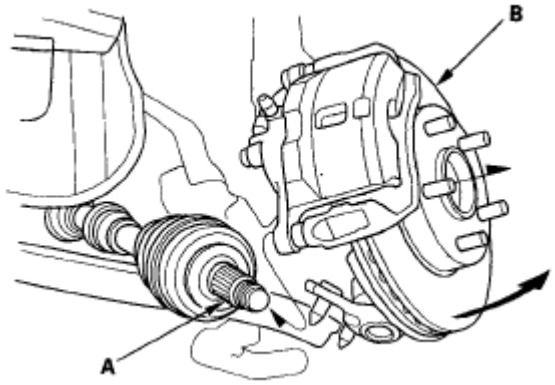


Fig. 53: Identifying Outboard Joint And Front Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the knuckle (A) onto the lower arm (B). During installation, install a new flange bolt and new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (C), the nut on the rear (D), then the bolt (E).

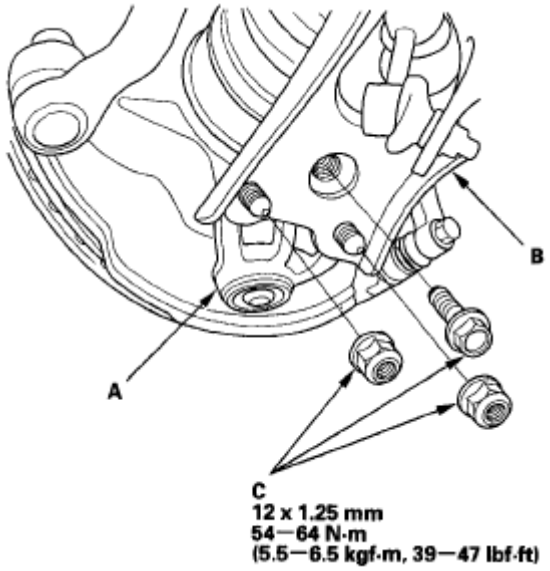


Fig. 54: Identifying Nuts And Bolt With Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Apply a small amount of engine oil to the seating surface of the new spindle nut (A).

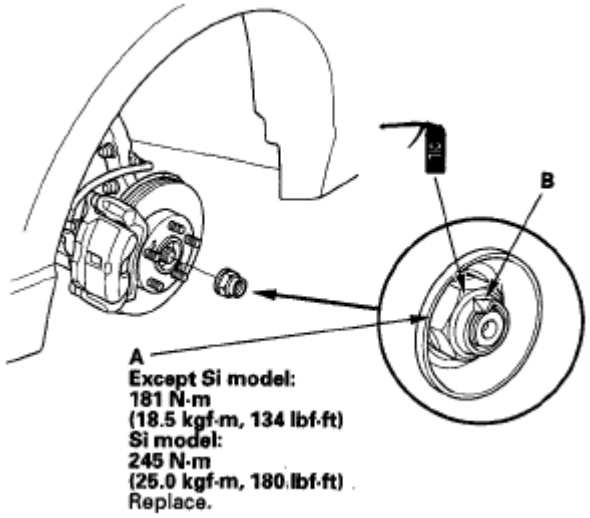


Fig. 55: Identifying Spindle Nut With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install a new spindle nut, then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.
10. Clean the mating surfaces of the brake discs and the front wheels, then install the front wheels.
11. Turn the front wheels by hand, and make sure there is no interference between the driveshaft and surrounding parts.
12. Refill the transmission with the recommended transmission fluid:
    - 5-speed Manual transmission (except Si) (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**)
    - 6-speed Manual transmission (Si) (see **TRANSMISSION FLUID INSPECTION AND**

REPLACEMENT).

- Automatic transmission (see **ATF REPLACEMENT**)

13. Lower the vehicle on the lift.
14. Check the front wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).
15. Test-drive the vehicle.

INTERMEDIATE SHAFT REMOVAL

5-SPEED M/T MODEL (EXCEPT SI)

1. Drain the transmission fluid. Reinstall the drain plug with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
2. Remove the right driveshaft (see **DRIVESHAFT REMOVAL**).
3. Remove the lower torque rod bracket (A).

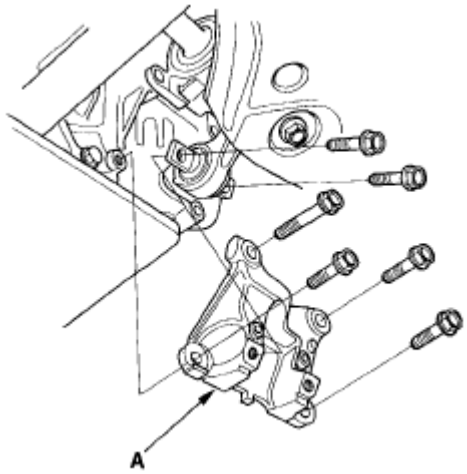


Fig. 56: Identifying Lower Torque Rod Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the flange bolts.

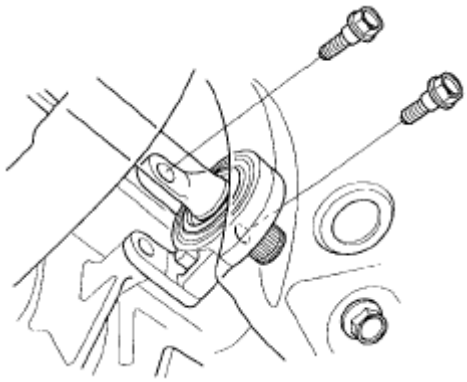


Fig. 57: Identifying Flange Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontal until it is clear of the differential to prevent damaging the differential oil seal (B).

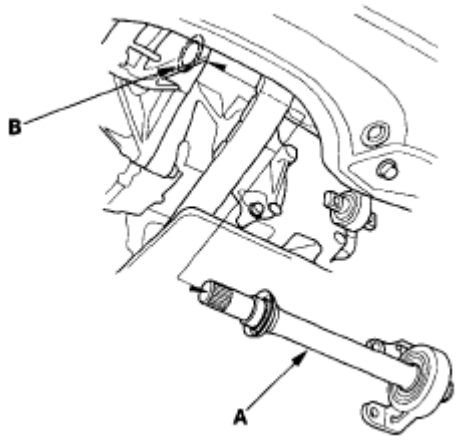


Fig. 58: Identifying Intermediate Shaft And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6-SPEED M/T MODEL (SI)

1. Drain the transmission fluid. Reinstall the drain plug with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
2. Remove the right driveshaft (see **DRIVESHAFT REMOVAL**).
3. Remove the heat shield (A).

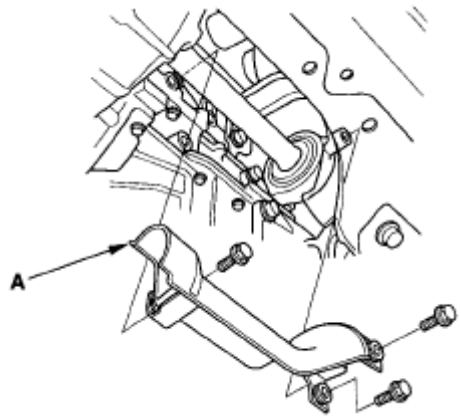


Fig. 59: Identifying Heat Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the flange bolt (A) and the two shoulder bolts (B).

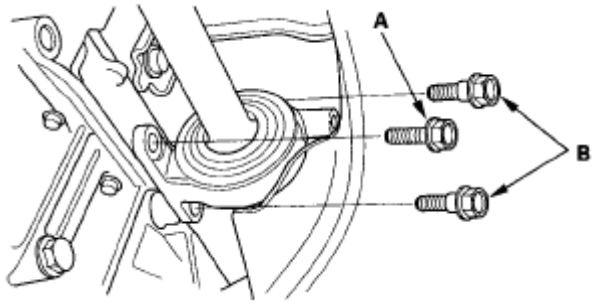


Fig. 60: Identifying Shoulder Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontal until it is clear of the differential to prevent damaging the differential oil seal (B).

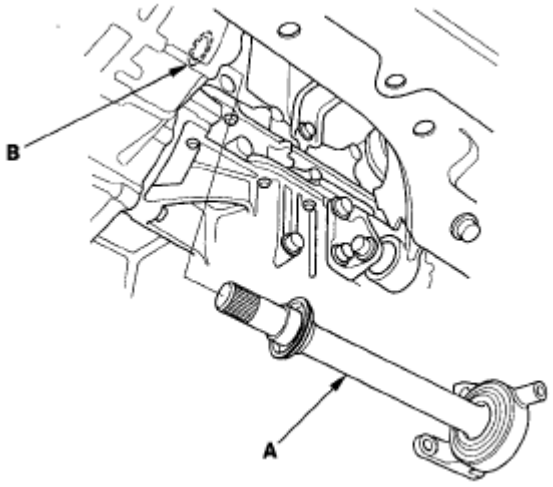


Fig. 61: Identifying Intermediate Shaft And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTERMEDIATE SHAFT DISASSEMBLY

Special Tools Required

- Half shaft base 07NAF-SR30101
- Oil seal driver 07947-SB00100

5-SPEED M/T MODELS (EXCEPT SI)

1. Remove the set ring (A), the outer seal (B), and the external snap ring (C).

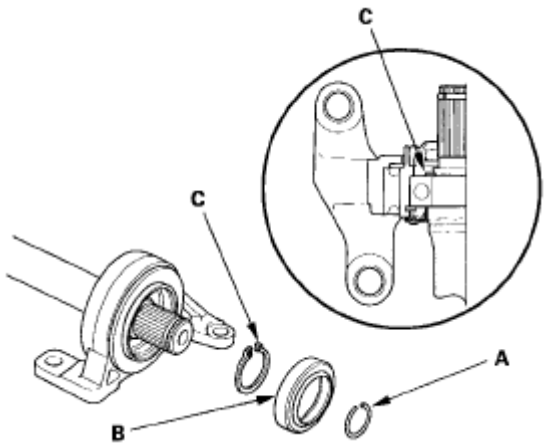


Fig. 62: Identifying External Snap Ring - 5-Speed M/T Models (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using a press. Be careful not to damage the bearing support ring (C) on the intermediate shaft during disassembly.

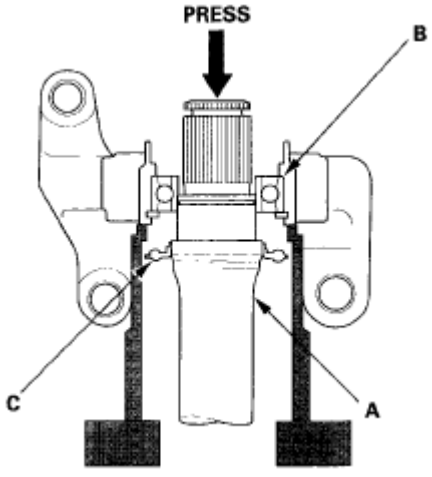


Fig. 63: Pressing Intermediate Shaft Out Of Intermediate Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the internal snap ring.

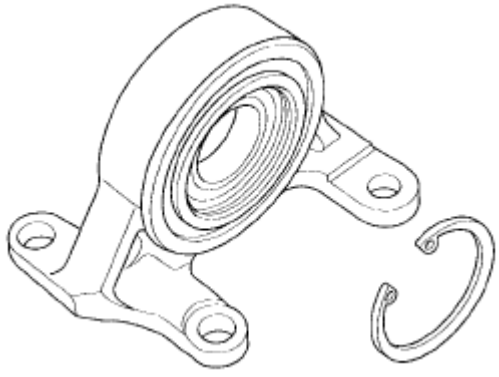


Fig. 64: Identifying Internal Snap Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the half shaft base (C), oil seal driver (D), and a press.

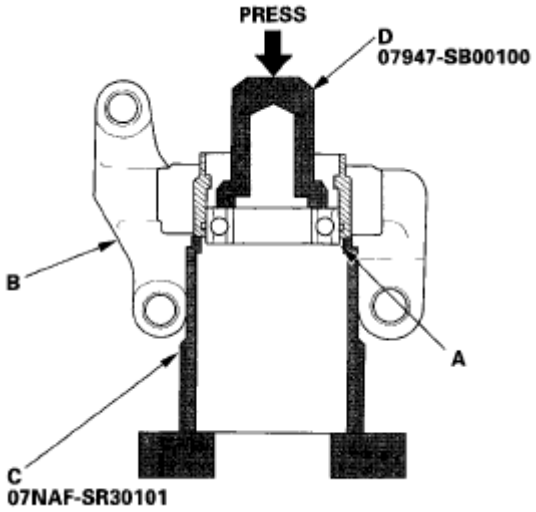


Fig. 65: Pressing Intermediate Shaft Bearing Out Of Bearing Support
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6-SPEED M/T MODEL (SI)

1. Remove the set ring (A), the outer seal (B), and the external snap ring (C).

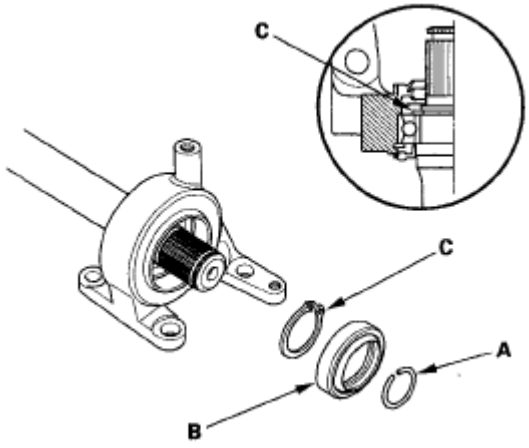


Fig. 66: Identifying External Snap Ring - 6-Speed M/T Model (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using a press. Be careful not to damage the bearing support ring (C) on the intermediate shaft during disassembly.

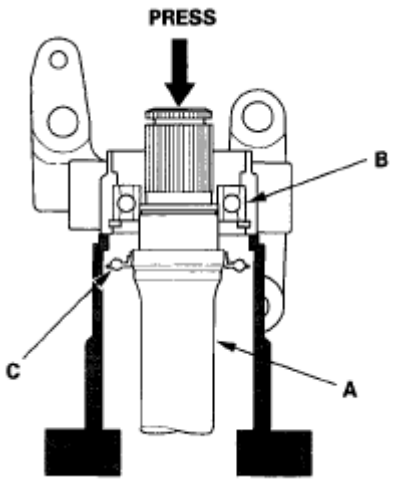


Fig. 67: Pressing Intermediate Shaft Out Of Intermediate Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the internal snap ring.

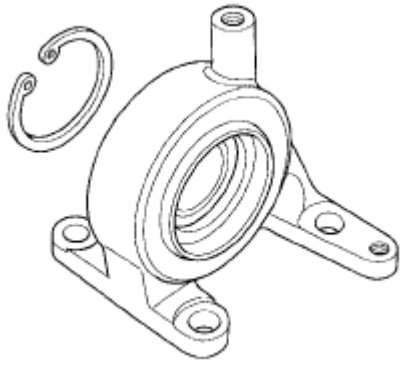


Fig. 68: Identifying Internal Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the half shaft base (C), oil seal driver (D) and a press.

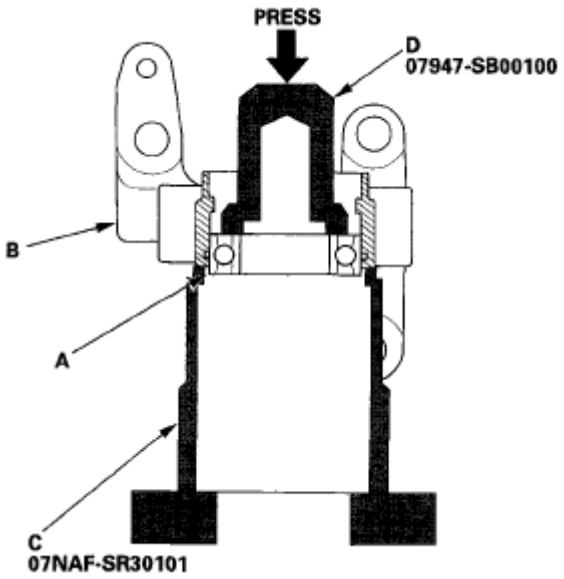


Fig. 69: Pressing Intermediate Shaft Bearing Out Of Bearing Support
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTERMEDIATE SHAFT REASSEMBLY

5-SPEED M/T MODEL (EXCEPT SI)

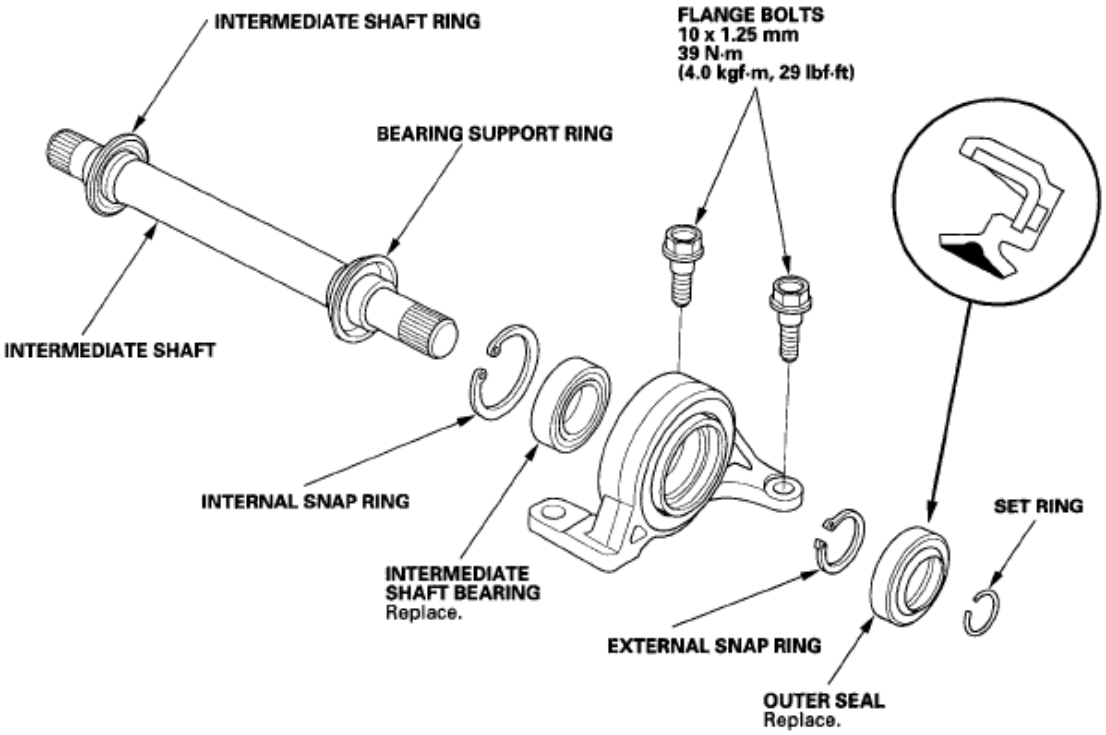


Fig. 70: Exploded View Of Intermediate Shaft - 5-Speed M/T Model (Except Si) With Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Oil seal driver 07GAD-PH70201
- Attachment, 52 x 55 mm 07746-0010400
- Attachment, 35 mm I.D. 07746-0030400
- Driver 07749-0010000

NOTE: Refer to Fig. 70, as needed, during this procedure.

5-speed M/T model (except Si)

1. Clean the disassembled parts with solvent, and dry them with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

2. Press the intermediate shaft bearing (A) into the bearing support (B) using the 52 x 55 mm attachment (C), driver (D), and a press.

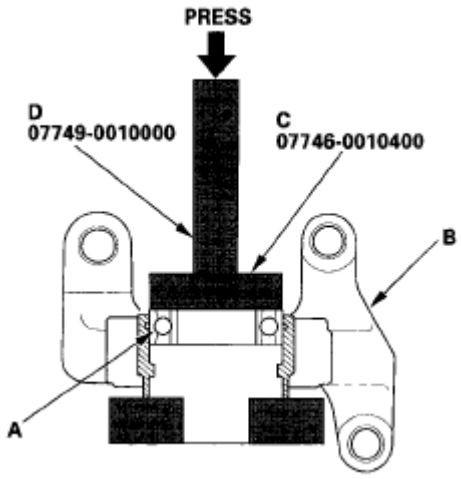


Fig. 71: Pressing Intermediate Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Seat the internal snap ring into the groove of the bearing support.

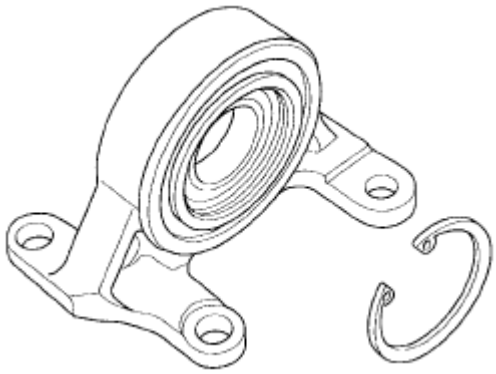


Fig. 72: Identifying Internal Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Press the intermediate shaft (A) into the new shaft bearing (B) using the 35 mm I.D. attachment (C) and a press.

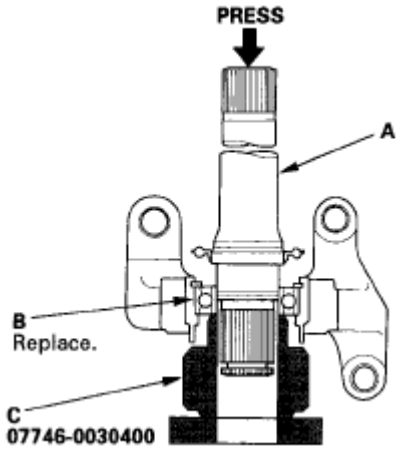


Fig. 73: Pressing Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Seat the external snap ring (A) into the groove of the intermediate shaft (B).

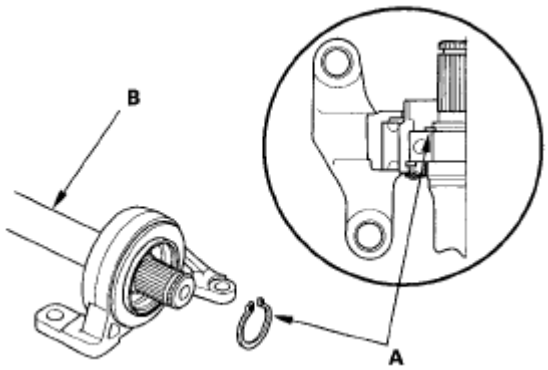


Fig. 74: Identifying External Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the new outer seal (A) into the bearing support (B) using the oil seal driver (C) and a press.

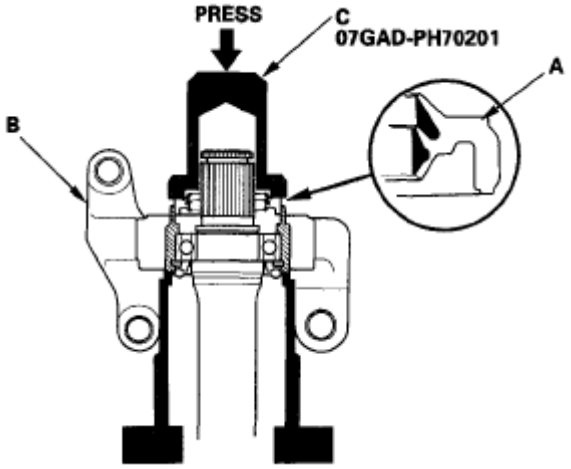


Fig. 75: Identifying Outer Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6-SPEED M/T MODEL (SI)

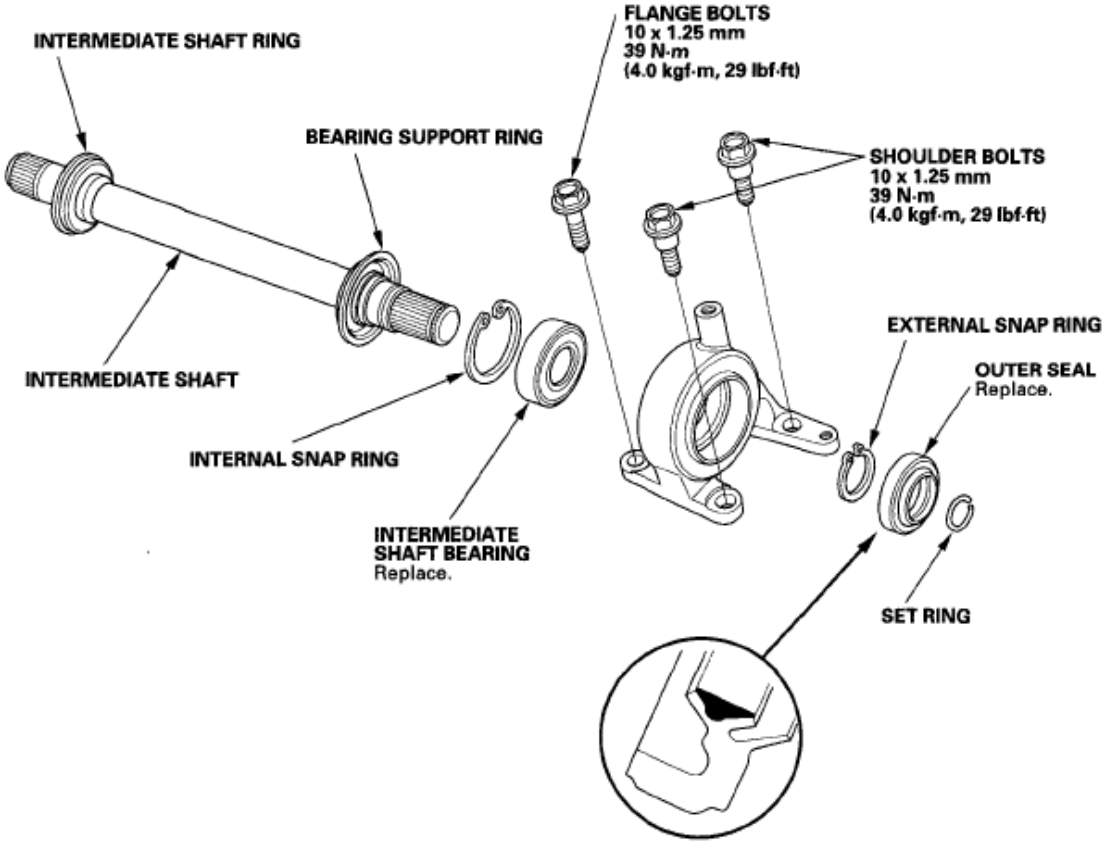


Fig. 76: Exploded View Of Intermediate Shaft - 6-Speed M/T Model (Si) With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Oil seal driver 07GAD-PH70201
- Attachment, 52 x 55 mm 07746-0010400

- Attachment, 35 mm I.D. 07746-0030400
- Driver 07749-0010000

NOTE: Refer to Fig. 76, as needed, during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

2. Press the intermediate shaft bearing (A) into the bearing support (B) using the 52 x 55 mm attachment (C), driver (D), and a press.

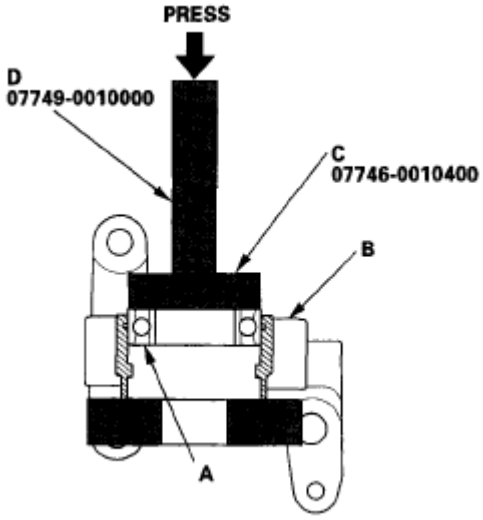


Fig. 77: Pressing Intermediate Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Seat the internal snap ring into the groove of the bearing support.

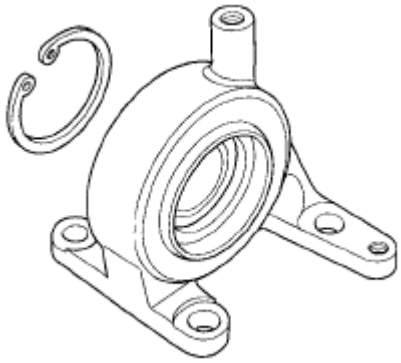


Fig. 78: Identifying Internal Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Press the intermediate shaft (A) into the new shaft bearing (B) using the 35 mm I.D. attachment (C) and a press.

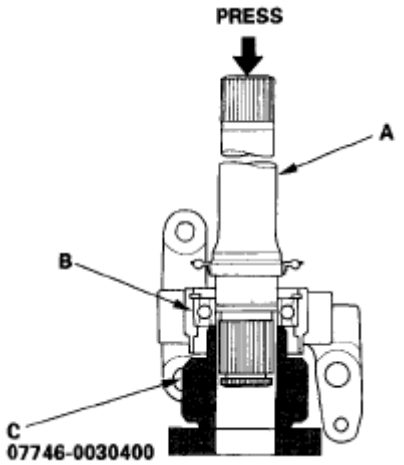


Fig. 79: Pressing Intermediate Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Seat the external snap ring (A) into the groove of the intermediate shaft (B).

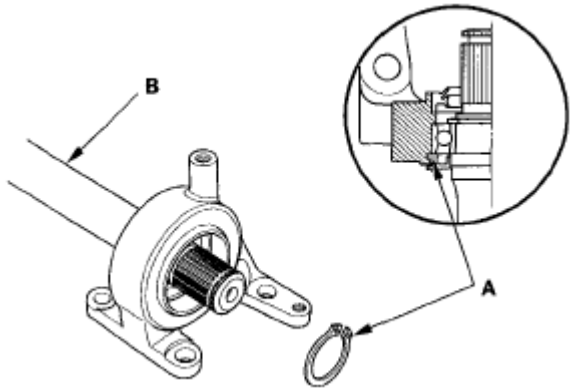


Fig. 80: Identifying External Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the new outer seal (A) into the bearing support (B) using the oil seal driver (C) and a press.

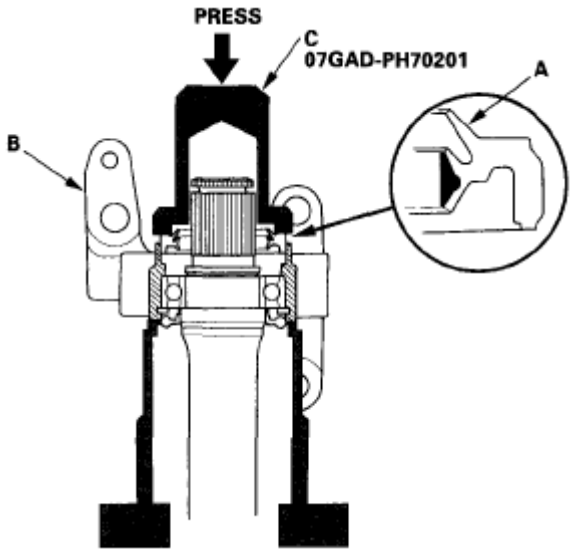


Fig. 81: Identifying Outer Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTERMEDIATE SHAFT INSTALLATION

5-SPEED MODEL (EXCEPT SI)

1. Install the new set ring.

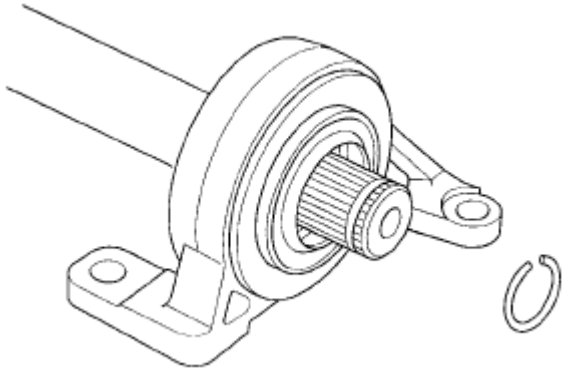


Fig. 82: Identifying Set Ring - 5-Speed Model (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft assembly (A) into the differential until the set ring locks in the groove.

NOTE: Insert the intermediate shaft horizontally to prevent damaging the differential oil seal (B).

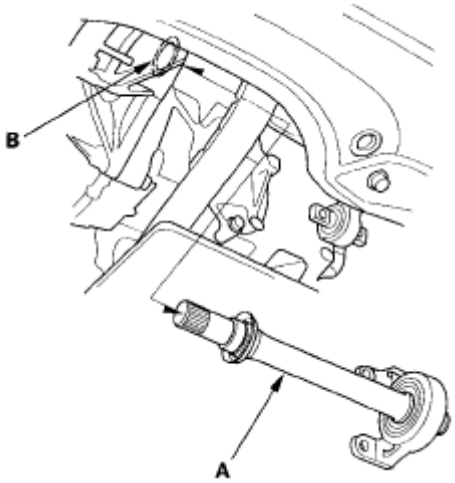


Fig. 83: Identifying Intermediate Shaft Assembly And Differential Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the flange bolts (A).

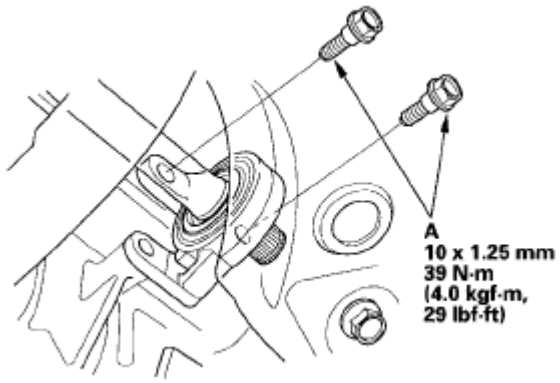


Fig. 84: Identifying Flange Bolts With Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the lower torque rod bracket (A), and tighten the flange bolts in the sequence shown.

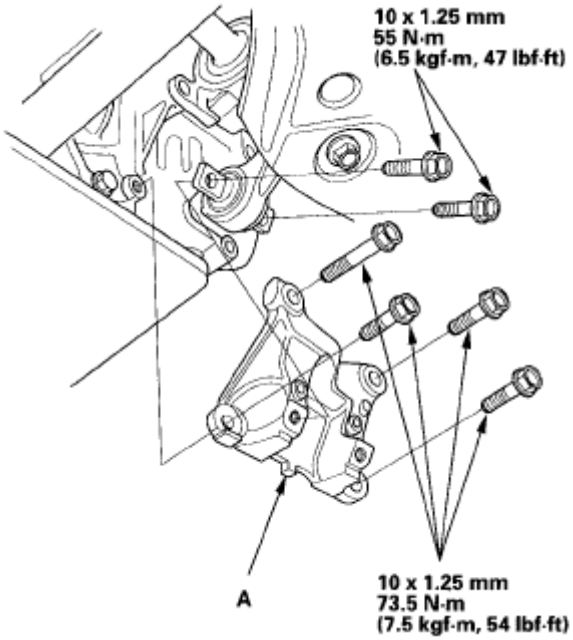


Fig. 85: Identifying Lower Torque Rod Bracket With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the right driveshaft (see **DRIVESHAFT INSTALLATION**).
7. Refill the transmission with the recommended transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
8. Test-drive the vehicle.

6-SPEED M/T MODEL (SI)

1. Install the new set ring.

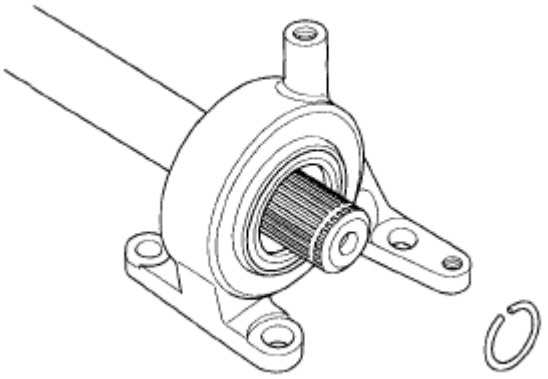


Fig. 86: Identifying Set Ring - 6-Speed M/T Model (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

NOTE: Do not wash the rubber parts with solvent.

3. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks in the groove (E).

NOTE: Insert the driveshaft horizontally to prevent damaging the differential oil seal.

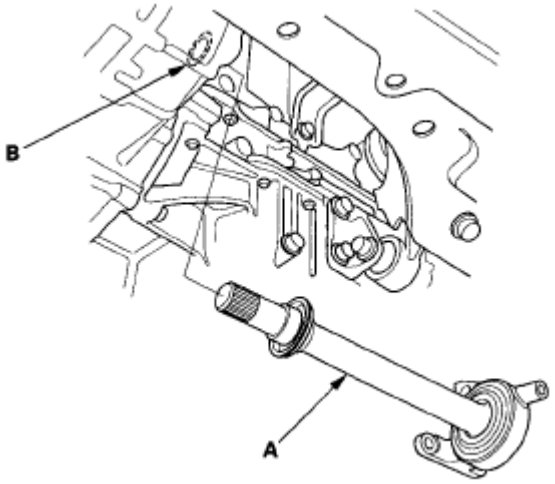


Fig. 87: Identifying Intermediate Shaft Assembly And Differential Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the flange bolt (A) and the two shoulder bolts (B).

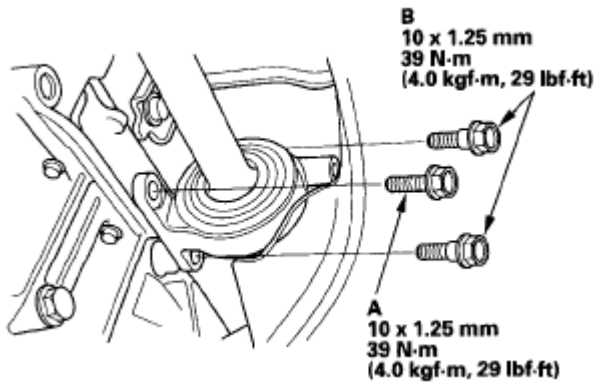


Fig. 88: Identifying Shoulder Bolts With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the heat shield (A), and tighten the three bolts.

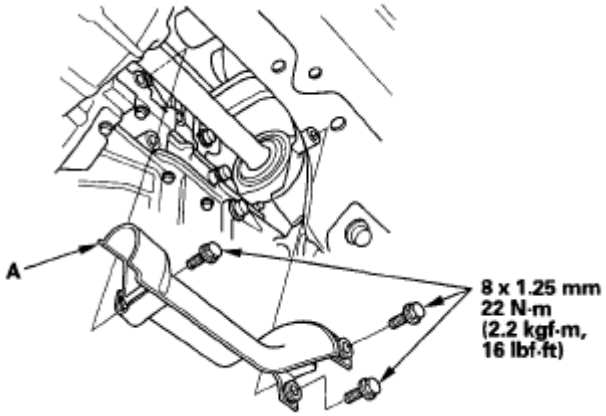


Fig. 89: Identifying Heat Shield Bolts With Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the right driveshaft (see **DRIVESHAFT INSTALLATION**).
7. Refill the transmission with the recommended transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
8. Test-drive the vehicle.

2006-08 DTC INDEX

Civic (Except Hybrid)

AUTOMATIC TRANSMISSION (SPCA) DTCS (A00298134)

NOTE: Retrieval of some diagnostic codes may require the use of special OEM tester or flash method using instrument cluster indicator. For procedures/testing of codes not shown below, refer to appropriate system article.

AUTOMATIC TRANSMISSION (SPCA) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	D Indicator	MIL	Detection Item
P0107	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input (The MIL comes on when the PGM-FI system detects the same failure)
P0108	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input (The MIL comes on when the PGM-FI system detects the same failure)
P0335	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor No signal (The MIL comes on when the PGM-FI system detects the same failure)
P0339	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor Intermittent Interruption (The MIL comes on when the PGM-FI system detects the same failure)
P0365	Blinks	ON or OFF	Camshaft Position (CMP) Sensor No Signal (The MIL comes on when the PGM-FI system detects the same failure)
P0369	Blinks	ON or OFF	Camshaft Position (CMP) Sensor Intermittent Interruption (The MIL comes on when the PGM-FI system detects the same failure)
P0603	Blinks	ON or OFF	PCM Internal Control Module Keep Alive Memory (KAM) Error (The MIL comes on when the PGM-FI system detects the same failure)
P0705	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input) (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0706	OFF	ON	Open in Transmission Range Switch Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0711	Blinks	OFF	Problem in ATF Temperature Sensor Circuit

			(This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0712	Blinks	OFF	Short in ATF Temperature Sensor Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0713	Blinks	OFF	Open in ATF Temperature Sensor Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0716	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0717	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input) (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0718	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0721	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0722	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input) (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0723	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0731	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)
P0732	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)
P0733	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)
P0734	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)

P0735	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)
P0741	OFF	ON	Torque Converter Clutch Hydraulic Circuit Stuck OFF
P0746	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck OFF
P0747	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON
P0751	Blinks	ON	Shift Solenoid Valve A Stuck OFF
P0752	Blinks	ON	Shift Solenoid Valve A Stuck ON
P0756	Blinks	ON	Shift Solenoid Valve B Stuck OFF
P0757	Blinks	ON	Shift Solenoid Valve B Stuck ON
P0761	Blinks	ON	Shift Solenoid Valve C Stuck OFF
P0762	Blinks	ON	Shift Solenoid Valve C Stuck ON
P0766	Blinks	ON	Shift Solenoid Valve D Stuck OFF
P0767	Blinks	ON	Shift Solenoid Valve D Stuck ON
P0776	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF
P0777	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON
P0796	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF
P0797	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck ON
P0812	Blinks	ON	Open in Transmission Range Switch ATP RVS Switch Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0842	Blinks	ON	Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0843	Blinks	ON	Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0847	Blinks	ON	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON (This code is caused by an electrical circuit

			problem and cannot be caused by a mechanical problem in the transmission) (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0848	Blinks	ON	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0962	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0963	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0966	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0967	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0970	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0971	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0973	Blinks	ON	Short in Shift Solenoid Valve A Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0974	Blinks	ON	Open in Shift Solenoid Valve A Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)

P0976	Blinks	ON	Short in Shift Solenoid Valve B Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0977	Blinks	ON	Open in Shift Solenoid Valve B Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0979	Blinks	ON	Short in Shift Solenoid Valve C Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0980	Blinks	ON	Open in Shift Solenoid Valve C Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0982	Blinks	ON	Short in Shift Solenoid Valve D Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P0983	Blinks	ON	Open in Shift Solenoid Valve D Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P16C0	OFF	ON	PCM A/T Control System Incomplete Update
P1717	Blinks	ON	Open in Transmission Range Switch ATP RVS Switch Circuit (This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission)
P1746	Blinks	OFF	Problem in Shift Control System; Cut Valve A Stuck OFF, or Cut Valve B Stuck ON
P1747	Blinks	OFF	Problem in Shift Control System; Cut Valve A Stuck ON, or Cut Valve B Stuck OFF
P1780	Blinks	ON	Problem in Shift Control System
P2122	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input
P2123	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input
U0028	Blinks	OFF	F-CAN Malfunction (BUS-OFF (PCM))
U0121	Blinks	OFF	F-CAN Malfunction (PCM-ABS)
U0155	Blinks	ON or OFF	F-CAN Malfunction (PCM-Gauge Control Module) (The MIL comes on when the PGM-FI system detects the same failure)

CATALYTIC CONVERTER DTCS

CATALYTIC CONVERTER SYSTEM (R18A1) - CIVIC (EXCEPT HYBRID) DTCS (A00255531)

CATALYTIC CONVERTER (R18A1) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0420	Catalytic System Efficiency Below Threshold

CATALYTIC CONVERTER SYSTEM (K20Z3) - CIVIC (ALL EXCEPT SI) DTCS (A00255552)

CATALYTIC CONVERTER (K20Z3) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0420	Catalytic System Efficiency Below Threshold

EVAP SYSTEM DTCS

EVAP SYSTEM (R18A1) - CIVIC (ALL EXCEPT HYBRID) DTCS (A00255540)

EVAP SYSTEM (R18A1) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0443	EVAP Canister Purge Valve Circuit Malfunction
P0451	FTP Sensor Range/Performance Problem
P0452	FTP Sensor Circuit Low Voltage
P0453	FTP Sensor Circuit High Voltage
P0455	EVAP System Large Leak Detected
P0456	EVAP System Very Small Leak Detected
P0457	EVAP System Leak Detected/Fuel Fill Cap Loose Or Missing
P0496	EVAP System High Purge Flow Detected
P0497	EVAP System Low Purge Flow Detected
P0498	EVAP Canister Vent Shut Valve Circuit Low Voltage
P1454	FTP Sensor Range/Performance Problem
P2422	EVAP Canister Vent Shut Valve Stuck Closed Malfunction

EVAP SYSTEM (K20Z3) - CIVIC (EXCEPT GX & SI) DTCS (A00255553)

EVAP SYSTEM (K20Z3) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0443	EVAP Canister Purge Valve Circuit Malfunction
P0451	FTP Sensor Circuit Range/Performance Problem
P0452	FTP Sensor Circuit Low Voltage
P0453	FTP Sensor Circuit High Voltage
P0455	EVAP System Large Leak Detected
P0456	EVAP System Very Small Leak Detected

P0457	EVAP System Leak Detected/Fuel Fill Cap Loose or Missing
P0496	EVAP System High Purge Flow Detected
P0497	EVAP System Low Purge Flow Detected ('06 model)
P0497	EVAP System Low Purge Flow Detected ('07 model)
P0498	EVAP Canister Vent Shut Valve Circuit Low Voltage
P0499	EVAP Canister Vent Shut Valve Circuit High Voltage
P1454	FTP Sensor Range/Performance Problem
P145C	EVAP System Purge Flow Malfunction ('07 model)
P2422	EVAP Canister Vent Shut Valve Stuck Closed Malfunction

IDLE CONTROL DTCS

IDLE CONTROL SYSTEM (R18A1) - CIVIC (ALL EXCEPT HYBRID) DTCS (A00255517)

IDLE CONTROL SYSTEM (R18A1) - CIVIC (ALL EXCEPT HYBRID) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0506	Idle Control System RPM Lower Than Expected
P0507	Idle Control System RPM Higher Than Expected
P0532	A/C Pressure Sensor Circuit Low Voltage
P0533	A/C Pressure Sensor Circuit High Voltage

IDLE CONTROL SYSTEM (K20Z3) - CIVIC (ALL EXCEPT HYBRID & SI) DTCS (A00255526)

IDLE CONTROL SYSTEM (K20Z3) - CIVIC (ALL EXCEPT HYBRID & Si) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0506	Idle Control System RPM Lower Than Expected
P0507	Idle Control System RPM Higher Than Expected
P0532	A/C Pressure Sensor Circuit Low Voltage
P0533	A/C Pressure Sensor Circuit High Voltage

PGM-FI DTCS

PGM-FI SYSTEM (GX) DTCS (A00259771)

PGM-FI SYSTEM (GX) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0171	Fuel System Too Lean

P0172	Fuel System Too Rich
P0300	Random Misfire and Any Combination of the Following; DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected, DTC P0304: No. 4 Cylinder Misfire Detected
P0301, P0302, P0303, P0304	DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected, DTC P0304: No. 4 Cylinder Misfire Detected

PGM-FI SYSTEM (R18A1) - (EXCEPT HYBRID) DTCS (A00255515)

PGM-FI SYSTEM (R18A1) - (EXCEPT HYBRID) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0101	MAF Sensor Circuit Range/Performance Problem
P0102	MAF Sensor Circuit Low Voltage
P0103	MAF Sensor Circuit High Voltage
P0107	MAP Sensor Circuit Low Voltage
P0108	MAP Sensor Circuit High Voltage
P0111	IAT Sensor Circuit Range/Performance Problem
P0112	IAT Sensor Circuit Low Voltage
P0113	IAT Sensor Circuit High Voltage
P0116	ECT Sensor 1 Circuit Range/Performance Problem
P0117	ECT Sensor 1 Circuit Low Voltage
P0118	ECT Sensor 1 Circuit High Voltage
P0125	ECT Sensor 1 Malfunction/Slow Response
P0128	Cooling System Malfunction
P0133	A/F Sensor (Sensor 1) Malfunction/Slow Response
P0134	A/F Sensor (Sensor 1) Heater System Malfunction
P0135	A/F Sensor (Sensor 1) Heater Circuit Malfunction
P0137	Secondary HO2S (Sensor 2) Circuit Low Voltage
P0138	Secondary HO2S (Sensor 2) Circuit High Voltage
P0139	Secondary HO2S (Sensor 2) Slow Response
P0141	Secondary HO2S (Sensor 2) Heater Circuit Malfunction
P0171	Fuel System Too Lean
P0172	Fuel System Too Rich
P0300	DTC P0300: Random Misfire and Any Combination of the Following: DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected,

	DTC P0304: No. 4 Cylinder Misfire Detected
P0301, P0302, P0303, P0304	DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected, DTC P0304: No. 4 Cylinder Misfire Detected
P0325	Knock Sensor Circuit Malfunction
P0335	CKP Sensor No Signal
P0339	CKP Sensor Intermittent Interruption
P0351, P0352, P0353, P0354	DTC P0351: No. 1 Cylinder Ignition Coil Circuit Malfunction, DTC P0352: No. 2 Cylinder Ignition Coil Circuit Malfunction, DTC P0353: No. 3 Cylinder Ignition Coil Circuit Malfunction, DTC P0354: No. 4 Cylinder Ignition Coil Circuit Malfunction
P0365	CMP Sensor No Signal
P0369	CMP Sensor Circuit Intermittent Interruption
P050A	Cold Start Idle Air Control System Performance Problem
P050B	Cold Start Ignition Timing Control System Performance Problem
P0562	Charging System Low Voltage
P0563	ECM/PCM Power Source Circuit Unexpected Voltage
P0602	ECM/PCM Programming Error
P0603	ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error
P0606	ECM/PCM Processor Malfunction
P060A	PCM (A/T system) Internal Control Module Malfunction
P0630	VIN Not Programmed or Mismatch
P0685	ECM/PCM Power Control Circuit/Internal Circuit Malfunction
P0720	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction
P0720	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction
P1109	BARO Sensor Circuit Out of Range High
P1116	ECT Sensor 1 Circuit Range/Performance Problem
P1128	MAP Sensor Signal Lower Than Expected
P1129	MAP Sensor Signal Higher Than Expected
P1157	A/F Sensor (Sensor 1) AFS Circuit Malfunction
P1172	A/F Sensor (Sensor 1) Circuit Out of Range High
P1297	ELD Circuit Low Voltage

P1298	ELD Circuit High Voltage
P1549	Charging System High Voltage
P16BB	Alternator B Terminal Circuit Low Voltage
P16BC	Alternator FR Terminal Circuit/IGP Circuit Low Voltage
P2183	ECT Sensor 2 Circuit Range/Performance Problem
P2184	ECT Sensor 2 Circuit Low Voltage
P2185	ECT Sensor 2 Circuit High Voltage
P2195	A/F Sensor (Sensor 1) Signal Stuck Lean
P2227	BARO Sensor Circuit Range/Performance Problem
P2228	BARO Sensor Circuit Low Voltage
P2229	BARO Sensor Circuit High Voltage
P2238	A/F Sensor (Sensor 1) AFS+ Circuit Low Voltage
P2252	A/F Sensor (Sensor 1) AFS-Circuit Low Voltage
P2270	Secondary HO2S (Sensor 2) Circuit Signal Stuck Lean
P2271	Secondary HO2S (Sensor 2) Circuit Signal Stuck Rich
P2610	ECM/PCM Ignition Off Internal Timer Malfunction
P2A00	A/F Sensor (Sensor 1) Circuit Range/Performance Problem
DTC U0155	F-CAN Malfunction (ECM/PCM-Gauge Control Module)
DTC U0300	PGM-FI System and A/T System Program Version Mismatch

PGM-FI SYSTEM (K20Z3) - (ALL EXCEPT SI) DTCS (A00255525)

PGM-FI SYSTEM (K20Z3) - (ALL EXCEPT SI) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0101	MAF Sensor Circuit Range/Performance Problem
P0102	MAF Sensor Circuit Low Voltage
P0103	MAF Sensor Circuit High Voltage
P0107	MAP Sensor Circuit Low Voltage
P0108	MAP Sensor Circuit High Voltage
P0111	IAT Sensor Circuit Range/Performance Problem
P0112	IAT Sensor Circuit Low Voltage
P0113	IAT Sensor Circuit High Voltage
P0116	ECT Sensor 1 Circuit Range/Performance Problem
P0117	ECT Sensor 1 Circuit Low Voltage
P0118	ECT Sensor 1 Circuit High Voltage
P0125	ECT Sensor 1 Malfunction/Slow Response

P0128	Cooling System Malfunction
P0133	A/F Sensor (Sensor 1) Malfunction/Slow Response
P0134	A/F Sensor (Sensor 1) Heater System Malfunction
P0135	A/F Sensor (Sensor 1) Heater Circuit Malfunction
P0137	Secondary HO2S (Sensor 2) Circuit Low Voltage
P0138	Secondary HO2S (Sensor 2) Circuit High Voltage
P0139	Secondary HO2S (Sensor 2) Slow Response
P0141	Secondary HO2S (Sensor 2) Heater Circuit Malfunction
P0171	Fuel System Too Lean
P0172	Fuel System Too Rich
P0300	Random Misfire and Any Combination of the Following:; DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected, DTC P0304: No. 4 Cylinder Misfire Detected
P0301, P0302, P0303, P0304	DTC P0301: No. 1 Cylinder Misfire Detected, DTC P0302: No. 2 Cylinder Misfire Detected, DTC P0303: No. 3 Cylinder Misfire Detected, DTC P0304: No. 4 Cylinder Misfire Detected
P0325	Knock Sensor Circuit Malfunction
P0335	CKP Sensor No Signal
P0339	CKP Sensor Circuit Intermittent Interruption
P0365	CMP Sensor B Circuit No Signal
P0369	CMP Sensor B Circuit Intermittent Interruption
P050A	Cold Start Idle Air Control System Performance Problem
P050B	Cold Start Ignition Timing Control System Performance Problem
P0562	Charging System Low Voltage
P0563	ECM Power Source Circuit Unexpected Voltage
P0602	ECM Programming Error
P0603	ECM Internal Control Module Keep Alive Memory (KAM) Error
P0606	ECM Processor Malfunction
P0630	VIN Not Programmed or Mismatch
P0685	ECM Power Control Circuit/Internal Circuit Malfunction
P0720	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction
P1109	BARO Sensor Circuit Out of Range High
P1116	ECT Sensor 1 Circuit Range/Performance Problem
P1128	MAP Sensor Signal Lower Than Expected

P1129	MAP Sensor Signal Higher Than Expected
P1157	A/F Sensor (Sensor 1) AFS Circuit Malfunction
P1172	A/F Sensor (Sensor 1) Circuit Out of Range High
P1297	ELD Circuit Low Voltage
P1298	ELD Circuit High Voltage
P1549	Charging System High Voltage
P16BB	Alternator B Terminal Circuit Low Voltage
P16BC	Alternator FR Terminal Circuit/IGP Circuit Low Voltage
P2183	ECT Sensor 2 Circuit Range/Performance Problem
P2184	ECT Sensor 2 Circuit Low Voltage
P2185	ECT Sensor 2 Circuit High Voltage
P2195	A/F Sensor (Sensor 1) Signal Stuck Lean
P2227	BARO Sensor Circuit Range/Performance Problem
P2228	BARO Sensor Circuit Low Voltage
P2229	BARO Sensor Circuit High Voltage
P2238	A/F Sensor (Sensor 1) AFS+ Circuit Low Voltage
P2252	A/F Sensor (Sensor 1) AFS-Circuit Low Voltage
P2270	Secondary HO2S (Sensor 2) Circuit Signal Stuck Lean
P2271	Secondary HO2S (Sensor 2) Circuit Signal Stuck Rich
P2610	ECM Ignition Off Internal Timer Malfunction
P2A00	A/F Sensor (Sensor 1) Circuit Range/Performance Problem
DTC U0028	F-CAN Malfunction (BUS-OFF)
DTC U0122	F-CAN Malfunction (ECM-VSA)
DTC U0131	F-CAN Malfunction (ECM-EPS)
DTC U0155	F-CAN Malfunction (ECM-Gauge Control Module)

VTEC/VTC DTCS

VTEC (R18A1) - CIVIC (ALL EXCEPT HYBRID) DTCS (A00255541)

VTEC (R18A1) - (ALL EXCEPT HYBRID) DIAGNOSTIC TROUBLE CODES (DTC) LIST

DTC	Description
P0522	EOP Sensor Circuit Low Voltage
P0523	EOP Sensor Circuit High Voltage
P2646	VTEC System Stuck OFF
P2647	VTEC System Stuck ON
P2648	Rocker Arm Oil Control Solenoid Circuit Low Voltage

P2649	Rocker Arm Oil Control Solenoid Circuit High Voltage

VTEC/VTC (K20Z3) - (EXCEPT GX & SI) DTCS (A00255532)

VTEC/VTC (K20Z3) - (EXCEPT GX & Si) DIAGNOSTIC TROUBLE CODES (DTC) LIST

TC	Description
P0010	VTC Oil Control Solenoid Valve Malfunction
P0011	VTC System Malfunction
P0340	CMP Sensor A No Signal
P0341	CMP Sensor A and CKP Sensor Incorrect Phase Detected
P0344	CMP Sensor A Circuit Intermittent Interruption
P1009	VTC Advance Malfunction
P2646	Rocker Arm Oil Pressure Switch Circuit Low Voltage
P2647	Rocker Arm Oil Pressure Switch Circuit High Voltage
P2648	Rocker Arm Oil Control Solenoid Circuit Low Voltage
P2649	Rocker Arm Oil Control Solenoid Circuit High Voltage

2006-09 ELECTRICAL

Accessory Power sockets - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

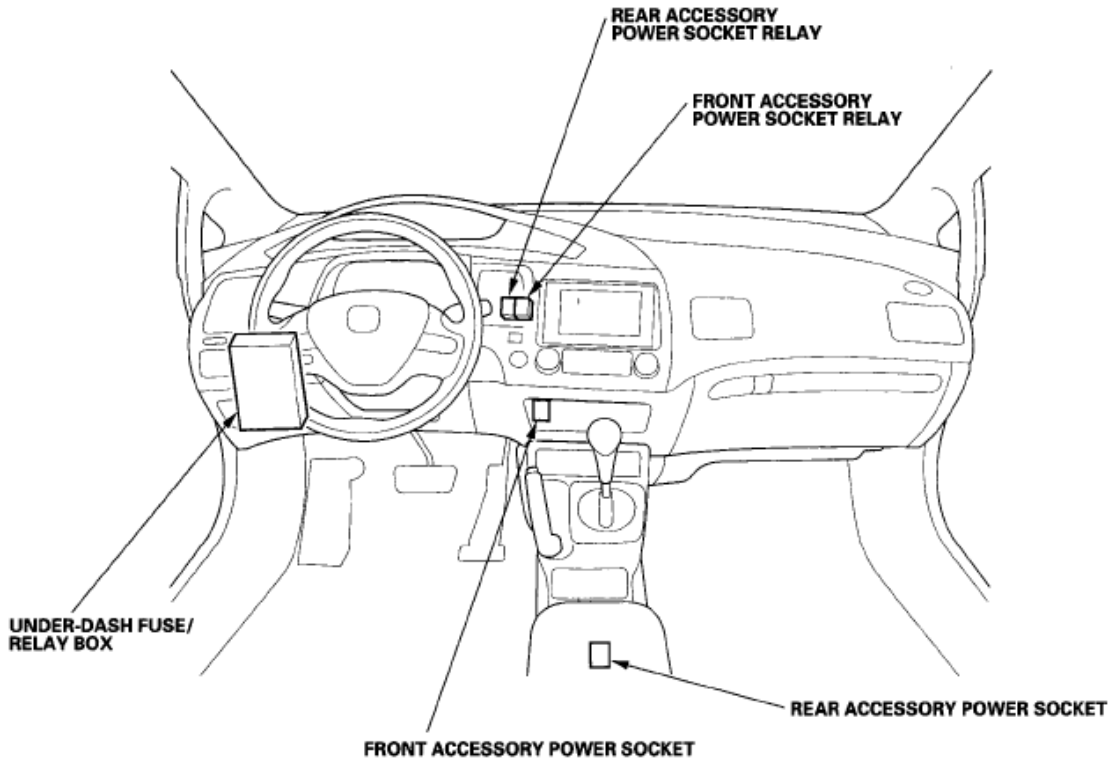


Fig. 1: Identifying Accessory Power Sockets Component Location
Courtesy of HONDA

CIRCUIT DIAGRAM

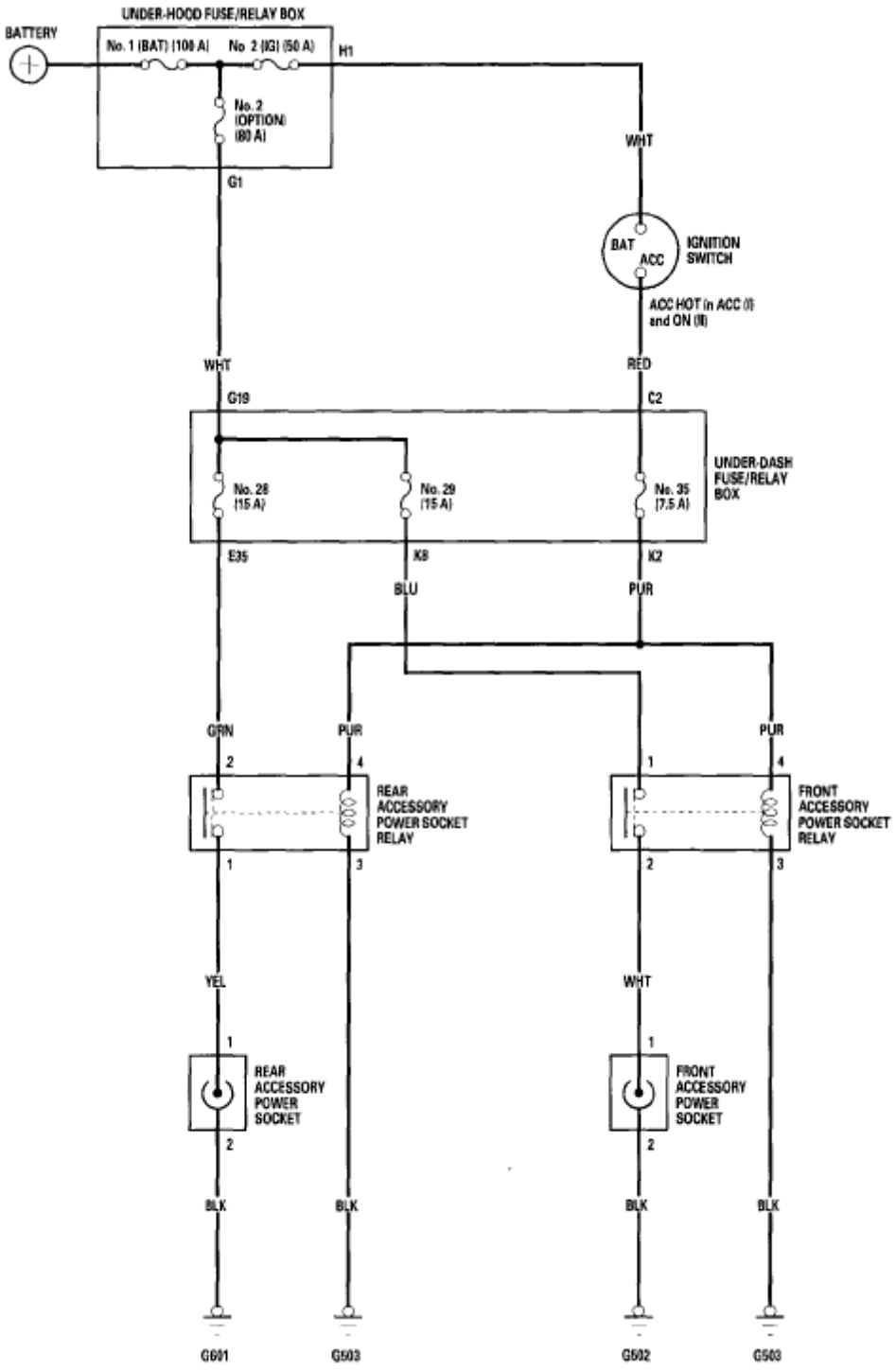


Fig. 2: Accessory Power Sockets - Circuit Diagram
Courtesy of HONDA

FRONT ACCESSORY POWER SOCKET TEST/REPLACEMENT

NOTE: If both of the front and rear accessory power sockets do not work, check the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

1. Remove the center panel.

- With Audio
  - '06-08 models (see **AUDIO UNIT REMOVAL/INSTALLATION**)
  - '09 model (see **AUDIO UNIT REMOVAL/INSTALLATION**)
- With Navigation
  - '06-08 models (see **NAVIGATION UNIT REMOVAL/INSTALLATION**)
  - '09 model (see **NAVIGATION UNIT REMOVAL/INSTALLATION**)

2. Disconnect the 2P connector (A) from the front accessory power socket (B).

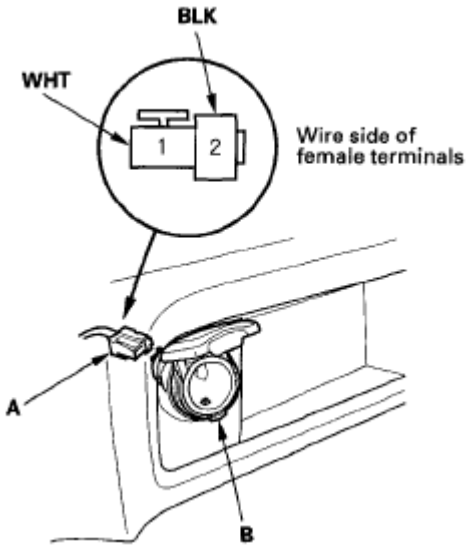


Fig. 3: Identifying 2P Connector
Courtesy of HONDA

3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.
4. Turn the ignition switch to ACCESSORY (I).
5. Measure the voltage between front accessory power socket relay terminal No. 3 and body ground. There should be less than 0.2 V.
   - If there is less than 0.2 V, go to step 6.
   - If there is more than 0.2 V, check for:
     - Poor ground (G503) or an open in the ground wire.
     - An open or high resistance in the wire between front accessory power socket relay terminal No. 3 and ground (G503).
6. Measure the voltage between front accessory power socket 2P connector terminal No. 1 and body ground. There should be battery voltage.
   - If there is battery voltage, go to step 7.
   - If there is no voltage, check for:
     - A blown No. 29 (15 A) fuse in the under-dash fuse/relay box.
     - A faulty front accessory power socket relay.
     - An open or high resistance in the wire between front accessory power socket relay

terminal No. 2 and front accessory power socket 2P connector terminal No. 1.

7. Check for continuity between front accessory power socket 2P connector terminal No. 2 and body ground. There should be continuity.
   - If there is continuity, replace the power socket; go to step 8.
   - If there is no continuity, check for:
     - Poor ground (G502) or an open in the ground wire.
     - An open in the wire between front accessory power socket 2P connector terminal No. 2 and ground (G502).
8. Remove the socket (A).

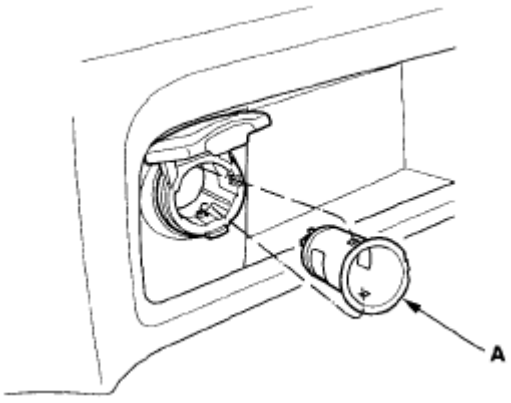


Fig. 4: Locating Socket
Courtesy of HONDA

9. Remove the housing (A) from the panel.

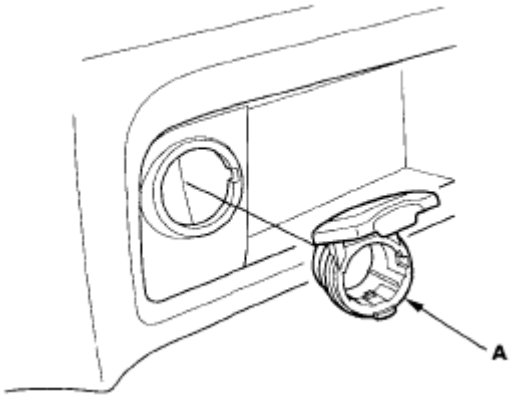


Fig. 5: Locating Panel Housing
Courtesy of HONDA

10. Install the power socket in the reverse order of removal.

CONSOLE ACCESSORY POWER SOCKET TEST/REPLACEMENT

NOTE: If both of the front and rear accessory power sockets do not work, check the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Disconnect the 2P connector (A) from the rear accessory power socket (B).

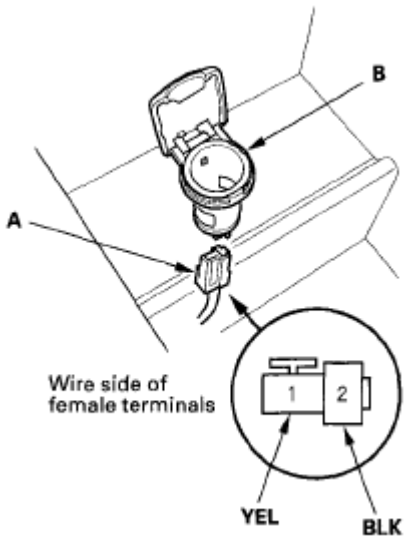


Fig. 6: Locating 2P Connector
Courtesy of HONDA

3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.
4. Turn the ignition switch to ACC (I).
5. Measure the voltage between console accessory power socket relay terminal No. 3 and body ground. There should be less than 0.2 V.
   - If there is less than 0.2 V, go to step 6.
   - If there is more than 0.2 V, check for:
     - An open or high resistance in the wire between console accessory power socket relay terminal No. 3 and ground (G503).
     - Poor ground (G503) or an open in the ground wire.Faulty rear accessory power socket relay.
6. Measure the voltage between console accessory power socket 2P connector terminal No. 1 and body ground. There should be battery voltage.
   - If there is battery voltage, go to step 7.
   - If there is no voltage, check for:
     - A blown No. 28 (15 A) fuse in the under-dash fuse/relay box.
     - A faulty console accessory power socket relay.
     - An open or high resistance in the wire between console accessory power socket relay terminal No. 1 and console accessory power socket 2P connector terminal No. 1.
7. Check for continuity between console accessory power socket 2P connector terminal No. 2 and body ground. There should be continuity.

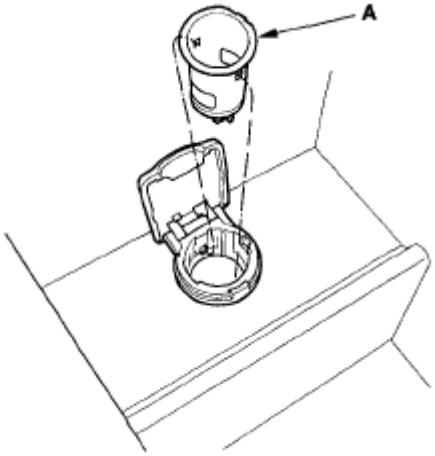


Fig. 7: Locating Socket
Courtesy of HONDA

- If there is continuity, replace the power socket; go to step 8.
- If there is no continuity, check for:
  - Poor ground (G601 [G503]) or an open in the ground wire.
  - An open in the wire between console accessory power socket 2P connector terminal No. 2 and ground (G601 [G503]).

    [ ]: '09-10 2-door models

2006-09 ELECTRICAL

Battery - Civic (Except Hybrid & Si)

BATTERY TEST

WARNING: A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby. Follow all procedures carefully and keep sparks and open flames away from the battery.

Use an ED-18 Battery Tester, and follow the manufacturer's procedures. If you don't have one of these computerized testers, follow this conventional test procedure:

Required Test Equipment

honda Eletrical System Analizer (ED-18 Battery Tester); T/N INBED18LLH

Ordering Information

To order an Electrical System Analyzer, go to the Honda Tool and Equipment catalog on the iN, or call 888-424-6857

Software Version

Make sure you have the latest software in the ED-18. To check the version follow these steps:

- Press the POWER button.
- Select Reports, then press ENTER.
- Select i Version, then press ENTER.

If you do not have the correct version, Tools Hotline at 800-346-6327.

Using the ED-18 Battery Tester

NOTE: For set up, customizations, and other available features, refer to the ED-18 user's manual.

1. Connect the leads to the positive and negative terminal of the battery.
2. Use the arrow keys to select the battery test, then press enter, then follow the prompts.

NOTE: Make sure to enter the correct cold cranking ampere rating of the battery. If the number is not entered correctly, the result will not be accurate.

3. Here are the five possible battery conditions:
   - Good Battery: the battery has at least 60 percent of its charge and requires no action.
   - Good-Recharge: The battery condition appears to be good, but charging is recommended and then retest. See your battery charger's instructions to fully charge the battery, then recheak. Do

not charge the battery using the vehicle's alternator.

- Charge and Retest: The battery condition is not known because its charge is too low. Recharge the battery, then retest. See your battery's instructions to fully charge the battery, then recheck. Do not charge the battery using the vehicle's alternator.
- Replace Battery: The battery condition is poor. Replace it.
- Bad Cell: There is a problem with the battery. Replace it.

DISCONNECTION

NOTE: Some systems store data in memory (including seat position, mirror position, etc) is lost when the battery is disconnected. Do the following procedures before disconnecting the battery.

1. Make sure you hvae the anti-theft code(s) for the audio system and/or navigation system (if equipped).

   NOTE: For some models it maybe necessary to write down the audio the presets (AM and FM), because the audio unit does not retain the presets after the battery is disconnected.

2. Write downt he XM audio presets (if equipped).
3. Make sure the ignition switch is in LOCK (0).
4. Disconnect and isolate the negative cable from the battery.

   NOTE: Always disconnect the negative battery cable from the battery first.

5. Disconnect the positive cable from the battery.

RECONNECTION

Some systems store data in memory that is lost when the battery is disconnected. Do the following procedures to restore the system back to normal operation.

1. Clean the battery terminals.
2. Test the battery (see **Battery Test**).
3. Reconnect the positive cable (A) to the battery (B) first, then reconnect the negative cable (C) to the battery.

   NOTE: Always connect the positive cable to the battery first.

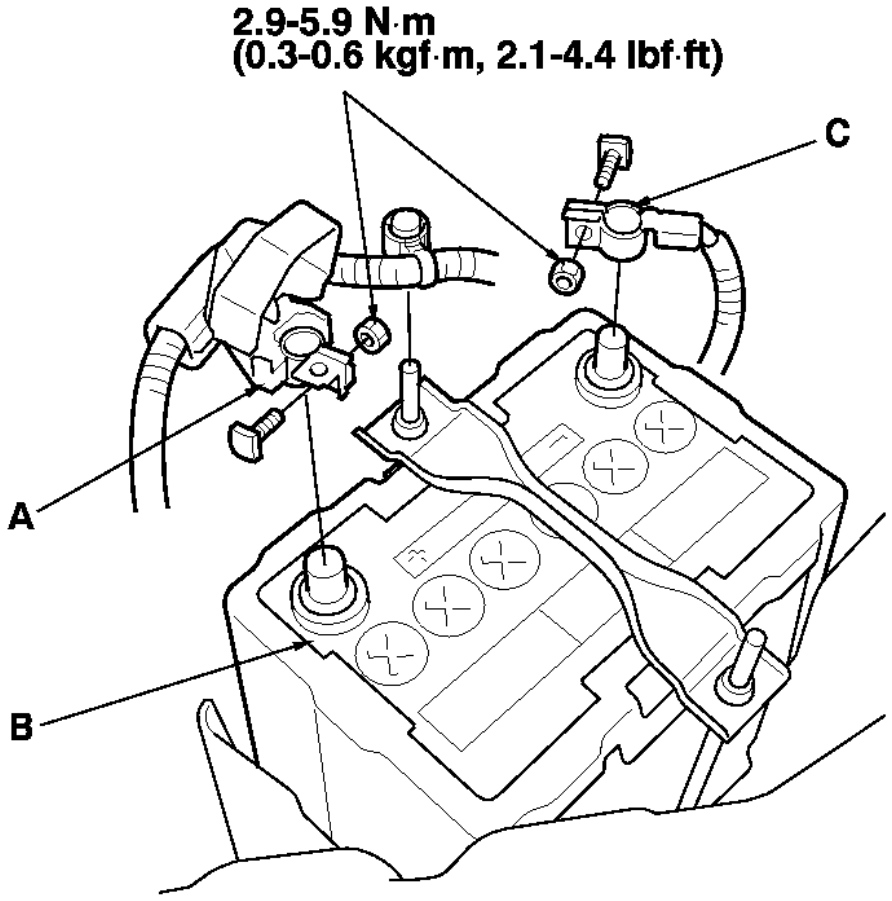


Fig. 1: Always Connect The Positive Cable To The Battery First
Courtesy of TOYOTA

4. Apply multipurpose grease to the terminals to prevent corrosion.
5. Enter the anti-theft code(s) for the audio system and/or navigation system (if equipped).
6. Enter the audio presets (if applicable), and enter the XM audio presets (if equipped).
7. Set the clock (for vehicles without navigation).

BATTERY REMOVAL AND INSTALLATION

NOTE: **The battery terminal disconnection/reconnection procedure (see Disconnection) must be done before and after doing this procedure. Some systems store data in memory that is lost when the battery is disconnected.**

REMOVAL

1. Do the battery terminal disconnection procedure (see **Disconnection**).
2. Remove the two nuts (A) securing the battery setting plate (B), then remove the battery setting plate and the battery (C).

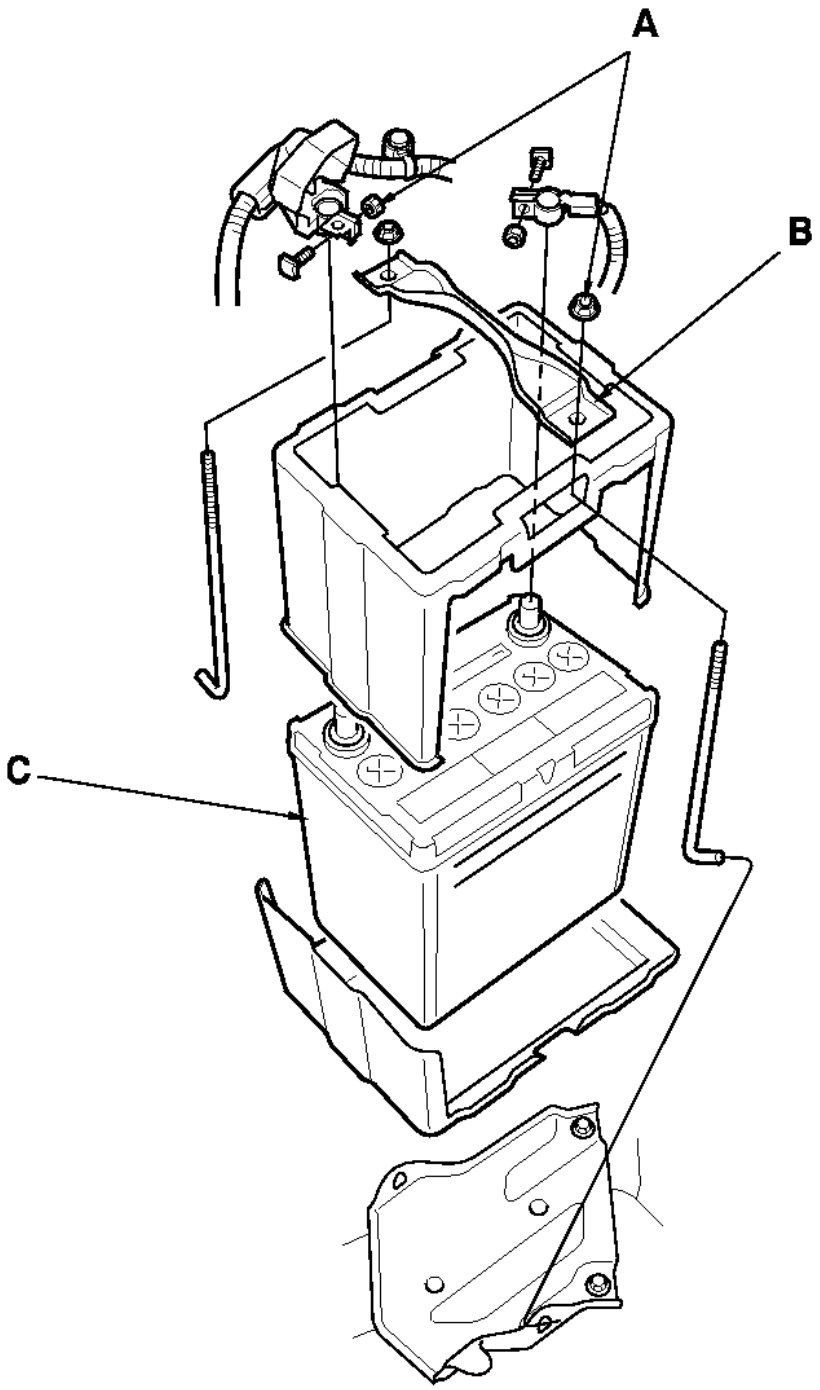


Fig. 2: Removing The Battery

INSTALLATION

1. Install the battery (A), then install the battery setting plate (B).

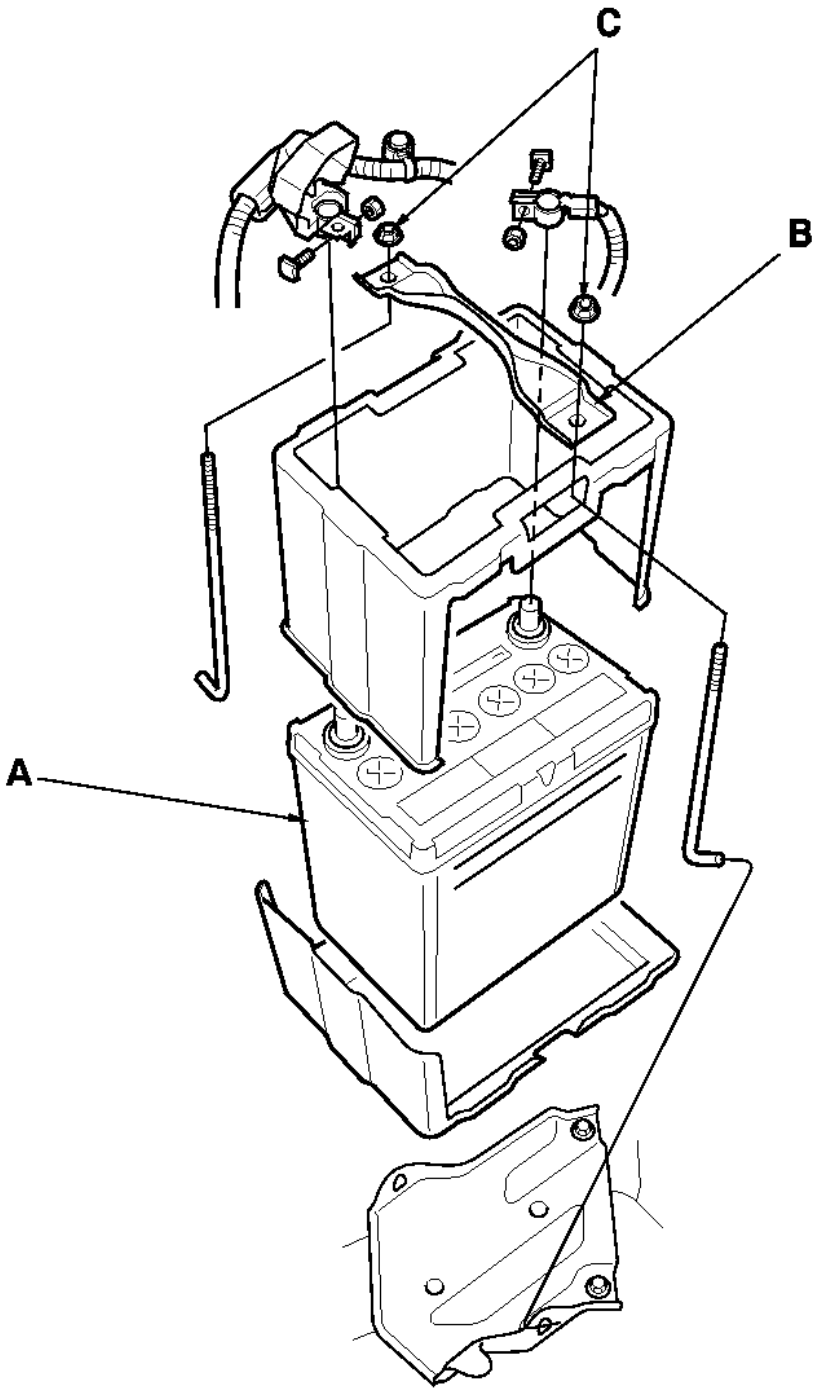


Fig. 3: Installing The Battery

2. Tighten the two nuts (C) equally until the battery is stable.

NOTE: Do not deform the battery setting plate by over-tightening the nuts.

3. Do the battery terminal reconnection procedure (see **Disconnection**).

NOTE: Make sure the positive terminal and the negative terminal are not reverse-

connected.

2006-09 ELECTRICAL

Body Electrical (Troubleshooting) - Civic (All Except Hybrid)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS (MCIC) Service Connector	1
②	07TAZ-001020A	Back Probe Adaptor	1

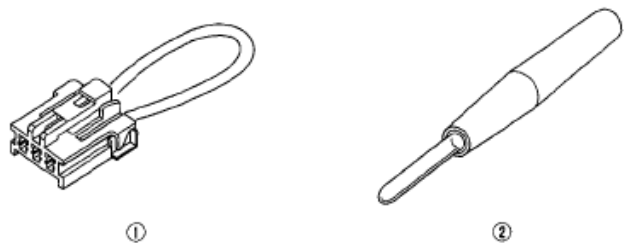


Fig. 1: Identifying Special Tools

GENERAL TROUBLESHOOTING INFORMATION

TIPS AND PRECAUTIONS

Before Troubleshooting

1. Check applicable fuses in the appropriate fuse/relay box.
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTE:

- **Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.**
- **Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.**

Handling Connectors

- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).

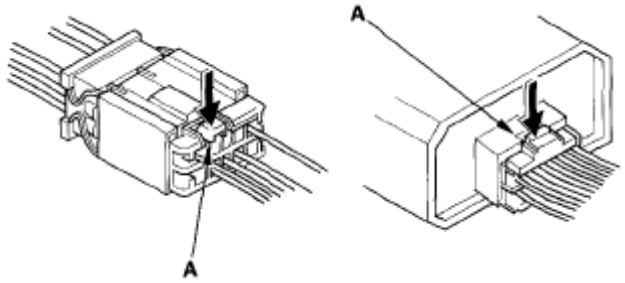


Fig. 2: Identifying Connector Lock

- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).

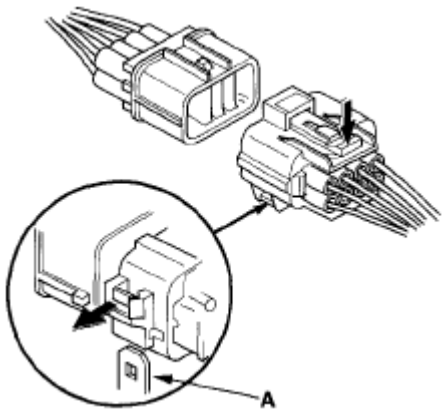


Fig. 3: Identifying Connector Mount Bracket

- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.

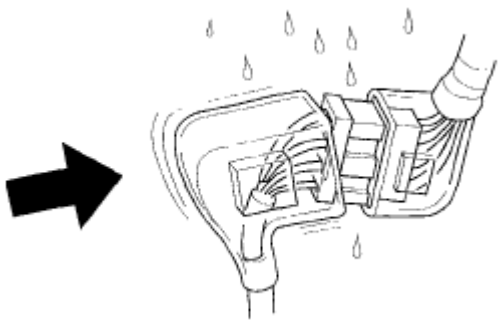


Fig. 4: Identifying Plastic Covers

- Before connecting connectors, make sure the terminals (A) are in place and not bent.

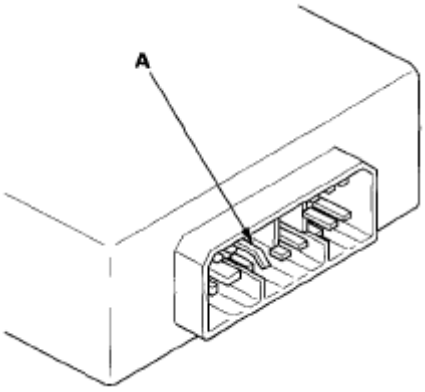


Fig. 5: Identifying Connector Terminals

- Check for loose retainer (A) and rubber seals (B).

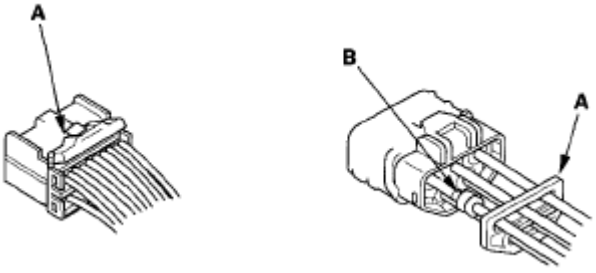


Fig. 6: Identifying Retainer And Rubber Seals

- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

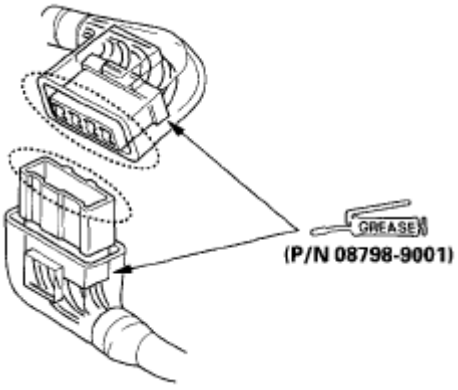


Fig. 7: Identifying Area Applying Grease

- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

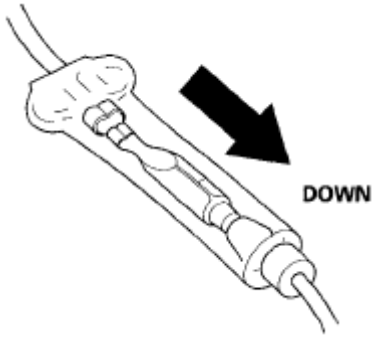


Fig. 8: Identifying Wires Cover Position

Handling Wires and Harnesses

- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).

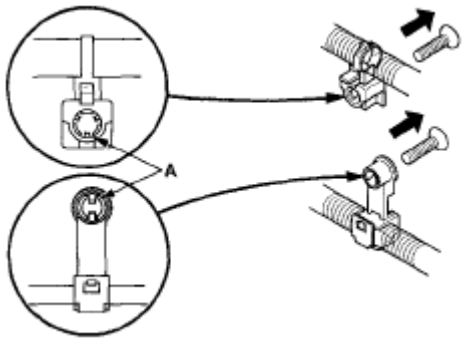


Fig. 9: Identifying Wire Harnesses Lock

- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.

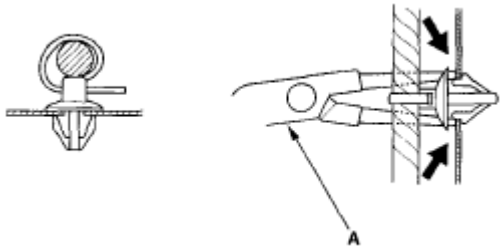


Fig. 10: Identifying Slip Pliers

- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust components and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

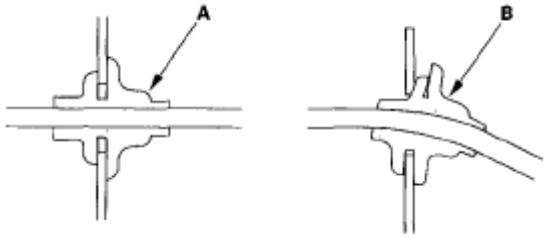


Fig. 11: Identifying Grommets Position

Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage is SRS wiring or terminals, replace the harness.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this information.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).

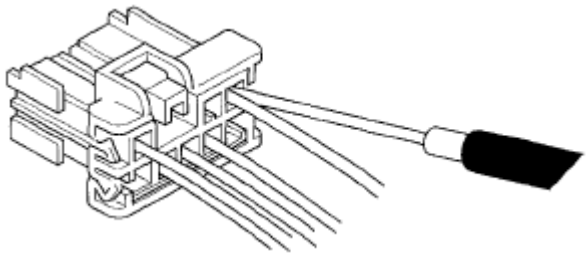


Fig. 12: Inserting Tester To Connector

- Use back probe adaptor 07TAZ-001020A.

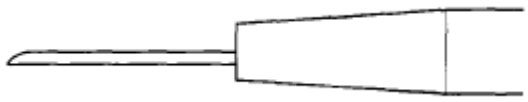


Fig. 13: Identifying Probe Adaptor 07TAZ-001020A

- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

FIVE-STEP TROUBLESHOOTING

1. Verify The Complaint:

   Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze The Schematic:

Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or a ground is a likely cause.

Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.

3. Isolate The Problem By Testing The Circuit: Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.
4. Fix The Problem:

   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Make Sure The Circuit Works:

   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

WIRE COLOR CODES

The following abbreviations are used to identify wire colors in the circuit schematics:

WIRE COLOR CODES

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

The wire insulation has one color or one color with another color stripe. The second color is the stripe.

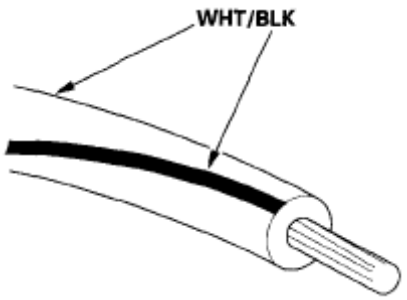


Fig. 14: Identifying Wire Color

HOW TO CHECK FOR DTCS WITH THE HONDA DIAGNOSTIC SYSTEM (HDS)

NOTE: For specific operations, refer to the user's manual that came with the Honda Diagnostic System (HDS).

1. Connect the HDS to the data link connector (A) located under the driver's side of the dashboard.

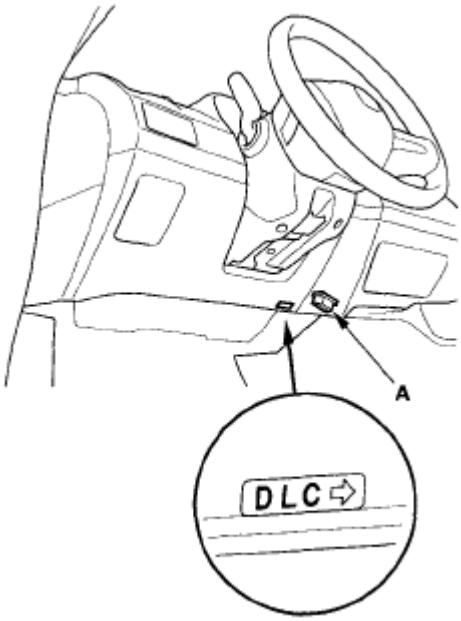


Fig. 15: Identifying Data Link Connector

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle, if it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Enter the BODY ELECTRICAL then select the TEST MODE menu.
5. Check for DTCs with the HDS.
6. If any DTCs are indicated, note them, and go to the indicated DTC troubleshooting.

2006-08 ELECTRICAL

Connectors and Harnesses - Civic (All Except Hybrid)

CONNECTOR INDEX

Identification numbers have been assigned to in-line connectors, junction connectors, and terminals. The number is preceded by the letter "C" for connectors, "G" for ground terminals, or "T" for non-ground terminals.

CONNECTOR INDEX

Harness	Location		
	Engine Compartment	Dashboard	Others (Floor, Door, Trunk, and Roof)
A/C WIRE HARNESS		C205, C505	
BATTERY GROUND CABLE	(-), G1		
CABLE REEL SUBHARNESS			
COIL SUBCORD (2-DOOR)			C852
CONSOLE SUBHARNESS (WITH REAR ACCESSORY POWER SOCKET)		C601	
DASHBOARD WIRE HARNESS (VIEW OF DRIVER'S SIDE)		C201, C202, C203, C501, C502, C751, C752, C801 G501, G503	
DASHBOARD WIRE HARNESS (VIEW OF MIDDLE)		C503 G504, G506	
DASHBOARD WIRE HARNESS (VIEW OF PASSENGER'S SIDE)		C505, C761, C762 G502, G505	
DRIVER'S DOOR SUBHARNESS (2-DOOR)			C754
DRIVER'S DOOR WIRE HARNESS (2-DOOR)		C751, C752	C753, C754
DRIVER'S DOOR WIRE HARNESS (4-DOOR)		C751, C752	C753
DRIVER'S SEAT POSITION SENSOR HARNESS			C602
ENGINE COMPARTMENT WIRE HARNESS (LEFT	C101, C102 G301	C201 through C205 G401	

BRANCH) (EXCEPT SI MODEL)			
ENGINE COMPARTMENT WIRE HARNESS (LEFT BRANCH) (SI MODEL)	C101, C102 G301	202 through C205, C207 G401	
ENGINE COMPARTMENT WIRE HARNESS (RIGHT BRANCH) (EXCEPT SI MODEL)	C206 G201, G202		
ENGINE COMPARTMENT WIRE HARNESS (RIGHT BRANCH) (SI MODEL)	C206, C207 G201, G202	G402, G403	
ENGINE GROUND CABLE A	T1, G2		
ENGINE GROUND CABLE B	T2, G3		
ENGINE WIRE HARNESS (A/T)	(+), C101, C102, C105, C107 T3, T4, T101, T102 G101		
ENGINE WIRE HARNESS (M/T EXCEPT SI MODEL)	(+), C101, C102, C103, C105 T3, T4, T101, T102 G101		
ENGINE WIRE HARNESS (SI MODEL)	(+), C101, C105, C106 G101		
FLOOR WIRE HARNESS (LEFT BRANCH) (2-DOOR)		C204, C501, C502, C601	C701, C852 G601
FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)	C207	C204, C501, C502, C601, C602	C701, C702, C771 G601, G603
FLOOR WIRE HARNESS (RIGHT BRANCH) (2-DOOR)			C782 G602
FLOOR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)			C781, C782 G602
FRONT PASSENGER'S DOOR WIRE HARNESS (4-DOOR)		C761, C762	
KNOCK SENSOR SUBHARNESS (M/T)	C103		
LEFT REAR DOOR WIRE HARNESS (4-DOOR)			C771

ODS unit harness			C782
PASSENGER'S DOOR SUBHARNESS (2-DOOR)			C763
PASSENGER'S DOOR WIRE HARNESS (2-DOOR)		C761, C762	C763
REAR WINDOW DEFOGGER GROUND WIRE (2-DOOR EXCEPT SI MODEL)			G801
REAR WINDOW DEFOGGER GROUND WIRE (2-DOOR SI MODEL)			G801
REAR WINDOW DEFOGGER GROUND WIRE (4-DOOR)			G801
REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR EXCEPT SI MODEL)			C701 G701
REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR SI MODEL)			C701, C703
REAR WIRE HARNESS (LEFT BRANCH) (4-DOOR)			C701, C702 G701
REAR WIRE HARNESS (RIGHT BRANCH) (2-DOOR EXCEPT SI MODEL)			
REAR WIRE HARNESS (RIGHT BRANCH) (2-DOOR SI MODEL)			
REAR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)			
RIGHT REAR DOOR WIRE HARNESS (4-DOOR)			C781
ROOF WIRE HARNESS (2-DOOR WITH MOONROOF)		C801	
ROOF WIRE HARNESS (2-DOOR WITHOUT MOONROOF)		C801	
ROOF WIRE HARNESS (4-DOOR WITH		C801	

MOONROOF)			
ROOF WIRE HARNESS (4-DOOR WITHOUT MOONROOF)		C801	
SHIFT SOLENOID WIRE HARNESS (A/T)		C107	
STARTER SUBHARNESS (SI MODEL)	(+), C102 through C106 T3, T4, T101, T102		
TRUNK LID SPOILER SUBHARNESS ('07 4-DOOR SI MODEL)			C703
TRUNK LID SPOILER SUBHARNESS (2-DOOR SI MODEL)			C703

CONNECTOR TO HARNESS INDEX

CONNECTOR TO HARNESS INDEX - BATTERY GROUND CABLE

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
(-)	4		Left side of engine compartment	Battery negative terminal	
G1	5		Left side of engine compartment	Body ground, via battery ground cable	

CONNECTOR TO HARNESS INDEX - ENGINE GROUND CABLE A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T1	6		Right side of engine compartment	Engine	
G2	1		Right side of engine compartment	Body ground, via engine ground cable A	

CONNECTOR TO HARNESS INDEX - ENGINE GROUND CABLE B

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T2	2		Left side of engine compartment	Transmission housing	
G3	3		Left side of engine compartment	Body ground, via engine ground cable B	

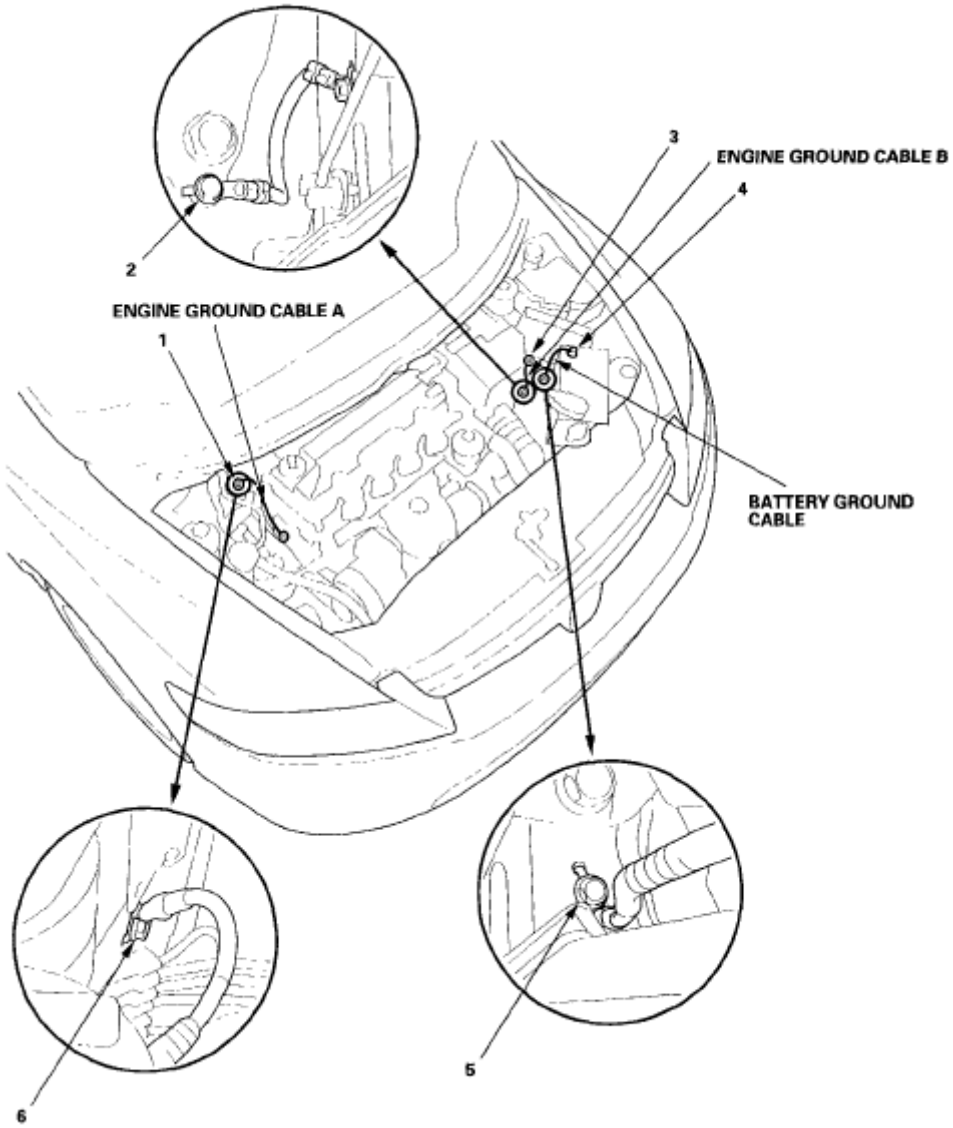


Fig. 1: Identifying Engine Ground Cables And Battery Ground Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE WIRE HARNESS (A/T)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	43	3	Middle of engine compartment		
A/F sensor (Sensor 1)	38	4	Exhaust manifold		
Alternator	44	4	Middle of engine compartment		
A/T clutch pressure control solenoid valve A	18	2	Transmission housing		
A/T clutch pressure control solenoid valve B	14	2	Transmission housing		

A/T clutch pressure control solenoid valve C	13	2	Transmission housing			
Camshaft position (CMP) sensor B	11	3	Middle of engine compartment			
Crankshaft position (CKP) sensor	36	3	Middle of engine compartment			
Engine coolant temperature (ECT) sensor 1	39	2	Middle of engine compartment			
Engine oil pressure (EOP) sensor	49	3	Middle of engine compartment			
EVAP canister purge valve	7	2	Middle of engine compartment			
Exhaust gas recirculation (EGR) valve and position sensor	40	5	Middle of engine compartment			
Ignition coil No. 1	47	3	Middle of engine compartment			
Ignition coil No. 2	46	3	Middle of engine compartment			
Ignition coil No. 3	42	3	Middle of engine compartment			
Ignition coil No. 4	41	3	Middle of engine compartment			
Injector No. 1	1	2	Middle of engine compartment			
Injector No. 2	2	2	Middle of engine compartment			
Injector No. 3	3	2	Middle of engine compartment			
Injector No. 4	4	2	Middle of engine compartment			
Input shaft (mainshaft) speed sensor	24	3	Transmission housing			
Intake manifold tuning (IMT) actuator	48	5	Middle of engine compartment			
Knock sensor	5	1	Middle of engine compartment			
Manifold absolute pressure (MAP) sensor	6	3	Middle of engine compartment sensor			
Mass air flow	17	5	Middle of engine			

(MAF) sensor/Intake air temperature (IAT) sensor			compartment		
Oil pressure switch	35	1	Middle of engine compartment		
Output shaft (countershaft) speed sensor	26	3	Transmission housing		
PCM connector B	22	44	Left side of engine compartment		
PCM connector C	19	44	Left side of engine compartment		
Rocker arm oil control solenoid	50	2	Middle of engine compartment		
2nd clutch pressure switch	23	1	Transmission housing		
Secondary HO2S (Sensor 2)	37	4	Exhaust manifold		
Starter solenoid	9	1	Middle of engine compartment		
3rd clutch pressure switch	28	1	Transmission housing		
Throttle body (TP sensor A/B, throttle actuator)	10	6	Middle of engine compartment		
Transmission range switch	25	10	Transmission housing		
C101	16	23	Left side of engine compartment	**ENGINE COMPARTMENT WIRE HARNESS** (see)	
C102	15	1	Left side of engine compartment	**ENGINE COMPARTMENT WIRE HARNESS** (see)	
C105 (Junction connector)	12	24	Middle of engine compartment		
C107	33	8	Transmission housing	Shift solenoid wire harness	
(+)	27		Left side of engine compartment	Battery (+) terminal	
T3	21		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY**	

				BOX INDEX)	
T4	8		Middle of engine compartment	Starter motor	
T101	20		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	
T102	45		Middle of engine compartment	Alternator	
G101	34		Middle of engine compartment	Body ground, via engine wire harness	

CONNECTOR TO HARNESS INDEX - SHIFT SOLENOID WIRE HARNESS (A/T)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ATF temperature sensor/Shift solenoid valve B	31	3	Transmission housing		
Shift solenoid valve A	30	1	Transmission housing		
Shift solenoid valve C	29	1	Transmission housing		
Shift solenoid valve D	32	1	Transmission housing		
C107	33	8	Transmission housing	Engine wire harness	

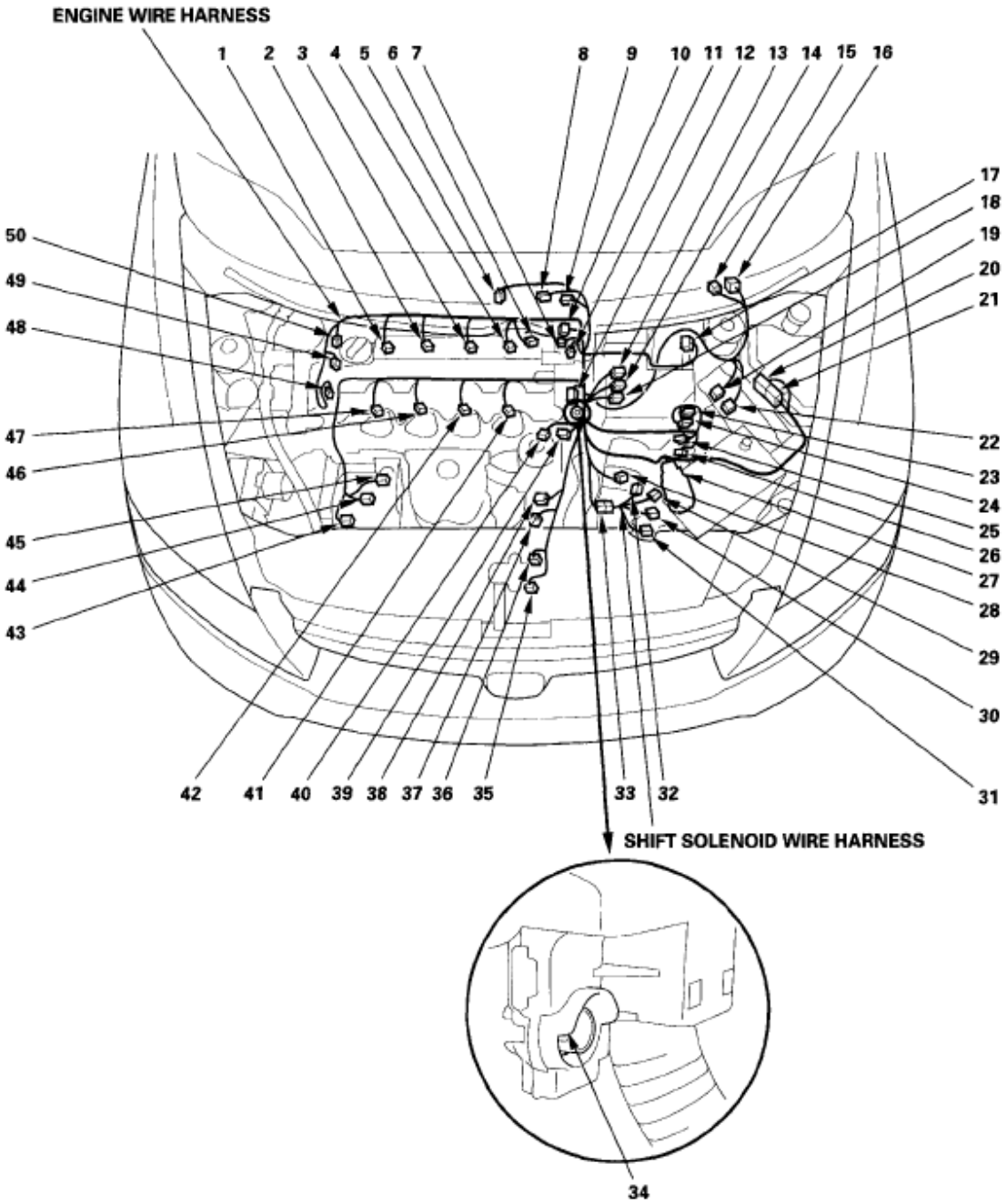


Fig. 2: Identifying Engine Wire Harness And Shift Solenoid Wire Harness (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE WIRE HARNESS (M/T EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	33	3	Middle of engine compartment		
A/F sensor (Sensor 1)	28	4	Exhaust manifold		
Alternator	34	4	Middle of engine compartment		

Back-up light switch	23	2	Transmission housing			
Camshaft position (CMP) sensor B	13	3	Middle of engine compartment			
Crankshaft position (CKP) sensor	26	3	Middle of engine compartment			
ECM connector B	21	44	Left side of engine compartment			
ECM connector C	18	44	Left side of engine compartment			
Engine coolant temperature (ECT) sensor 1	29	2	Middle of engine compartment			
Engine oil pressure (EOP) sensor	39	3	Middle of engine compartment			
EVAP canister purge valve	7	2	Middle of engine compartment			
Exhaust gas recirculation (EGR) valve and position sensor	30	5	Middle of engine compartment			
Ignition coil No. 1	37	3	Middle of engine compartment			
Ignition coil No. 2	36	3	Middle of engine compartment			
Ignition coil No. 3	32	3	Middle of engine compartment			
Ignition coil No. 4	31	3	Middle of engine compartment			
Injector No. 1	1	2	Middle of engine compartment			
Injector No. 2	2	2	Middle of engine compartment			
Injector No. 3	3	2	Middle of engine compartment			
Injector No. 4	4	2	Middle of engine compartment			
Intake manifold tuning (IMT) actuator	38	5	Middle of engine compartment			
Manifold absolute pressure (MAP) sensor	6	3	Middle of engine compartment			
Mass air flow	17	5	Middle of engine			

(MAF) sensor/Intake air temperature (IAT) sensor			compartment		
Oil pressure switch	25	1	Middle of engine compartment		
Output shaft (countershaft) speed sensor	11	3	Transmission housing		
Rocker arm oil control solenoid	40	2	Middle of engine compartment		
Secondary HO2S (Sensor 2)	27	4	Exhaust manifold		
Starter solenoid	10	1	Middle of engine compartment		
Throttle body (TP sensor A/B, throttle actuator)	12	6	Middle of engine compartment		
C101	16	23	Left side of engine compartment	**ENGINE COMPARTMENT WIRE HARNESS** (see)	
C102	15	1	Left side of engine compartment	**ENGINE COMPARTMENT WIRE HARNESS** (see)	
C103	9	1	Middle of engine compartment	Knock sensor subharness	
C105 (Junction connector)	14	24	Middle of engine compartment		
(+)	22		Left side of engine compartment	Battery (+) terminal	
T3	20		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	
T4	8		Middle of engine compartment	Starter motor	
T101	19		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	
T102	35		Middle of engine compartment	Alternator	
G101	24		Middle of engine compartment	Body ground, via engine wire harness	

CONNECTOR TO HARNESS INDEX - KNOCK SENSOR SUBHARNESS (M/T)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Knock sensor	5	1	Middle of engine compartment		
C103	9	1	Middle of engine compartment	Engine wire harness	

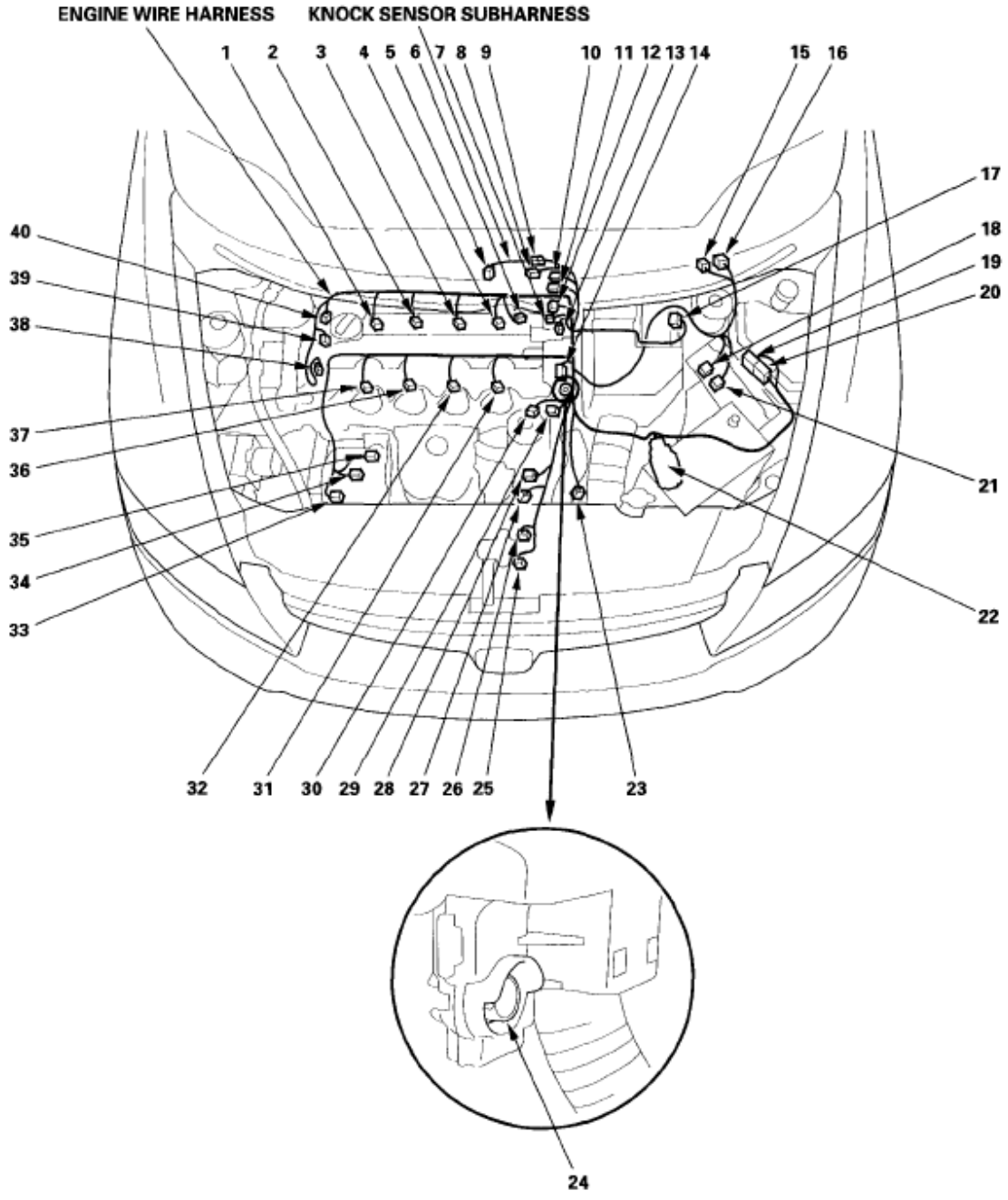


Fig. 3: Identifying Engine Wire Harness (M/T Except Si Model) And Knock Sensor Subharness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE WIRE HARNESS (SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back-up light switch	20	2	Transmission housing		
Camshaft position (CMP) sensor A	21	3	Middle of engine compartment		
Camshaft position (CMP) sensor B	12	3	Middle of engine compartment		
Crankshaft position (CKP) sensor	1	3	Middle of engine compartment		
ECM connector B	15	44	Left side of engine compartment		
ECM connector C	13	44	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 1	11	2	Middle of engine compartment		
Engine oil pressure (EOP) switch	3	1	Right side of engine compartment		
EVAP canister purge valve	10	2	Middle of engine compartment		
Ignition coil No. 1	6	3	Middle of engine compartment		
Ignition coil No. 2	7	3	Middle of engine compartment		
Ignition coil No. 3	8	3	Middle of engine compartment		
Ignition coil No. 4	9	3	Middle of engine compartment		
Injector No. 1	29	2	Middle of engine compartment		
Injector No. 2	28	2	Middle of engine compartment		
Injector No. 3	27	2	Middle of engine compartment		
Injector No. 4	23	2	Middle of engine compartment		
Manifold absolute pressure (MAP) sensor	25	3	Middle of engine compartment		
Mass air flow (MAF) sensor/Intake air	18	5	Middle of engine compartment		

temperature (IAT) sensor					
Output shaft (countershaft) speed sensor	17	3	Transmission housing		
Reverse lockout solenoid	16	2	Transmission housing		
Rocker arm oil control solenoid	4	2	Middle of engine compartment		
Rocker arm oil pressure switch	5	2	Middle of engine compartment		
Throttle body (TP sensor A/B, throttle actuator)	22	6	Middle of engine compartment		
VTC oil control solenoid valve	2	2	Middle of engine compartment		
C101	14	23	Left side of engine compartment	**ENGINE COMPARTMENT WIRE HARNESS** (see)	
C105 (Junction connector)	19	24	Left side of engine compartment		
C106	26	10	Front of engine	Starter subharness (see)	
G101	24		Middle of engine compartment	Body ground, via engine wire harness	

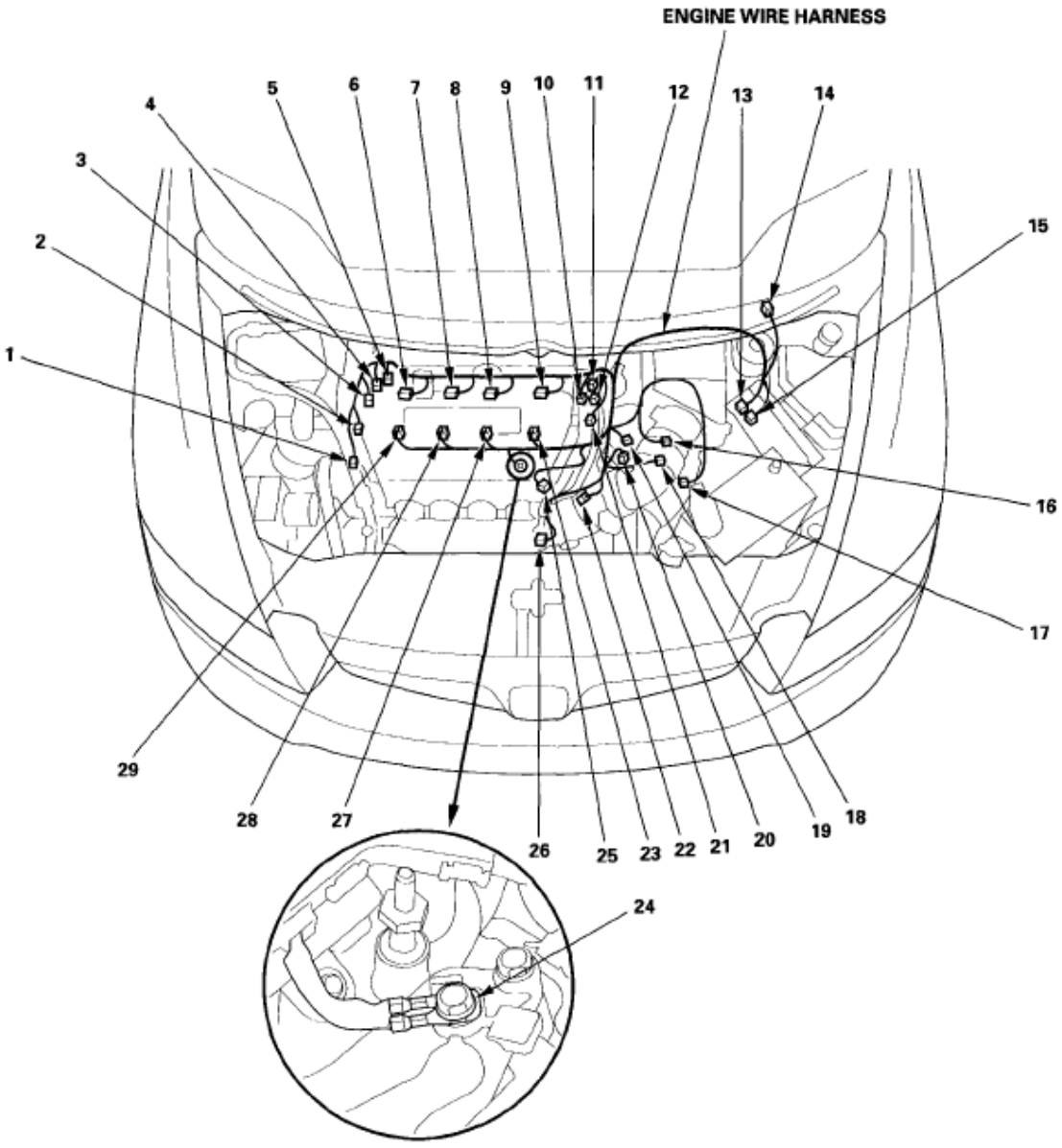


Fig. 4: Identifying Engine Wire Harness (Si Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - STARTER SUBHARNESS (SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	9	3	Middle of engine compartment		
Alternator	10	4	Middle of engine compartment		
Knock sensor	7	1	Middle of engine compartment		
Starter solenoid	6	1	Middle of engine compartment		
C102	4	1	Middle of engine compartment	**ENGINE COMPARTMENT**	

				WIRE HARNESS (see)	
C106	5	10	Middle of engine compartment	**ENGINE WIRE HARNESS** (see)	
(+)	3		Left side of engine compartment	Battery (+) terminal	
T3	2		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	
T4	11		Middle of engine compartment	Starter motor	
T101	1		Left side of engine compartment	Under-hood fuse/relay box (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	
T102	8		Middle of engine compartment	Alternator	

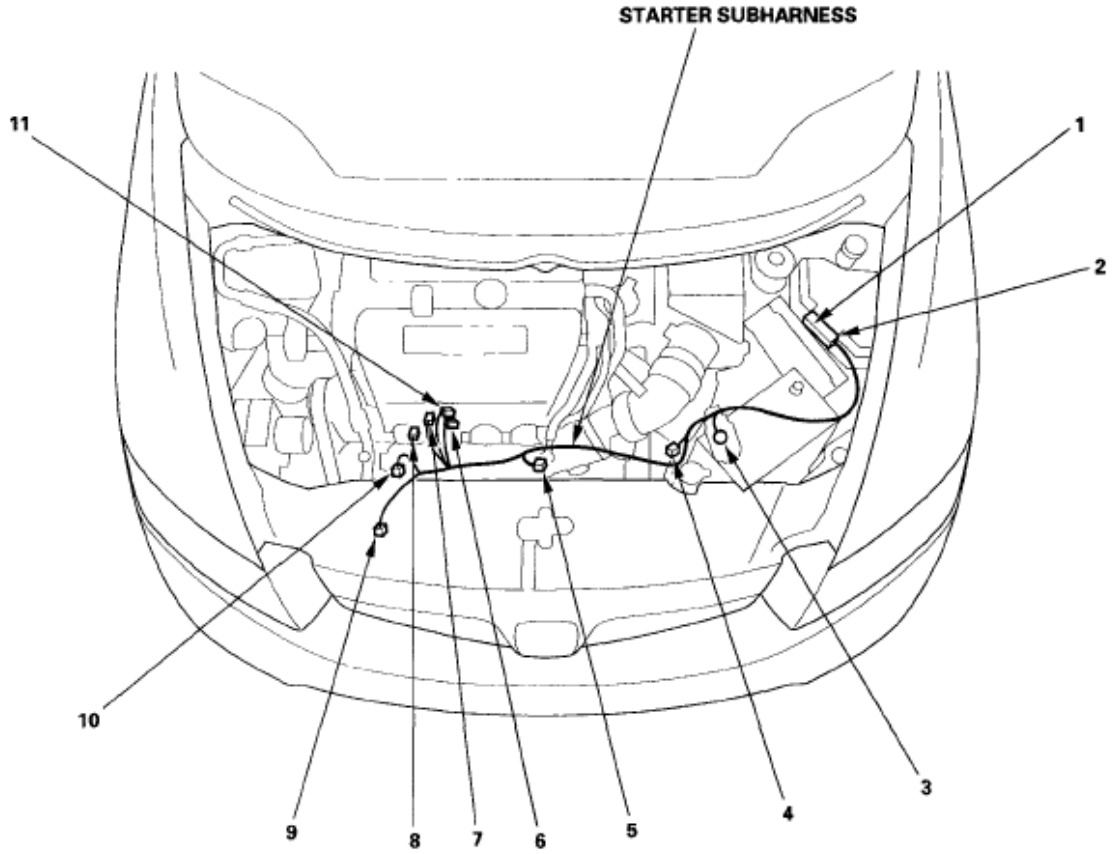


Fig. 5: Identifying Starter Subharness (Si Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE COMPARTMENT WIRE HARNESS (LEFT BRANCH) (EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C condenser fan motor	38	2	Front of engine compartment		
APP sensor	2	6	Under left side of dash		
Brake fluid level switch	3	2	Left side of engine compartment		
Brake pedal position switch	7	4	Under left side of dash		
Clutch pedal position switch (for cruise control)	9	3	Under left side of dash		M/T
Clutch interlock switch (for starter cut)	8	2	Under left side of dash		M/T
ECM/PCM connector A	27	44	Left side of engine compartment		
Engine coolant temperature (ECT)	34	2	Front of engine compartment sensor 2		
Hood switch (security)	37	2	Front of engine compartment		
Horn	32	1	Behind left side of front bumper		
Left front impact sensor	28	4	Under left headlight		
Left front side marker/parking/turn signal lights	26	3	Behind left headlight		
Left front wheel sensor	36	2	Left side of engine compartment		
Left headlight (high beam)	31	2	Behind left headlight		
Left headlight (low beam)	29	2	Behind left headlight		
Optional connector (for fog light)	6	1	Under left side of dash		
Outside air temperature sensor	33	2	Front of engine compartment		
Radiator main fan motor	35	2	Front of engine compartment		
Under-dash fuse/relay box	10	34	Under left side of dash		

connector F (see)						
Under-dash fuse/relay box connector G (see)	12	21	Under left side of dash			
Under-hood fuse/relay box connector A (ELD unit) (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	19	3	Behind under-hood fuse/relay box		USA models	
Under-hood fuse/relay box connector C (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	20	2	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector D (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	22	8	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector E (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	21	10	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector F (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	24	20	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector G (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	17	1	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector H (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	18	1	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector J (see	23	4	Behind under-hood fuse/relay box			

CONNECTOR TO FUSE/RELAY BOX INDEX)					
Under-hood fuse/relay box connector K (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	25	2	Behind under-hood fuse/relay box		
C101	5	23	Left side of engine compartment	Engine wire harness • A/T (see **ENGINE WIRE HARNESS (A/T)**) • M/T (see **ENGINE WIRE HARNESS (M/T EXCEPT SI MODEL)**)	
C102	4	1	Left side of engine compartment	Engine wire harness • A/T (see **ENGINE WIRE HARNESS (A/T)**) • M/T (see **ENGINE WIRE HARNESS (M/T EXCEPT SI MODEL)**)	
C201	14	14	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C202	13	20	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C203	11	4	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C204	16	14	Under left side of dash	Floor wire harness	

				• 4-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)**) • 2-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (2-DOOR)**)	
C205	1	2	Under left side of dash	**A/C wire harness** (see)	
G301	30		Left side of engine compartment	Body ground, via engine compartment wire harness	
G401	15		Left kick panel	Body ground, via engine compartment wire harness	

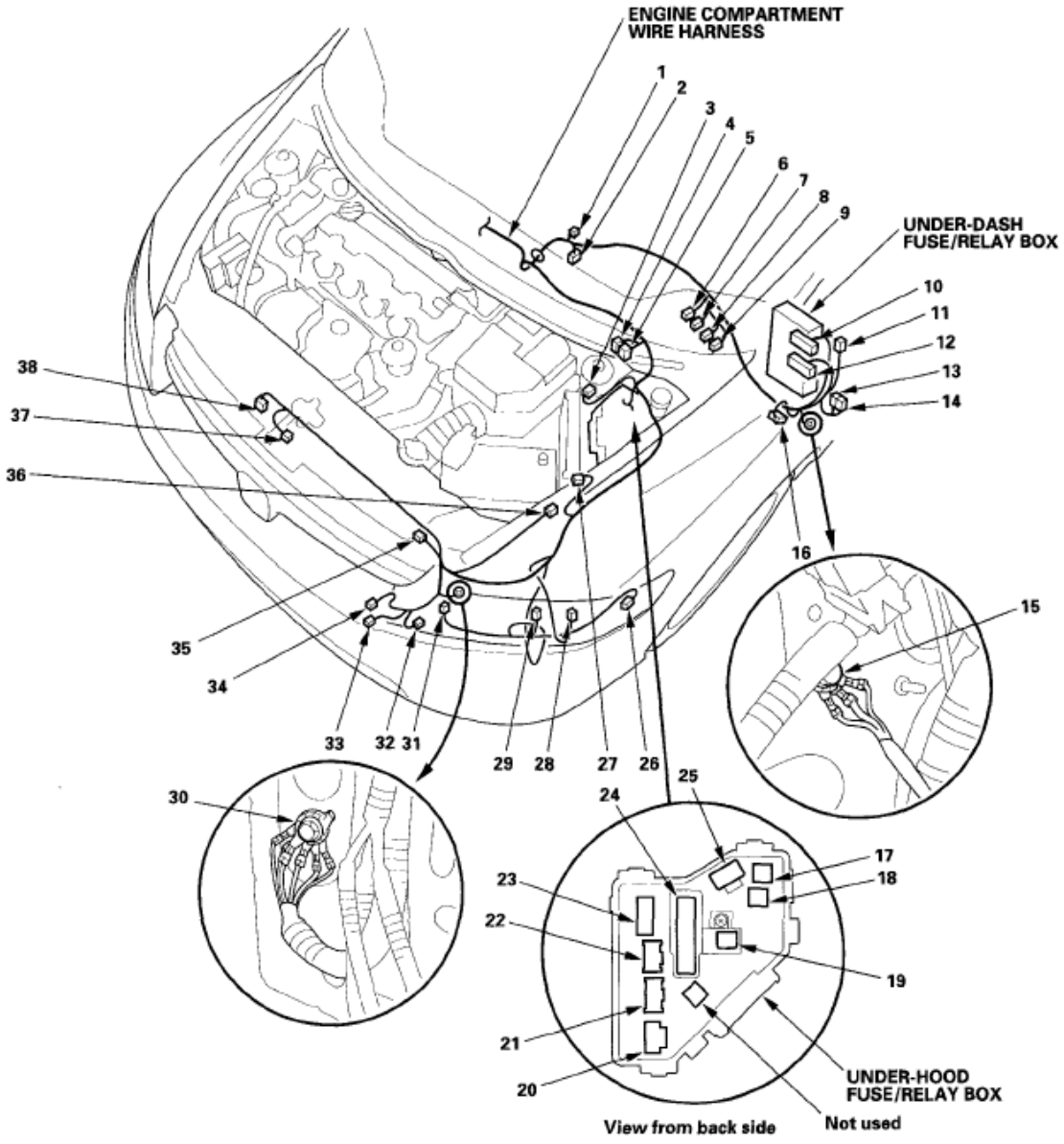


Fig. 6: Identifying Engine Compartment Wire Harness And Connector Terminals - Except Si Model (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE COMPARTMENT WIRE HARNESS (RIGHT BRANCH) (EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS modulator-control unit	13	25	Right side of engine compartment		
A/C pressure sensor	2	3	Right side of engine compartment		
Optional connector (for fog light)	9	1	Behind right headlight		

Power steering pressure (PSP) switch	15	2	Right side of engine compartment		
Right front impact sensor	10	4	Under right headlight		
Right front side marker/parking/turn signal lights	11	3	Behind right headlight		
Right front wheel sensor	14	2	Right side of engine compartment		
Right headlight (hight beam)	3	2	Behind right headlight		
Right headlight (low beam)	8	2	Behind right headlight		
Windshield washer motor	6	2	Behind right side of front bumper		
Windshield washer fluid level switch	7	2	Behind right side of front bumper		Canada
Windshield wiper motor	1	5	Under right side of windshield		
C206 (Junction connector)	12	6	Right side of engine compartment		
G201	4		Behind right side of front bumper	Body ground, via engine compartment wire harness	
G202	5		Behind right side of front bumper	Body ground, via engine compartment wire harness	

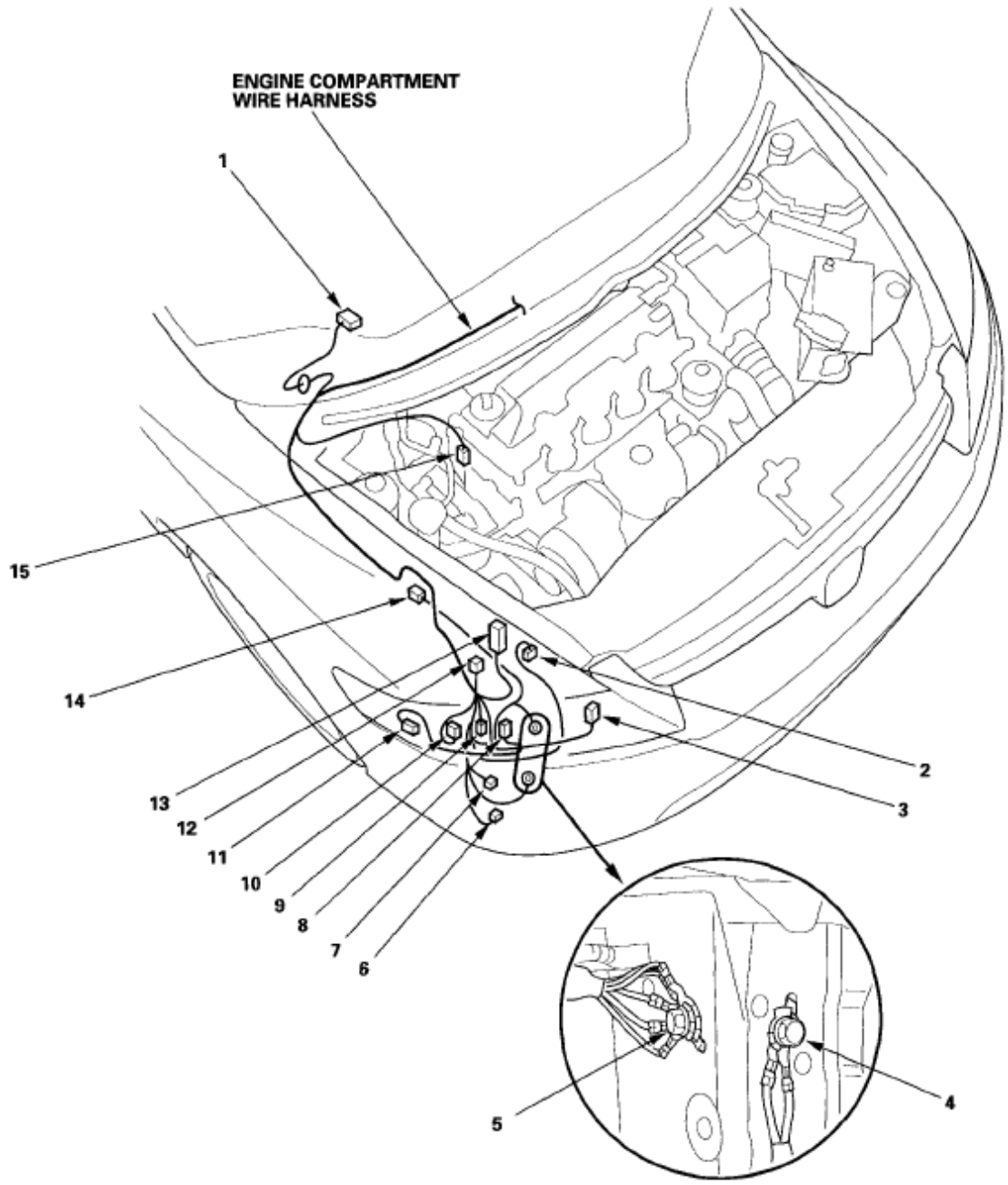


Fig. 7: Identifying Engine Compartment Wire Harness And Connector Terminals - Except Si Model (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE COMPARTMENT WIRE HARNESS (LEFT BRANCH) (SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C condenser fan motor	39	2	Front of engine compartment		
APP sensor	2	6	Under left side of dash		
Brake fluid level	3	2	Left side of		

switch			engine compartment			
Brake pedal position switch	7	4	Under left side of dash			
Clutch pedal position switch (for cruise control)	9	3	Under left side of dash			
Clutch interlock switch (for starter cut)	8	2	Under left side of dash			
ECM connector A	28	44	Left side of engine compartment			
Engine coolant temperature (ECT) sensor 2	35	2	Front of engine compartment			
Hood switch (security)	38	2	Front of engine compartment			
Horn	33	1	Behind left side of front bumper			
Left front impact sensor	29	4	Under left headlight			
Left front side marker/parking/turn signal lights	27	3	Behind left headlight			
Left front wheel sensor	37	2	Left side of engine compartment			
Left headlight (high beam)	32	2	Behind left headlight			
Left headlight (low beam)	30	2	Behind left headlight			
Optional connector (for fog light)	8	1	Under left side of dash			
Outside air temperature sensor	34	2	Front of engine compartment			
Radiator main fan motor	36	2	Front of engine compartment			
Under-dash fuse/relay box connector F (see)	10	34	Under left side of dash			
Under-dash fuse/relay box connector G (see)	12	21	Under left side of dash			
Under-hood fuse/relay box connector A (ELD unit) (see **CONNECTOR TO**	19	3	Behind under-hood fuse/relay box			

FUSE/RELAY BOX INDEX)						
Under-hood fuse/relay box connector B (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	20	1	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector C (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	21	2	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector D (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	23	8	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector E (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	22	10	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector F (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	25	20	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector G (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	17	1	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector H (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	18	1	Behind under-hood fuse/relay box			
Under-hood fuse/relay box connector J (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	24	4	Behind under-hood fuse/relay box			

Under-hood fuse/relay box connector K (see **CONNECTOR TO FUSE/RELAY BOX INDEX**)	26	2	Behind under-hood fuse/relay box		
C101	5	23	Left side of engine compartment	**ENGINE WIRE HARNESS** (see)	
C102	4	1	Left side of engine compartment	**STARTER SUBHARNESS** (see)	
C202	13	20	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C203	11	4	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C204	15	14	Under left side of dash	Floor wire harness • 4-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)**) • 2-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (2-DOOR)**)	
C205	1	2	Under left side of dash	**A/C wire harness** (see)	
C207	16	3	Under left side of dash	**FLOOR WIRE HARNESS** (see)	(1)
G301	31		Left side of engine compartment	Body ground, via engine compartment wire harness	
G401	14		Left kick panel	Body ground, via engine compartment wire harness	

(1) 4-door with premium sound system

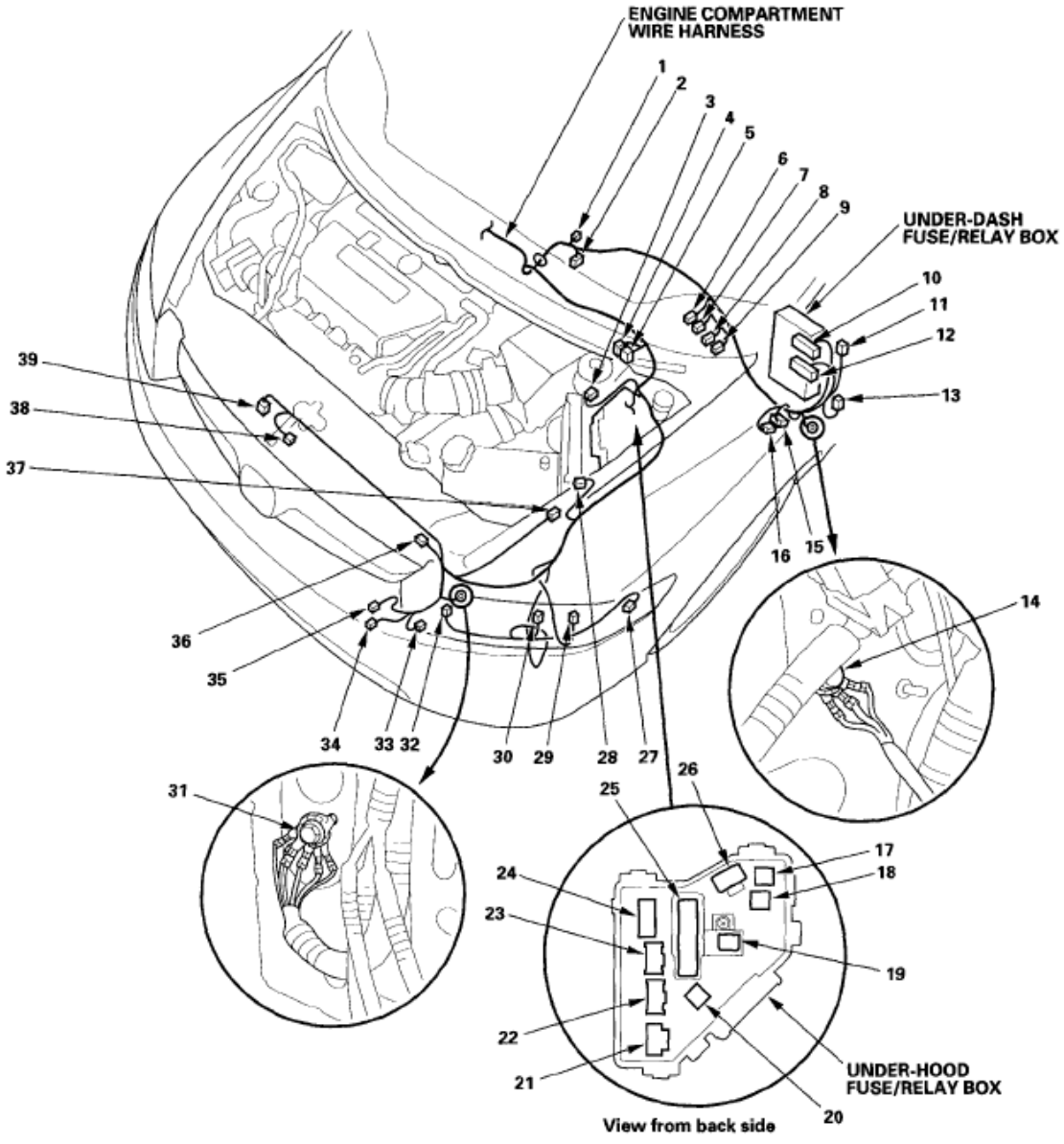


Fig. 8: Identifying Engine Compartment Wire Harness And Connector Terminals - Si Model (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ENGINE COMPARTMENT WIRE HARNESS (RIGHT BRANCH) (SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS modulator-control unit	18	25	Right side of engine compartment		(1)
A/C pressure sensor	7	3	Right side of engine compartment		
EPS motor A	4	2	Right side of engine		

			compartment		
EPS motor B	20	1	Right side of engine compartment		
EPS control unit connector A	22	2	Under right side of dash		
EPS control unit connector B	23	2	Under right side of dash		
EPS control unit connector C	24	28	Under right side of dash		
EPS control unit connector D	25	2	Under right side of dash		
Motor-angle sensor	5	6	Right side of engine compartment		
Optional connector (for fog light)	14	1	Behind right headlight		
Right front impact sensor	15	4	Under right headlight		
Right front side marker/parking/turn signal lights	16	3	Behind right headlight		
Right front wheel sensor	19	2	Right side of engine compartment		
Right headlight (high beam)	8	2	Behind right headlight		
Right headlight (low beam)	13	2	Behind right headlight		
Torque sensor	6	4	Right side of engine compartment		
VSA modulator-control unit	1	37	Right side of engine compartment		(2)
Windshield washer motor	11	2	Behind right side of front bumper		
Windshield washer fluid level switch	12	2	Behind right side of front bumper		(3)
Windshield wiper motor	3	5	Under right side of windshield		
C206 (Junction connector)	17	6	Right side of engine compartment		
C207 (Junction connector)	21	6	Right side of engine compartment		
G201	10		Right side of engine	Body ground, via engine	

			compartment	compartment wire harness	
G202	9		Right side of engine compartment	Body ground, via engine compartment wire harness	
G402	1		Under right side of dash	Body ground, via engine compartment wire harness	
G403	2		Under right side of dash	Body ground, via engine compartment wire harness	

(1) With ABS

(2) With VSA

(3) Canada models

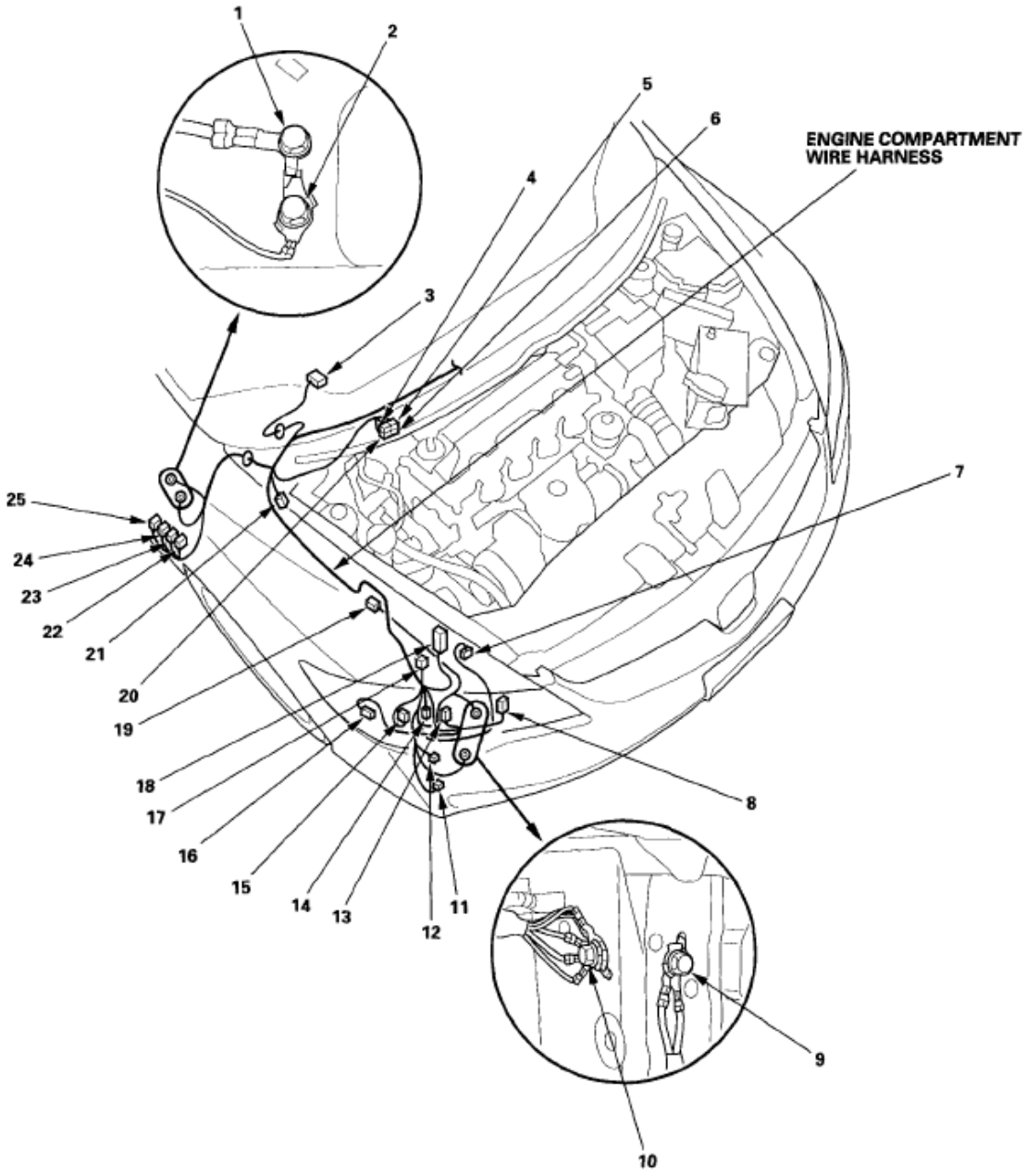


Fig. 9: Identifying Engine Compartment Wire Harness And Connector Terminals - Si Model (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DASHBOARD WIRE HARNESS (VIEW OF DRIVER SIDE)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Dashlights brightness controller	15	7	Left side of dash		
Gauge control module connector (tach)	12	36	Behind gauge		

Gauge control module connector (speedo)	11	12	Behind gauge		
Left tweeter	1	2	Left side of dash		
Memory erase signal (MES) connector	20	2	Left kick panel		
Power mirror switch	17	13	Left side of dash		2-door
Under-dash fuse/relay box connector C (see)	19	4	Left kick panel		
Under-dash fuse/relay box connector D (see)	18	2	Left kick panel		
Under-dash fuse/relay box connector J (see)	3	4	Left kick panel		
Under-dash fuse/relay box connector K (see)	4	8	Left kick panel		
Under-dash fuse/relay box connector M (see)	6	10	Left kick panel		
Under-dash fuse/relay box connector N (see)	8	14	Left kick panel		
Under-dash fuse/relay box connector P (see)	5	10	Left kick panel		
Under-dash fuse/relay box connector Q (see)	7	16	Left kick panel		
Under-dash fuse/relay box connector R (see)	9	20	Left kick panel		
Under-dash fuse/relay box connector S	10	20	Under left side of dash		

(see)					
Under-dash fuse/relay box connector T (see)	2	34	Under left side of dash		
VSA OFF switch	16	5	Left side of dash		(5)
C201	26	14	Under left side of dash	**ENGINE COMPARTMENT WIRE HARNESS** (see)	(3)
C202	25	20	Under left side of dash	Engine compartment wire harness • **EXCEPT SI MODEL** (see) • **SI MODEL** (see)	
C203	21	4	Under left side of dash	Engine compartment wire harness • **EXCEPT SI MODEL** (see) • **SI MODEL** (see)	
C501	23	23	Under left side of dash	Floor wire harness • 4-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)**) • 2-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (2-DOOR)**)	
C502	24	20	Under left side of dash	**FLOOR WIRE HARNESS** (see)	4-door
C502	24	4	Under left side of dash	**FLOOR WIRE HARNESS** (see)	(4)
C751	27	23	Under left side of dash	Driver's door wire harness • 4-door (see **DRIVER'S DOOR WIRE**	

				HARNESS (4-DOOR)) • 2-door (see **DRIVER'S DOOR WIRE HARNESS (2-DOOR)**)	
C752	28	18	Under left side of dash	Driver's door wire harness • 4-door (see **DRIVER'S DOOR WIRE HARNESS (4-DOOR)**) • 2-door (see **DRIVER'S DOOR WIRE HARNESS (2-DOOR)**)	
C801	22	20	Under left side of dash	Roof wire harness • 4-door (see **ROOF WIRE HARNESS (4-DOOR WITH MOONROOF)**) • 2-door (see **ROOF WIRE HARNESS (2-DOOR WITH MOONROOF)**)	(1)
C801	22	6	Under left side of dash	Roof wire harness • 4-door (see **ROOF WIRE HARNESS (4-DOOR WITHOUT MOONROOF)**) • 2-door (see **ROOF WIRE HARNESS (2-DOOR WITHOUT MOONROOF)**)	(2)
G501	14		Under left side of dash	Body ground, via dashboard wire harness	
G503	13		Under left side	Body ground, via	

			of dash	dashboard wire harness	

(1) With moonroof

(2) Without moonroof

(3) Except Si model

(4) '07 2-door Si model with VSA

(5) '07 Si model with VSA

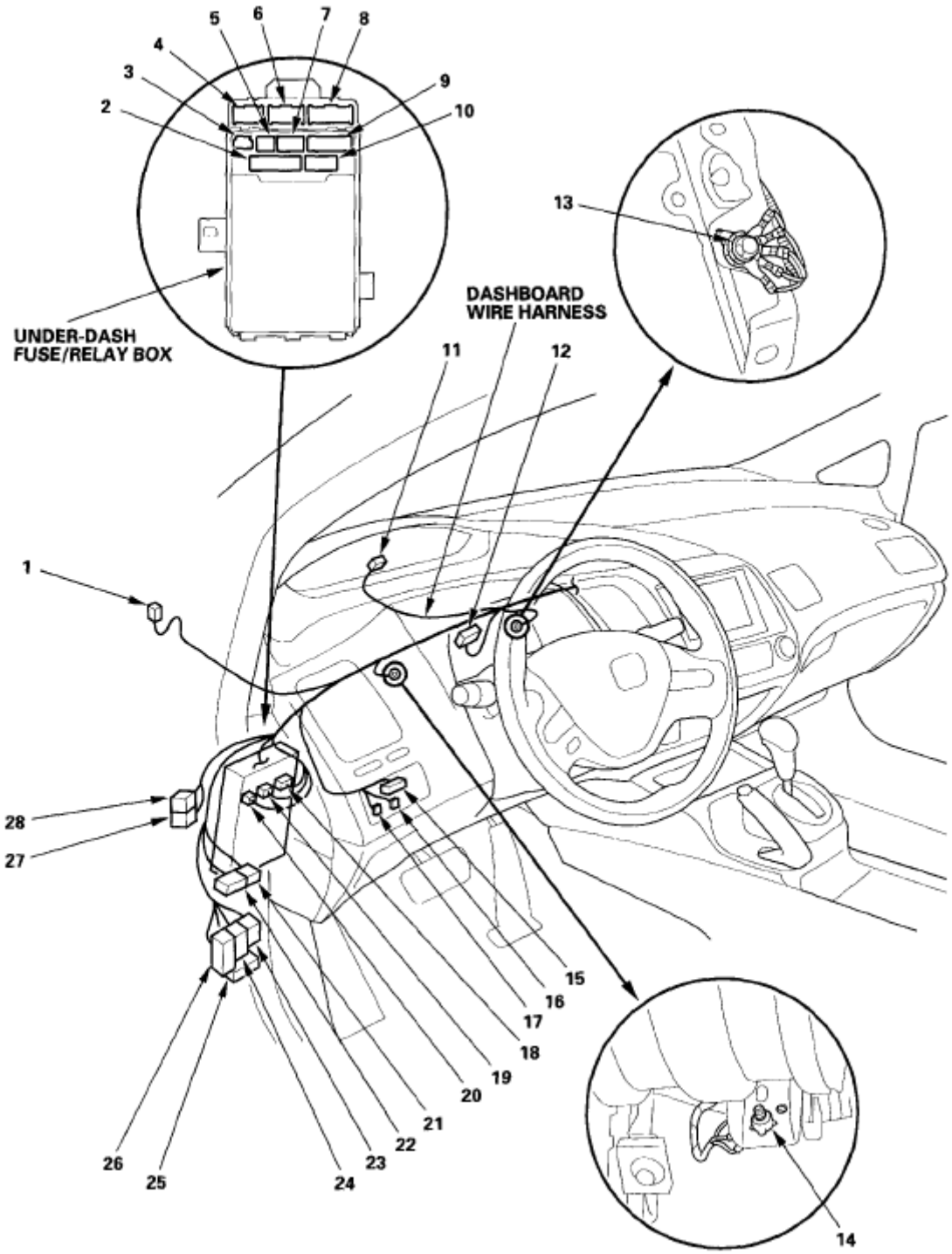


Fig. 10: Identifying Dashboard Wire Harness And Connector Terminals - Driver Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DASHBOARD WIRE HARNESS (VIEW OF MIDDLE)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
AM/FM antenna lead connector	32	1	Under middle of dash	Antenna sublead	
AM/FM antenna sublead connector	23	1	Middle of dash	Antenna lead	
Stereo amplifier connector A	28	20	Under middle of dash		(7)
Stereo amplifier connector B	29	14	Under middle of dash		(7)
Audio unit connector A	24	20	Middle of dash		(1)
Audio unit connector A	24	17	Middle of dash		(2)
Audio unit connector B	22	20	Middle of dash		(4)
Auxiliary jack assembly	36	5	Middle of dash		(5)
Data link connector	35	16	Middle of dash		
Front accessory power socket	33	2	Middle of dash		
Front accessory power socket relay	16	4	Under left side of dash		
Hazard warning switch	37	5	Middle of dash		
Junction box connector A	7	6	Under left side of dash		
Junction box connector B	8	6	Under left side of dash		
Junction box connector C	2	14	Under left side of dash		
Junction box connector D	5	6	Under left side of dash		
Junction box connector E	6	18	Under left side of dash		
Junction box connector F	9	10	Under left side of dash		
Junction box connector G	4	14	Under left side of dash		
Junction box connector H	12	10	Under left side of dash		
Junction box	10	22	Under left side		

connector J			of dash		
Junction box connector K	3	14	Under left side of dash		
Junction box connector L	11	10	Under left side of dash		
Junction box connector M	1	10	Under left side of dash		
Navigation unit connector A	21	22	Middle of dash		(3)
Navigation unit connector B	20	12	Middle of dash		(3)
Navigation unit connector C	19	5	Middle of dash		(3)
Navigation unit connector E	25	14	Middle of dash		(3)
Optional connector (for auxiliary jack)	34	6	Under middle of dash		(8)
Optional connector (I/F box connector A)	17	20	Under middle of dash		(6)
Optional connector (I/F box connector B)	18	16	Under middle of dash		(6)
Optional connector (I/F box connector C)	26	2	Under middle of dash		(6)
Optional connector (I/F box connector D)	27	2	Under middle of dash		(6)
Passenger's airbag cutoff indicator	38	4	Middle of dash		
Rear accessory power socket relay	13	4	Under left side of dash		
SRS unit connector A	31	28	Under middle of dash		
C503 (Junction connector)	15	12	Under left side of dash		EX
G504	14		Under middle of dash	Body ground, via dashboard wire harness	
G506	30		Under center console	Body ground, via dashboard wire harness	

(1) USA DX model

(2) Except USA DX models

(3) With navigation

(4) Without navigation

(5) Except DX model

(6) '06 USA CARLINK

(7) 2-door with premium sound system

(8) DX model

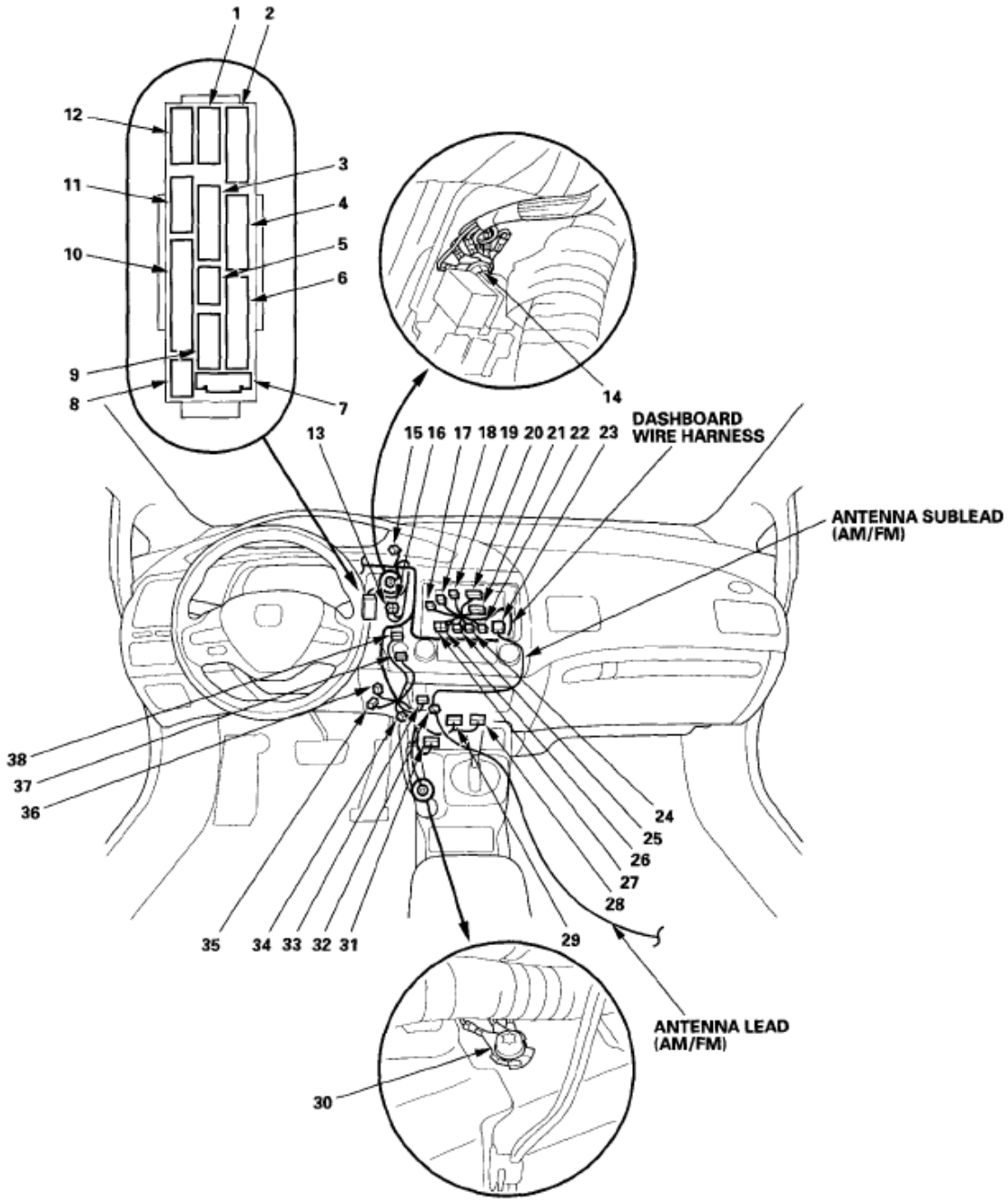


Fig. 11: Identifying Dashboard Wire Harness And Connector Terminals - Middle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DASHBOARD WIRE HARNESS (VIEW OF PASSENGER SIDE)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cable reel connector A	15	4	In steering column cover	Driver's airbag inflator	
Cable reel connector B	2	20	In steering column cover	Steering switches (audio, cruise, navigation, horn)	
Combination light switch	1	12	In steering column cover		
Heater control panel/HVAC control unit	11	24	Middle of dash		
Ignition switch	12	7	In steering column cover		
Ignition key switch	13	6	In steering column cover		
Immobilizer-keyless control unit	14	7	In steering column cover		
Passenger's airbag inflator	8	4	Under right side of dash		
Right tweeter	4	2	Right side of dash		
Steering angle sensor	16	5	In steering column cover		(1)
Wiper/Washer switch	3	8	In steering column cover		
C505	9	24	Behind left side of glove box	**A/C wire harness** (see)	
C761	6	23	Under right side of dash	Front passenger's door wire harness • 4-door (see **FRONT PASSENGER'S DOOR WIRE HARNESS (4-DOOR)**) • 2-door (see **PASSENGER'S DOOR WIRE HARNESS (2-DOOR)**)	
C762	5	18	Under right side of dash	Front passenger's door wire harness • 4-door (see	

				FRONT PASSENGER'S DOOR WIRE HARNESS (4-DOOR)) • 2-door (see **PASSENGER'S DOOR WIRE HARNESS (2-DOOR)**)	
G502	7		Under right side of dash	Body ground, via dashboard wire harness	
G505	10		Behind left side of glove box	Body ground, via dashboard wire harness	
(1) Si model with VSA					

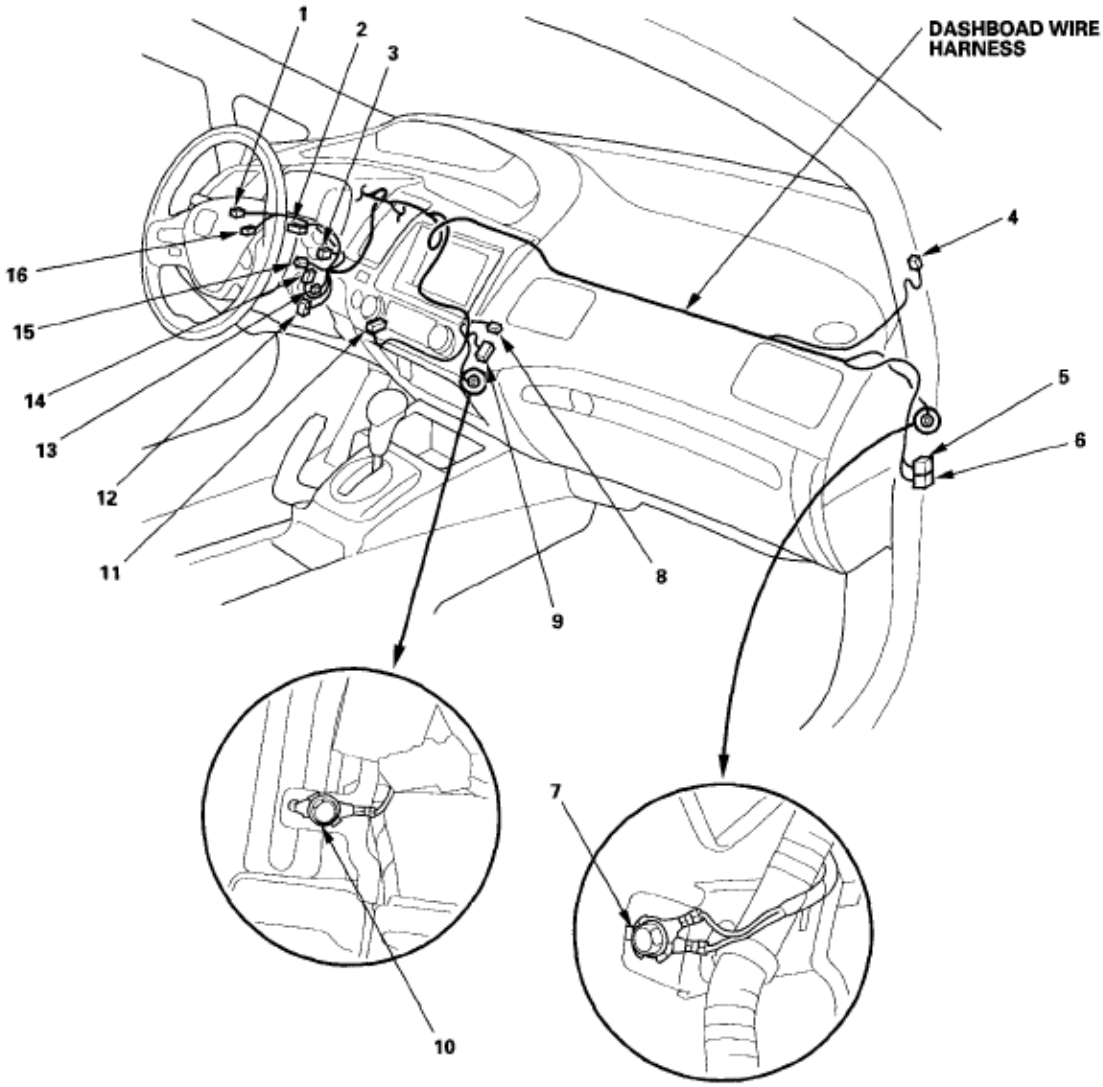


Fig. 12: Identifying Dashboard Wire Harness And Connector Terminals - Passenger Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/T gear position indicator panel light/park-pin switch	9	4	Under center console		A/T
Driver's door switch	24	1	Left B-pillar		
Driver's seat belt buckle switch	21	3	Under driver's seat		
Driver's seat belttensioner	23	4	Left B-pillar		
Driver's seat belt tension reducer solenoid	27	4	Under driver's seat		
Driver's side airbag inflator	20	2	Under driver's seat		
Left rear door switch	16	1	Left C-pillar		
Left rear wheel sensor	19	2	Under left side of floor		
Left side curtain airbag	12	2	Left C-pillar		
Left side impact sensor (FIRST)	26	4	Left side of floor		
Left side impact sensor (SECOND)	18	2	Left side of floor		
Noise condenser (for rear window defogger)	17	2	Left C-pillar		
Parking brake switch	10	1	Under console panel		
Rear window defogger connector A (+)	11	1	Left C-pillar		
Shift lock solenoid	8	2	Under console panel		A/T
SRS unit connector B	31	28	Under middle of dash		
Stereo amplifier connector A	29	20	Under driver's seat		(2)
Stereo amplifier connector B	28	14	Under driver's seat		(2)
Under-dash	5	42	Left kick panel		

fuse/relay box connector E (see)					
Yaw rate-lateral acceleration sensor	6	5	Under middle of dash		(1)
C204	4	14	Under left side of dash	Engine compartment wire harness • **EXCEPT SI MODEL** (see) • **SI MODEL** (see)	
C207	3	3	Under left side of dash	**ENGINE COMPARTMENT WIRE HARNESS** (see)	(2)
C501	2	23	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C502	1	20	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C601	7	2	Under middle of dash	**CONSOLE SUBHARNESS** (see)	(3)
C602	25	2	Under driver's seat	**DRIVER'S SEAT POSITION SENSOR HARNESS** (see)	
C701	14	14	Left C-pillar	**REAR WIRE HARNESS** (see)	
C702	15	6	Left C-pillar	**REAR WIRE HARNESS** (see)	(2)
C771	22	18	Left B-pillar	**LEFT REAR DOOR WIRE HARNESS** (see)	
G601	30		Under driver's seat	Body ground, via floor wire harness	
G603	13		Left side of floor	Body ground, via floor wire harness	

(1) Si model with VSA

(2) With premium sound system

(3) With rear accessory power socket

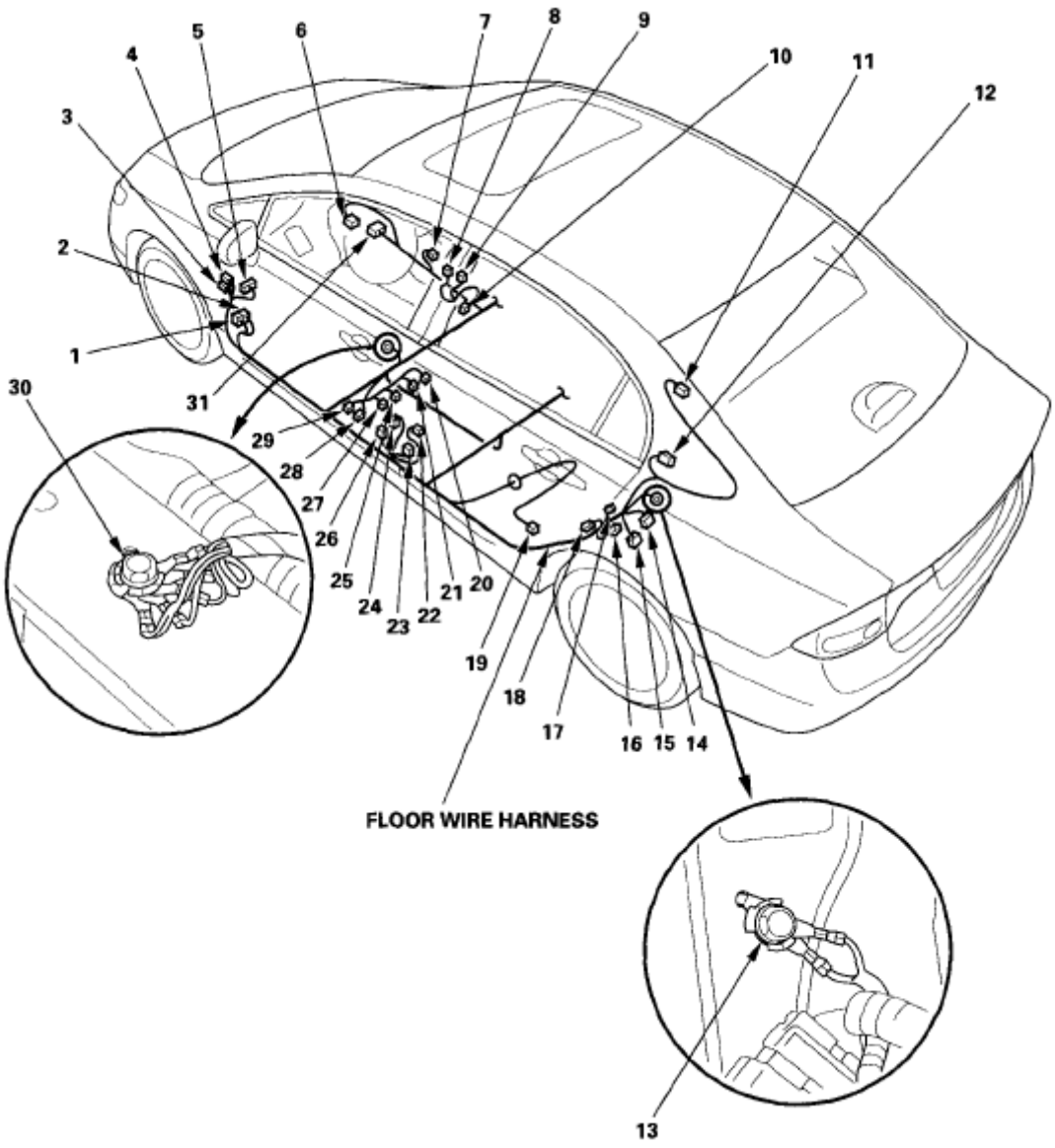


Fig. 13: Identifying Floor Wire Harness And Connector Terminals - 4-Door (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FLOOR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
EVAP canister vent shut valve	3	2	Fuel tank		
Front passenger's door switch	6	1	Right B-pillar		
Front passenger's seat belt buckle switch	12	3	Under front passenger's seat		
Front passenger's seat belt tensioner	9	4	Right B-pillar		
Front passenger's	13	4	Under front		

seat belt tension reducer solenoid			passenger's seat		
Front passenger's side airbag inflator	10	2	Under front passenger's seat		
Fuel tank pressure (FTP) sensor	2	3	Fuel tank		
Fuel tank unit (Fuel pump and fuel gauge sending unit)	1	4	Fuel tank		
Rear safing sensor	4	4	Middle of floor		
Right rear door switch	14	1	Right C-pillar		
Right rear wheel sensor	16	2	Right side of floor		
Right side curtain airbag	18	2	Right side of floor		
Right side impact sensor (FIRST)	7	4	Right side of floor		
Right side impact sensor (SECOND)	15	2	Right C-pillar		
XM receiver	17	4	Right C-pillar		(1)
C781	8	18	Right B-pillar	**RIGHT REAR DOOR WIRE HARNESS** (see)	
C782	11	4	Under front passenger's seat	**ODS unit harness** (see)	
G602	5		Under front passenger's seat	Body ground, via floor wire harness	

(1) With navigation

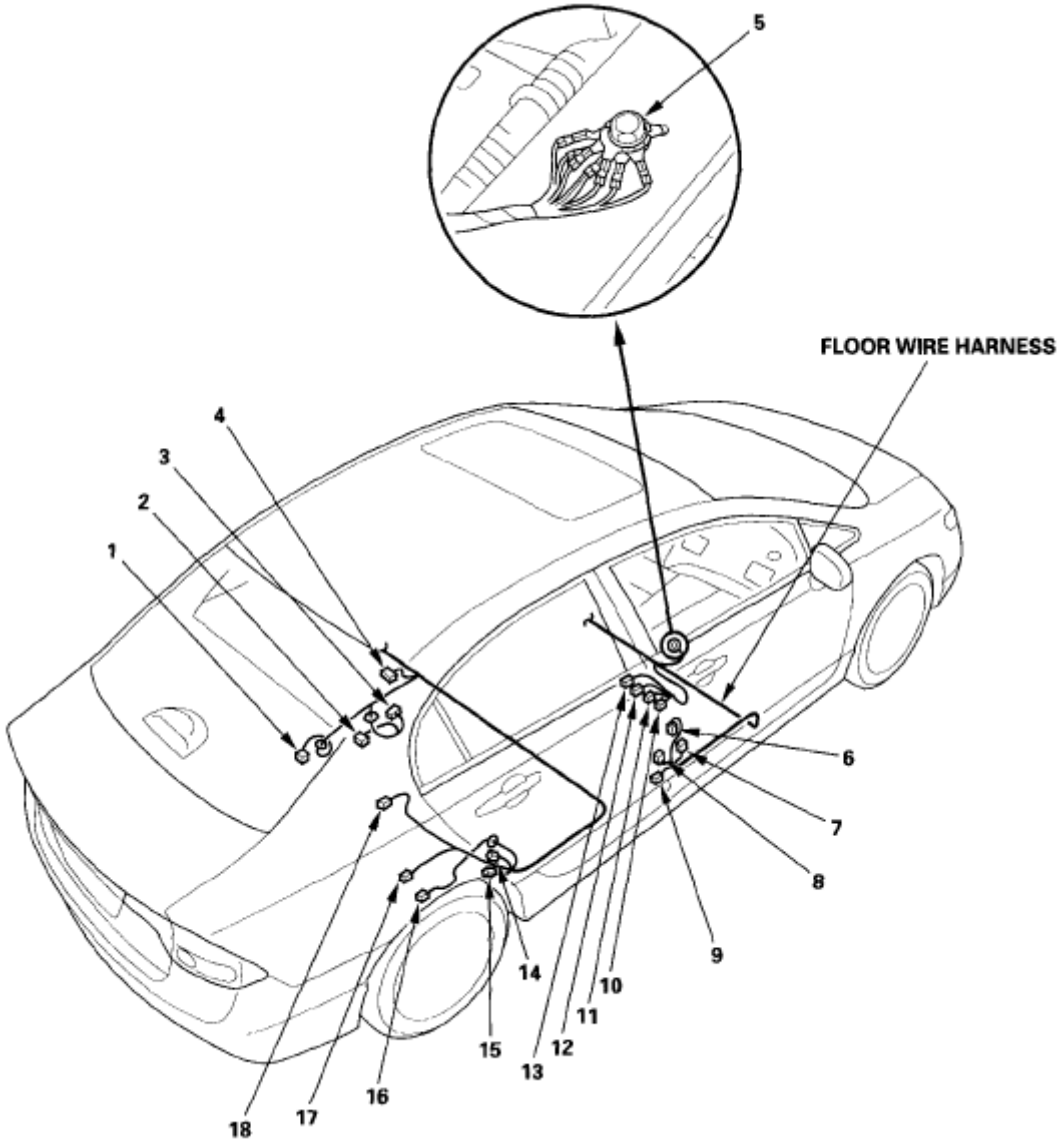


Fig. 14: Identifying Floor Wire Harness And Connector Terminals - 4-Door (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FLOOR WIRE HARNESS (LEFT BRANCH) (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/T gear position indicator panel light/park-pin switch	9	4	Under center console		A/T
Driver's door switch	16	1	Left B-pillar		
Driver's seat belt buckle switch	21	3	Under driver's seat		
Driver's seat belt tensioner	17	4	Left B-pillar		
Driver's seat belt	22	4	Under driver's		

tension reducer solenoid			seat		
Driver's seat position sensor	19	2	Under driver's seat		
Driver's side airbag inflator	20	2	Under driver's seat		
Left rear wheel sensor	14	2	Under left side of floor		
Left side curtain airbag	12	2	Left C-pillar		
Left side impact sensor (FIRST)	18	4	Left side of floor		
Left side impact sensor (SECOND)	15	2	Left side of floor		
Parking brake switch	6	1	Under console panel		
Shift lock solenoid	7	2	Under console panel		A/T
SRS unit connector B	4	28	Under middle of dash		
Under-dash fuse/relay box connector E (see)	19	42	Left kick panel		
Yaw rate-lateral acceleration sensor	3	5	Under middle of dash		(1)
C204	1	14	Under left side of dash	Engine compartment wire harness • **EXCEPT SI MODEL** (see) • **SI MODEL** (see)	
C501	23	23	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C502	24	4	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	(1)
C601	8	2	Under middle of dash	**CONSOLE SUBHARNESS** (see)	(2)
C701	13	14	Left C-pillar	Rear wire harness • Except Si	

				model (see **REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR EXCEPT SI MODEL)**) • Si model (see **REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR SI MODEL)**)	
C852	11	1	Left C-pillar	Coil subcord	
G601	5		Under driver's seat	Body ground, via floor wire harness	

(1) Si model with VSA

(2) With rear accessory power socket

CONNECTOR TO HARNESS INDEX - COIL SUBCORD (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector A (+)	10	1	Left C-pillar		
C852	11	1	Left C-piller	Floor wire harness	

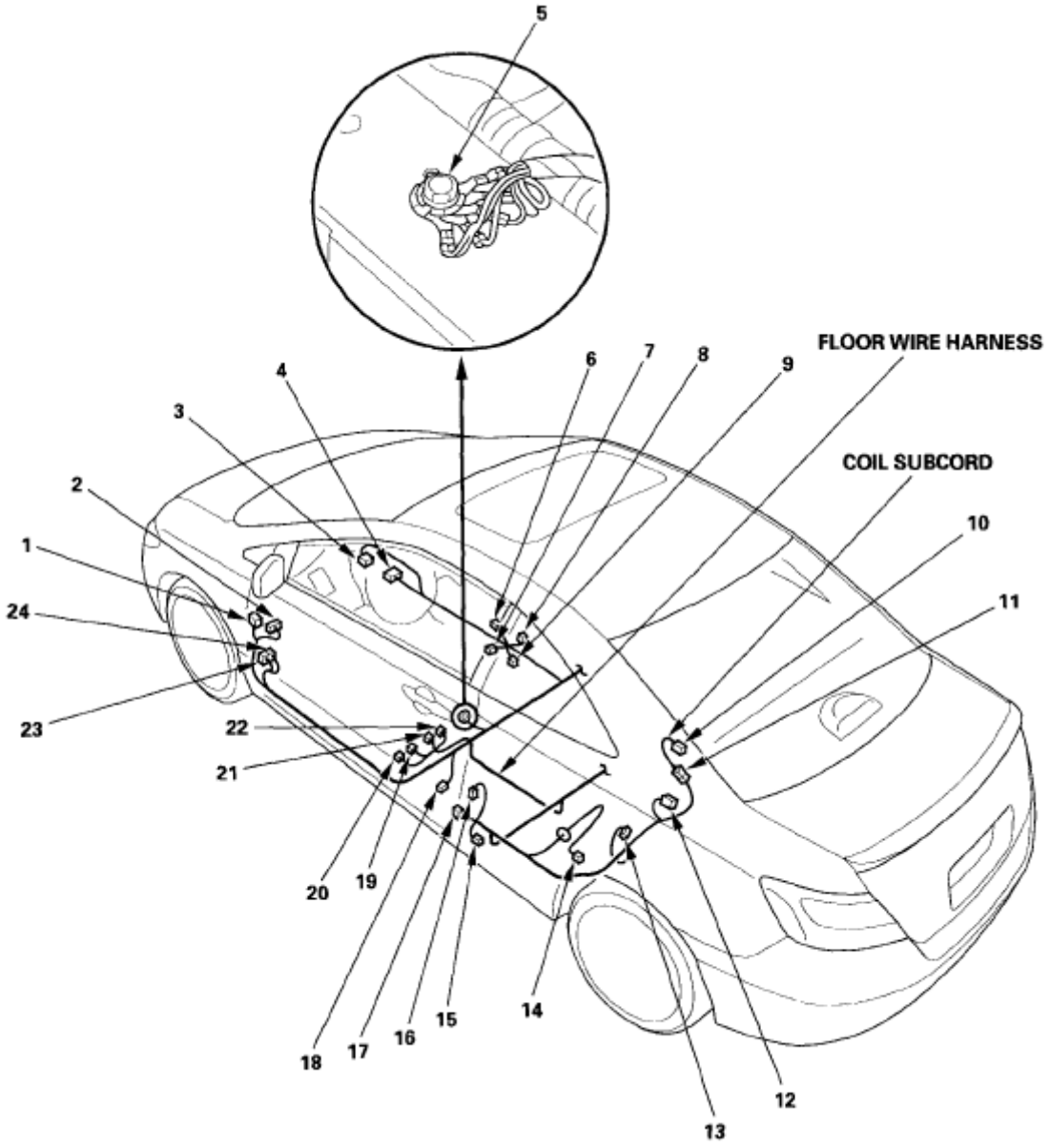


Fig. 15: Identifying Floor Wire Harness And Connector Terminals - 2-Door (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FLOOR WIRE HARNESS (RIGHT BRANCH) (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
EVAP canister vent shut valve	3	2	Fuel tank		
Fuel tank pressure (FTP) sensor	2	3	Fuel tank		
Fuel tank unit (fuel pump and fuel gauge sending unit)	1	4	Fuel tank		
Passenger's door	11	1	Right B-pillar		

switch					
Passenger's seat belt buckle switch	6	3	Under passenger's seat		
Passenger's seat belt tensioner	12	4	Right B-pillar		
Passenger's seat belt tension reducer solenoid	5	4	Under passenger's seat		
Passenger's side airbag inflator	8	2	Under passenger's seat		
Rear safing sensor	4	4	Middle of floor		
Right rear wheel sensor	14	2	Right side of floor		
Right side curtain airbag	15	2	Right side of floor		
Right side impact sensor (FIRST)	10	4	Right side of floor		
Right side impact sensor (SECOND)	13	2	Right C-pillar		
XM receiver	16	14	Right side of trunk		(1)
C782	7	4	Under passenger's seat	**ODS unit harness** (see)	
G602	9		Under passenger's seat	Body ground, via floor wire harness	

(1) With navigation

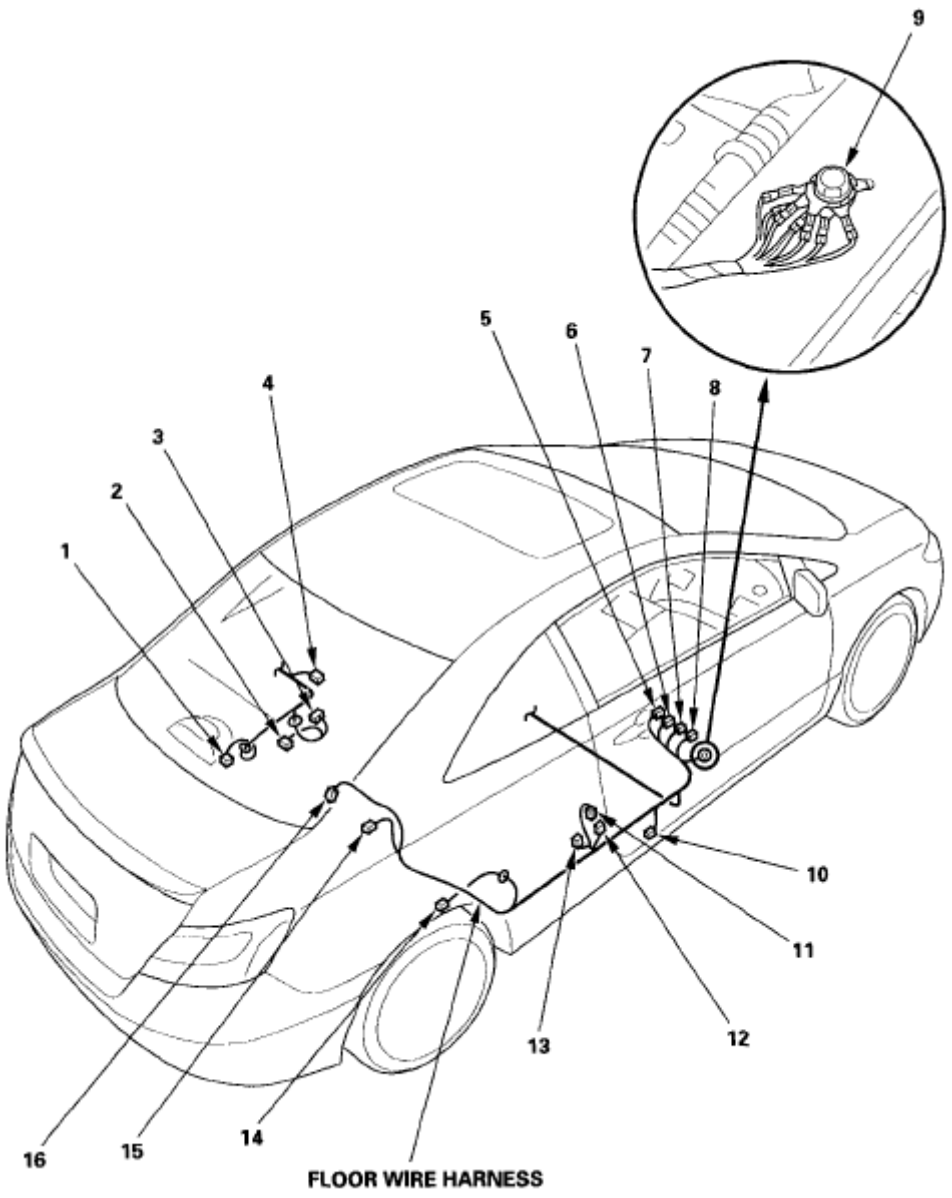


Fig. 16: Identifying Floor Wire Harness And Connector Terminals - 2-Door (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (LEFT BRANCH) (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
High mount brake light	2	2	Middle of rear shelf		(4)
Left back-up light	13	2	Behind left taillight		
Left inner taillight	11	2	Behind left side of trunk lid		
Left license plate light	10	2	Behind middle of trunk lid		
Left taillight/brake	4	4	Behind left taillight		

light					
Left rear side marker light	15	2	Behind left taillight		
Left rear speaker	17	2	Left rear shelf		
Left rear turn signal light	14	3	Behind left taillight		
Right license plate light	7	2	Behind middle of trunk lid		
Right rear speaker	1	2	Right rear shelf		
Trunk lid latch switch	9	2	Middle of trunk lid		(2)
Trunk light	3	2	Middle of rear shelf		
Trunk release actuator/trunk lid latch switch	9	3	Middle of trunk lid		(1)
Subwoofer	16	2	Middle of rear shelf		(5)
C701	18	14	Left C-pillar	**FLOOR WIRE HARNESS** (see)	
C702	19	6	Left C-pillar	**FLOOR WIRE HARNESS** (see)	(3)
C703	8	2	Middle of trunk lid	Trunk lid spoiler subharness	(3)
G701	12		Left side of trunk	Body ground, via rear wire harness	

(1) USA-EX and Si models

(2) Except USA-EX and Si models

(3) Si model

(4) Except Si model

(5) With premium sound system

CONNECTOR TO HARNESS INDEX - TRUNK LID SPOILER SUBHARNESS (4-DOOR SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
High mount brake light terminal (+)	5	-	Behind trunk lid spoiler		
High mount brake light terminal (-)	6	-	Behind trunk lid spoiler		
C703	8	2	Middle of trunk lid	Rear wire harness	

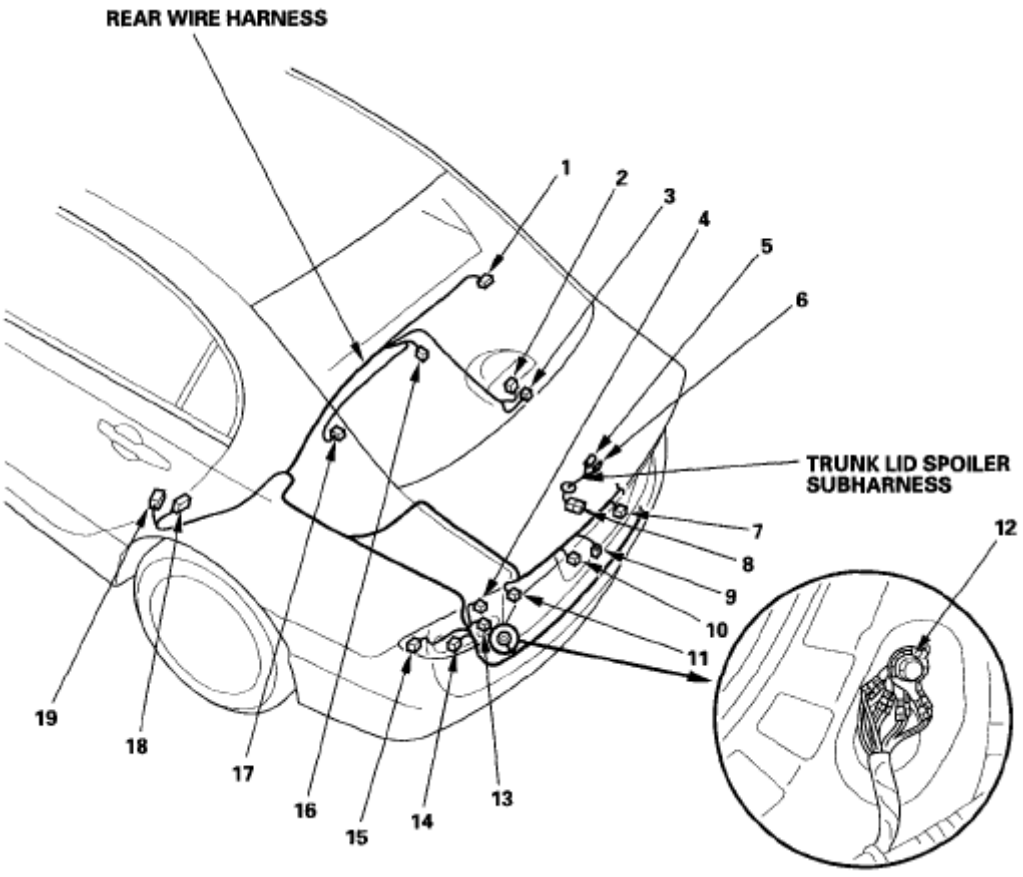


Fig. 17: Identifying Rear Wire Harness And Connector Terminals - 4-Door (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right back-up light	5	2	Behind right taillight		
Right inner taillight	7	2	Behind right side of trunk lid		
Right taillight/brake light	6	4	Behind right taillight		
Right rear side marker light	3	2	Behind right taillight		
Right rear turn signal light	4	3	Behind right taillight		
Trunk key cylinder switch	8	3	Middle of trunk lid		(1)
(1) USA-LX, EX and Si models					

CONNECTOR TO HARNESS INDEX - REAR WINDOW DEFOGGER GROUND WIRE (4-DOOR)

Connector or					

Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector (B) (-)	1	-	Right C-pillar		
G801	2		Right C-pillar	Body ground, via rear window defogger ground wire	

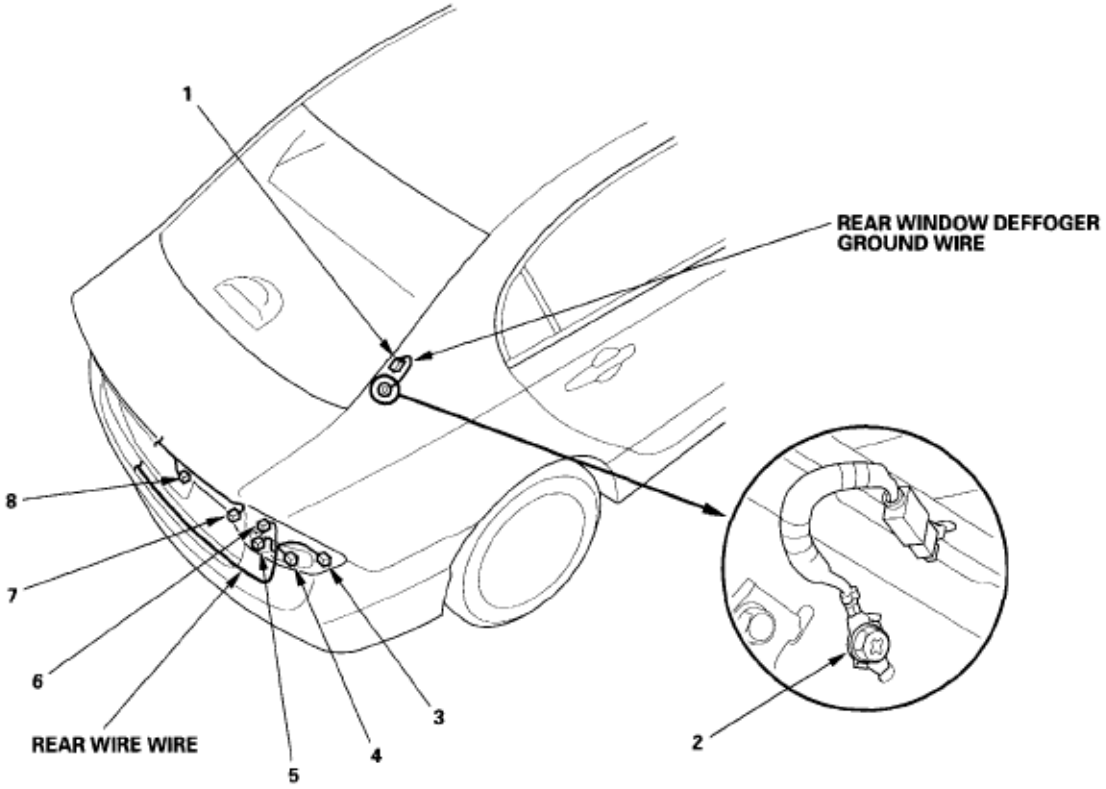


Fig. 18: Identifying Rear Wire Harness And Connector Terminals - 4-Door (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
High mount brake light	4	2	Middle of rear shelf		
Left back-up light	11	2	Behind left taillight		
Left license plate light	9	2	Behind middle of trunk lid		
Left taillight/brake light	12	3	Behind left taillight		
Left rear side marker light	14	2	Behind left taillight		

Left rear speaker	1	2	Left rear shelf		
Left rear turn signal light	13	3	Behind left taillight		
Right license plate light	7	2	Behind middle of trunk lid		
Right rear speaker	3	2	Right rear shelf		
Subwoofer	2	2	Middle of rear shelf		(1)
Trunk lid latch switch	8	2	Middle of trunk lid		(2)
Trunk release actuator/trunk lid latch switch	8	3	Middle of trunk lid		USA-EX
Trunk key cylinder switch	6	3	Right side of trunk lid		USA-LX
Trunk light	5	2	Middle of rear shelf		
C701	15	14	Left C-pillar	**FLOOR WIRE HARNESS** (see)	
G701	10		Left side of trunk	Body ground, via rear wire harness	

(1) With premium sound system

(2) Except USA-EX

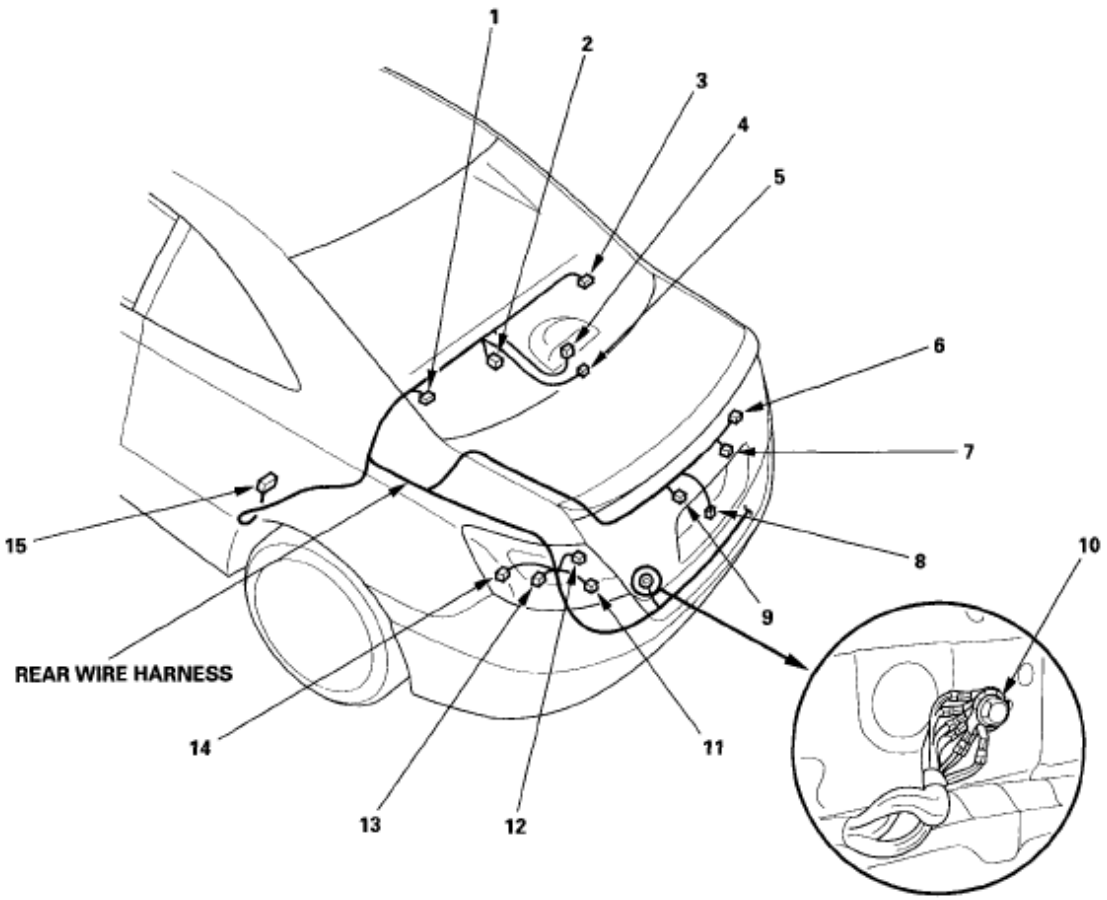


Fig. 19: Identifying Rear Wire Harness And Connector Terminals - 2-Door Except Si Model (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (RIGHT BRANCH) (2-DOOR EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right back-up light	7	2	Behind right taillight		
Right taillight/brake light	8	3	Behind right taillight		
Right rear side marker light	5	2	Behind right taillight		
Right rear turn signal light	6	3	Behind right taillight		

CONNECTOR TO HARNESS INDEX - REAR WINDOW DEFOGGER GROUND WIRE (2-DOOR EXCEPT SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger	3	-	Right C-pillar		

connector (B) (-)					
G801	4		Right C-pillar	Body ground, via rear window defogger ground wire	

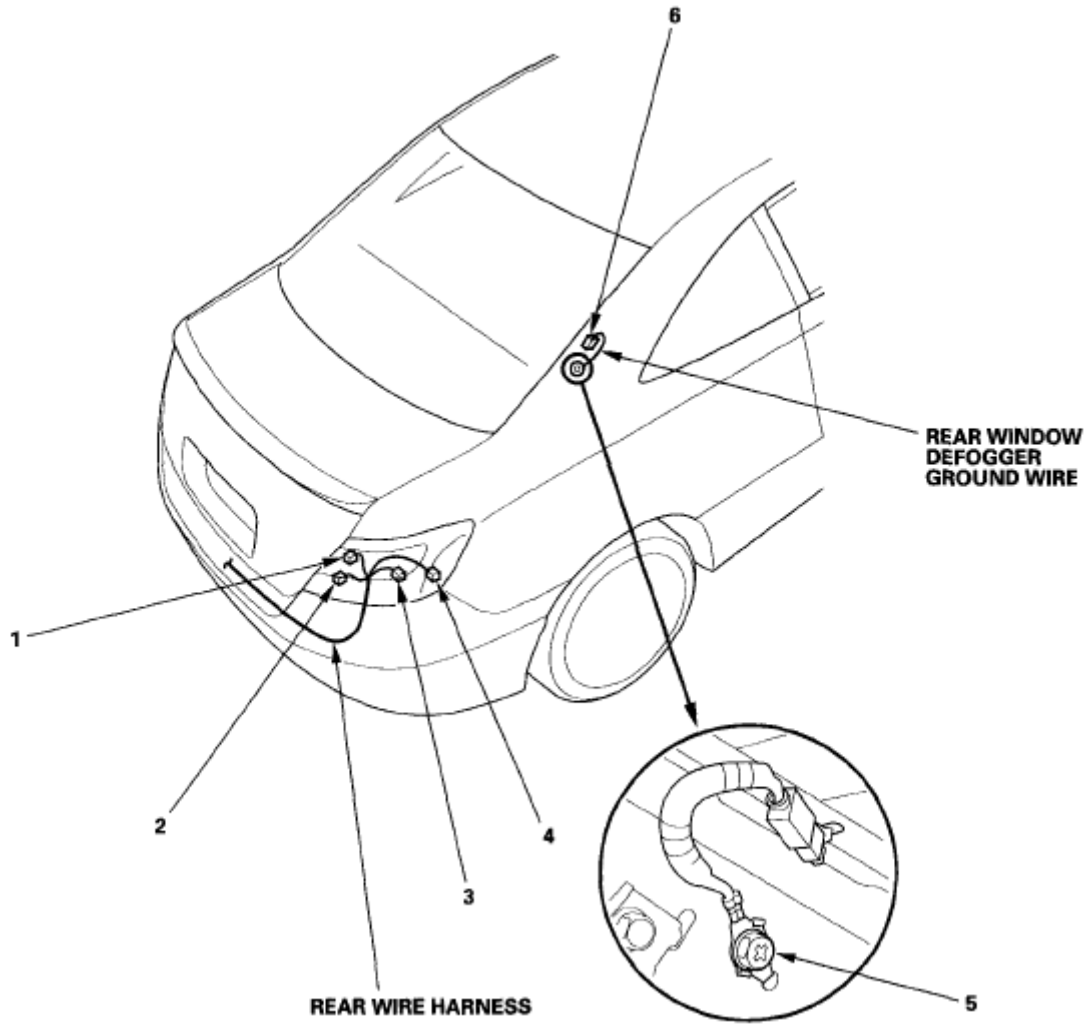


Fig. 20: Identifying Rear Wire Harness And Connector Terminals - 2-Door Except Si Model (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (LEFT BRANCH) (2-DOOR SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left back-up light	13	2	Behind left taillight		
Left license plate light	10	2	Behind middle of trunk lid		
Left taillight/brake	12	3	Behind left taillight		

light					
Left rear side marker light	15	2	Behind left taillight		
Left rear speaker	1	2	Left rear shelf		
Left rear turn signal light	14	3	Behind left taillight		
Right license plate light	8	2	Behind middle of trunk lid		
Right rear speaker	3	2	Right rear shelf		
Subwoofer	2	2	Middle of rear shelf		
Trunk lid latch switch	9	3	Middle of trunk lid		
Trunk light	4	2	Middle of rear shelf		
C701	16	14	Left C-pillar	**FLOOR WIRE HARNESS** (see)	
C703	7	2	Middle of trunk lid	Trunk lid spoiler subharness	
G701	11		Left side of trunk	Body ground, via rear wire harness	

CONNECTOR TO HARNESS INDEX - TRUNK LID SPOILER SUBHARNESS (2-DOOR SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
High mount brake light terminal (+)	5	-	Behind trunk lid spoiler		
High mount brake light terminal (-)	6	-	Behind trunk lid spoiler		
C703	7	2	Middle of trunk lid	Rear wire harness	

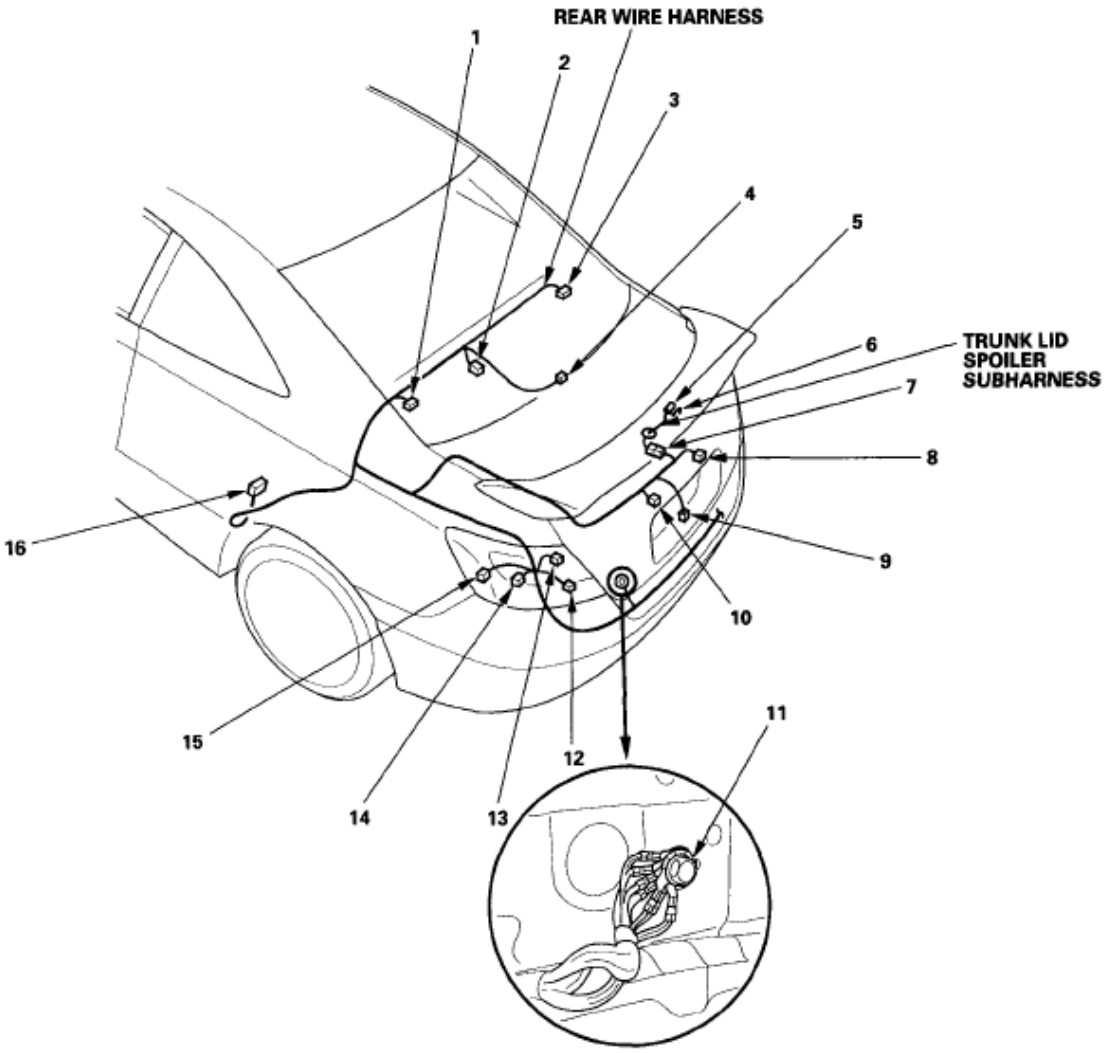


Fig. 21: Identifying Rear Wire Harness And Connector Terminals - 2-Door Si Model (Left Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - REAR WIRE HARNESS (RIGHT BRANCH) (2-DOOR SI MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right back-up light	1	2	Behind right taillight		
Right taillight/brake light	2	3	Behind right taillight		
Right rear side marker light	4	2	Behind right taillight		
Right rear turn signal light	3	3	Behind right taillight		

CONNECTOR TO HARNESS INDEX - REAR WINDOW DEFOGGER GROUND WIRE (2-DOOR SI MODEL)

Connector or					

Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector (B) (-)	6	-	Right C-pillar		
G801	5		Right C-pillar	Body ground, via rear window defogger ground wire	

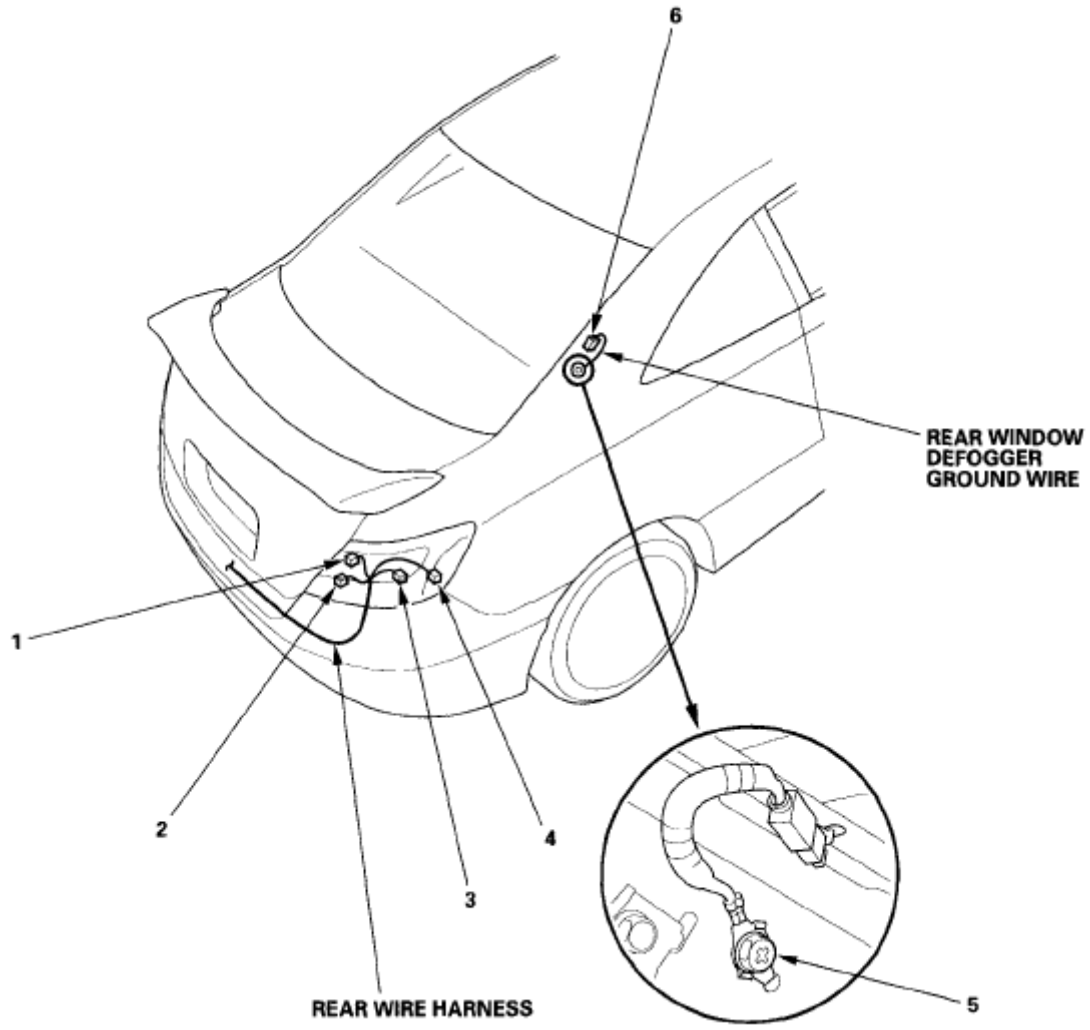


Fig. 22: Identifying Rear Wire Harness And Connector Terminals - 2-Door Si Model (Right Branch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ROOF WIRE HARNESS (4-DOOR WITH MOONROOF)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ceiling light	5	3	Rear of roof		
Map lights	3	3	Front of roof		
Moonroof control unit/motor	4	10	Rear of roof		
Moonroof	1	10	Front of roof		

switch/interior light switch					
Navigation microphone	2	3	Front of roof		
C801	6	20	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	

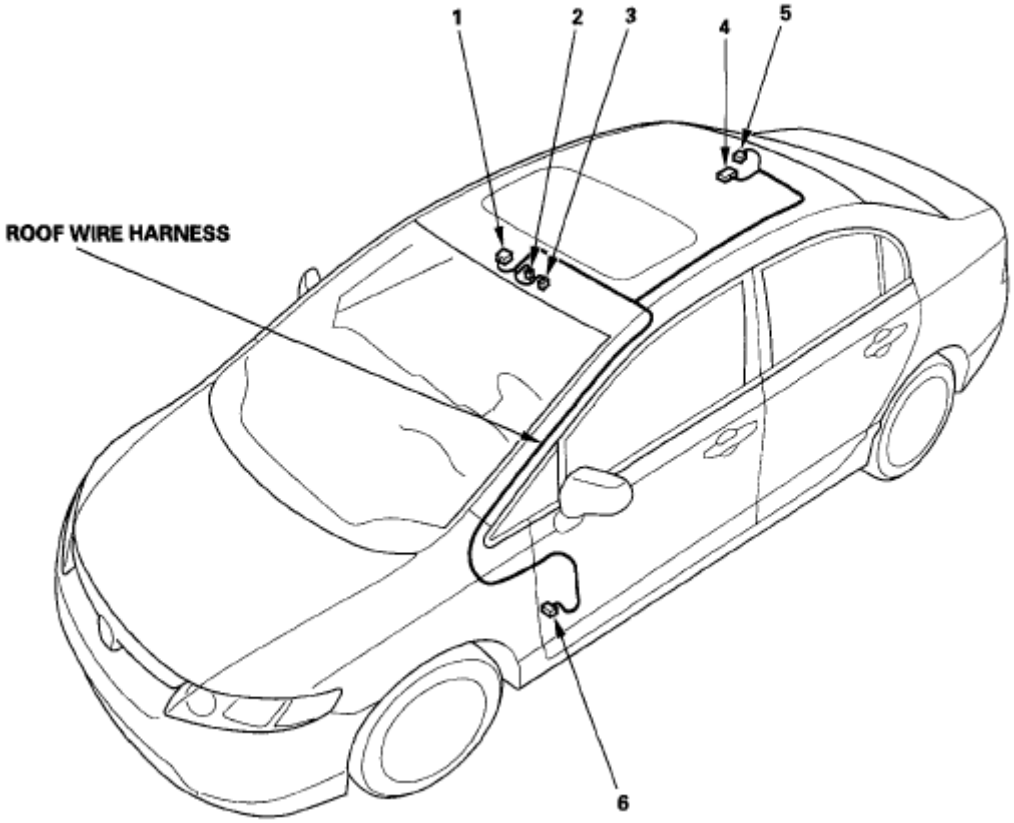


Fig. 23: Identifying Roof Wire Harness - 4-Door With Moonroof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ROOF WIRE HARNESS (4-DOOR WITHOUT MOONROOF)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ceiling light	2	3	Rear of roof		
Map lights	1	3	Front of roof		
C801	3	6	Under right side of dash	**DASHBOARD WIRE HARNESS** (see)	

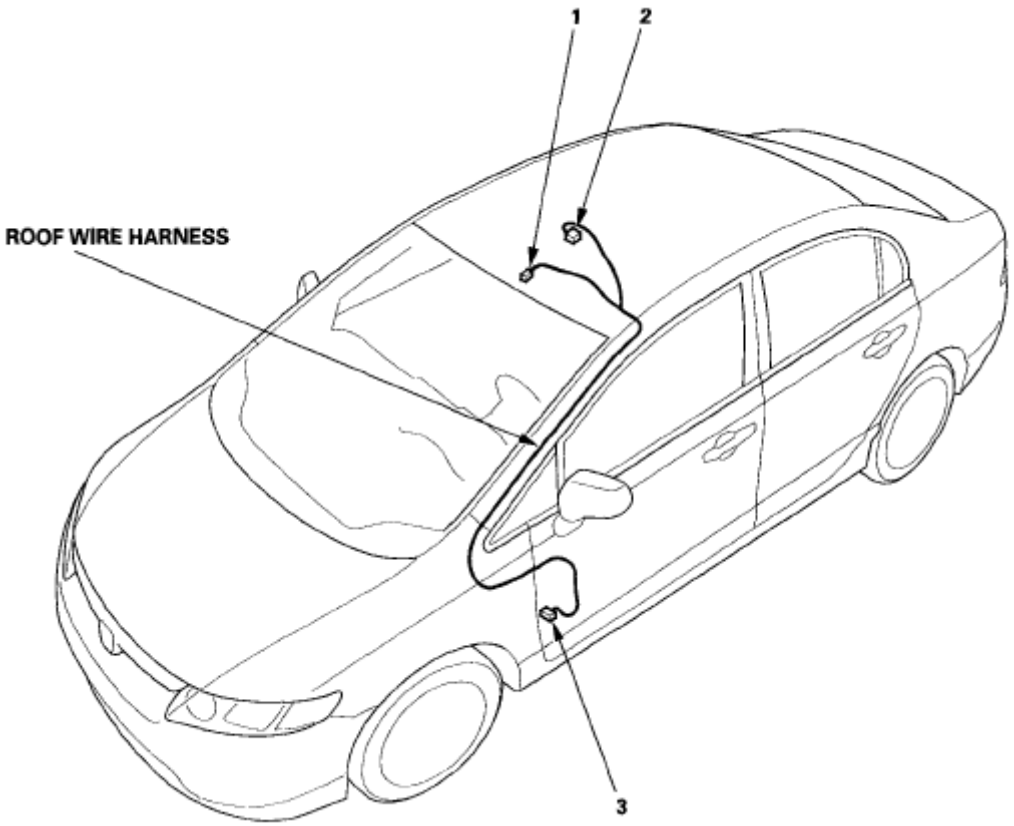


Fig. 24: Identifying Roof Wire Harness - 4-Door Without Moonroof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ROOF WIRE HARNESS (2-DOOR WITH MOONROOF)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ceiling light	5	3	Rear of roof		
Map lights	3	3	Front of roof		
Moonroof control unit/motor	4	10	Rear of roof		
Moonroof switch/interior light switch/ambient light	1	10	Front of roof		
Navigation microphone	2	3	Front of roof		
C801	7	20	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
G851	6			Body ground, via roof wire harness	

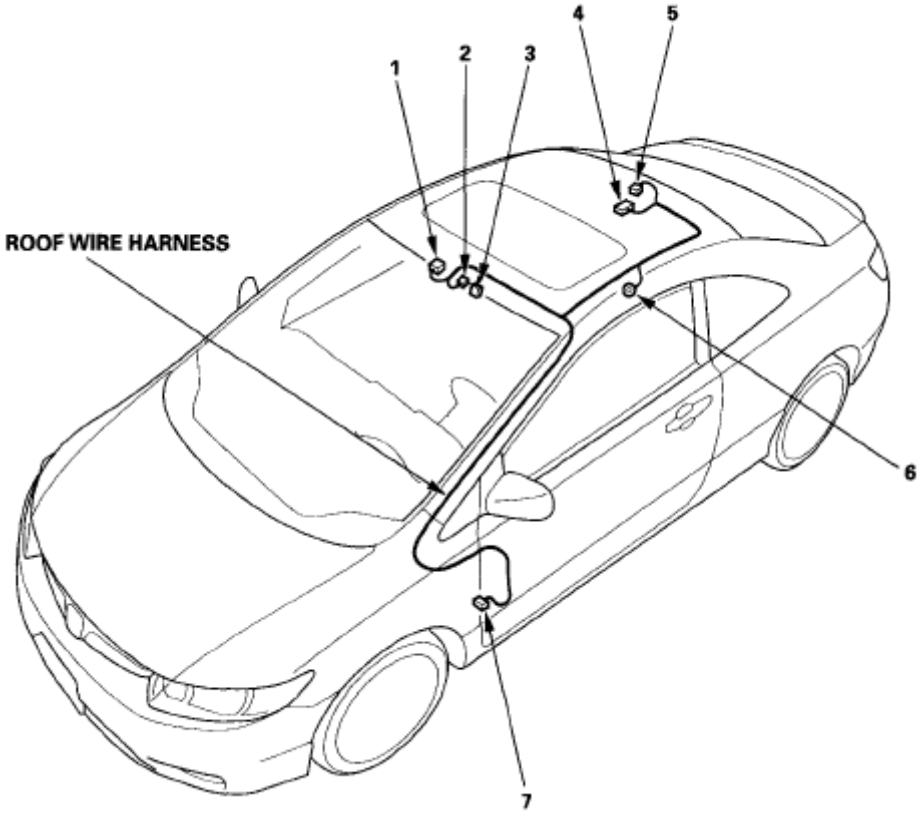


Fig. 25: Identifying Roof Wire Harness And Connector Terminals - 2-Door With Moonroof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ROOF WIRE HARNESS (2-DOOR WITHOUT MOONROOF)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ceiling light	2	3	Rear of roof		
Map lights	1	3	Front of roof		
C801	3	6	Under right side of dash	**DASHBOARD WIRE HARNESS** (see)	

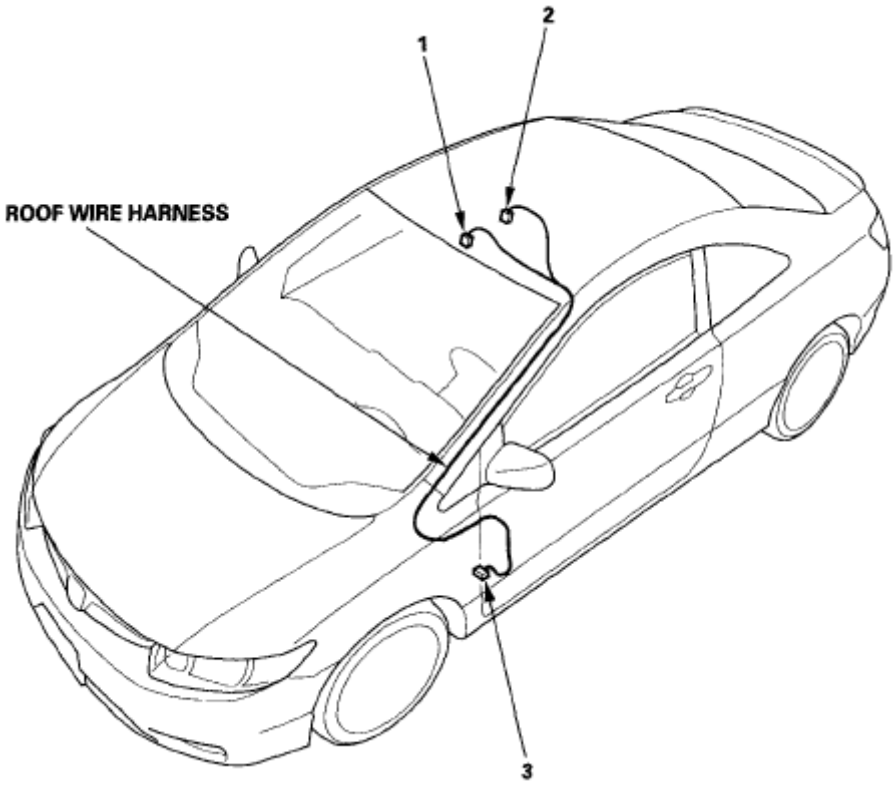


Fig. 26: Identifying Roof Wire Harness And Connector Terminals - 2-Door Without Moonroof
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DRIVER DOOR WIRE HARNESS (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door lock actuator	1	10	Driver's door		
Driver's door speaker	8	2	Driver's door		
Driver's power window motor	9	6	Driver's door		
Power mirror switch	3	13	Driver's door		
Power window master switch	2	22	Driver's door		
Left power mirror	4	3	Driver's door		Without defogger
Left power mirror	4	6	Driver's door		With defogger
C751	6	23	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C752	7	18	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C753 (Junction	5	12	Driver's door		Canada models

connector)					(LX, EX)

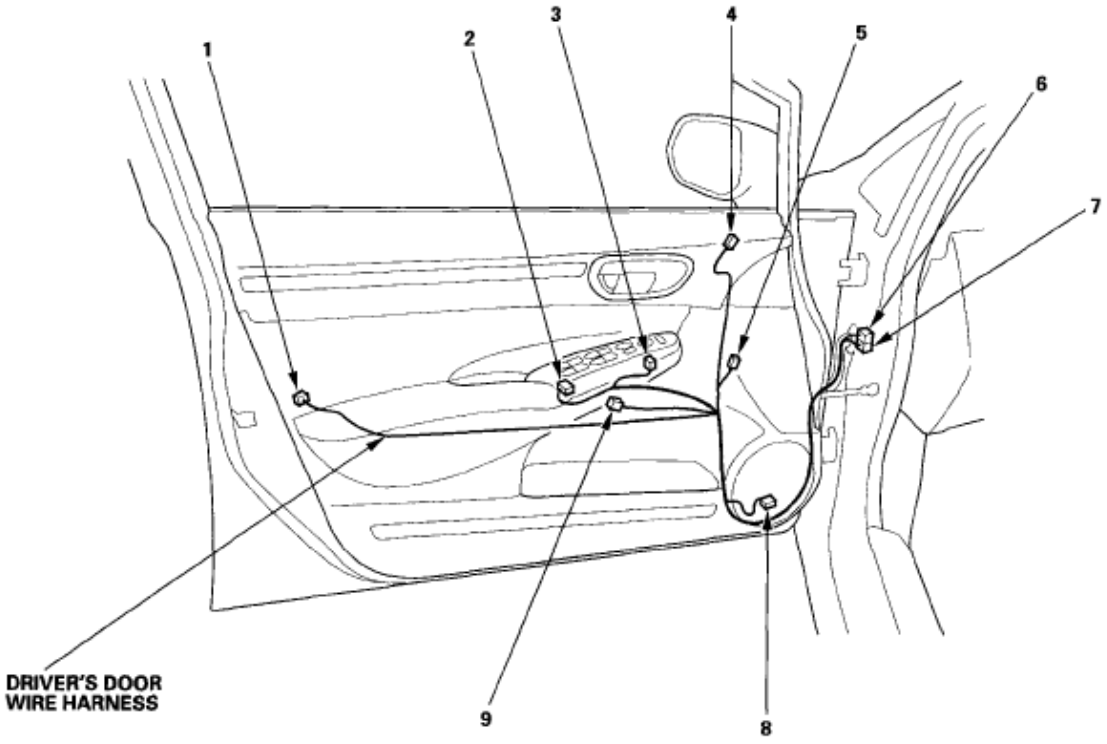


Fig. 27: Identifying Driver Door Wire Harness And Connector Terminals (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DRIVER DOOR WIRE HARNESS (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door lock actuator	1	10	Driver's door		
Driver's door speaker	7	2	Driver's door		
Driver's power window motor	8	6	Driver's door		
Left power mirror	3	8	Driver's door		
C751	5	23	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C752	6	18	Under left side of dash	**DASHBOARD WIRE HARNESS** (see)	
C753 (Junction connector)	4	12	Driver's door		LX, EX
C754	9	18	Driver's door	Driver's door subharness	

CONNECTOR TO HARNESS INDEX - DRIVER DOOR SUBHARNESS (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Power window switch	2	16	Driver's door		
C754	9	18	Driver's door	Driver's door wire harness	

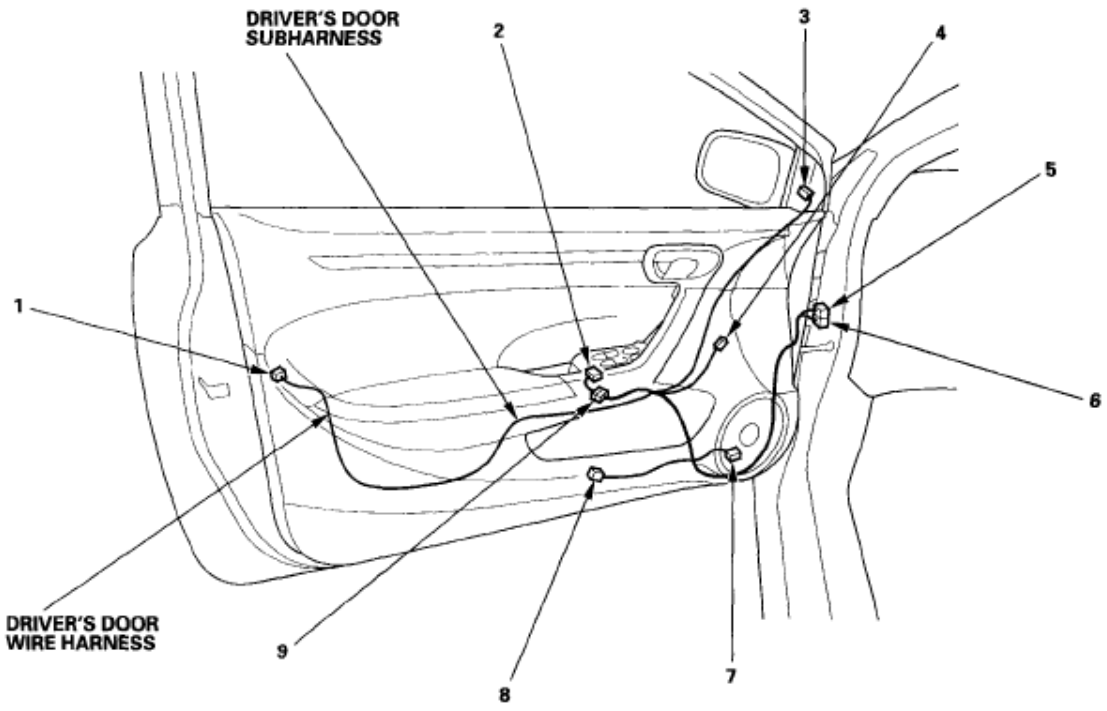


Fig. 28: Identifying Driver Door Wire Harness And Connector Terminals (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FRONT PASSENGER DOOR WIRE HARNESS (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's door lock actuator	6	10	Front passenger's door		
Front passenger's door speaker	7	2	Front passenger's door		
Front passenger's power window motor	5	6	Front passenger's door		
Front passenger's power window switch	4	8	Front passenger's door		
Right power mirror	3	3	Front passenger's door		(1)
Right power mirror	3	6	Front passenger's door		(2)
C761	1	23	Under right side	**DASHBOARD**	

			of dash	**WIRE HARNESS** (see)	
C762	2	18	Under right side of dash	**DASHBOARD WIRE HARNESS** (see)	
(1) Without power mirror defogger (2) With power mirror defogger					

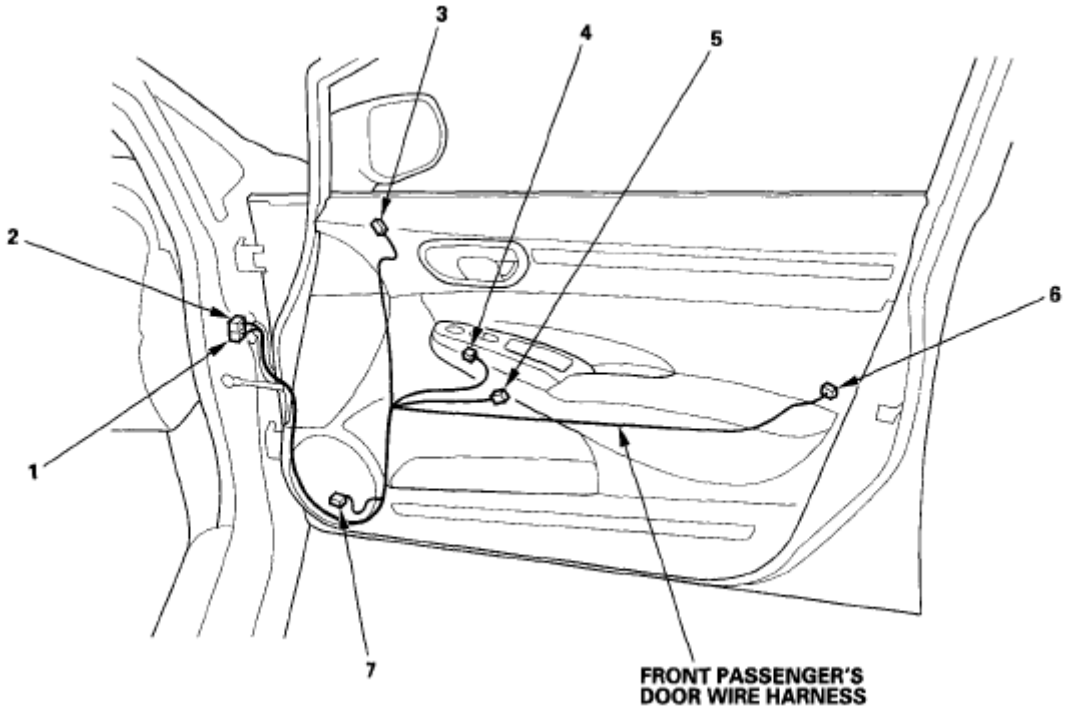


Fig. 29: Identifying Front Passenger Door Wire Harness And Connector Terminals (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - PASSENGER DOOR WIRE HARNESS (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Passenger's door lock actuator	6	10	Passenger's door		
Passenger's door speaker	7	2	Passenger's door		
Passenger's power window motor	5	6	Passenger's door		
Right power mirror	3	8	Passenger's door		
C761	1	23	Under right side of dash	**DASHBOARD WIRE HARNESS** (see)	
C762	2	18	Under right side of dash	**DASHBOARD WIRE**	

C763	8	8	Passenger's door	**HARNESS** (see) Passenger's door subharness	

CONNECTOR TO HARNESS INDEX - PASSENGER DOOR SUBHARNESS (2-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Passenger's window switch	4	8	Passenger's door		
C763	8	8	Passenger's door	Passenger's door wire harness	

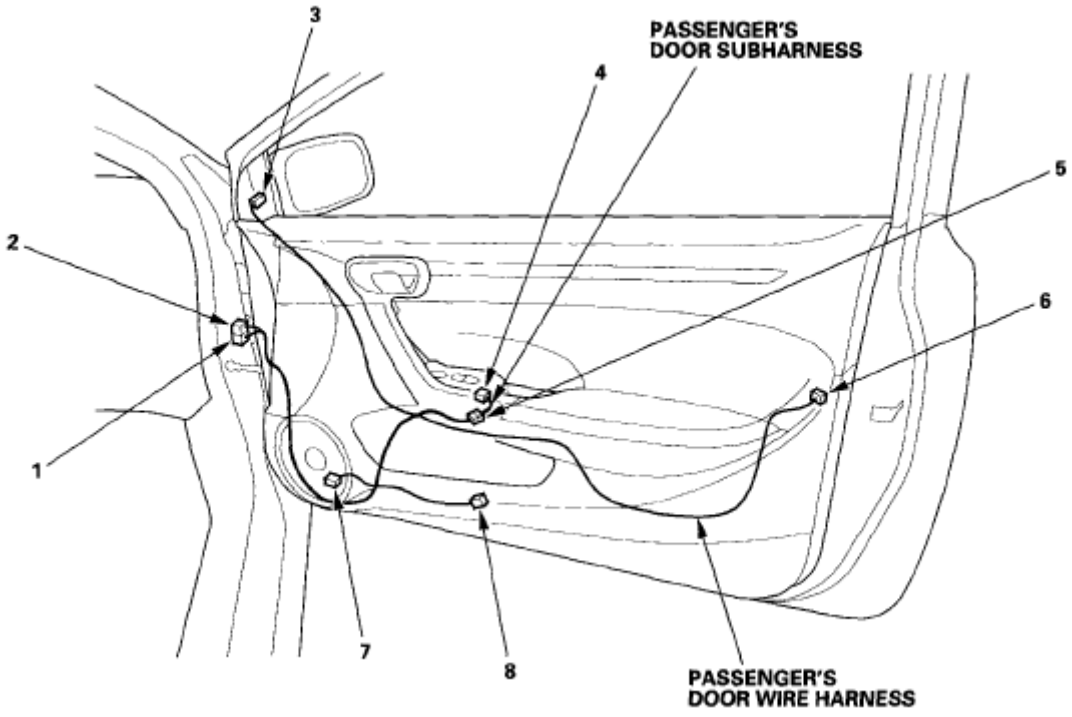


Fig. 30: Identifying Front Passenger Door Wire Harness And Connector Terminals (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - LEFT REAR DOOR WIRE HARNESS (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left rear door lock actuator	1	10	Left rear door		
Left rear power window motor	4	6	Left rear door		
Left rear power window switch	2	8	Left rear door		
C771	3	18	Left B-pillar	**FLOOR WIRE HARNESS** (see)	

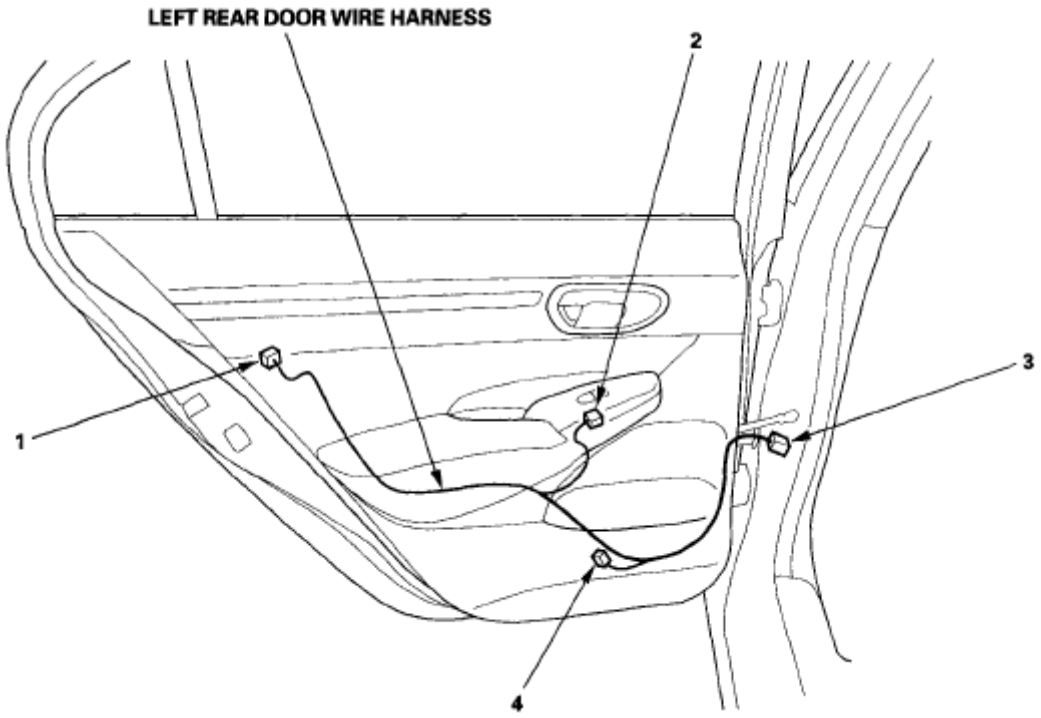


Fig. 31: Identifying Left Rear Door Wire Harness And Connector Terminals (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - RIGHT REAR DOOR WIRE HARNESS (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right rear door lock actuator	3	10	Right rear door		
Right rear power window motor	4	6	Right rear door		
Right rear power window switch	2	8	Right rear door		
C781	1	18	Right B-pillar	**FLOOR WIRE HARNESS** (see)	

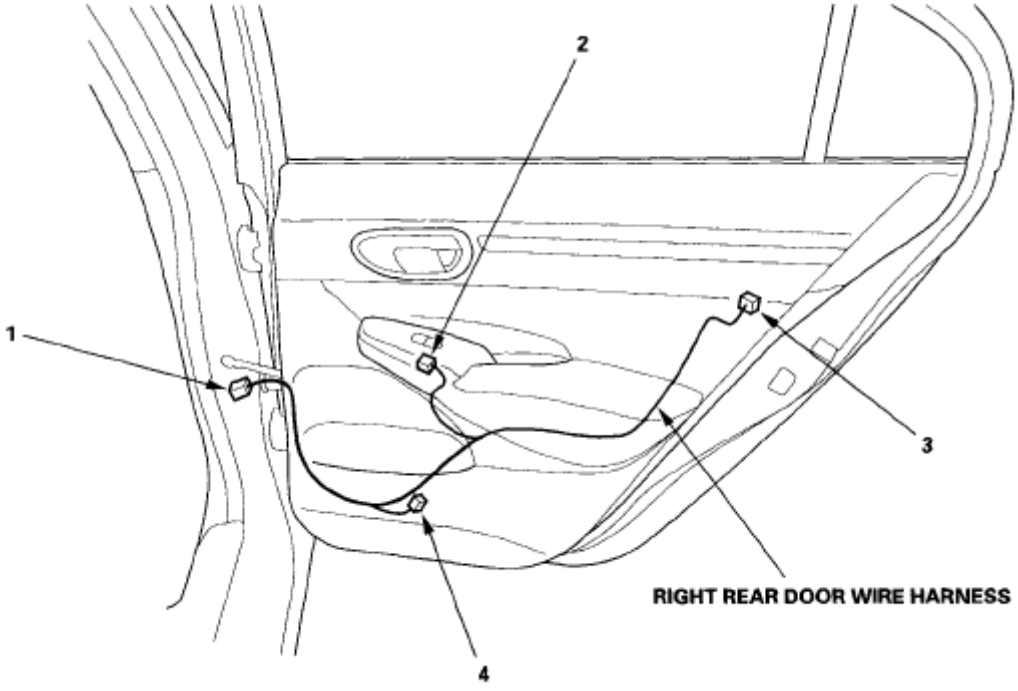


Fig. 32: Identifying Right Rear Door Wire Harness And Connector Terminals (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - A/C WIRE HARNESS

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Air mix control motor	1	7	Under left side of dash		
Blower motor	8	2	Under right side of dash		
Evaporator temperature sensor	4	2	Under middle of dash		
Mode control motor	6	7	Behind glove box		
Power transistor	3	4	Under right side of dash		
Recirculation control motor	7	7	Behind glove box		
C205	2	2	Under left side of dash	Engine compartment wire harness • **EXCEPT SI MODEL** (see) • **SI MODEL** (see)	
C505	5	24	Behind left side	**DASHBOARD**	

			of glove box	**WIRE HARNESS** (see)	

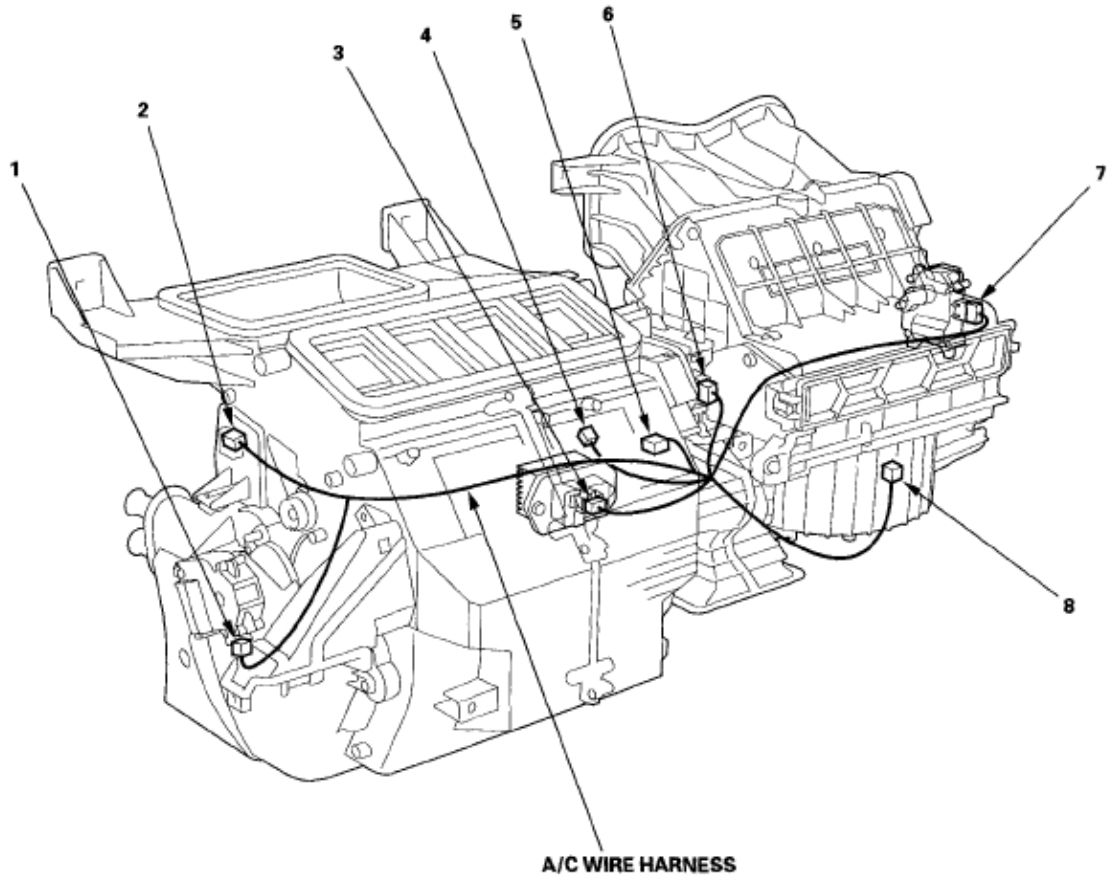


Fig. 33: Identifying A/C Wire Harness And Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - CONSOLE SUBHARNESS (WITH REAR ACCESSORY POWER SOCKET)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear accessory power socket	2	2	Behind rear console		
C601	1	2	Under middle of dash	Floor wire harness • 4-door (see **FLOOR WIRE HARNESS (LEFT BRANCH) (4-DOOR)**) • 2-door (see **FLOOR WIRE**	

				HARNESS (LEFT BRANCH) (2-DOOR))	

CONNECTOR TO HARNESS INDEX - CABLE REEL SUBHARNESS (USA DX MODEL)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Horn switch	4	1	Behind driver's airbag inflator		
Cable reel connector C	3	20	In steering column	Dashboard wire harness	

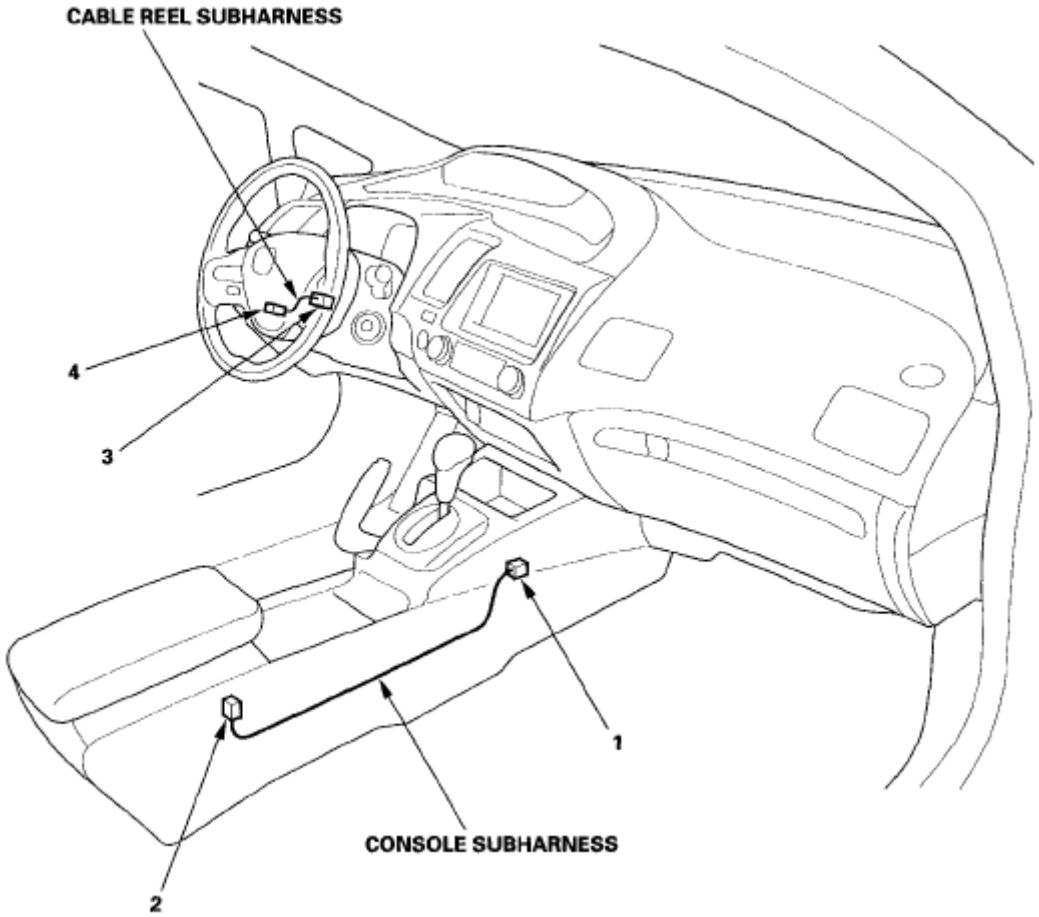


Fig. 34: Identifying Console Subharness, Cable Reel Subharness And Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DRIVER SEAT POSITION SENSOR HARNESS (4-DOOR)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat position sensor	1	2	Inside of driver's seat		
C602	2	2	Under driver's seat	**FLOOR WIRE HARNESS** (see)	

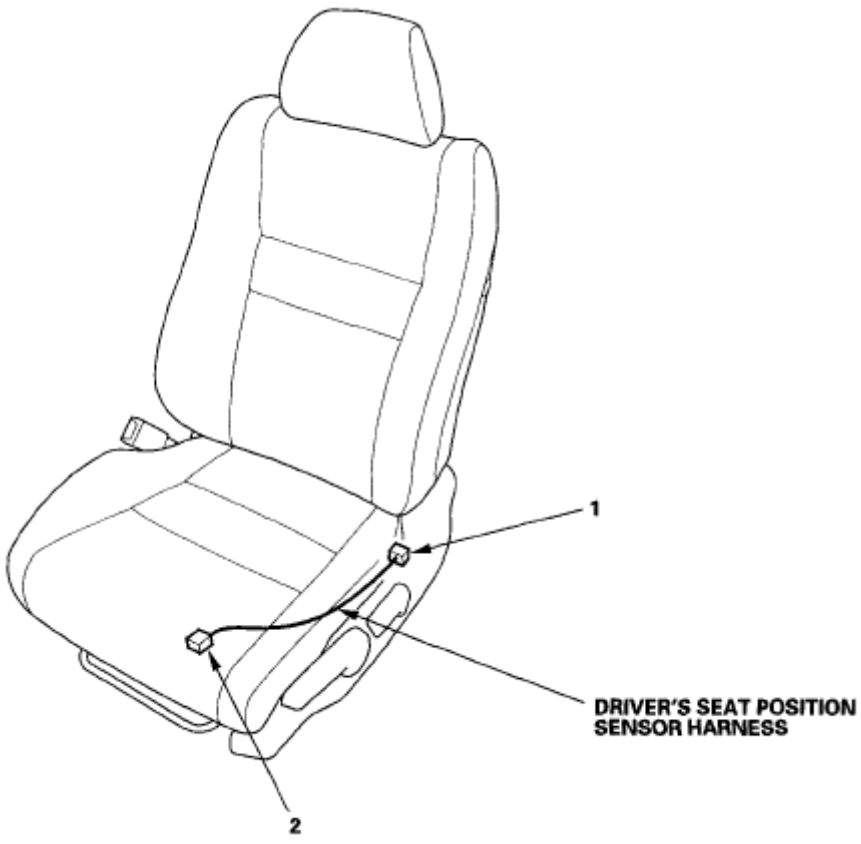


Fig. 35: Identifying Driver Seat Position Sensor Harness And Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - DRIVER'S SEAT WIRE HARNESS (WITH SEAT HEATER)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat cushion heater	2	2	Under driver's seat		
Driver's seat heater relay (high)	5		Under driver's seat		
Driver's seat heater relay (high)	6		Under driver's seat		
C602	3	2	Under driver's seat	**FLOOR WIRE HARNESS** (see)	
C604	4	2	Under driver's seat	Driver's seat position sensor harness	

CONNECTOR TO HARNESS INDEX - DRIVER'S SEAT POSITION SENSOR HARNESS (WITH SEAT HEATER)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes

Driver's seat position sensor	1	2	Inside of driver's seat		
C604	4	2	Under driver's seat	Driver's seat wire harness	

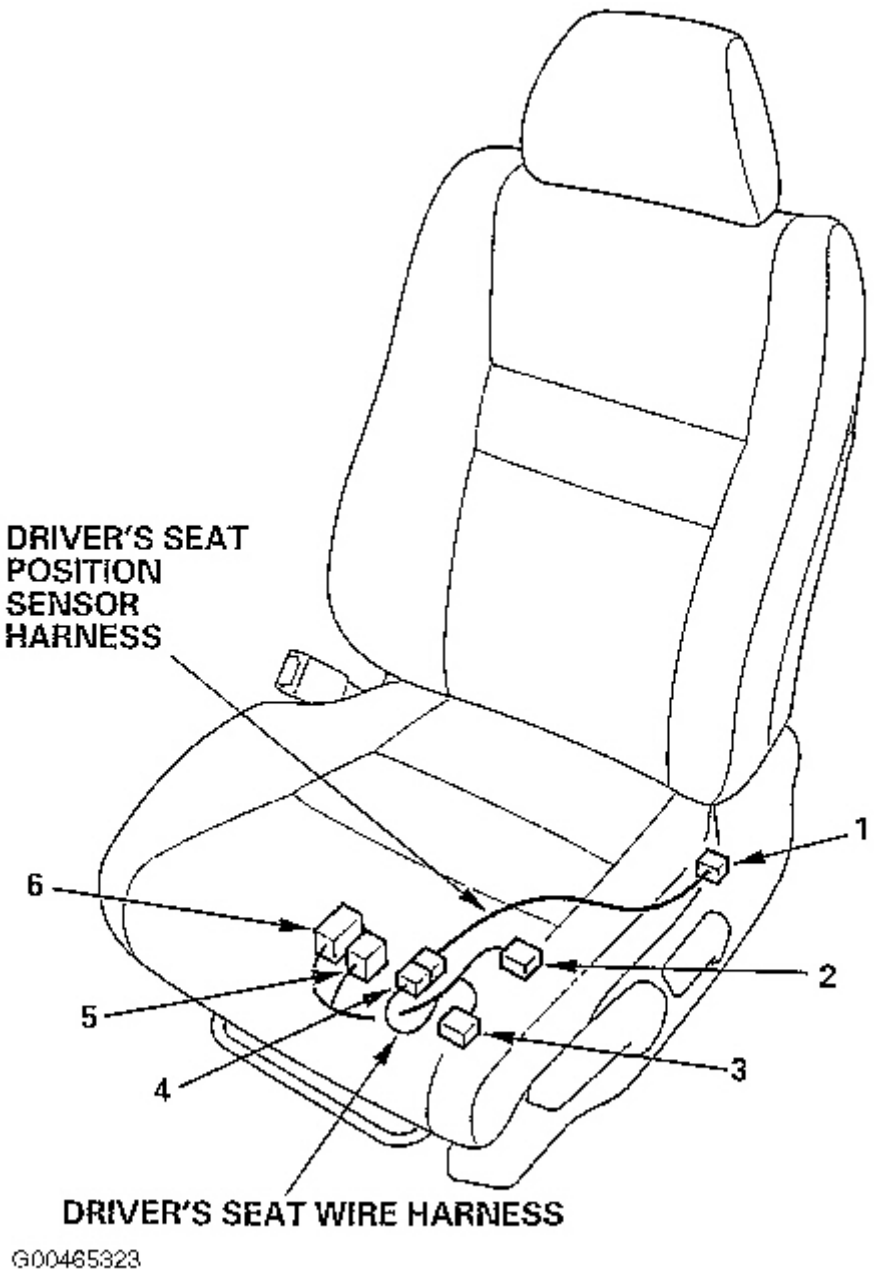


Fig. 36: Identifying Driver's Seat Harness (With Seat Heater)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - FRONT PASSENGER'S SEAT WIRE HARNESS (WITH SEAT HEATER)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front Passenger's seat cushion heater	5	3	Under front passenger's seat		
Front Passenger's seat heater relay (high)	10	4	Under front passenger's seat		
Front Passenger's seat heater relay (high)	9	5	Under front passenger's seat		
C782	6	8	Under front passenger's seat	**FLOOR WIRE HARNESS** (see)	
C783	4	4	Under front passenger's seat	ODS unit harness	

CONNECTOR TO HARNESS INDEX - ODS UNIT HARNESS (WITH SEAT HEATER)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ODS unit	1	18	Left side of (front) passenger's seatback		
Front inner seat weight sensor [Inner seat weight sensor]	3	3 [2]	Right side of (front) passenger's seat		
Front outer seat weight sensor [Outer seat weight sensor]	7	3	Left side of (front) passenger's seat		
Rear inner seat weight sensor	2	3	Right side of front passenger's seat		
Rear outer seat weight sensor	8	3	Left side of front passenger's seat		
C783	4	4	Under (front) passenger's seat	Floor wire harness • 4-door (see **FLOOR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)**) • 2-door (see	

				FLOOR WIRE HARNESS (RIGHT BRANCH) (2-DOOR))	

[ ] : 2-door

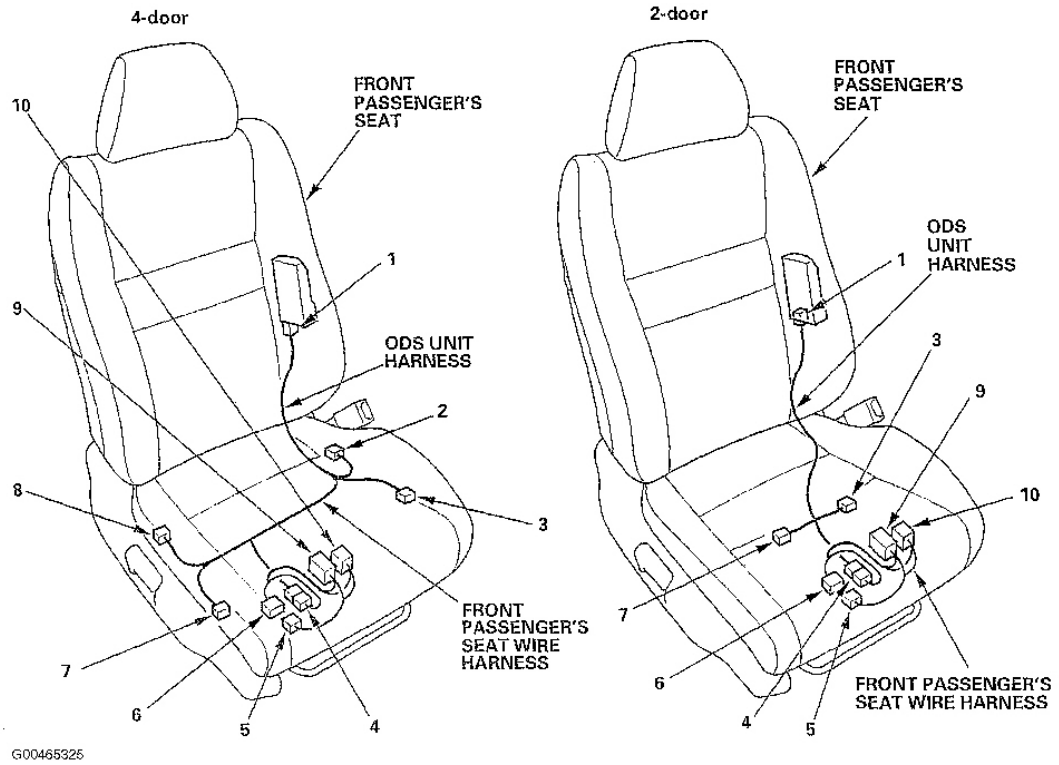


Fig. 37: Identifying ODS Unit Harness (With Seat Heater)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTOR TO HARNESS INDEX - ODS UNIT HARNESS (WITHOUT SEAT HEATER)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ODS unit	1	18	Left side of (front) passenger's seatback		
Front inner seat weight sensor [Inner seat weight sensor]	3	3 [2]	Right side of (front) passenger's seat		
Front outer seat	5	3	Left side of		

weight sensor [Outer seat weight sensor]			(front) passenger's seat		
Rear inner seat weight sensor	2	3	Right side of front passenger's seat		
Rear outer seat weight sensor	6	3	Left side of front passenger's seat		
C782	4	4	Under (front) passenger's seat	Floor wire harness • 4-door (see **FLOOR WIRE HARNESS (RIGHT BRANCH) (4-DOOR)**) • 2-door (see **FLOOR WIRE HARNESS (RIGHT BRANCH) (2-DOOR)**)	

[ ] : 2-door

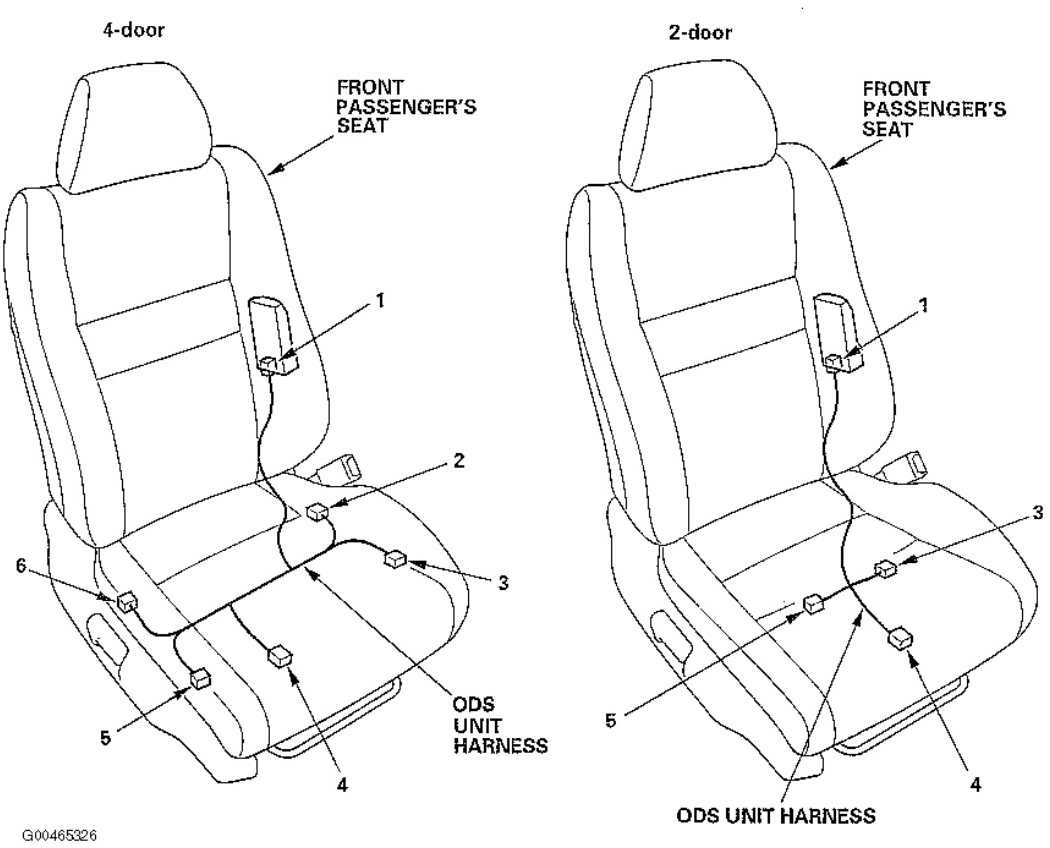


Fig. 38: Identifying ODS Unit Harness (Without Seat Heater)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ELECTRICAL

Fuse/Relay Boxes - Civic (All Except Hybrid)

CONNECTOR TO FUSE/RELAY BOX INDEX

UNDER-HOOD FUSE/RELAY BOX

CONNECTOR TO FUSE/RELAY BOX INDEX (UNDER-HOOD FUSE/RELAY BOX)

Socket	Ref	Terminal	Connects to	Notes
A (ELD unit)	21	3	Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	(1)
A/C compressor clutch relay	12	4		
A/C condenser fan relay	3	4		
B	22	1	Not used	
Blower motor relay	2	4		
C	23	2	Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
D	25	8	Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Diode (for A/C condenser fan)	9	-		
Diode (for radiator fan)	8	-		
E	24	10	Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Electronic throttle control system (ETCS) control relay	14	4		
			Engine compartment wire harness	

F	17	20	• Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Fan control relay	4	5	Engine compartment wire harness	
G	19	1	• Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) Engine compartment wire harness	
H	20	1	• Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Ignition coil relay	7	4	Engine compartment wire harness	
J	16	4	• Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) Engine compartment wire harness	
K	18	2	• Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
PGM-FI main relay (Fl MAIN)	13	4		
PGM-FI subrelay	6	4		
Power mirror defogger relay	5	5		(2)
Radiator fan relay	15	4		
Rear window defogger relay	1	4		
T3	10		Engine wire harness • A/T (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • M/T except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) Starter subharness (Si model) (see **CONNECTORS AND**	

			HARNESSES (ALL EXCEPT HYBRID))	
T101	11		Alternator, via engine wire harness • A/T (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • M/T except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) Starter subharness (Si model) (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
(1) USA only (2) Canada LX, EX and Si models				

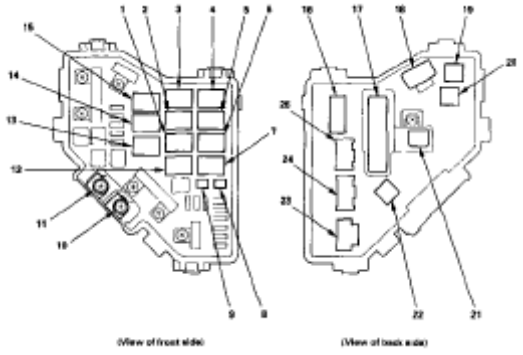


Fig. 1: Identifying Under-Hood Fuse/Relay Boxes
Courtesy of HONDA

UNDER-DASH FUSE/RELAY BOX

CONNECTOR TO FUSE/RELAY BOX INDEX (UNDER-DASH FUSE/RELAY BOX)

Socket	Ref	Terminal	Connects to	Notes
A (Optional connector)	9	6	Not used	
C	10	4	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
D	4	2	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
E	5	42	Floor wire harness • 4-door (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • 2-door (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
F	6	34	Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	

G	7	21	• Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) Engine compartment wire harness • Except Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**) • Si model (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
H (MICU service check connector)	8	3		
J	20	4	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
K	12	8	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
M	13	10	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Memory erase signal connector socket	11	-		
N	14	14	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
P	19	10	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
PGM-FI main relay 2 (FUEL PUMP)	2	4		
Power window relay	1	4		
Q	17	16	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
R	15	20	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
Starter cut relay	3	4		
S	16	20	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	
T	18	34	Dashboard wire harness (see **CONNECTORS AND HARNESSES (ALL EXCEPT HYBRID)**)	

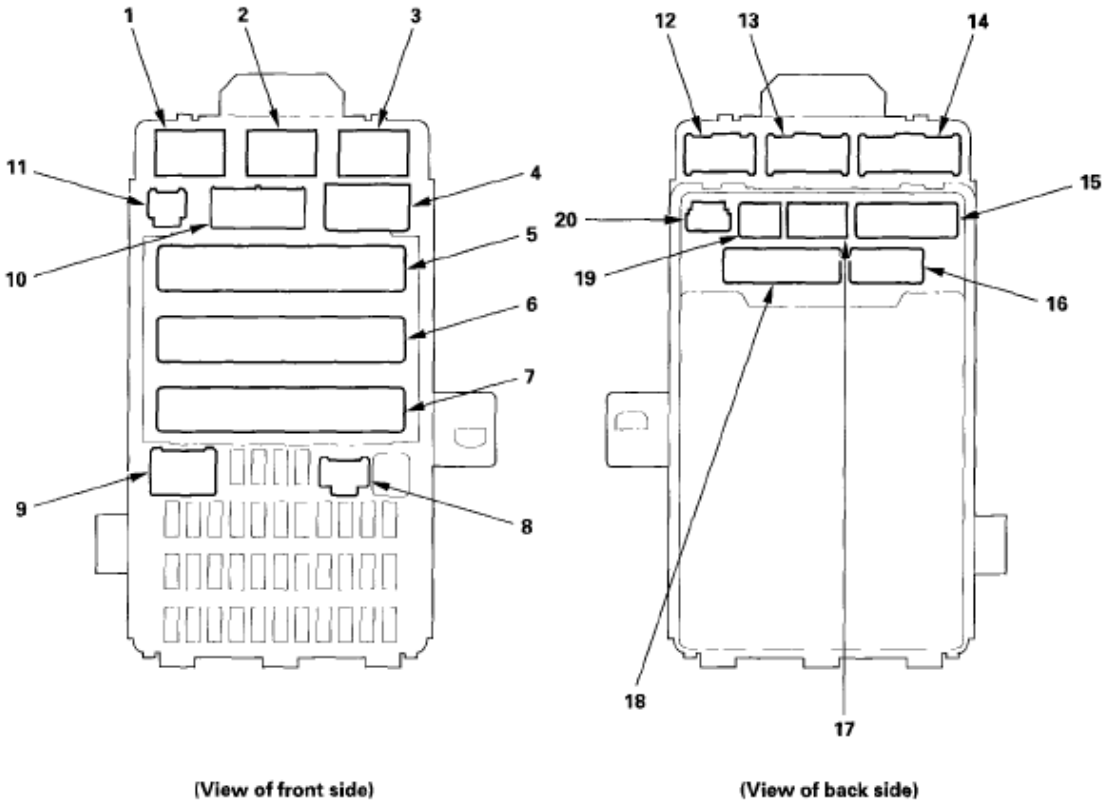


Fig. 2: Identifying Under-Dash Fuse/Relay Boxes
Courtesy of HONDA

2006-09 ELECTRICAL

Ground Distribution - Civic (Except Hybrid)

GROUND TO COMPONENTS INDEX

NOTE: Refer to the GROUND DISTRIBUTION (GX) article for additional information for the GX model.

GROUND TO COMPONENTS INDEX

Ground	Component or Circuit Grounded
G1	Battery
G2	Engine
G3	Transmission housing
G101	ECM/PCM (PG is BLK; LG is BRN/YEL) BLK: A/T clutch pressure control solenoid valves A, B, C, ECM/PCM, EGR valve. Fuel tank pressure sensor, Ignition coils, Transmission range switch (A/T), VTC oil control solenoid valve BRN/YEL: CKP sensor, CMP sensor A, CMP sensor B, Data link connector (DLC), ECM/PCM, Immobilizer-keyless control unit Shielding between the ECM/PCM and these components have BRN/YEL wires: Knock sensor (KS), Secondary H02S (Sensor 2)
G201	Right headlights (high/low beams), Right front side marker/parking/turn signal lights, Windshield wiper motor. Windshield washer motor
G202	ABS modulator-control unit (Except Si model with VSA), VSA modulator-control unit (2 wires) (Si model with VSA)
G301	Blower motor relay, A/T condenser fan motor, Fan control relay, Left headlights (high/low beams), Left front side marker/parking/turn signal lights
G401	Brake fluid level switch, Clutch pedal position switch (for cruise control), Driver's door lock knob switch (2-door), Driver's door key cylinder switch (2-door), Hood switch (with security), MICU (PG), Power steering pressure (PSP) switch (4-door), Power transistor, Starter cut relay, Washer fluid level switch (Canada), Starter cut relay (M/T without clutch interlock) (G401 connects to G601 via under-dash fuse/relay box)
G402	EPS control unit
G403	Torque sensor
G501	BLK wire: Dash lights brightness controller-odometer select/reset button, Driver's power motor, MICU (SG), Power mirror switch (2-door), Power window mater switch BRN wire: Driver's door lock knob switch (4-door), Driver's door key cylinder switch (4-door), Left power mirror defogger (2-door)
G502	Data link connector (DLC), Front accessory power socket, Right power mirror defogger
G503	Accessory power socket relays (front and rear), Driver's door lock switch, Driver's window motor (2-door with AUTO UP/AUTO DOWN function), Gauge control module (tach), Heater control panel/HVAC control unit. Left power mirror defogger, Moonroof control unit/motor, Power mirror switch (4-door), Power mirror switch light (4-door), Power window master switch, Power window master switch (main switch)
G504	Cable reel (steering wheel switches ground). Front passenger's door lock knob switch, Front passenger's door lock knob switch, Gauge control module (tach). Gauge control module (speedo). Heater control panel/HVAC control unit, Ignition key switch
G505	Audio unit or navigation unit. Stereo amplifier (2 wires) (2-door)

G506	Memory erase signal (MES) connector, SRS unit (2 wires)
G601	Fuel pump, MICU (PG), Rear accessory power socket. Transmission gear selection switch light/Park-pin switch (G601 connects to G401 via under-dash fuse/relay box)
	Shielding between the SRS unit and left side impact sensor (FIRST) has BLK wire. Shielding between the left side impact sensor (FIRST) and rear safing sensor has BLK wire.
G602	Driver's seat belt buckle switch, Front passenger's seat belt buckle switch, Left rear door lock knob switch (4-door with security), MICU (SG), MICU service check connector, ODS unit, Power window relay (without AUTO UP/AUTO DOWN function). Right rear door lock knob switch (4-door with security), Yaw rate-lateral acceleration sensor (Si model with VSA)
	Shielding between the SRS unit and right side impact sensor (FIRST) has BLK wire. Shielding between the left side impact sensor (FIRST) and right side impact sensor (SECOND) have BLK wires. 2-door: Shielding between the rear safing sensor and left side impact sensor (SECOND) has BLK wire.
G603 (4-door)	Noise condenser
	Shielding between the rear safing sensor and left side impact sensor (SECOND) has BLK wire.
G701	High mount brake light, Left taillight/brake light. Left inner taillight (4-door), Left rear side marker light, Left back-up light, Left rear turn signal light, License plate lights, Right taillight/brake light, Right inner taillight (4-door), Right rear side marker light. Right back-up light, Right rear turn signal light. Trunk lid latch switch, Trunk key cylinder switch (USA LX and EX models), Trunk lid release actuator (USA EX model)
G801	Rear window defogger (-)
G851	Moonroof control unit/motor (2-door)

2006-09 ELECTRICAL

Power Distribution - Civic (Except Hybrid)

FUSE TO COMPONENTS INDEX

NOTE: Refer to the POWER DISTRIBUTION (GX) (SUPPLEMENT) article for additional information for the GX model.

UNDER-HOOD FUSE/RELAY BOX

FUSE TO COMPONENTS INDEX (UNDER-HOOD FUSE/RELAY BOX)

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	100 A (BAT)	Battery, Power distribution
	70 A (EPS)	EPS control unit
2	50 A (IG)	Ignition switch
	80 A (OPTION)	No. 5, No. 6, No. 7, No. 27, No. 28, No. 29, and No. 31 fuses (in the under-dash fuse/relay box)
3	30 A (ABS MTR)	ABS modulator-control unit (Except Si model with VSA), VSA modulator-control unit (Si model with VSA)
	30 A (ABS FSR)	ABS modulator-control unit (Except Si model with VSA), VSA modulator-control unit (Si model with VSA)
4	50 A (H/L)	No. 18, No. 19, No. 20, and No. 21 fuses (in the under-dash fuse/relay box)
	40 A (PAW)	No. 24, No. 25, No. 26, No. 30, No. 32, and No. 33 fuses (in the under-dash fuse/relay box)
5	-	Not used
6	20 A	A/C condenser fan motor (via A/C condenser fan relay)
7	20 A (M/T)	Radiator fan motor (via radiator fan relay)
	30 A (A/T)	Radiator fan motor (via radiator fan relay)
8	30 A (4-door)	Rear window defogger (via rear window defogger relay)
	40 A (2-door)	
9	40 A	Blower motor (via blower motor relay)
10	10A	Hazard lights
11	15A	A/F sensor (Sensor 1), ECM/PCM
12	15A	Brake lights, ECM/PCM, Horn, MICU
13	-	Not used
14	-	Not used
15	7.5 A	A/C condenser fan relay
16	-	Not used
17	15A	Stereo amplifier (2-door with premium sound system)
18	15A	Iqnition coils, ECM/PCM
19	15A	CKP sensor, CMP sensor B, ECM/PCM, ETCS control relay, Injectors, PGM-FI main relay 1 (Fl MAIN), PGM-FI main relay 2 (FUEL PUMP)
20	7.5 A	A/C compressor clutch (via A/C compressor clutch relay)
21	15A	ECM/PCM (via ETCS control relay)

22	7.5 A	RED [LT BLU]
23	10A	Audio unit. Data link connector, Gauge control module (tach). Gauge control module (speedo), Hazard warning switch, Immobilizer-keyless control unit, MICU
[ ] : 2-door		

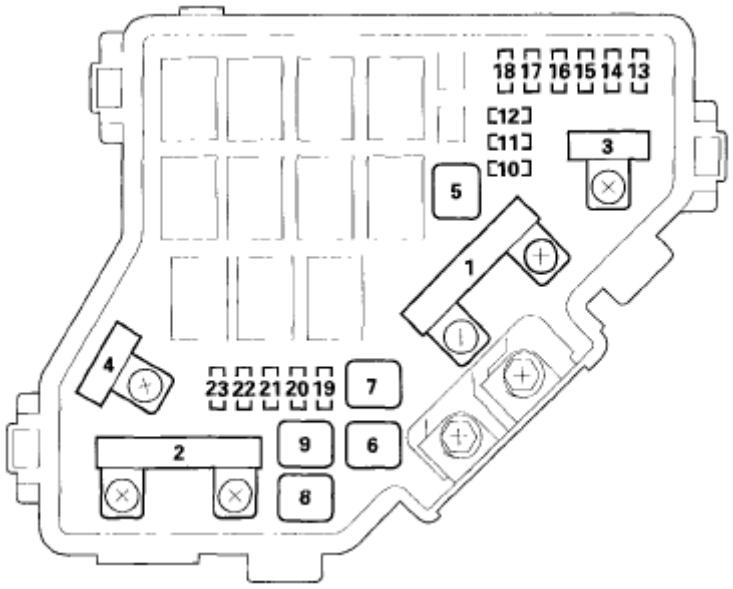


Fig. 1: Identifying Under-Hood Fuse/Relay Box
Courtesy of HONDA

UNDER-DASH FUSE/RELAY BOX

FUSE TO COMPONENTS INDEX (UNDER-DASH FUSE/RELAY BOX)

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	7.5 A	Power mirror switch light (4-door), Power window relay (without key-off operation)
		Power window relay (without key-off operation)
2	15A	CMP sensor A, ECM/PCM
		Immobilizer-keyless control unit
3	10A	Alternator, ECM/PCM, EVAP canister purge valve, EVAP canister vent shut valve, MAF sensor
4	7.5 A	ABS modulator-control unit (Except Si model with VSA), VSA modulator-control unit (Si model with VSA), Yaw rate-lateral acceleration sensor (Si model with VSA), EPS control unit
5	15A	Stereo amplifier (2-door EX model)
6	--	Not used
7	--	Not used
8	--	Not used
9	7.5 A	ODS unit
		Passenger's airbag CUTOFF indicator, SRS unit
10	7.5 A	Gauge control module (tach), Power window master switch (2-door with AUTO UP/AUTO DOWN), Back-up light switch (M/T), Shift lock solenoid (A/T), MICU

11	10A	SRS unit
12	10A	Right headlight (high beam)
13	10A	Left headlight (high beam)
14	7.5 A	Audio unit light, Dash lights brightness controller light, Hazard warning switch light. Heater control panel light/HVAC control unit light, Moonroof switch light, Passenger's airbag CUTOFF indicator light, Select/reset switch light
15	7.5 A	Parking lights, Taillights, License plate lights, Side marker lights
16	10A	Right headlight (low beam)
17	10A	Left headlight (low beam)
18	20 A	MICU (+B H/L HI)
19	15A	MICU (+B SMALL LT)
20	-	Not used
21	20 A	MICU (+B H/L LO)
22	--	Not used
23	-	Not used
24	20 A	Moonroof control/motor
25	20 A	MICU (+B DR LOCK)
26	20 A	Driver's window motor (via power window master switch)
27	--	Not used
28	15A	Rear accessory power socket
29	15A	Front accessory power socket
30	20 A	Front passenger's window motor (4-door), Moonroof switch (2-door), Moonroof control unit/motor (2-door), Passenger's window motor (2-door)
31	-	Not used
32	20 A	Right rear window motor (4-door), Moonroof switch (4-door), Moonroof control unit/motor (4-door)
33	20 A	Left rear window motor (4-door)
34	-	Not used
35	7.5 A	Audio unit. Front accessory power socket, Rear accessory power socket, Stereo amplifier (2-door EX model)
36	10A	Heater control panel/HVAC control unit. Power mirrors, Recirculation control motor, Under-hood fuse/relay box (A/C compressor clutch relay. Blower motor relay. Power mirror defogger relay(1), Rear window defogger relay). Cooling fan control relay and radiator ran relay (via A/C diode)
37	7.5 A	MICU (daytime running lights power supply)
38	30 A	MICU (IG 1 WIPER)

(1) With mirror defogger

[ ] : 2-door

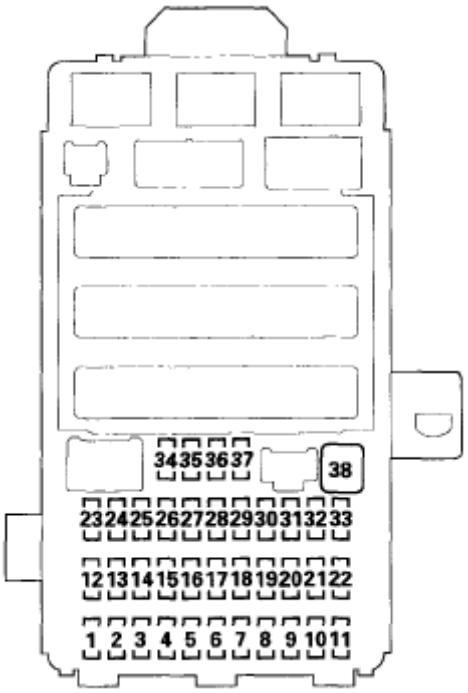


Fig. 2: Identifying Under-Dash Fuse/Relay Box
Courtesy of HONDA

2006-09 ELECTRICAL

Relay and Control Unit Locations - Civic (Except Hybrid)

ENGINE COMPARTMENT

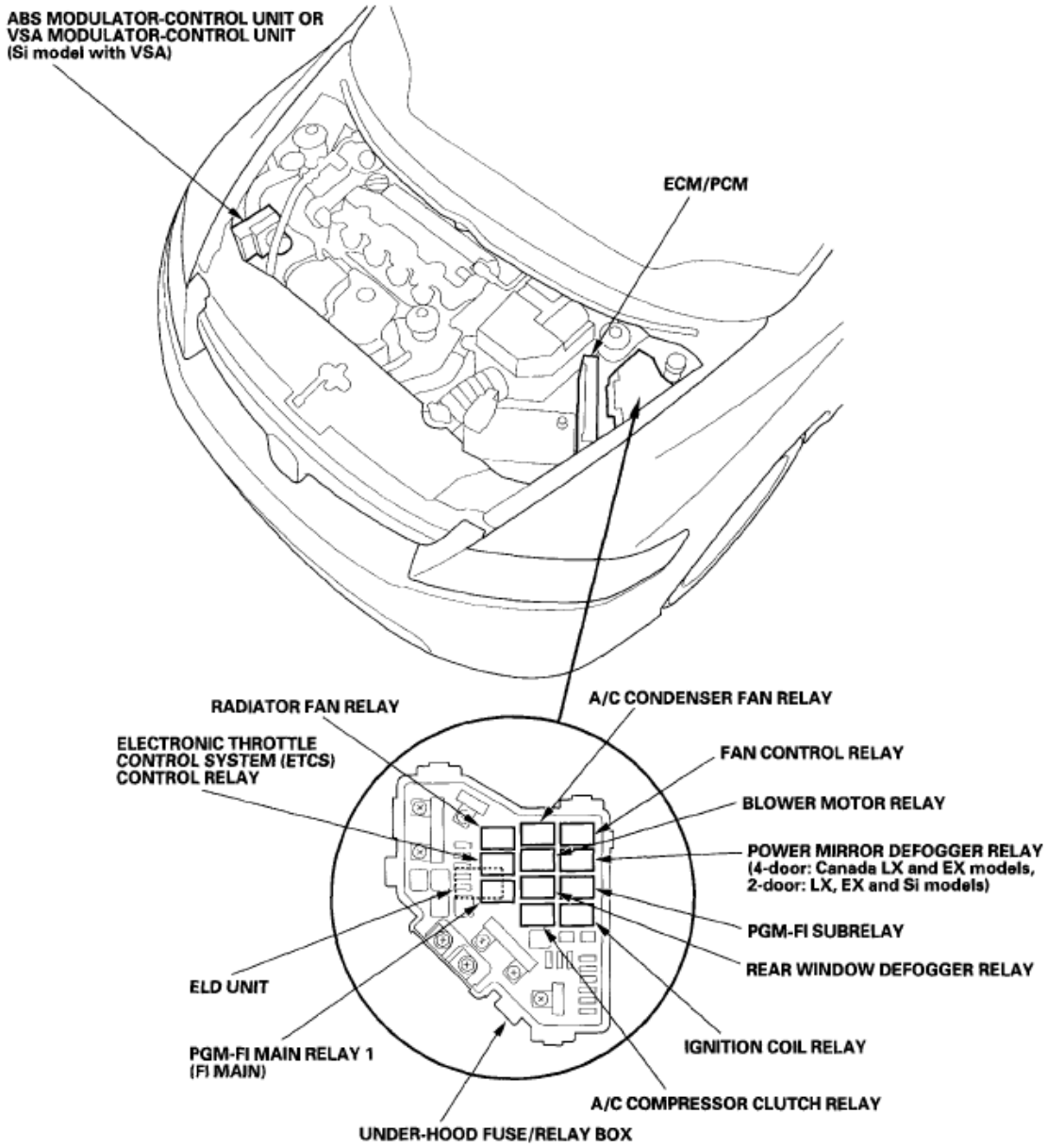


Fig. 1: Identifying Relay And Control Unit Locations - Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DASHBOARD

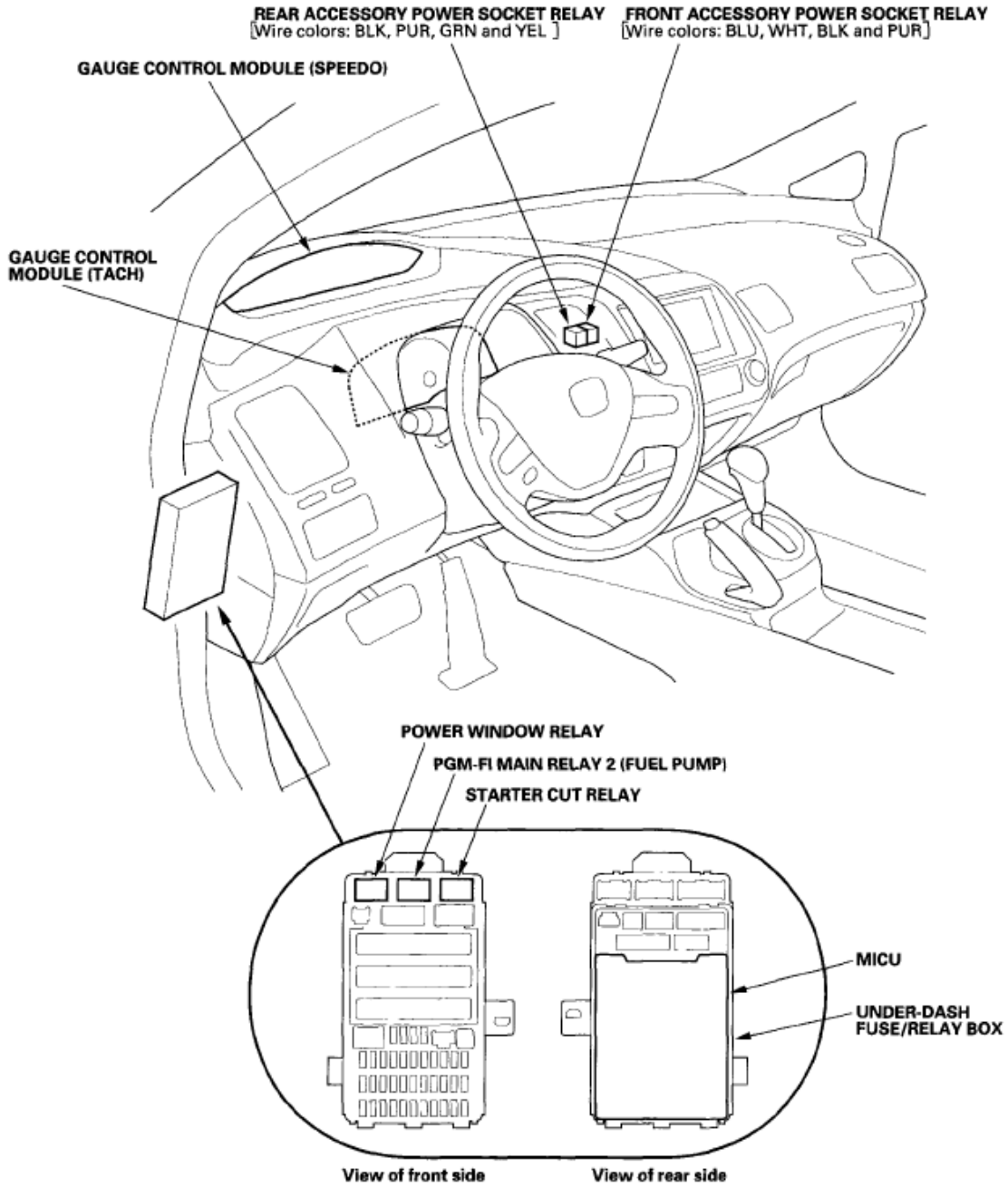


Fig. 2: Identifying Relay And Control Unit Locations (Except GX) - Dashboard (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

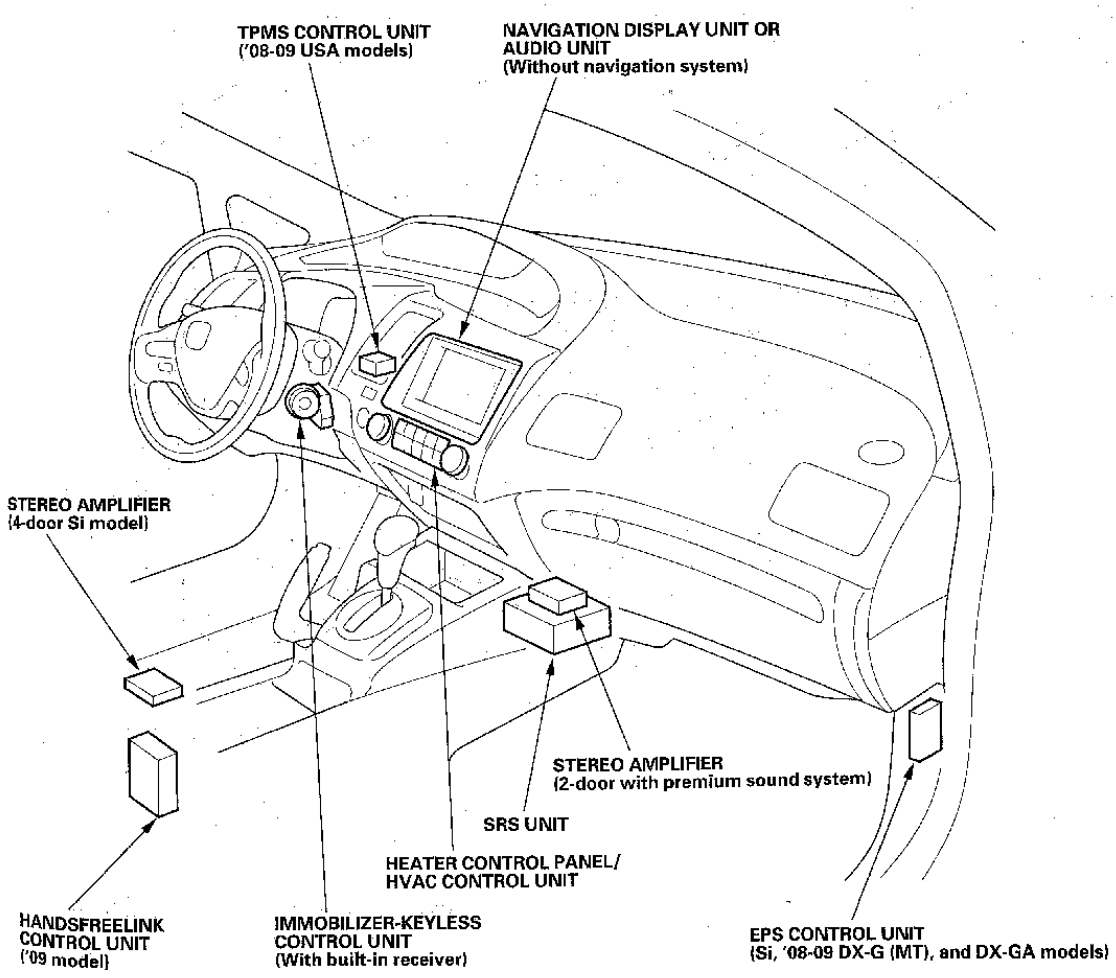


Fig. 3: Identifying Relay And Control Unit Locations (Except GX) - Dashboard (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

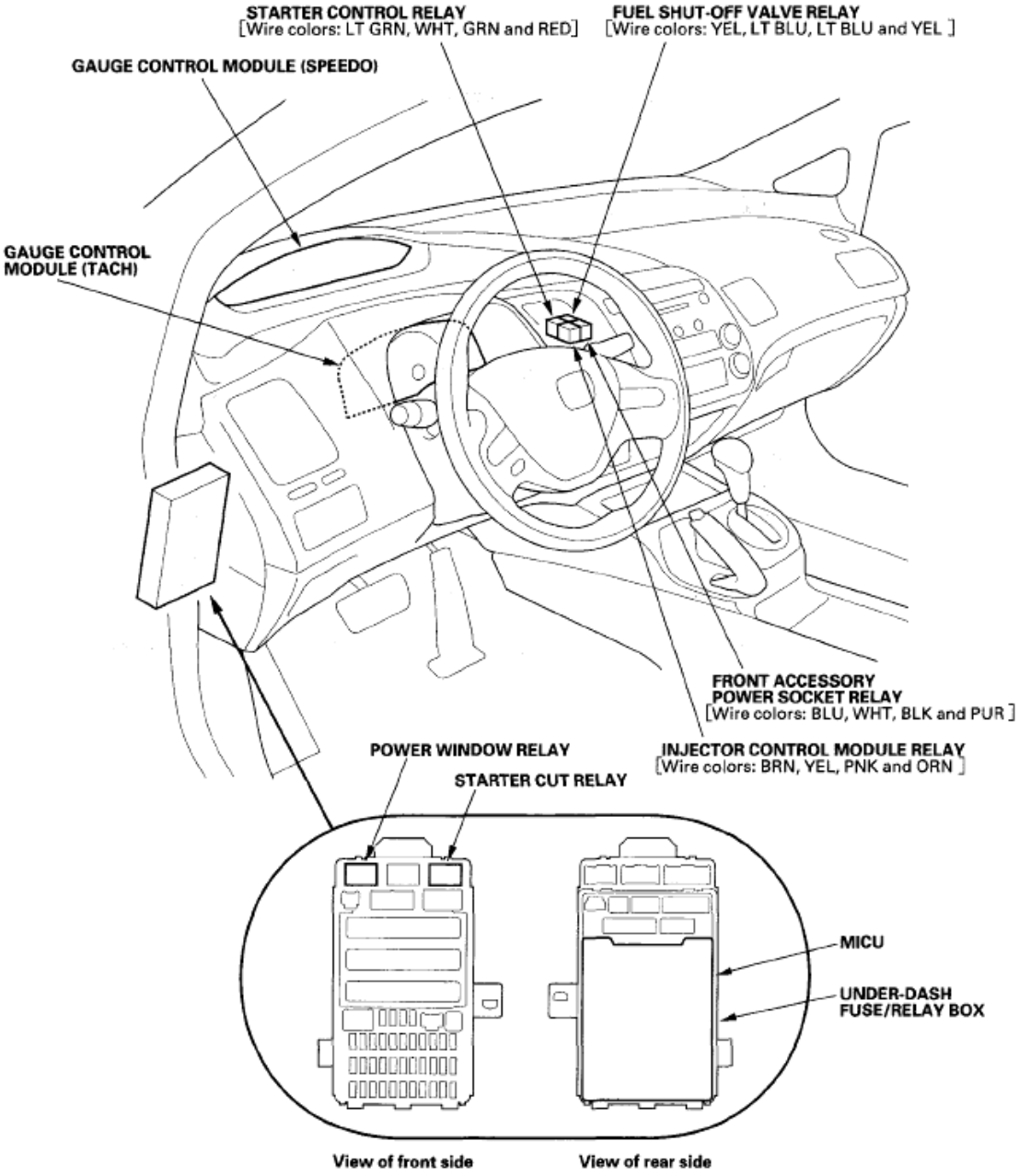


Fig. 4: Identifying Relay And Control Unit Locations (GX) - Dashboard (1 Of 2)

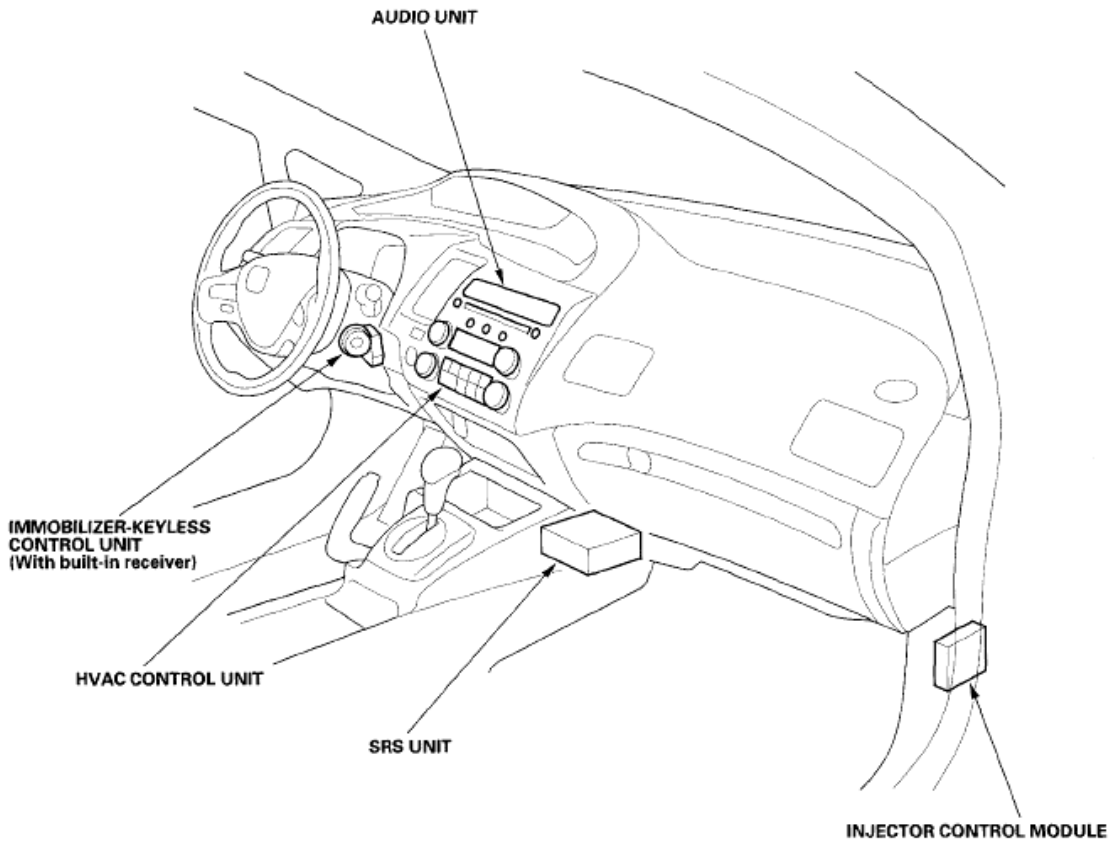


Fig. 5: Identifying Relay And Control Unit Locations (GX) - Dashboard (2 Of 2)

FLOOR

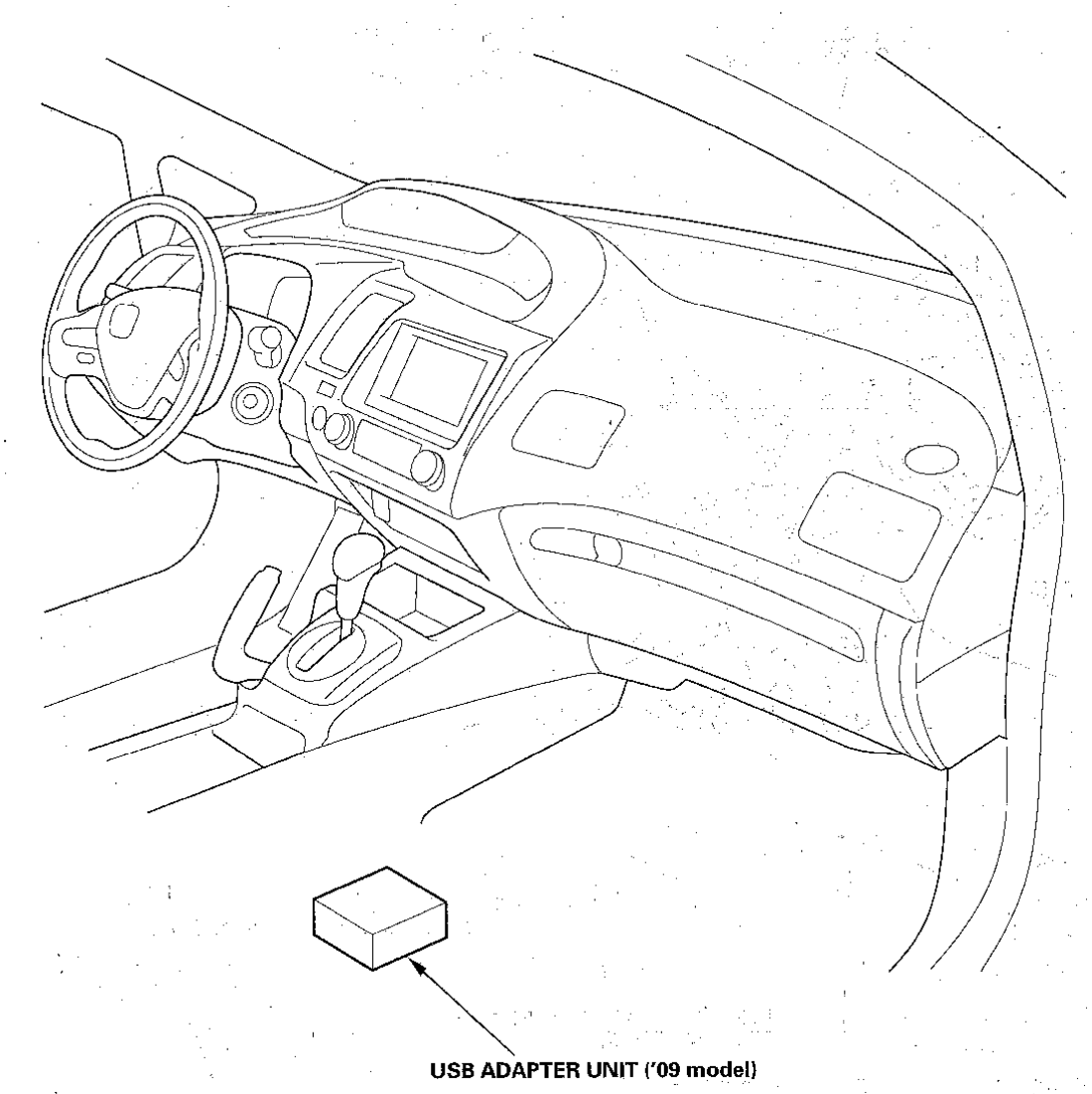


Fig. 6: Identifying USB Adapter Unit Location (Except GX) - Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DOOR AND ROOF

Driver's Door

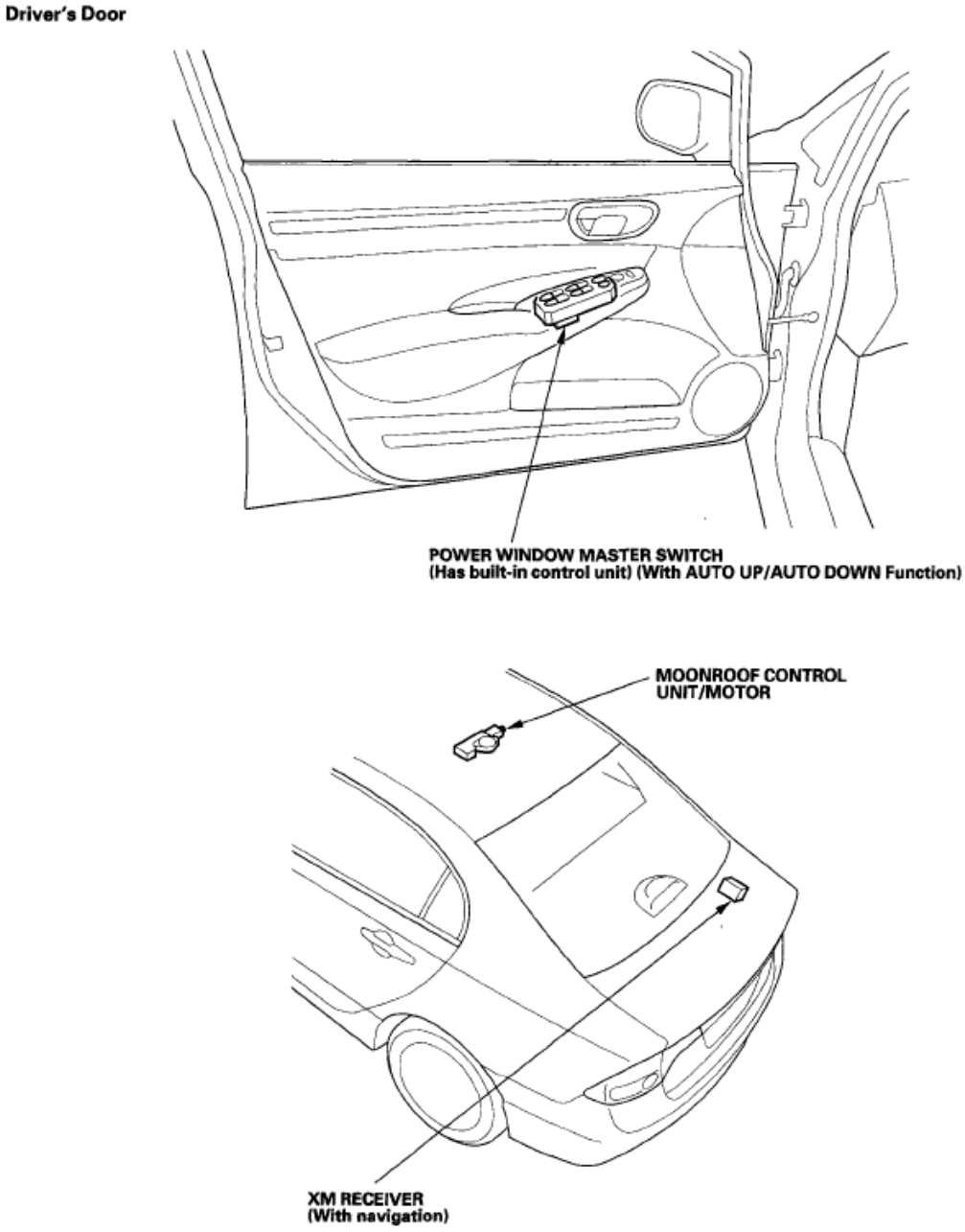


Fig. 7: Identifying ODS Unit, XM Receiver, Moonroof Control Unit And Power Window Master Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SEAT

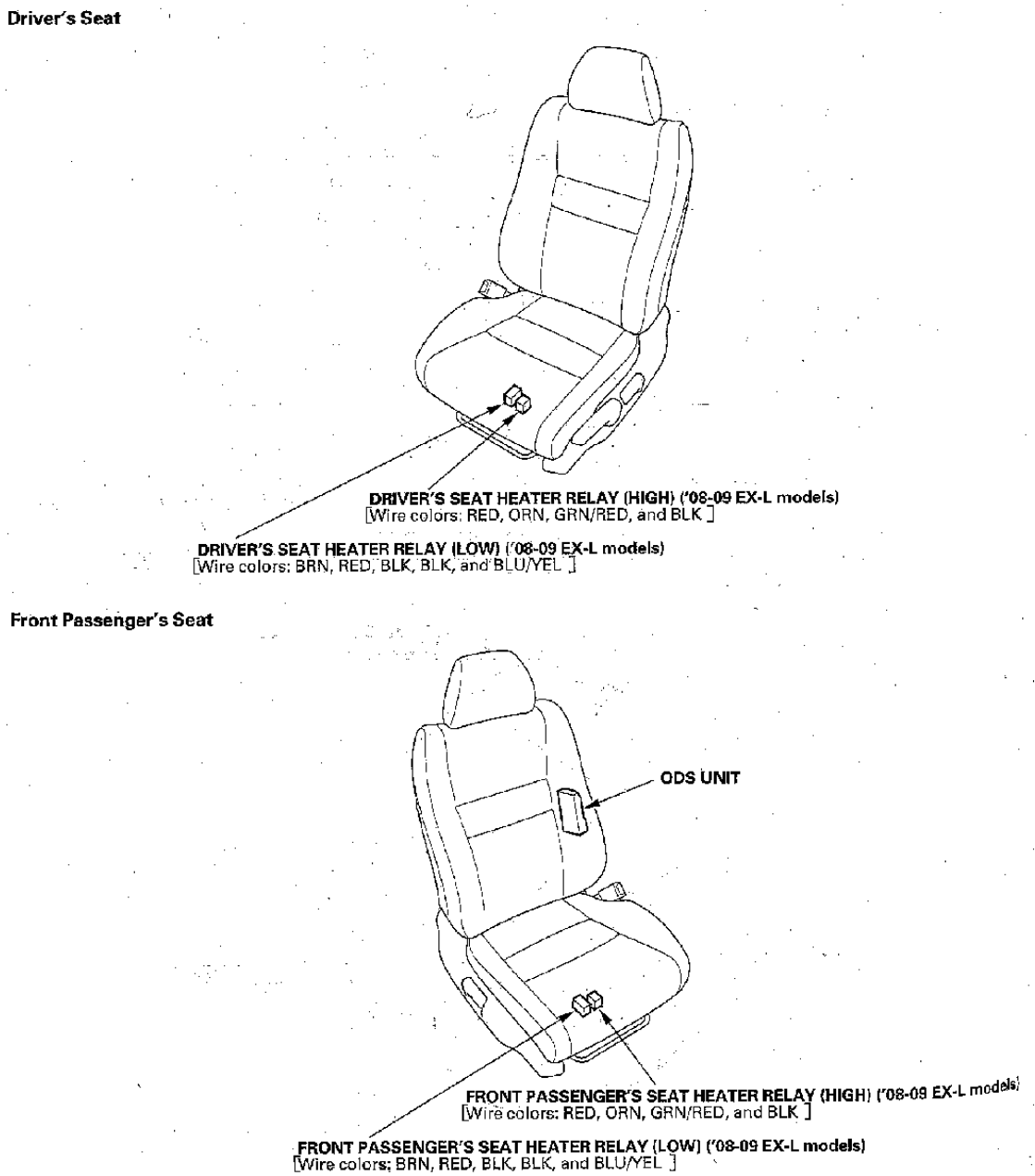


Fig. 8: Identifying Front Seat Relay Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ELECTRICAL

Relays - Civic (Except Hybrid)

POWER RELAY TEST

NOTE: Refer to the RELAYS (GX) article for additional information for the GX model.

Use this chart to identify the type of relay, then do the test listed for it.

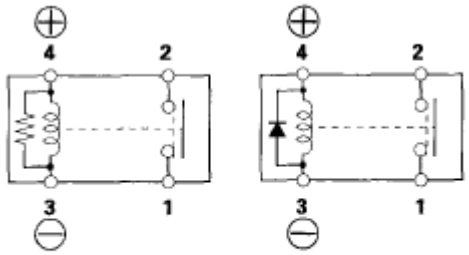
RELAY TYPES REFERENCE

Relay	Test
A/C compressor clutch relay	Normally-open type
A/C condenser fan relay	
Blower motor relay	
ETCS control relay	
Front accessory power socket relay	
Ignition coil relay	
PGM-FI main relay 1 (Fl MAIN)	
PGM-FI main relay 2 (FUEL PUMP)	
PGM-FI subrelay	
Power window relay	
Radiator fan relay	
Rear accessory power socket relay	
Rear window defogger relay	
Seat Heater (HIGH)	
Starter cut relay	
Fan control relay	Five-terminal type
Power mirror defogger relay	
Seat Heater (LOW) (1)	
(1) 2008-09 Model	

NORMALLY-OPEN TYPE

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when battery positive terminal is connected to the No. 4 terminal, and battery negative terminal is connected to the No. 3 terminal.
- There should be continuity between the No. 1 and No. 2 terminals when power is disconnected.



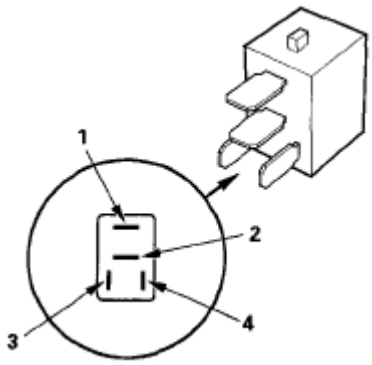


Fig. 1: Power Relay Test - Normally-Open Type

FIVE-TERMINAL TYPE

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when battery positive terminal is connected to the No. 5 terminal, and battery negative terminal is connected to the No. 3 terminal.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.

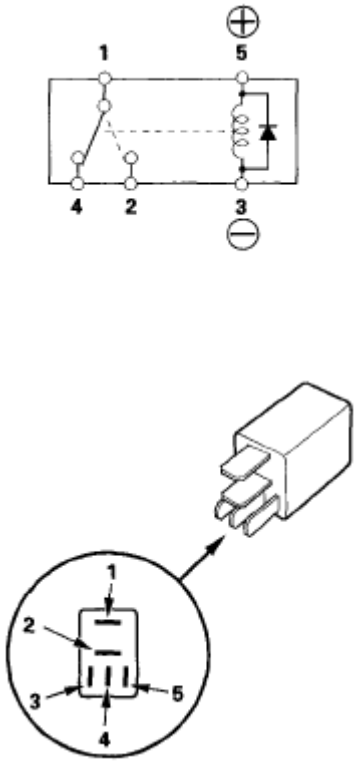


Fig. 2: Power Relay Test - Five-Terminal Type

2006-09 ELECTRICAL

Under-dash Fuse/Relay Box - Civic (Except Hybrid)

REMOVAL AND INSTALLATION

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

REMOVAL

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.
2. Make sure the ignition switch is OFF.
3. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.
4. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
5. Disconnect the connectors from the fuse side of the under-dash fuse/relay box (A).

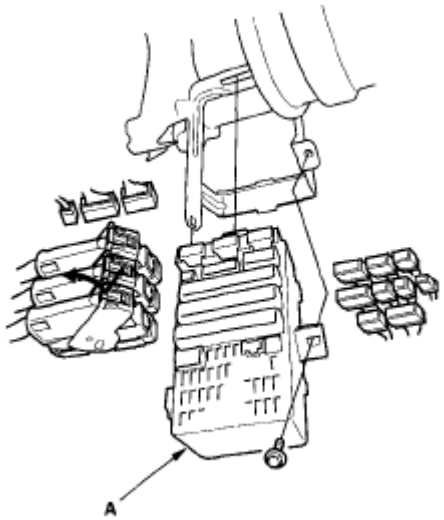


Fig. 1: Identifying Under-Dash Fuse/Relay Box

6. Remove the mounting bolt, and pull the fuse/relay box away from the body.
7. Disconnect the connectors from the back side of the under-dash fuse/relay box, then remove the under-dash fuse/relay box.
8. Carefully remove the relays by prying under the base of the relay.

NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

INSTALLATION

1. Install the relays and connect the connectors to the under-dash fuse/relay box, then install the under-

dash fuse/relay box in the reverse order of removal.

2. Install the removed parts in the reverse order of removal.
3. Connect the positive cable to the battery, then connect the negative cable to the battery.
4. Register the immobilizer system with the HDS (see **IMMOBILIZER-KEYLESS CONTROL UNIT INPUT TEST**).

NOTE: The IMOES unit is built into the MICU which is part of the under-dash fuse/relay box. Because of this construction, the IMOES must be registered, or the vehicle will not start.

5. Enter the anti-theft code for the audio or the navigation system, then enter the customer's audio presets, and set the clock.
6. Confirm that all systems work properly.

2006-09 ELECTRICAL

Under-hood Fuse/Relay Box - Civic (Except Hybrid)

REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.
2. Make sure the ignition switch is OFF.
3. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.
4. Remove the screws (A) for the alternator and battery cable terminals from the under-hood fuse/relay box.

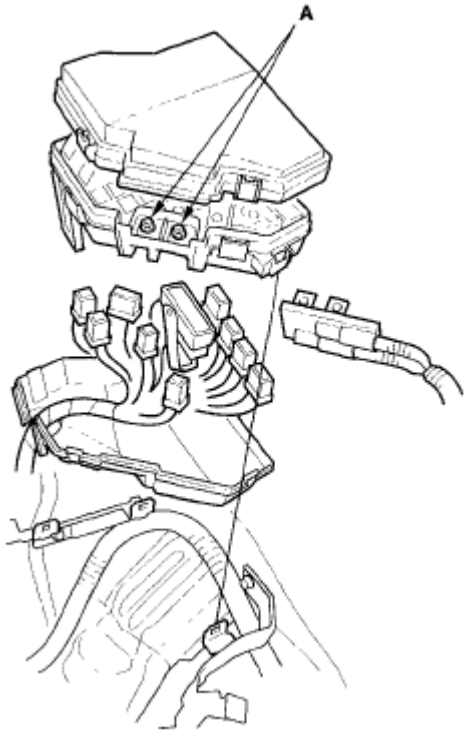


Fig. 1: Identifying Screws

5. Remove the bottom cover from the under-hood fuse/relay box.
6. Disconnect the connectors from the under-hood fuse/relay box.
7. Carefully remove the relays by prying under the base of the relay.

NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

INSTALLATION

1. Install the relays and connect the connectors to the under-hood fuse/relay box, then install the under-

hood fuse/relay box in the reverse order of removal.

2. Install the removed parts in the reverse order of removal.
3. Connect the positive cable to the battery, then connect the negative cable to the battery.
4. Enter the anti-theft code for the audio or the navigation system, then enter the customer's audio presets, and set the clock.
5. Confirm that all systems work properly.

2006-08 ELECTRICAL

Charging System (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX

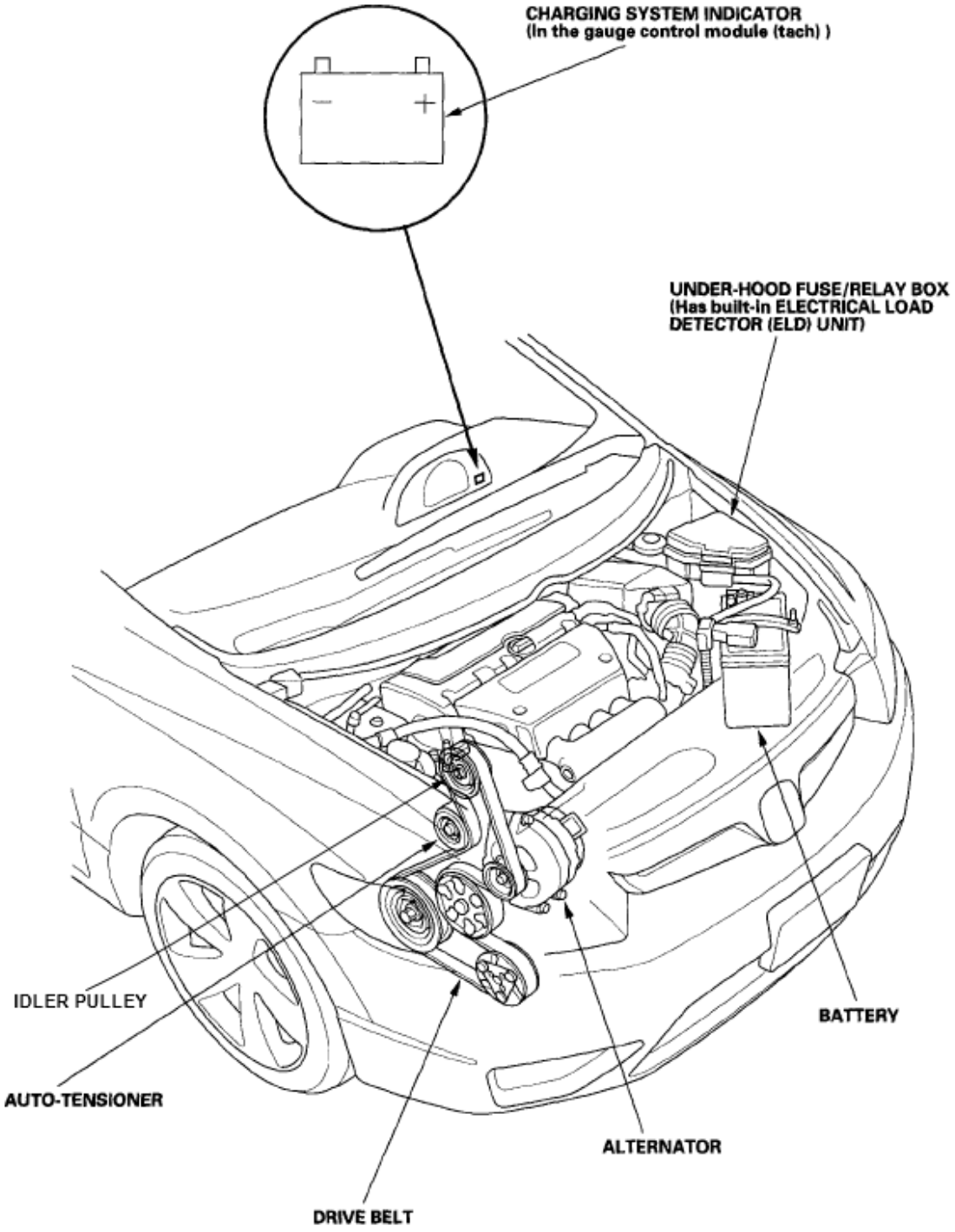


Fig. 1: Locating Charging System Components (K20Z3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure
Charging system indicator does not come on with the ignition switch ON (II)	**TROUBLESHOOT THE CHARGING SYSTEM INDICATOR CIRCUIT**
Charging system indicator stays on	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Troubleshoot the charging system indicator circuit (see **CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING**). 3. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 4. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**).
Battery discharged	1. Check for excessive parasitic electrical current draw with the ignition switch off, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 3. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**). 4. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see **BATTERY TEST**).
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). 2. Test the battery (see **BATTERY TEST**).

CIRCUIT DIAGRAM

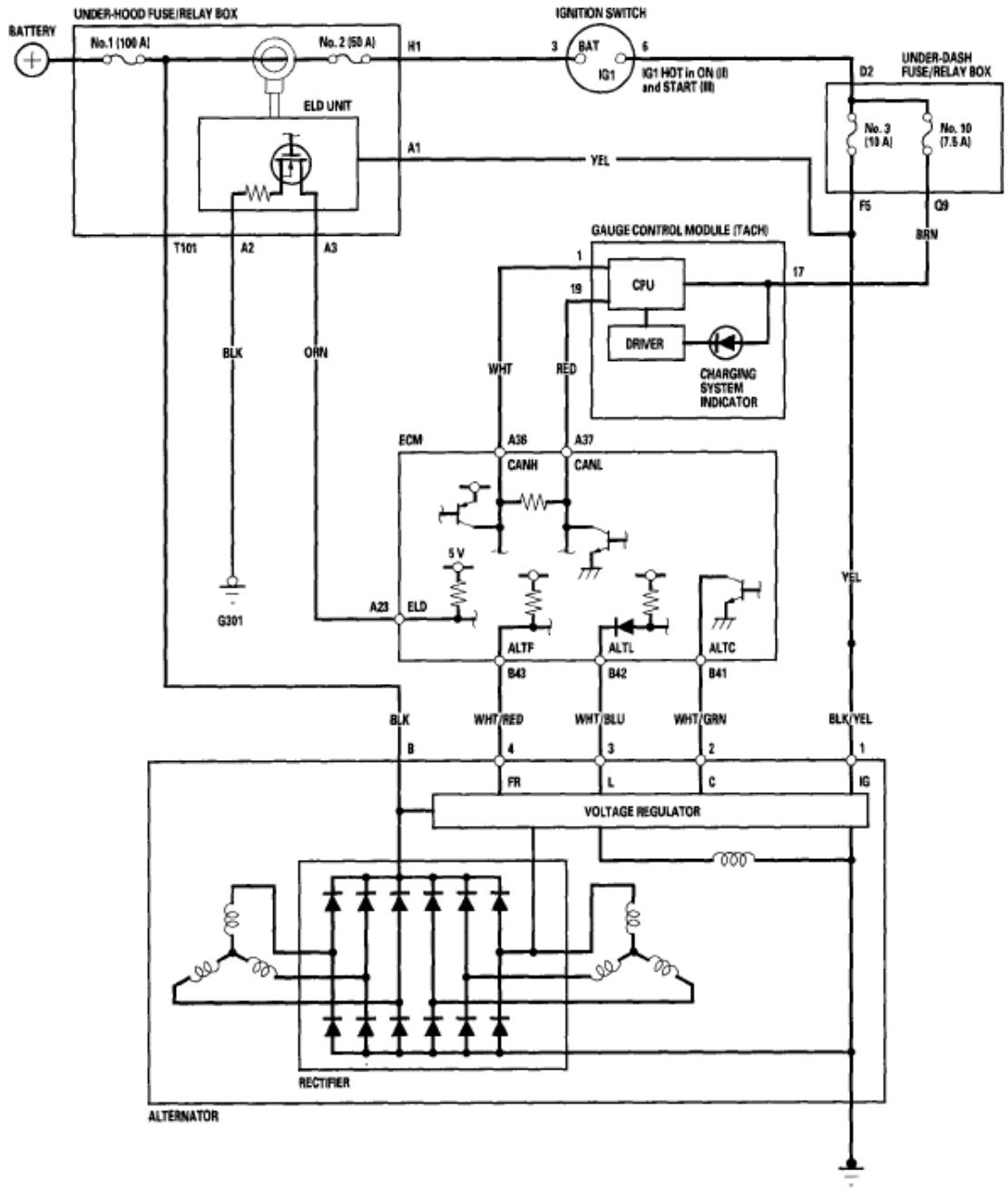


Fig. 2: Charging System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES - Go to step 2.

   NO - Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

   Does the charging system indicator go off?

   YES - Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

   NO - Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

   Does the charging system indicator flash?

   YES - Go to step 4.

   NO - Replace the gauge control module (tach) (see **REPLACEMENT**).

4. Turn the ignition switch OFF.
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).

   Does the charging system indicator go off?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

   NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
9. Turn the ignition switch ON (II).
10. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the ECM from damage.

12. Disconnect ECM connector B (44P).
13. Check for continuity between ECM connector terminal B42 and body ground.

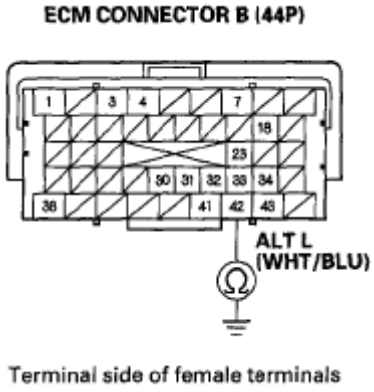


Fig. 3: Checking Continuity Between ECM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the alternator and the ECM.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

14. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

    Does the charging system indicator flash?

    YES - Go to step 15.

    NO - Replace the gauge control module (tach) (see **REPLACEMENT**).

15. Turn the ignition switch OFF.
16. Disconnect the alternator 4P connector.
17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

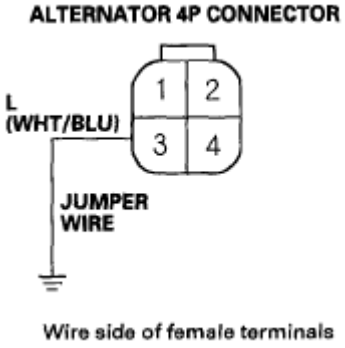


Fig. 4: Connecting Alternator 4P Connector Terminal No. 3 And Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Turn the ignition switch ON (II).

    Does the charging system indicator come on?

    YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

    NO - Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
21. Turn the ignition switch ON (II).
22. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
23. Jump the SCS line with the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the ECM from damage.

24. Disconnect ECM connector B (44P).
25. Check for continuity between ECM connector terminal B42 and alternator 4P connector terminal No. 3.

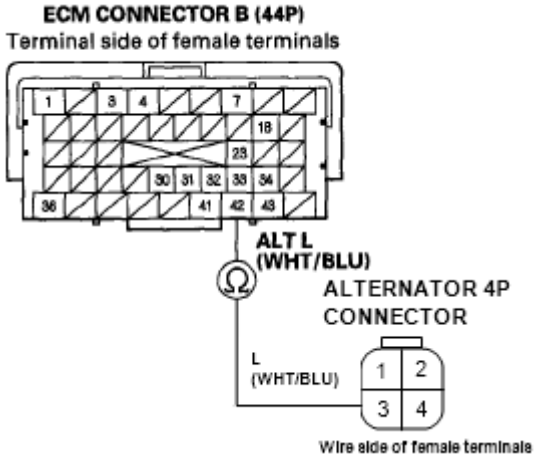


Fig. 5: Checking Continuity Between ECM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Repair open in the wire between the alternator and the ECM.

ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING

1. Make sure the battery connections are good and the battery is sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).

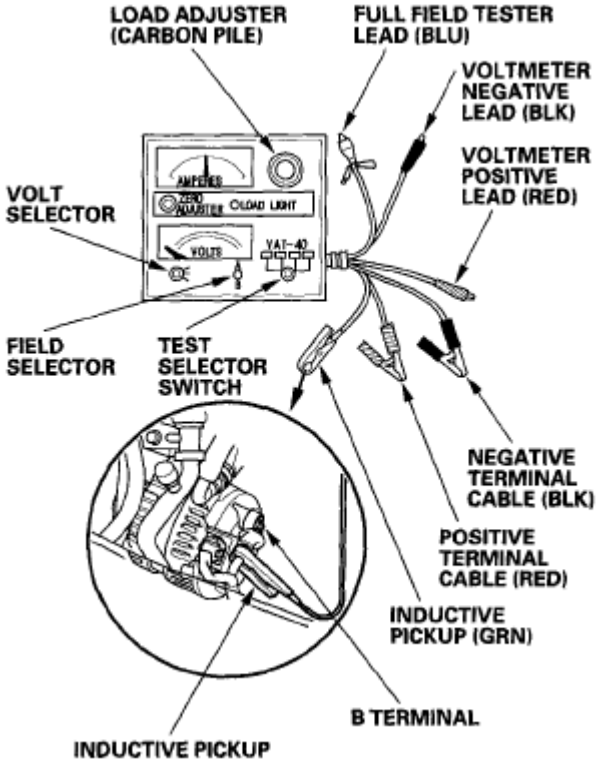


Fig. 6: Turning Selector Switch To Position 1 (Starting)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage over 15.1 V?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or rear housing assembly (see **ALTERNATOR OVERHAUL**).

   NO - Go to step 5.

5. Release the accelerator pedal, and let the engine idle.
6. Turn off all the accessories. Select the charging test on the tester.
7. Remove the inductive pickup, and zero the ammeter.
8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage less than 13.5 V?

YES - Go to alternator control circuit troubleshooting (see **ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING**).

NO - Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops within 12-13.5 V.

    Is the amperage 87.5 A or more?

    YES - The charging system is OK.

    NOTE: If the charging system indicator is still on, replace the alternator (see ALTERNATOR REMOVAL AND INSTALLATION).

    NO - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector from the alternator.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.

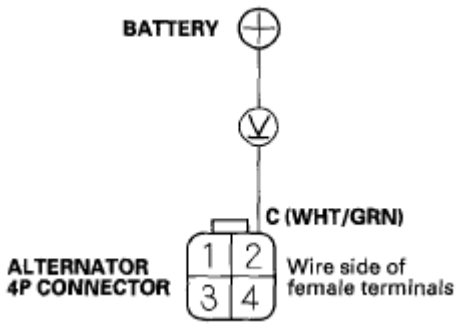


Fig. 7: Measuring Voltage Between Alternator 4P Connector Terminal No. 2 And Positive Terminal Of Battery
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or less?

YES - Go to step 11.

NO - Go to step 8.

8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

9. Disconnect ECM connector B (44P).
10. Check for continuity between ECM connector terminal B41 and body ground.

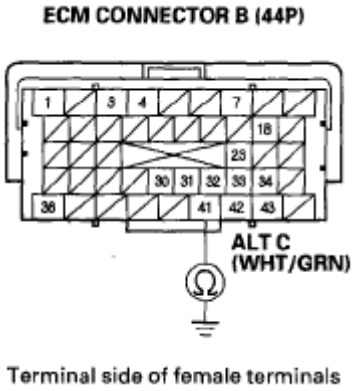


Fig. 8: Checking Continuity Between ECM Connector Terminal B41 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the alternator and the ECM.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

12. Disconnect ECM connector B (44P).
13. Check for continuity between ECM connector terminal B41 and alternator 4P connector terminal No. 2.

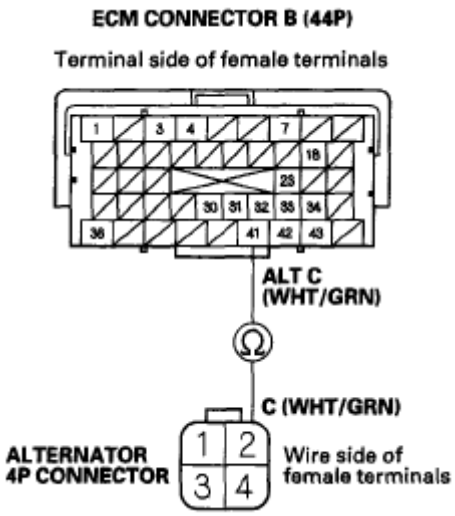


Fig. 9: Checking Continuity Between ECM Connector Terminal B41 And Alternator 4P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO - Repair open in the wire between the alternator and the ECM.

DRIVE BELT INSPECTION

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see **DRIVE BELT INSPECTION**).

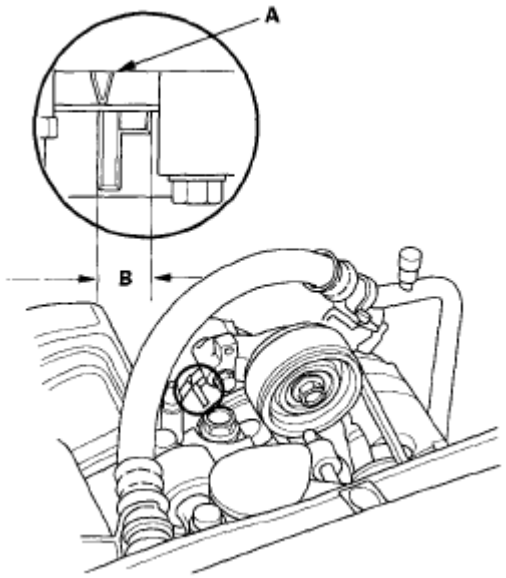


Fig. 10: Checking Auto-Tensioner Indicator Is Within Standard Range

Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT REMOVAL/INSTALLATION

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Move the auto-tensioner (A) using the belt tension release tool to relieve tension from the drive belt, then remove the drive belt.

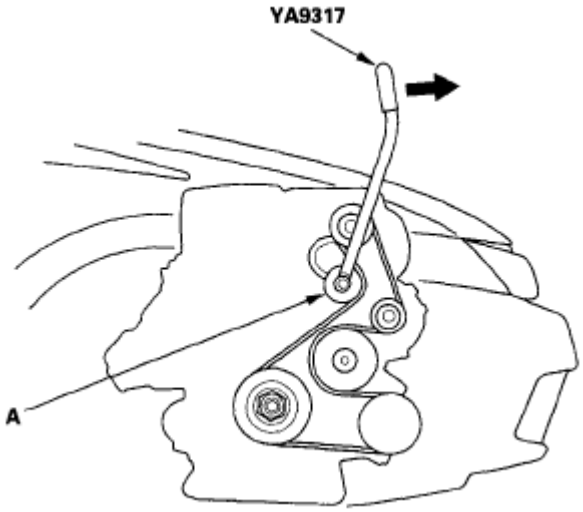


Fig. 11: Moving Auto-Tensioner Using Belt Tension Release Tool To Relieve Tension From Drive Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new belt in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER INSPECTION

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Turn the ignition switch ON (II), and make sure to turn the A/C switch OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves of fluctuates a lot, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

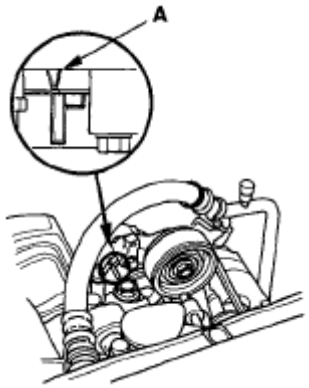


Fig. 12: Checking Position Of Auto-Tensioner Indicator's Pointer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the tensioner pulley.
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

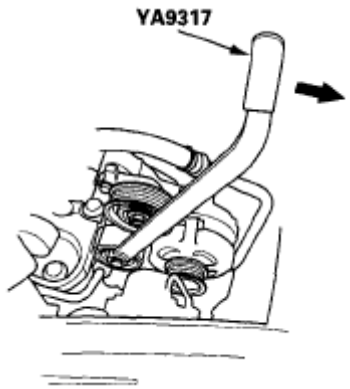


Fig. 13: Moving Auto-Tensioner Within Its Limit Using Belt Tension Release Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
7. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.

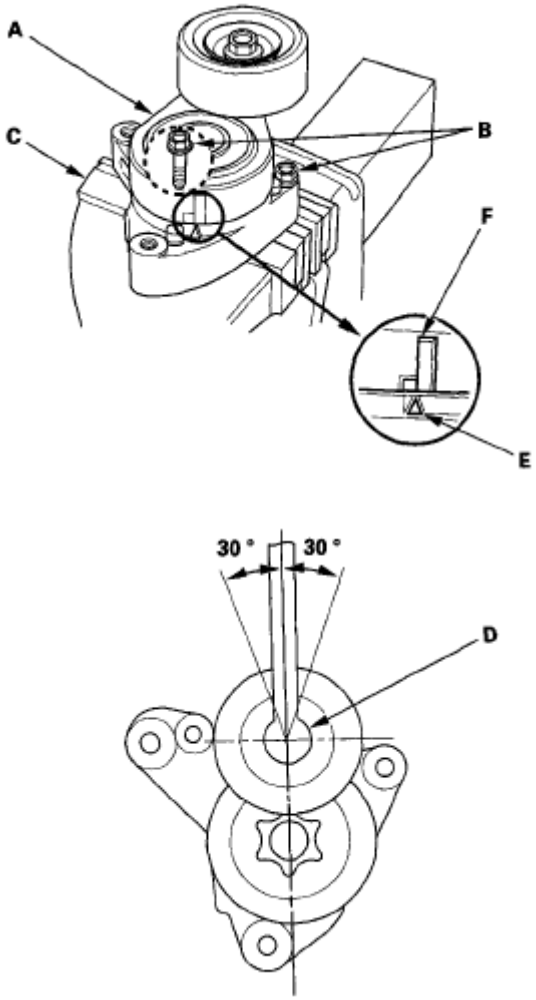


Fig. 14: Clamping Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Set the torque wrench (D) in the pulley bolt in the direction shown.
9. Align the indicator (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

NOTE: If the indicator exceeds the center mark, recheck the torque.

Auto-tensioner Spring Torque: 32.5-39.7 N.m (3.31-4.05 kgf.m, 23.9-29.3 lbf.ft)

DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the idler pulley base.

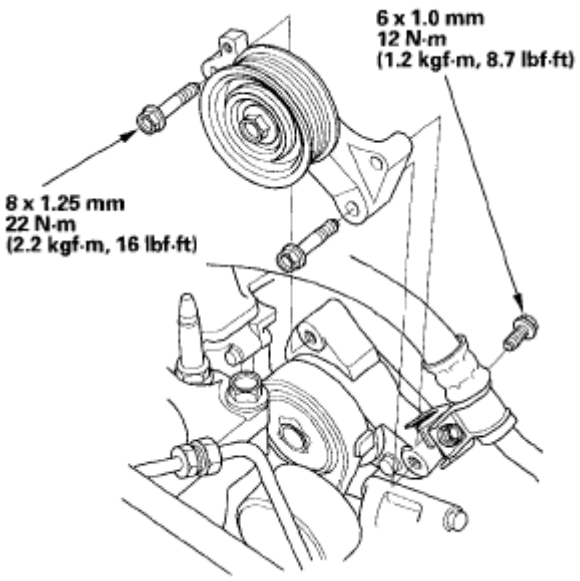


Fig. 15: Removing Idler Pulley Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the pulley bolt (A), then remove the tensioner pulley (B).

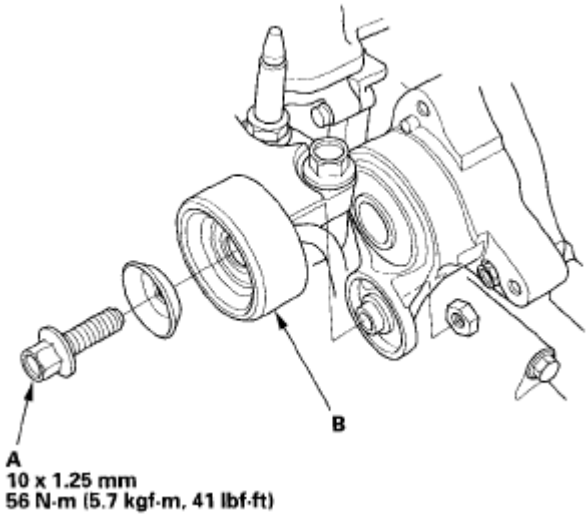


Fig. 16: Removing Pulley Bolt And Tensioner Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the auto-tensioner.

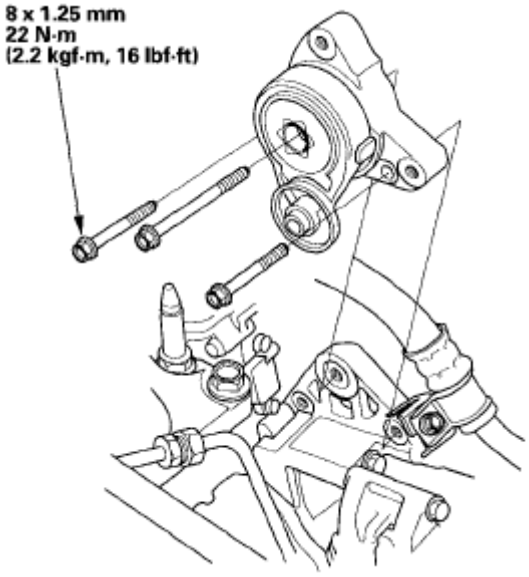


Fig. 17: Removing Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the auto-tensioner in the reverse order of removal.

TENSIONER PULLEY REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the pulley bolt (A), then remove the tensioner pulley (B).

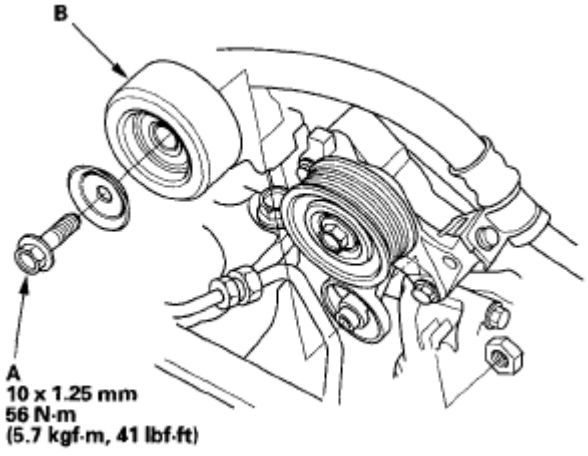


Fig. 18: Removing Pulley Bolt And Tensioner Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the tensioner pulley in the reverse order of removal.

IDLER PULLEY REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the idler pulley.

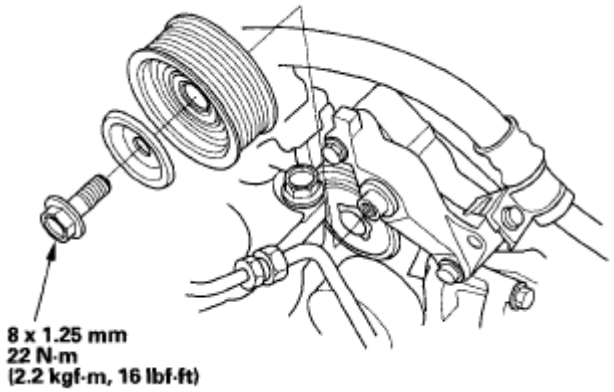


Fig. 19: Removing Idler Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the idler pulley in the reverse order of removal.

ALTERNATOR REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the drive belt (see **DRIVE BELT INSPECTION**).
4. Remove the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
5. Disconnect the fan motor connectors (A) and hood switch connector (B), then remove the harness clamps (C).

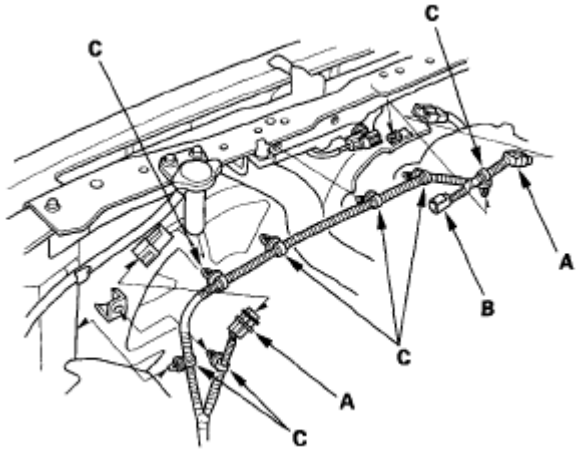


Fig. 20: Disconnecting Fan Motor Connectors And Hood Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the reservoir hose (A), radiator cap base mounting bolts (B), clips (C) and radiator upper brackets (D).

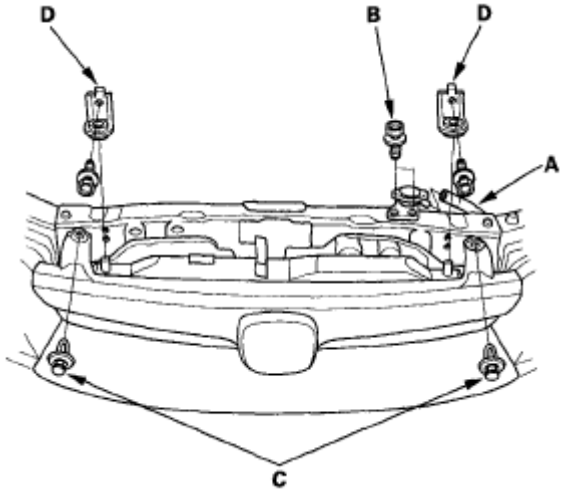


Fig. 21: Removing Reservoir Hose, Radiator Cap Base Mounting Bolts, Clips And Radiator Upper Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the condenser bracket mounting bolts (A), then remove the bulkhead (B).

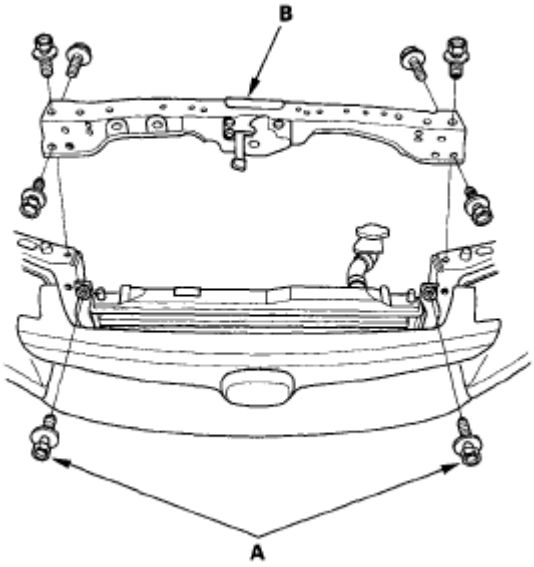


Fig. 22: Removing Condenser Bracket Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the three bolts securing the alternator.

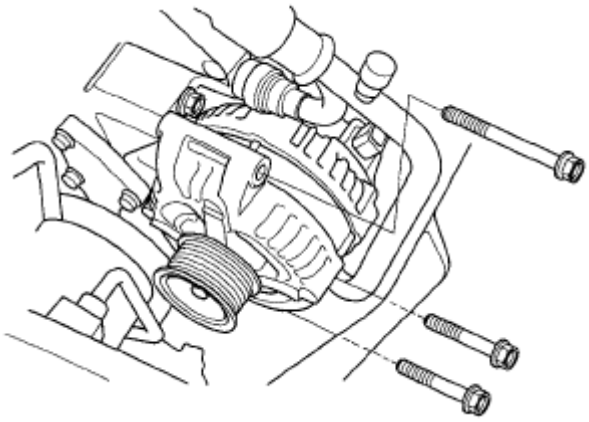


Fig. 23: Removing Alternator Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the alternator connector (A), BLK wire (B) and harness clamp (C) from the alternator, then remove the alternator.

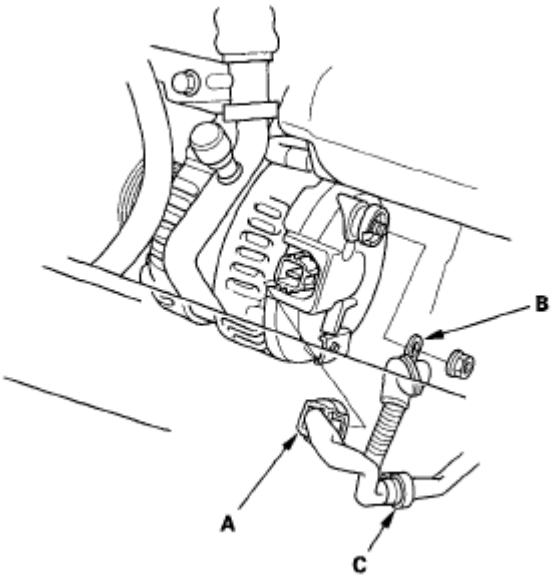


Fig. 24: Removing Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Connect the alternator connector (A), BLK wire (B) and harness clamp (C) to the alternator.

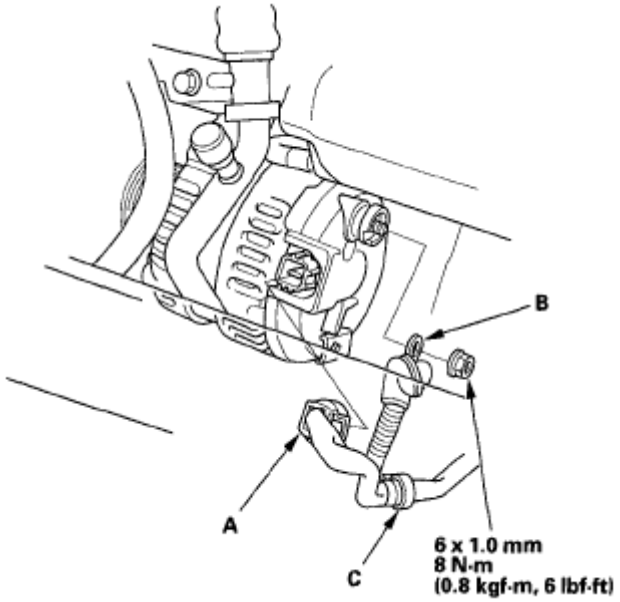


Fig. 25: Connecting Alternator Connector, BLK Wire And Harness Clamp To Alternator (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Tighten the three bolts securing the alternator.

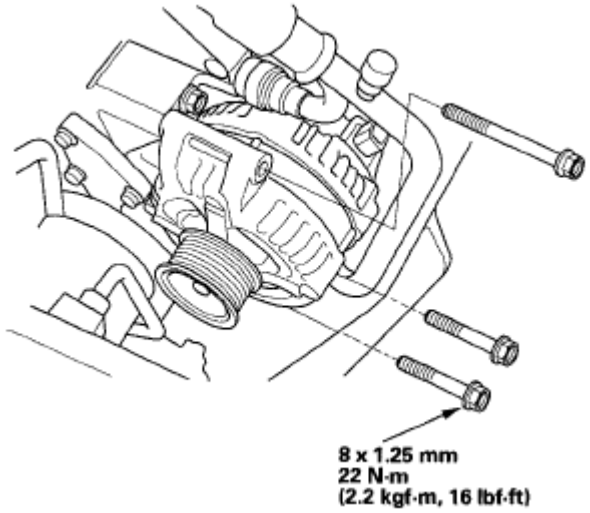


Fig. 26: Tightening Alternator Bolts (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the bulkhead (A), then install the condenser bracket mounting bolts (B).

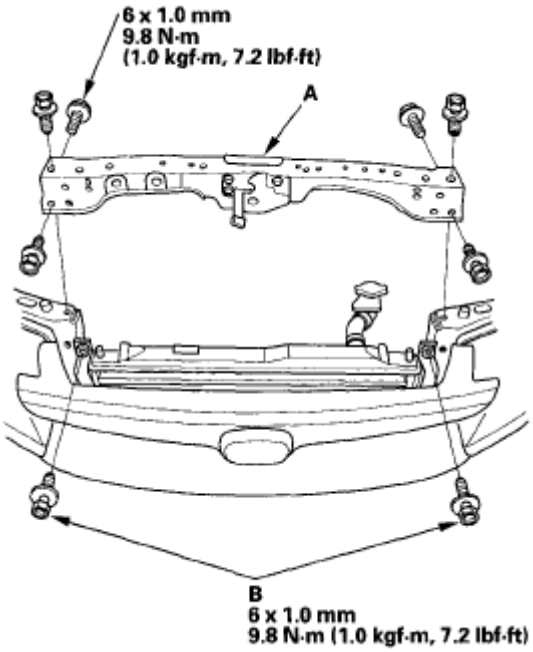


Fig. 27: Installing Condenser Bracket Mounting Bolts (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Apply body paint to the bulkhead mounting bolts.
5. Install the radiator upper brackets (A), radiator cap base mounting bolts (B), reservoir hose (C), and Clips (D).

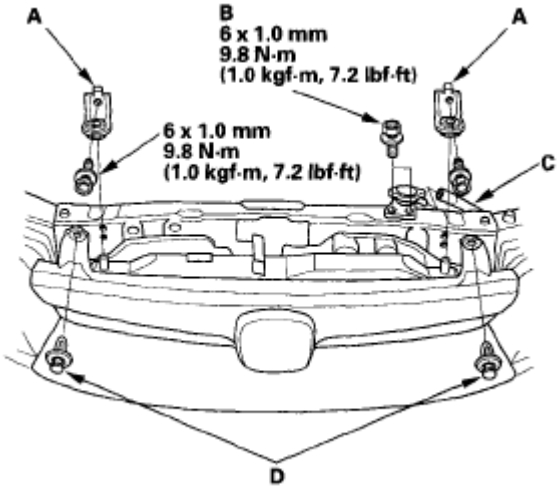


Fig. 28: Installing Radiator Upper Brackets And Radiator Cap Base Mounting Bolts (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the fan motor connectors (A) and hood switch connector (B), then install the harness clamps (C).

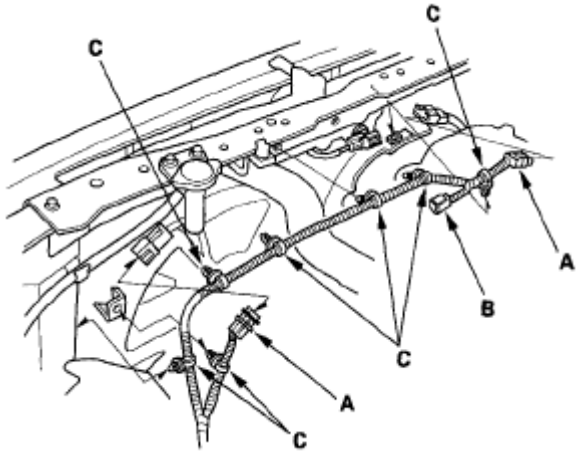


Fig. 29: Connecting Fan Motor And Hood Switch Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
8. Install the drive belt (see **DRIVE BELT INSPECTION**).
9. Connect the positive cable to the battery first, then connect the negative cable.
10. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio preset.
11. Set the clock.

ALTERNATOR OVERHAUL

EXPLODED VIEW

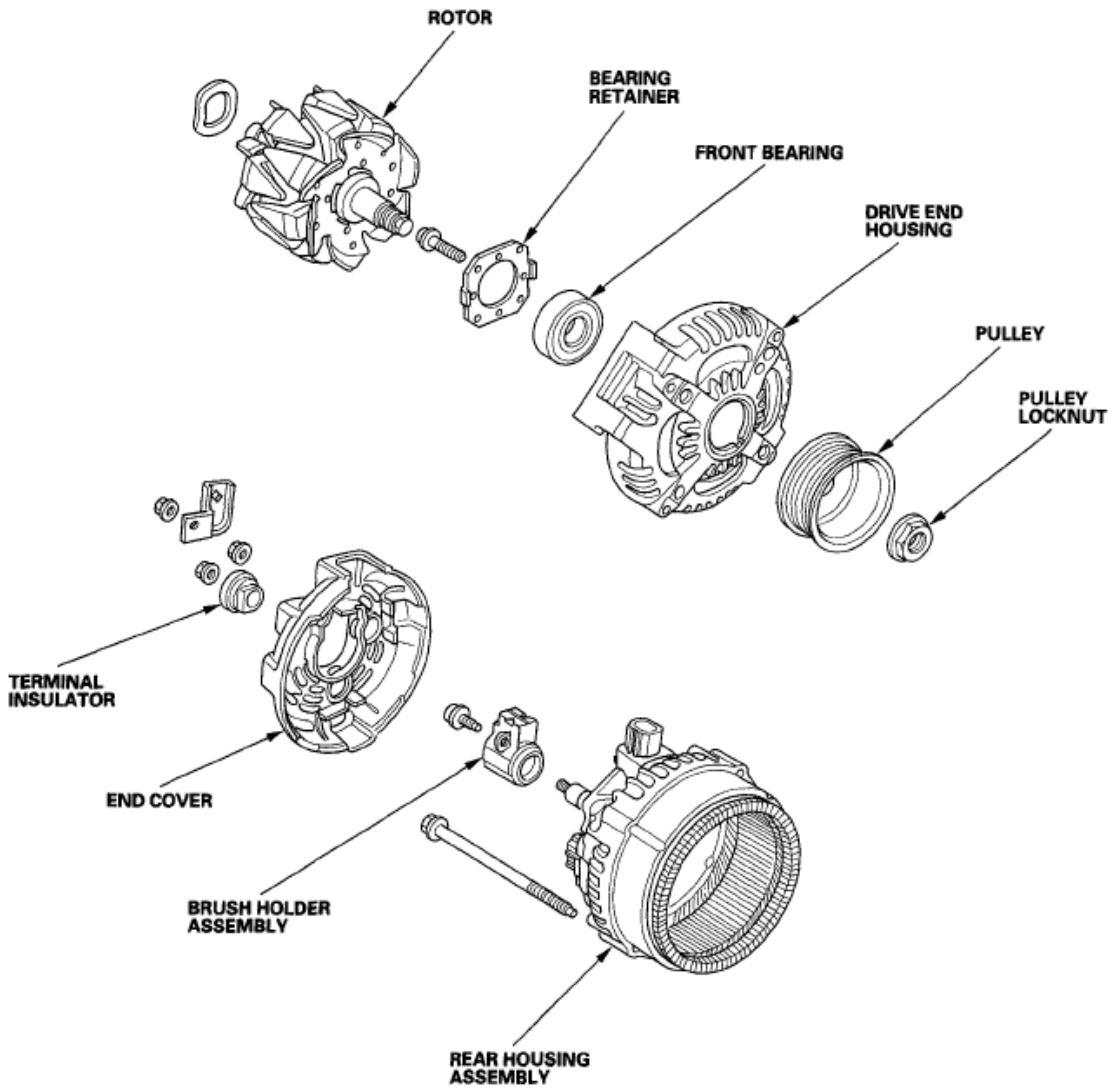


Fig. 30: Exploded View Of Alternator Overhaul
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to Fig. 30 as needed during this procedure.

1. Test the alternator and regulator before you remove them (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).
2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.

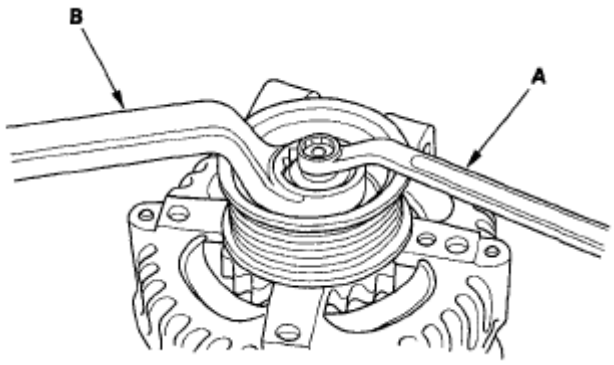


Fig. 31: Removing Locknut With Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the harness stay and the three flange nuts from the alternator.

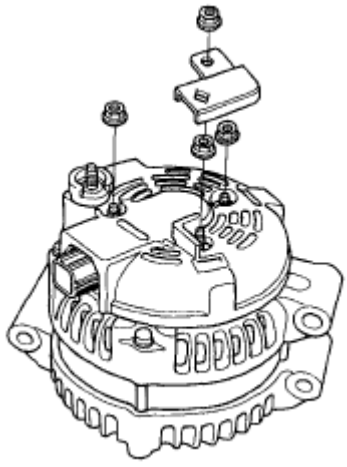


Fig. 32: Removing Harness Stay And Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the end cover.

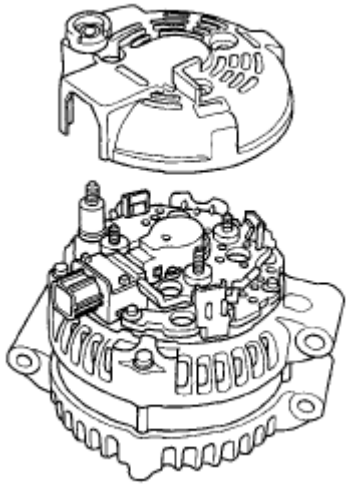


Fig. 33: Removing End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the brush holder.

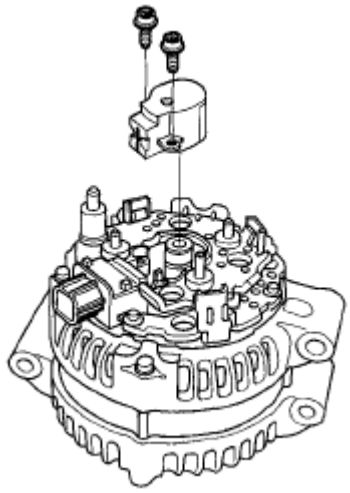


Fig. 34: Removing Brush Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the four bolts, then remove the rear housing assembly (A), and washer (B).

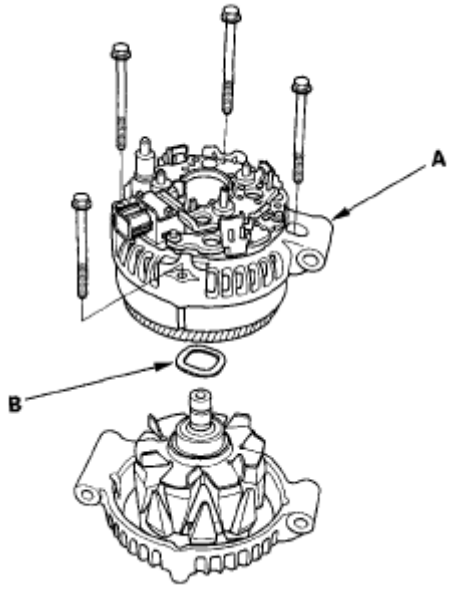


Fig. 35: Removing Rear Housing Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive end housing.

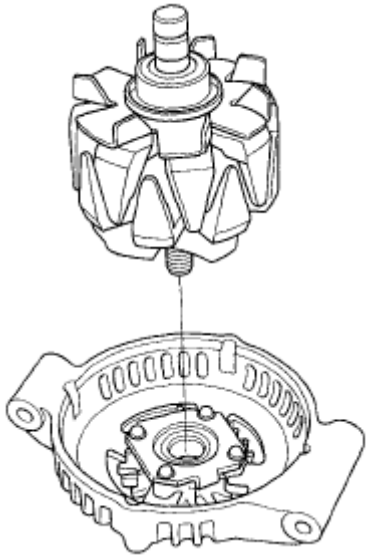


Fig. 36: Removing Rotor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.
   - If the rotor is damaged, replace the rotor assembly.
   - If the rotor is OK, go to step 10.
10. Remove the front bearing retainer plate.

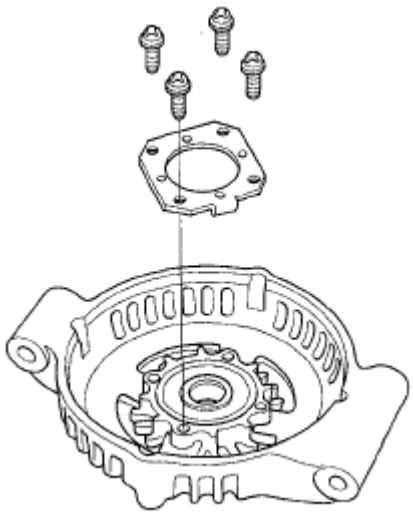


Fig. 37: Removing Front Bearing Retainer Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Drive out the front bearing with a brass drift and hammer.

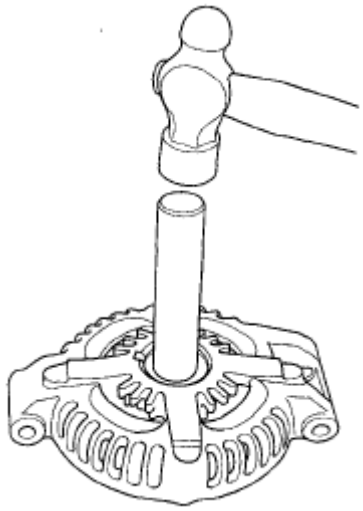


Fig. 38: Removing Front Bearing With Brass Drift And Hammer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. With a hammer and special tools, install a new front bearing in the drive end housing.

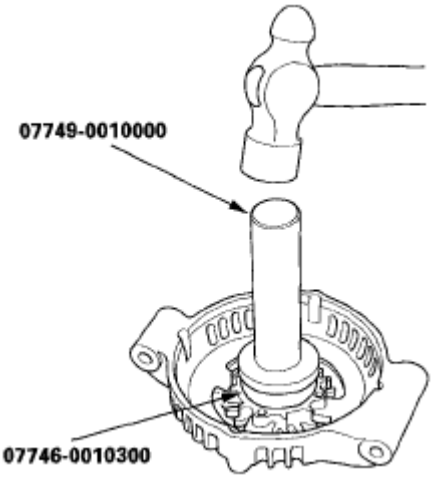


Fig. 39: Installing Front Bearing In Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Brush Inspection

13. Measure the length of both brushes (A) with vernier caliper (B).
    - If either brush is shorter than the service limit, replace the brush holder assembly.
    - If brush length is OK, go to step 14.

Alternator Brush Length

Standard (New): 10.5 mm (0.41 in.)
Service Limit: 1.5 mm (0.06 in.)

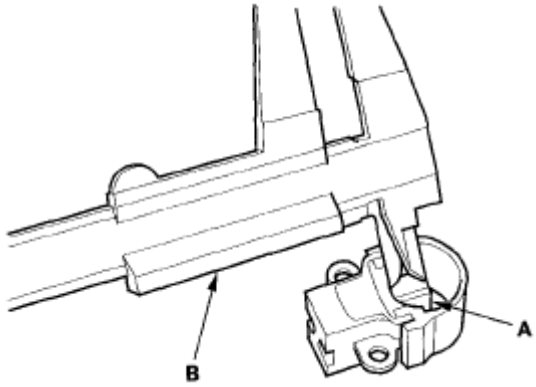


Fig. 40: Measuring Length Of Brushes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).
    - If there is continuity, go to step 15.
    - If there is no continuity, replace the rotor assembly.

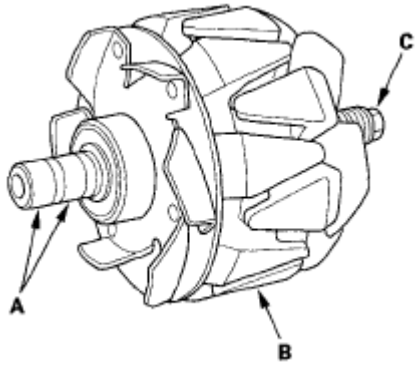


Fig. 41: Checking Continuity Between Slip Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).
    - If there is no continuity, replace the rear housing assembly, and go to step 16.
    - If there is continuity, replace the rotor assembly.

Alternator Reassembly

16. If you removed the pulley, put the rotor in the drive end housing, then tighten its locknut to 110 N.m (11.2 kgf.m, 81.0 lbf.ft).
17. Remove any grease or any oil from the slip rings.
18. Put the rear housing assembly and drive end housing/rotor assembly together, tighten the four through bolts.
19. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.6 mm (0.06 in.) diameter) to hold them there.

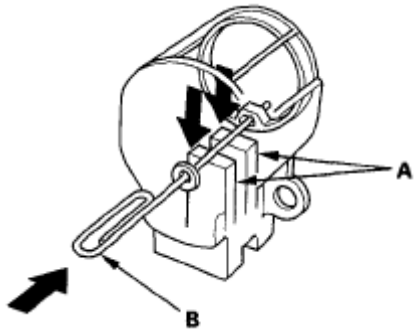


Fig. 42: Pushing Brushes In And Inserting Pin Or Drill Bit To Hold
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the brush holder, and pull out the pin.

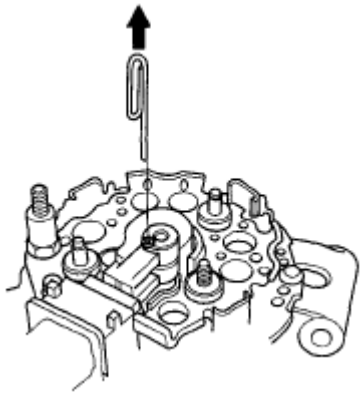


Fig. 43: Installing Brush Holder And Removing Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the end cover.
22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
23. Install the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) and drive belt (see **DRIVE BELT INSPECTION**).

2006-08 ELECTRICAL

Charging System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

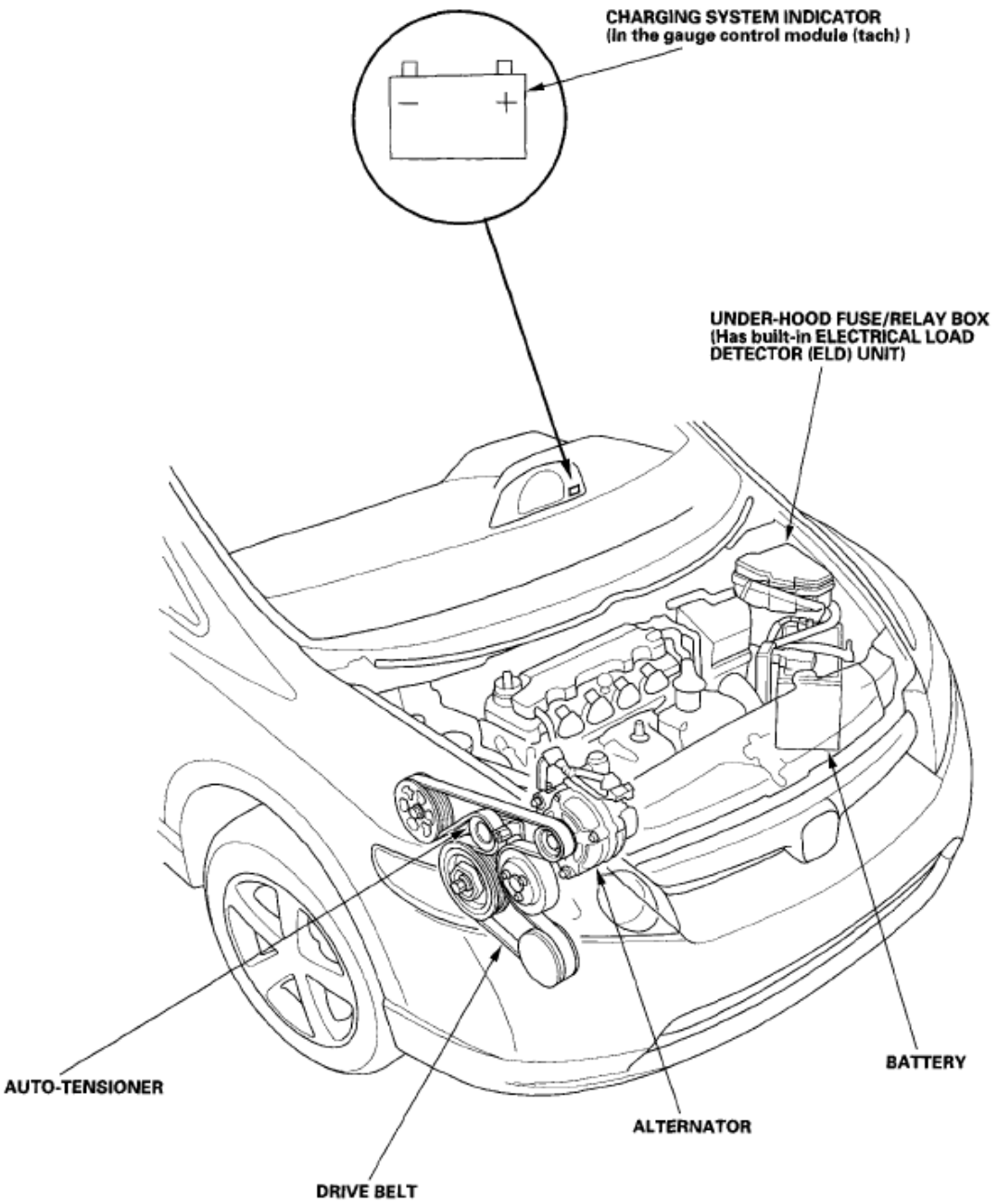


Fig. 1: Identifying Charging System Component
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see **CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING**).	
Charging system indicator stays on	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Troubleshoot the charging system indicator circuit (see **CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING**). 3. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 4. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**).	
Battery discharged	1. Check for excessive parasitic electrical current draw with the ignition switch off, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 3. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**). 4. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see **BATTERY TEST**).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). 2. Test the battery (see **BATTERY TEST**).	

CIRCUIT DIAGRAM

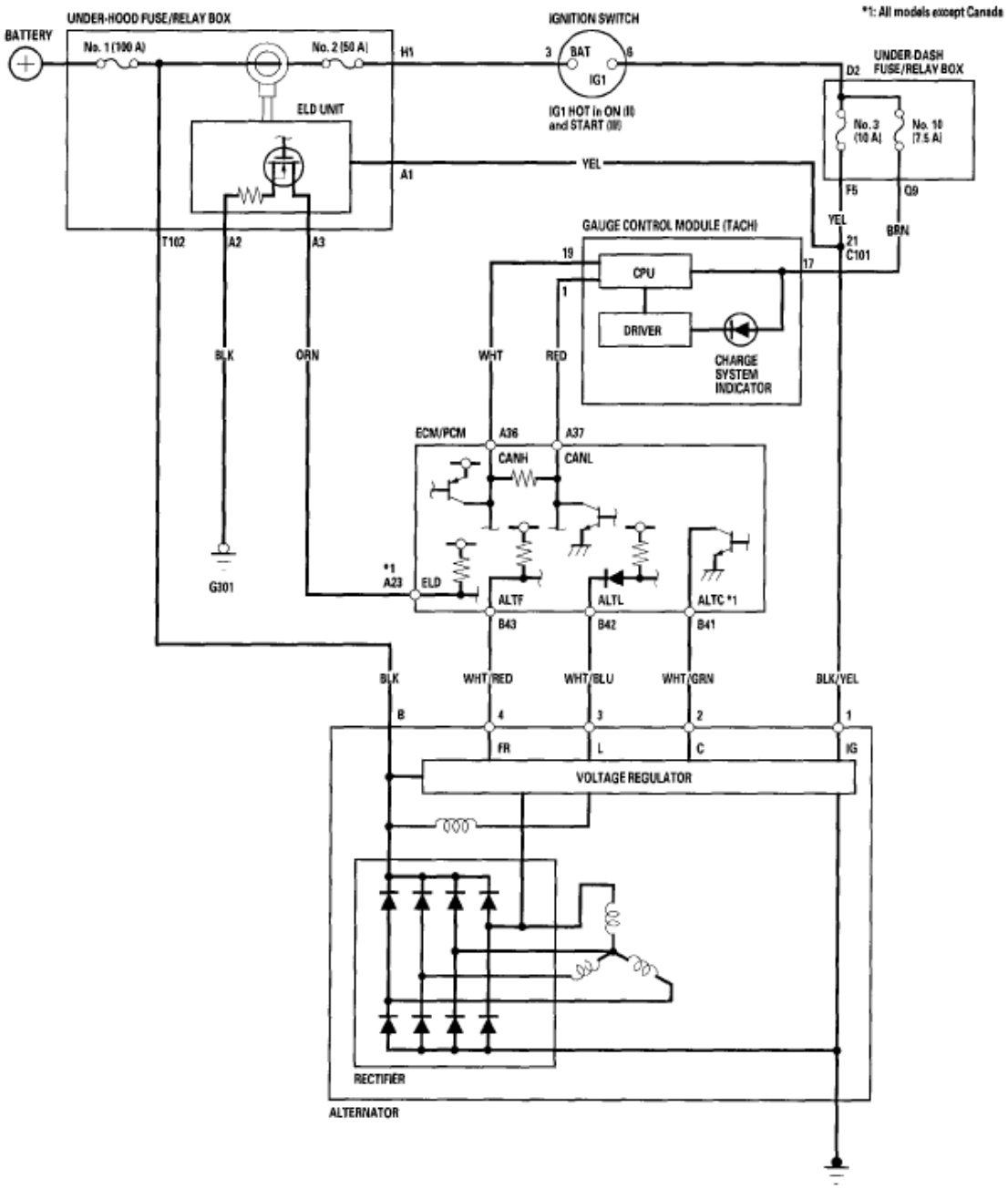


Fig. 2: Charging System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES -Go to step 2.

   NO -Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

   Does the charging system indicator go off?

   YES -Charging system indicator circuit is OK. Go to the **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING** .

   NO -Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

   Does the charging system indicator flash?

   YES -Go to step 4.

   NO -Replace the gauge control module (tach) (see **REPLACEMENT**).

4. Turn the ignition switch to LOCK (0)
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).

   NOTE: The charging system indicator may come on and then go off.

   Does the charging system indicator go off?

   YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

   NO -Go to step 7.

7. Turn the ignition switch to LOCK (0).
8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
9. Turn the ignition switch ON (II).
10. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
11. Jump the SCS line with the HDS, then turn the ignition to LOCK (0).

    NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).
13. Check for continuity between ECM/PCM connector terminal B42 and body ground.

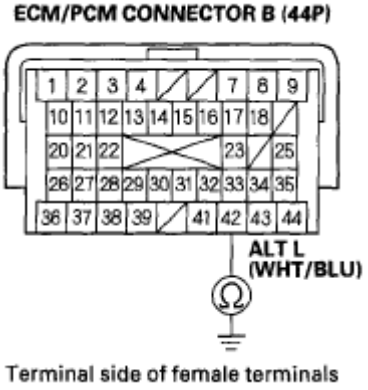


Fig. 3: Checking For Continuity Between ECM/PCM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the alternator and the ECM/PCM.

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

14. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

    Does the charging system indicator flash?

    YES -Go to step 15.

    NO -Replace the gauge control module (tach) (see **REPLACEMENT**).

15. Turn the ignition switch OFF.
16. Disconnect the alternator 4P connector.
17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

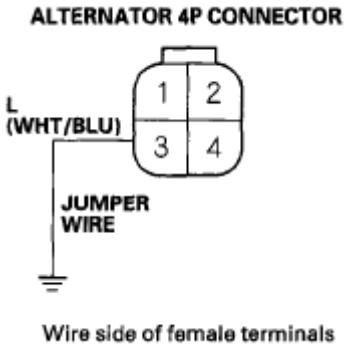


Fig. 4: Connecting Alternator 4P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Turn the ignition switch ON (II).

    Does the charging system indicator come on?

    YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

    NO -Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Connect the HDS to the DLC (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
21. Turn the ignition switch ON (II).
22. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
23. Jump the SCS line with the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the ECM/PCM from damage.

24. Disconnect ECM/PCM connector B (44P).
25. Check for continuity between ECM/PCM connector terminal B42 and body ground.

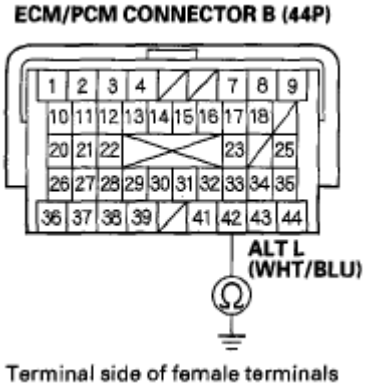


Fig. 5: Checking For Continuity Between ECM/PCM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO -Repair open in the wire between the alternator and the ECM/PCM.

ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING

1. Make sure the battery connections are good and the battery is sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).

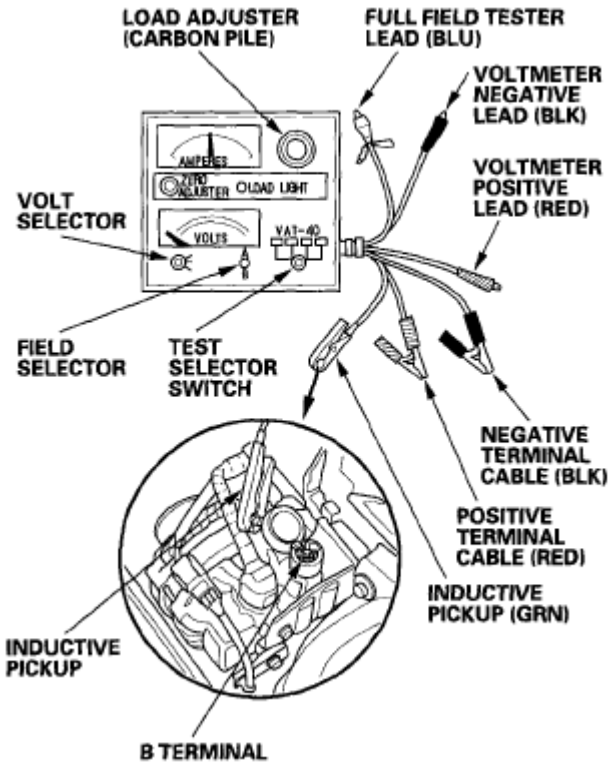


Fig. 6: Identifying VAT-40 (Or Equivalent Tester)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage over 15.1 V?

   YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or rear housing assembly (see **ALTERNATOR OVERHAUL**).

   NO -Go to step 5.

5. Release the accelerator pedal, and let the engine idle.
6. Turn off all the accessories. Select the charging test on the tester.
7. Remove the inductive pickup, and zero the ammeter.
8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage less than 13.5 V?

   YES -Go to **ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING** (see).

NO -Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops within 12-13.5 V.

    Is the amperage 87.5 A or more?

    YES -The charging system is OK.

    NOTE: If the charging system indicator is still on, replace the alternator (see ALTERNATOR REMOVAL AND INSTALLATION).

    NO -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector from the alternator.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.

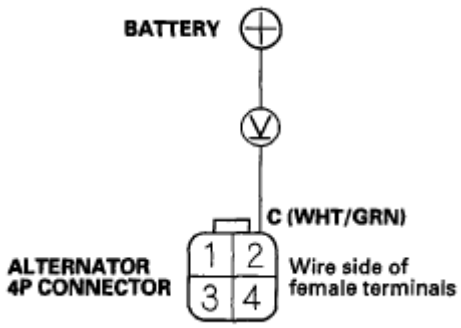


Fig. 7: Identifying Voltage Between Alternator 4P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or less?

YES -Go to step 11.

NO -Go to step 8.

8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between ECM/PCM connector terminal B41 and body ground.

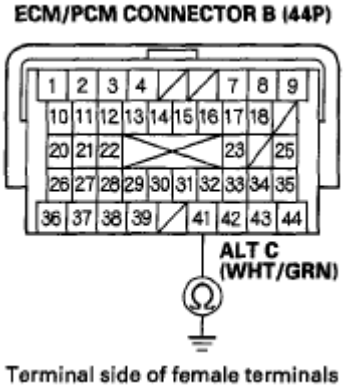


Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal B41 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the alternator and the ECM/PCM.

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).
13. Check for continuity between ECM/PCM connector terminal B41 and alternator 4P connector terminal No. 2.

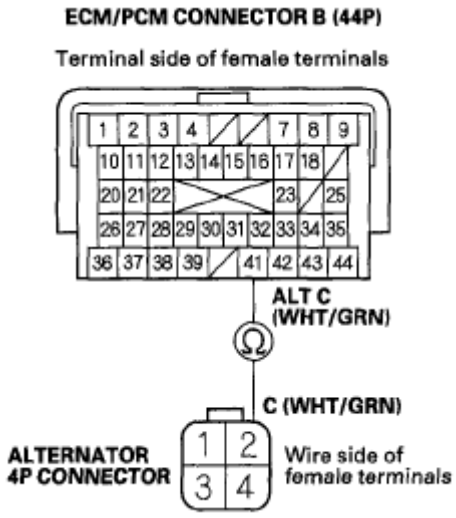


Fig. 9: Checking Continuity Between ECM/PCM Connector Terminal B41 And Alternator 4P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO -Repair open in the wire between the alternator and the ECM/PCM.

DRIVE BELT INSPECTION

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see **DRIVE BELT INSPECTION**). After you inspected or replaced the drive belt, go to step 3.

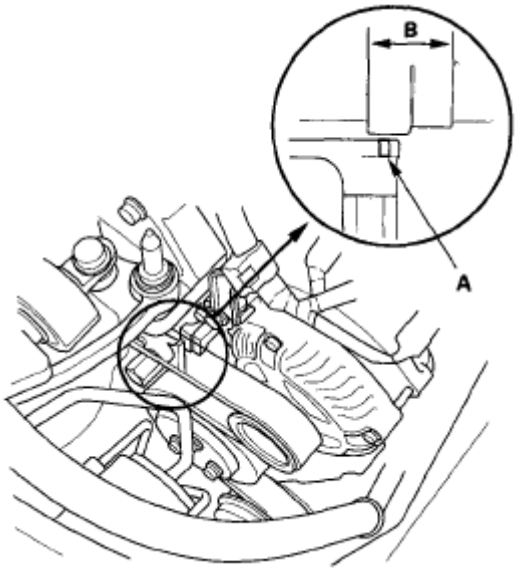


Fig. 10: Checking Auto-Tensioner Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the maintenance minder required to inspect the drive belt, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), and this procedure is complete.

DRIVE BELT REMOVAL/INSTALLATION

1. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from above the engine. Slowly turn the wrench in the direction shown, then remove the drive belt.

NOTE: This is a hydraulic type auto-tensioner; you must turn the wrench slowly.

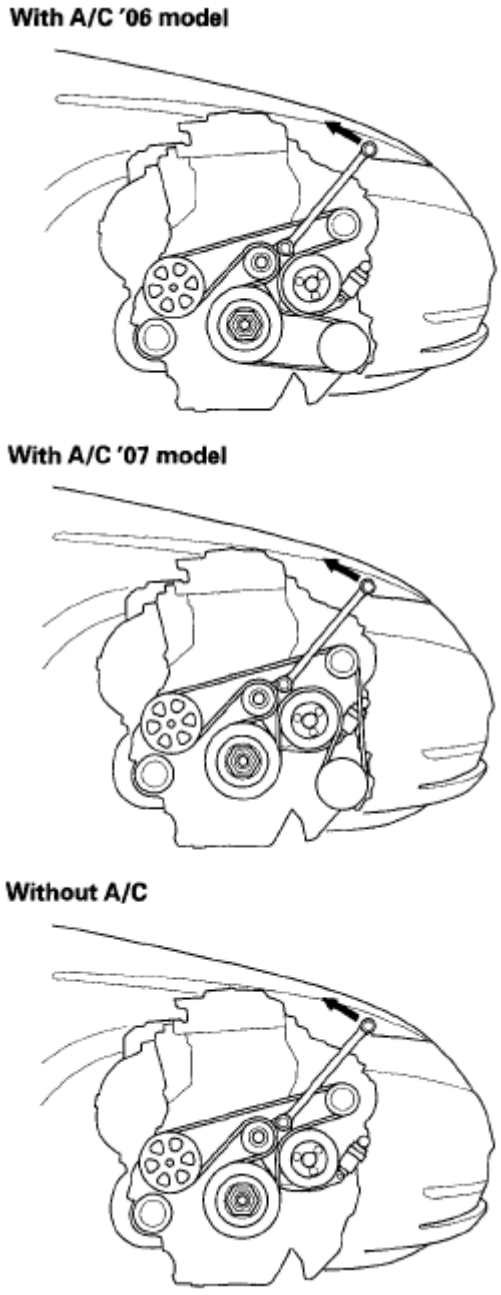


Fig. 11: Identifying Drive Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new belt in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER INSPECTION

1. Turn the ignition switch ON (II), and make sure to turn the A/C switch OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

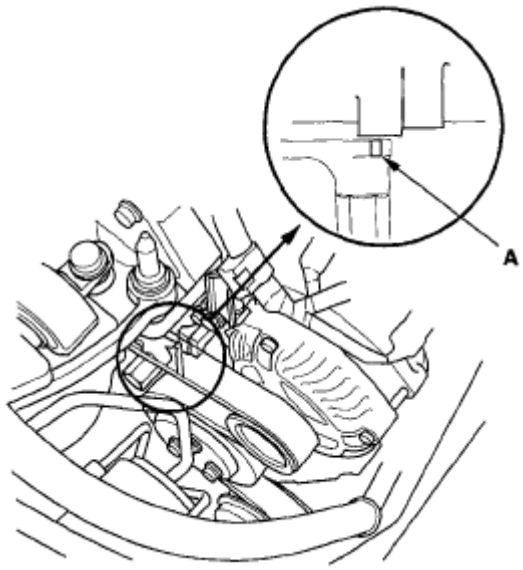


Fig. 12: Identifying Drive Belt Auto-Tensioner Inspection
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from above the engine. Slowly turn the wrench in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

NOTE: This is a hydraulic type auto-tensioner; you must turn the wrench slowly.

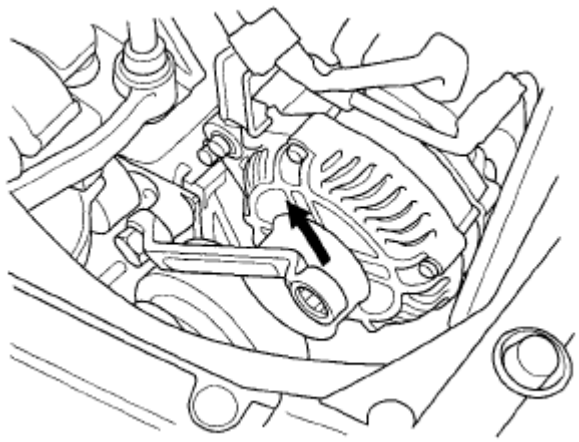


Fig. 13: Identifying Long-Handled, Boxed-End Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION

1. Loosen the water pump pulley mounting bolts.

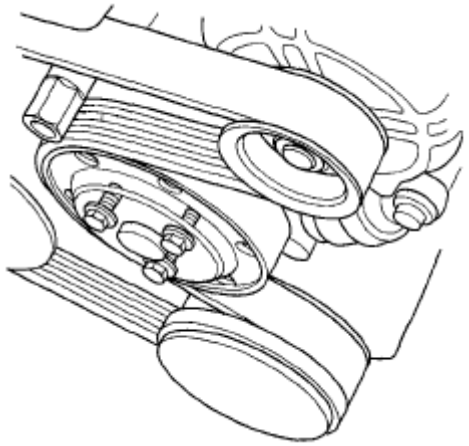


Fig. 14: Identifying Water Pump Pulley Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
4. Remove the water pump pulley.

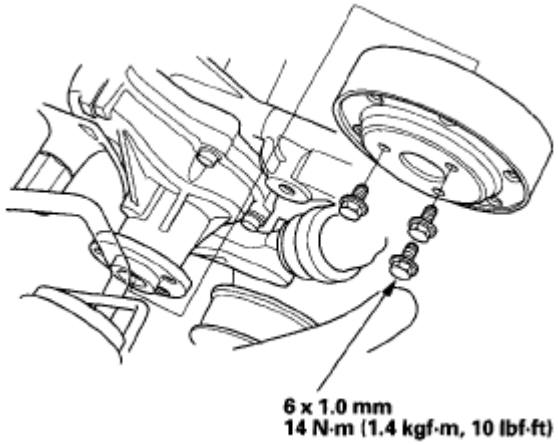


Fig. 15: Identifying Water Pump Pulley (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the drive belt auto-tensioner.

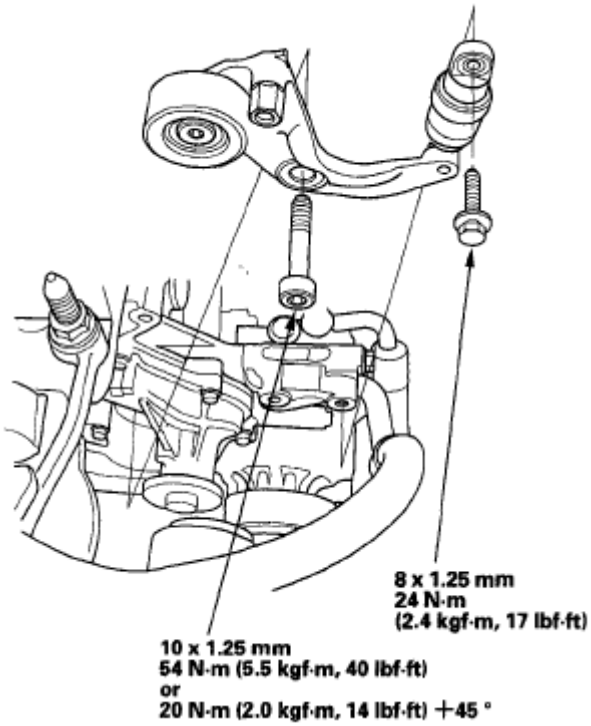


Fig. 16: Identifying Drive Belt Auto-Tensioner (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the drive belt auto-tensioner in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER AIR BLEEDING

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from the top of the engine. Apply slow and steady pressure (3 seconds or more to complete the stroke) to compress the drive belt auto-tensioner. Pull the wrench back, taking 3 or more seconds to complete the stroke. Do this action a total of 3 times to complete the air bleeding.

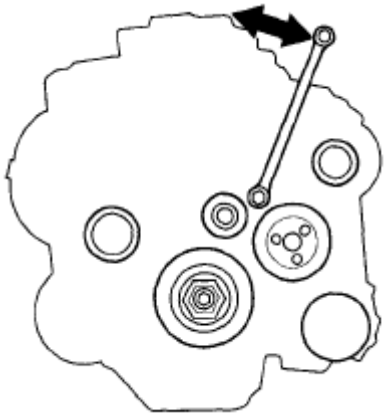


Fig. 17: Identifying Drive Belt Auto-Tensioner Air Bleeding
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive belt (see **DRIVE BELT INSPECTION**).

ALTERNATOR REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the drive belt (see **DRIVE BELT INSPECTION**).
4. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.

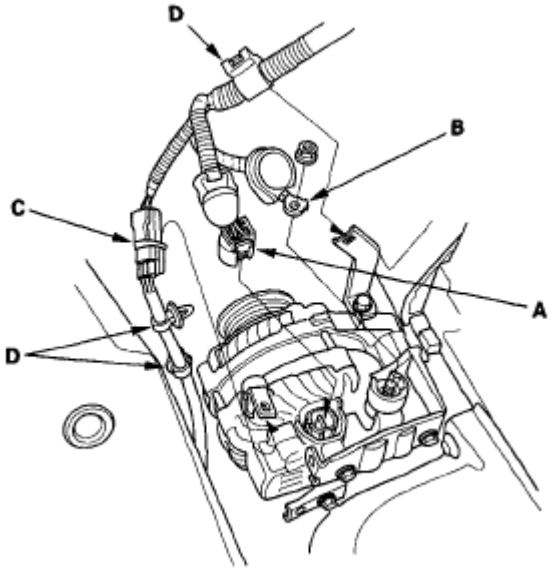


Fig. 18: Identifying Alternator Components Description
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the harness connector (C) and harness clamps (D) from the alternator.
6. Remove the alternator.

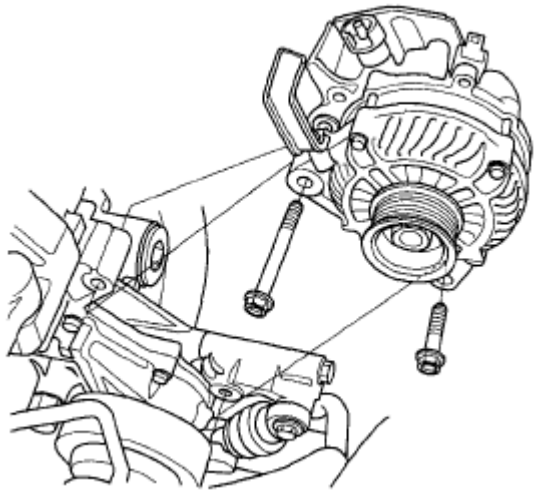


Fig. 19: Identifying Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Install the alternator.

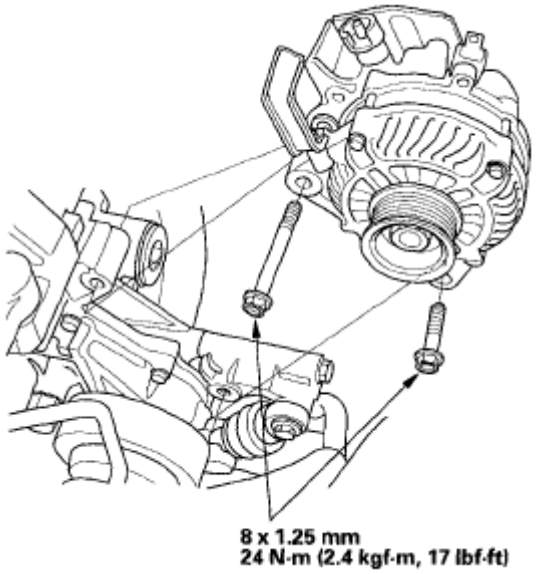


Fig. 20: Identifying Alternator (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the alternator connector (A) and BLK wire (B) to the alternator.

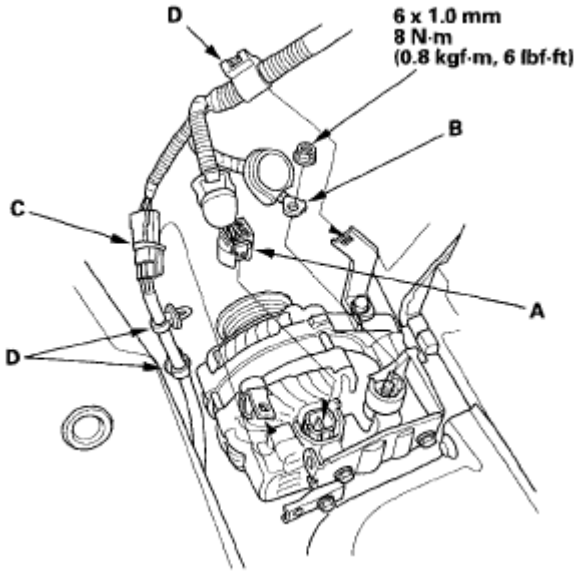


Fig. 21: Identifying Alternator Connector And BLK Wire To Alternator (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the harness connector (C) and harness clamp (D) to the alternator.
4. Install the drive belt (see **DRIVE BELT INSPECTION**).
5. Connect the positive cable to the battery first, then connect the negative cable.

6. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
7. Set the clock.

ALTERNATOR OVERHAUL

EXPLODED VIEW

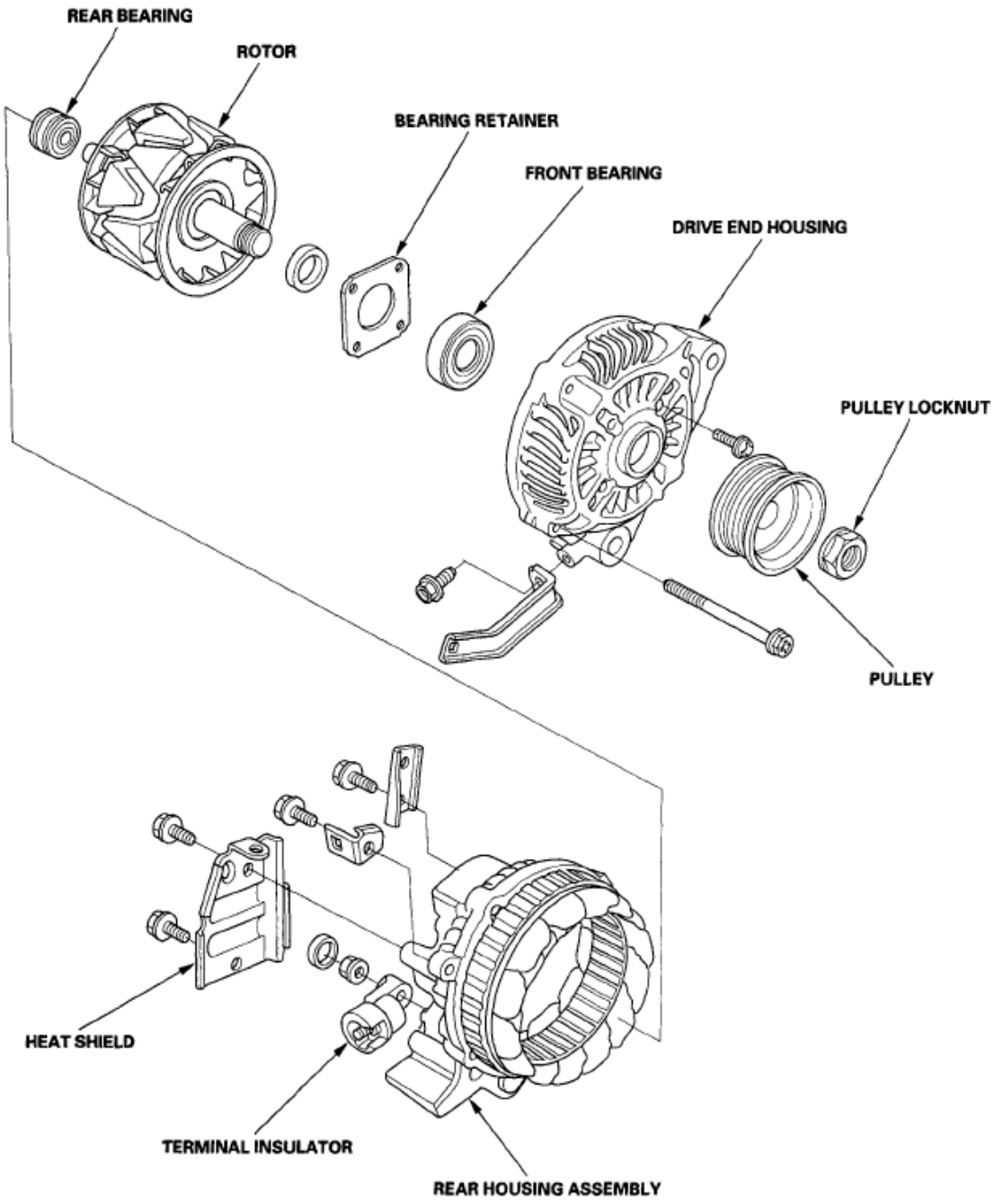


Fig. 22: Exploded View Of Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to the exploded view as needed during this procedure. See Fig. 22.

Alternator Disassembly

1. Test the alternator and regulator before you remove them (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).
2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
3. Remove the heat shield (A) and harness brackets (B).

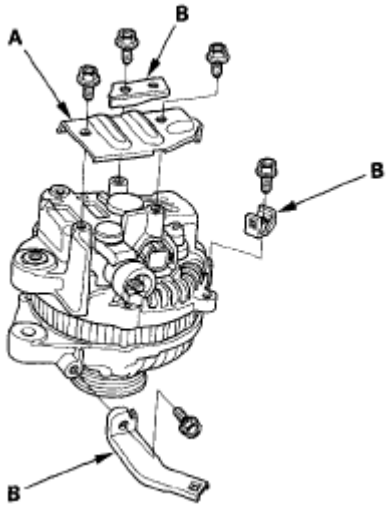


Fig. 23: Removing Heat Shield And Harness Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the terminal insulator.

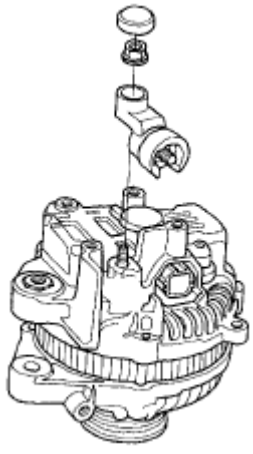


Fig. 24: Removing Terminal Insulator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the four through bolts.

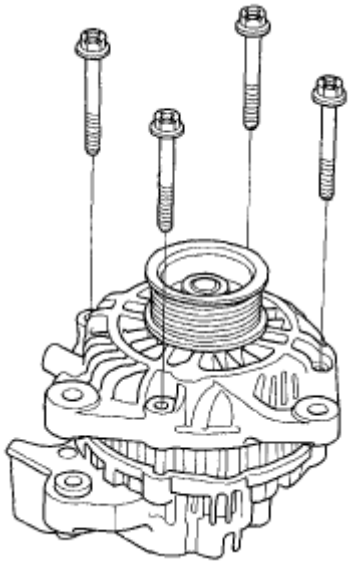


Fig. 25: Removing Through Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Heat the rear bearing seat with a heat gun for about 5 minutes (129-140 °F, 50-60 °C).

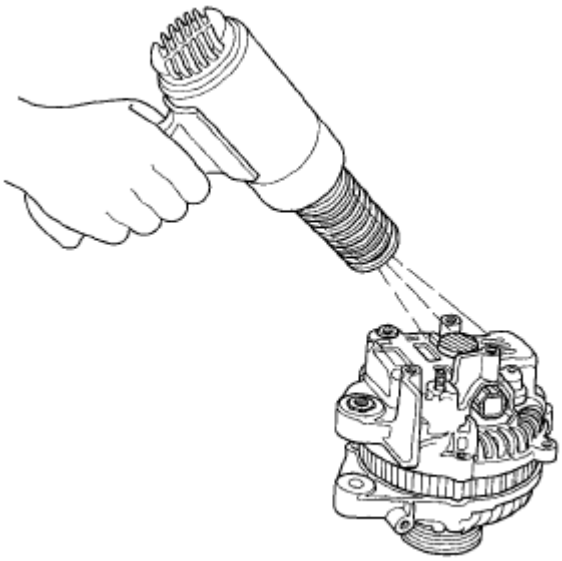


Fig. 26: Identifying Heat Rear Bearing Seat With Heat Gun
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Separate the rear housing from the drive end housing by inserting a flat-tip screwdriver into the openings and prying them apart.

NOTE: Be careful not to damage the stator with the tip of the screwdriver.

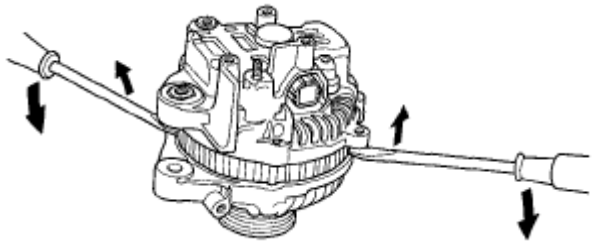


Fig. 27: Identifying Rear Housing From Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Separate the rear housing (A) and drive end housing (B) with the stator (C) attached to the rear housing.

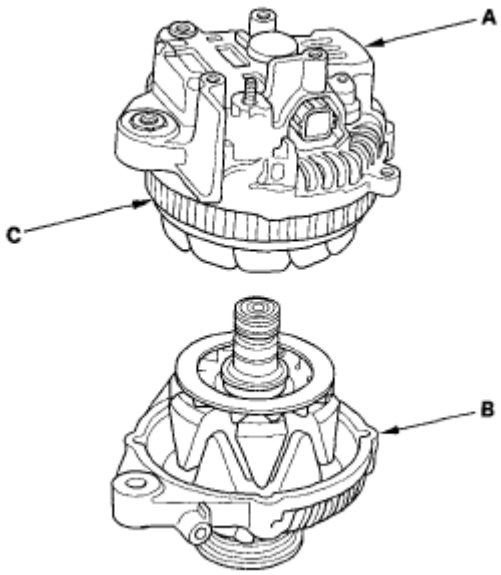


Fig. 28: Separating Rear Housing And Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If you are not replacing the front bearing and/or rear bearing, go to step 17. Clamp the rotor in a soft-jawed vise, then remove the pulley locknut.

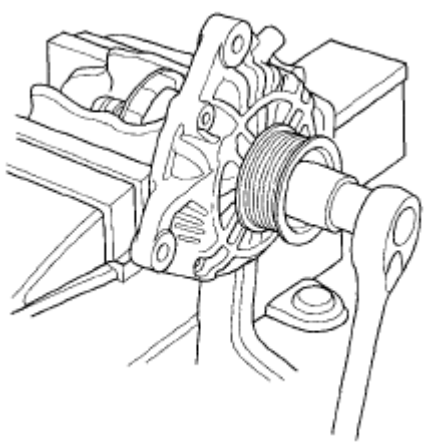


Fig. 29: Removing Pulley Locknut

Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the rotor using a puller as shown.

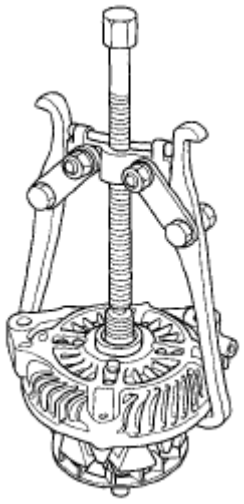


Fig. 30: Removing Rotor Using Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.
    - If either the rotor or drive end housing is damaged, replace the alternator.
    - If both the rotor and the drive end housing are OK, go to step 12.
12. Remove the rear bearing using the puller as shown.

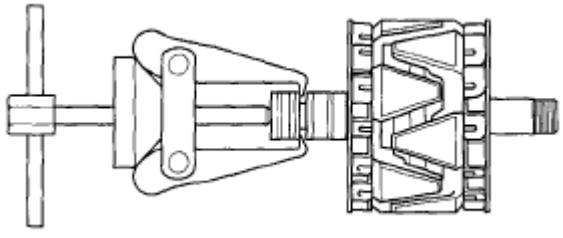


Fig. 31: Removing Rear Bearing Using Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Use a hand press to install the new rear bearing. Apply pressure only on the inner race to avoid damaging the bearing.

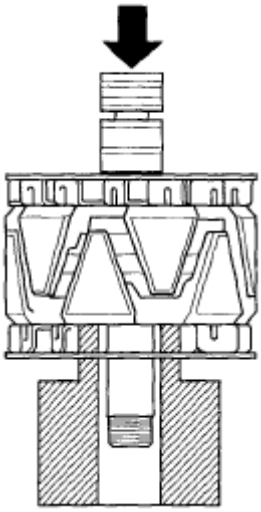


Fig. 32: Applying Pressure On Inner Race Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the front bearing retainer plate.

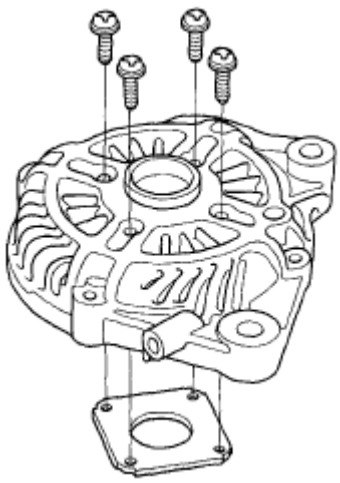


Fig. 33: Removing Front Bearing Retainer Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Support the drive end housing in a vise, and drive out the front bearing with a brass drift and hammer.

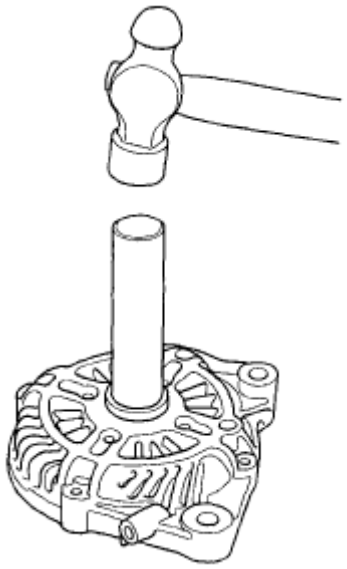


Fig. 34: Identifying Support Drive End Housing In Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. With a hammer and the special tools, install a new front bearing in the drive end housing.

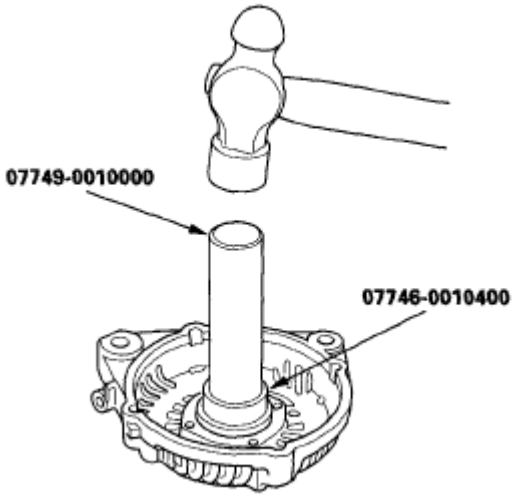


Fig. 35: Installing Front Bearing In Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Brush Inspection

17. Measure the length of both brushes with a vernier caliper.
    - If either brush is shorter than the service limit, replace the rear housing assembly.
    - If the brush length is OK, go to step 18.

Alternator Brush Length

Standard (New): 19.0 mm (0.75 in.)

Service Limit: 5.0 mm (0.2 in.)

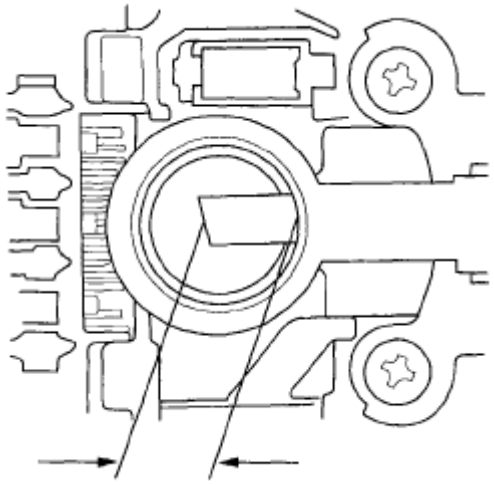


Fig. 36: Measuring Length Of Both Brushes With Vernier Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rotor Slip Ring Test

18. Check for continuity between the slip rings (A).
    - If there is continuity, go to step 19.
    - If there is no continuity, replace the rotor assembly.

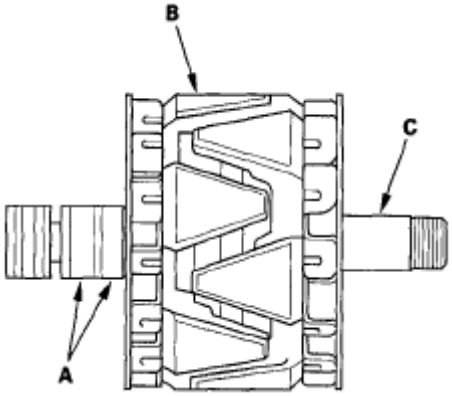


Fig. 37: Checking Continuity Between Slip Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Check for no continuity between each slip ring (A) and the rotor (B) and the rotor shaft (C).
    - If there is no continuity, replace the rear housing assembly, and go to step 20.
    - If there is continuity, replace the rotor assembly.

Alternator Reassembly

20. If you removed the pulley, put the rotor in the drive end housing, then tighten its locknut to 111 N.m (11.3 kgf-m, 81.7 lbf-ft).
21. Remove any grease or oil from the slip rings.
22. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.8 mm (0.77 in.) diameter) to hold them there.

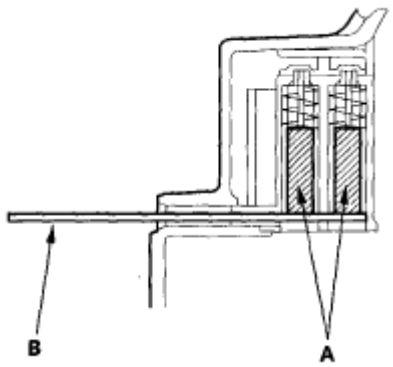


Fig. 38: Removing Grease Or Oil From Slip Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Heat the rear bearing seat with a heat gun for about 5 minutes (129-140 °F, 50-60 °C).
24. Put the rear housing assembly (A) and drive end housing/rotor assembly (B) together, tighten the four through bolts (C), and pull out the pin (D).

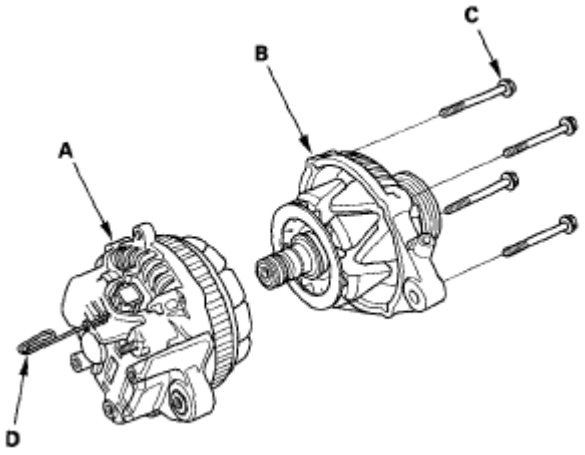


Fig. 39: Identifying Heat Rear Bearing Seat With Heat Gun
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
26. Install the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) and drive belt (see **DRIVE BELT INSPECTION**).

2007 HONDA

Civic - Except Hybrid

BUZZERS, RELAYS & TIMERS

BUZZERS, RELAYS & TIMERS LOCATION

Component	Location
A/C Compressor Clutch Relay	In under-hood fuse/relay box. See **Fig. 2**.
A/C Condenser Fan Relay	In underhood fuse/relay box. See **Fig. 2**.
Blower Motor Relay	In under-hood fuse/relay box. See **Fig. 2**.
ETCS Control Relay	In under-hood fuse/relay box. See **Fig. 2**.
Fan Control Relay	In under-hood fuse/relay box. See **Fig. 2**.
Front Accessory Power Socket Relay	Near under-dash junction box. See **Fig. 66**.
Fuel Shut-Off Solenoid Valve Relay	Under left side of dash. See **Fig. 163**.
Ignition Coil Relay	In under-hood fuse/relay box. See **Fig. 2**.
Injector Control Module Relay	Under left side of dash. See **Fig. 163**.
PGM-FI Main Relay 1	In under-hood fuse/relay box. See **Fig. 2**.
PGM-FI Main Relay 2	In under-dash fuse/relay box. See **Fig. 1**.
PGM-FI Sub-Relay	In under-hood fuse/relay box. See **Fig. 2**.
Power Mirror Defogger Relay	In under-hood fuse/relay box. See **Fig. 2**.
Power Window Relay	In under-dash fuse/relay box. See **Fig. 1**.
Radiator Fan Relay	In under-hood fuse/relay box. See **Fig. 2**.
Rear Accessory Power Socket Relay	Near under-dash junction box. See **Fig. 66**.
Rear Window Defogger Relay	In under-hood fuse/relay box. See **Fig. 2**.
Starter Control Relay	Under left side of dash. See **Fig. 163**.
Starter Cut Relay	In under-dash fuse/relay box. See **Fig. 1**.

CIRCUIT PROTECTION DEVICES

CIRCUIT PROTECTION DEVICES LOCATION

Component	Location
Under-Dash Fuse/Relay Box	Under left end of dash. See **Fig. 58**.
Under-Dash Junction Box	Under left side of dash. See **Fig. 65**.
Under-Hood Fuse/Relay Box	Left side of engine compartment. See **Fig. 43**.

CONTROL UNITS

CONTROL UNITS LOCATION

Component	Location
ABS Modulator-Control Unit	Right side of engine compartment. See **Fig. 3**.
Antenna Module Unit (2-Door)	Inside right "C" pillar.
ECM/PCM	Left side of engine compartment. See **Fig. 44**.
EPS Control Unit	Behind right kick panel. See **Fig. 86**.
Gauge Control Module (Speedo)	Left side of dash. See **Fig. 150**.

Gauge Control Module (Tach)	Left side of dash. See **Fig. 151**.
Immobilizer-Keyless Control Unit	On steering column. See **Fig. 56**.
Injector Control Module	Behind right kick panel. See **Fig. 164**.
Moonroof Control Unit	Center rear of roof. See **Fig. 116**.
ODS Unit	In front passenger' seat back. See **Fig. 93**.
SRS Unit	Under middle of dash. See **Fig. 77**.
VSA Modulator Control Unit	Right side of engine compartment. See **Fig. 3**.
XM Receiver (2 Door)	Right side of trunk. See **Fig. 126**.
XM Receiver (4 Door)	Right side of trunk. See **Fig. 173**.

MOTORS

MOTORS LOCATION

Component	Location
A/C Condenser Fan Motor Connector	Top of A/C condenser fan motor. See **Fig. 15**.
Air Mix Control Motor	On left side of HVAC assembly. See **Fig. 68**.
Blower Motor	Under right side of dash. See **Fig. 85**.
Driver's Power Window Motor	In driver's door. See **Fig. 106**.
Front Passenger's Power Window Motor	In front passenger's door. See **Fig. 106**.
Fuel Tank Unit	In top of fuel tank. See **Fig. 123**.
Left Power Mirror Connector (4-Door)	Front of driver's door. See **Fig. 110**.
Left Power Mirror (2-Door)	Front of driver's door. See **Fig. 109**.
Left Rear Power Window Motor	In left rear door. See **Fig. 111**.
Mode Control Motor	Behind glove box, on HVAC assembly. See **Fig. 81**.
Radiator Fan Motor Connector	Front of engine compartment. See **Fig. 16**.
Recirculation Control Motor	Behind glove box, on HVAC assembly. See **Fig. 82**.
Right Power Mirror	Front of front passenger's door. See **Fig. 109**.
Right Rear Power Window Motor	In right rear door. See **Fig. 111**.
Starter	Lower right rear of engine. See **Fig. 157**.
Windshield Washer Motor	Behind right side of front bumper. See **Fig. 131**.
Windshield Wiper Motor	Under right side of cowl cover. See **Fig. 51**.

SENDING UNITS & SENSORS

SENDING UNITS & SENSORS LOCATION

Component	Location
A/C Pressure Sensor	Right side of engine compartment. See **Fig. 3**.
A/F Sensor Connector (Except Si)	Top left rear of engine. See **Fig. 26**.
A/F Sensor Connector (Si)	Rear of engine compartment. See **Fig. 147**.
APP Sensor	Under left side of dash. See **Fig. 68**.
CKP Sensor (Except Si)	Top left rear of engine. See **Fig. 25**.
CKP Sensor (Si)	Lower front of engine. See **Fig. 135**.

CMP Sensor	Rear of engine. See **Fig. 32**.
CMP Sensor A	Right rear of engine. See **Fig. 34**.
CMP Sensor B	Right rear of engine. See **Fig. 34**.
Driver's Seat Position Sensor	Under driver's seat. See **Fig. 87**.
ECT Sensor 1 (Except Si)	Rear of engine. See **Fig. 29**.
ECT Sensor 1 (Si)	Right rear of engine. See **Fig. 35**.
ECT Sensor 2	Lower left side of radiator. See **Fig. 139**.
EGR Valve & EGR Valve Position Sensor	Top left rear of engine. See **Fig. 27**.
EOP Sensor	Top right front of engine. See **Fig. 11**.
EPS Torque Sensor	Under left side of engine compartment. See **Fig. 174**.
Evaporator Temperature Sensor Connector	Under right side of dash. See **Fig. 84**.
Front Passenger's Weight Sensor (Front Inner Side)	Under left side of front passenger's seat. See **Fig. 94**.
Front Passenger's Weight Sensor (Front Outer Side)	Under right side of front passenger's seat. See **Fig. 95**.
Front Passenger's Weight Sensor (Rear Inner Side)	Under left side of front passenger's seat. See **Fig. 94**.
Front Passenger's Weight Sensor (Rear Outer Side)	Under right side of front passenger's seat. See **Fig. 95**.
FTP Sensor	Under left side of floor. See **Fig. 149**.
FTP Sensor (GX)	Behind rear seat (GX). See **Fig. 166**.
FTT Sensor	Behind rear seat (GX). See **Fig. 166**.
Fuel Pressure Sensor	Right rear of engine. See **Fig. 162**.
Fuel Temperature Sensor	Rear of engine. See **Fig. 159**.
Inner Side Front Passenger's Weight Sensor Connector (2-Door)	Under front passenger's seat. See **Fig. 92**.
Input Shaft (Mainshaft) Speed Sensor	On transmission housing. See **Fig. 37**.
Knock Sensor (Except Si)	Lower right rear of engine. See **Fig. 145**.
Knock Sensor (Si)	Left front side of engine. See **Fig. 24**.
Left Front Impact Sensor	Behind left side of front bumper. See **Fig. 134**.
Left Rear Wheel Speed Sensor Connector	Under left rear of vehicle (Right similar). See **Fig. 175**.
Left Side Impact Sensor (1st) (2-Door)	Left side of floor. See **Fig. 99**.
Left Side Impact Sensor (1st) (4-Door)	Base of left "B" pillar. See **Fig. 103**.
Left Side Impact Sensor (2nd) (2-Door)	In left "B" pillar. See **Fig. 102**.
Left Side Impact Sensor (2nd) (4-Door)	In left "C" pillar. See **Fig. 120**.
MAF/IAT Sensor (Except Si)	Left rear of engine compartment. See **Fig. 48**.
MAF/IAT Sensor (Si)	Left side of engine compartment. See **Fig. 49**.
MAP Sensor (Except Si)	Rear of engine. See **Fig. 32**.
MAP Sensor (Si)	Left rear side of engine. See **Fig. 23**.
Motor Angle Sensor Connector	Under rear of engine. See **Fig. 137**.
Outer Side Front Passenger's Weight Sensor Connector (2-Door)	Under front passenger's seat. See **Fig. 92**.
Output Shaft (Countershaft) Speed Sensor	Under transmission housing (Si). See **Fig. 156**.

Output Shaft (Countershaft) Speed Sensor (A/T)	On transmission housing. See **Fig. 38**.
Output Shaft (Countershaft) Speed Sensor (M/T)	On transmission housing. See **Fig. 144**.
Outside Air Temperature Sensor	Behind left side of front bumper. See **Fig. 133**.
Rear Safing Sensor	Middle of floor. See **Fig. 100**.
Right Front Impact Sensor	Behind right side of front bumper. See **Fig. 134**.
Right Side Impact Sensor (1st)	Right side of floor.
Right Side Impact Sensor (2nd) (2-Door)	In right "B" pillar.
Right Side Impact Sensor (2nd) (4-Door)	In right "C" pillar. See **Fig. 120**.
Secondary HO2S Connector (Except Si)	Top left rear of engine. See **Fig. 26**.
Secondary HO2S Connector (Si)	Under center console. See **Fig. 97**.
Steering Angle Sensor	In steering column cover (Si). See **Fig. 171**.
TP Sensor/Throttle Actuator (Except Si)	On throttle body.
TP Sensor/Throttle Actuator (Si)	On throttle body. See **Fig. 169**.
Wheel Speed Sensor Connector (Left Front)	On left frame rail. See **Fig. 141**.
Wheel Speed Sensor Connector (Right Front)	On frame rail. See **Fig. 141**.
Wheel Speed Sensor Connector (Right Rear)	Under right rear of floor. See **Fig. 148**.
Wheel Speed Sensor (Left Rear)	Under left rear of floor. See **Fig. 148**.
Yaw Rate-Lateral Acceleration Sensor (Si)	Under middle of dash. See **Fig. 176**.

SOLENOIDS & SOLENOID VALVES

SOLENOIDS & SOLENOID VALVES LOCATION

Component	Location
A/C Compressor Connector (Except Si)	Left front of engine. See **Fig. 8**.
A/C Compressor Connector (Si)	Lower left front of engine. See **Fig. 138**.
A/T Clutch Pressure Control Solenoid Valve A	On transmission housing. See **Fig. 39**.
A/T Clutch Pressure Control Solenoid Valve B	On transmission housing. See **Fig. 39**.
A/T Clutch Pressure Control Solenoid Valve C	On transmission housing. See **Fig. 39**.
EGR Valve & EGR Valve Position Sensor	Top left rear of engine. See **Fig. 27**.
EVAP Canister Purge Valve	Right rear of engine. See **Fig. 33**.
EVAP Canister Vent Shut Valve	Under left side of floor. See **Fig. 149**.
Fuel Pressure Regulator Shut-Off Solenoid Valve	Right rear of engine. See **Fig. 160**.
Fuel Tank Internal Solenoid Valve (GX)	Left side of trunk (GX). See **Fig. 167**.
IMT Actuator	Right front of engine. See **Fig. 10**.
Injectors No. 1, 2, 3 & 4 (Except Si)	Top of engine, at respective cylinders. See **Fig. 20**.
Injectors No. 1, 2, 3 & 4 (Si)	Top left side of engine, at respective cylinders. See **Fig. 22**.
Reverse Lockout Solenoid	Top of transmission housing. See **Fig. 42**.
Rocker Arm Oil Control Solenoid (Except Si)	Top front of engine. See **Fig. 9**.
Rocker Arm Oil Control Solenoid (Si)	Top front of engine. See **Fig. 14**.
Shift Lock Solenoid Connector	Under center console. See **Fig. 96**.
Starter Solenoid (Except Si)	Lower right rear of engine. See **Fig. 157**.
Starter Solenoid (Si)	On starter motor.
Trunk Lid Opener Solenoid/Latch Switch	Middle of trunk lid. See **Fig. 128**.

VTC Oil Control Solenoid Valve	Front of engine. See **Fig. 13**.

SWITCHES

SWITCHES LOCATION

Component	Location
A/T Gear Position Indicator Panel Light/Park Pin Switch Connector (A/T)	Under center console. See **Fig. 96**.
Back-Up Light Switch (Except Si)	On transaxle housing. See **Fig. 40**.
Back-Up Light Switch (Si)	On transmission housing. See **Fig. 41**.
Brake Fluid Level Switch	On brake master cylinder reservoir. See **Fig. 46**.
Brake Pedal Position Switch	Under left side of dash. See **Fig. 63**.
Clutch Interlock Switch	Under left side of dash. See **Fig. 61**.
Clutch Pedal Position Switch	Under left side of dash. See **Fig. 61**.
Driver's Door Lock Actuator/Knob Switch	Rear of driver's door. See **Fig. 107**.
Driver's Door Switch	In left "B" pillar. See **Fig. 104**.
Driver's Seat Belt Switch Connector	Under driver's seat. See **Fig. 89**.
Front Passenger's Door Lock Actuator/Knob Switch	Rear of front passenger's door. See **Fig. 107**.
Front Passenger's Door Switch	In right "B" pillar. See **Fig. 104**.
Front Passenger's Seat Belt Switch Connector	Under front passenger's seat. See **Fig. 91**.
Fuel Fill Door Switch Connector (GX)	Left rear shelf (GX). See **Fig. 168**.
Fuel Pressure Regulator Switch	Right rear of engine. See **Fig. 161**.
Left Rear Door Lock Actuator/Knob Switch	Rear of left rear door. See **Fig. 112**.
Left Rear Door Switch	In left "C" pillar. See **Fig. 105**.
Oil Pressure Switch (Except Si)	Top left rear of engine. See **Fig. 25**.
Oil Pressure Switch (Si)	Near oil filter. See **Fig. 136**.
Parking Brake Switch	At base of parking brake lever. See **Fig. 96**.
PSP Switch	Right side of engine compartment. See **Fig. 6**.
Right Rear Door Lock Actuator/Knob Switch	Rear of right rear door.
Right Rear Door Switch	In right "C" pillar. See **Fig. 105**.
Rocker Arm Oil Pressure Switch (Si)	Top front of engine. See **Fig. 14**.
Security Hood Switch Connector	Front center of engine compartment. See **Fig. 17**.
Transmission Range Switch	On transmission housing. See **Fig. 141**.
Trunk Key Cylinder Switch	Right side of trunk lid, on key cylinder assembly. See **Fig. 130**.
Trunk Key Cylinder Switch	Right side of trunk lid. See **Fig. 155**.
Trunk Latch Switch Connector	Middle of trunk lid. See **Fig. 127**.
Trunk Lid Opener Solenoid/Latch Switch	Middle of trunk lid. See **Fig. 128**.
2nd Clutch Transmission Fluid Pressure Switch	On transmission housing. See **Fig. 37**.
3rd Clutch Transmission Fluid Pressure Switch	On transmission housing. See **Fig. 143**.

MISCELLANEOUS

MISCELLANEOUS LOCATION

Component	Location
Alternator (Except Si)	Left front of engine. See **Fig. 8**.
Alternator (Si)	Lower left front of engine. See **Fig. 12**.
AM/FM Antenna Amplifier	Right "C" pillar. See **Fig. 122**.
AM Signal Window Antenna (2-Door)	Top right side of rear window. See **Fig. 121**.
AM Signal Window Antenna (4-Door)	In right "C" pillar. See **Fig. 122**.
Antenna Lead Connector (2-Door)	Under front of center console. See **Fig. 79**.
Antenna Lead Connector (4-Door)	Under front of center console. See **Fig. 80**.
Blower Power Transistor	Under right side of dash, near blower motor. See **Fig. 84**.
Cable Reel Connector A	On steering column. See **Fig. 55**.
Cable Reel Connector B	On steering column. See **Fig. 54**.
Cable Reel Connector C	In steering wheel. See **Fig. 53**.
DLC	Under left side of dash. See **Fig. 69**.
Driver's Airbag First & Second Inflators Connector	In steering wheel. See **Fig. 52**.
Driver's Seat Belt Buckle Tensioner Connector	Under driver's seat. See **Fig. 89**.
Driver's Seat Belt Tensioner Connector (4-Door)	Base of left "B" pillar. See **Fig. 103**.
Driver's Seat Belt Tensioner (2-Door)	At left "B" pillar. See **Fig. 102**.
Driver's Side Airbag Inflator Connector	Under driver's seat. See **Fig. 88**.
EPS Gearbox Connectors A & B	Under rear of engine. See **Fig. 137**.
FM Signal Window Antenna (2-Door)	Top right side of rear window. See **Fig. 121**.
FM Signal Window Antenna (4-Door)	In right "C" pillar. See **Fig. 122**.
Front Passenger's Airbag First & Second Inflators Connector	Behind right side of dash. See **Fig. 74**.
Front Passenger's Seat Belt Buckle Tensioner Connector	Under front passenger's seat. See **Fig. 91**.
Front Passenger's Seat Belt Tensioner Connector (4-Door)	Base of right "B" pillar. See **Fig. 103**.
Front Passenger's Seat Belt Tensioner (2-Door)	At right "B" pillar. See **Fig. 102**.
Front Passenger's Side Airbag Inflator Connector	Under front passenger's seat. See **Fig. 90**.
Fuel Pressure Regulator Leak Check Connector	Front of engine compartment. See **Fig. 158**.
GPS Antenna	Under middle of dash. See **Fig. 73**.
Horn	Behind left side of front bumper. See **Fig. 133**.
Ignition Coils No. 1, 2, 3 & 4 (Except Si)	Top of engine. See **Fig. 19**.
Ignition Coils No. 1, 2, 3 & 4 (Si)	Top of engine. See **Fig. 21**.
Junction Connector C101	Near brake master cylinder. See **Fig. 47**.
Junction Connector C105	Top rear of engine. See **Fig. 28**.
Junction Connector C206	Right side of engine compartment. See **Fig. 5**.
Junction Connector C207	Right rear of engine compartment. See **Fig. 7**.
Left Side Curtain Airbag Inflator Connector (2-Door)	In left "C" pillar. See **Fig. 117**.
Left Side Curtain Airbag Inflator Connector (4-Door)	In left "C" pillar. See **Fig. 118**.
MES Connector	On under-dash fuse/relay box. See **Fig. 152**.

Microphone (Navigation)	In roof console. See **Fig. 113**.
Noise Reduction Condenser Connector	In left "C" pillar. See **Fig. 120**.
Right Side Curtain Airbag Inflator Connector (2-Door)	In right "C" pillar. See **Fig. 117**.
Right Side Curtain Airbag Inflator Connector (4-Door)	In right "C" pillar. See **Fig. 118**.
Stereo Amplifier (4-Door) (Si)	Under driver's seat. See **Fig. 98**.
Thermal Joint S1 (Except Si)	Rear of engine. See **Fig. 31**.
Thermal Joint S1 (Si)	Rear of engine. See **Fig. 36**.
Thermal Joint S2 (Except Si)	Rear of engine. See **Fig. 31**.
Thermal Joint S3 (Except Si)	Rear of engine. See **Fig. 31**.
Thermal Joint S3 (Si)	Rear of engine. See **Fig. 36**.
Thermal Joint S4	Rear of engine. See **Fig. 31**.
Thermal Joint S4	Rear of engine. See **Fig. 31**.
Thermal Joint S11 (Si)	Rear of engine. See **Fig. 36**.
XM Antenna Lead Connector	Left rear of roof. See **Fig. 115**.
XM Antenna Lead Connector	Left rear of roof. See **Fig. 172**.

CONNECTORS

CONNECTORS LOCATION

Component	Location
C102 (Except Si) (Black, 1 Pin)	Near brake master cylinder. See **Fig. 47**.
C102 (Si) (Black, 1 Pin)	Left front of engine compartment. See **Fig. 50**.
C103 (Black, 1 Pin)	On lower rear of engine. See **Fig. 146**.
C106 (Black, 10 Pin)	Left side of engine. See **Fig. 18**.
C107 (Black, 10 Pin)	On transmission housing. See **Fig. 38**.
C109 (Black/Gray, 8 Pin)	Underside of transmission housing. See **Fig. 142**.
C201 (2-Door) (Blue/White, 14 Pin)	Behind left kick panel. See **Fig. 71**.
C201 (4-Door) (Blue, 14 Pin)	Behind left kick panel. See **Fig. 72**.
C202 (2 Door) (Blue, 20 Pin)	Behind left kick panel. See **Fig. 170**.
C203 (Yellow, 4 Pin)	Under under-dash fuse/relay box. See **Fig. 59**.
C204 (2-Door) (White, 14 Pin)	Behind left kick panel. See **Fig. 71**.
C204 (4-Door) (White, 14 Pin)	Behind left kick panel. See **Fig. 60**.
C205 (Brown, 2 Pin)	Under left side of dash. See **Fig. 67**.
C208 (2 Door, 4 Door) (White, 3 Pin)	Behind left kick panel. See **Fig. 60**.
C209 (White, 4 Pin)	Under right side of engine compartment. See **Fig. 137**.
C210 (Optional) (Brown, 1 Pin)	Under left end of dash. See **Fig. 63**.
C211 (Optional) (Brown, 1 Pin)	Behind right side of front bumper. See **Fig. 132**.
C501 (2-Door) (White, 23 Pin)	Behind left kick panel. See **Fig. 71**.
C501 (4-Door) (White, 23 Pin)	Behind left kick panel. See **Fig. 72**.
C502 (White, 20 Pin)	Behind left kick panel. See **Fig. 72**.
C502 (2 Door) (White, 4 Pin)	Behind left kick panel. See **Fig. 170**.

C504 (White, 24 Pin)	Behind right side of dash. See **Fig. 74**.
C505 (Si) (White, 23 Pin)	Under middle of dash. See **Fig. 79**.
C509 (Optional) (White, 6 Pin)	Under middle of dash. See **Fig. 75**.
C601 (White, 2 Pin)	Under middle of dash. See **Fig. 76**.
C602 (White, 2 Pin)	Under driver's seat. See **Fig. 88**.
C605 (White, 4 Pin)	Under center console.
C701 (2-Door) (White, 14 Pin)	In left "C" pillar. See **Fig. 117**.
C701 (4-Door) (White, 14 Pin)	In left "C" pillar. See **Fig. 119**.
C702 (4 Door) (Light Blue, 6 Pin)	Left "C" pillar. See **Fig. 119**.
C703 (Green, 2 Pin)	Middle of trunk lid. See **Fig. 129**.
C751 (Blue, 23 Pin)	Under left end of dash. See **Fig. 57**.
C752 (White, 18 Pin)	Under left end of dash. See **Fig. 57**.
C754 (White, 18 Pin)	In driver's door. See **Fig. 108**.
C761 (Blue, 23 Pin)	Under right end of dash. See **Fig. 57**.
C762 (White, 18 Pin)	Under right end of dash. See **Fig. 57**.
C763 (White, 18 Pin)	In front passenger's door. See **Fig. 108**.
C771 (White, 18 Pin)	At left "B" pillar. See **Fig. 104**.
C781 (White, 18 Pin)	At right "B" pillar. See **Fig. 104**.
C782 (White, 4 Pin)	Under front passenger's seat. See **Fig. 90**.
C801 (Ex & Si) (Blue, 20 Pin)	Under under-dash fuse/relay box. See **Fig. 59**.
C801 (2 door: DX, DX-G & LX) (2 Pin)	Under under-dash fuse/relay box. See **Fig. 59**.
C801 (4 Door: DX, DX-G & LX) (6 Pin)	Under under-dash fuse/relay box. See **Fig. 59**.
C852 (Brown, 1 Pin)	In left "C" pillar. See **Fig. 117**.
C861 (GX) (Light Blue, 6 Pin)	Left side of rear seat back. See **Fig. 165**.

GROUNDS

GROUNDS LOCATION

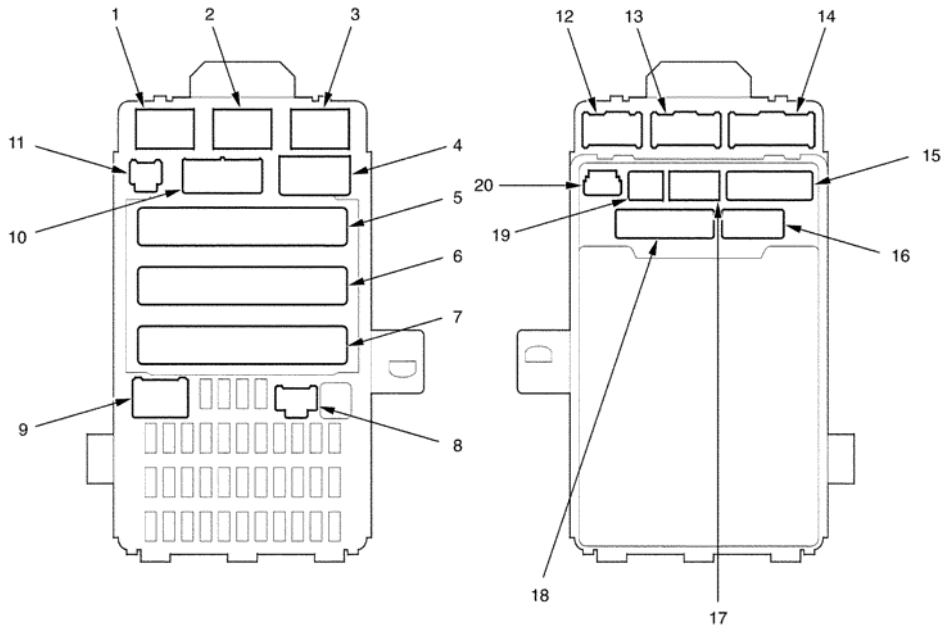
Component	Location
G1	Left side of engine compartment. See **Fig. 45**.
G2	At top right front of engine. See **Fig. 4**.
G3	Left side of engine compartment. See **Fig. 45**.
G101 (Except Si)	Right rear of engine. See **Fig. 30**.
G101 (Si)	Left rear of engine. See **Fig. 23**.
G201	Behind right side of front bumper. See **Fig. 132**.
G202	Behind right side of front bumper. See **Fig. 132**.
G301	Lower left side of engine compartment. See **Fig. 140**.
G401	Behind left kick panel. See **Fig. 70**.
G402	Behind glove box. See **Fig. 83**.
G403	Behind glove box. See **Fig. 83**.
G403 (2 Door)	Behind right kick panel. See **Fig. 86**.
G501	Under gauge assembly. See **Fig. 62**.
G502	Behind glove box. See **Fig. 82**.

G503	Under left side of dash. See **Fig. 64**.
G504	Near under-dash junction box. See **Fig. 66**.
G505	Behind glove box. See **Fig. 81**.
G506	Under middle of dash. See **Fig. 78**.
G601	Front left side of floor. See **Fig. 98**.
G602	Front right side of floor. See **Fig. 101**.
G603	In left "C" pillar. See **Fig. 119**.
G701 (2-Door)	Left side of trunk. See **Fig. 124**.
G701 (4-Door)	Left rear of trunk. See **Fig. 125**.
G801	Left side of roof. See **Fig. 153**.
G801	Right "C" pillar. See **Fig. 154**.
G851 (2-Door)	Base of right "C" pillar. See **Fig. 114**.
G851 (4-Door)	In right "C" pillar.

COMPONENT LOCATION GRAPHICS

NOTE: Figures may show multiple component locations. Refer to appropriate table for proper figure references.

Under-dash Fuse/Relay Box



(View of Front Side) (View of Rear Side)

Ref	Socket	Cavities	Connects to
1	Power Window Relay	4	
2	PGM-FI Main Relay 2	4	
3	Starter Cut Relay	4	
4	D	2	Dashboard wire harness
5	E	42	Floor Wire Harness
6	F	34	Engine Compartment Wire Harness
7	G	21	Engine Compartment Wire Harness
8	H (MICU Service Check Connector)	3	
9	A (Optional Connector)	6	
10	C	4	Dashboard wire harness
11	B (MES Connector)		Dashboard wire harness
12	K	8	Dashboard wire harness
13	M	10	Dashboard wire harness
14	N	14	Dashboard wire harness
15	R	20	Dashboard wire harness
16	S (MICU)	20	Dashboard wire harness
17	Q	16	Dashboard wire harness
18	T (MICU)	34	Dashboard wire harness
19	P	10	Dashboard wire harness
20	J	4	Dashboard wire harness

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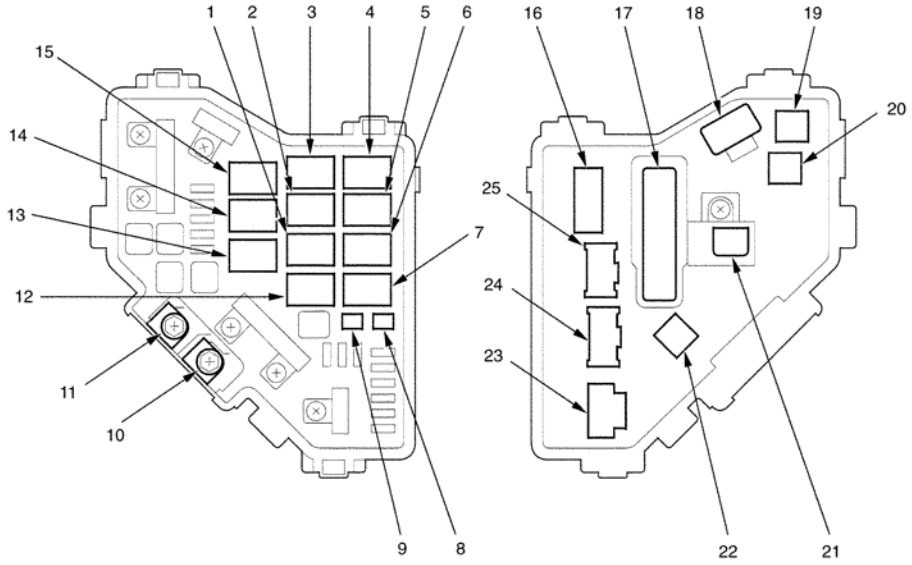
Fig. 1: Under-Dash Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Under-hood Fuse/Relay Box



Ref	Socket	Cavities	Connects to
1	Rear Window Defogger Relay	4	
2	Blower Motor Relay	4	
3	A/C Condenser Fan Relay	4	
4	Fan Control Relay	5	
5	Power Mirror Defogger Relay (Canada: LX, EX, Si)	5	
6	PGM-FI Sub-relay	4	
7	Ignition Coil Relay	4	
8	Radiator Fan Diode	2	(Plugs directly into the fuse/relay box)
9	A/C Condenser Fan Diode	2	
10	T3		Engine Wire Harness (DX, DX-G, LX, EX)
10	T3		Starter Sub-harness (Si)
11	T101		Engine Wire Harness (DX, DX-G, LX, EX)
11	T101		Starter Sub-harness (Si)
12	A/C Compressor Clutch Relay	4	
13	PGM-FI Main Relay 1	4	
14	ETCS Control Relay	4	
15	Radiator Fan Relay	4	
16	J	4	Engine Compartment Wire Harness
17	F	20	Engine Compartment Wire Harness
18	K	2	Engine Compartment Wire Harness
19	G	1	Engine Compartment Wire Harness
20	H	1	Engine Compartment Wire Harness
21	A (ELD Unit) (USA; Canada: Si)	3	Engine Compartment Wire Harness
22	B (Si)	1	Engine Compartment Wire Harness
23	C	2	Engine Compartment Wire Harness
24	E	10	Engine Compartment Wire Harness
25	D	8	Engine Compartment Wire Harness

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Fig. 2: Under-Hood Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

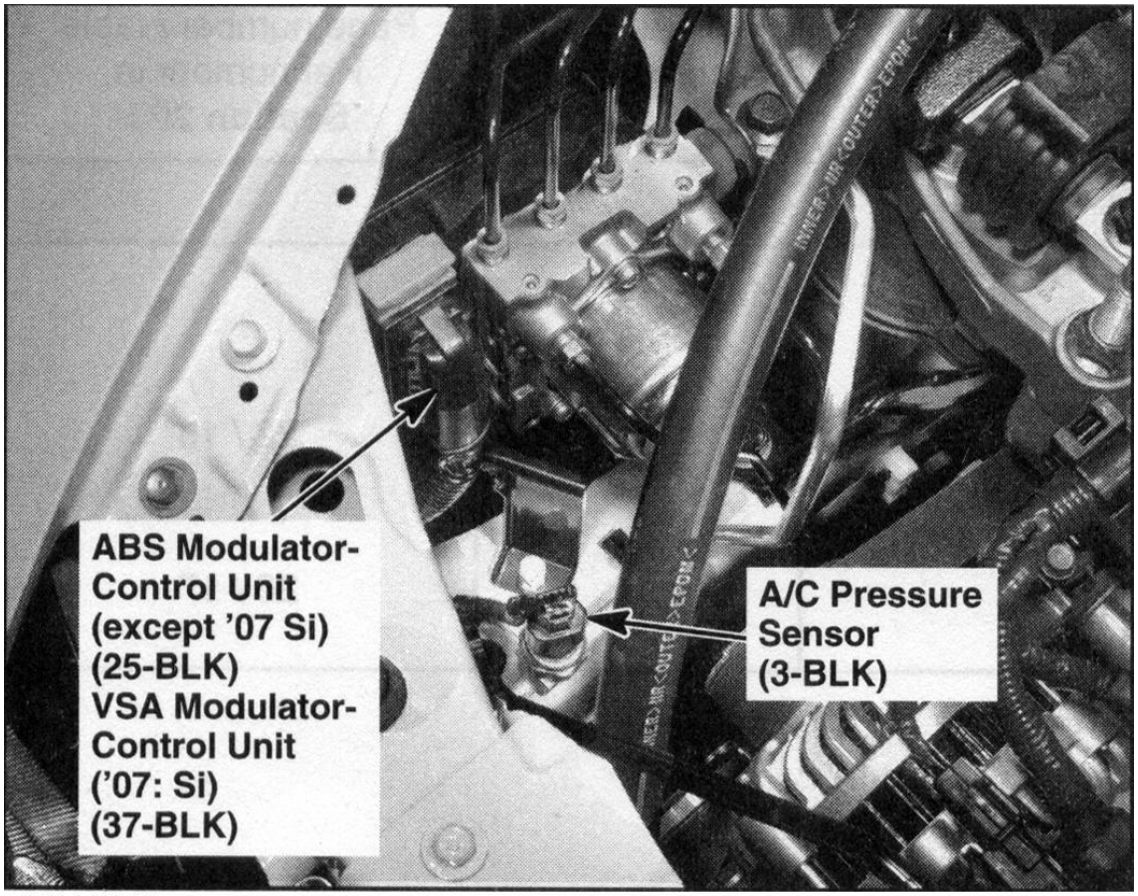

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Fig. 3: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

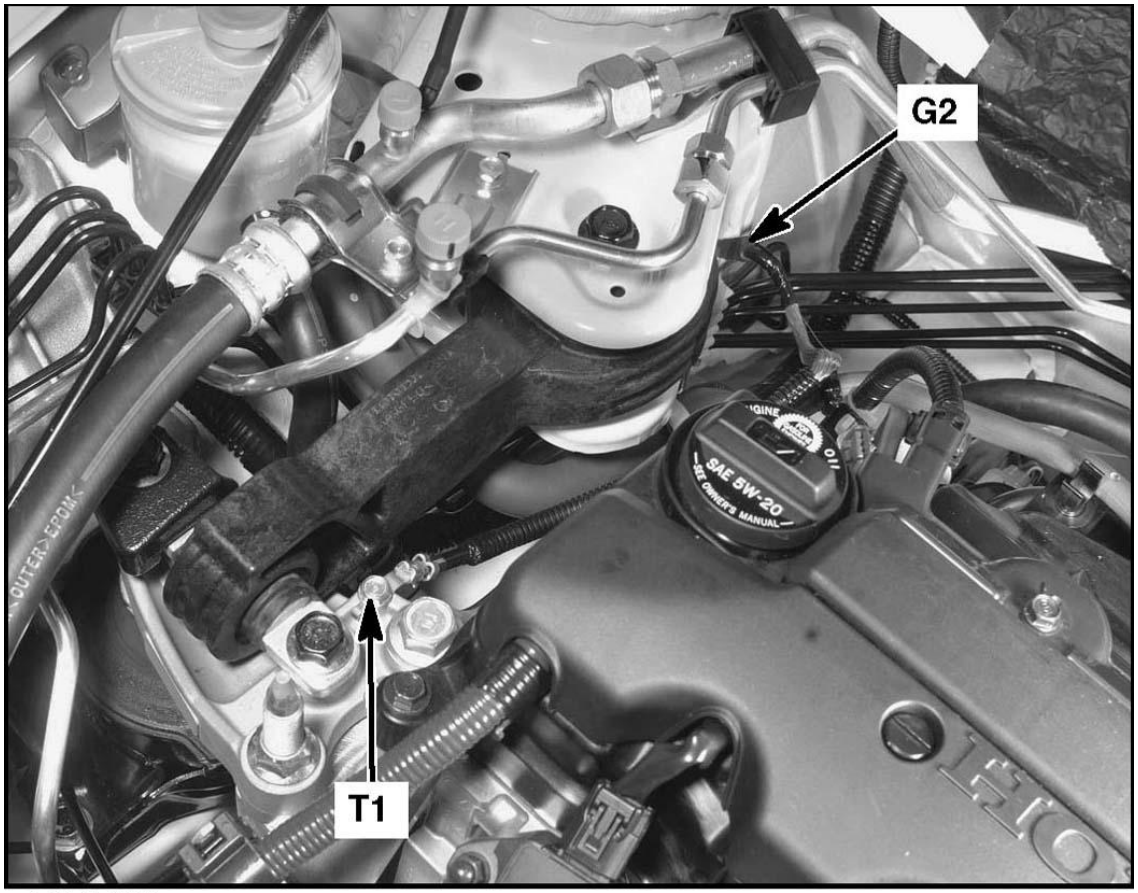

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Fig. 4: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 5: Right Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

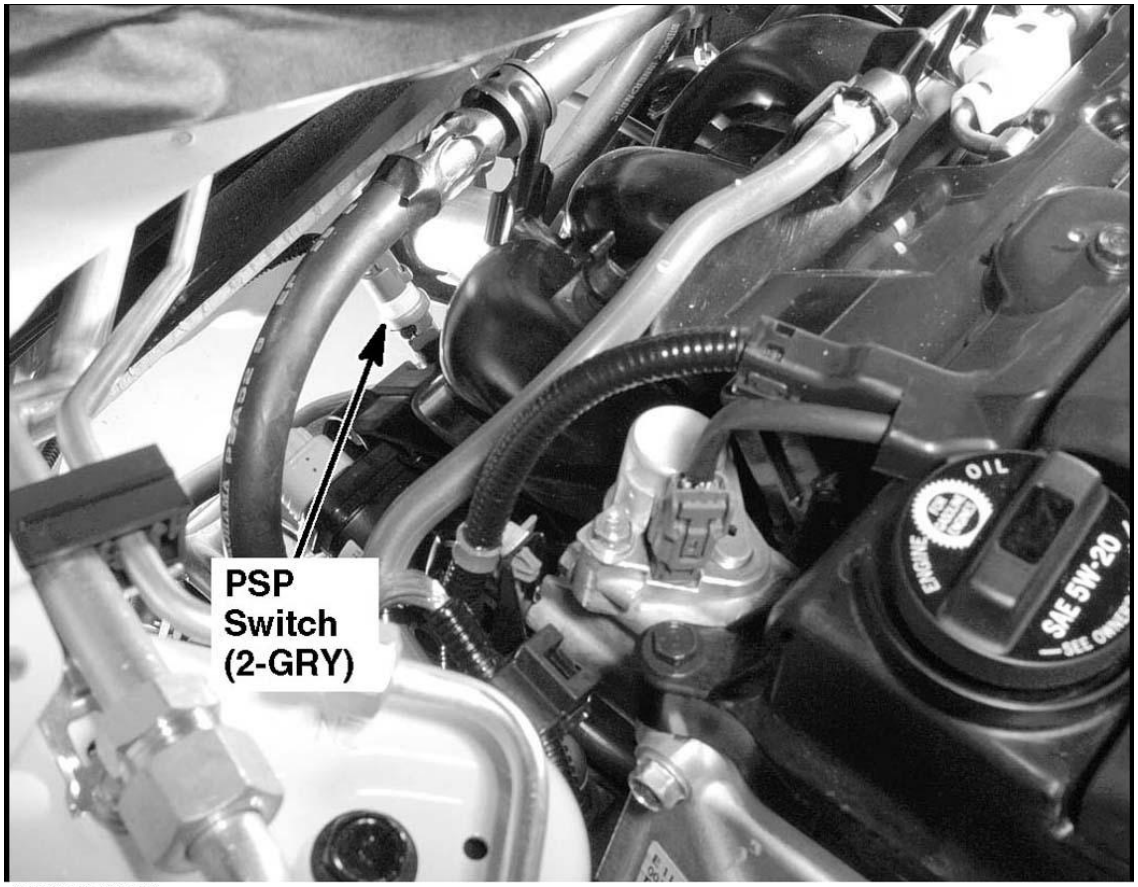

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Fig. 6: Right Side Of Engine Compartment (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

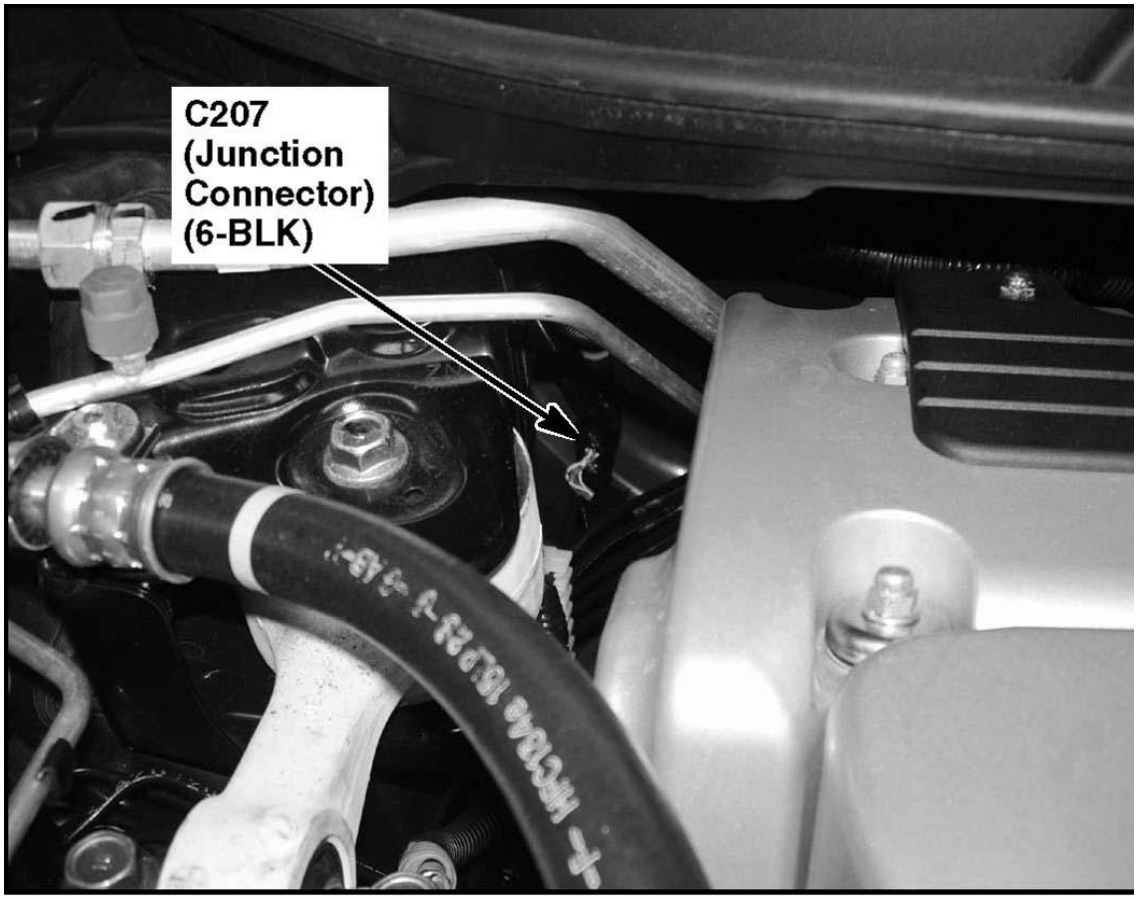

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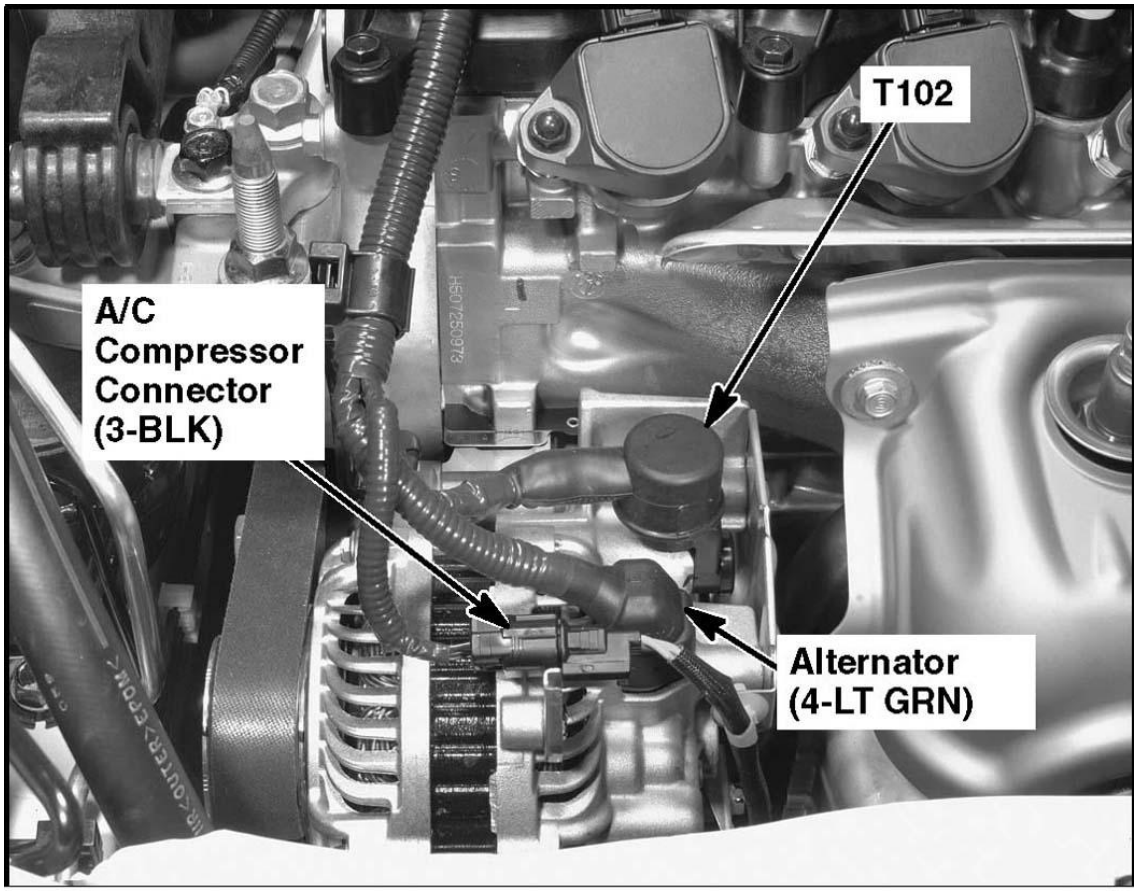
Fig. 7: Right Side Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434342

Fig. 8: Left Front Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

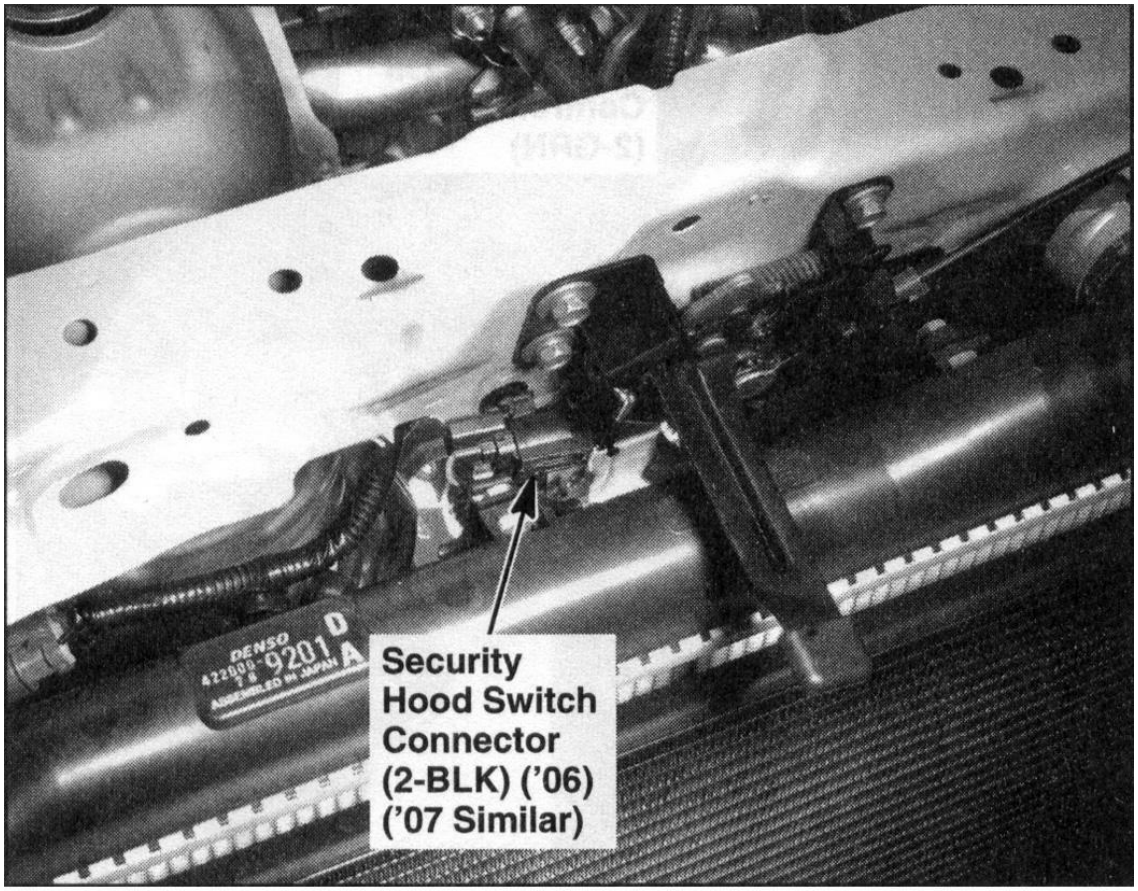


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Fig. 9: Front Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

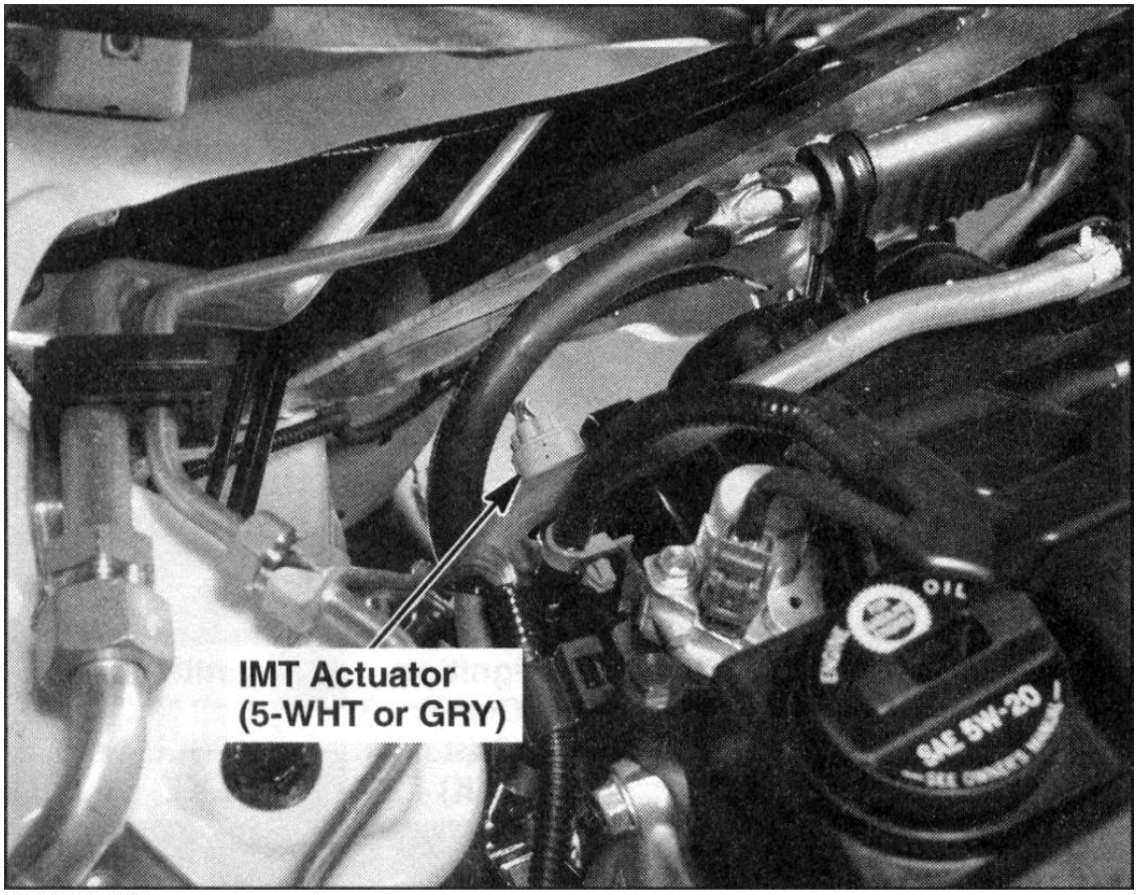

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Fig. 10: Right Front Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

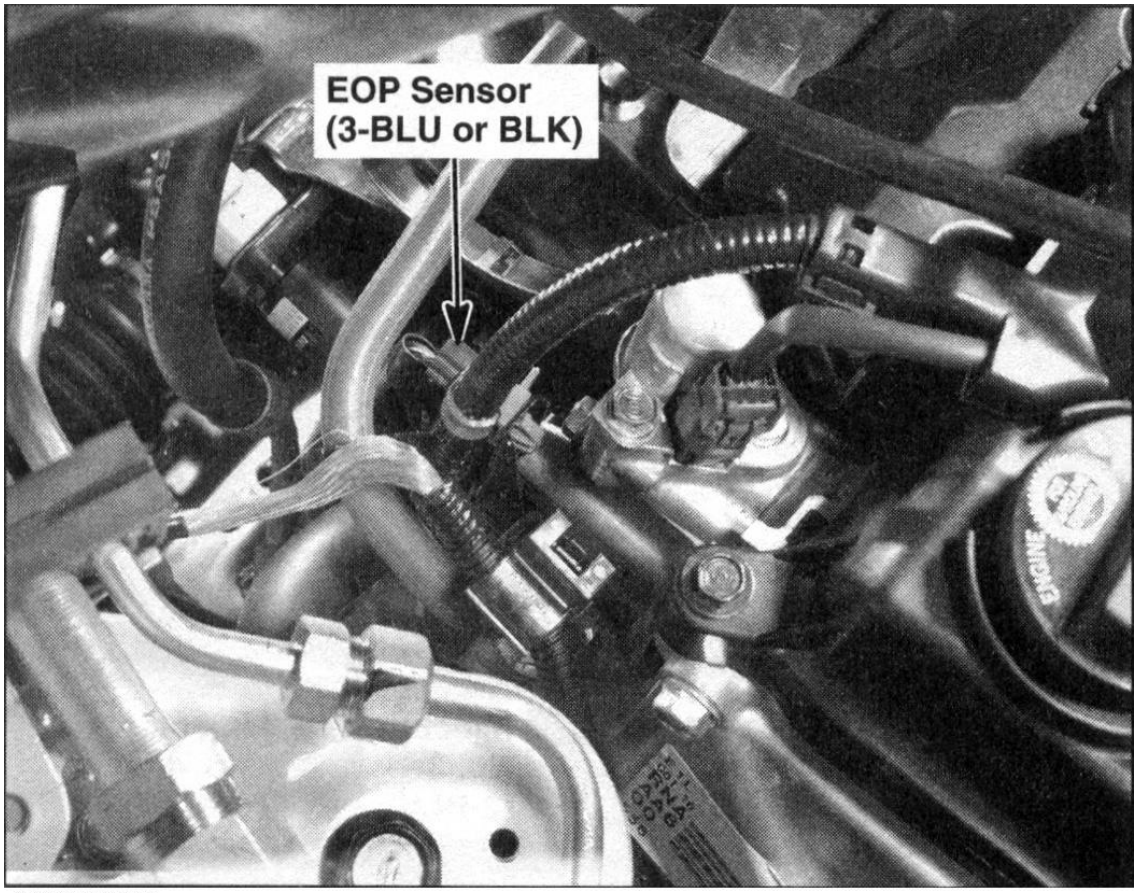

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Fig. 11: Right Front Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

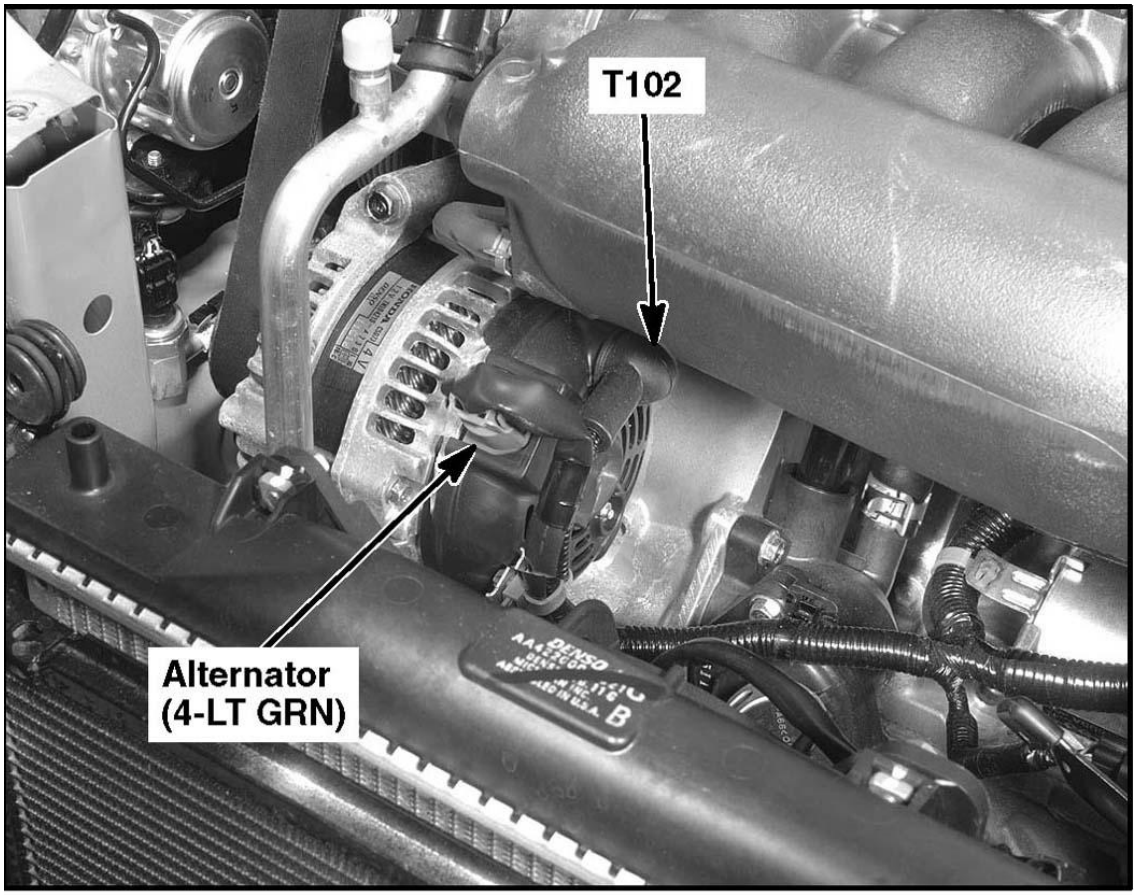

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Fig. 12: Left Front Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

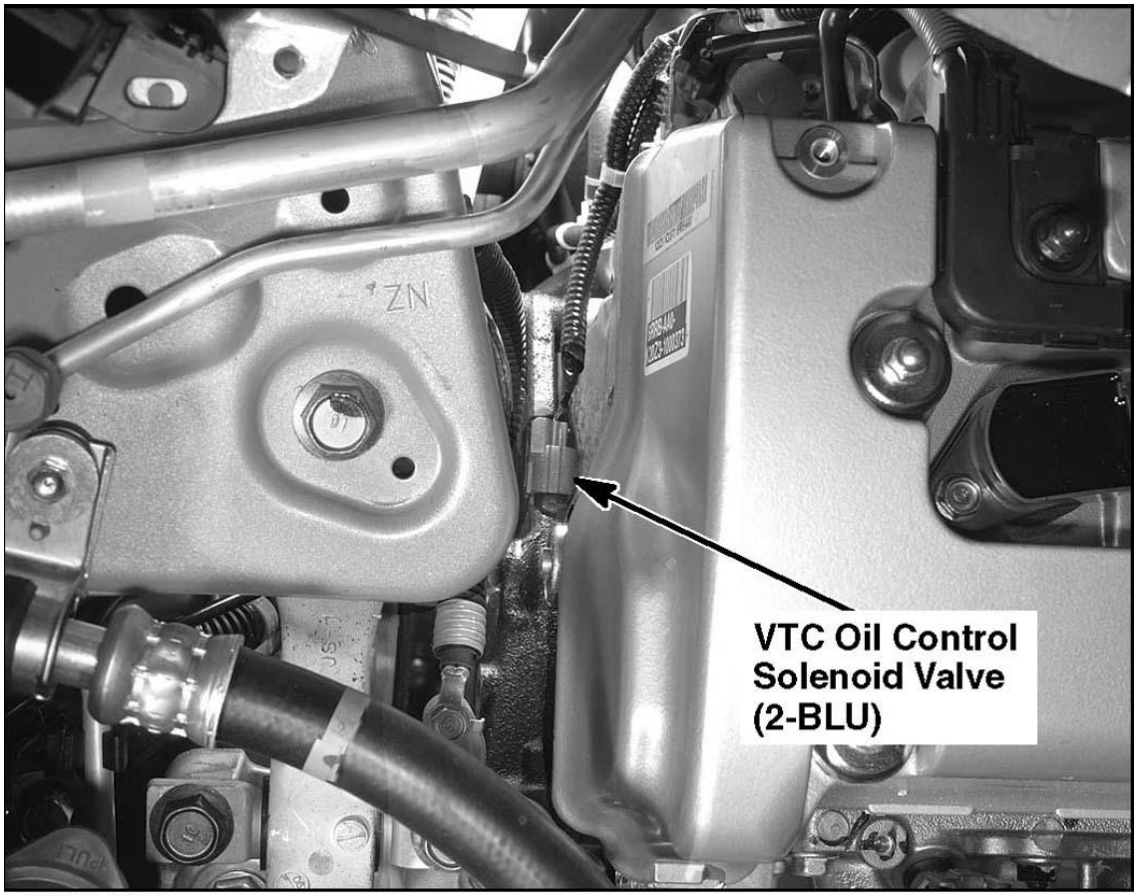

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Fig. 13: Front Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

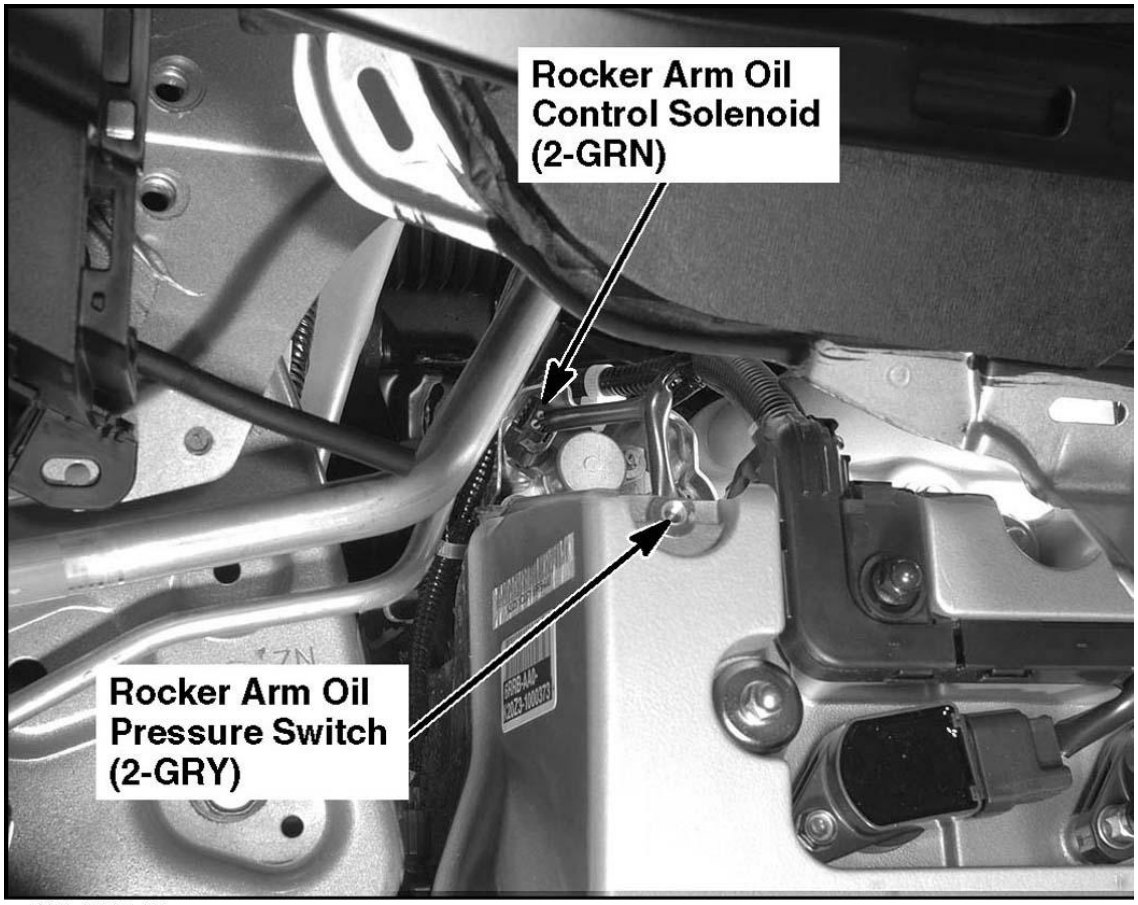

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Fig. 14: Front Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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Fig. 15: Right Front Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

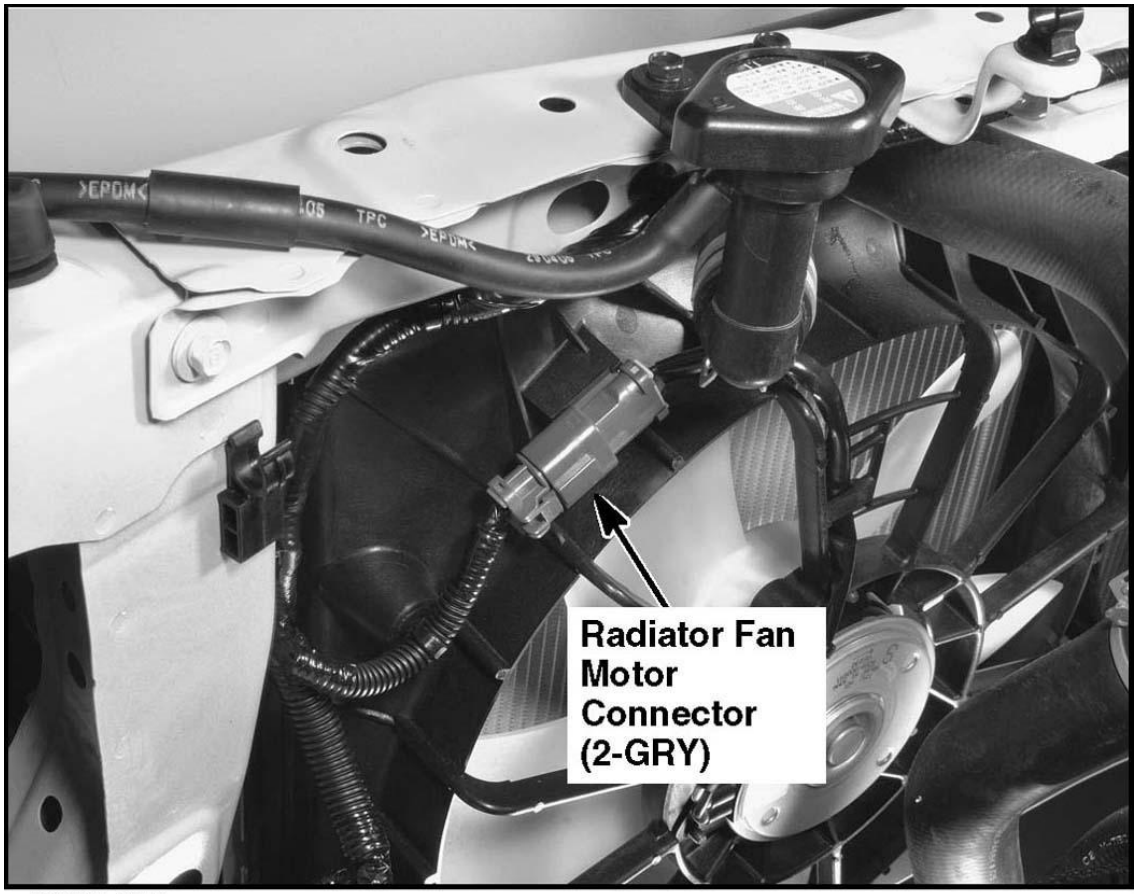

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Fig. 16: Front Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

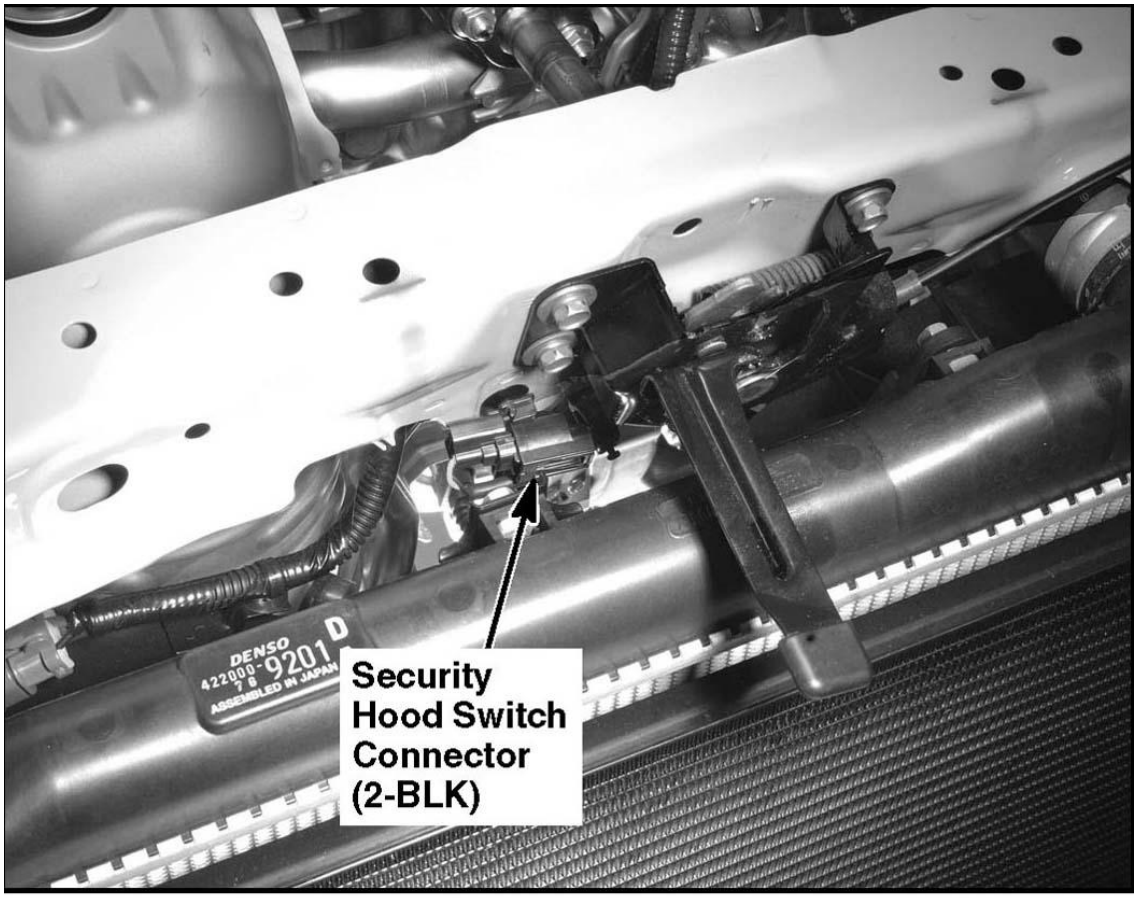

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Fig. 17: Front Of Engine Compartment (USA: LX, EX, Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

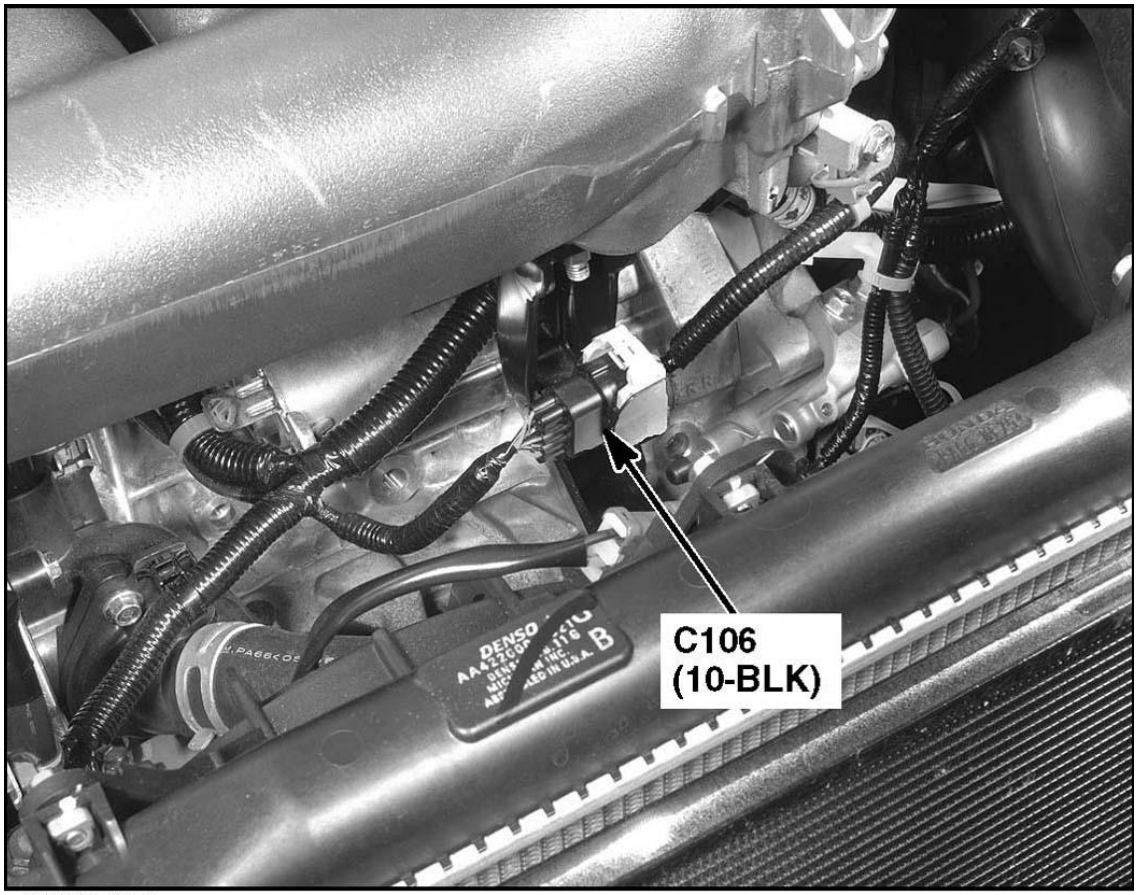

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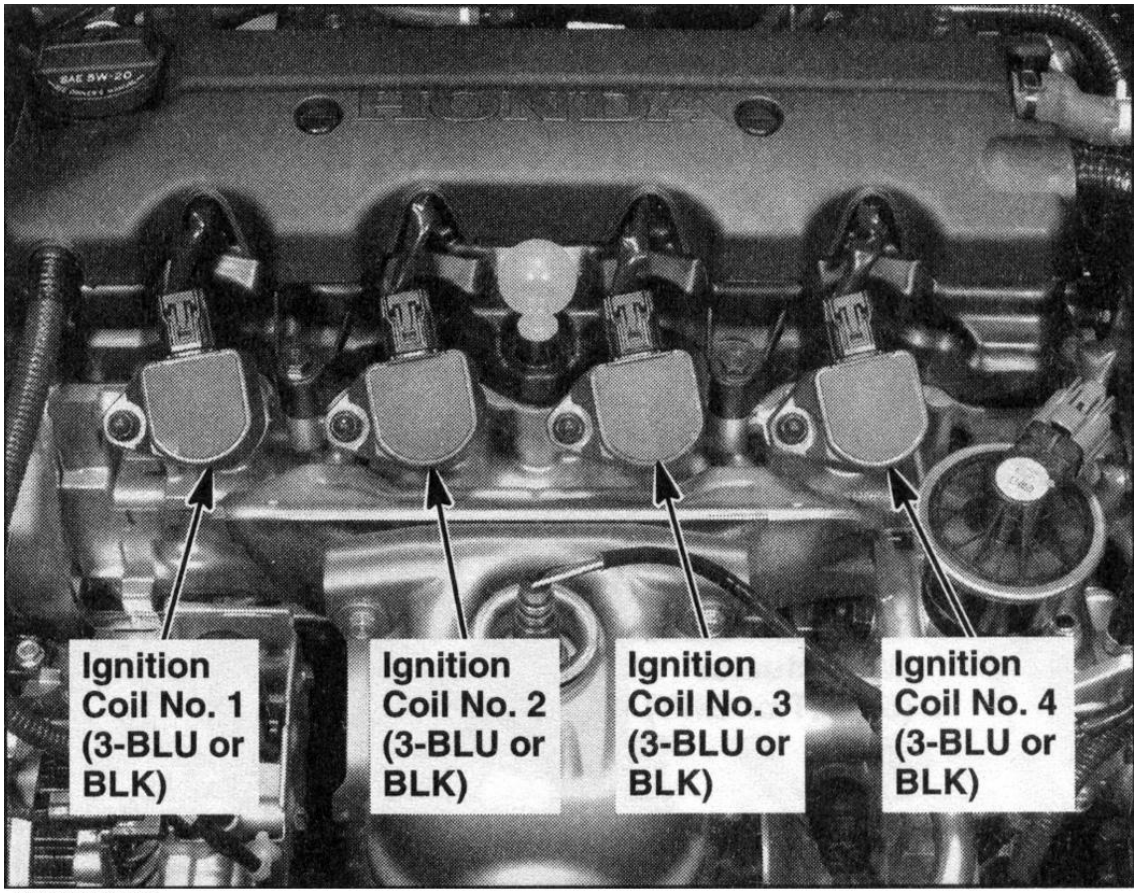
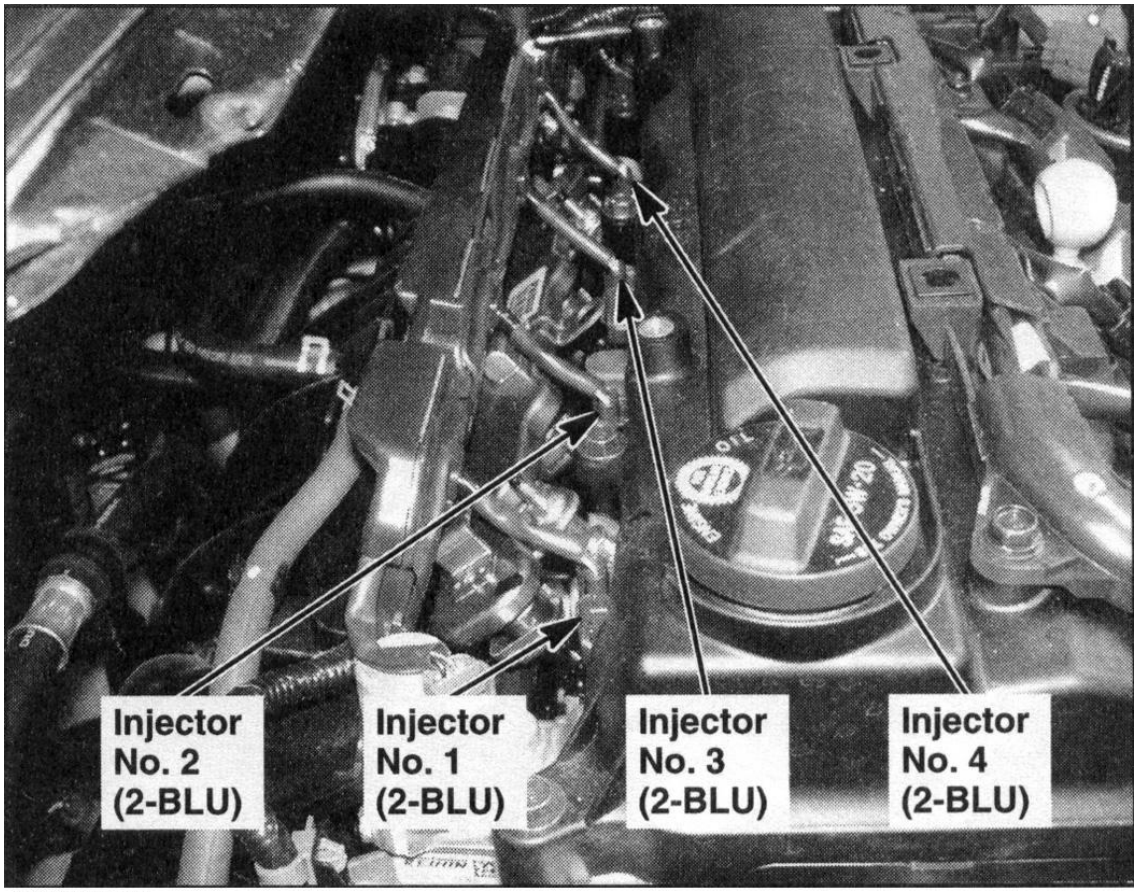
Fig. 18: Front Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



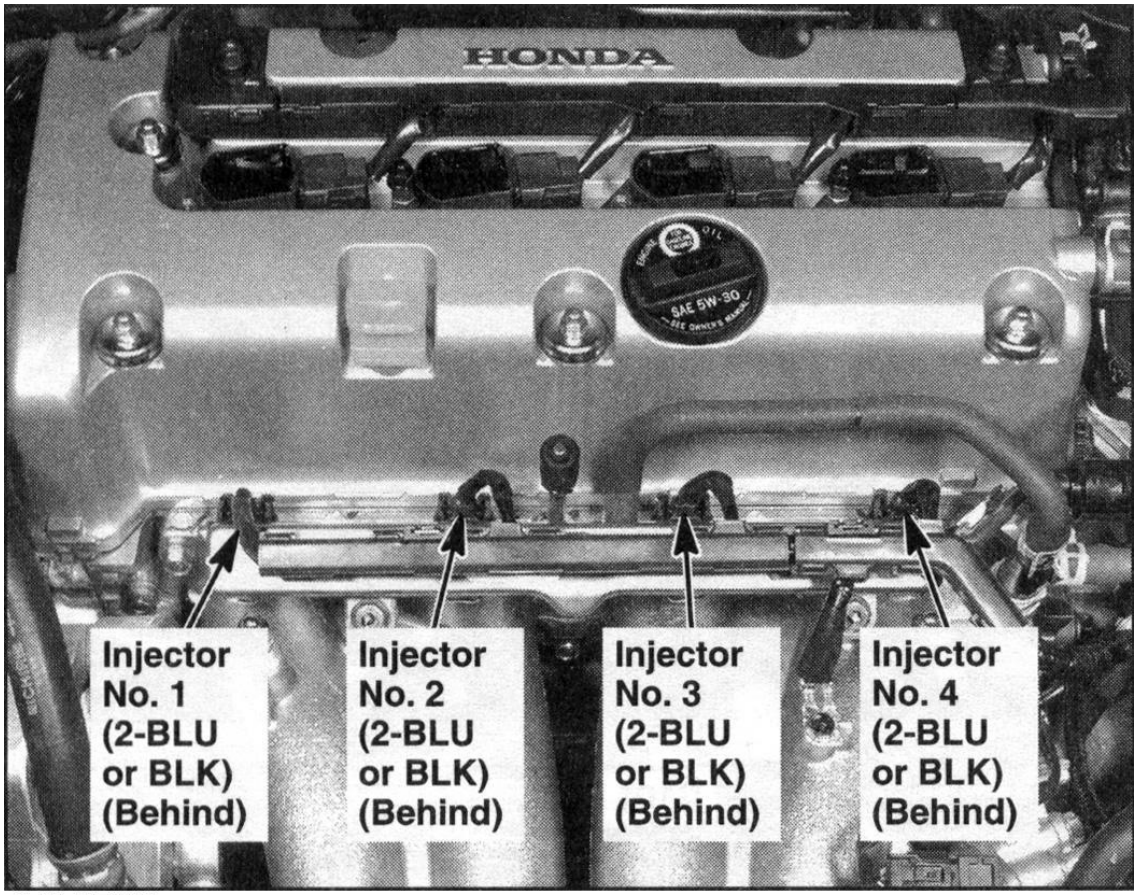
G00447693

Fig. 19: Top Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00447694

Fig. 20: Top Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00447695

Fig. 21: Top Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

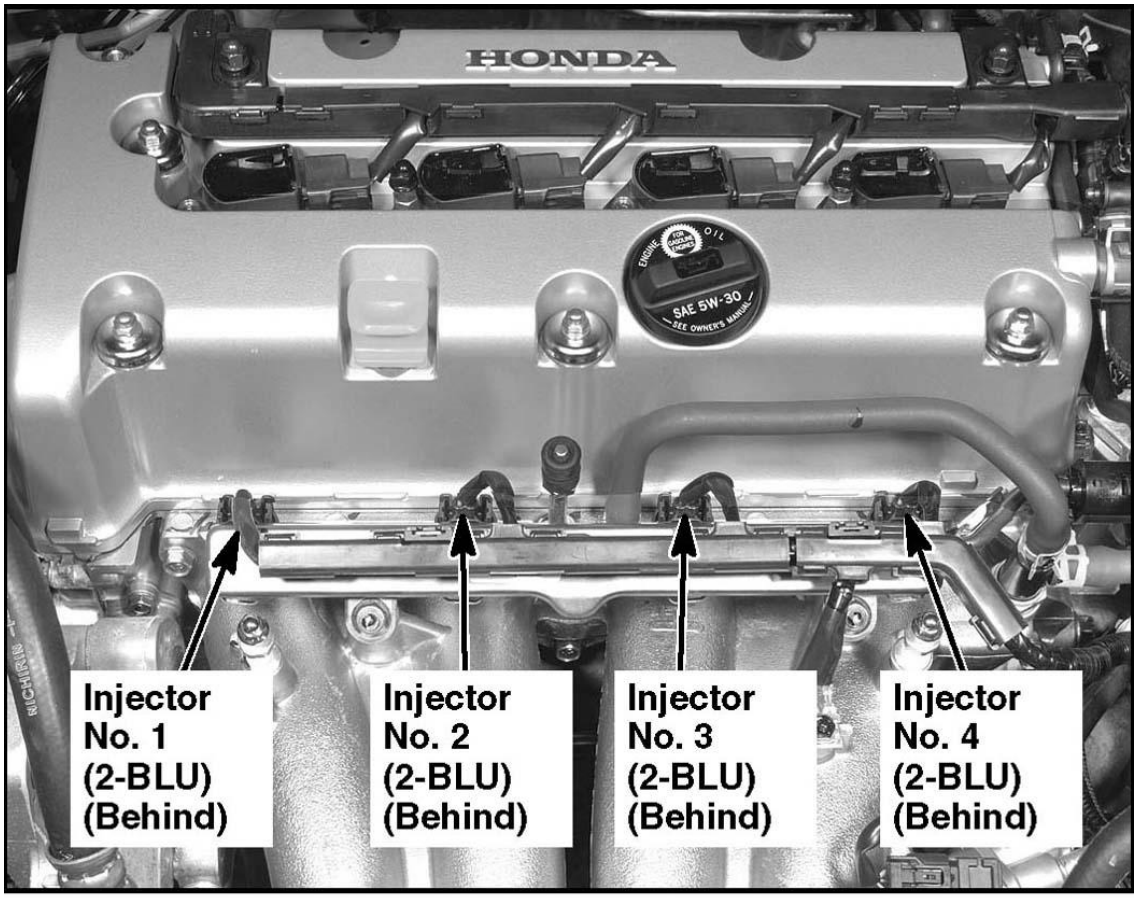


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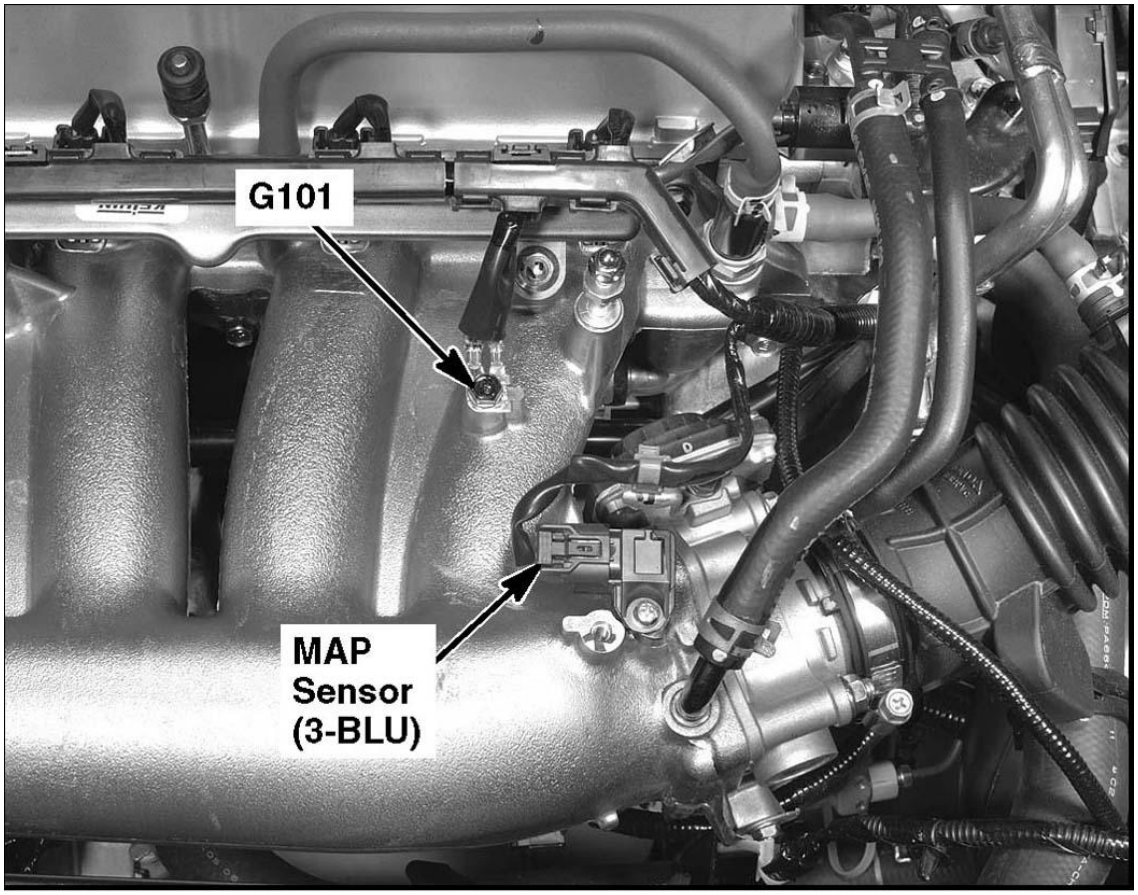
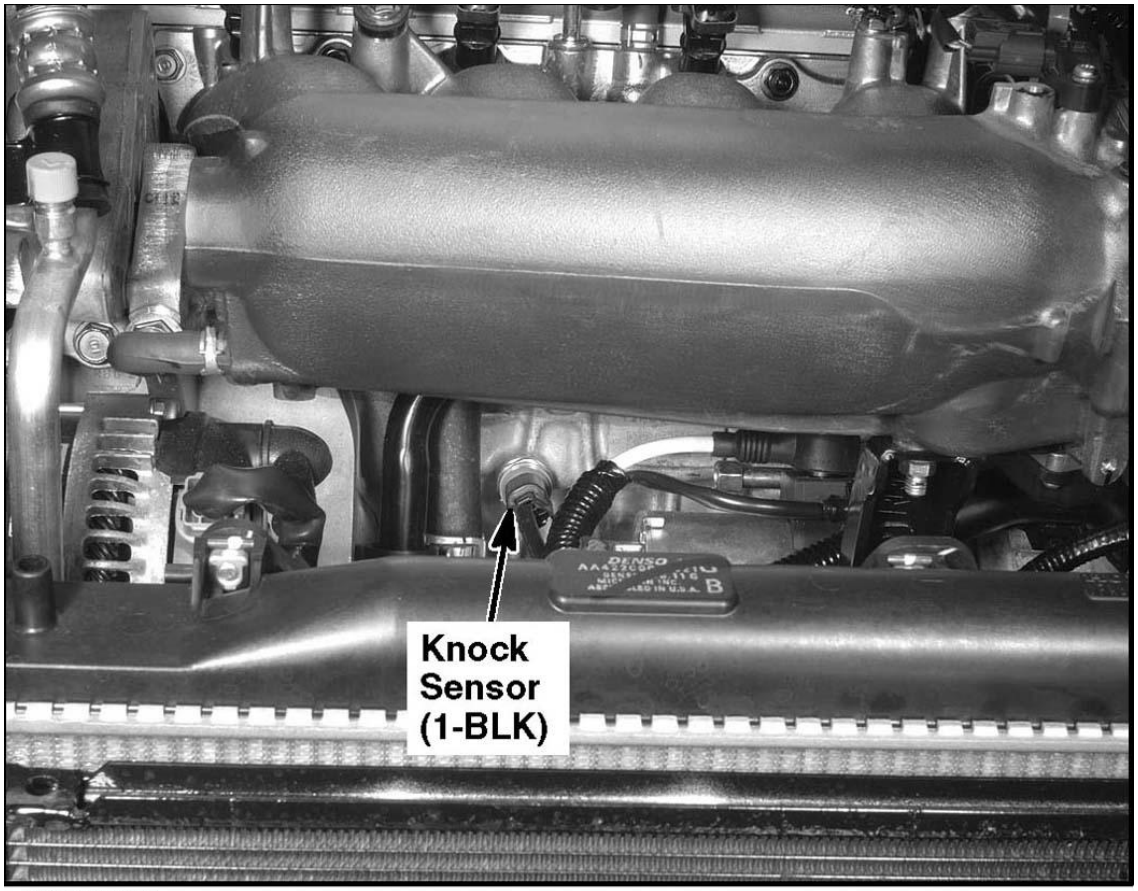
Fig. 22: Top Left Side Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434357

Fig. 23: Left Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434358

Fig. 24: Left Front Side Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

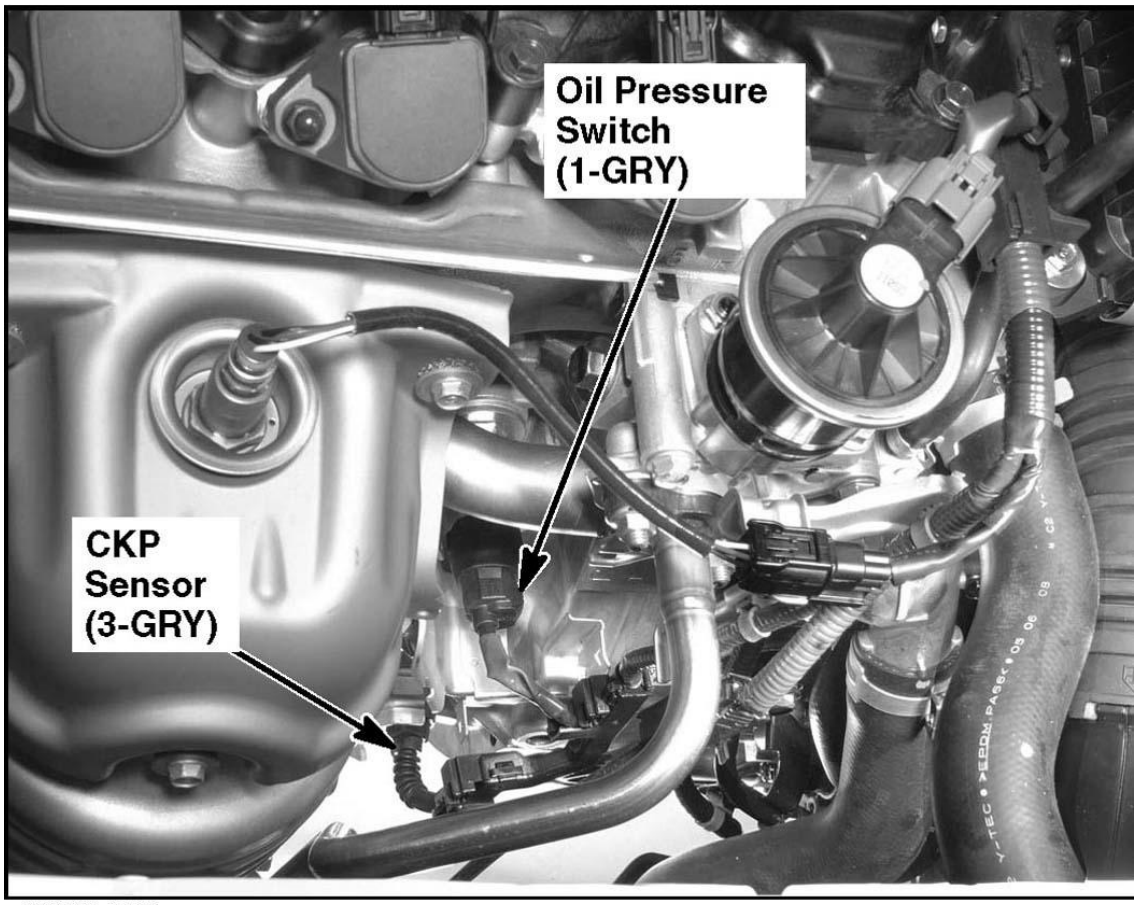


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Fig. 25: Left Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

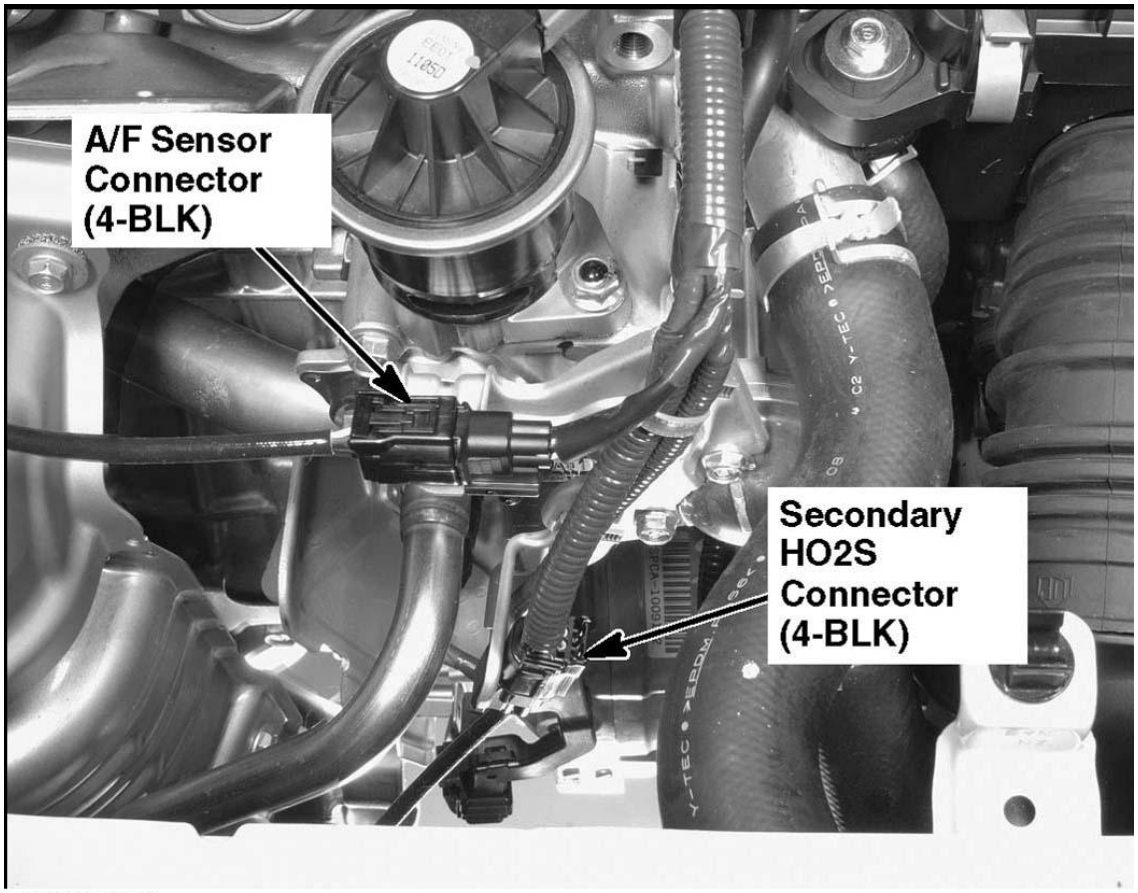

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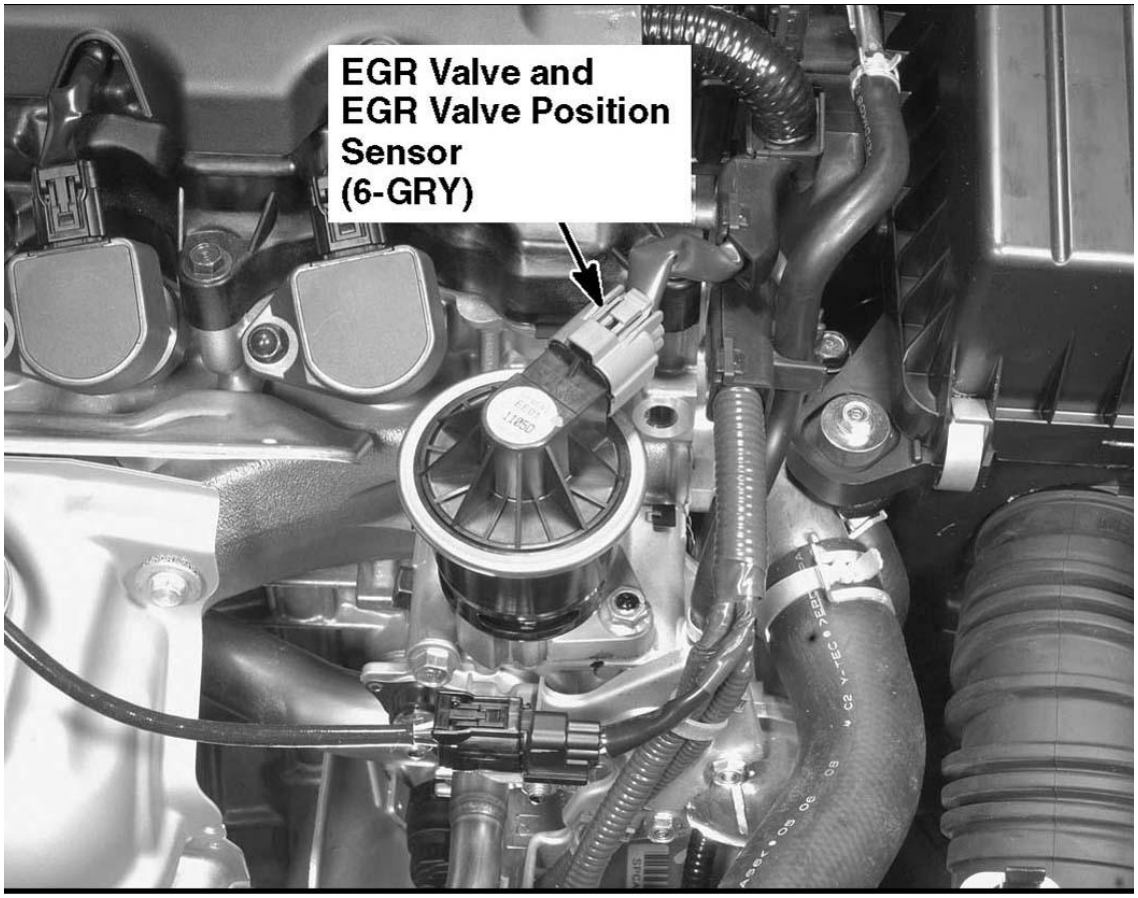
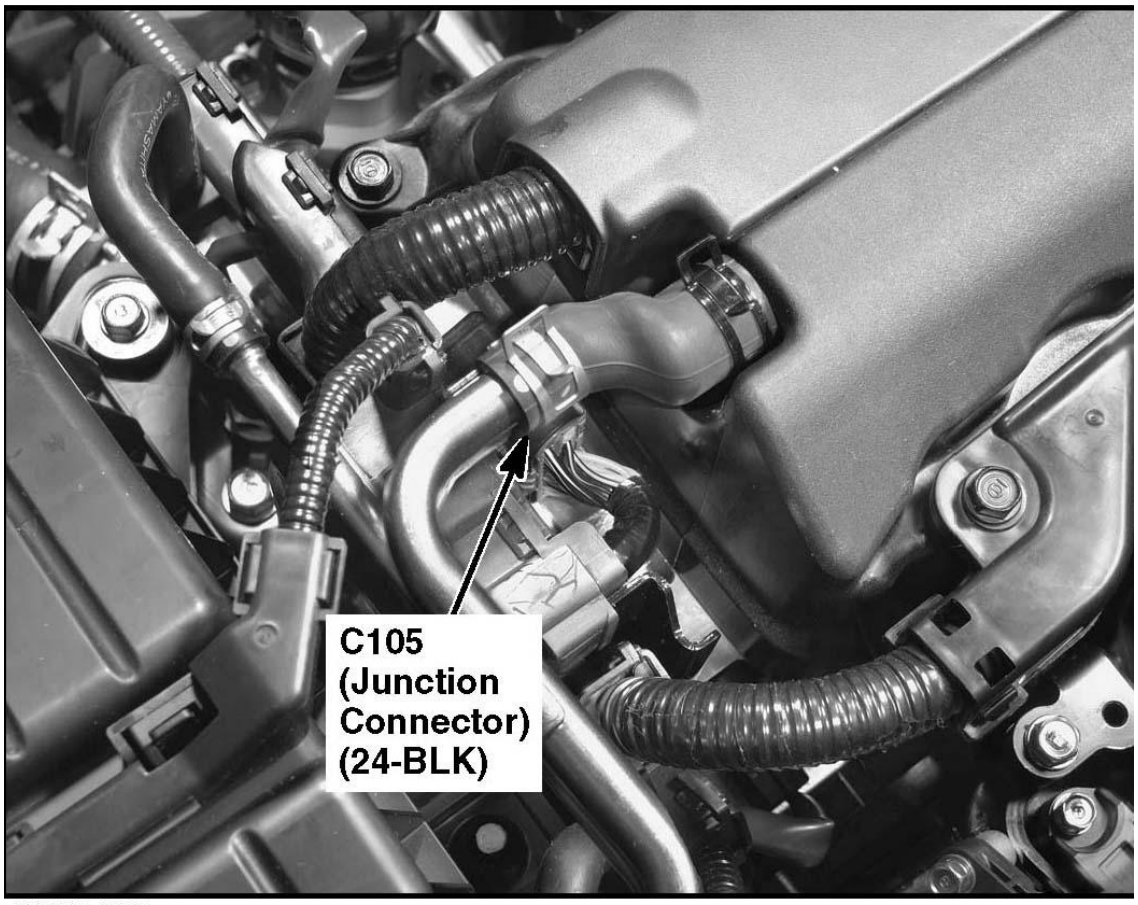
Fig. 26: Top Left Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



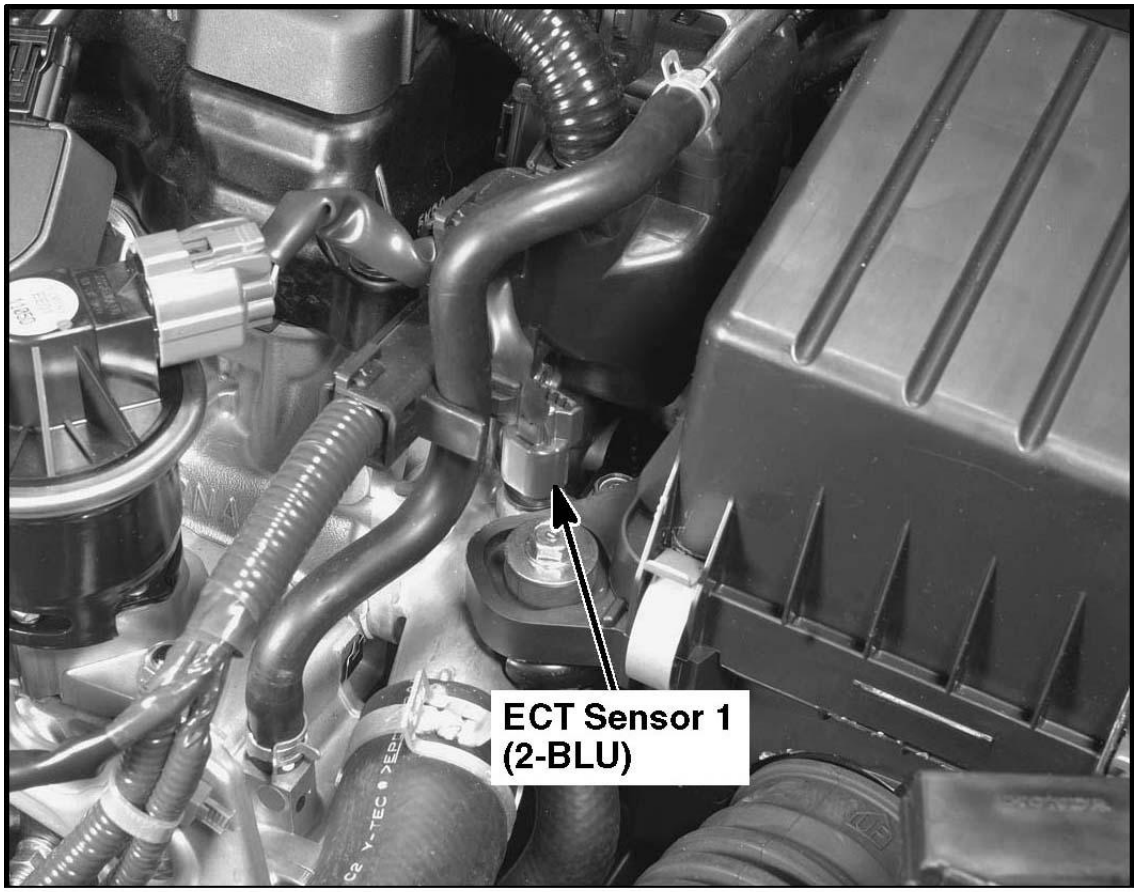
G00434362

Fig. 27: Top Left Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



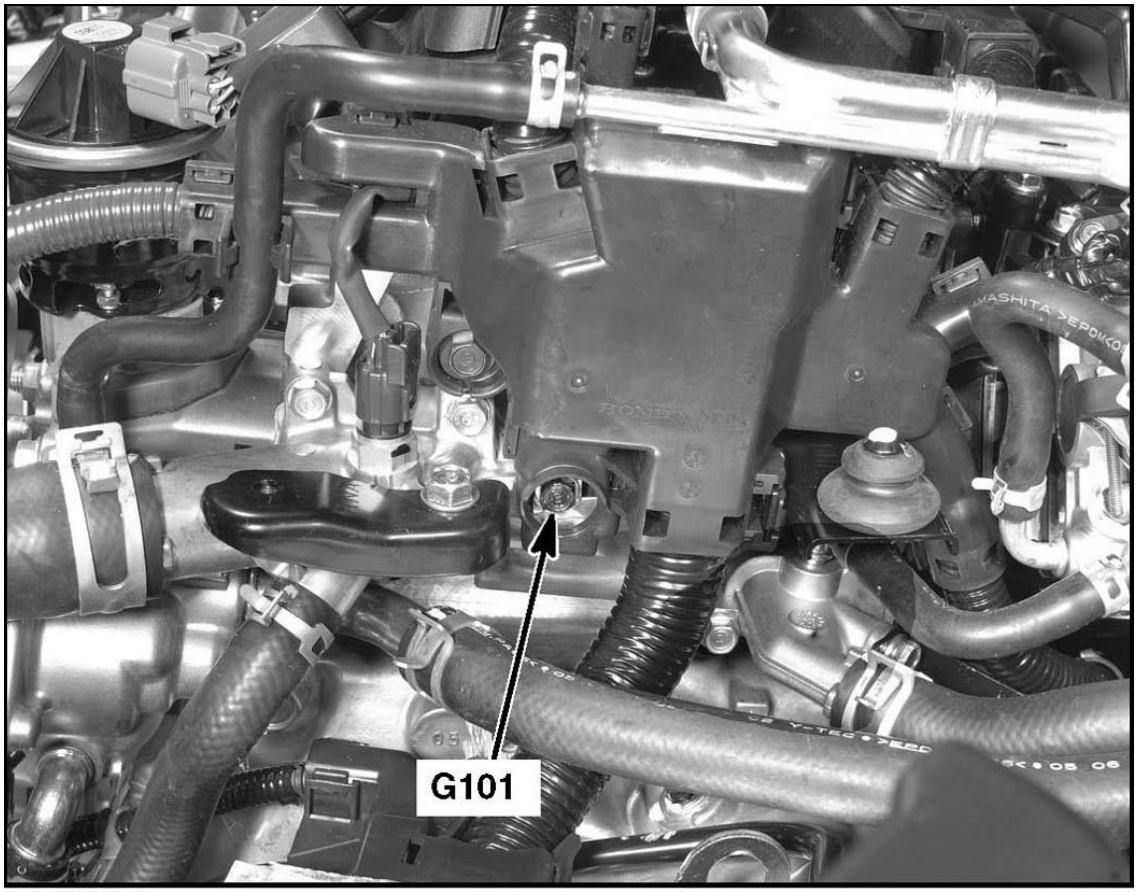
G00434363

Fig. 28: Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



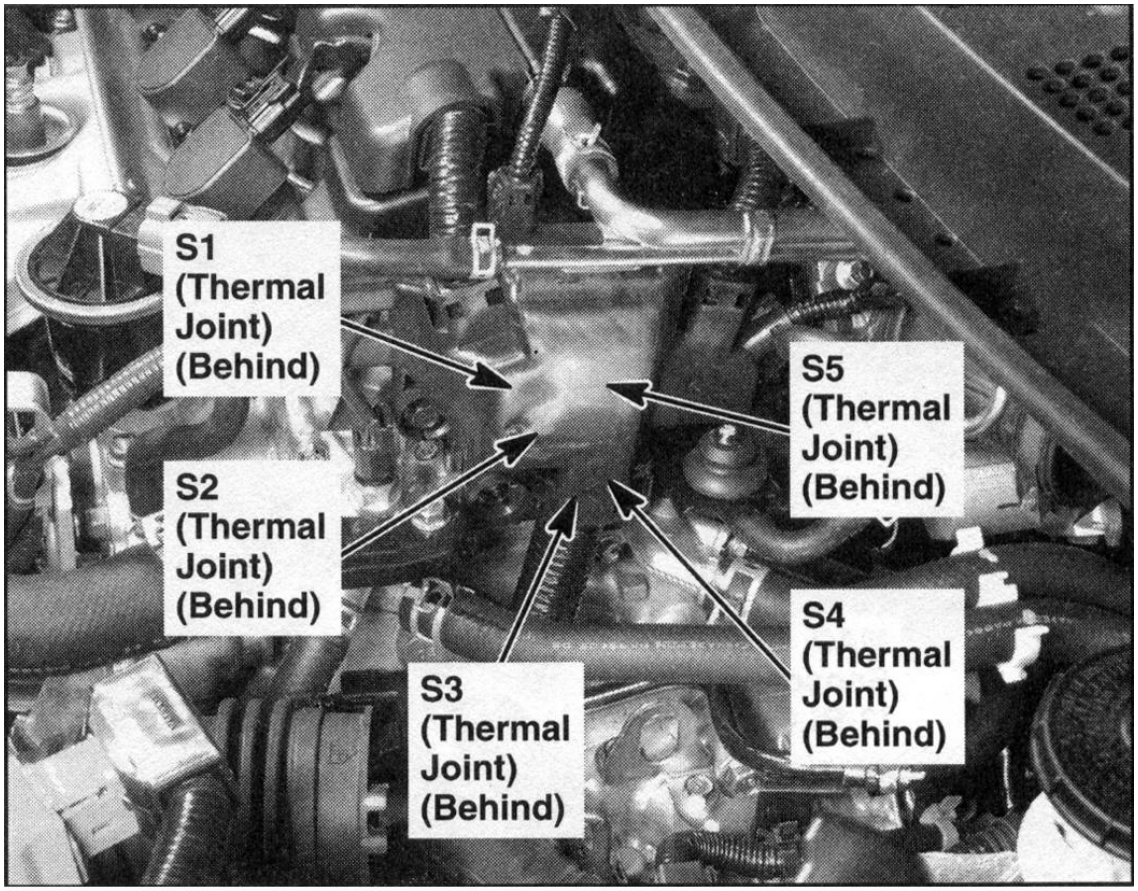
G00434364

Fig. 29: Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



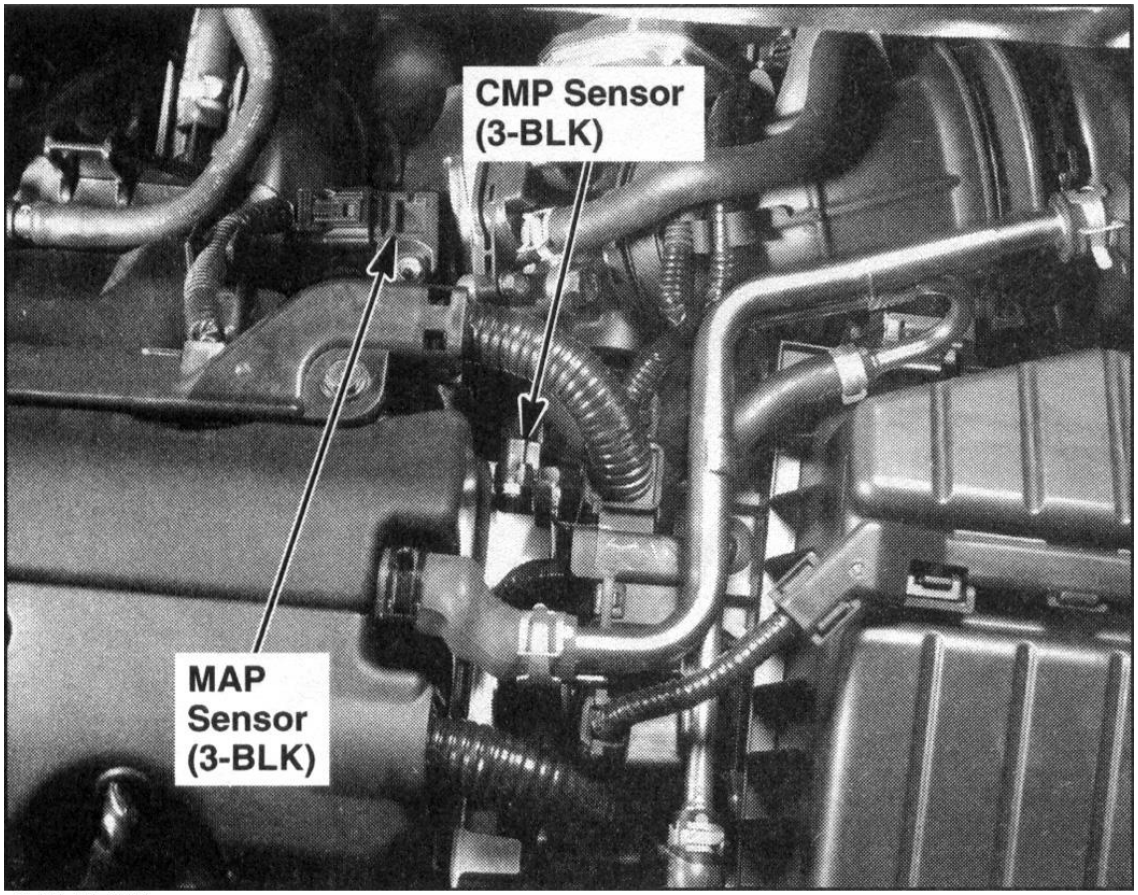
G00434365

Fig. 30: Right Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



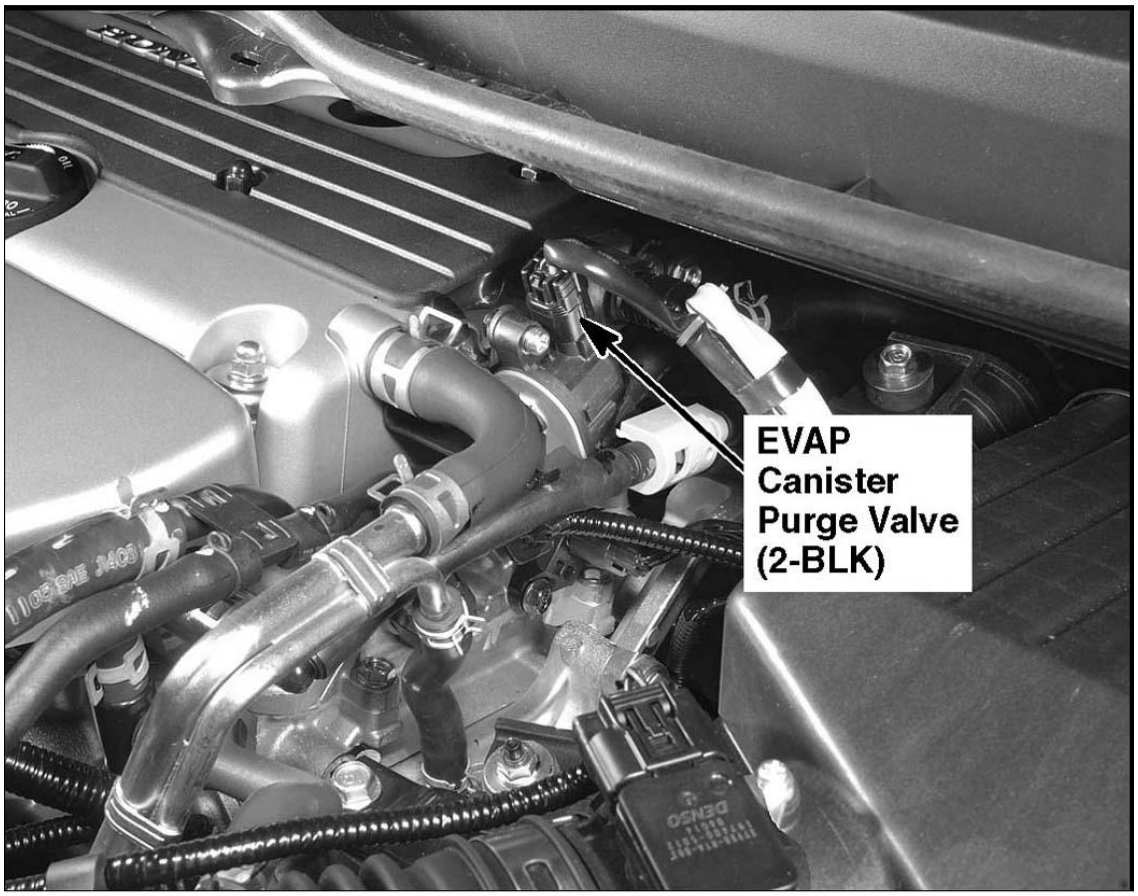
G00447696

Fig. 31: Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



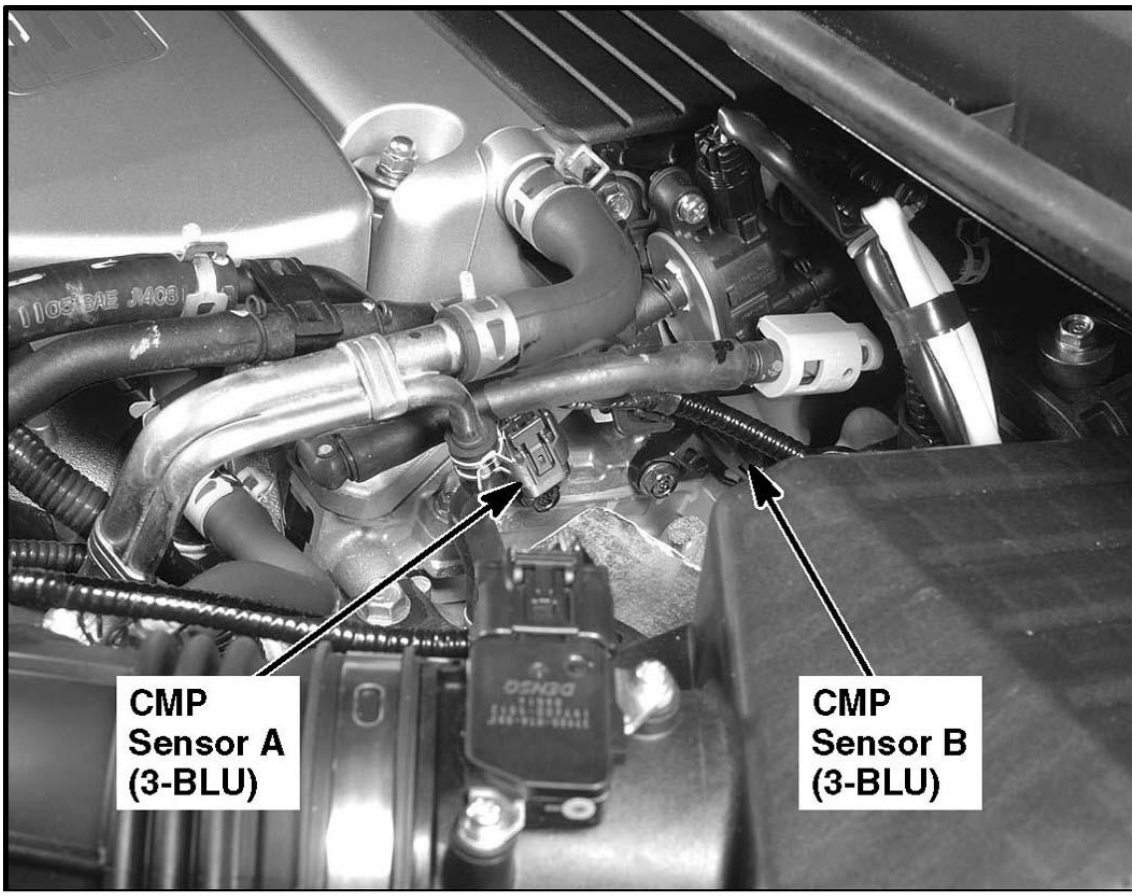
G00447698

Fig. 32: Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



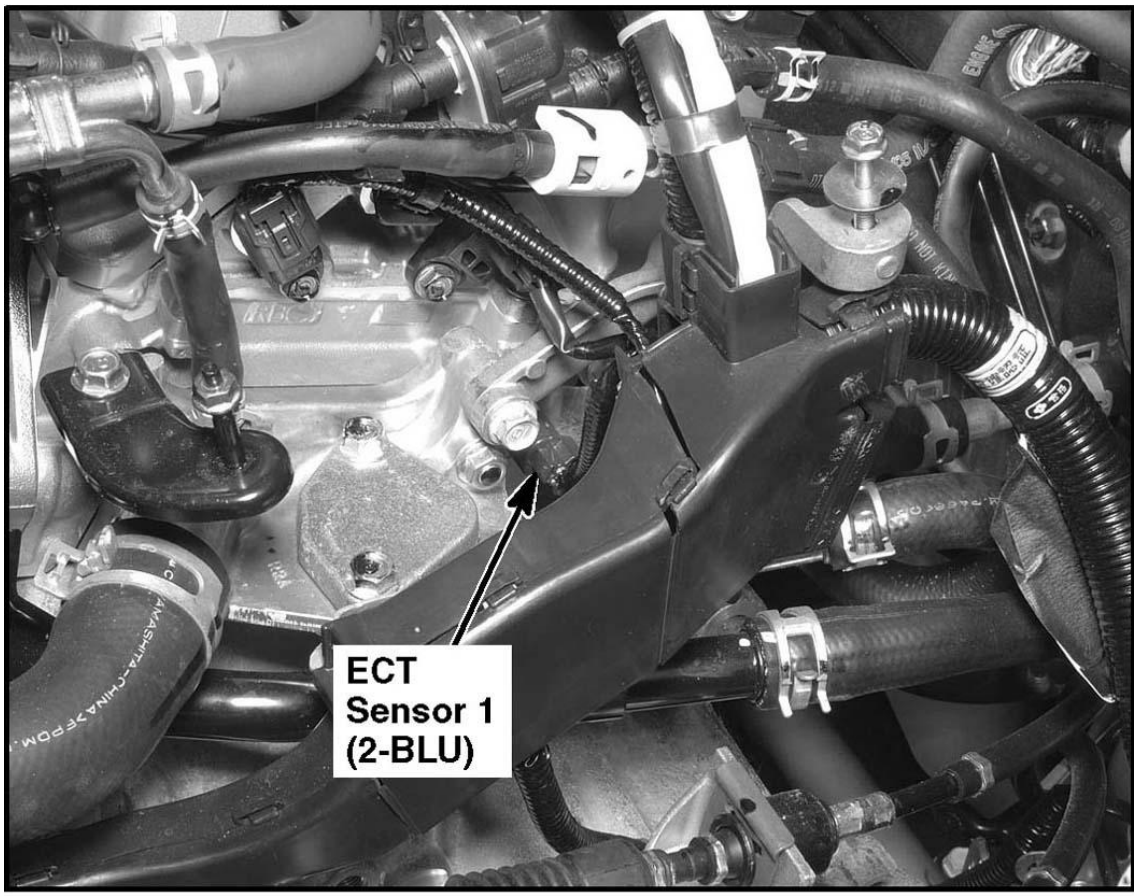
G00434370

Fig. 33: Right Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



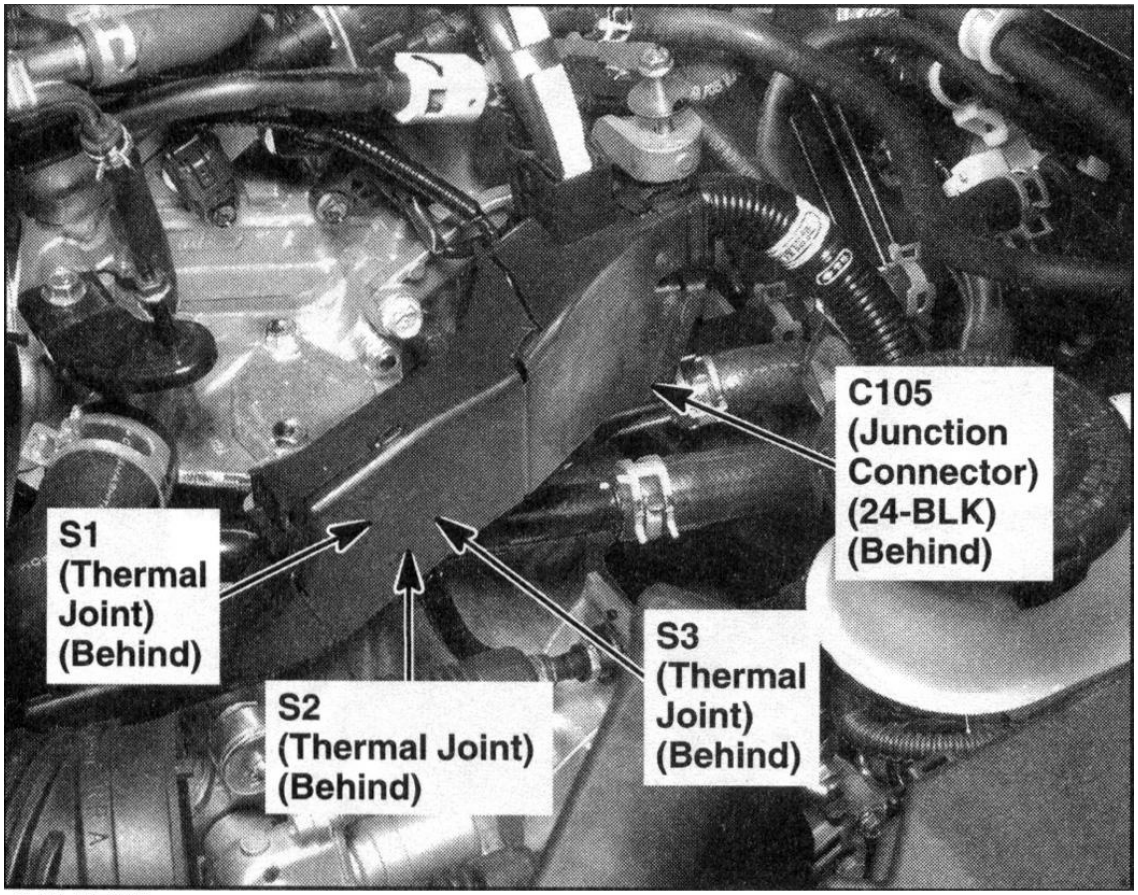
G00434371

Fig. 34: Right Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



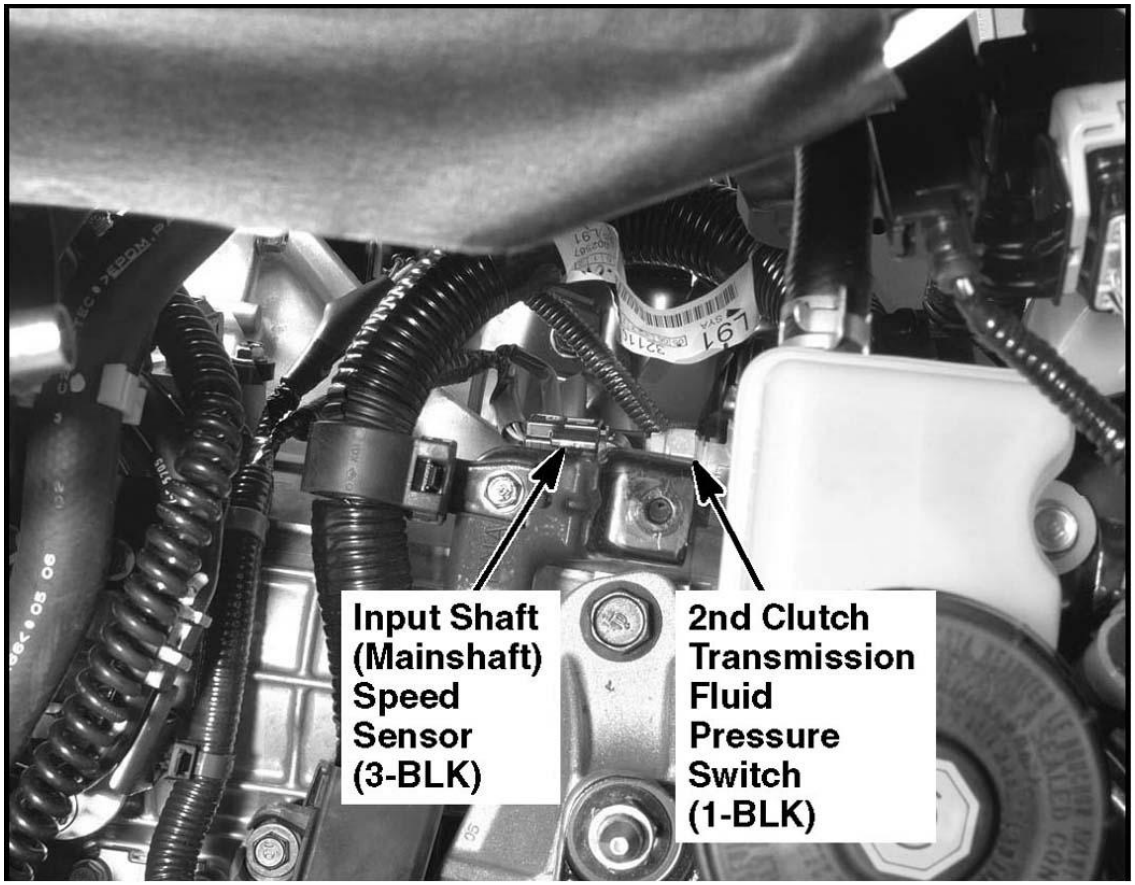
G00434372

Fig. 35: Right Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



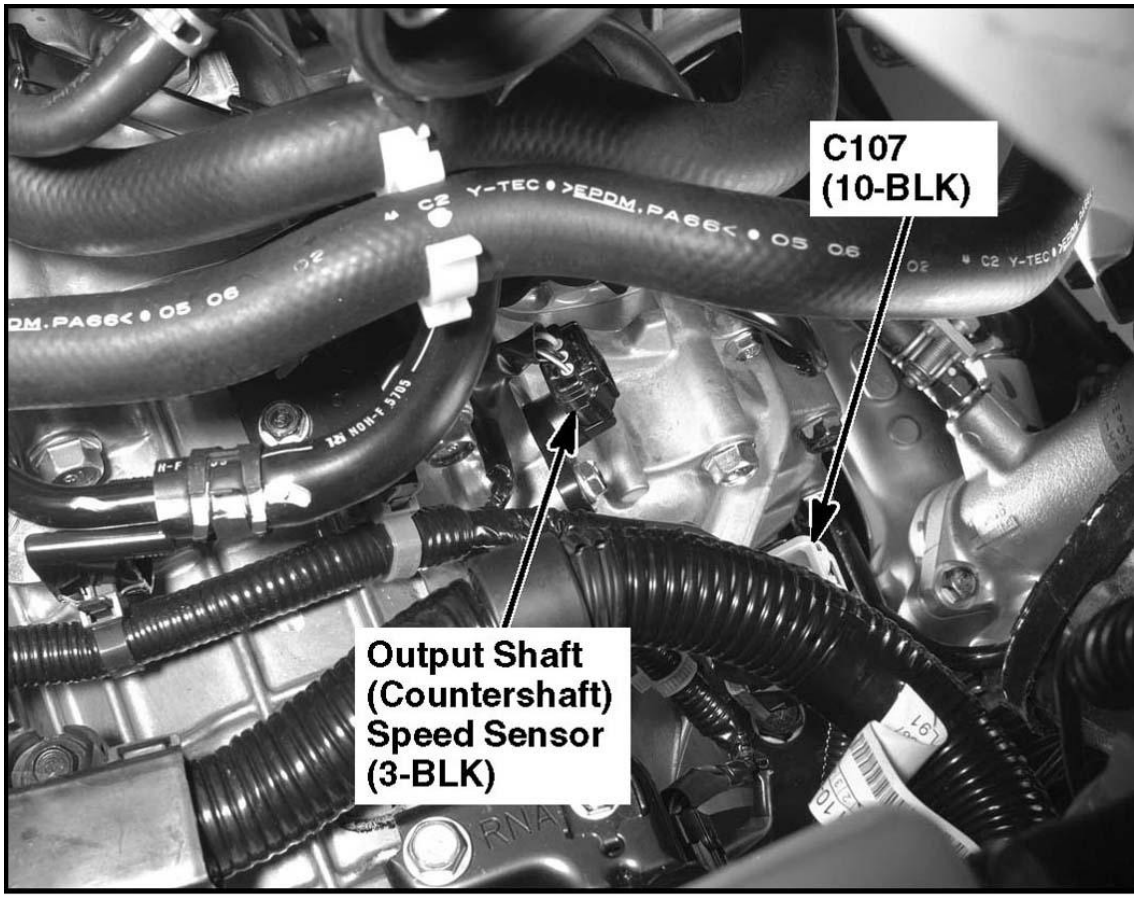
G00447699

Fig. 36: Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



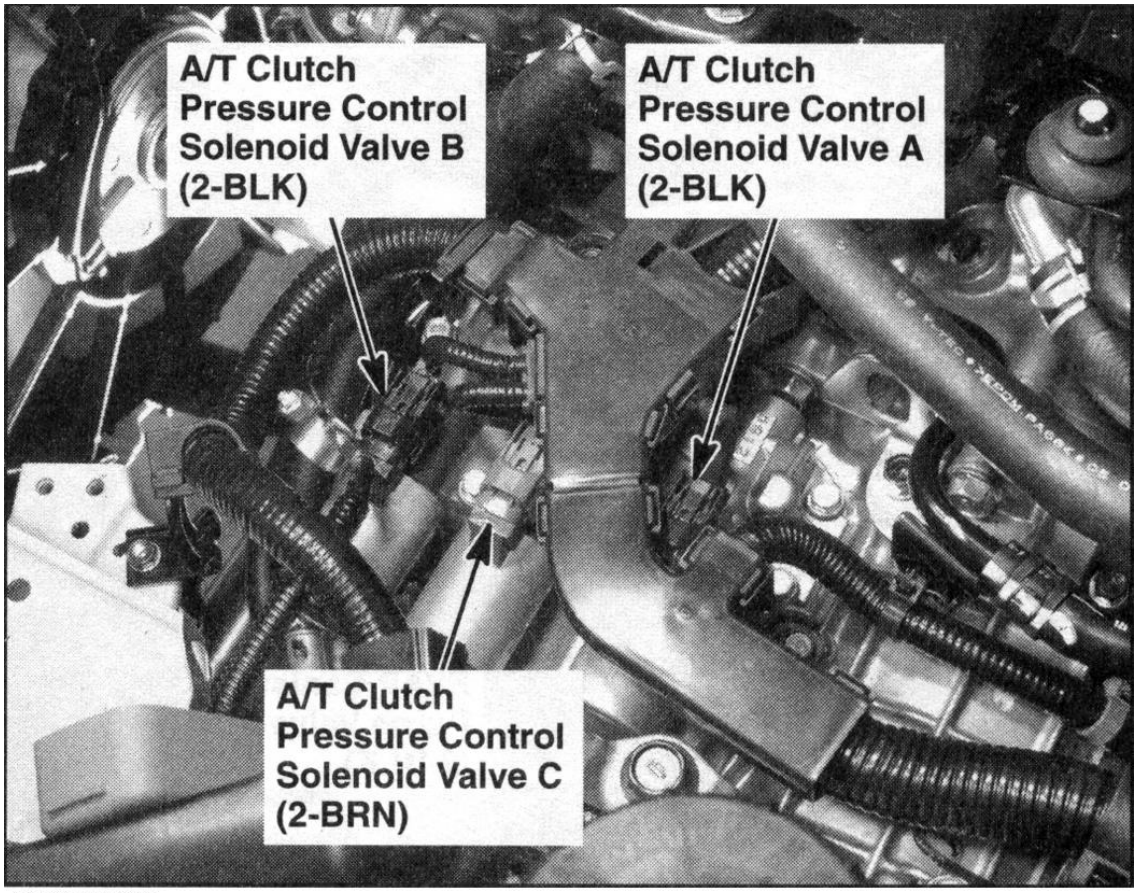
G00434374

Fig. 37: Transmission Housing (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



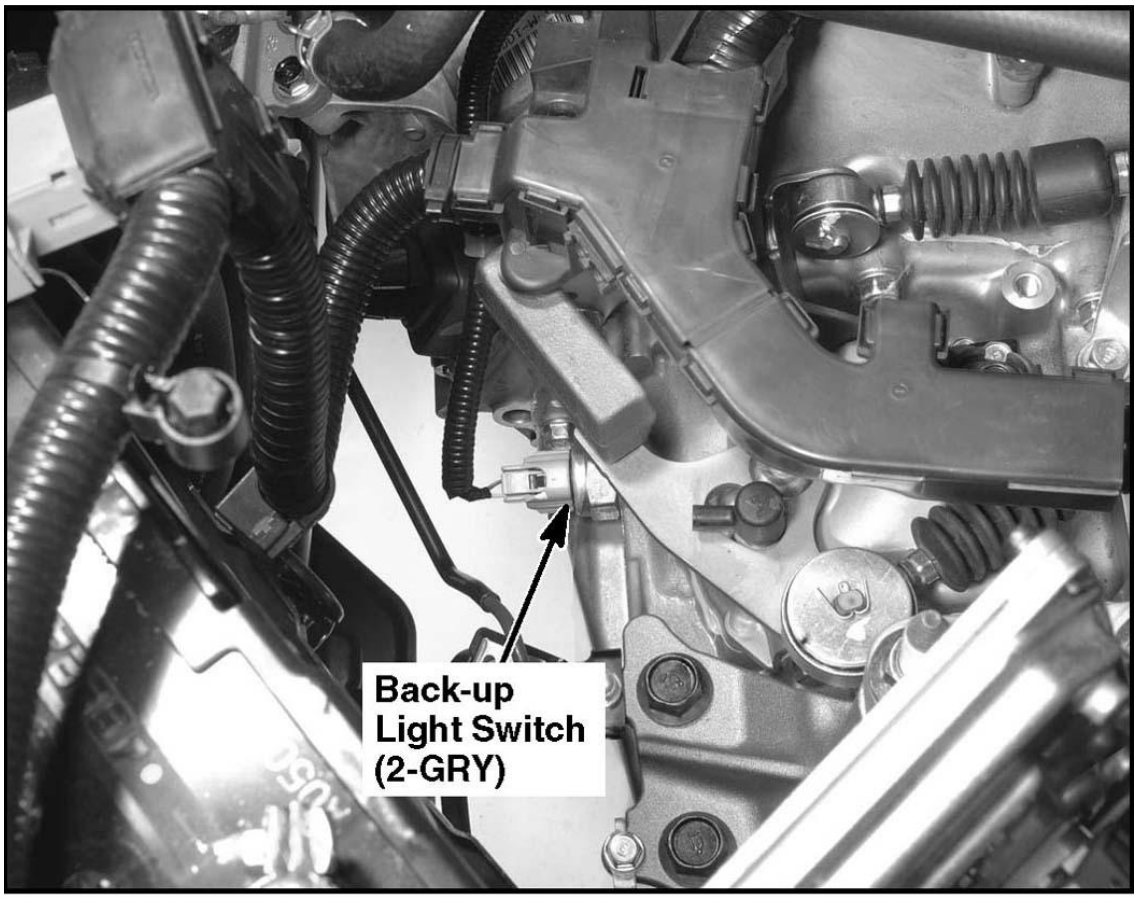
G00434375

Fig. 38: Transmission Housing (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



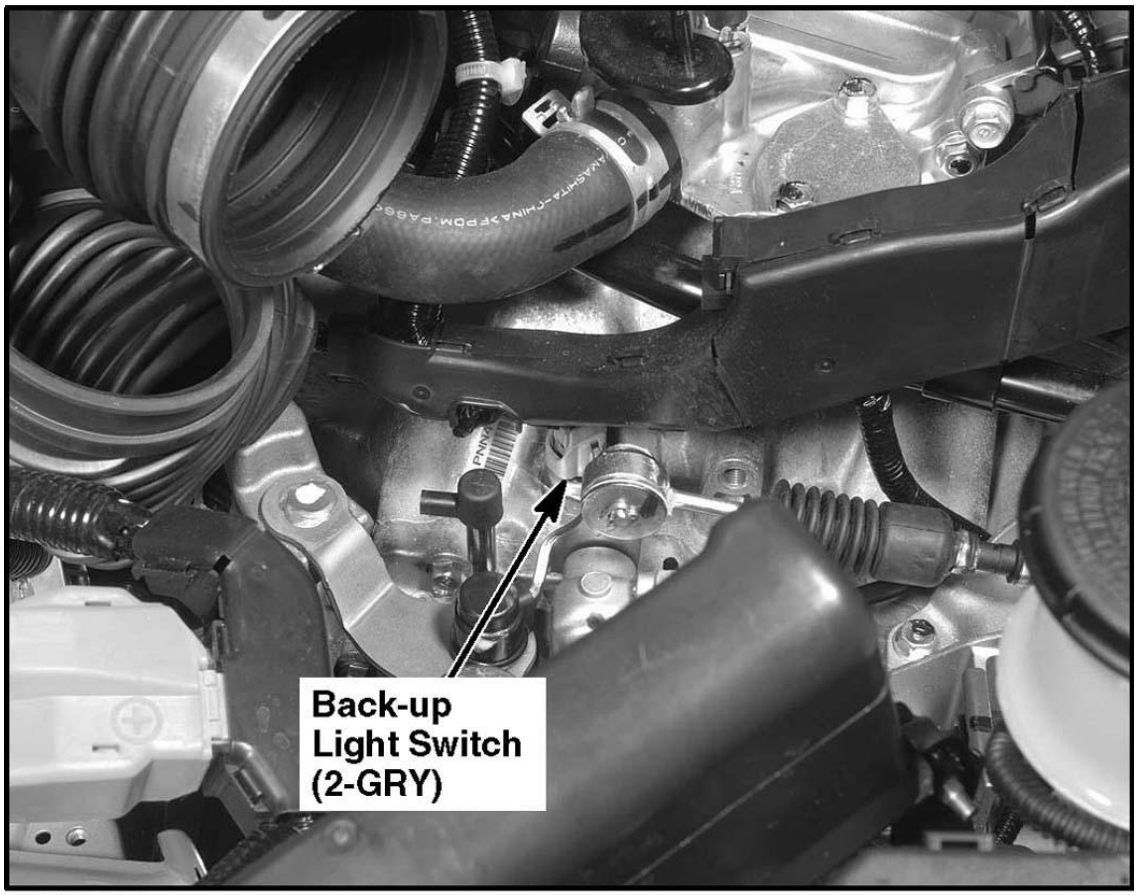
G00447700

Fig. 39: Transmission Housing (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



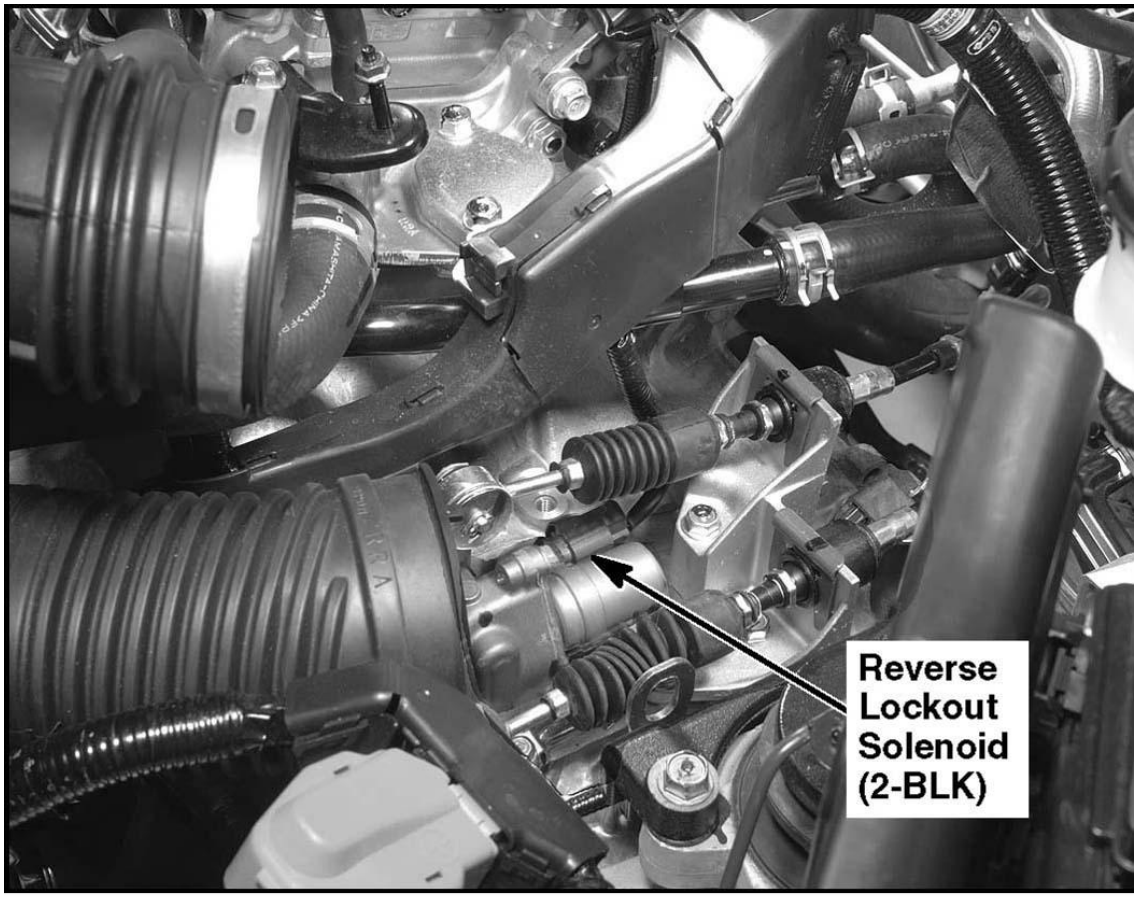
G00434377

Fig. 40: Transaxle Housing (Except Si) (M/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



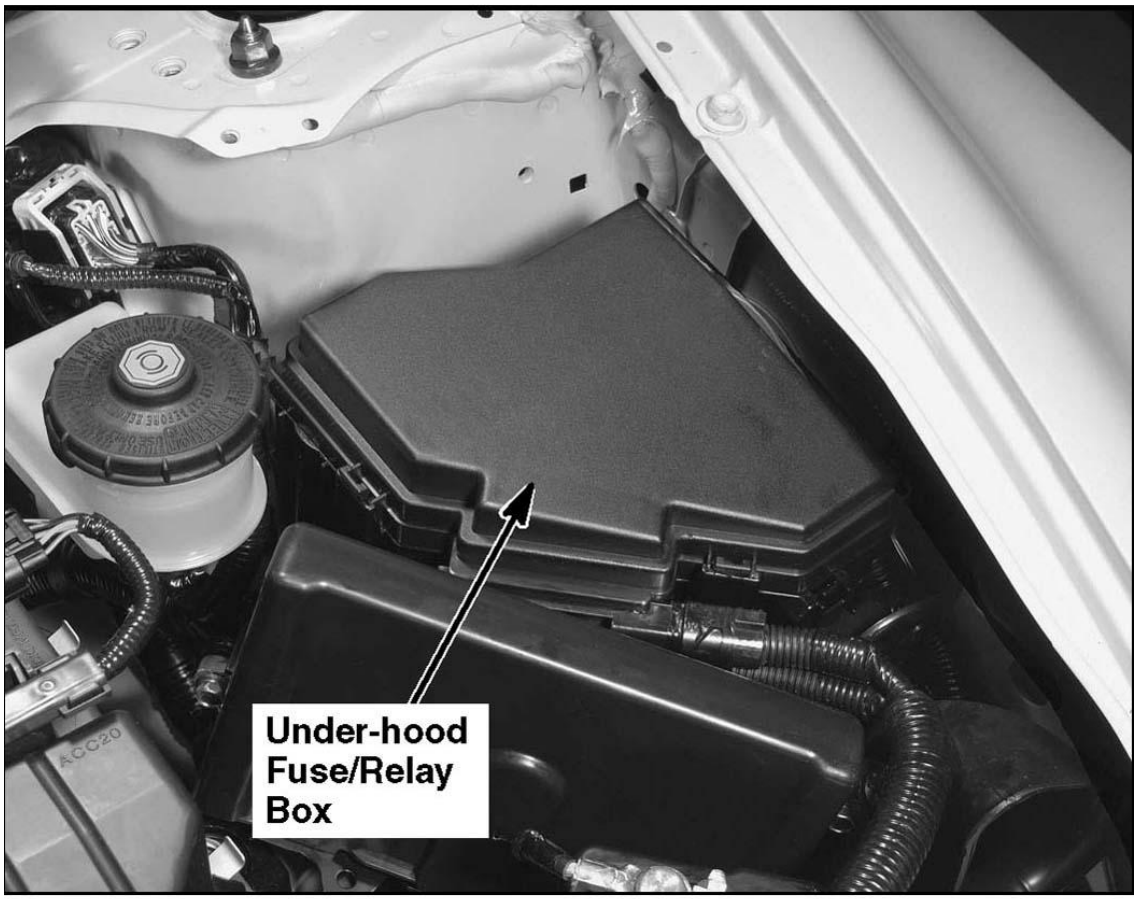
G00434378

Fig. 41: Transmission Housing (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



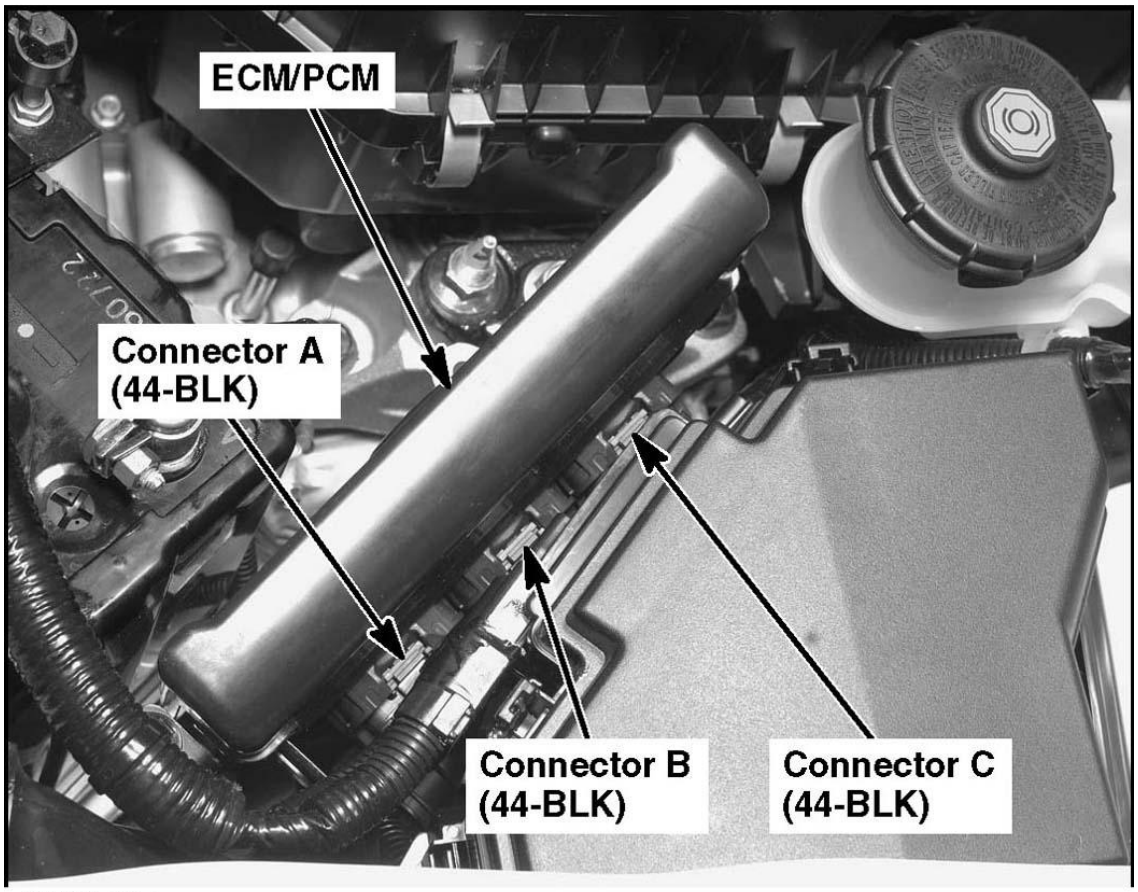
G00434379

Fig. 42: Transmission Housing (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



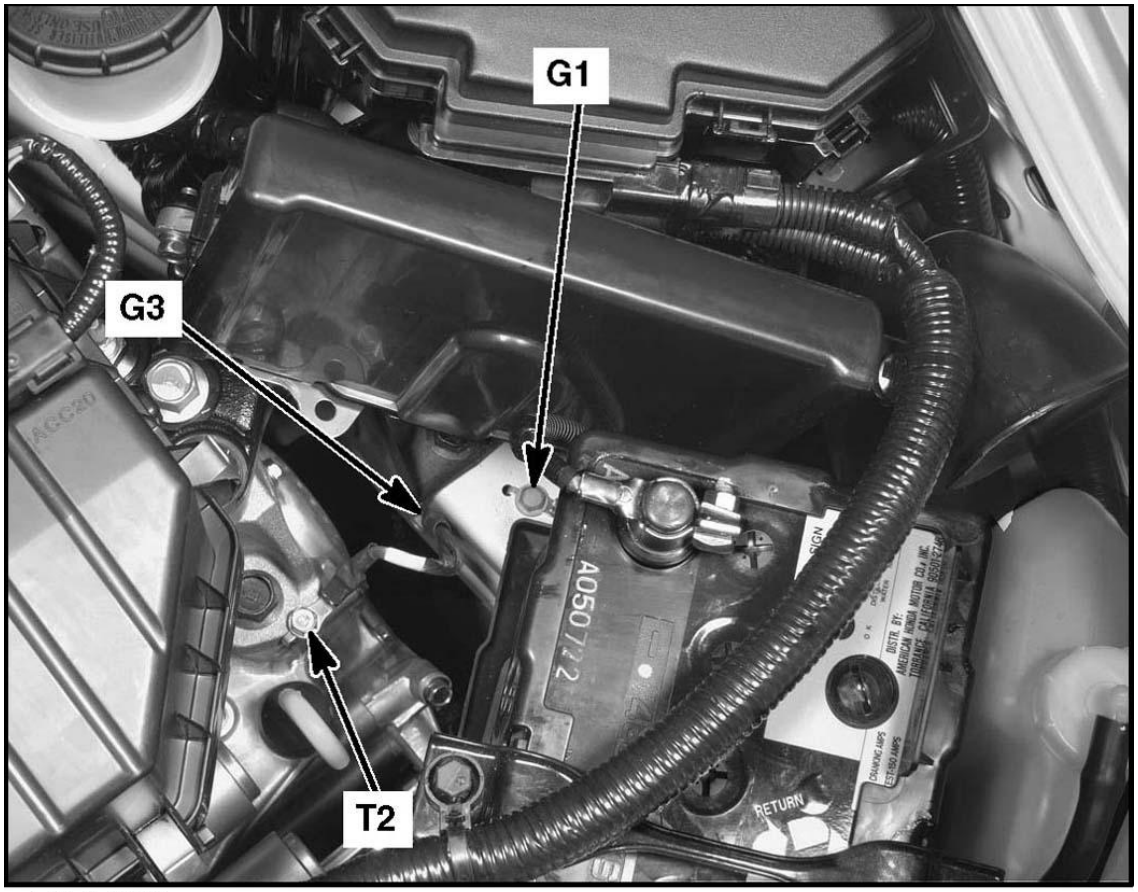
G00434380

Fig. 43: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



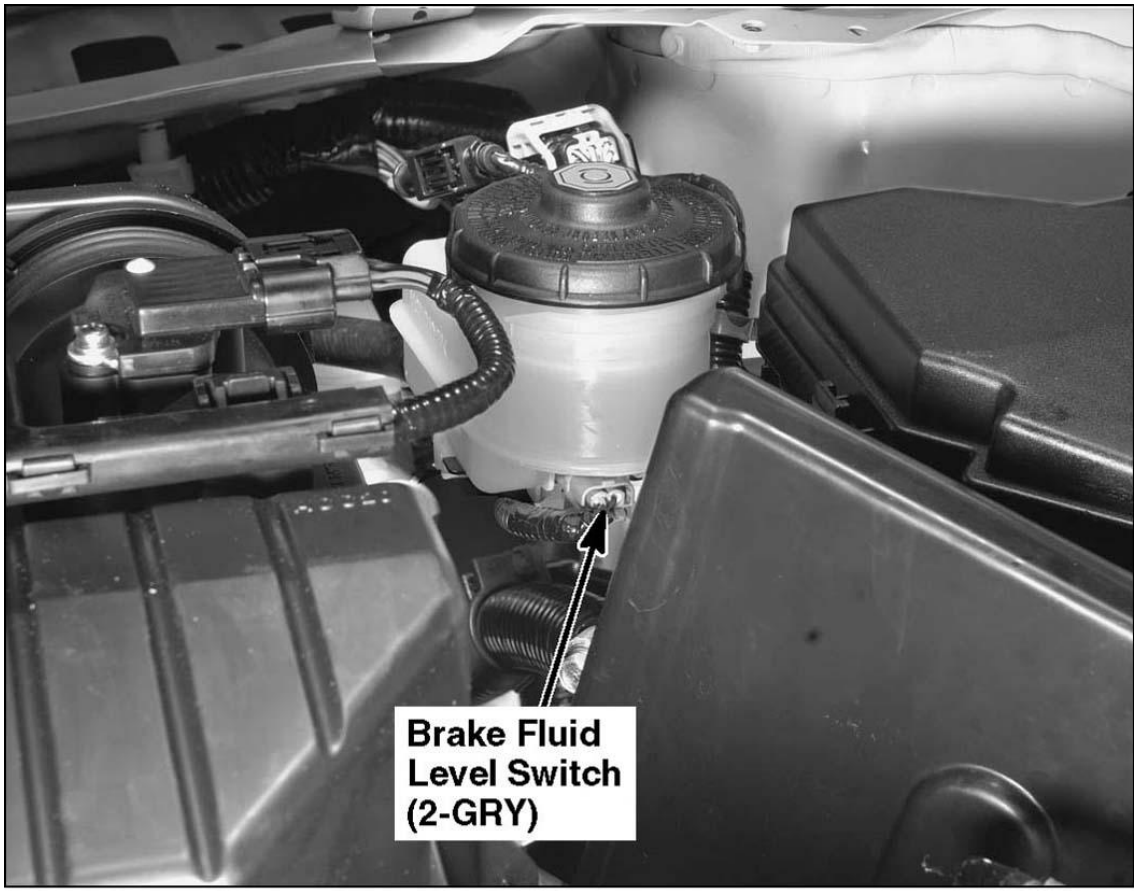
G00434381

Fig. 44: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



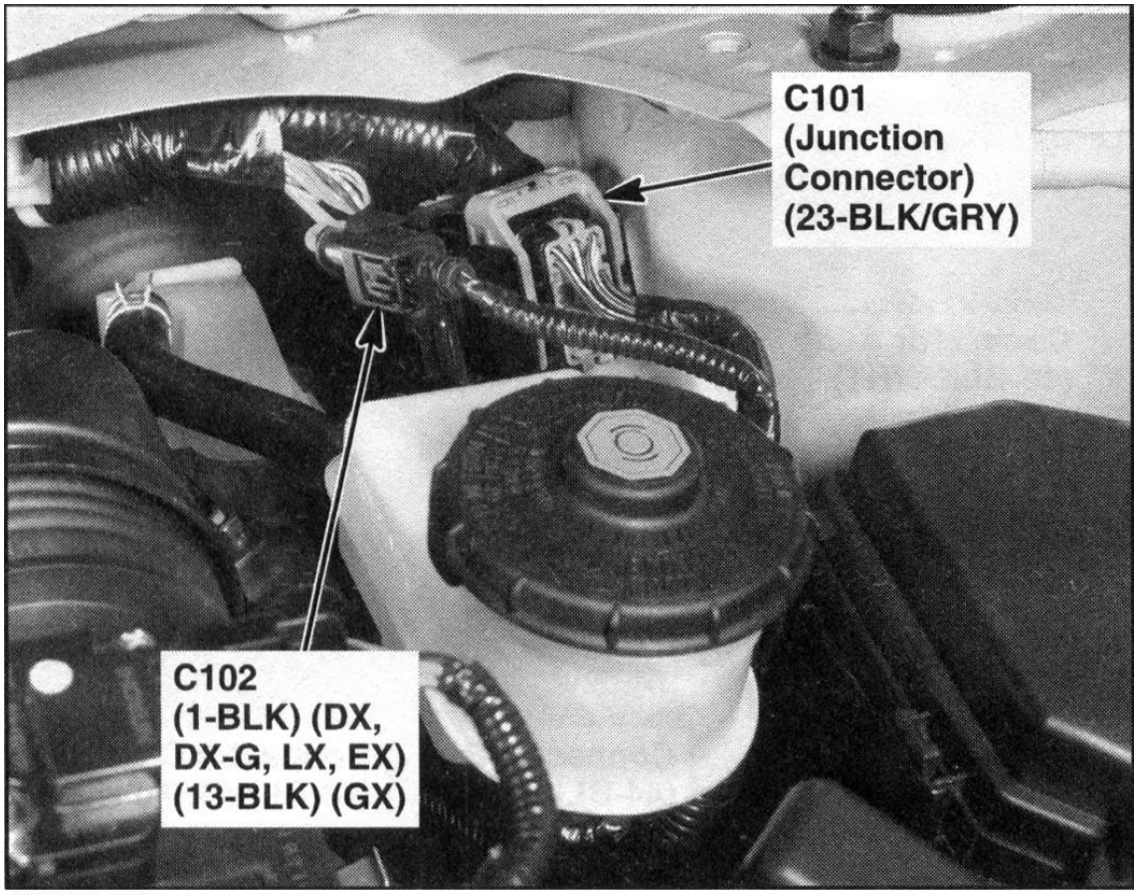
G00434382

Fig. 45: Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



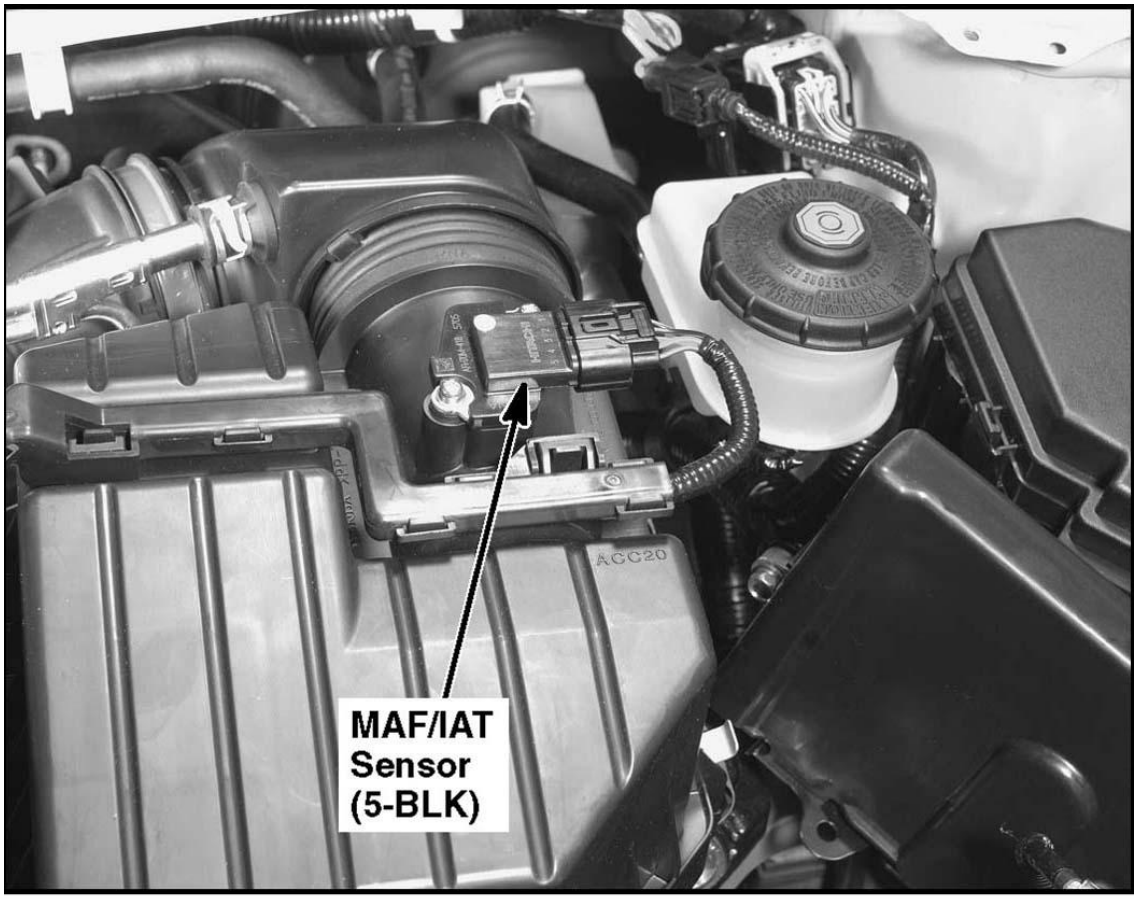
G00434383

Fig. 46: Left Rear Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



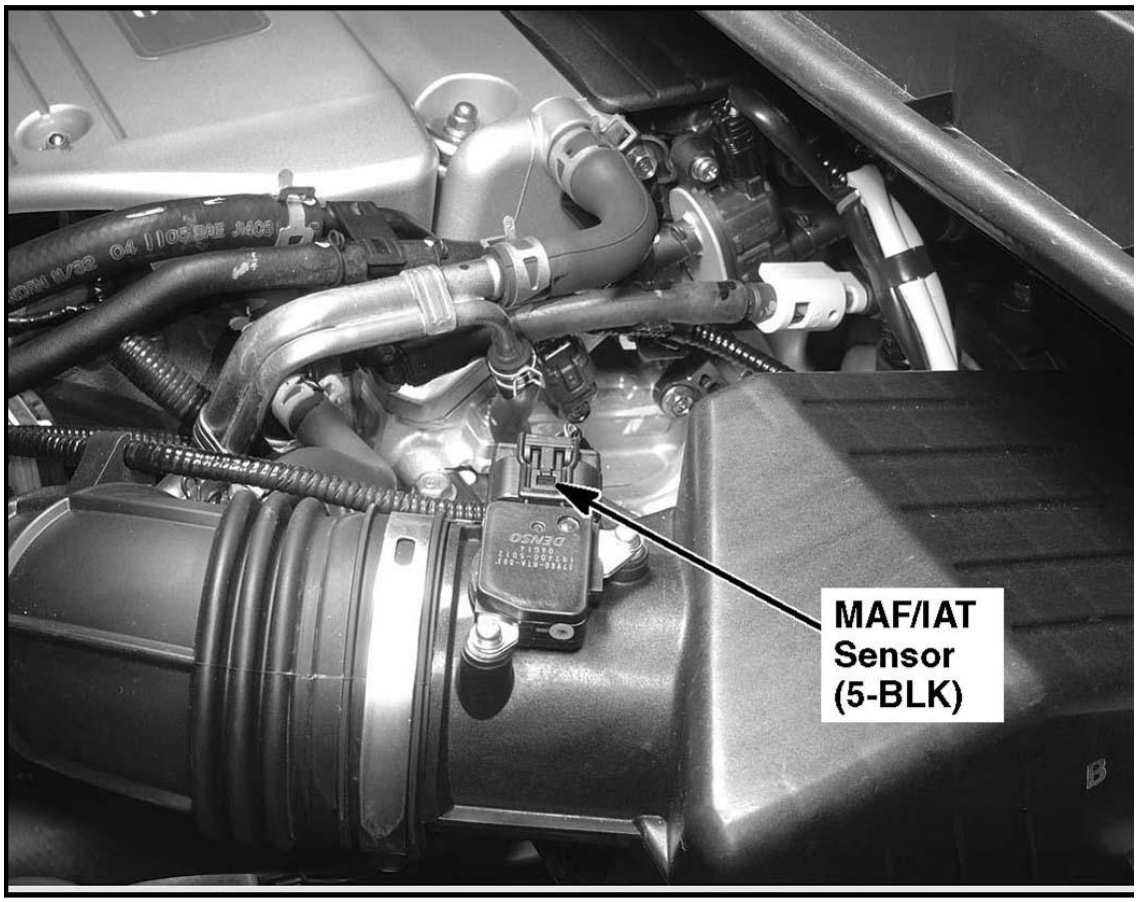
G00447701

Fig. 47: Left Rear Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



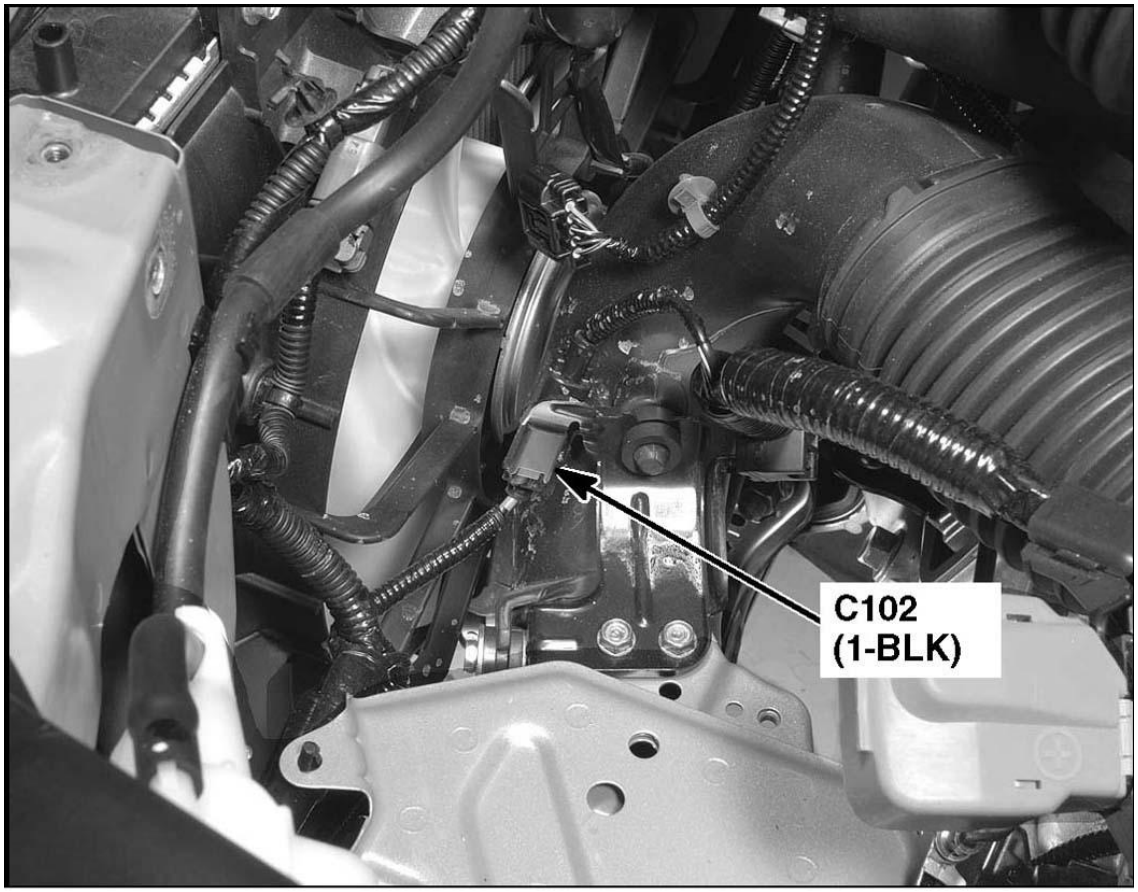
G00434385

Fig. 48: Left Rear Of Engine Compartment (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



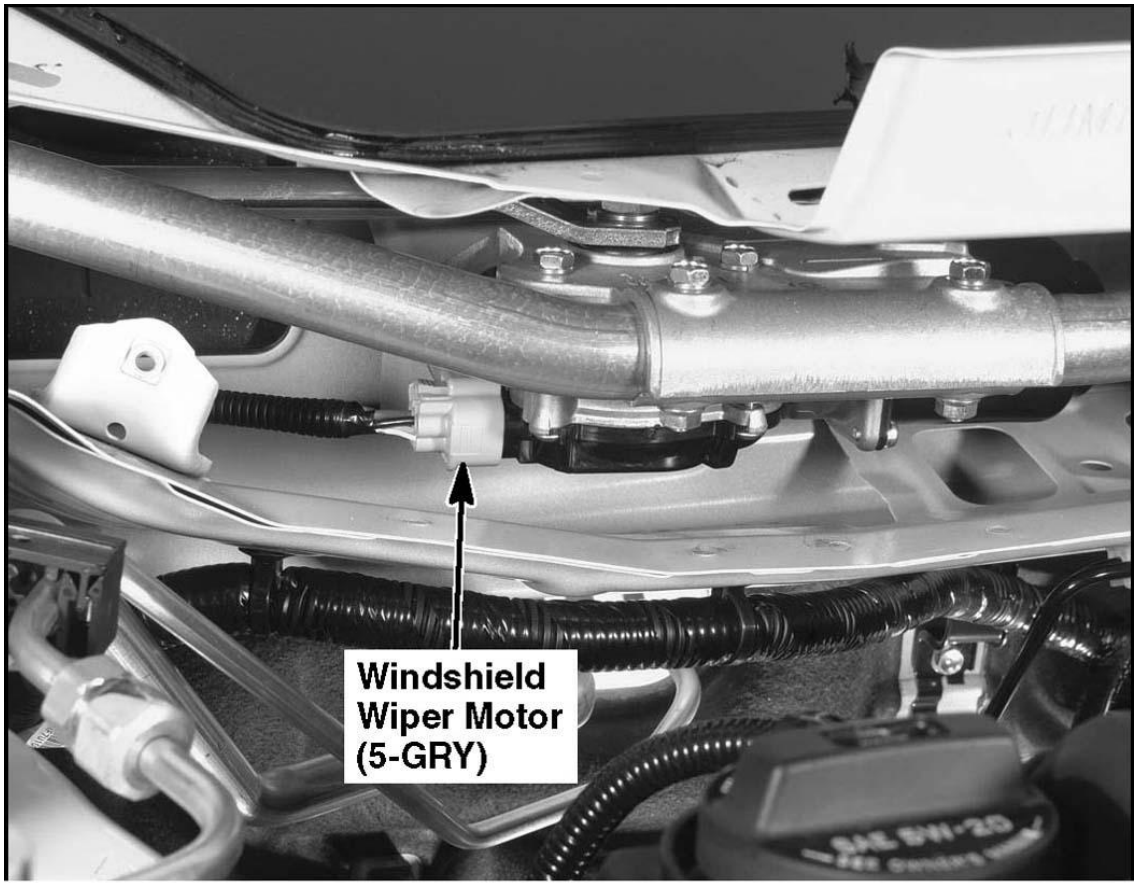
G00434386

Fig. 49: Left Side Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



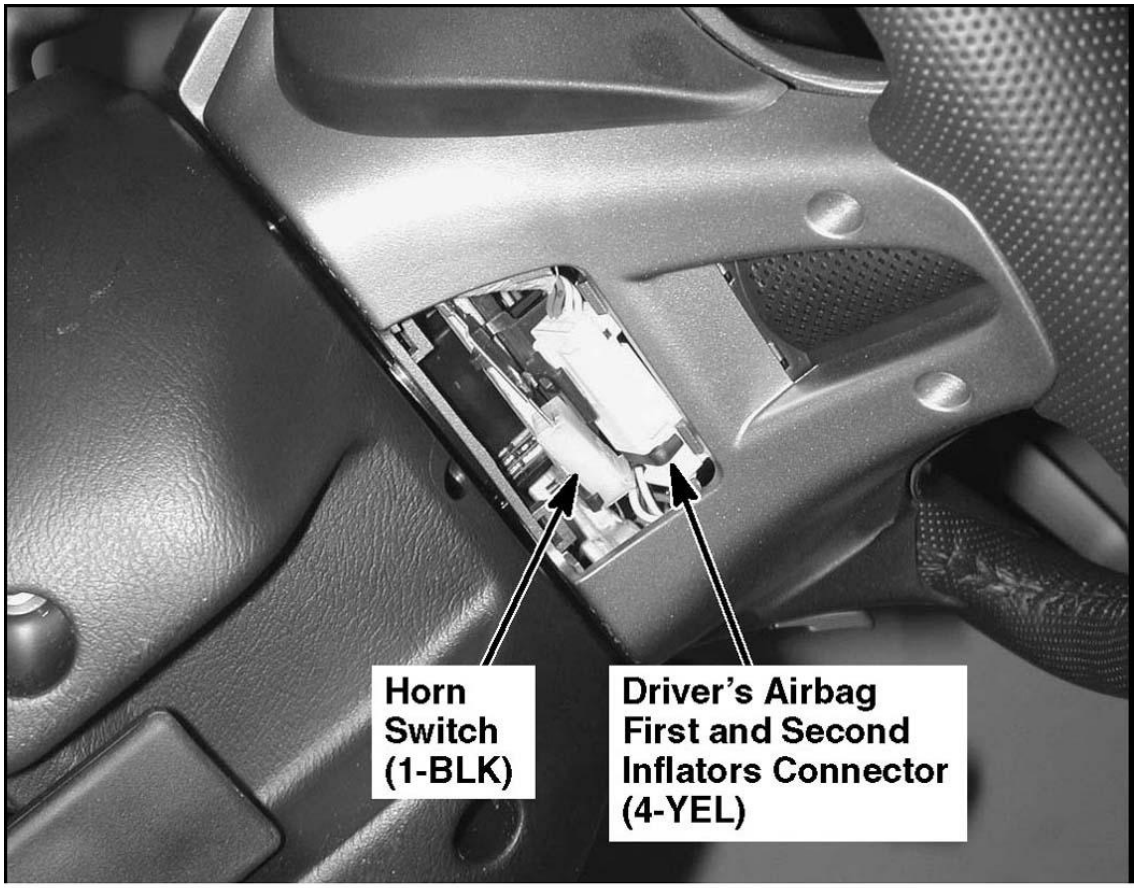
G00434387

Fig. 50: Left Front Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



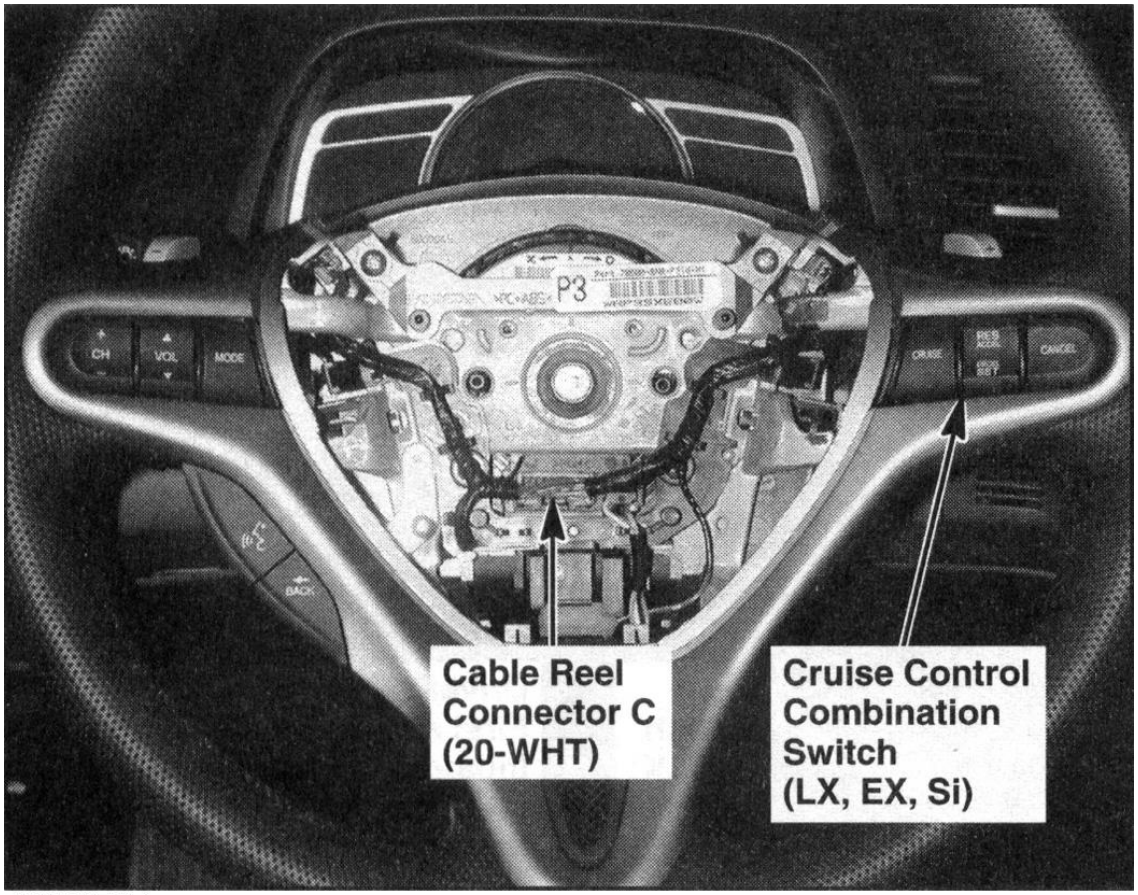
G00434388

Fig. 51: Under Right Side Of Windshield
Courtesy of AMERICAN HONDA MOTOR CO., INC.



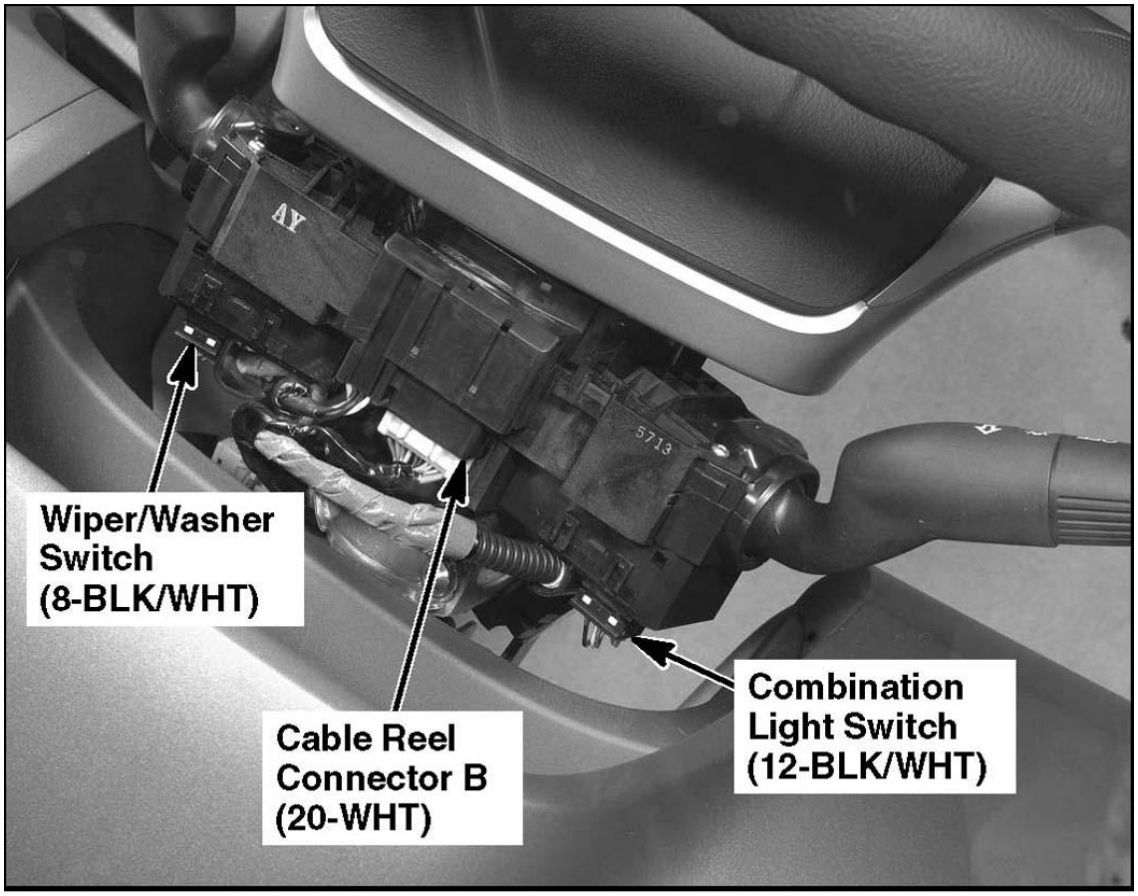
G00434389

Fig. 52: Steering Wheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.



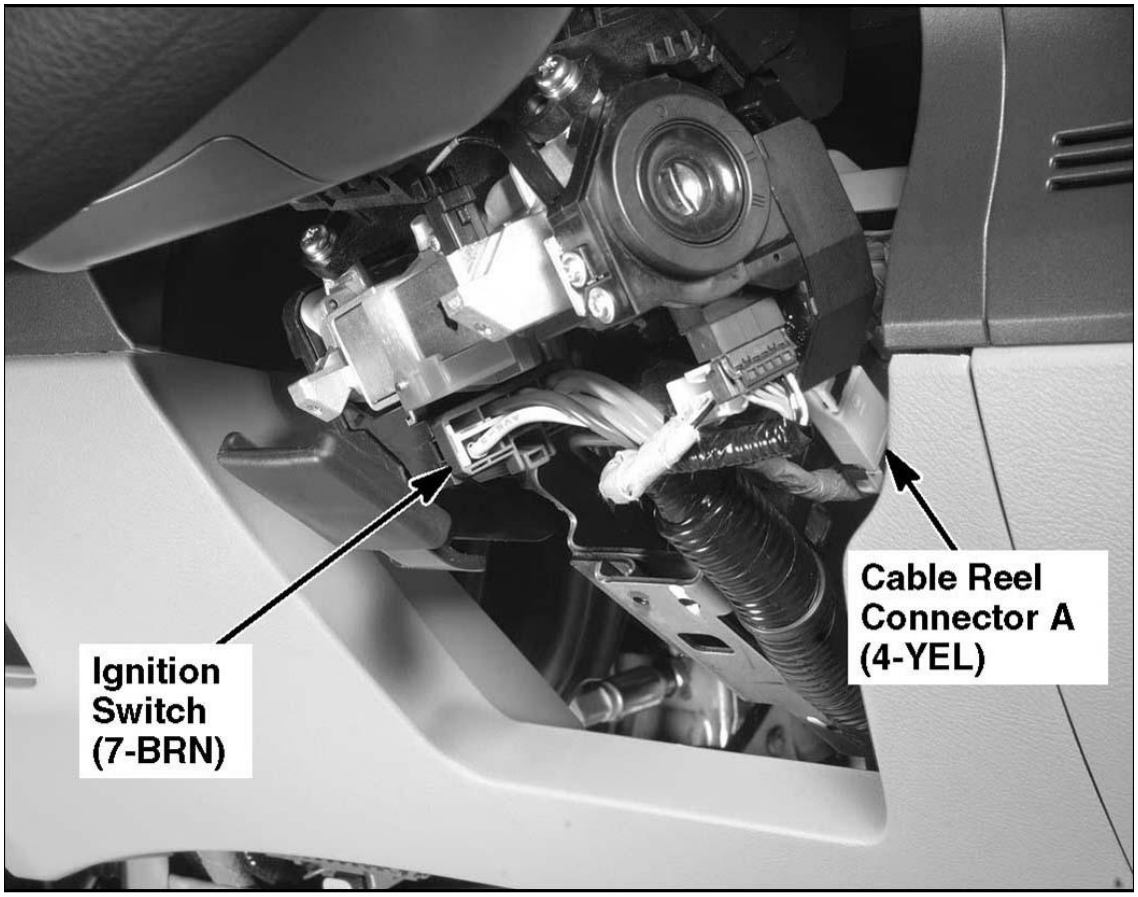
G00447702

Fig. 53: Steering Wheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.



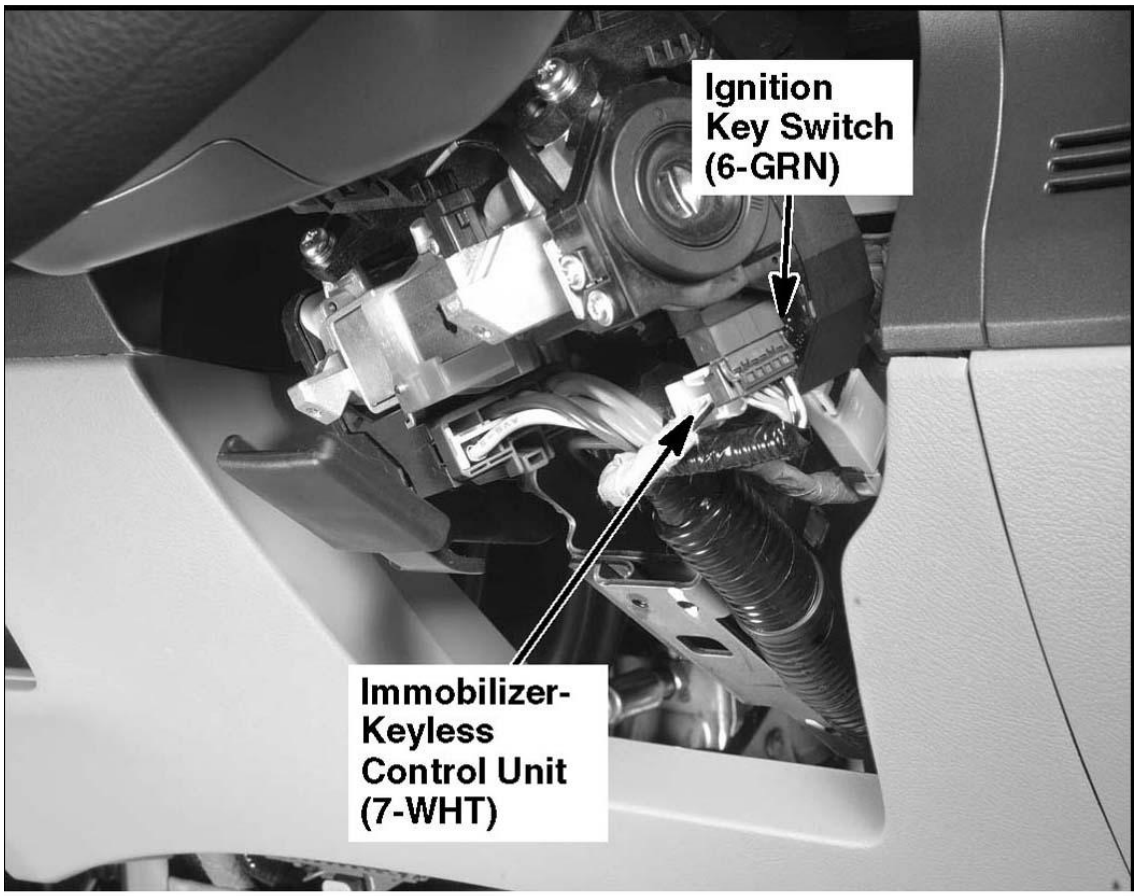
G00434391

Fig. 54: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.



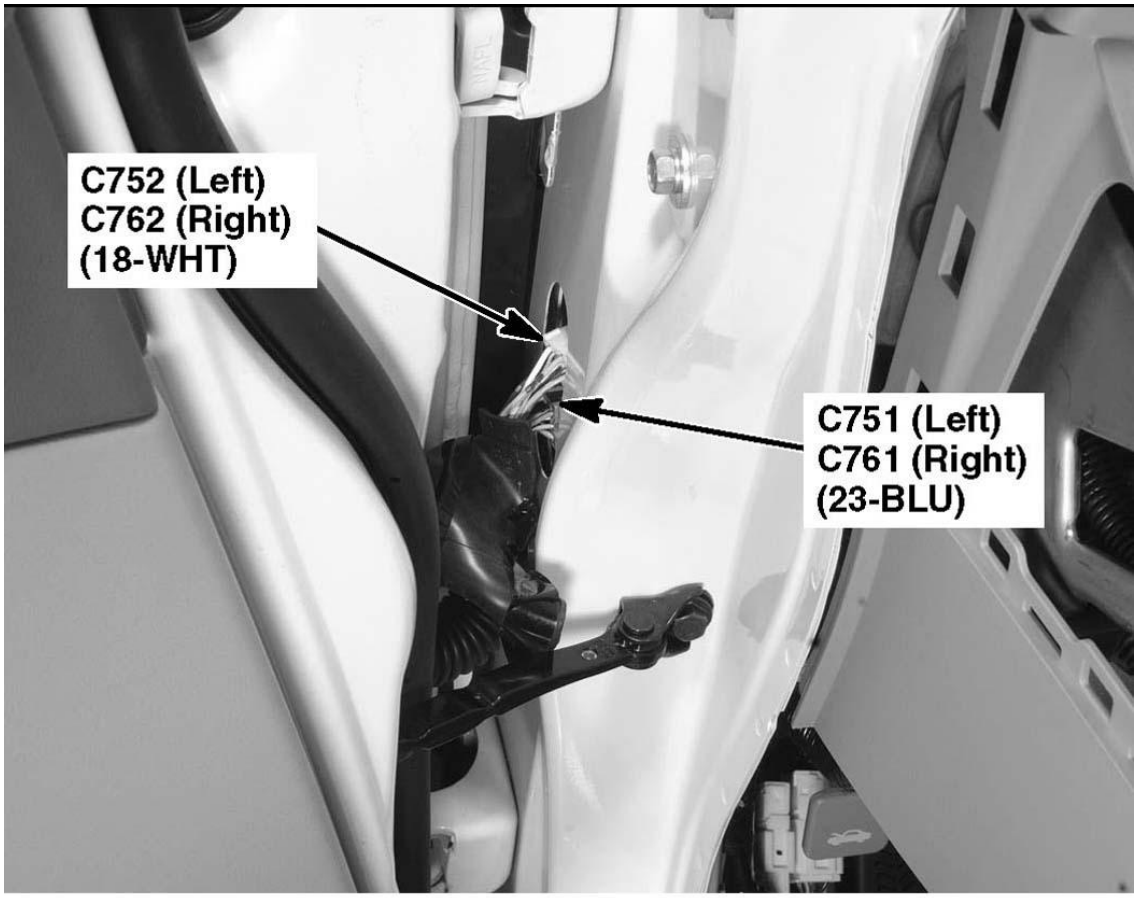
G00434392

Fig. 55: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.



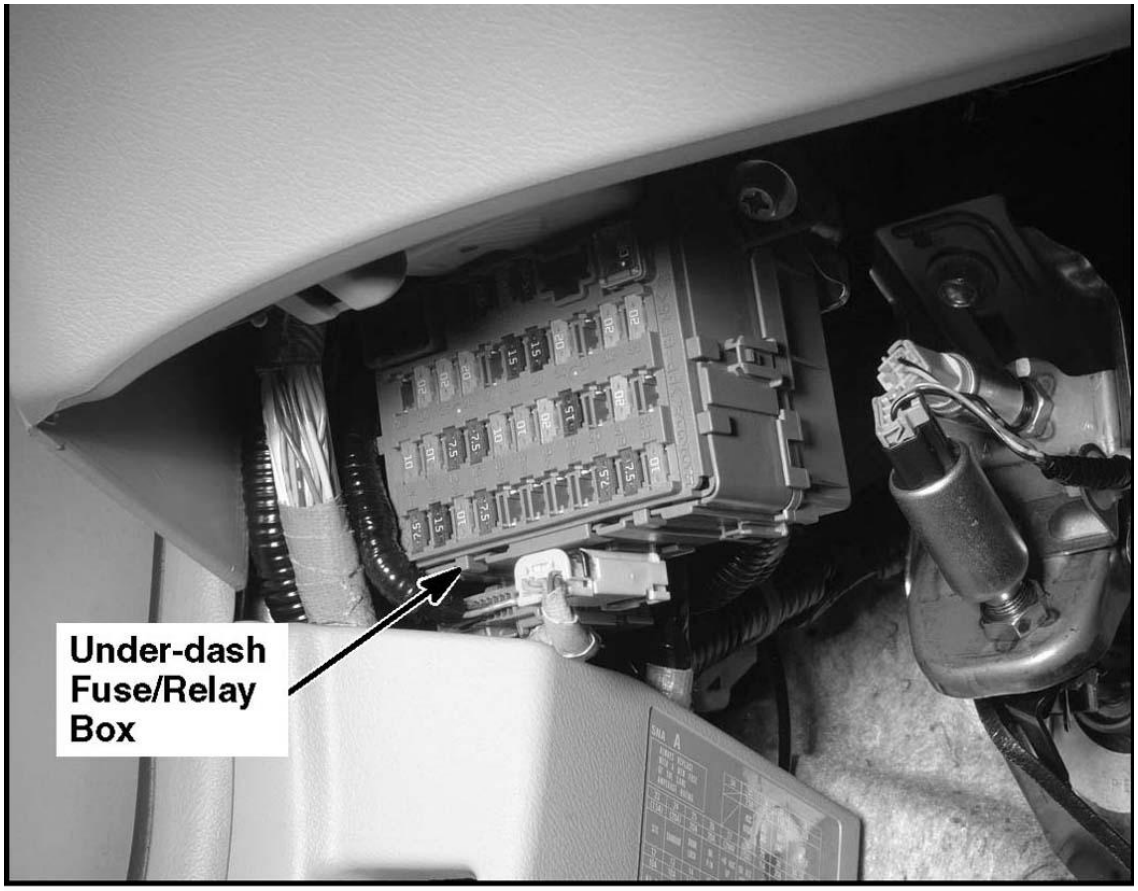
G00434393

Fig. 56: Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.



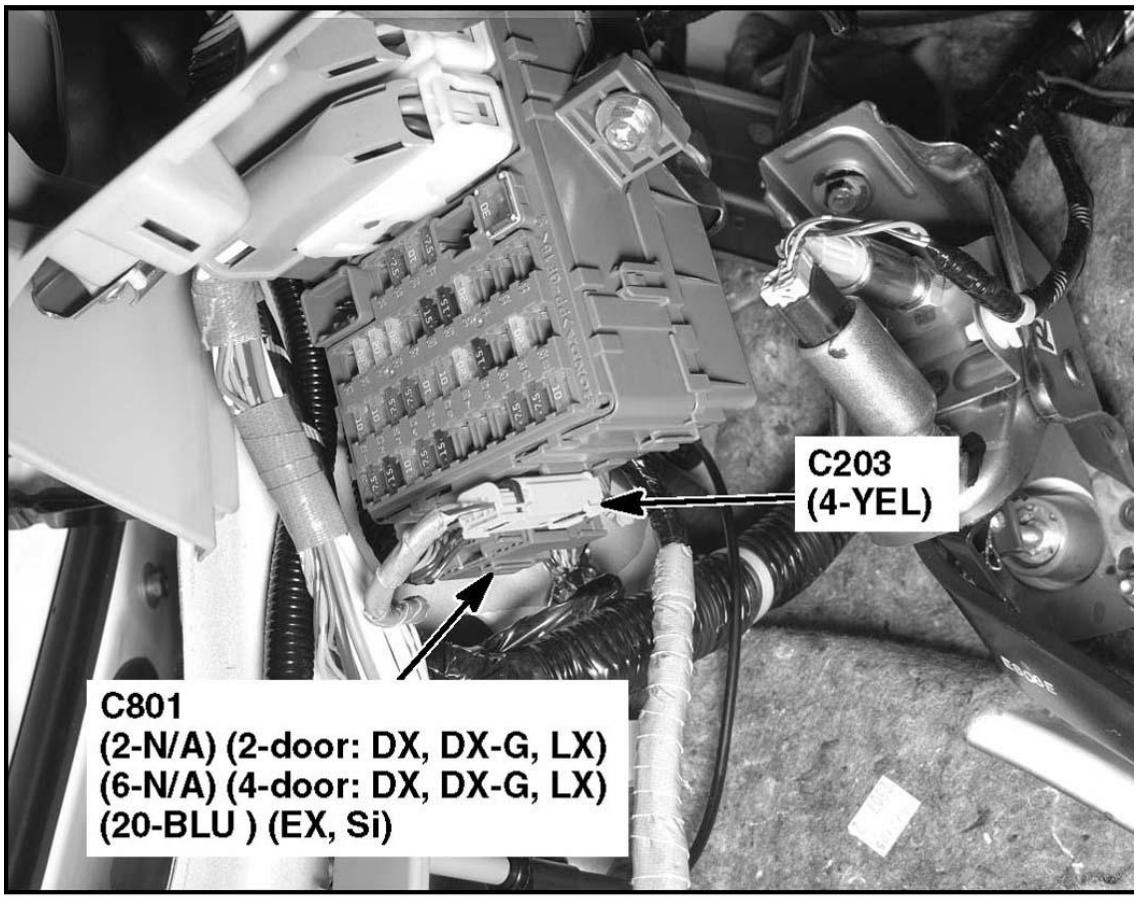
G00434394

Fig. 57: Under Left End Of Dash (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



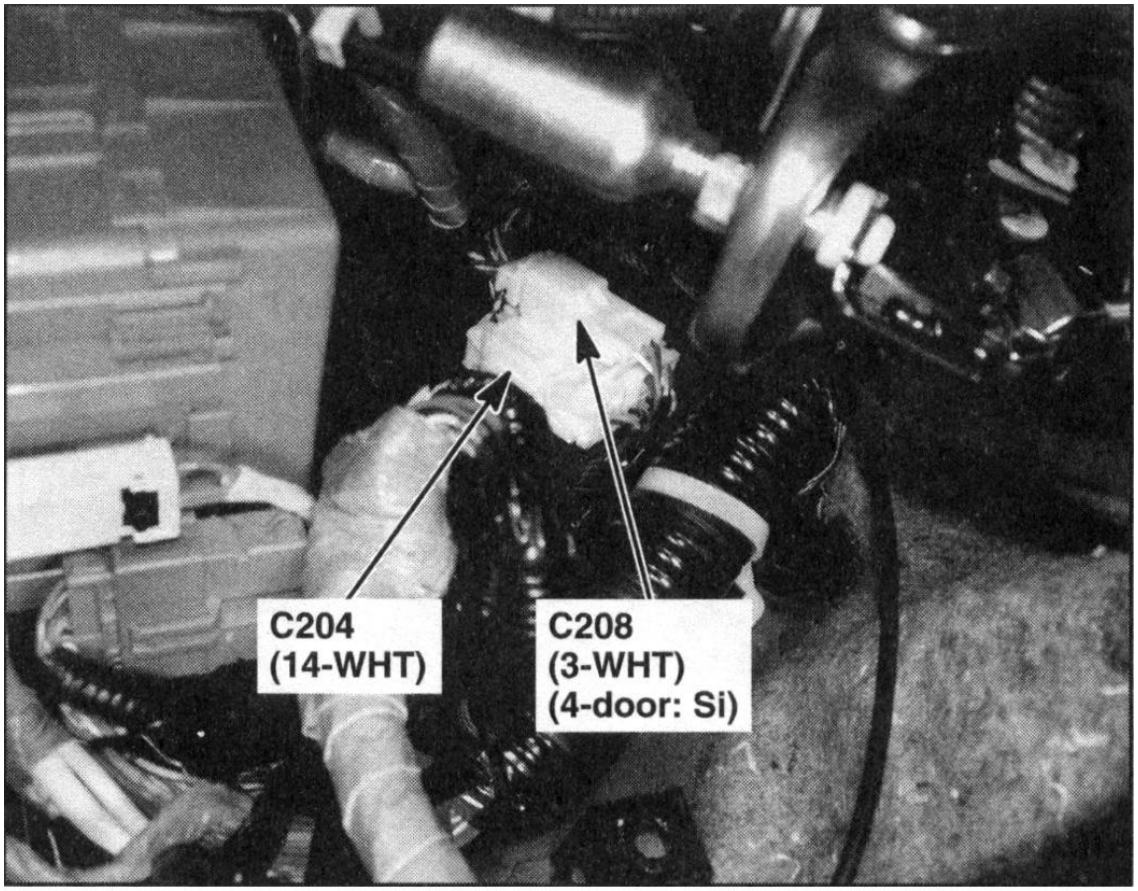
G00434395

Fig. 58: Under Left End Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



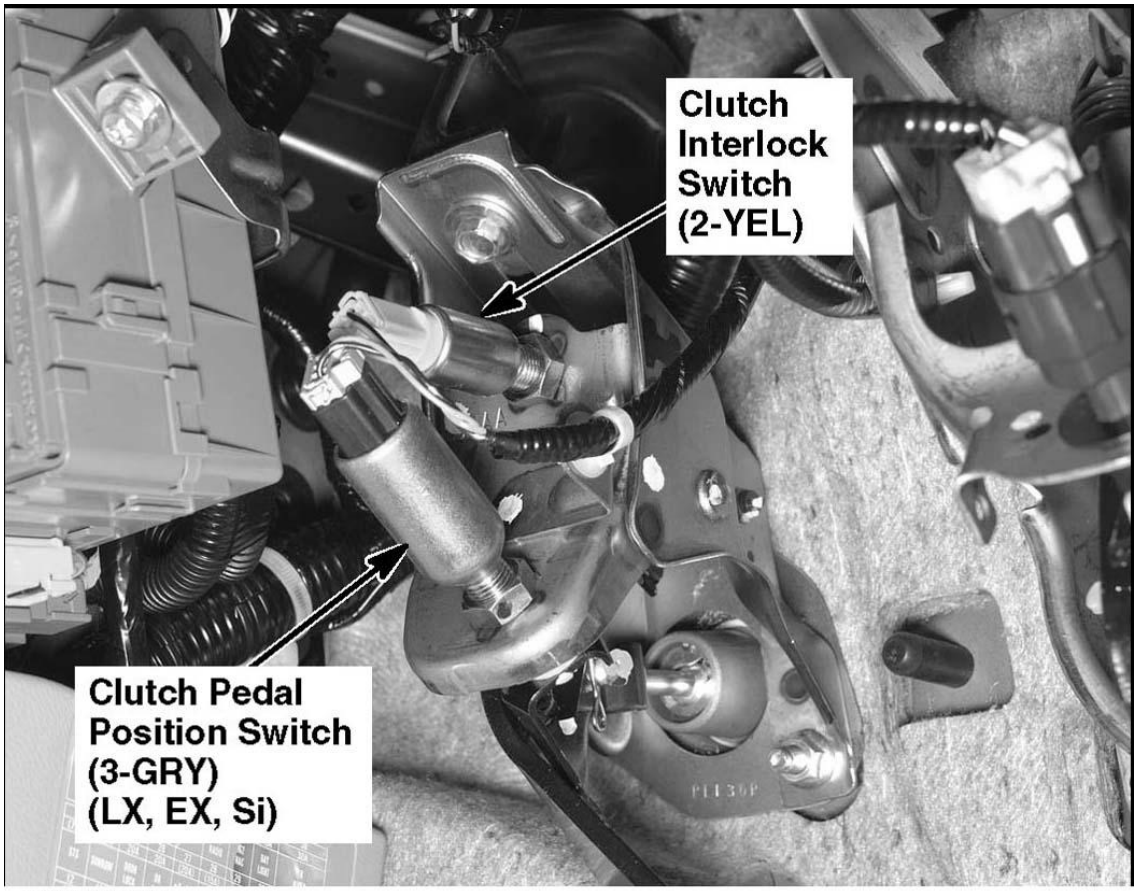
G00434396

Fig. 59: Under Left End Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



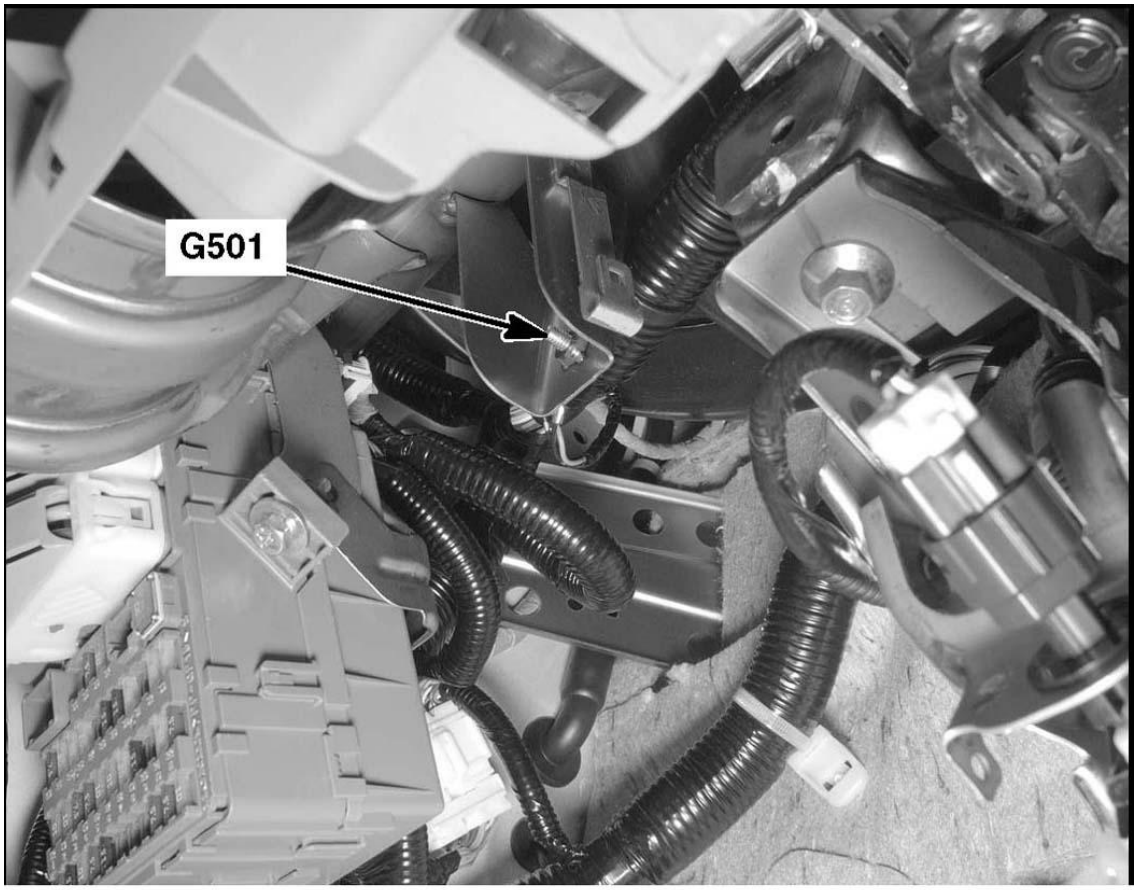
G00447706

Fig. 60: Behind Left Kick Panel (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



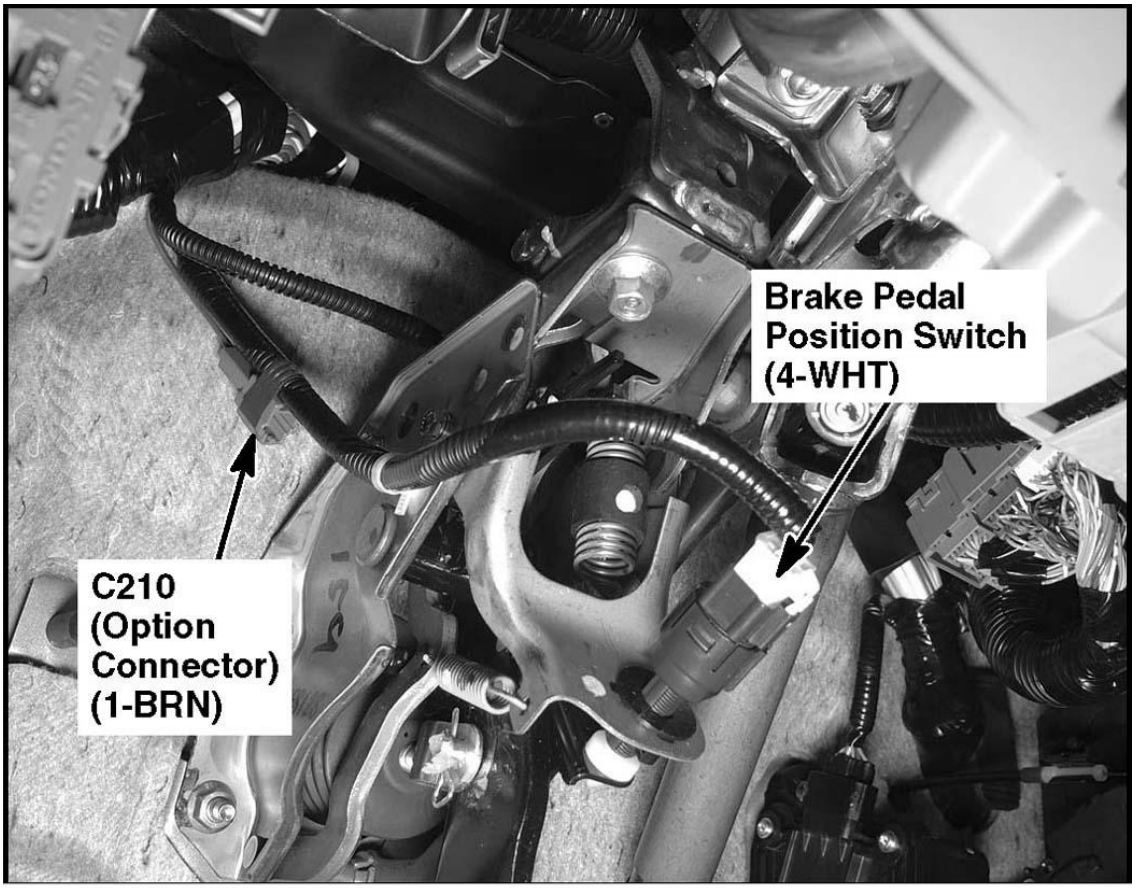
G00434398

Fig. 61: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



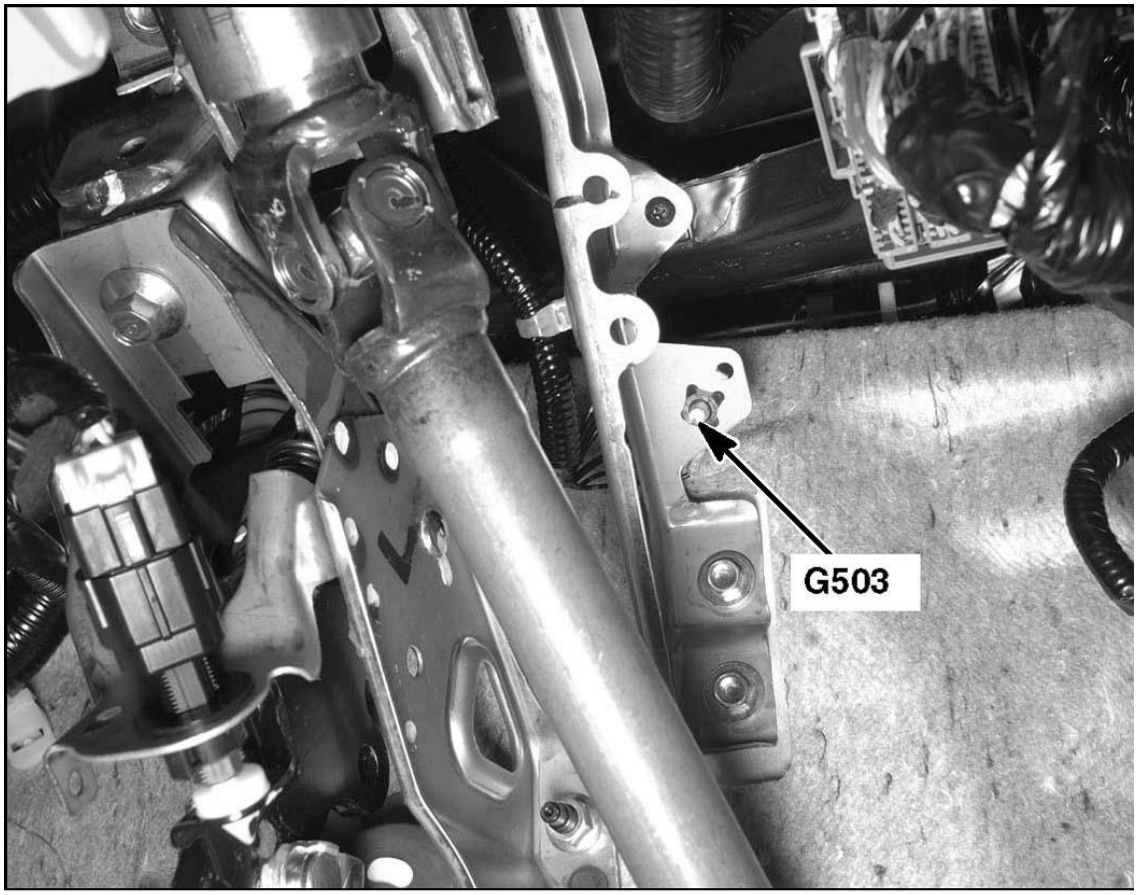
G00434399

Fig. 62: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



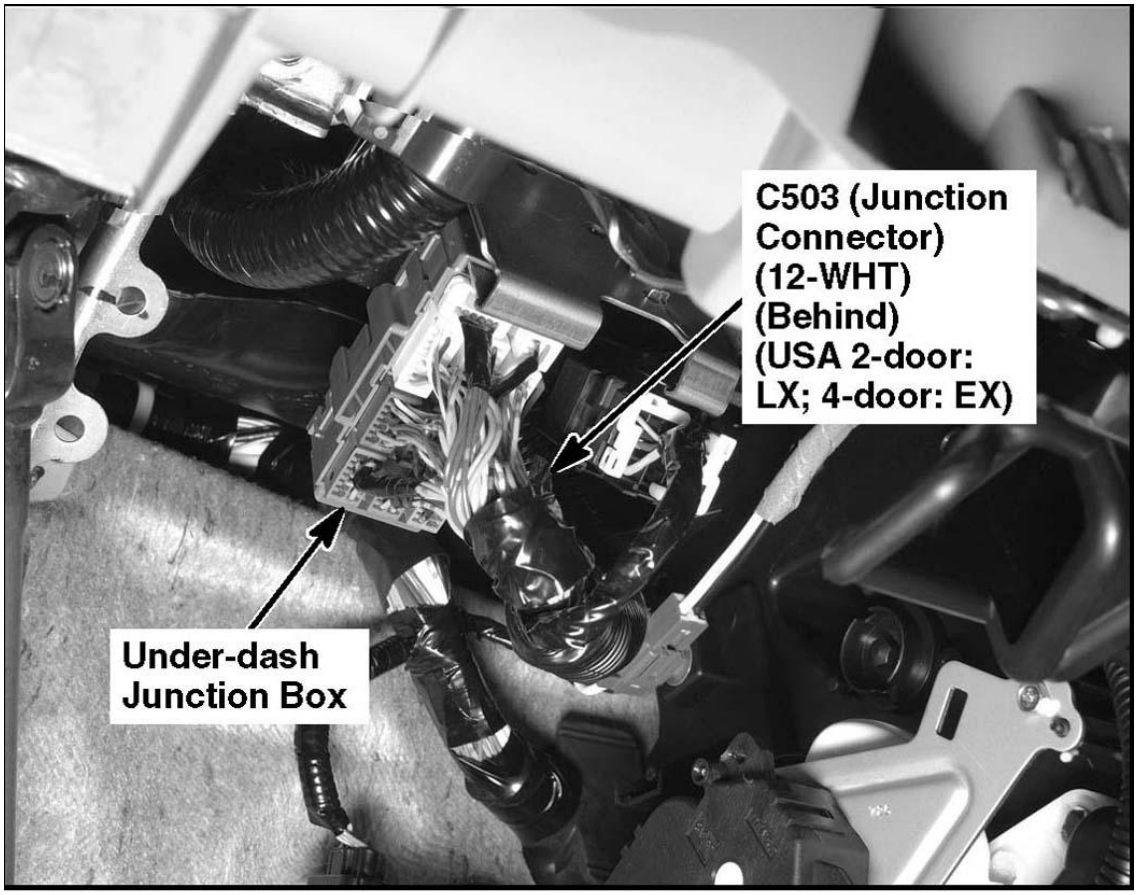
G00434400

Fig. 63: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



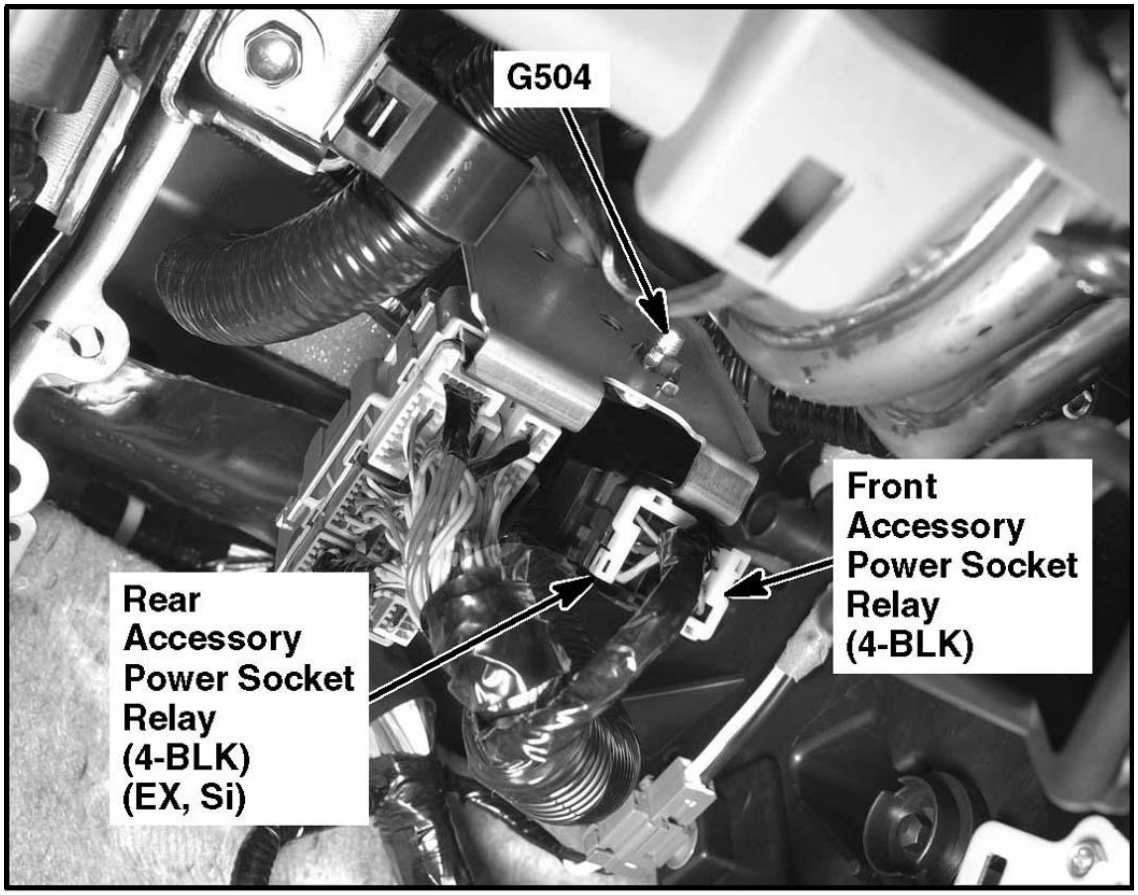
G00434401

Fig. 64: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



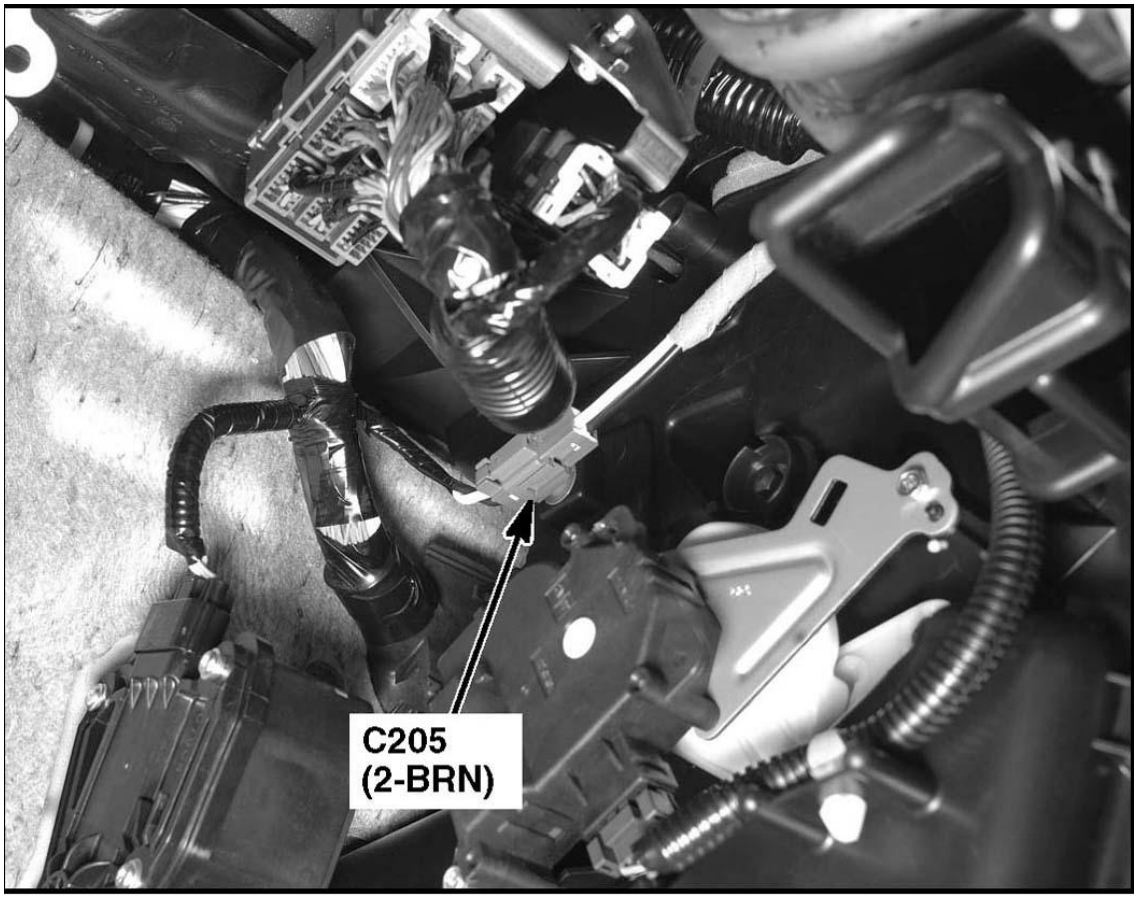
G00434402

Fig. 65: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



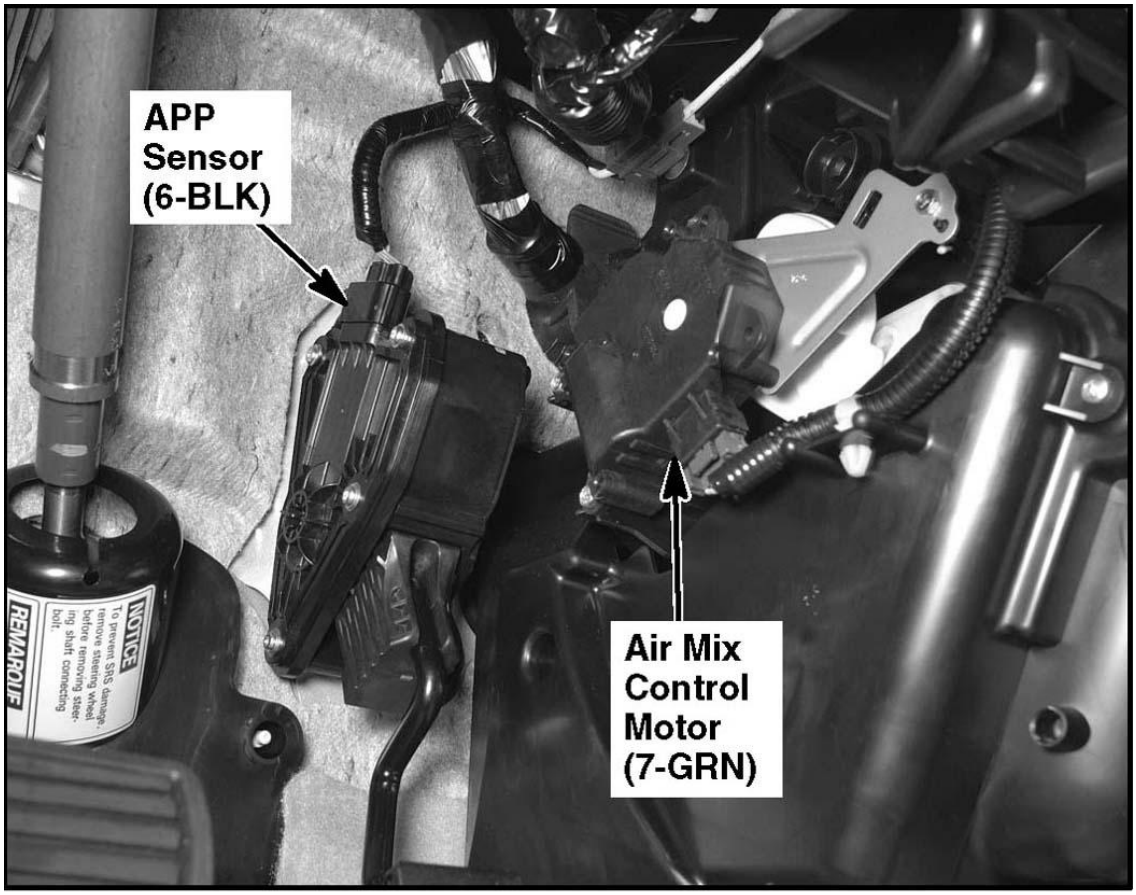
G00434403

Fig. 66: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434404

Fig. 67: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

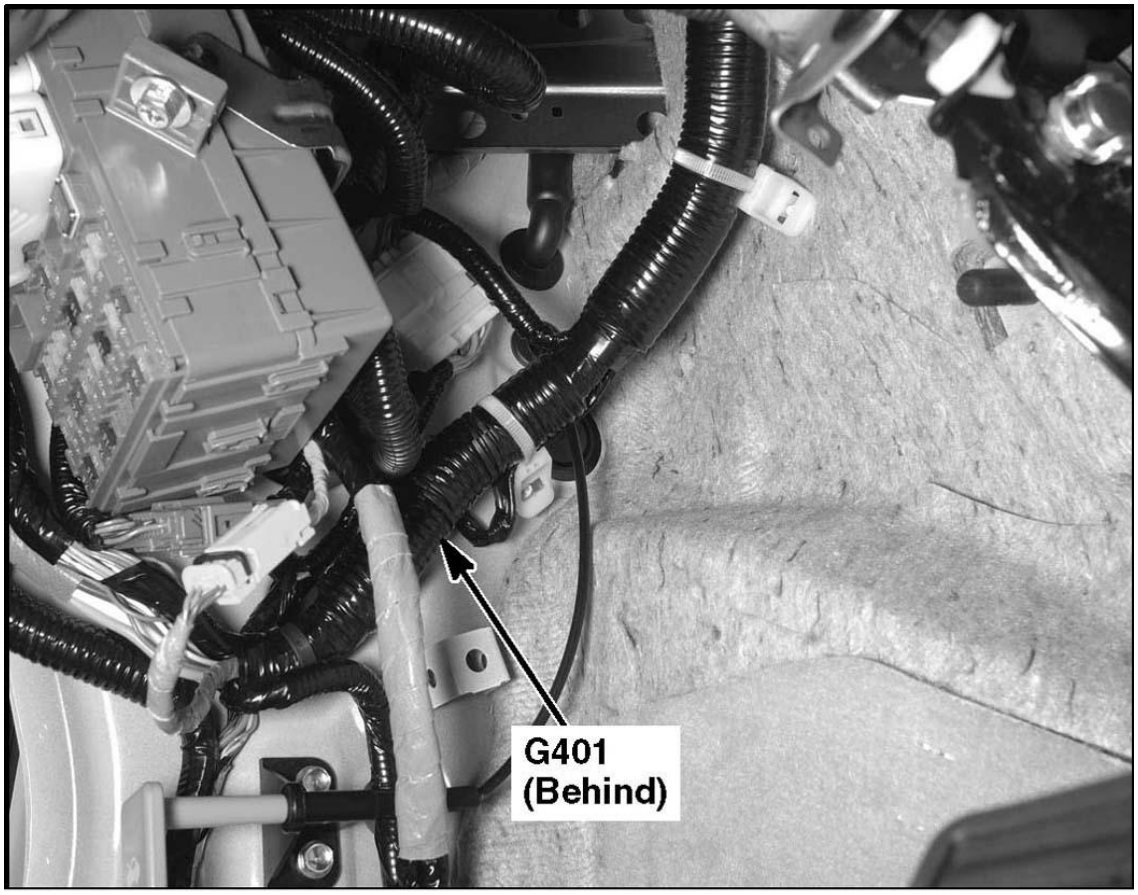


G00434405

Fig. 68: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.

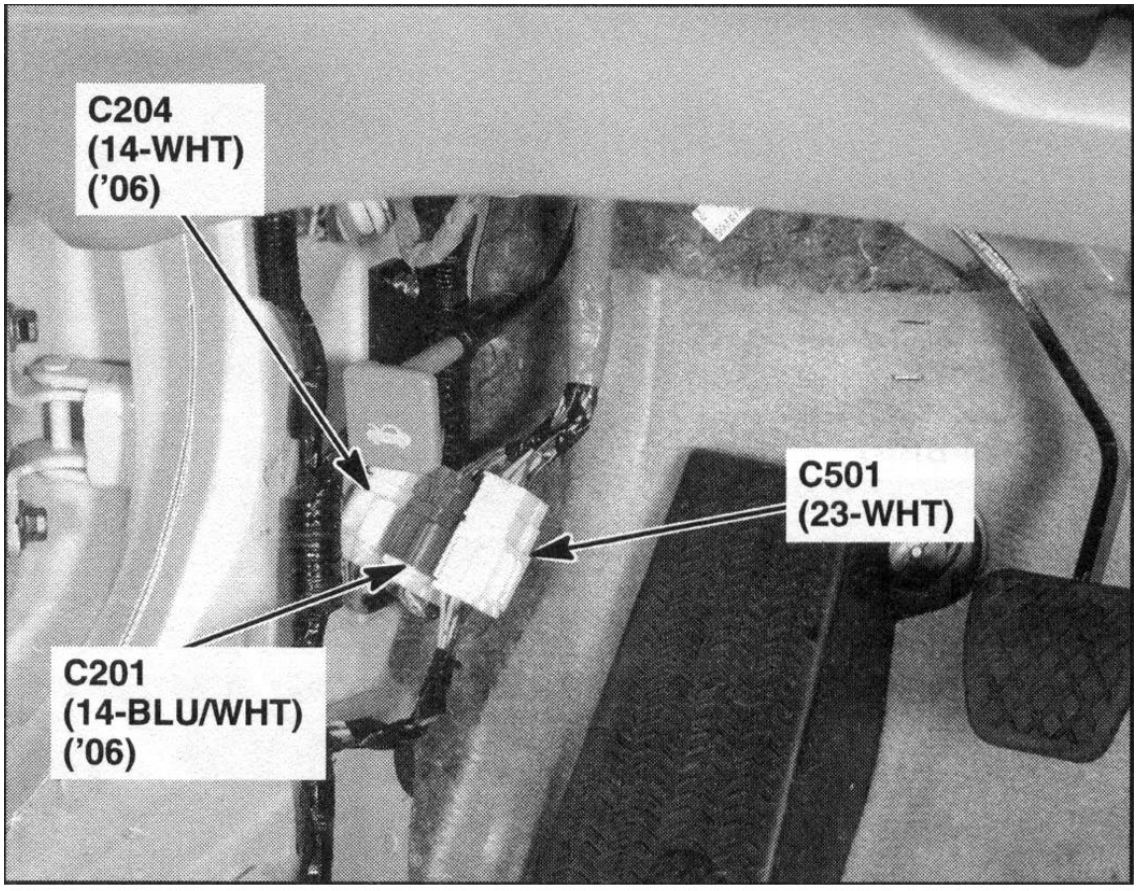
G00434406

Fig. 69: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



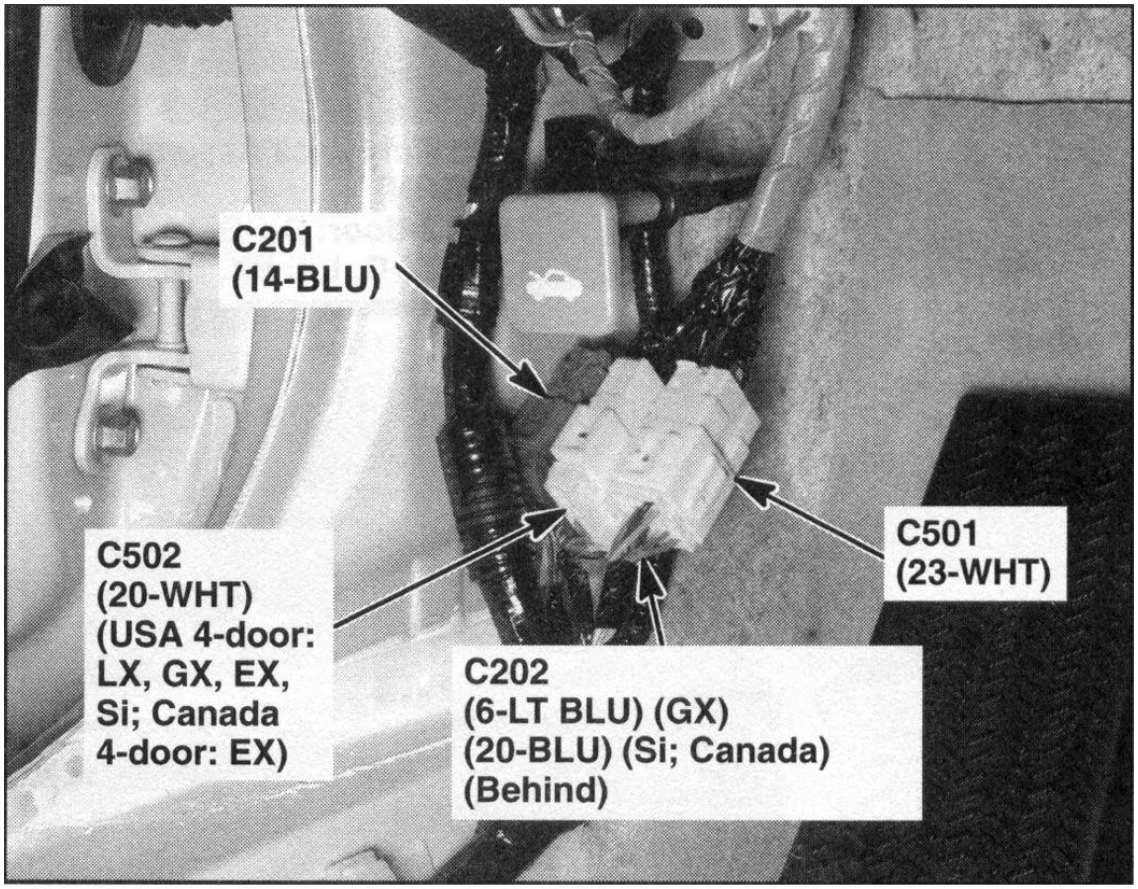
G00434407

Fig. 70: Behind Left Kick Panel
Courtesy of AMERICAN HONDA MOTOR CO., INC.



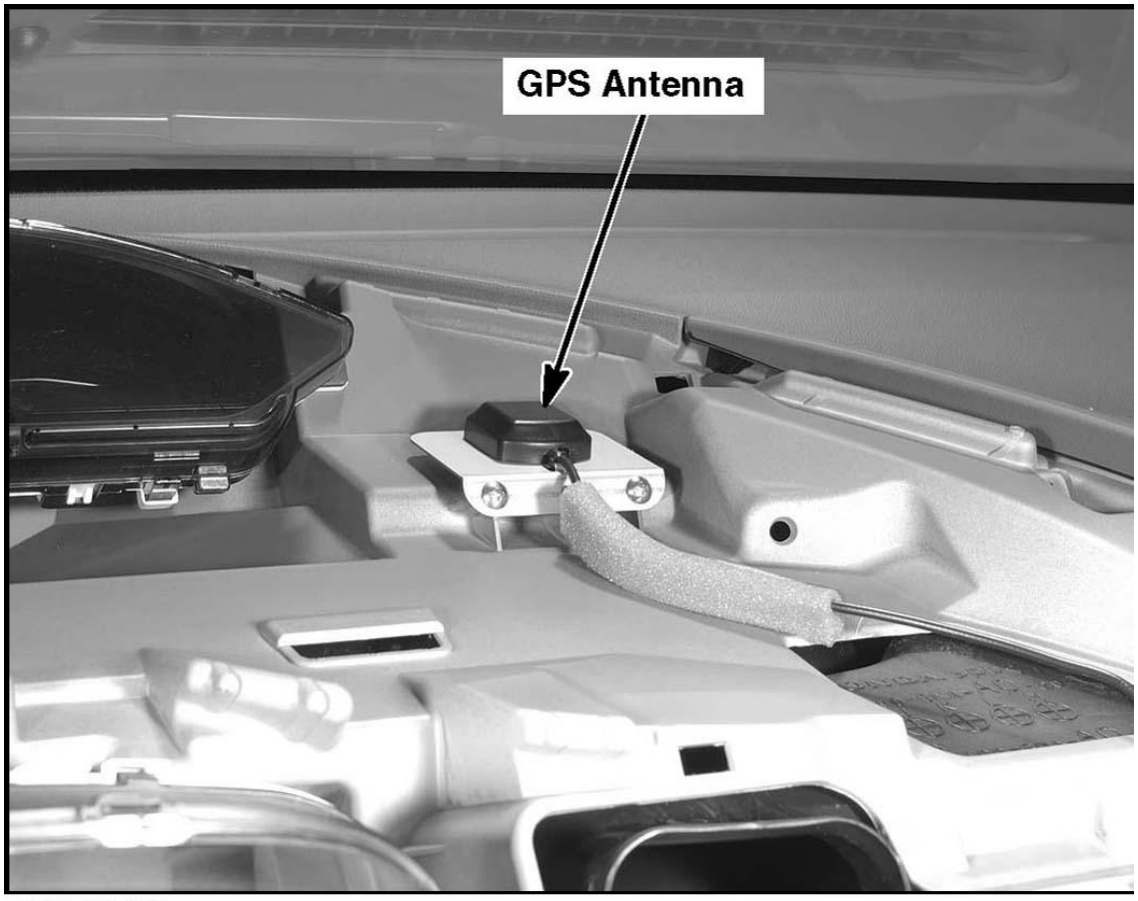
G00447707

Fig. 71: Behind Left Kick Panel (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



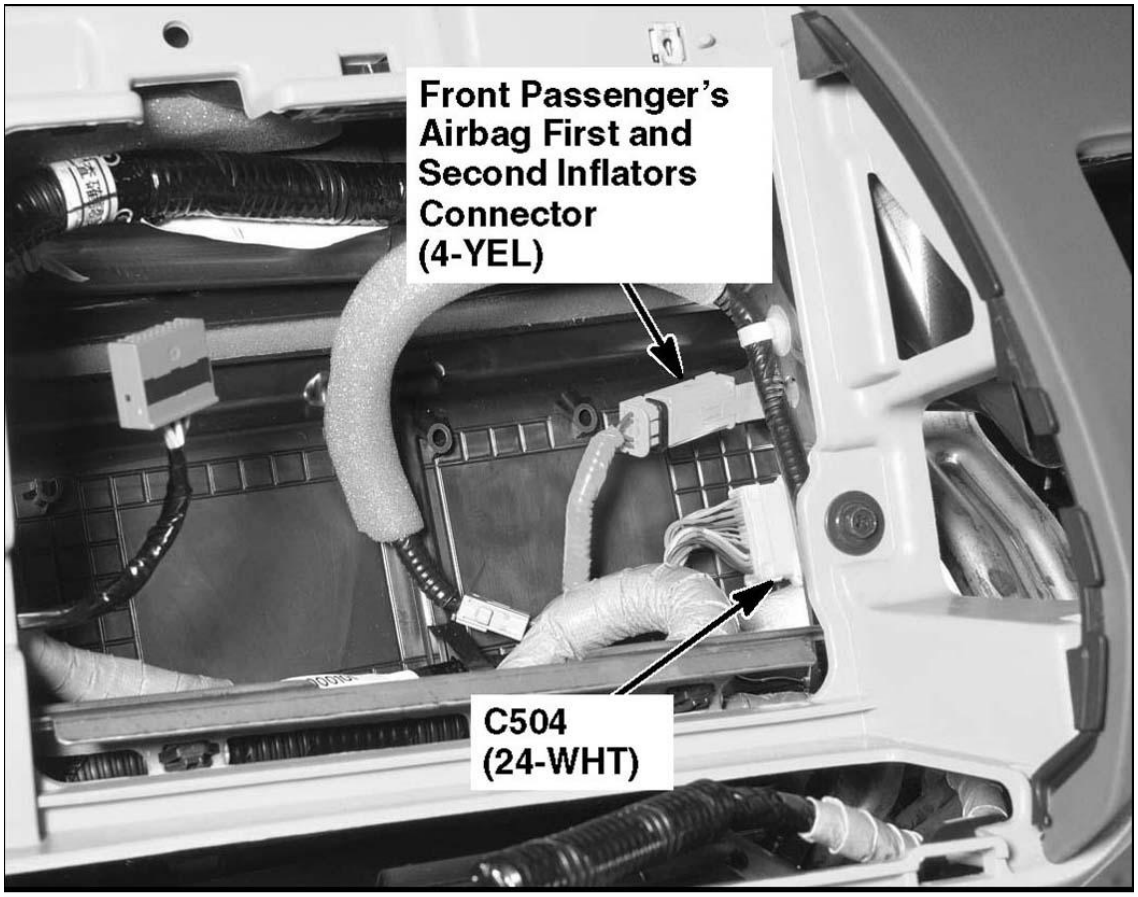
G00447708

Fig. 72: Behind Left Kick Panel (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



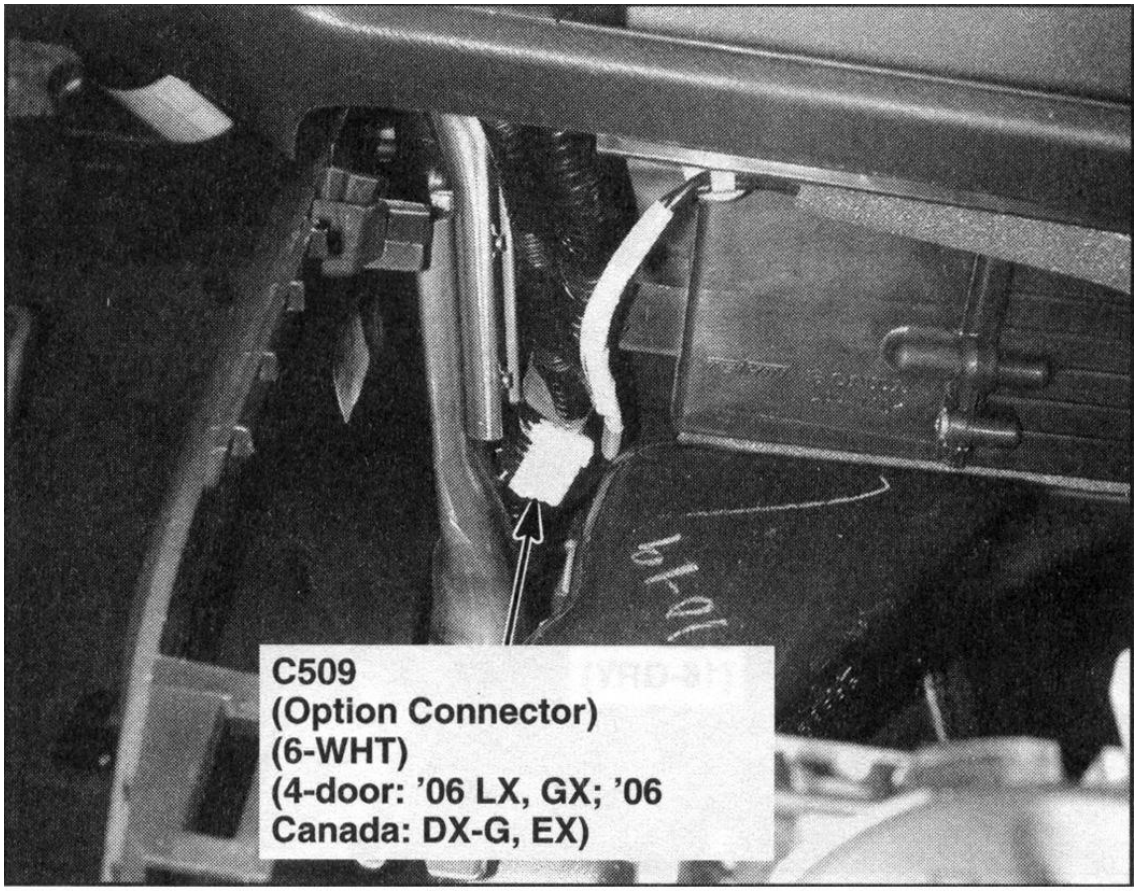
G00434410

Fig. 73: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



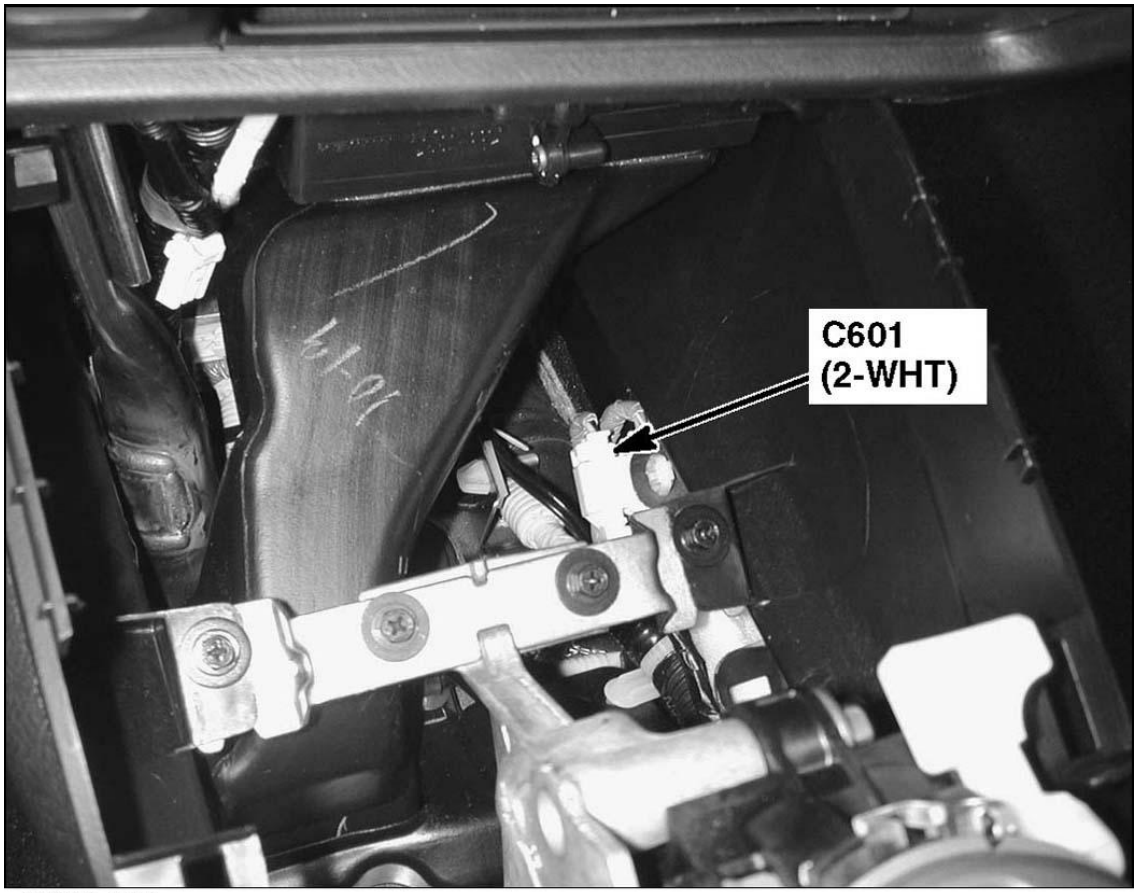
G00434411

Fig. 74: Behind Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



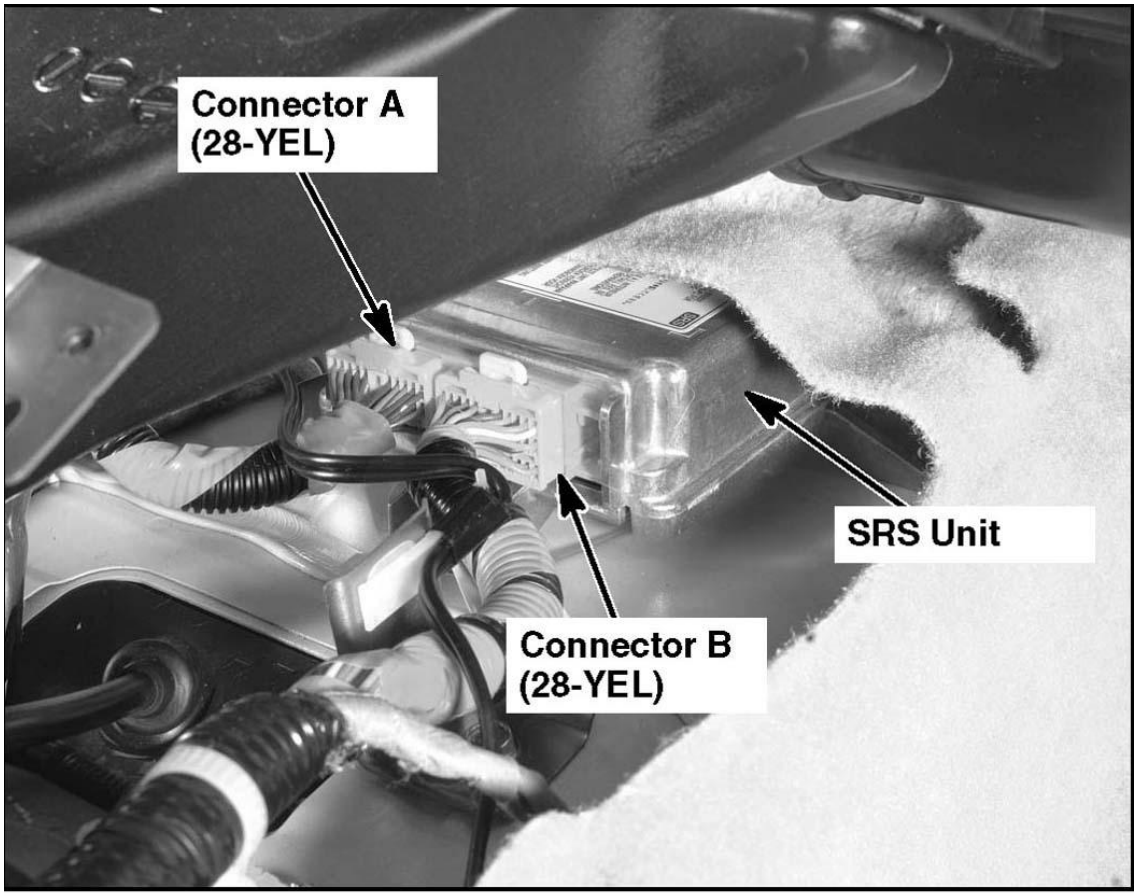
G00447709

Fig. 75: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



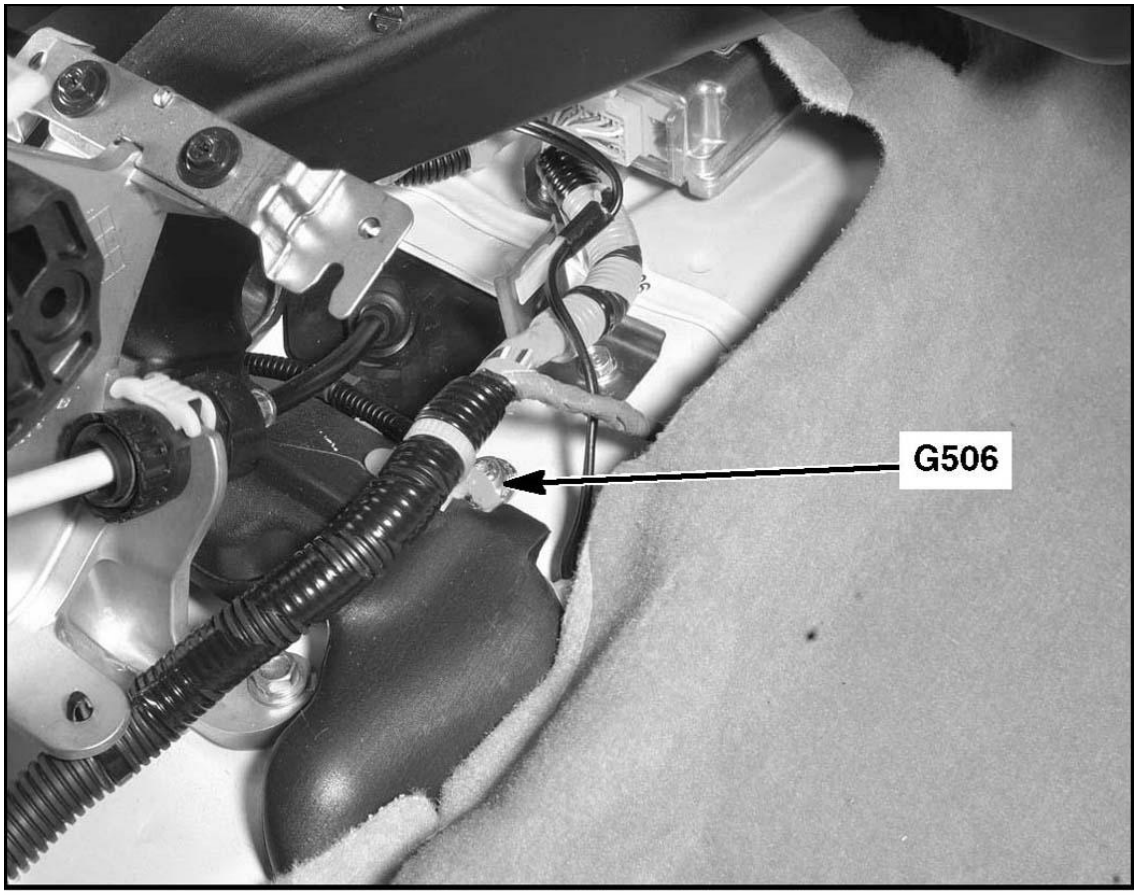
G00434413

Fig. 76: Under Middle Of Dash (EX & Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



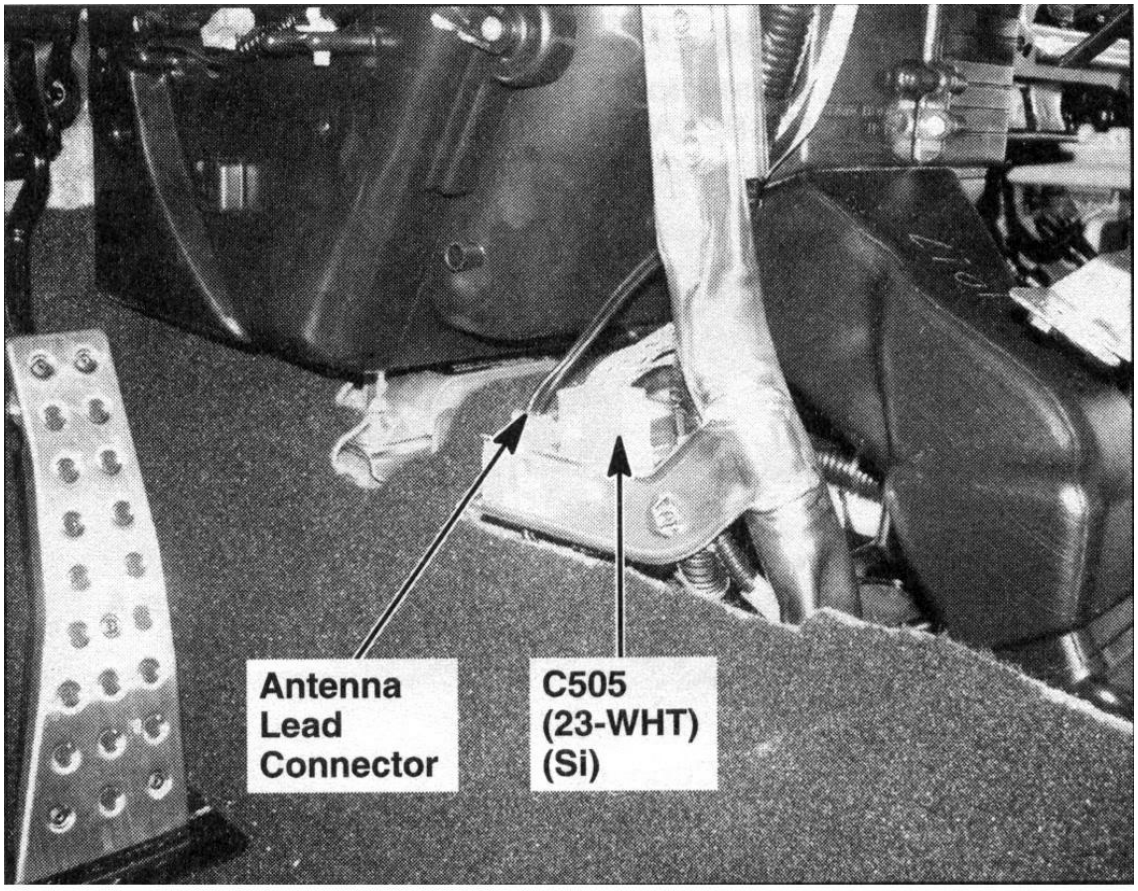
G00434414

Fig. 77: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



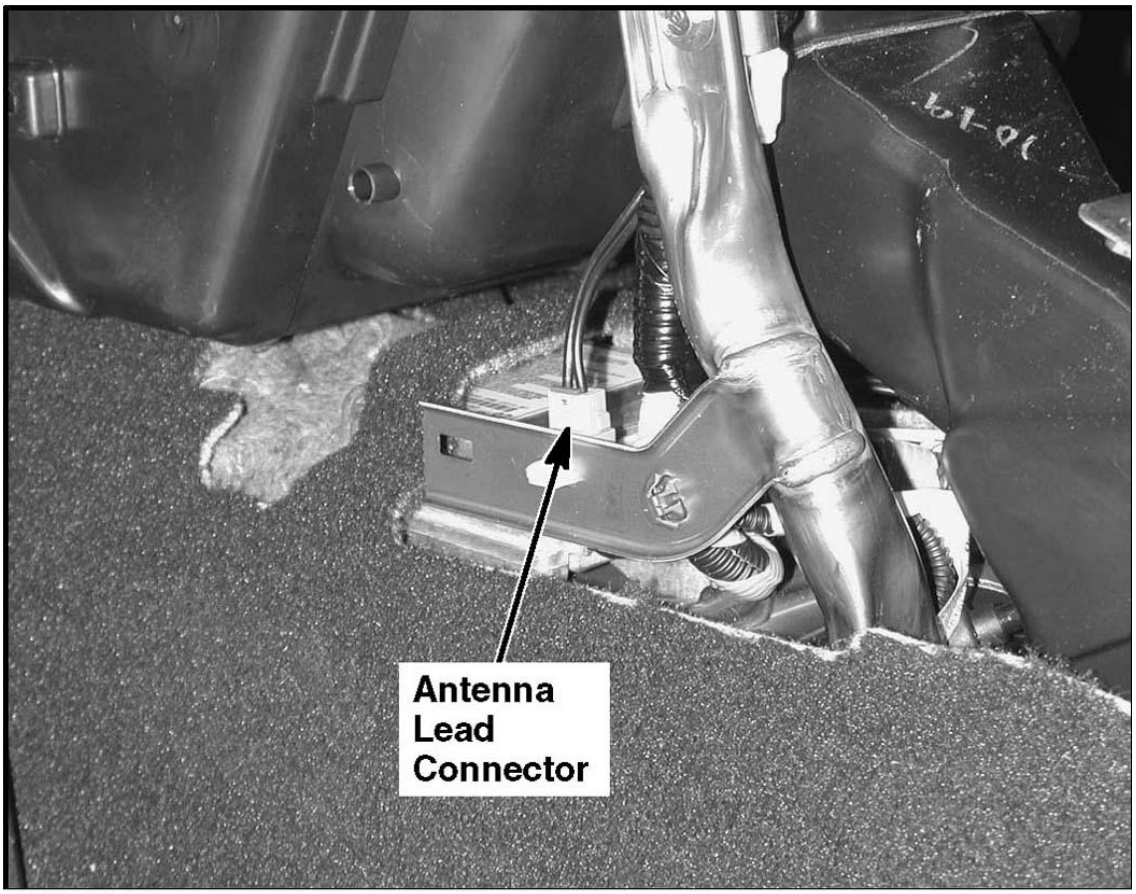
G00434415

Fig. 78: Under Middle Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



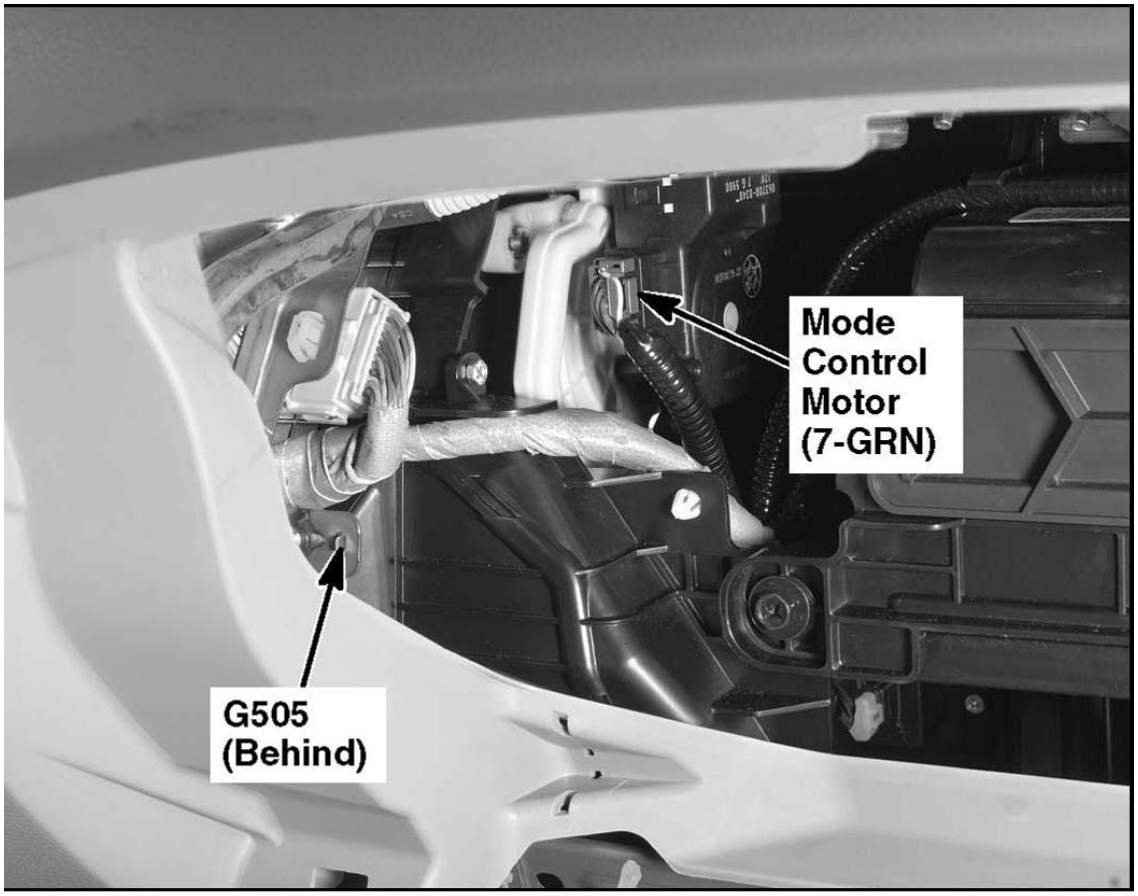
G00447710

Fig. 79: Under Front Of Center Console (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



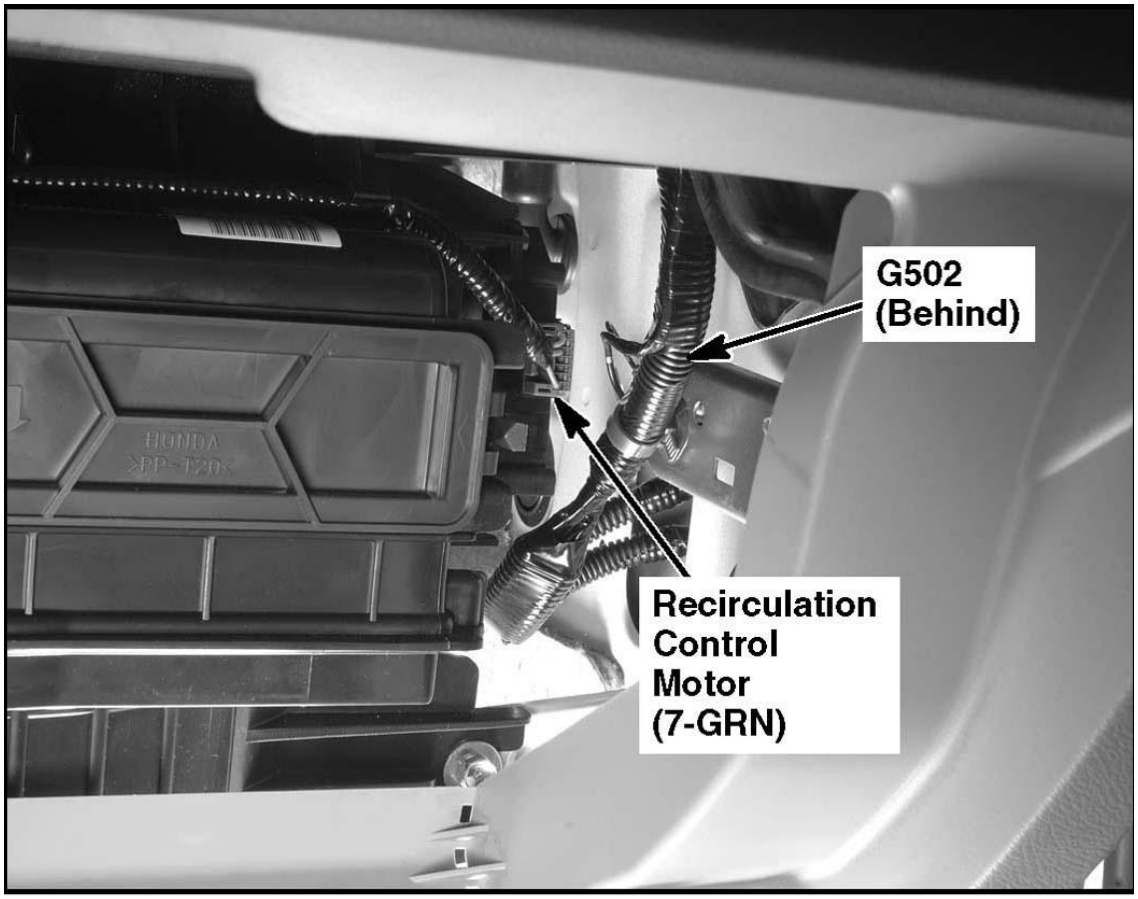
G00434418

Fig. 80: Under Front Of Center Console (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



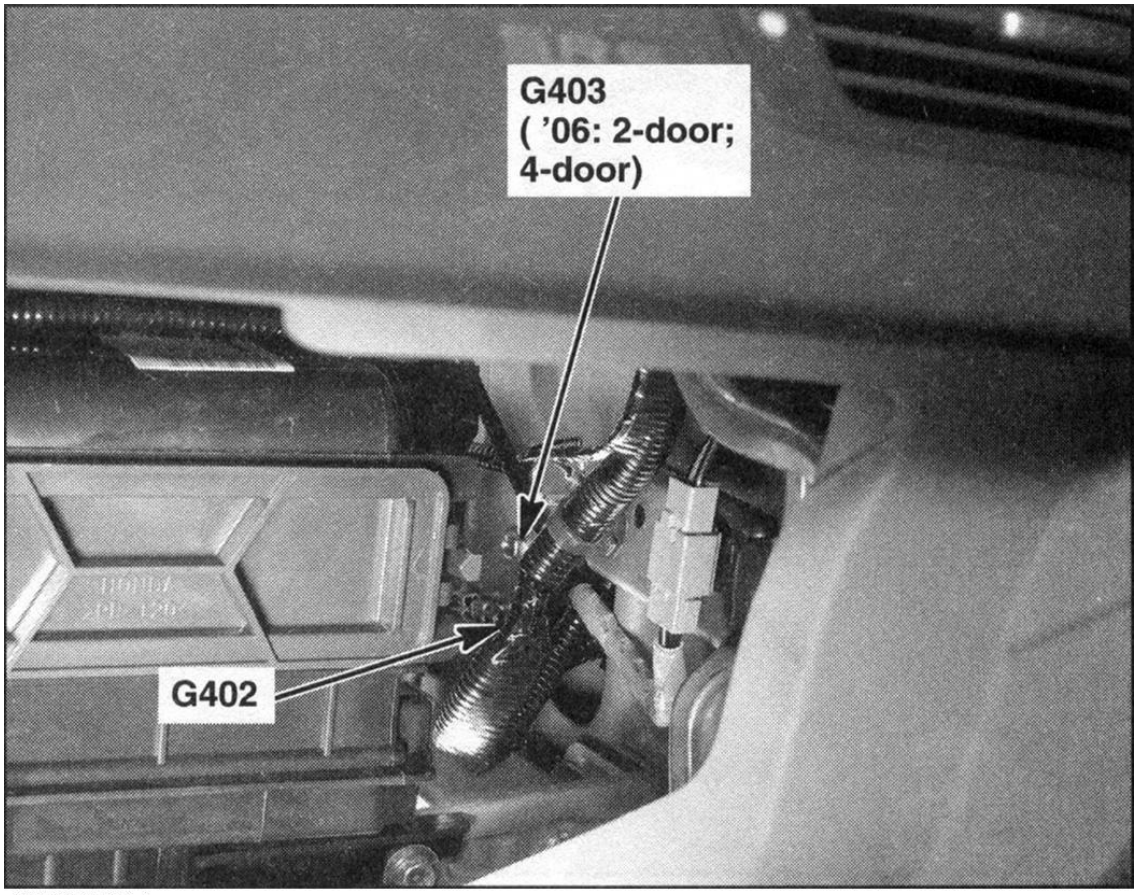
G00434419

Fig. 81: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.



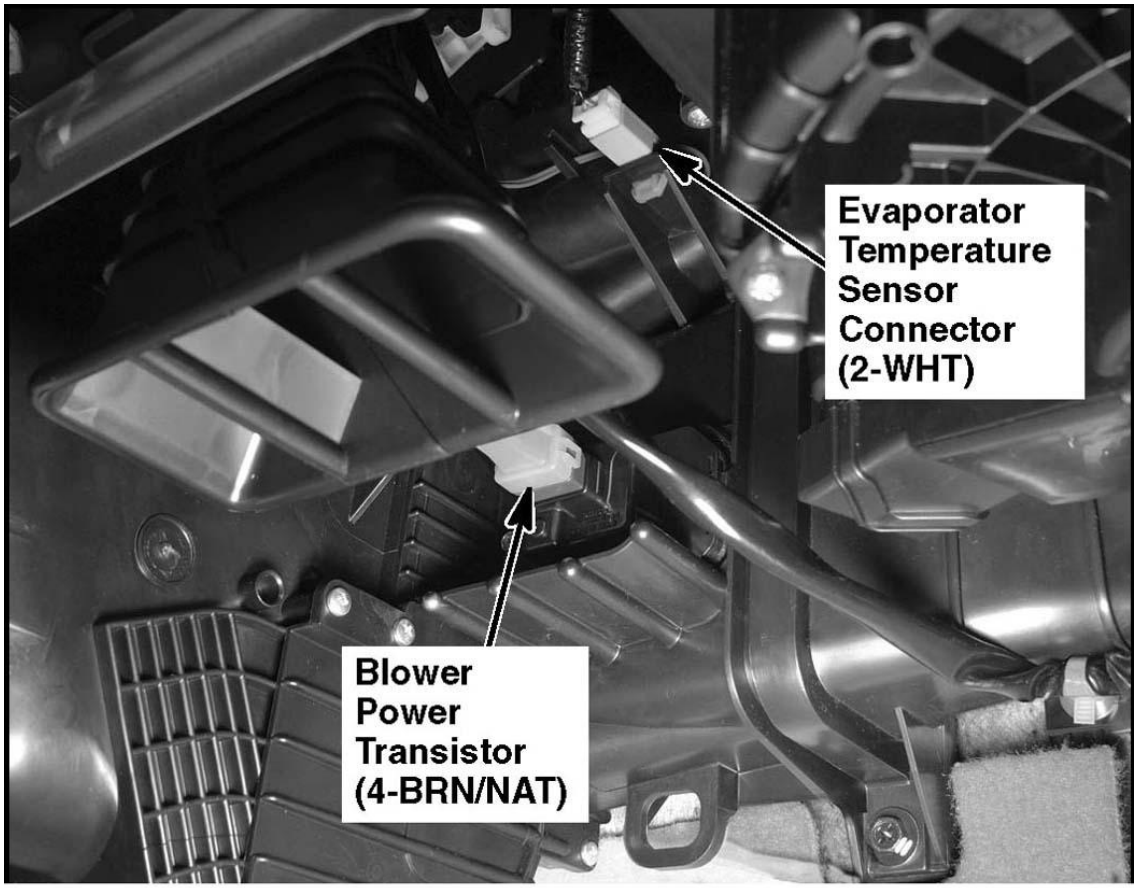
G00434420

Fig. 82: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.



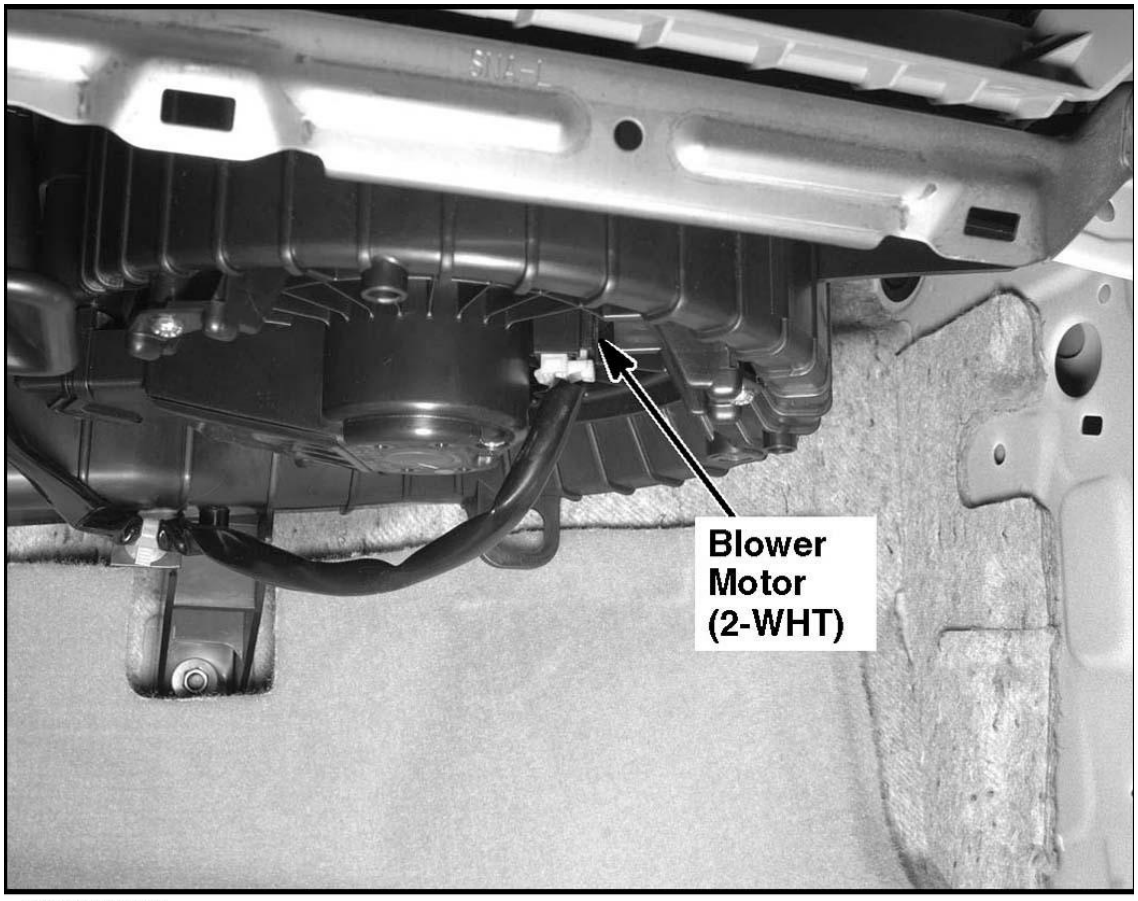
G00447711

Fig. 83: Behind Glove Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.



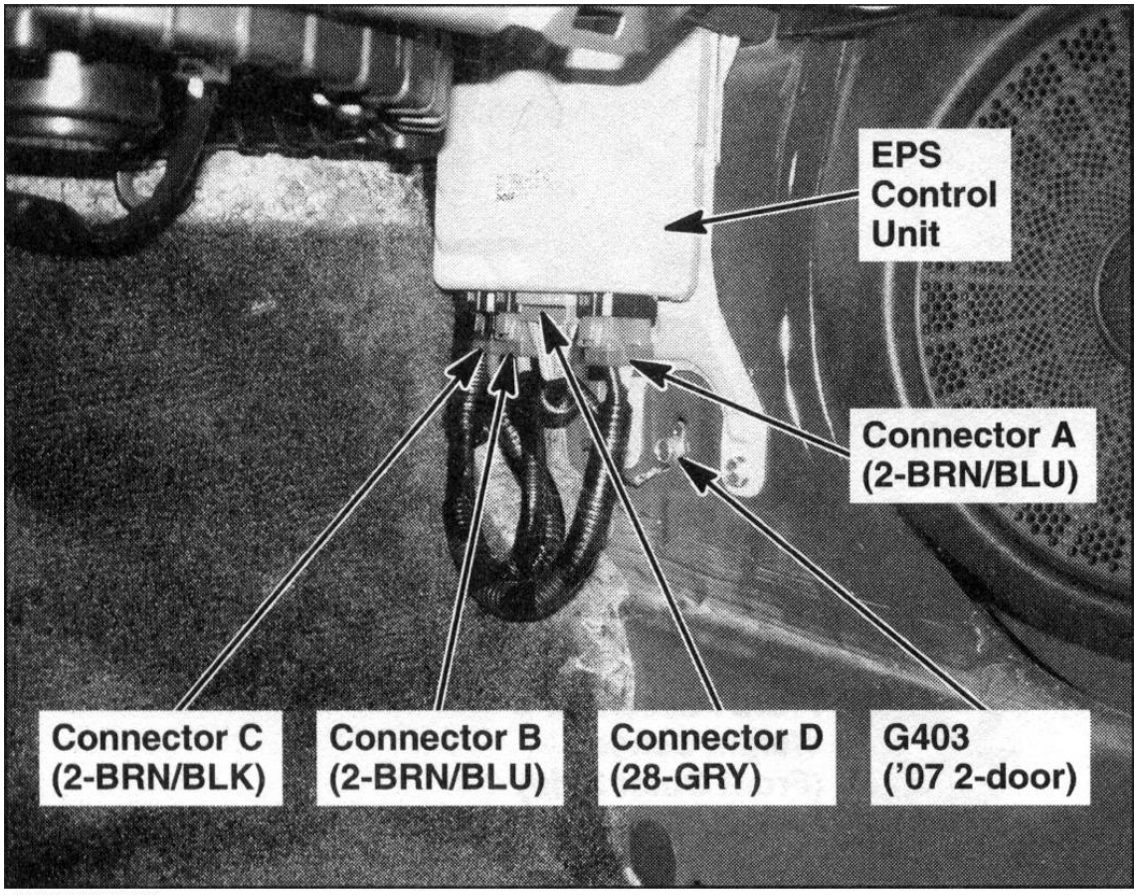
G00434422

Fig. 84: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



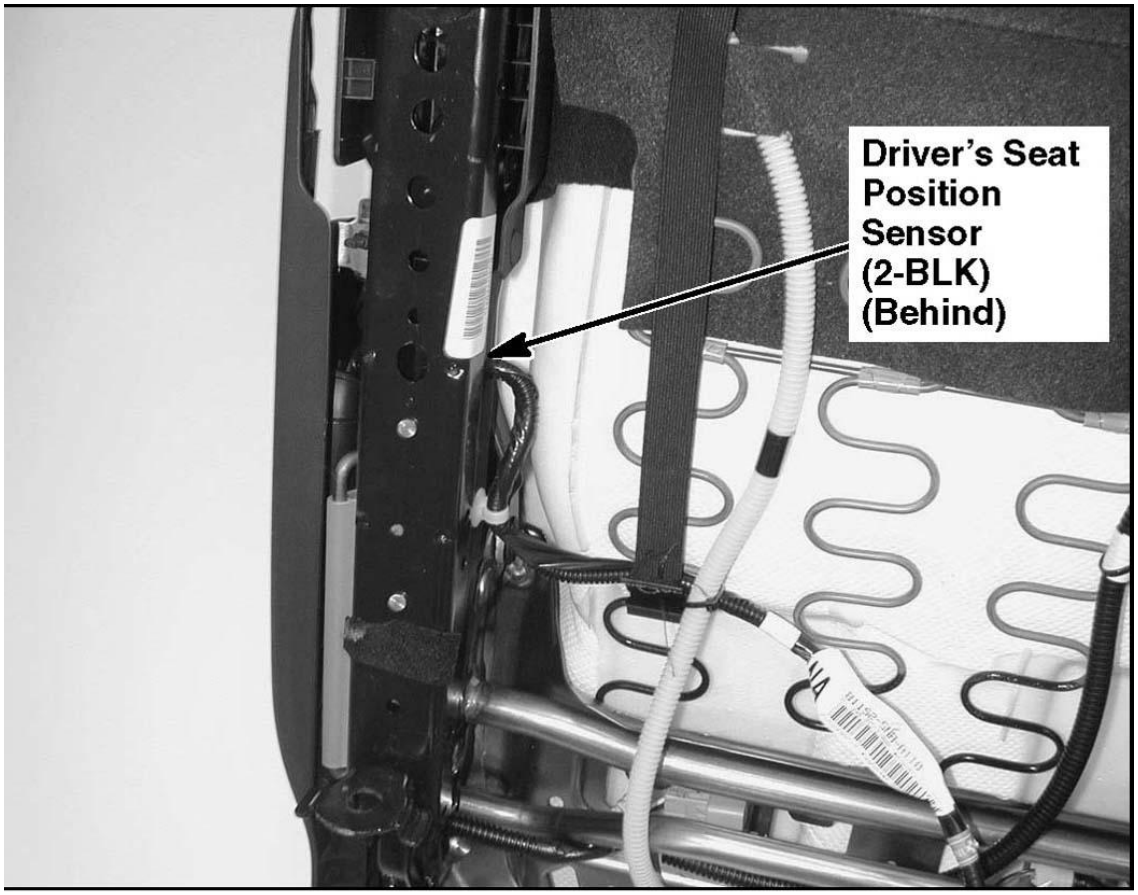
G00434423

Fig. 85: Under Right Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



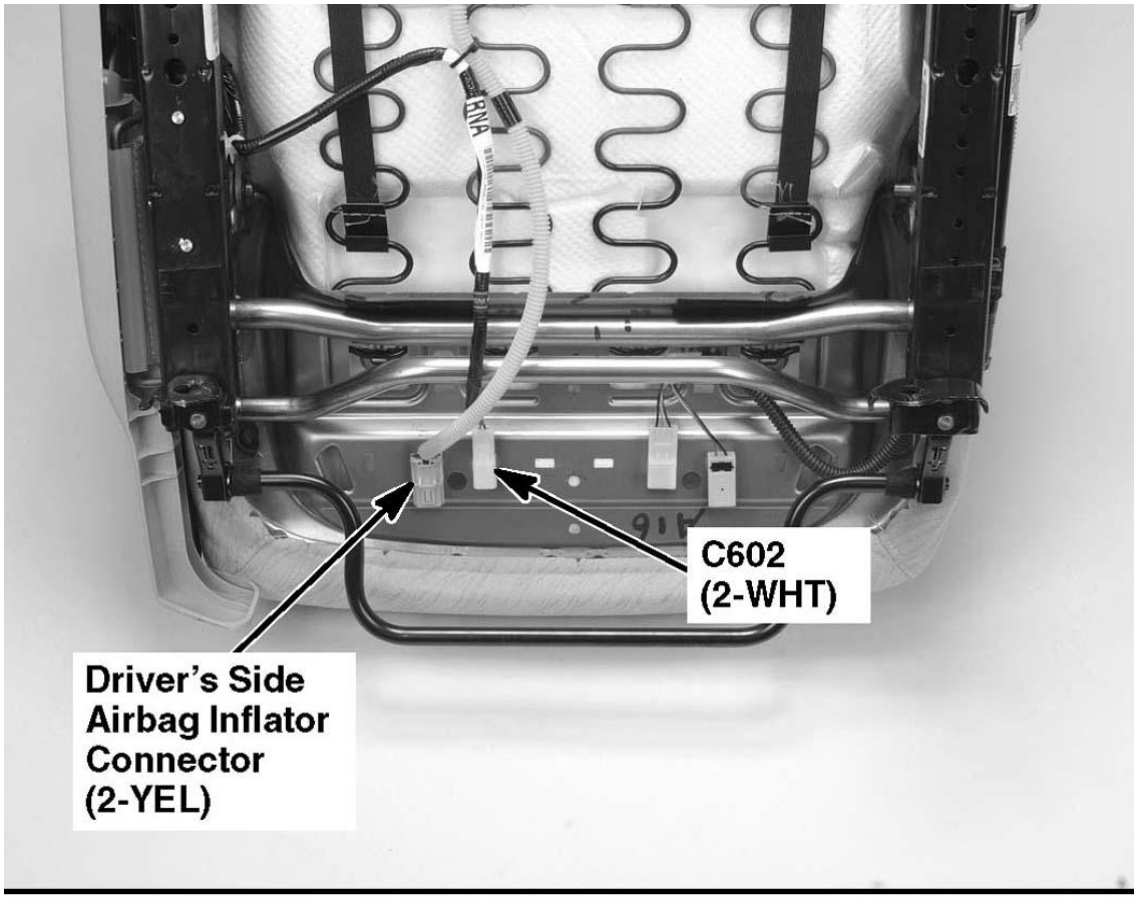
G00447712

Fig. 86: Behind Right Kick Panel (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



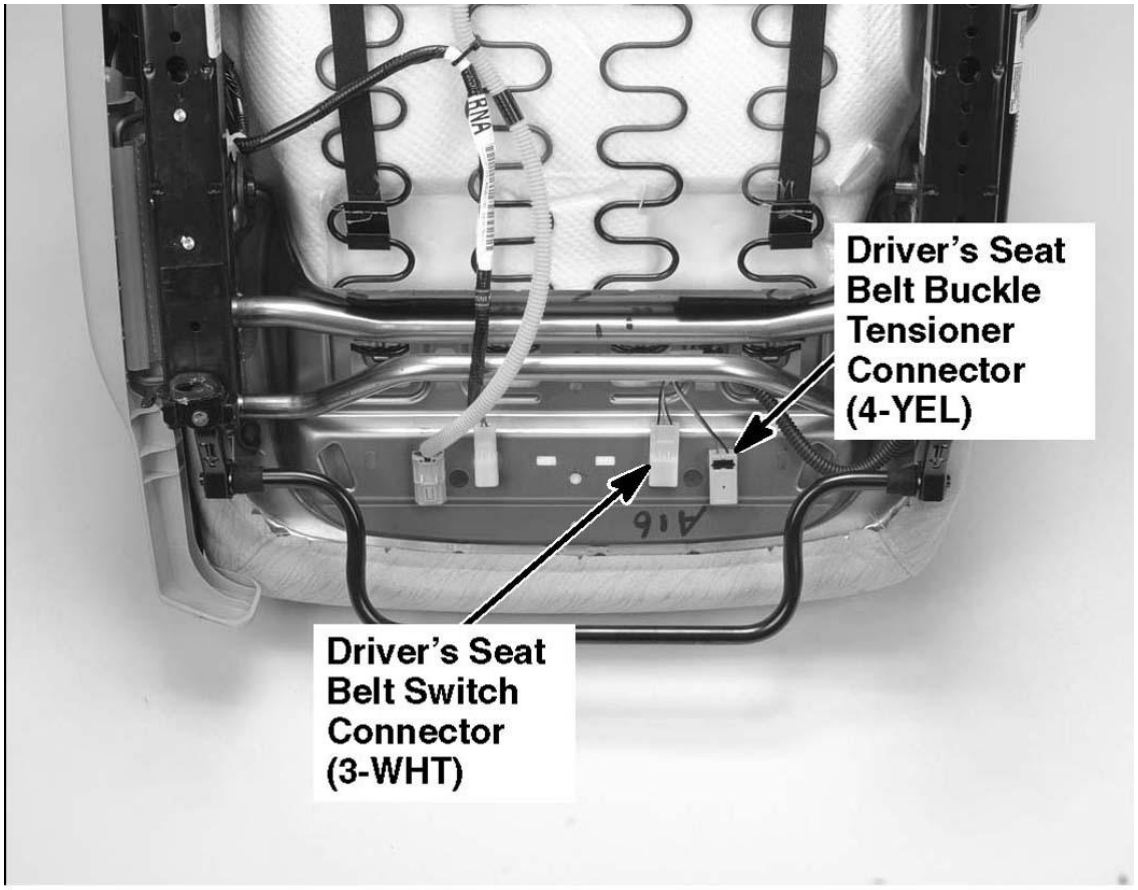
G00434425

Fig. 87: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



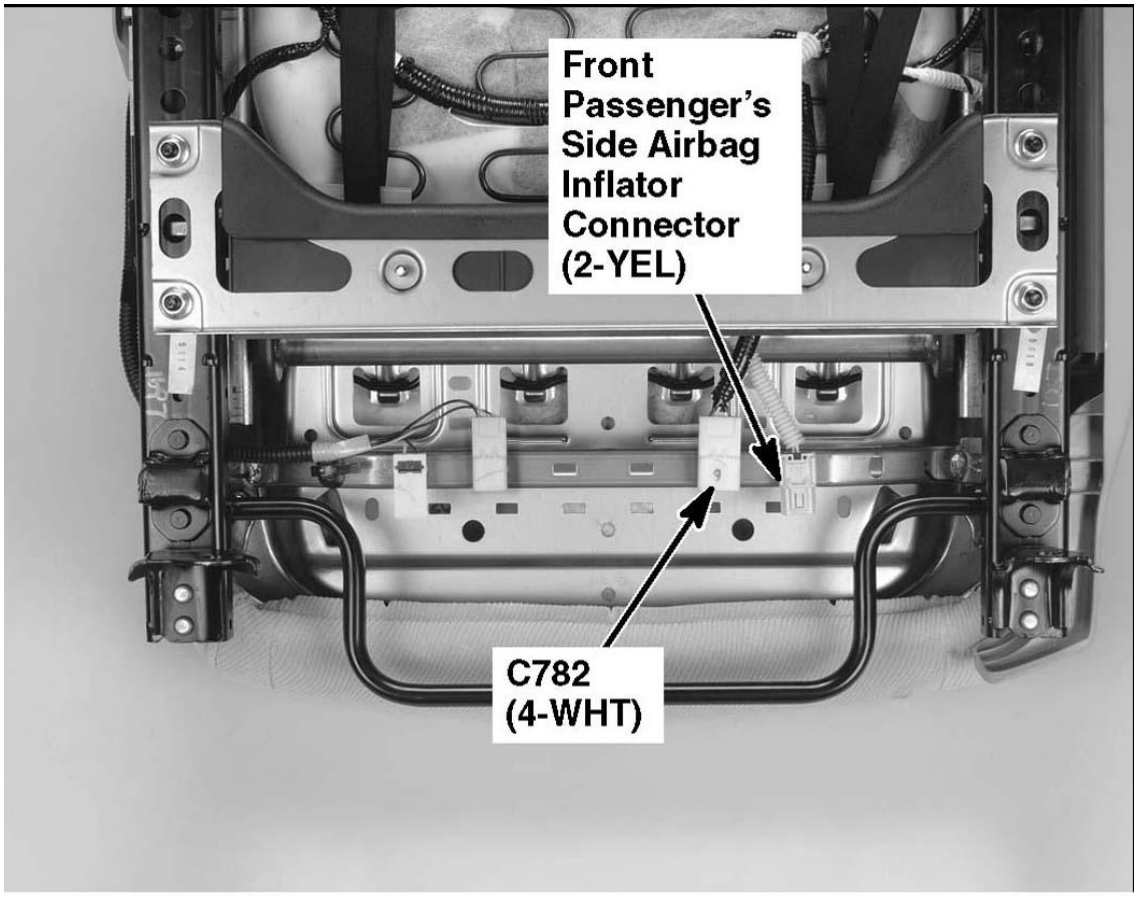
G00434426

Fig. 88: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



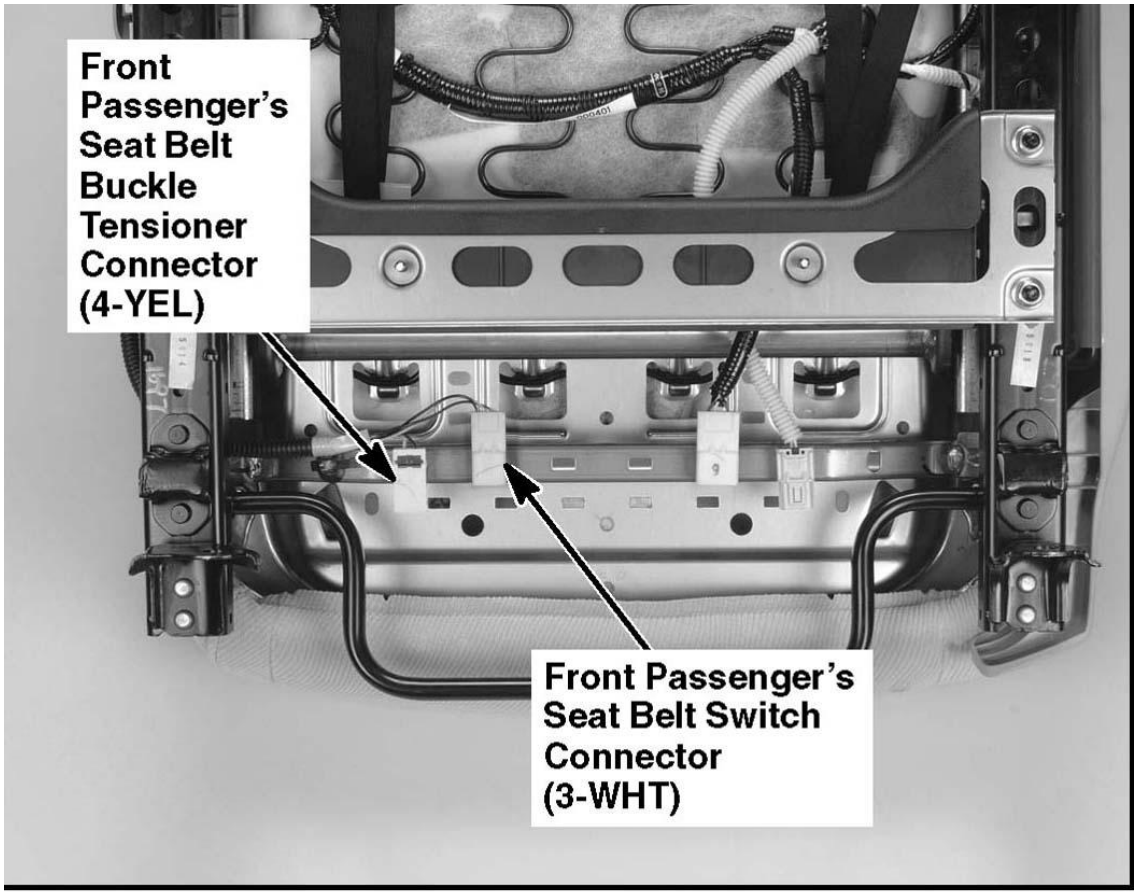
G00434427

Fig. 89: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



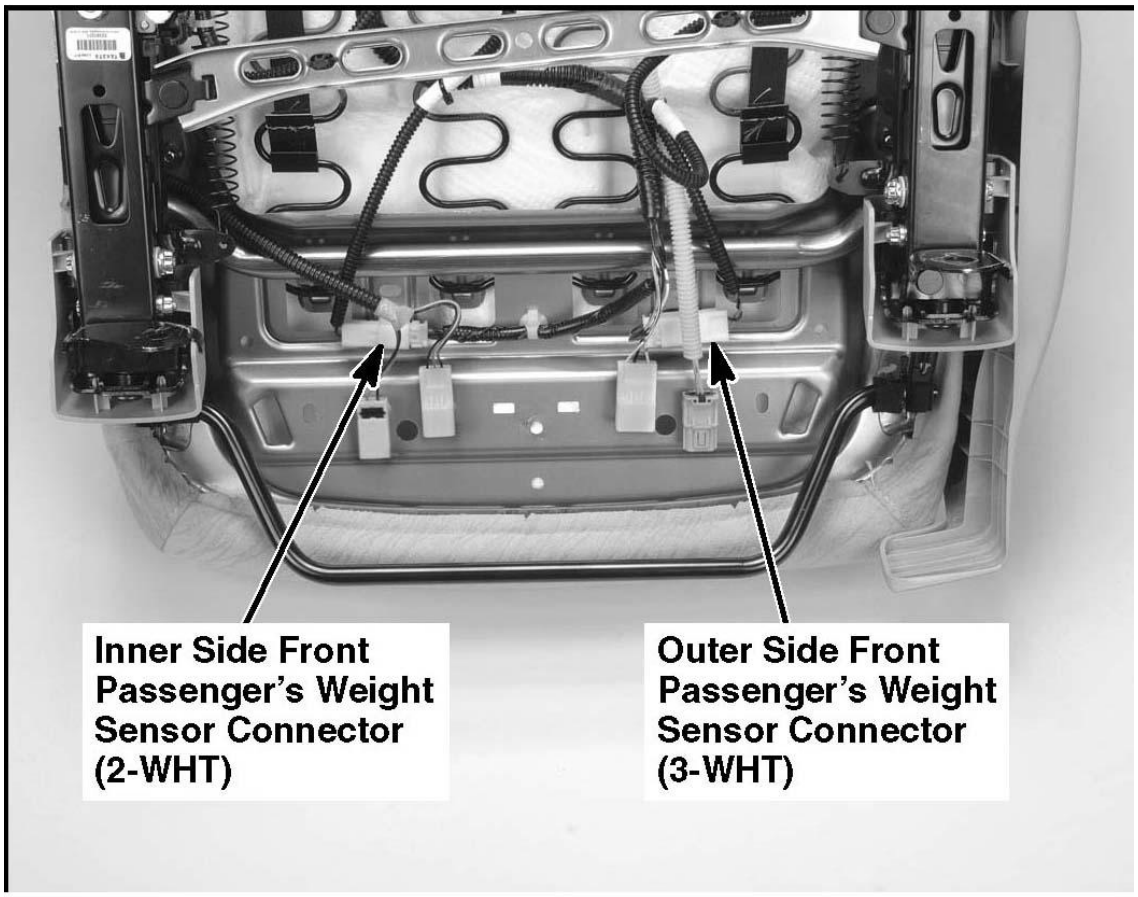
G00434428

Fig. 90: Under Front Passenger's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



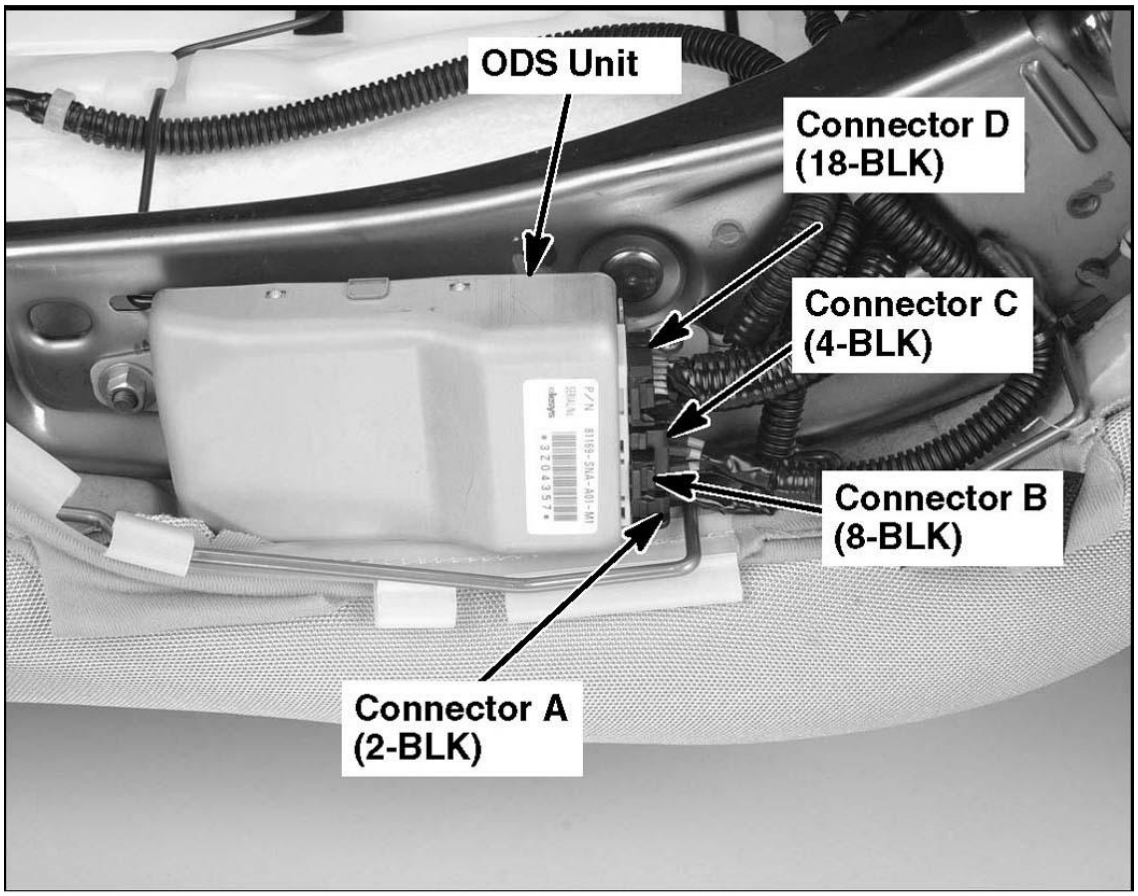
G00434429

Fig. 91: Under Front Passenger's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434430

Fig. 92: Under Front Passenger's Seat (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434431

Fig. 93: Front Passenger's Seat Back
Courtesy of AMERICAN HONDA MOTOR CO., INC.

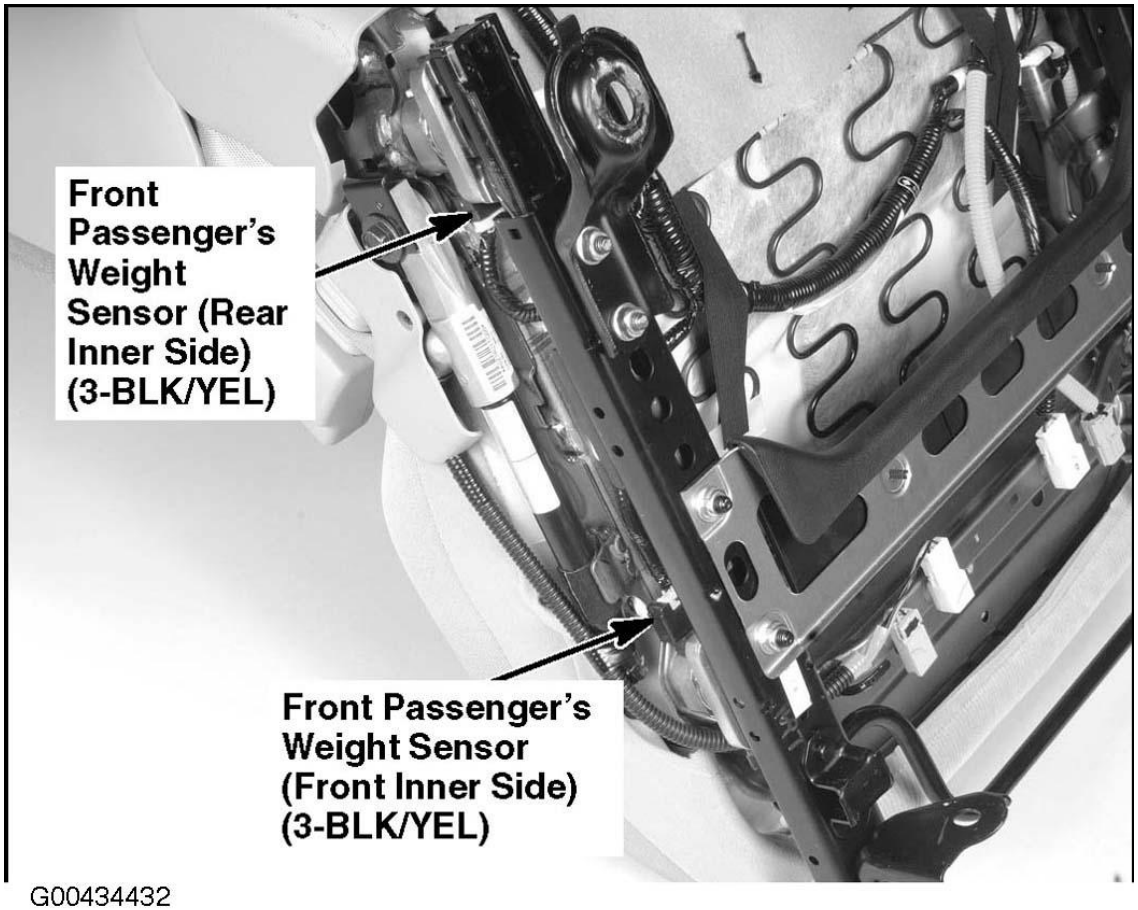


Fig. 94: Under Front Passenger's Seat (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

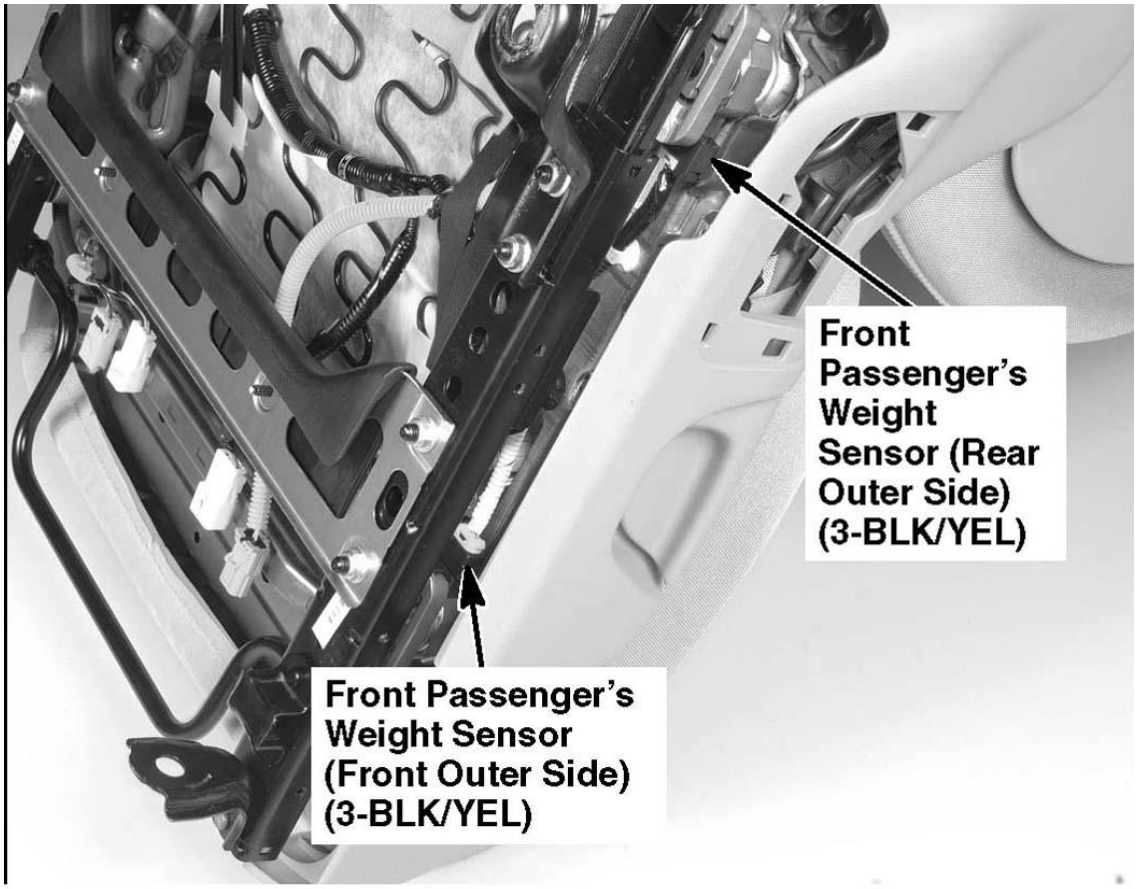
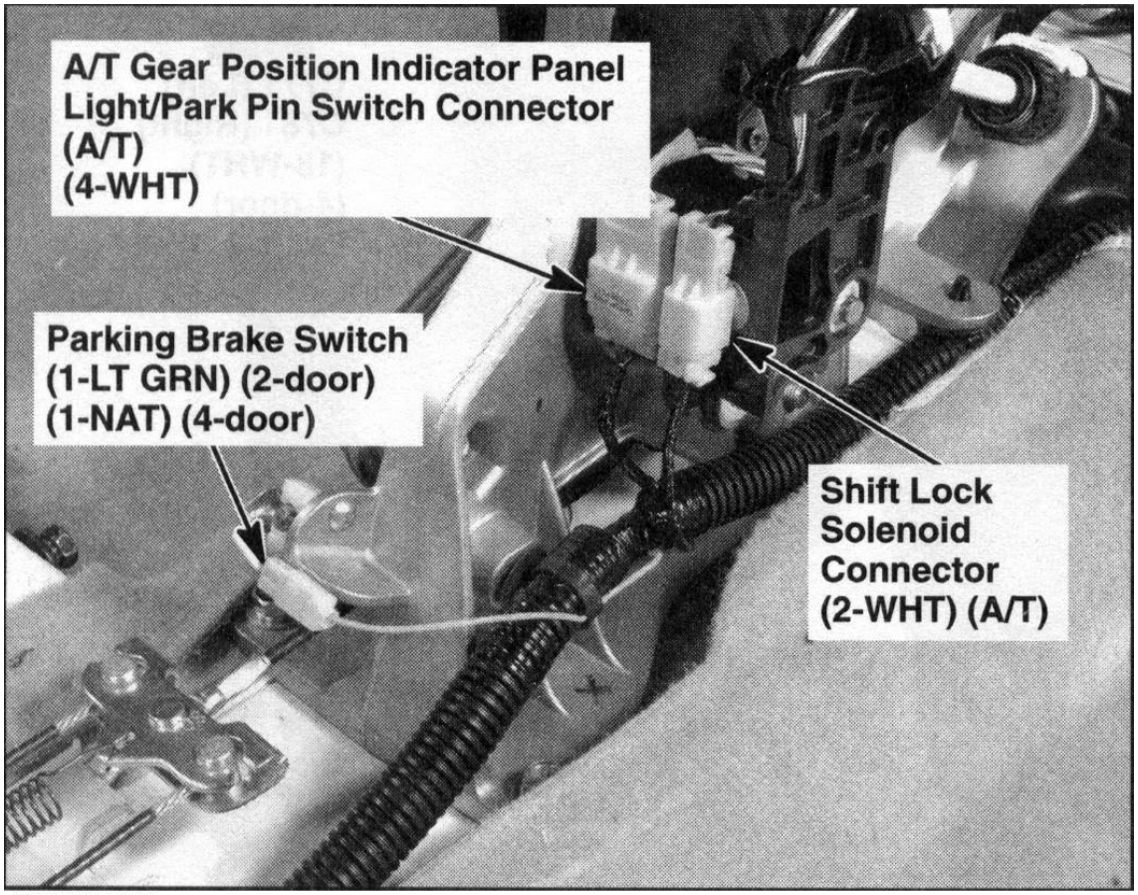
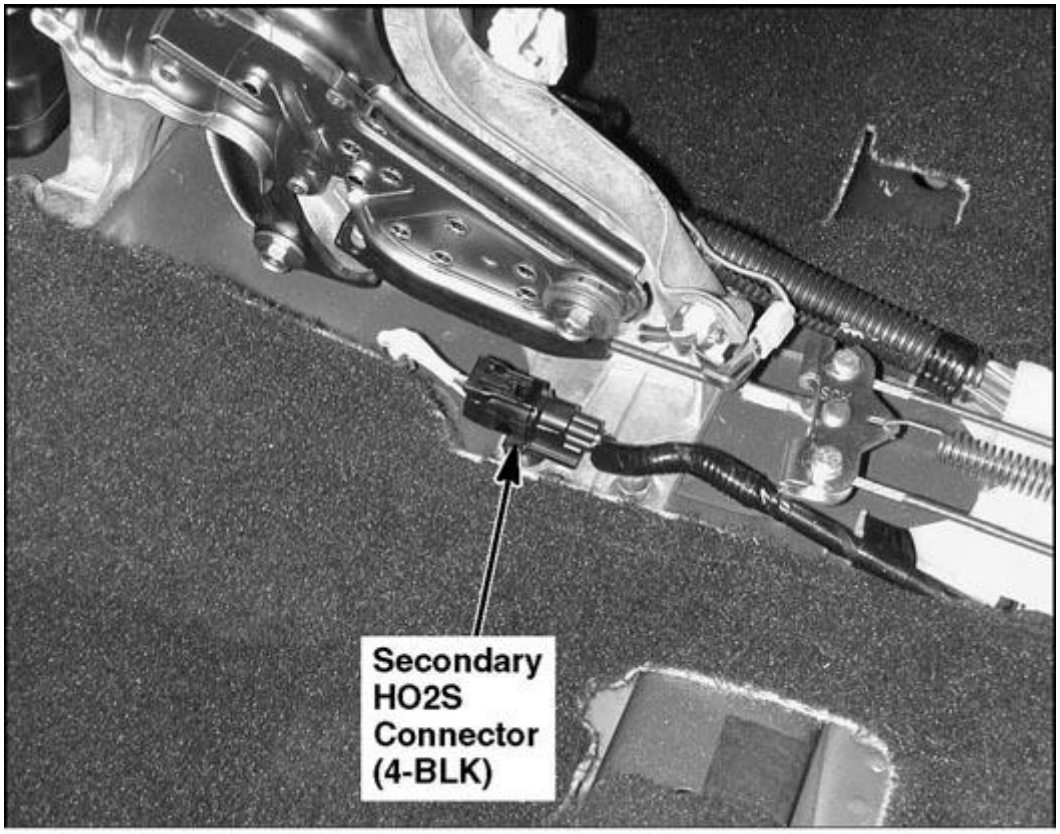


Fig. 95: Under Front Passenger's Seat (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



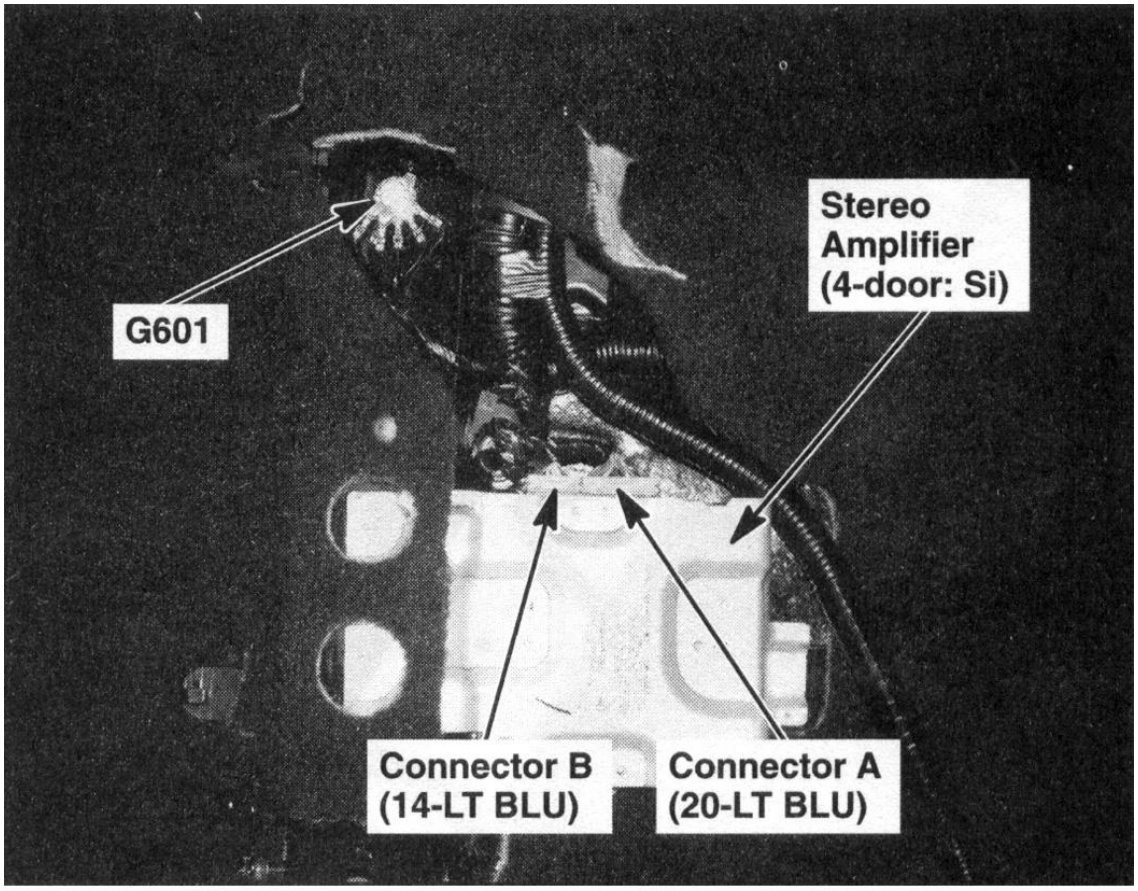
G00447713

Fig. 96: Under Center Console
Courtesy of AMERICAN HONDA MOTOR CO., INC.



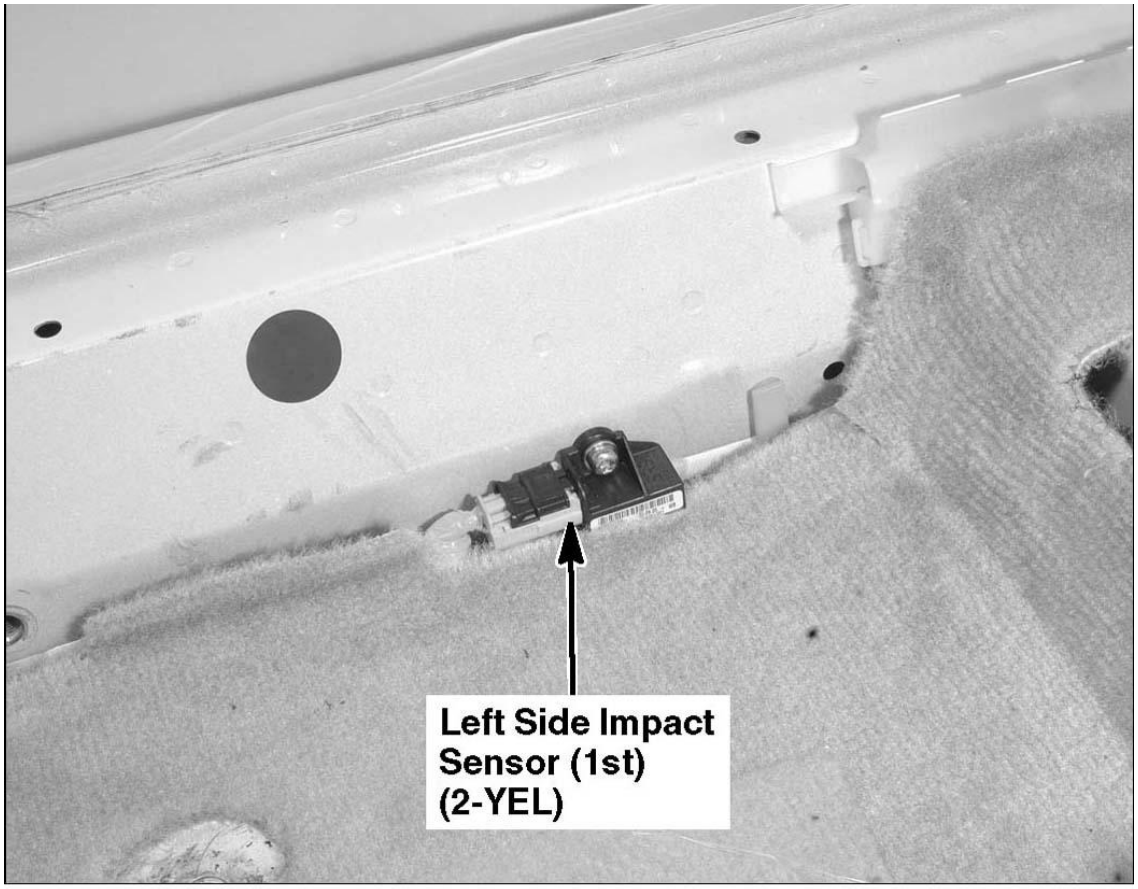
G00434435

Fig. 97: Under Center Console (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



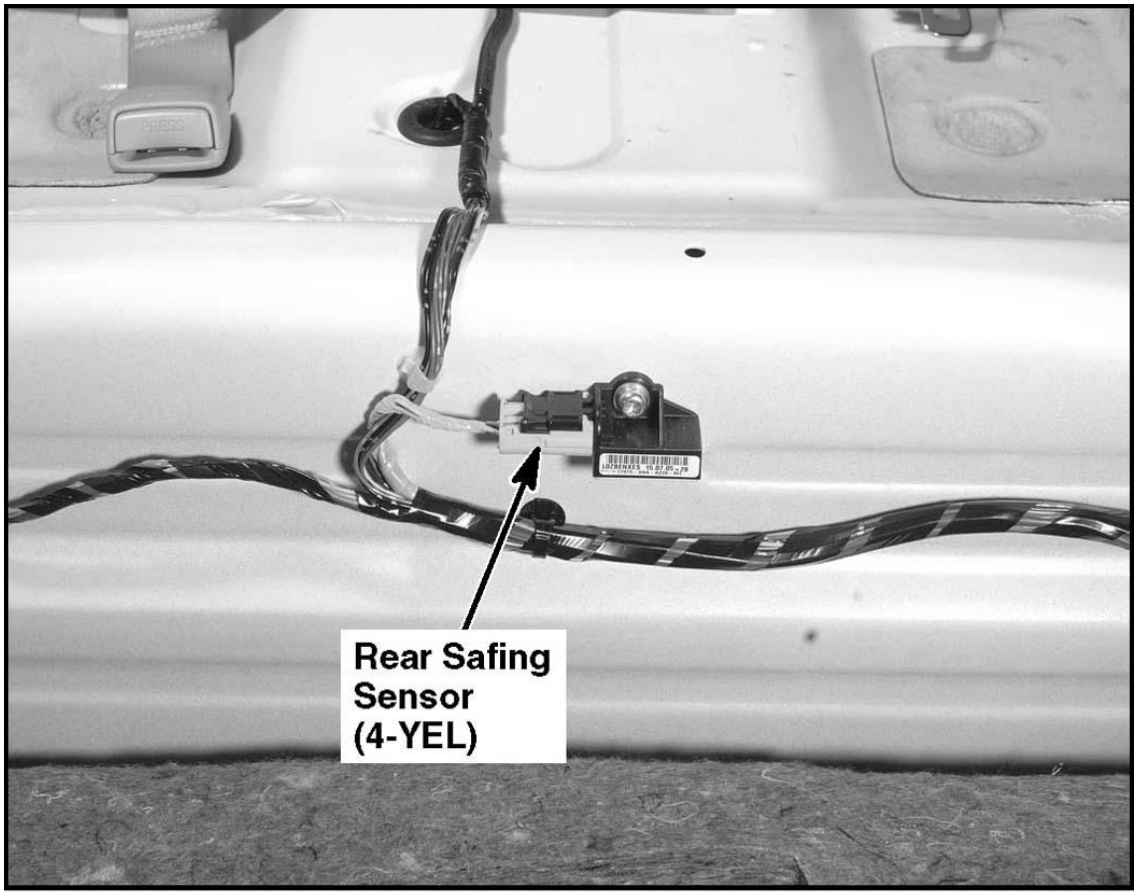
G00447714

Fig. 98: Under Driver's Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434437

Fig. 99: Left Side Of Floor (2-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

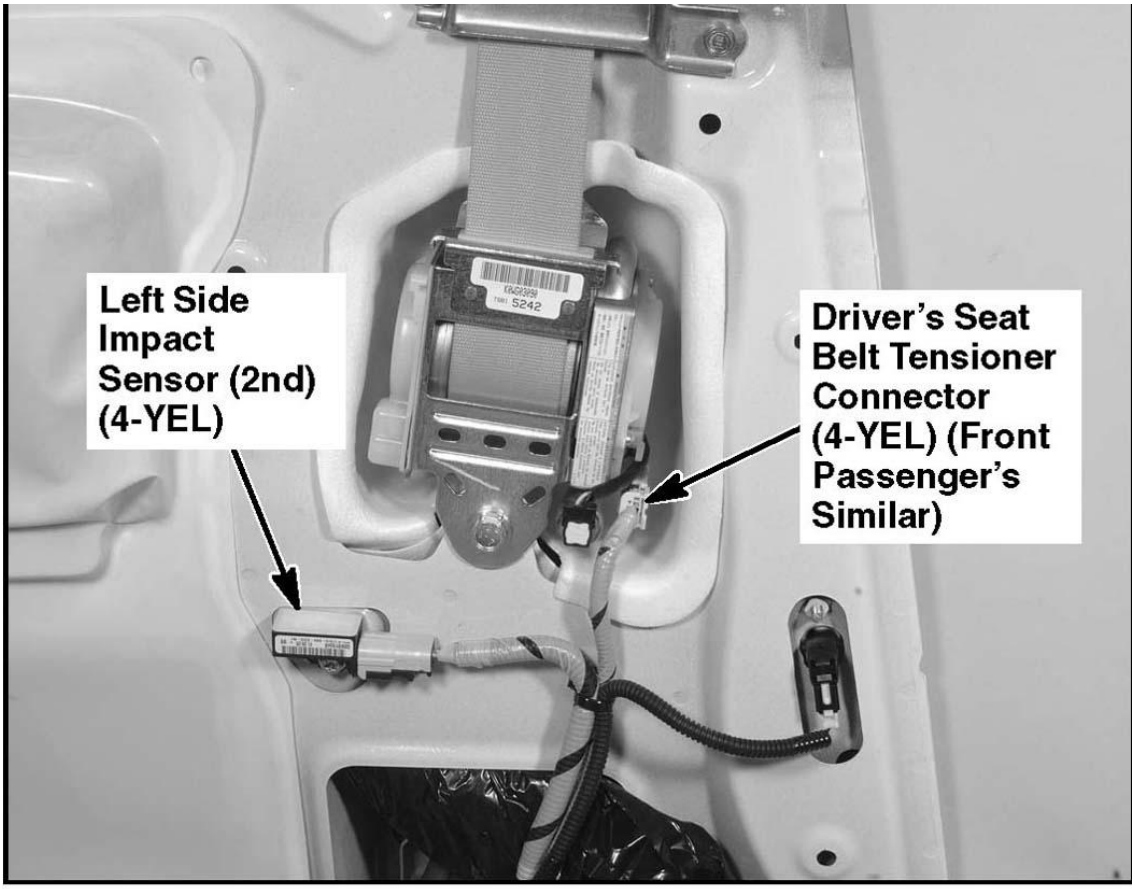


G00434438

Fig. 100: Middle Of Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

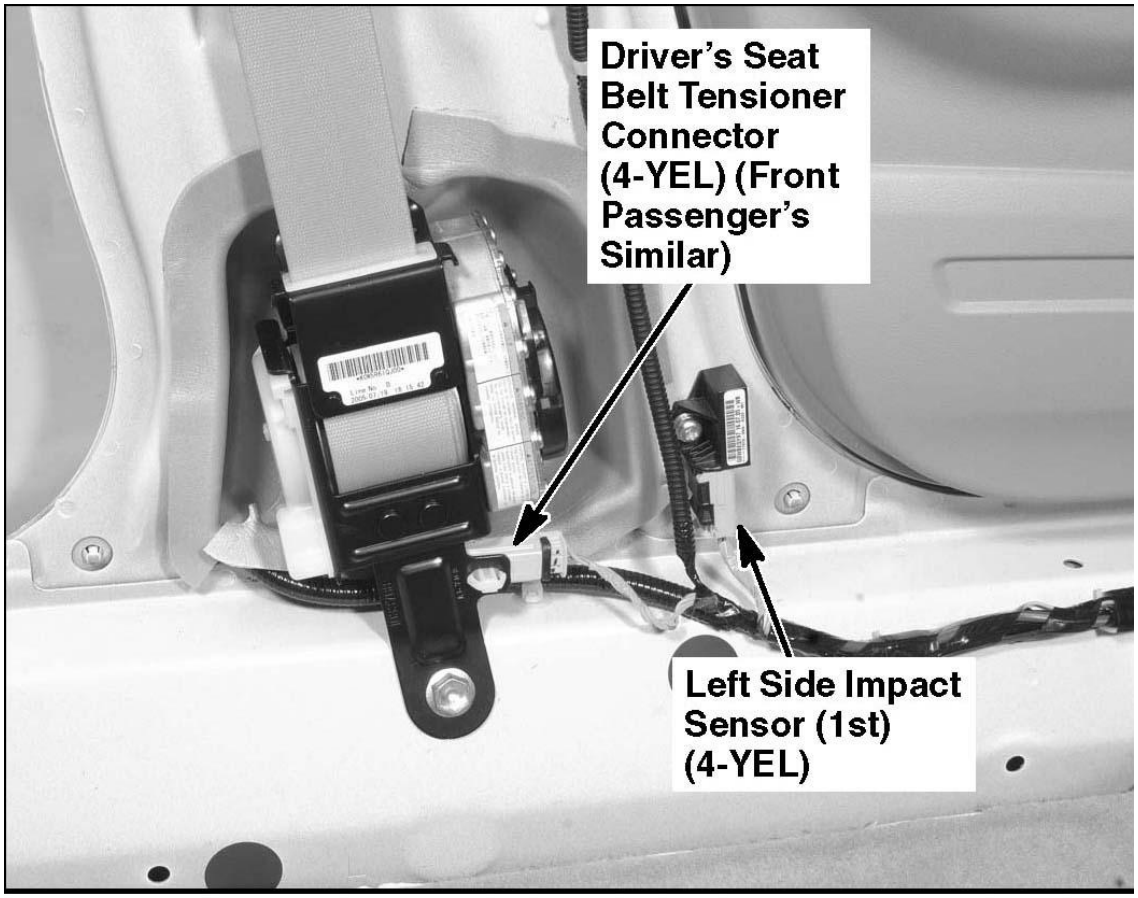
G00434439

Fig. 101: Front Right Side Of Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.



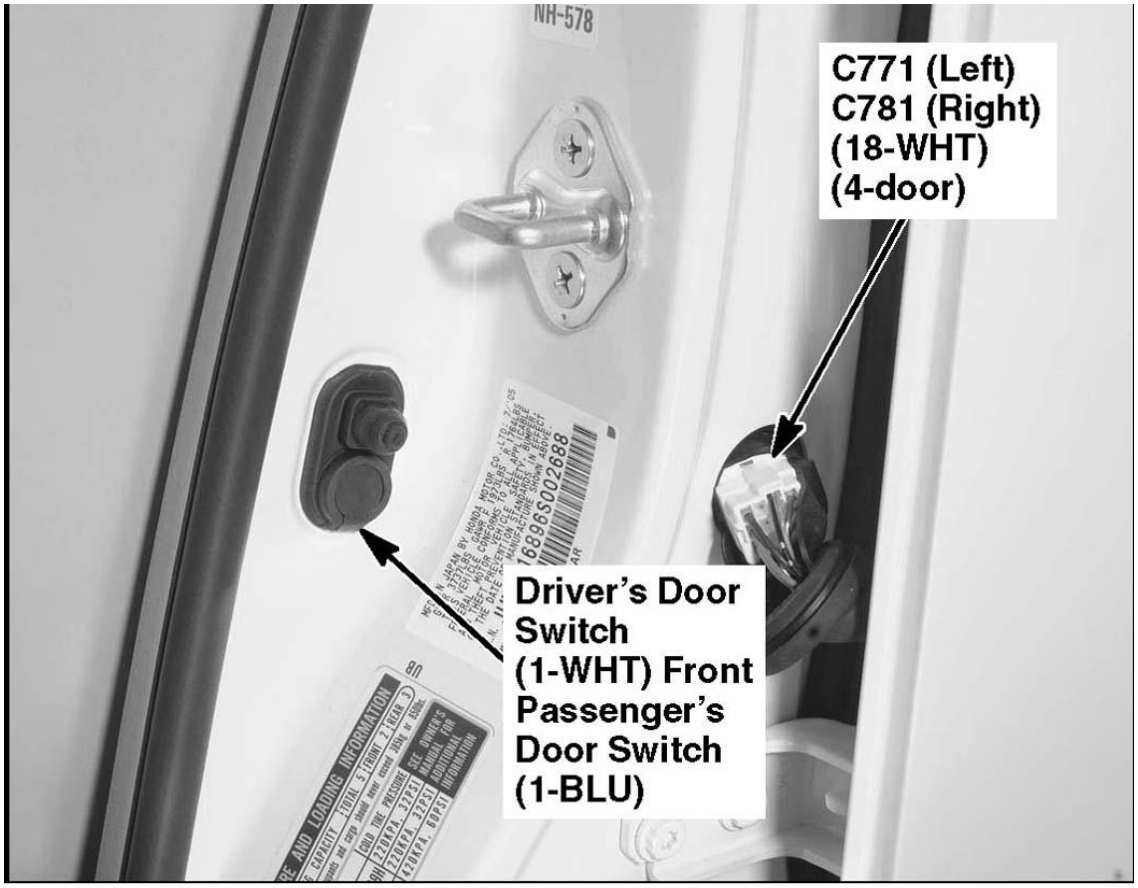
G00434440

Fig. 102: Left "B" Pillar (2-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



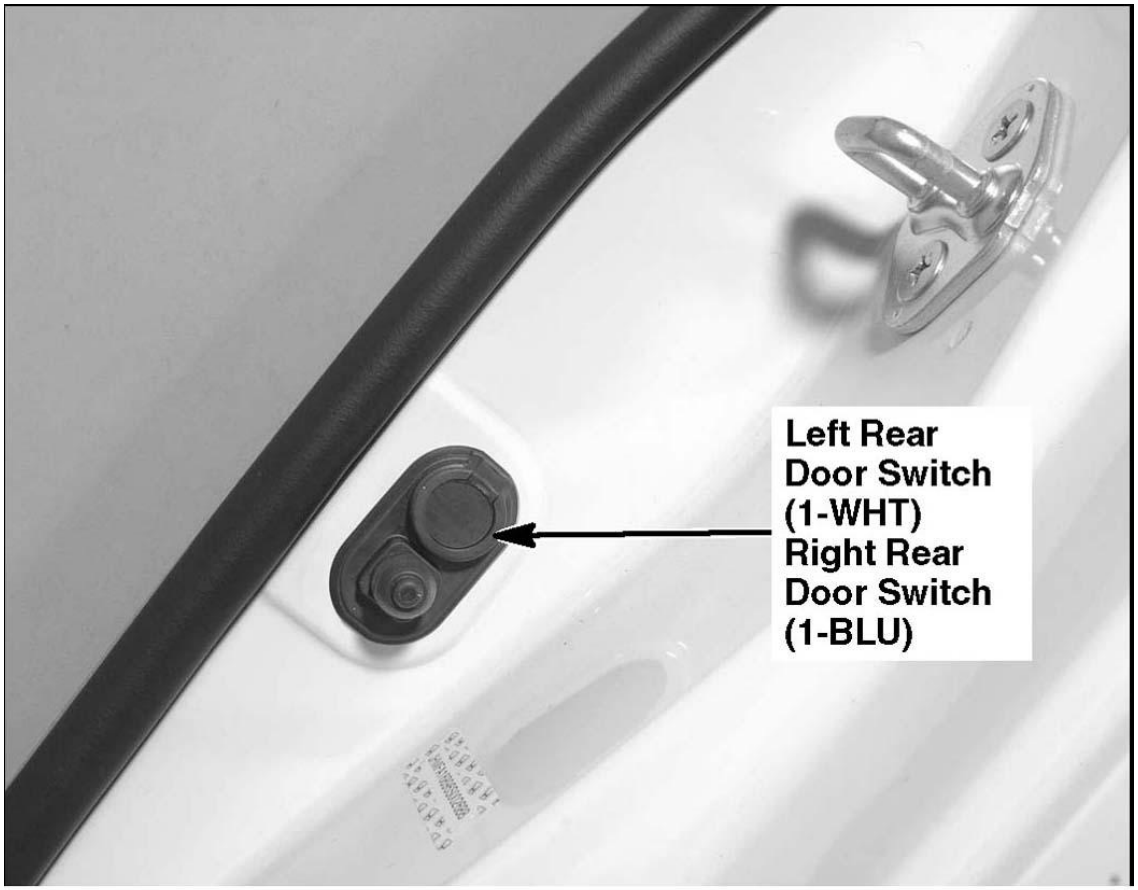
G00434441

Fig. 103: Base Of Left "B" Pillar (4-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



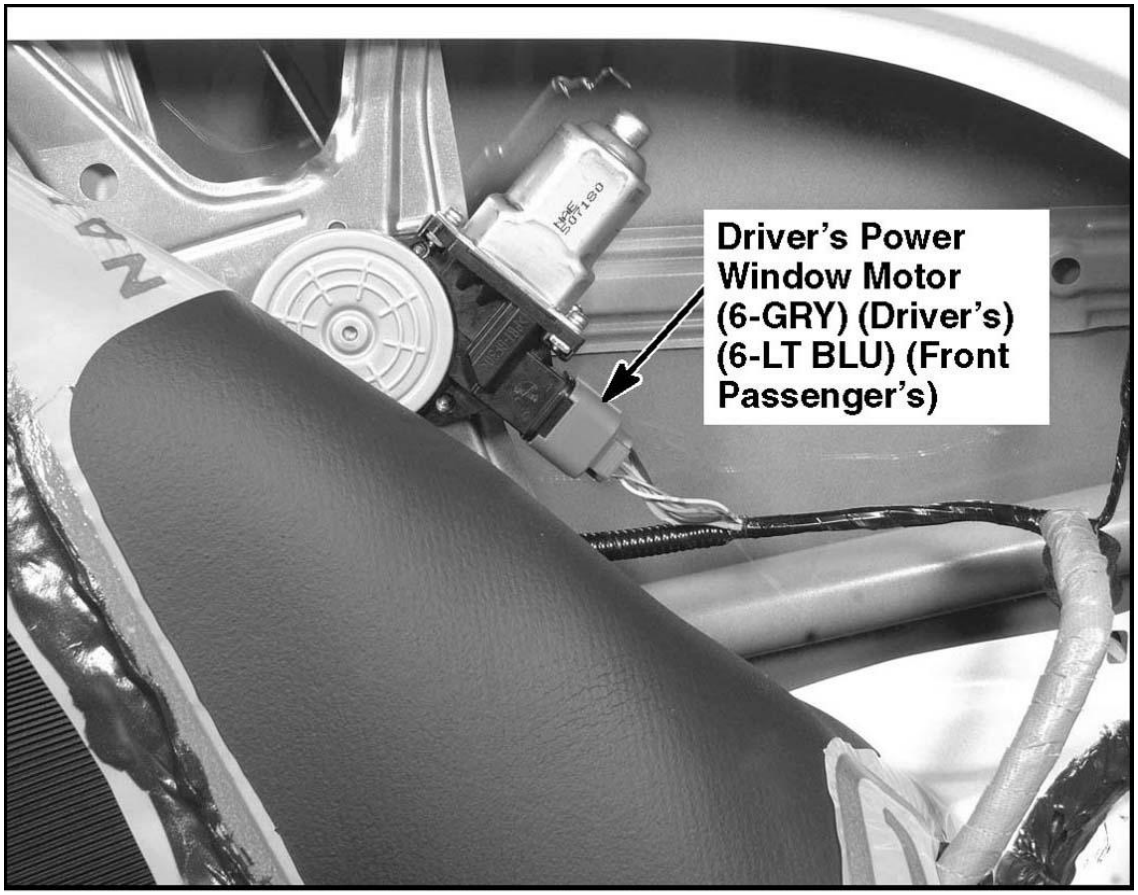
G00434442

Fig. 104: Left "B" Pillar (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



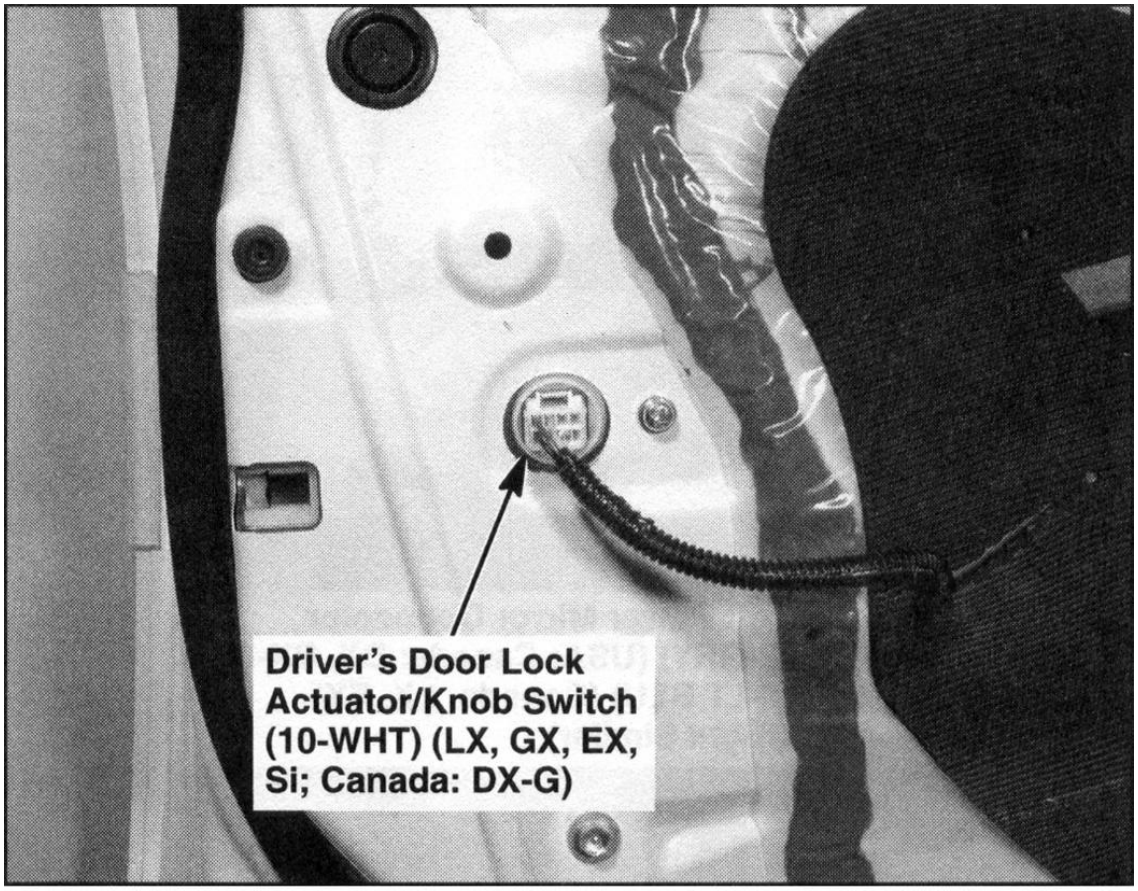
G00434443

Fig. 105: Left "C" Pillar (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



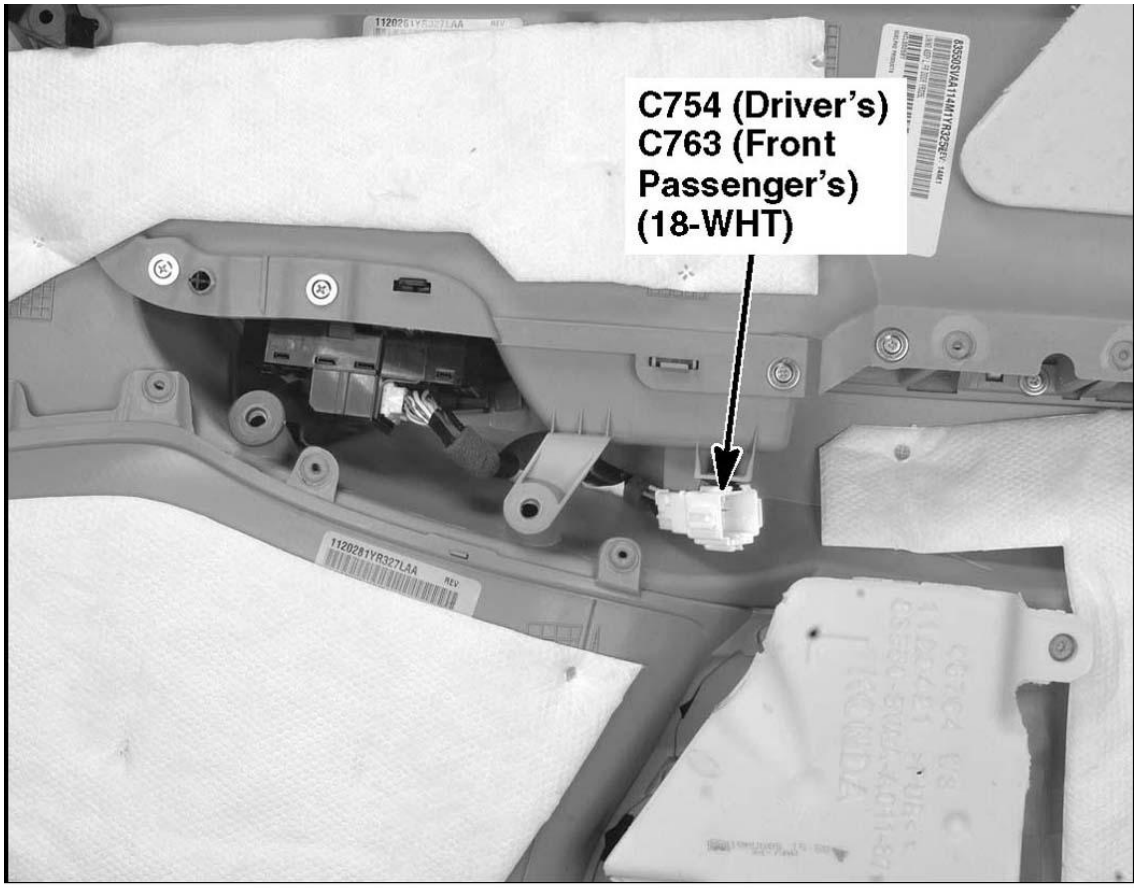
G00434444

Fig. 106: Driver's Door (Front Passenger's Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



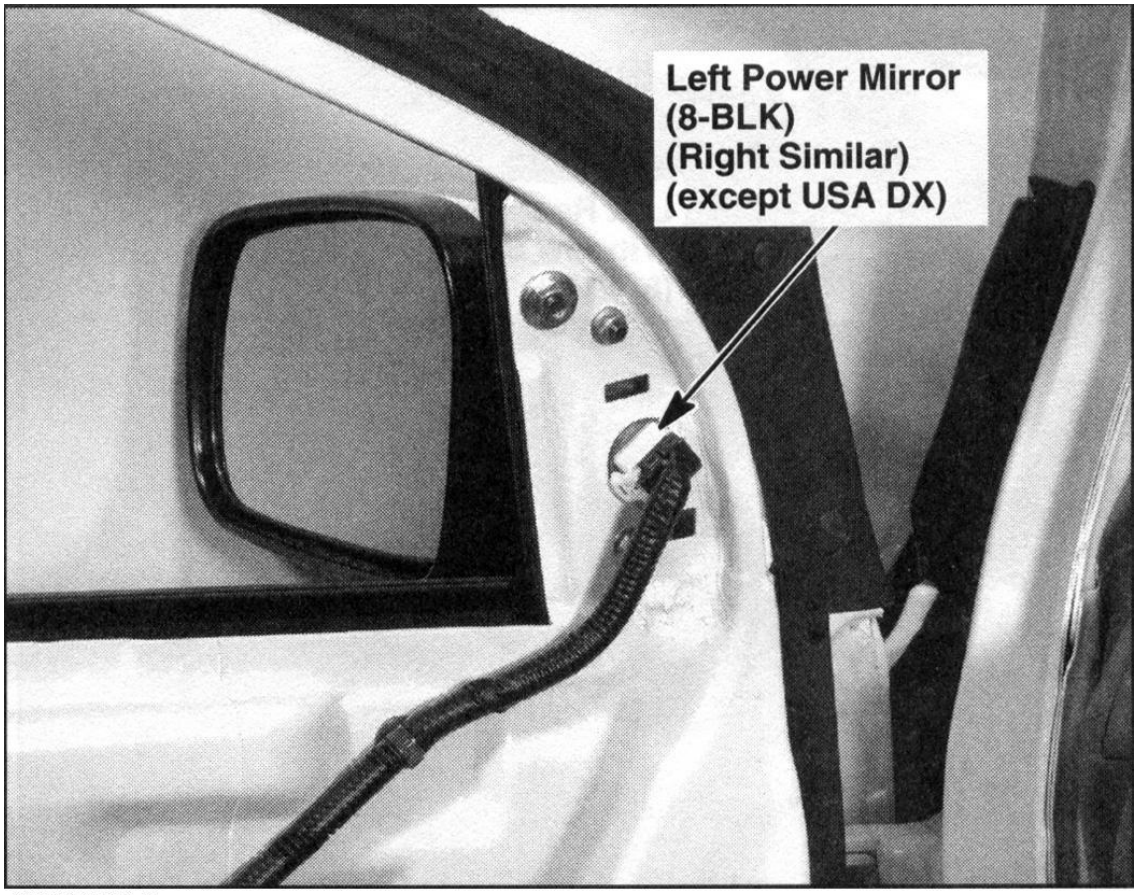
G00447715

Fig. 107: Driver's Door (Front Passenger's Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



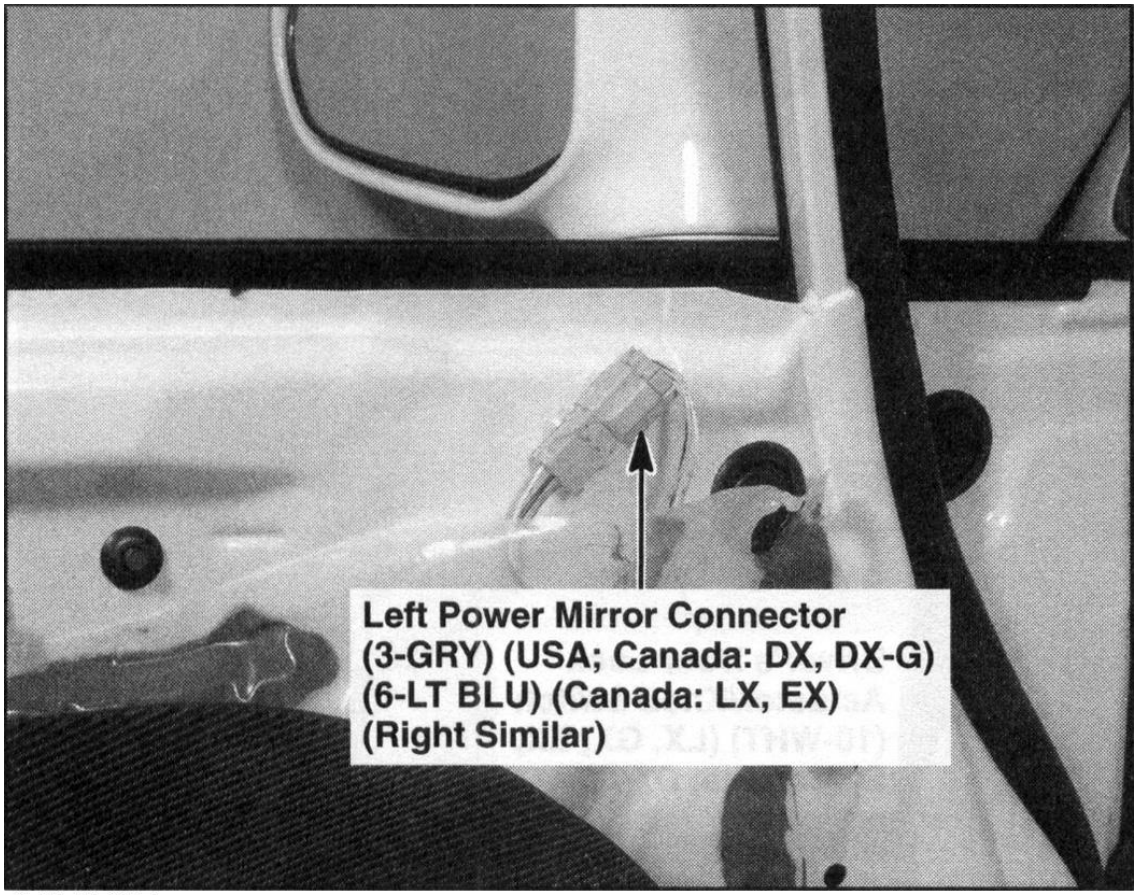
G00434446

Fig. 108: Driver's Door (Front Passenger's Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



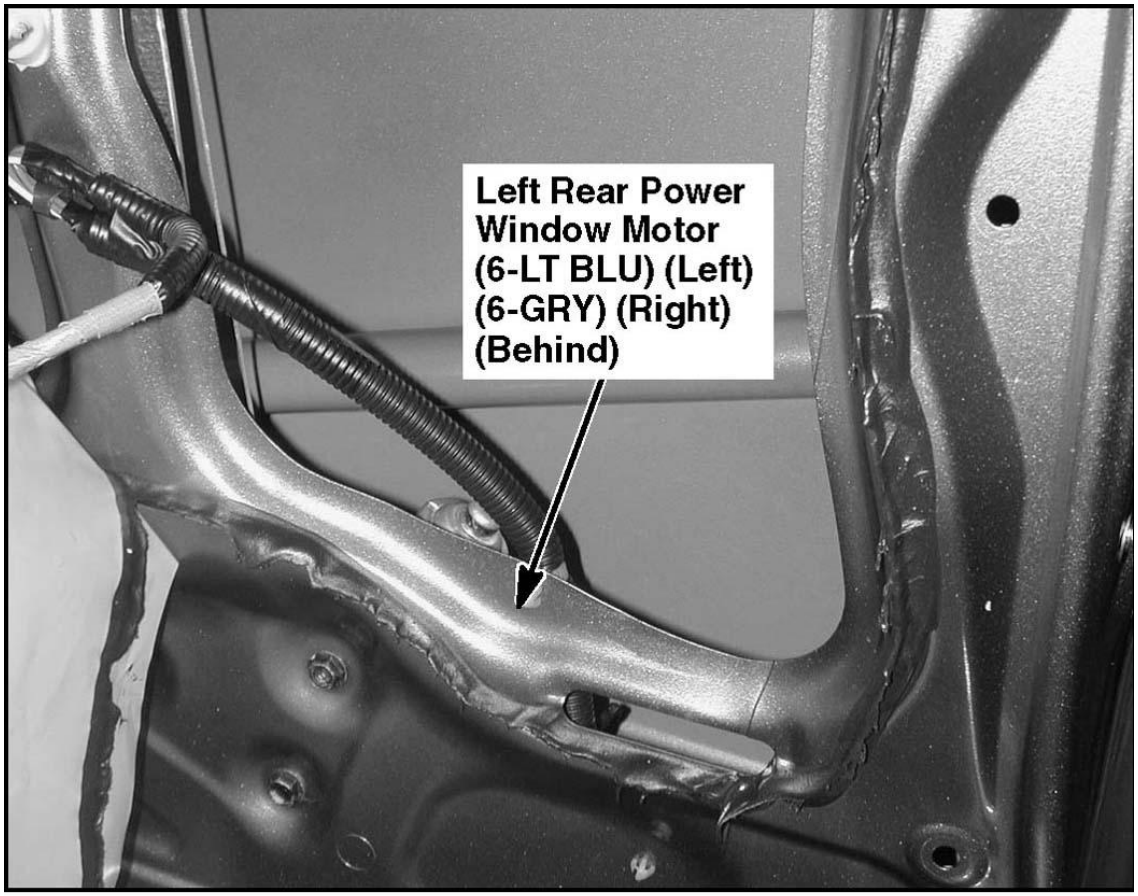
G00447716

Fig. 109: Driver's Door (2-Door) (Front Passenger's Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



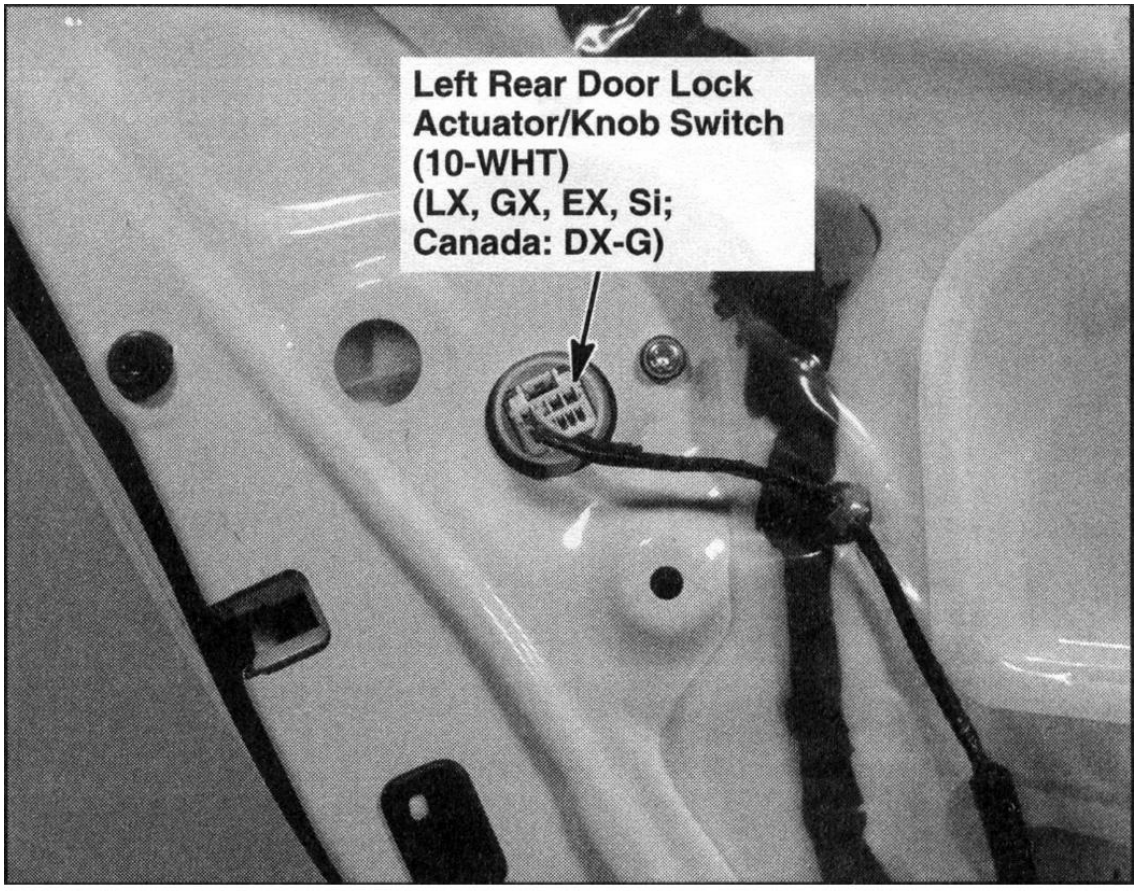
G00447717

Fig. 110: Driver's Door (4-Door) (Front Passenger's Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



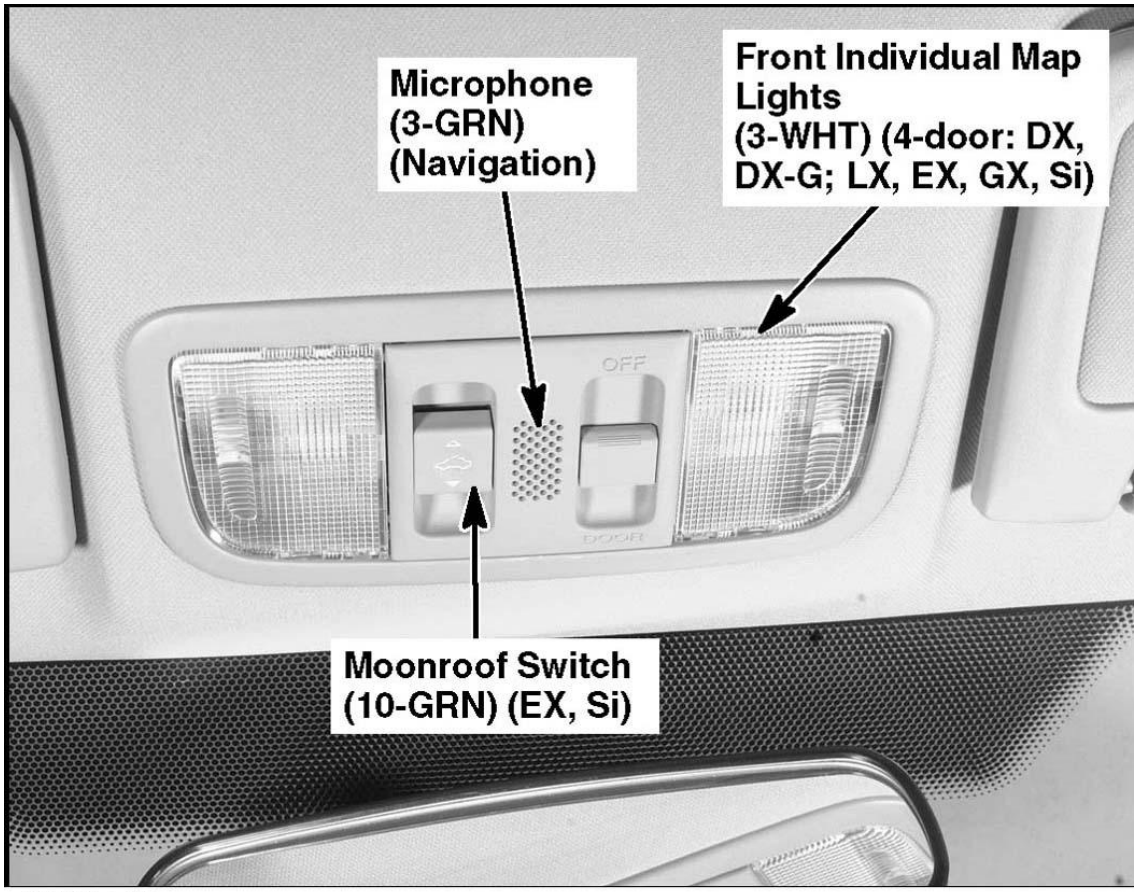
G00434449

Fig. 111: Left Rear Door (Right Rear Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



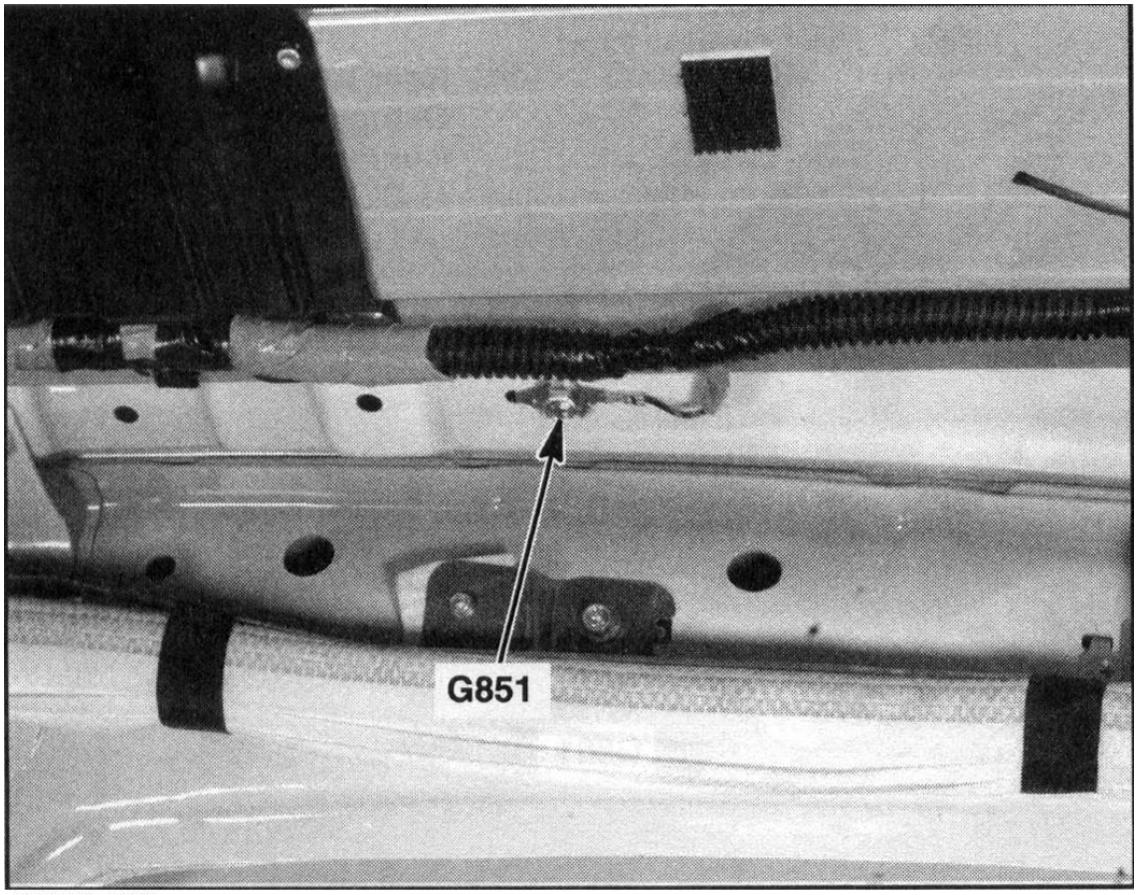
G00447718

Fig. 112: Left Rear Door (Right Rear Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



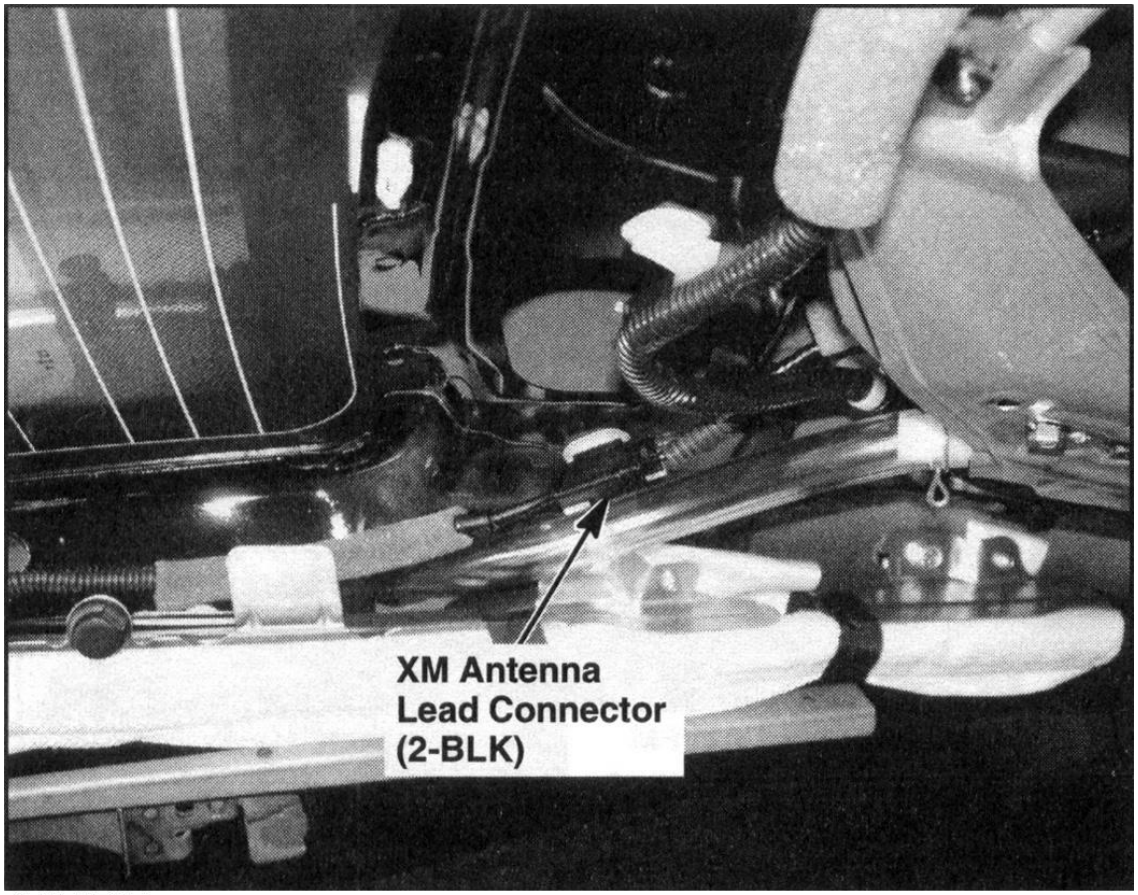
G00434451

Fig. 113: Front Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.



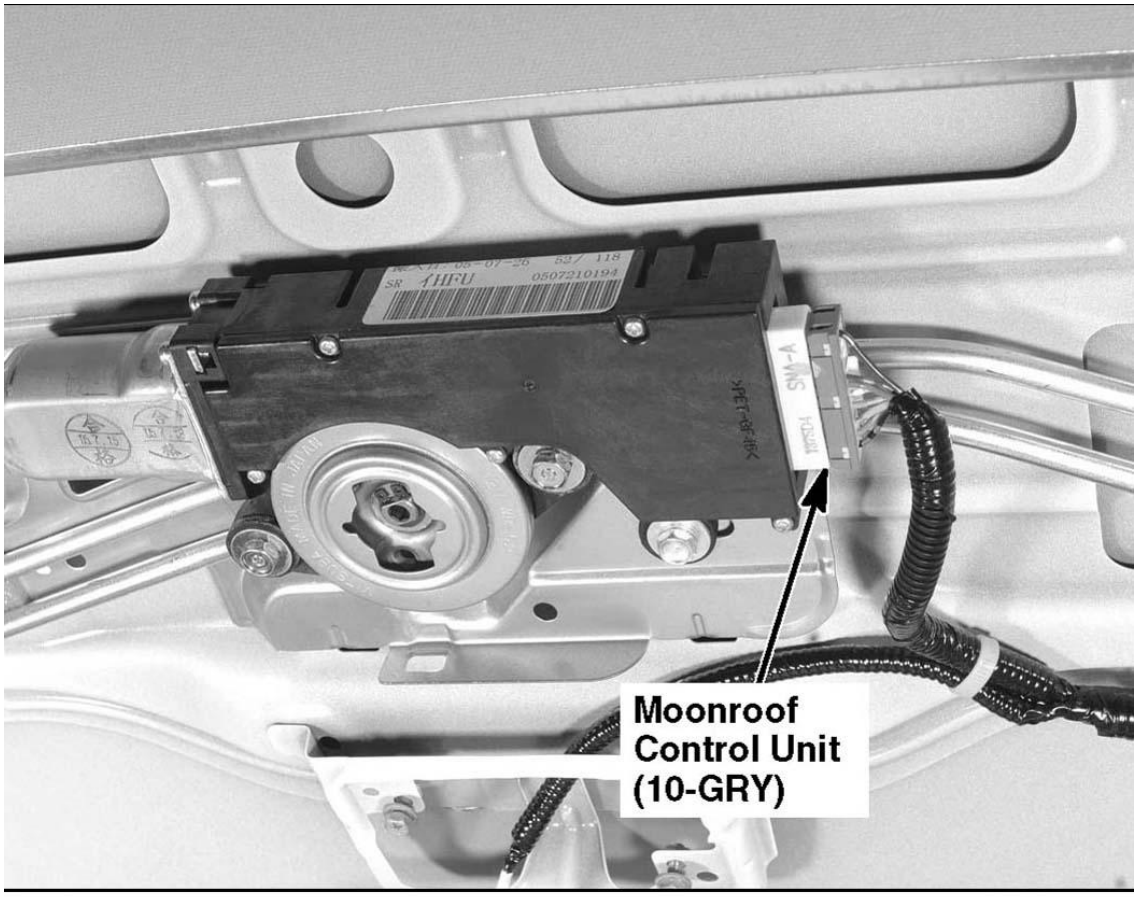
G00447720

Fig. 114: Left Side Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.



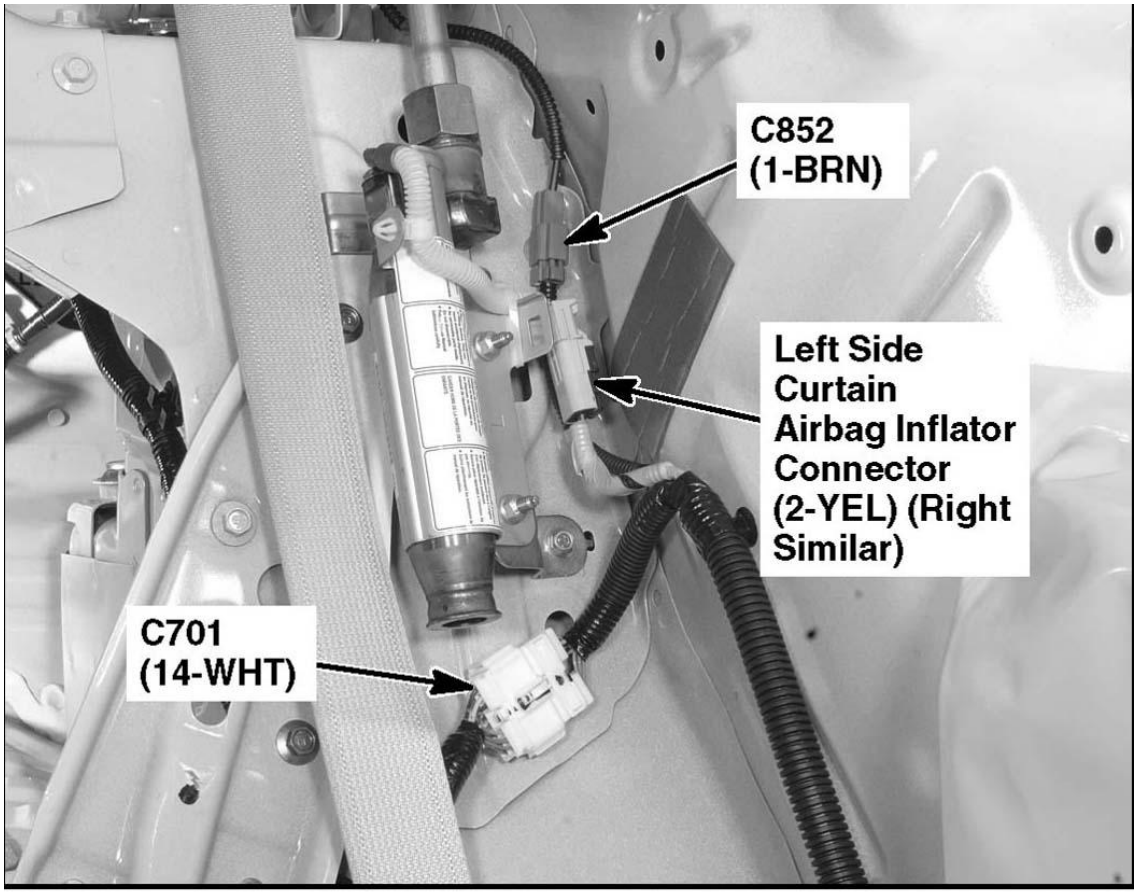
G00447719

Fig. 115: Left Rear Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.



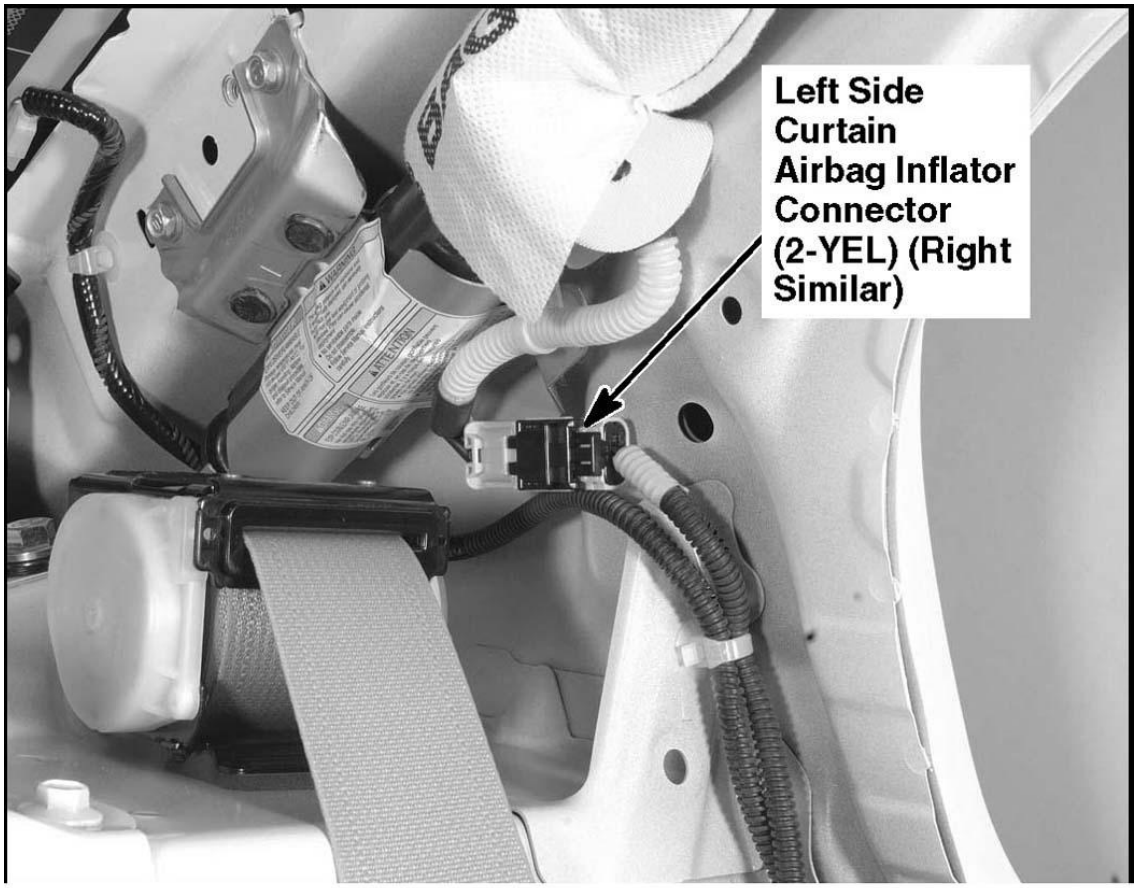
G00434454

Fig. 116: Rear Of Roof
Courtesy of AMERICAN HONDA MOTOR CO., INC.



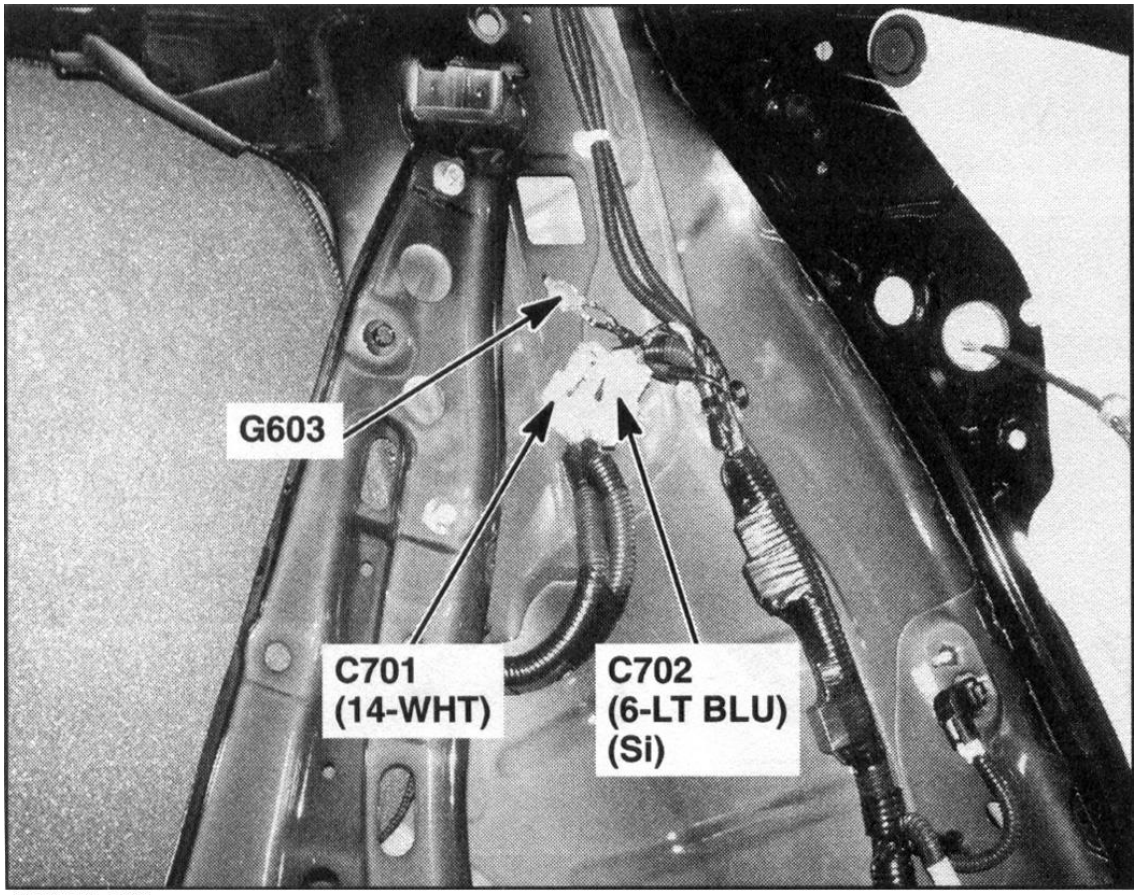
G00434455

Fig. 117: Left "C" Pillar (2-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



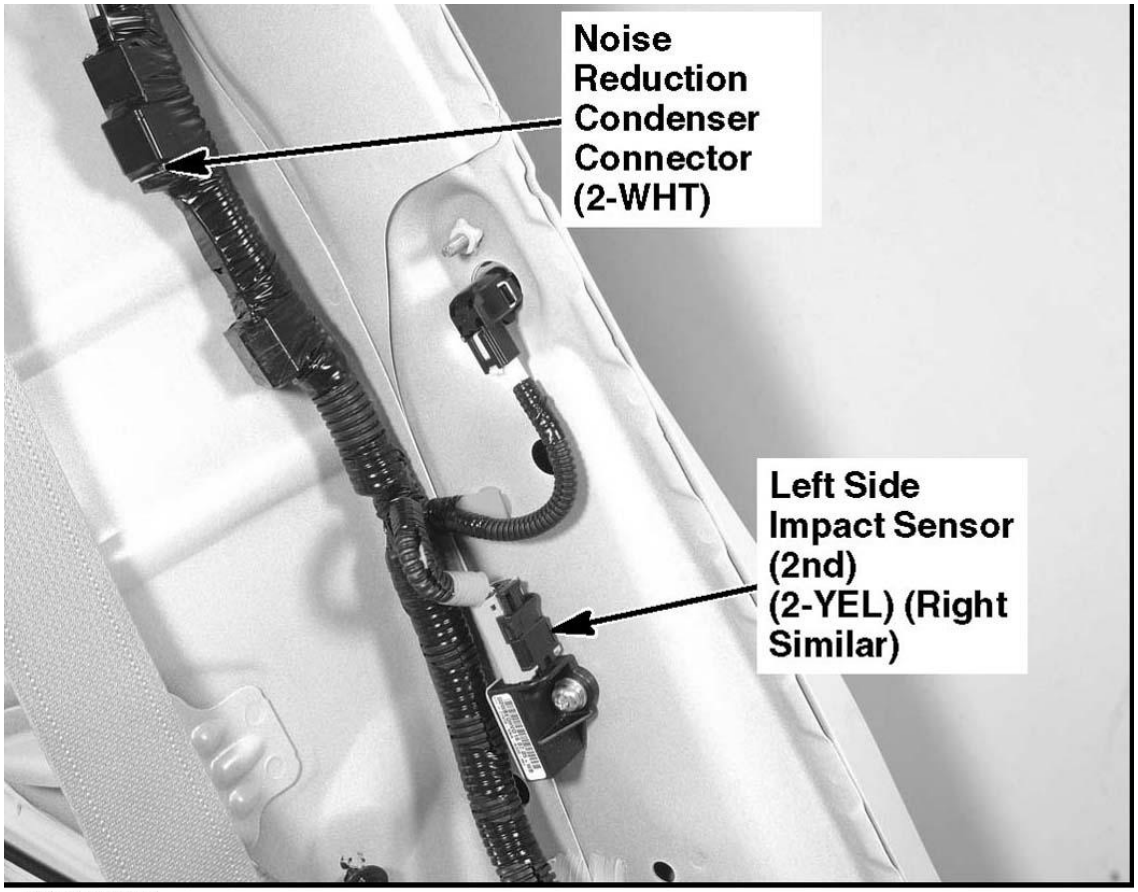
G00434456

Fig. 118: Left "C" Pillar (4-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



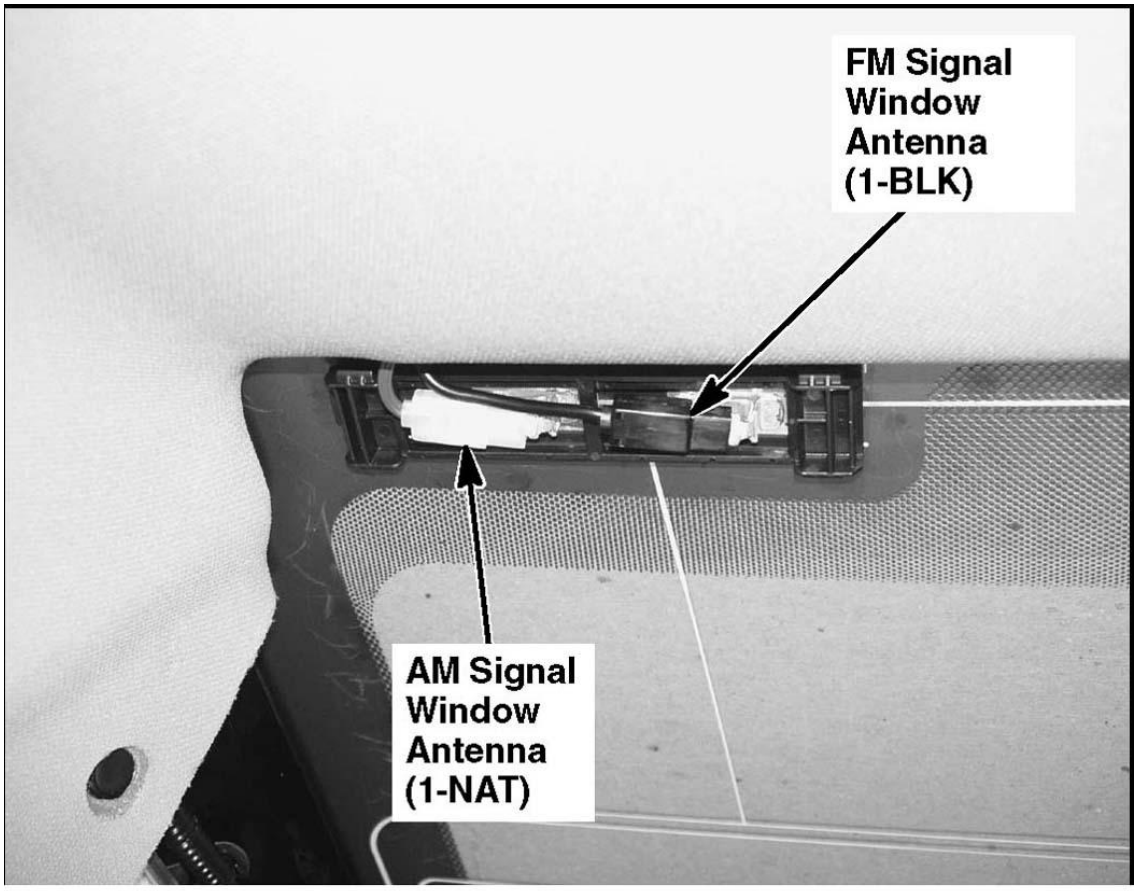
G00447721

Fig. 119: Left "C" Pillar (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



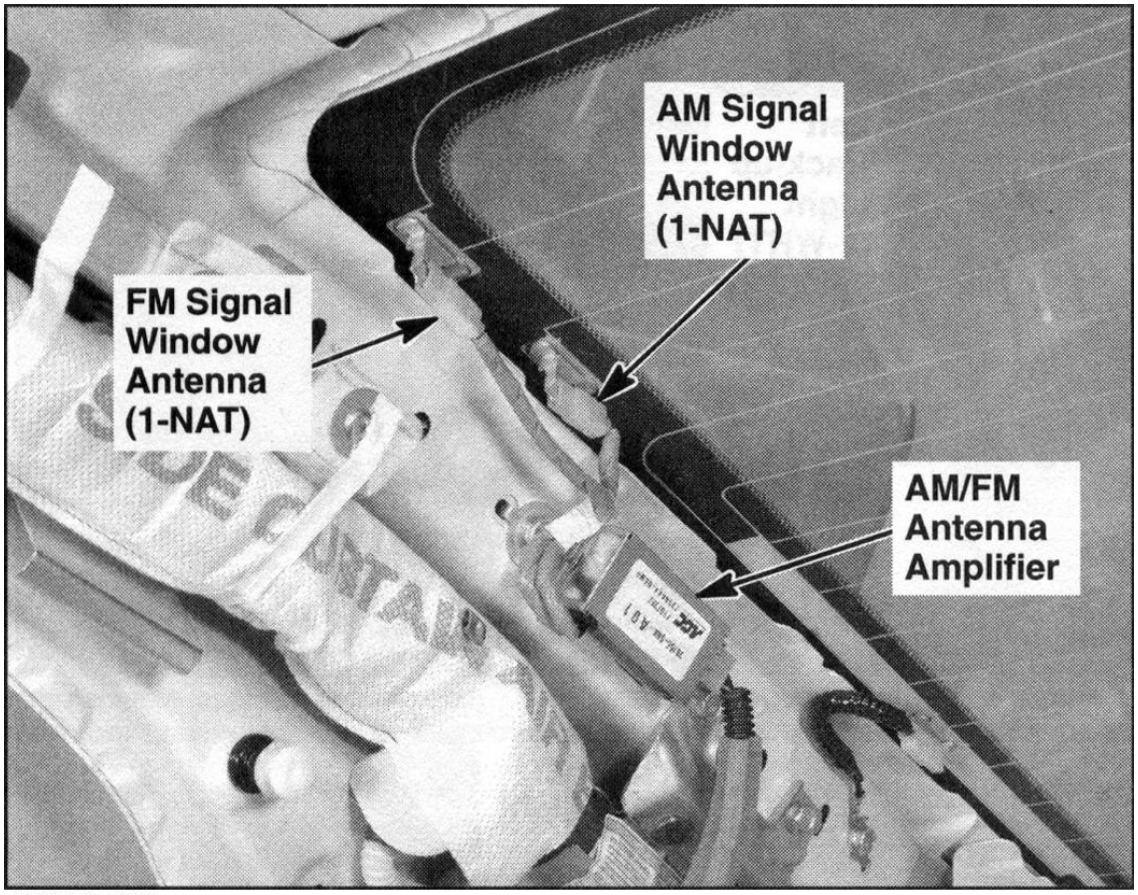
G00434458

Fig. 120: Left "C" Pillar (4-Door) (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



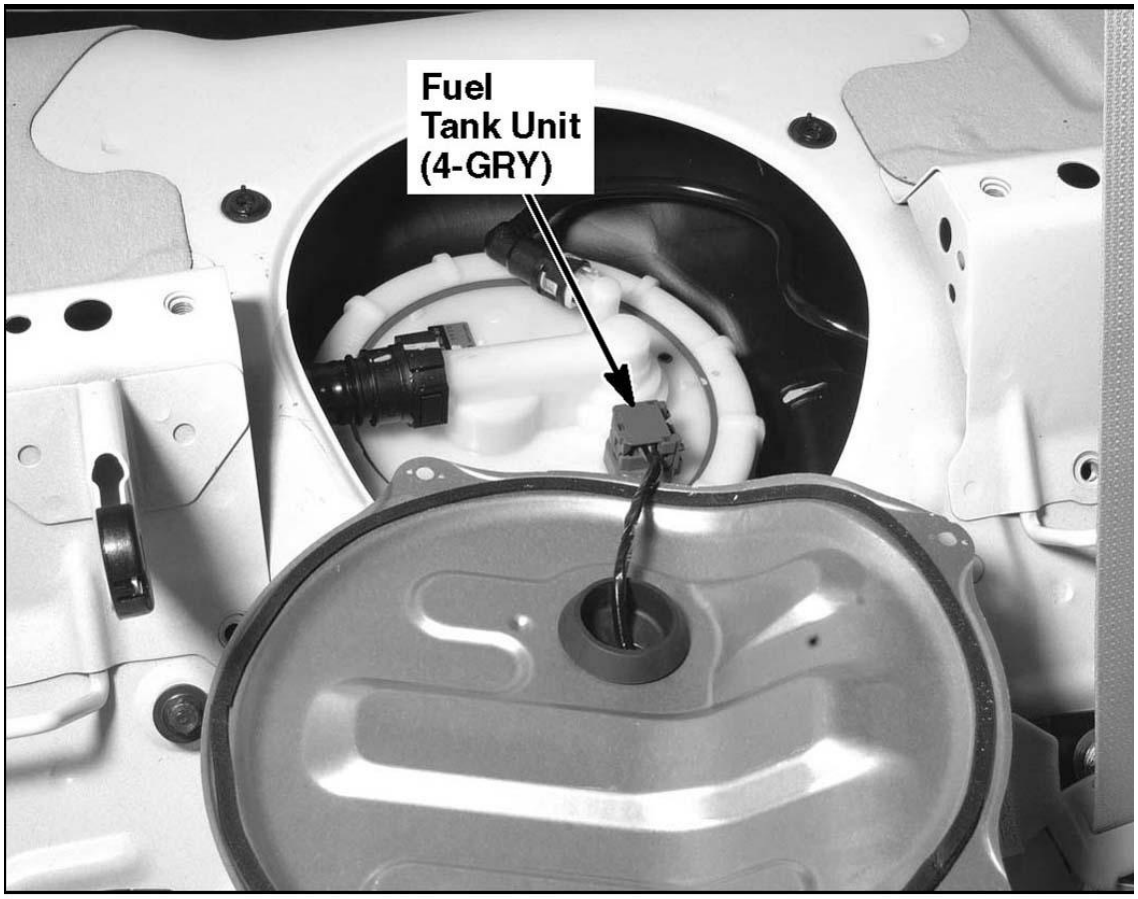
G00434461

Fig. 121: Right Rear Of Roof (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



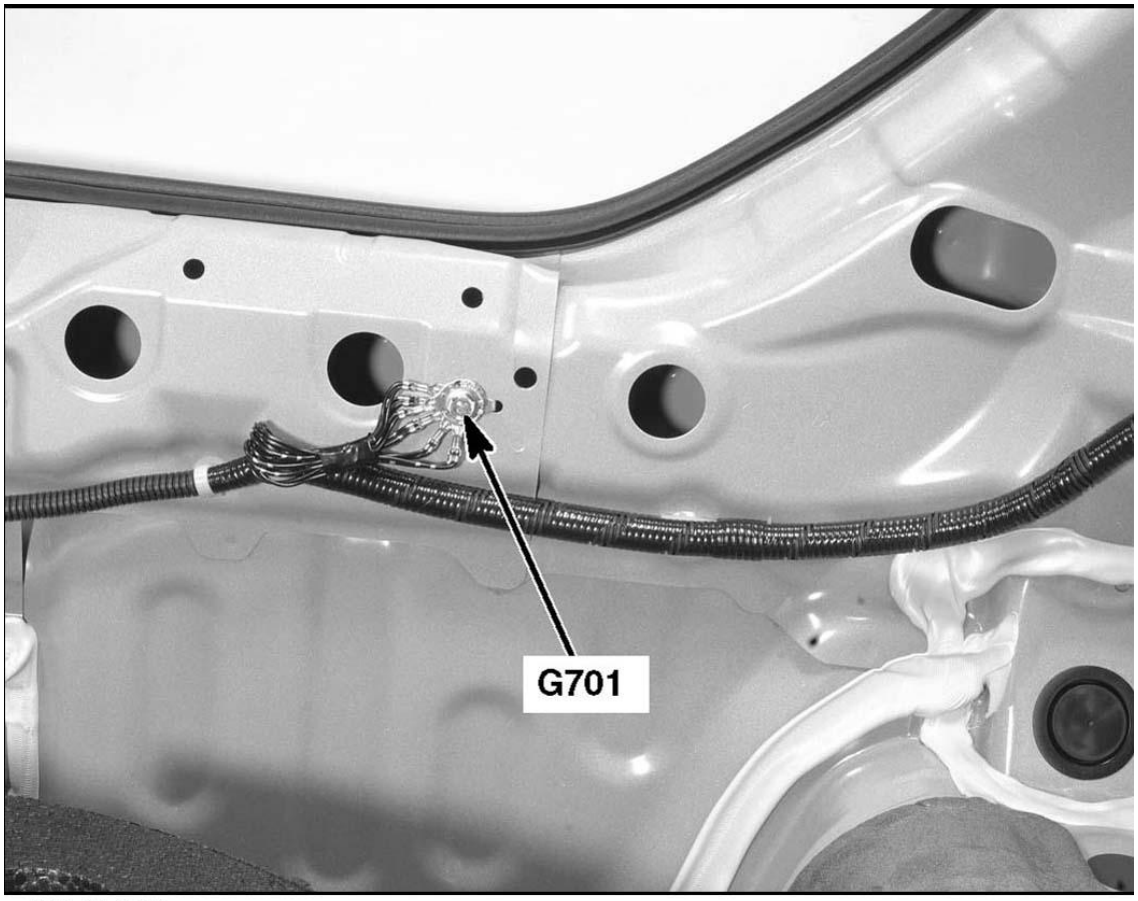
G00447726

Fig. 122: Right "C" Pillar (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



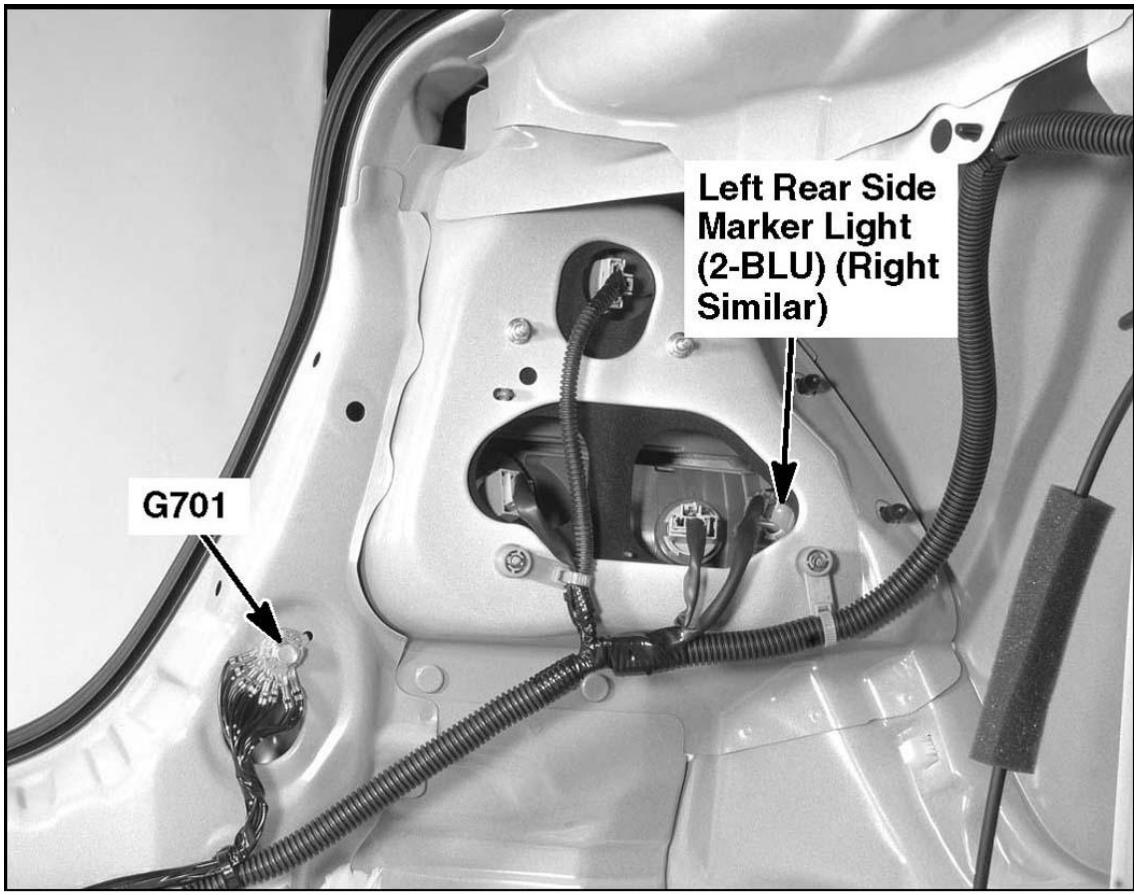
G00434464

Fig. 123: Middle Front Of Trunk
Courtesy of AMERICAN HONDA MOTOR CO., INC.



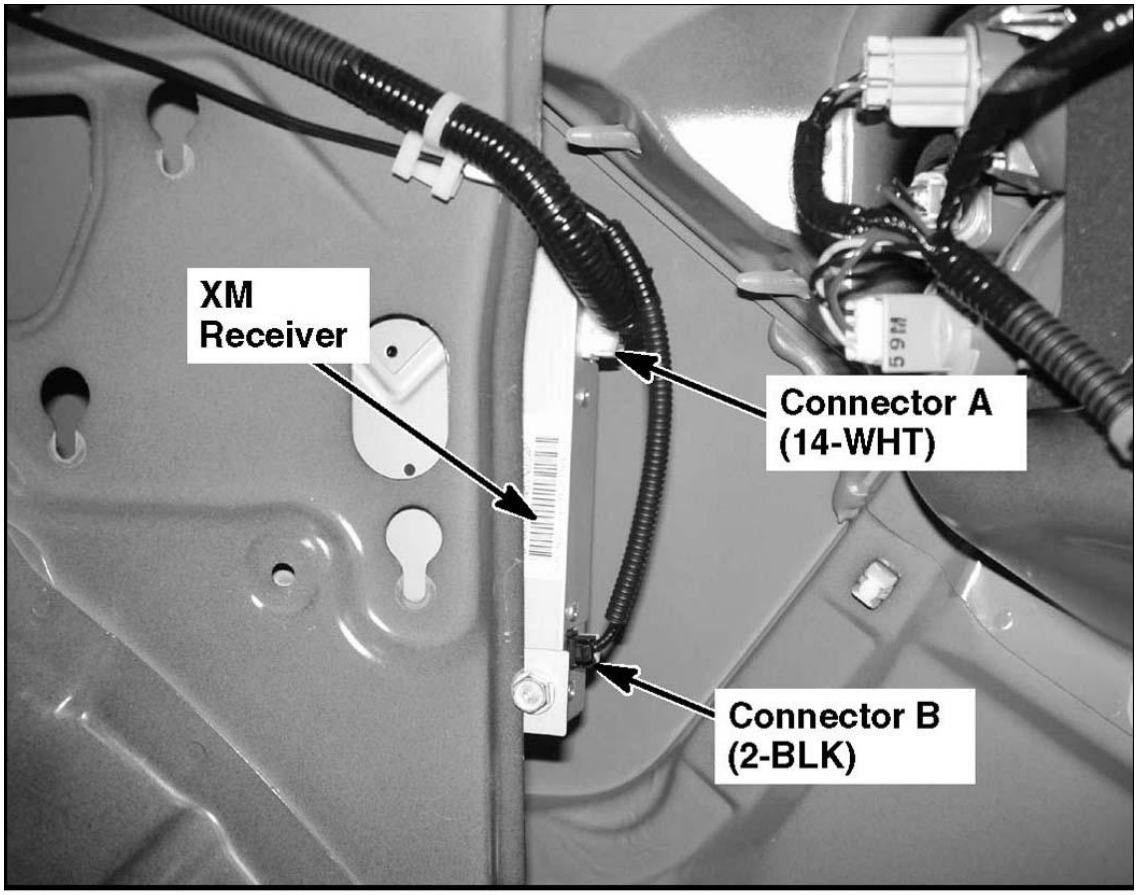
G00434465

Fig. 124: Left Side Of Trunk (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



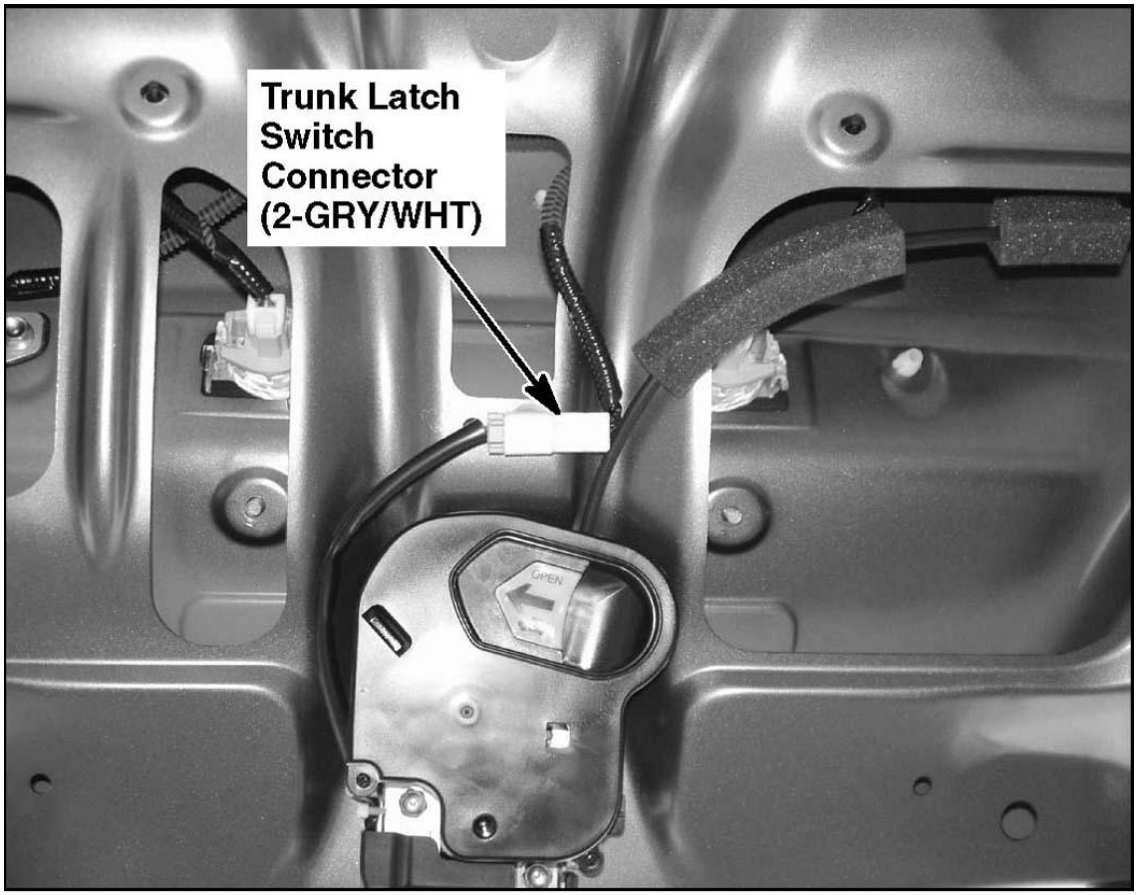
G00434466

Fig. 125: Left Rear Of Trunk (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00434467

Fig. 126: Right Side Of Trunk (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

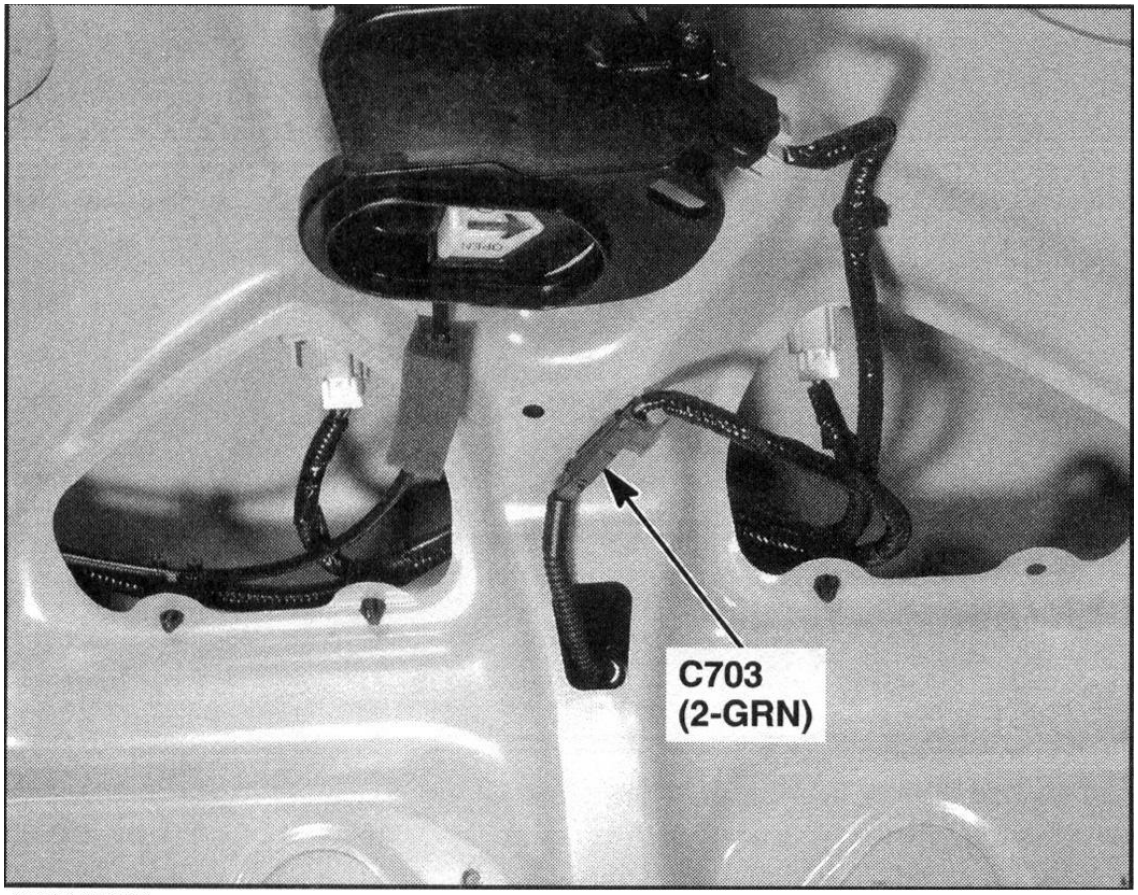


G00434468

Fig. 127: Middle Of Trunk Lid
Courtesy of AMERICAN HONDA MOTOR CO., INC.

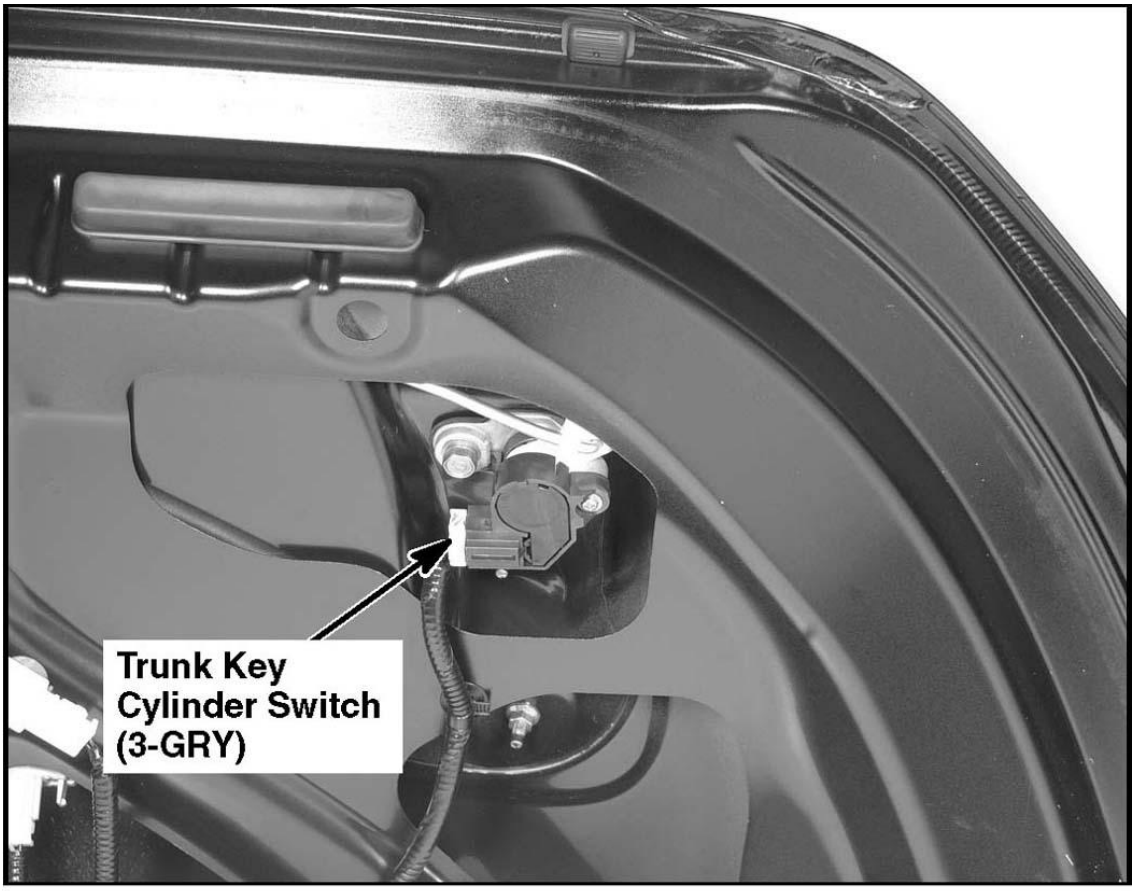
G00434469

Fig. 128: Middle Of Trunk Lid
Courtesy of AMERICAN HONDA MOTOR CO., INC.



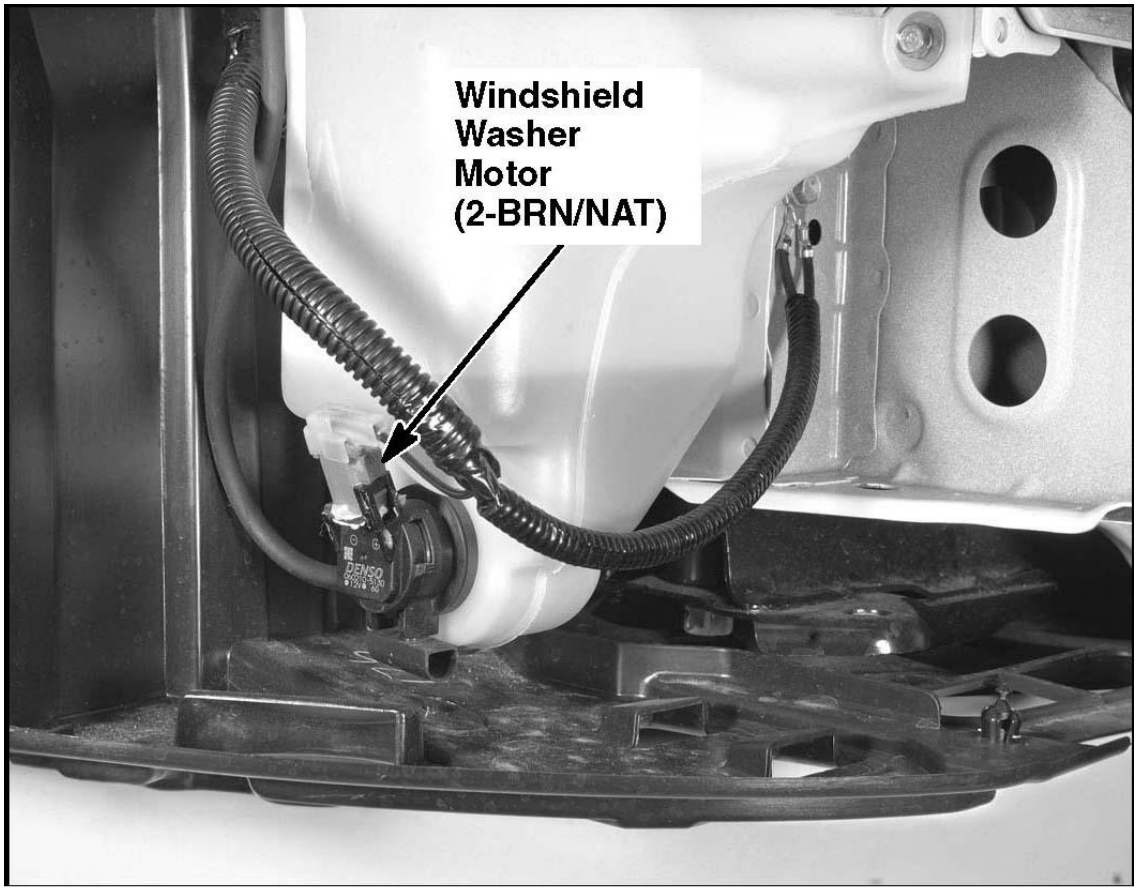
G00447724

Fig. 129: Middle Of Trunk Lid
Courtesy of AMERICAN HONDA MOTOR CO., INC.



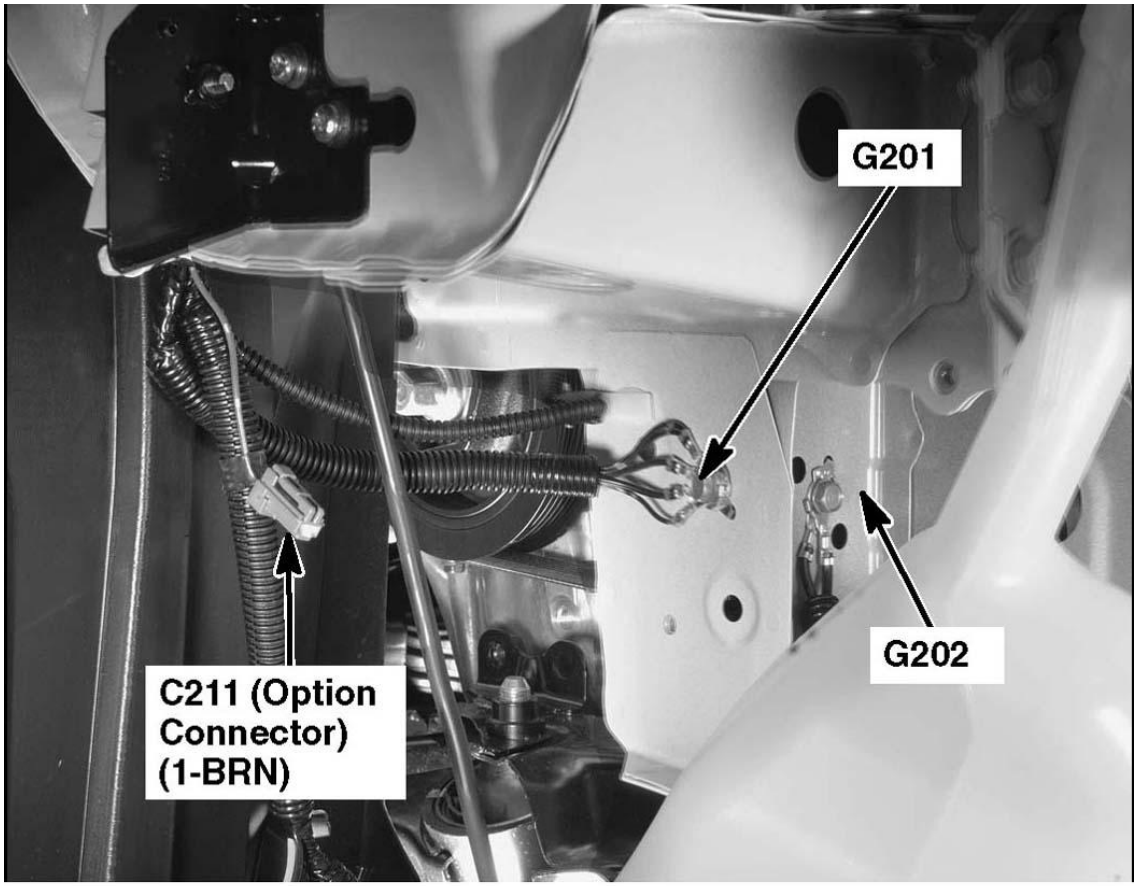
G00434471

Fig. 130: Right Side Of Trunk Lid
Courtesy of AMERICAN HONDA MOTOR CO., INC.



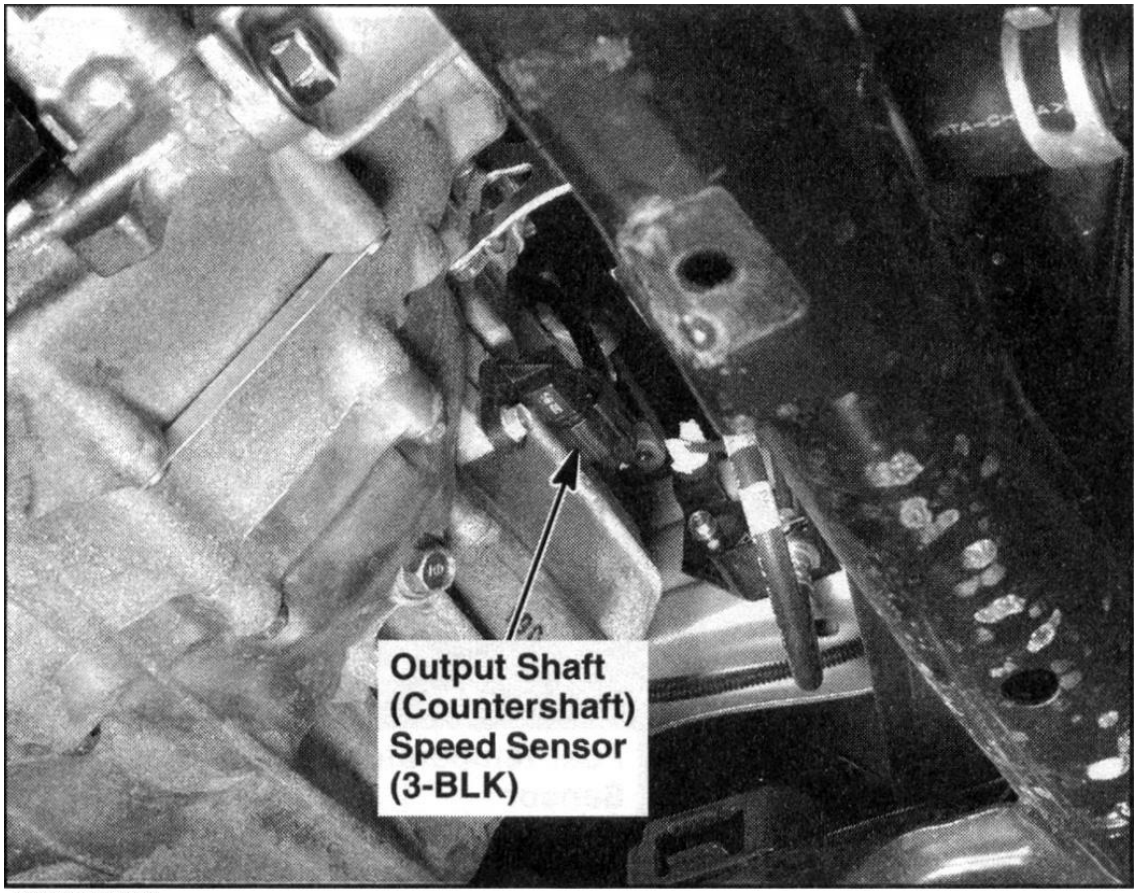
G00434472

Fig. 131: Behind Right Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.



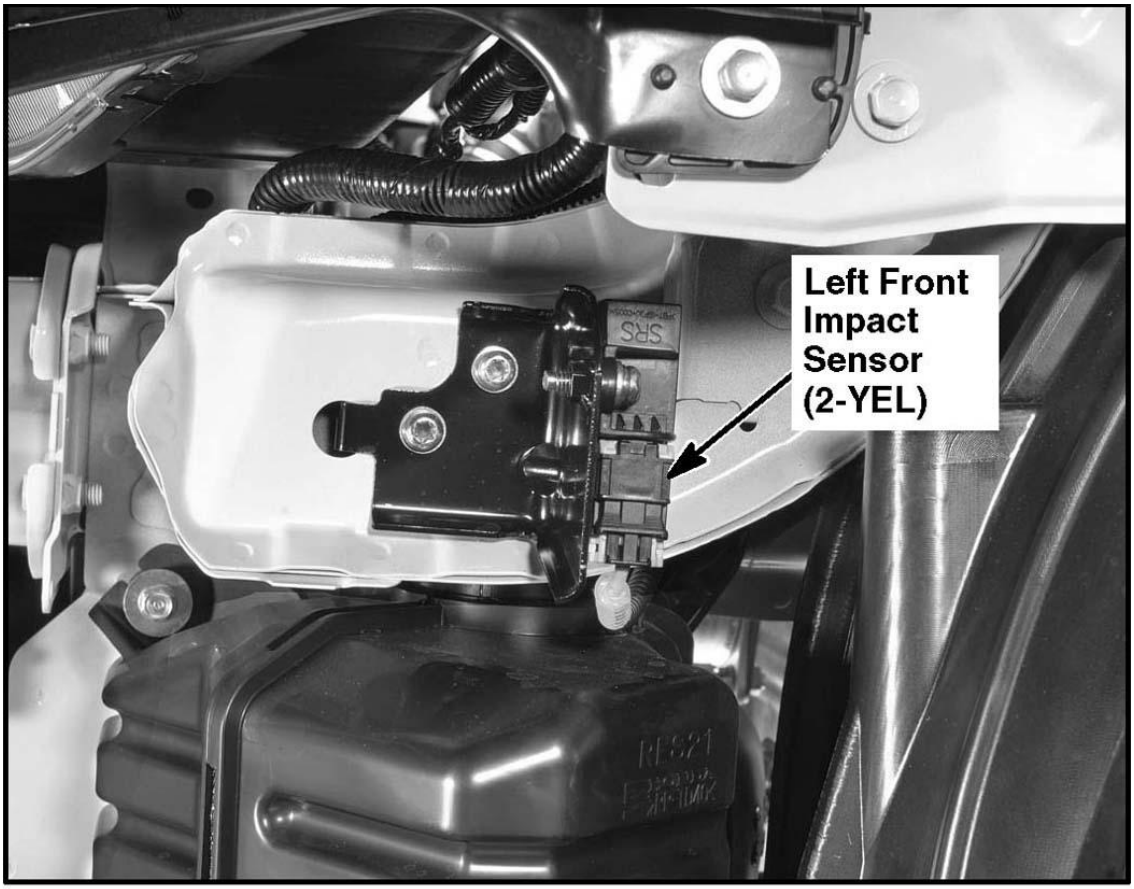
G00434473

Fig. 132: Behind Right Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.



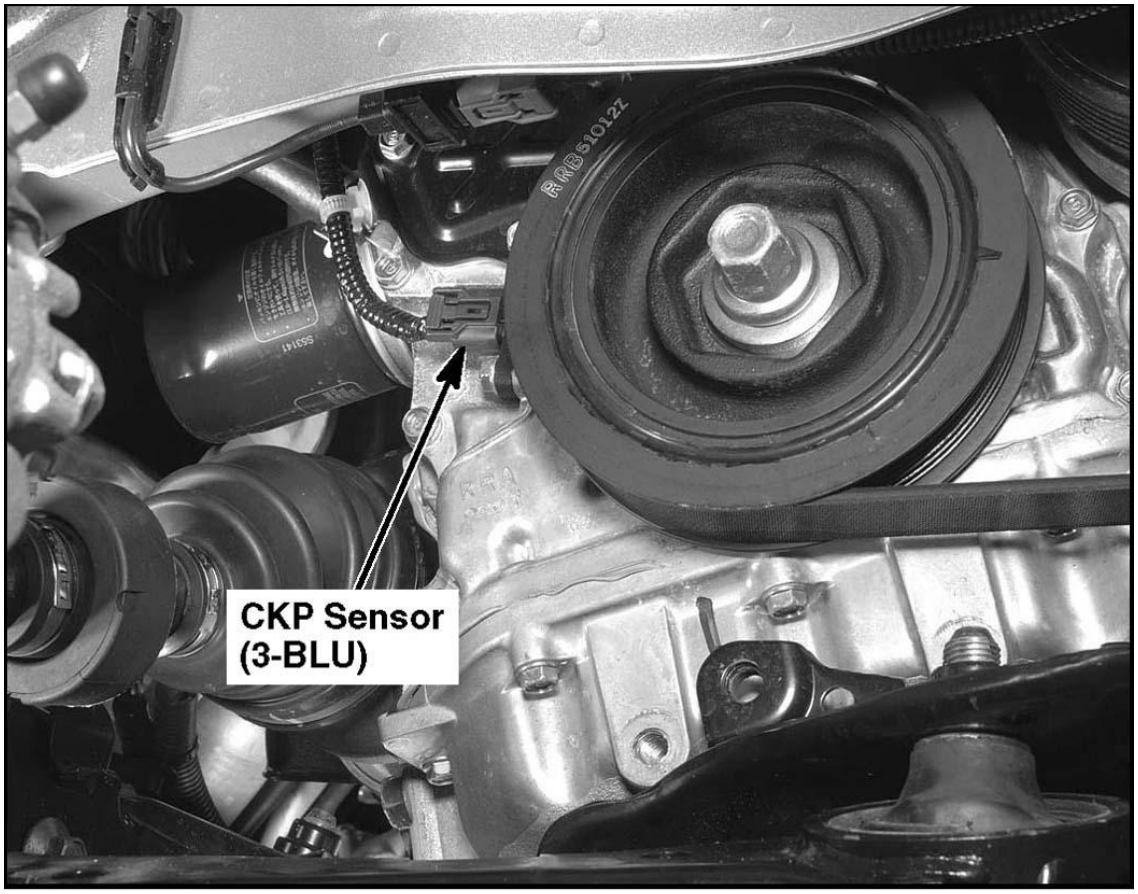
G00447729

Fig. 133: Behind Left Side Of Front Bumper
Courtesy of AMERICAN HONDA MOTOR CO., INC.



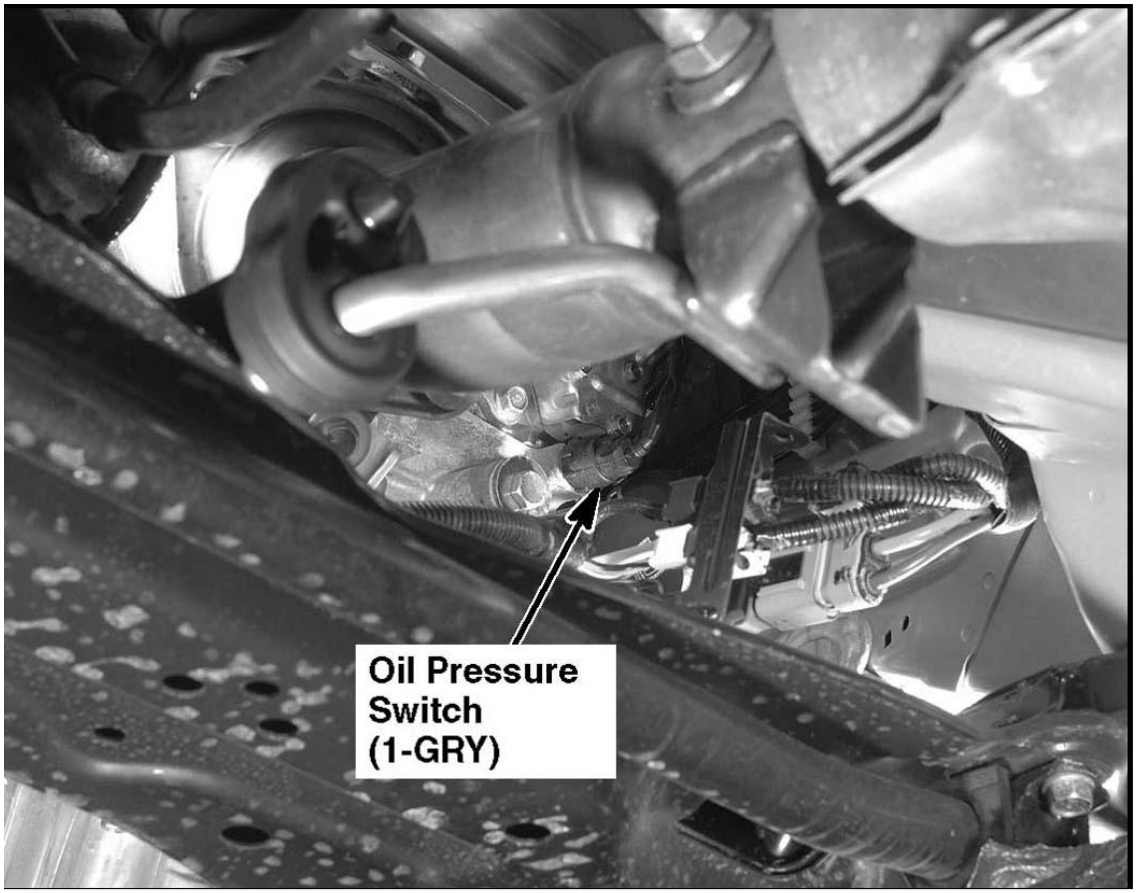
G00434475

Fig. 134: Behind Left Side Of Front Bumper (Right Side Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



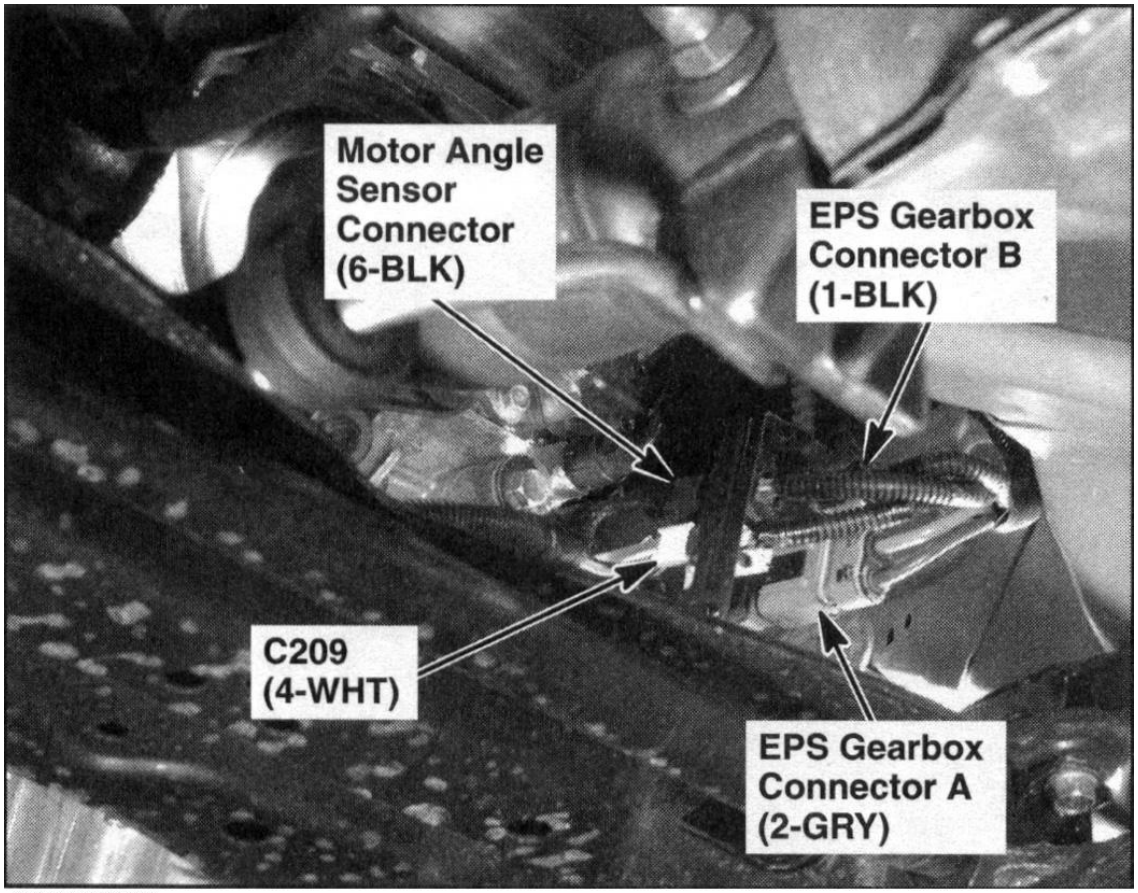
G00434476

Fig. 135: Front Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



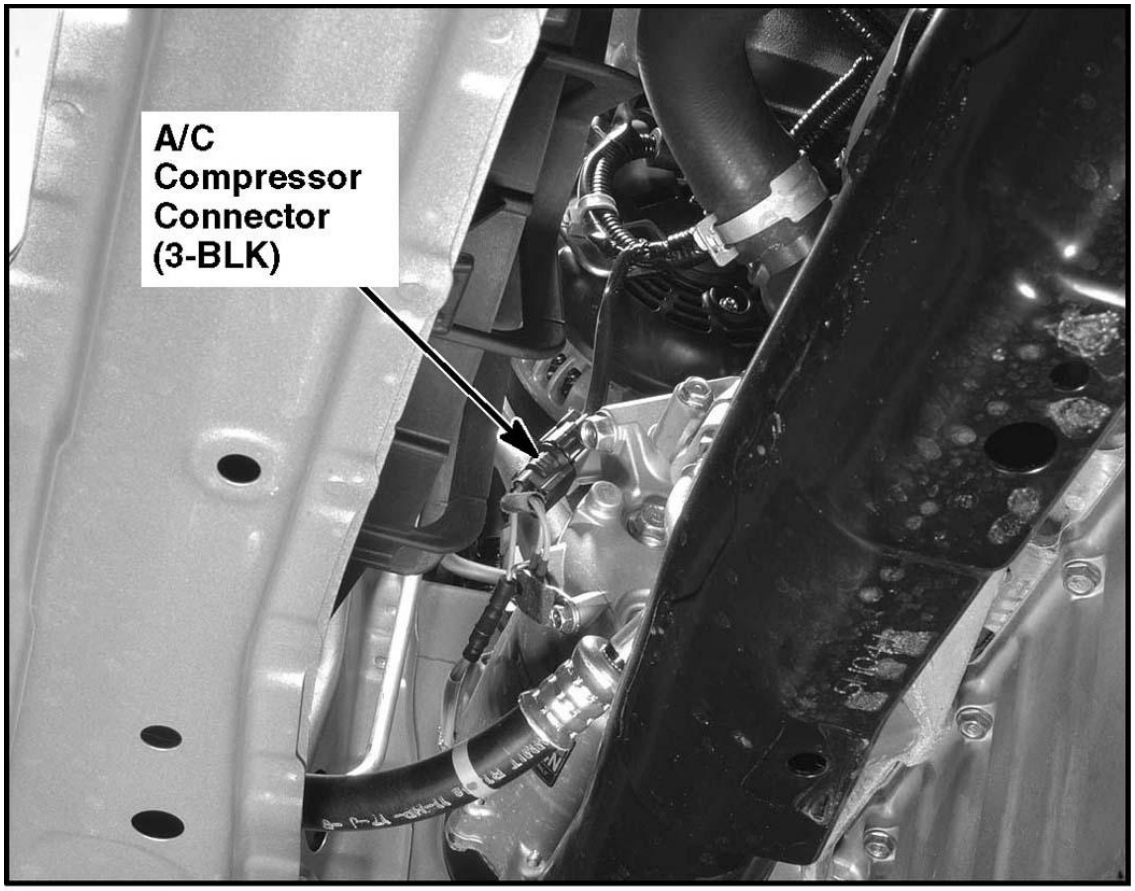
G00434477

Fig. 136: Lower Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



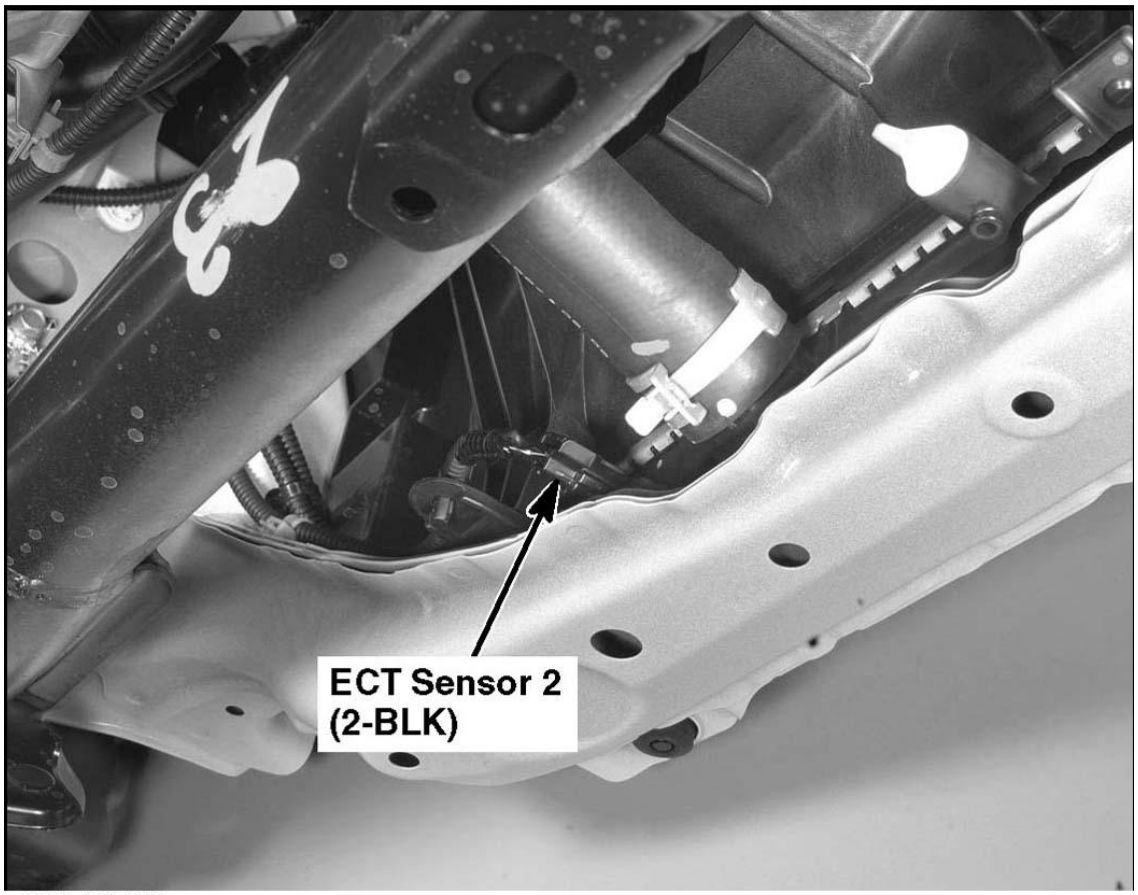
G00447728

Fig. 137: Lower Rear Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



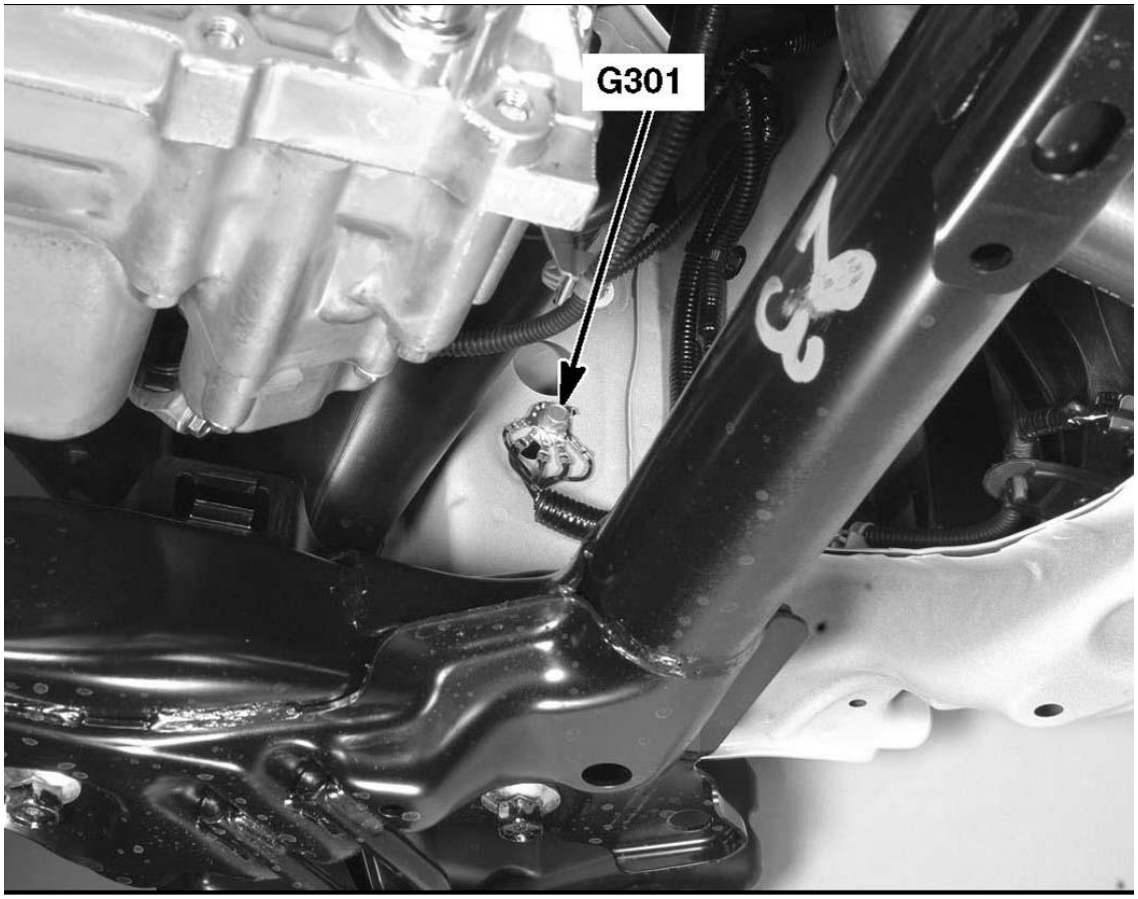
G00434479

Fig. 138: Lower Front Of Engine (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



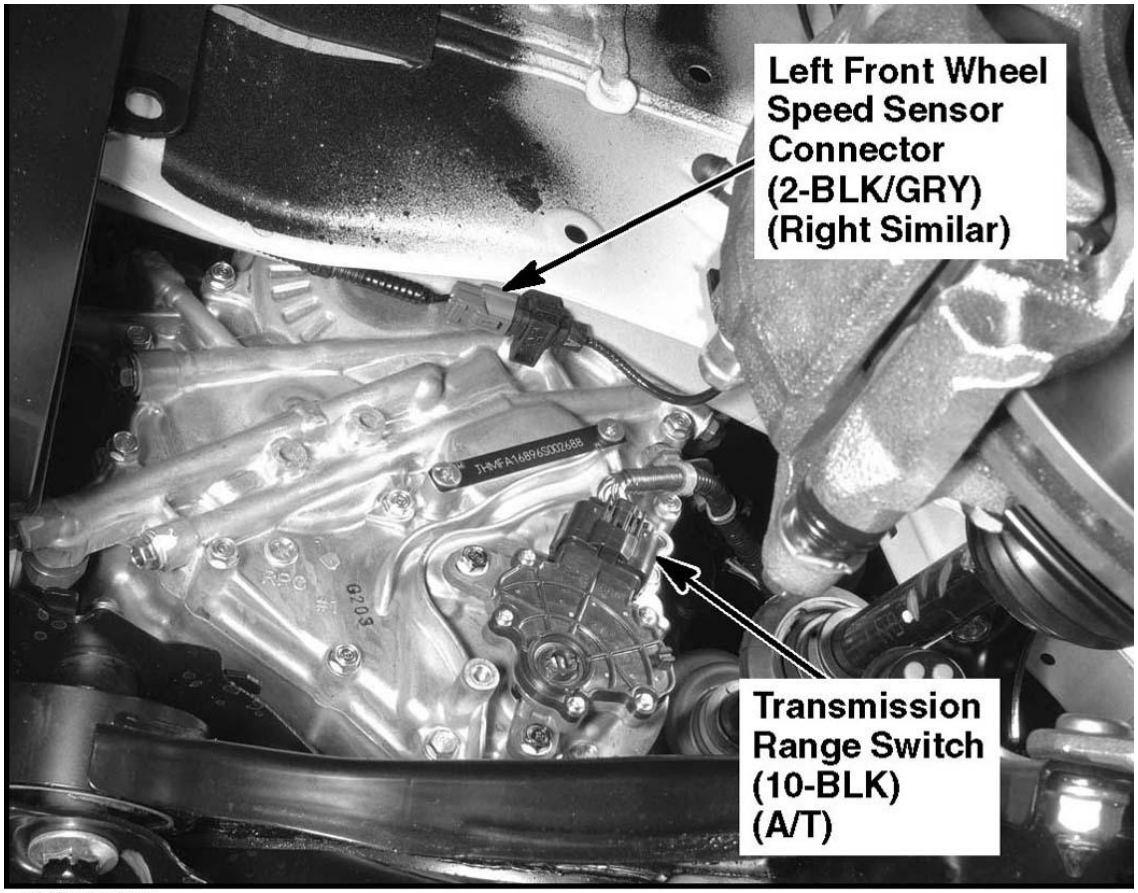
G00434480

Fig. 139: Lower Left Front Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



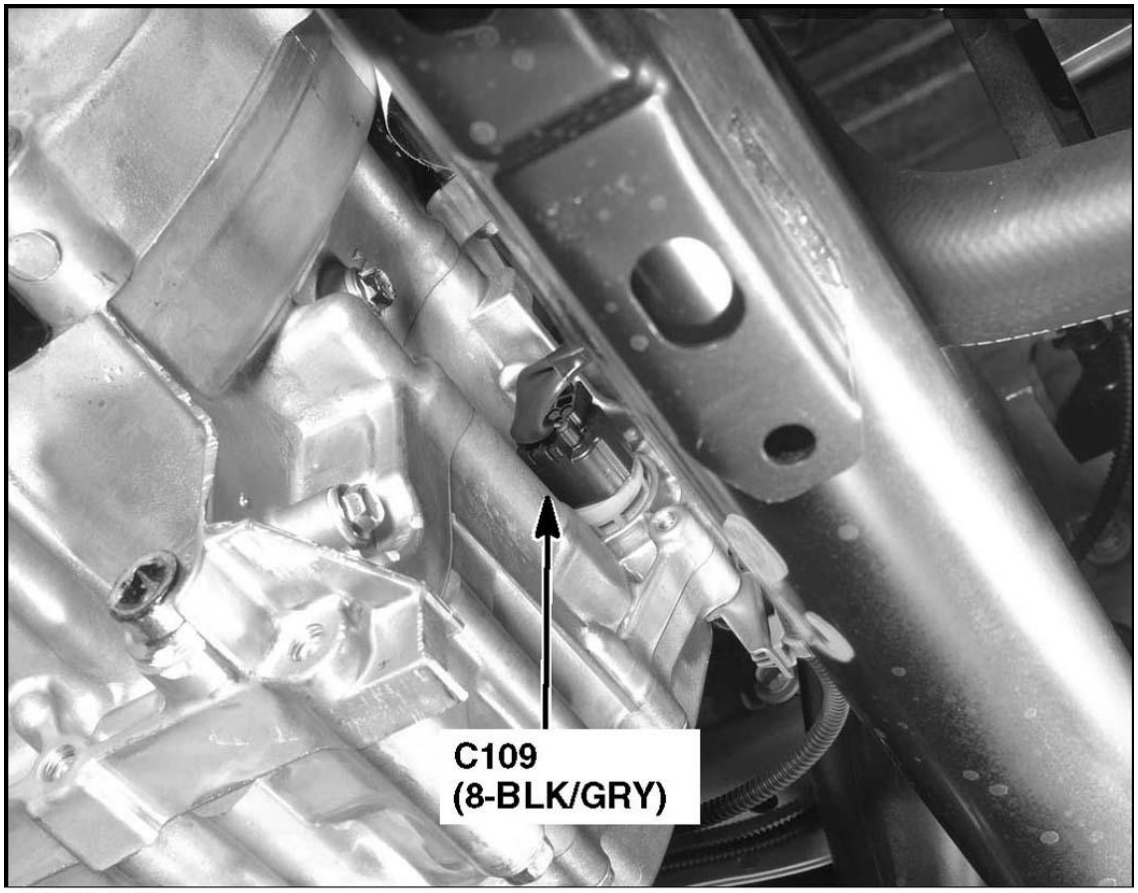
G00434481

Fig. 140: Lower Left Side Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



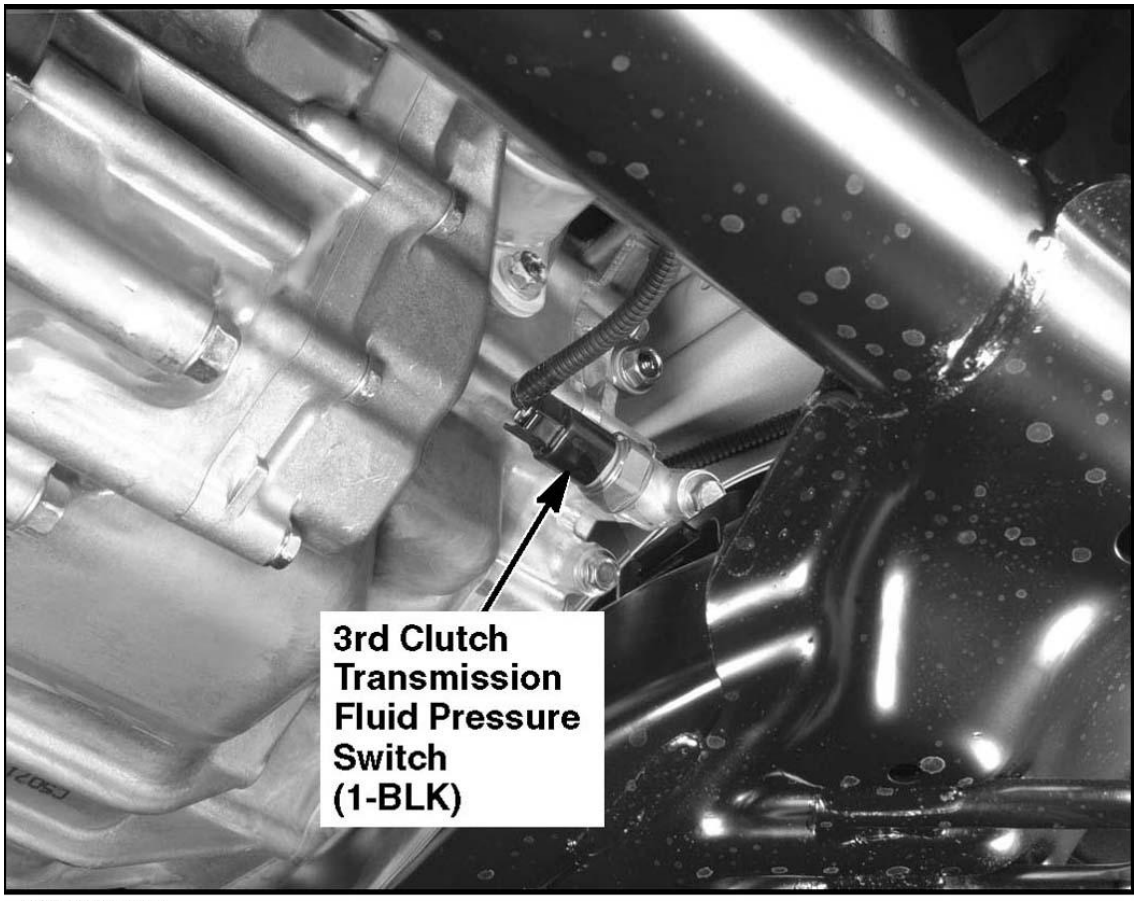
G00434482

Fig. 141: Lower Left Side Of Engine Compartment (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



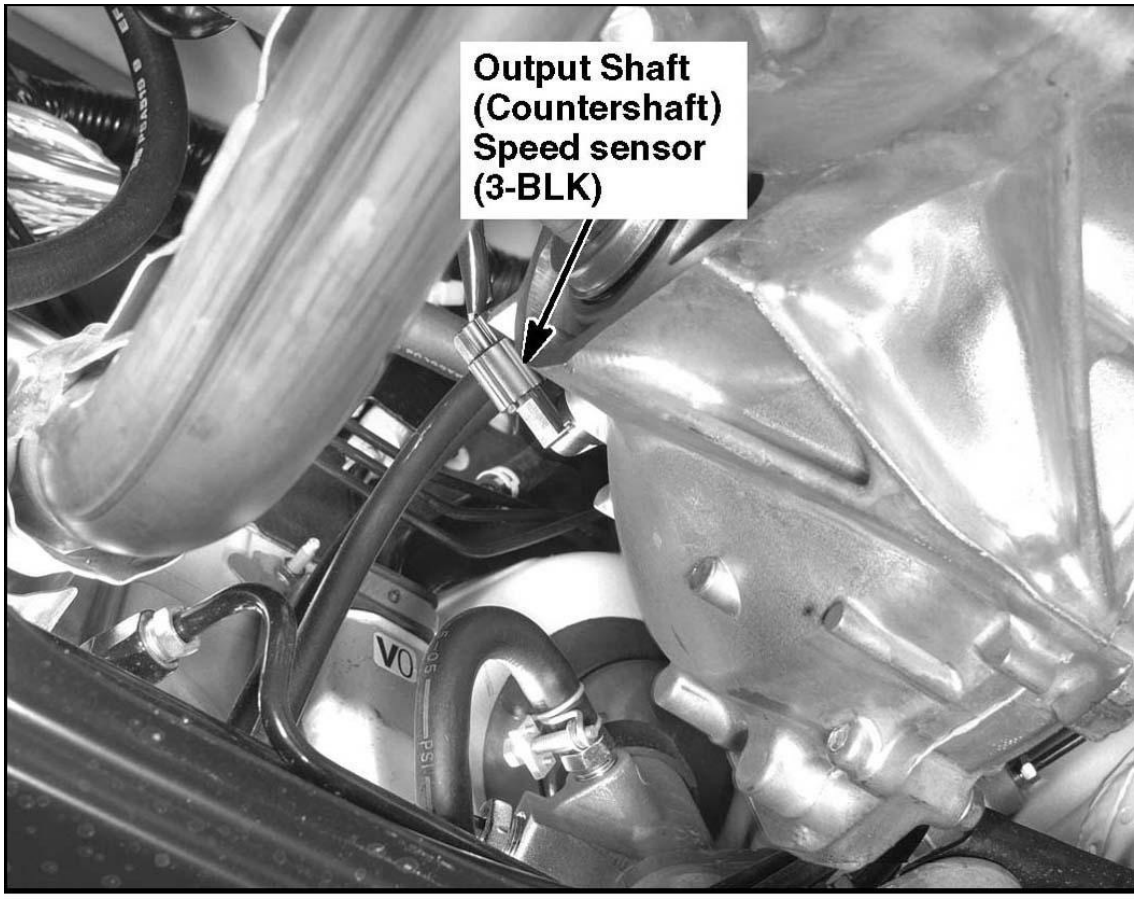
G00434483

Fig. 142: Transmission Housing (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



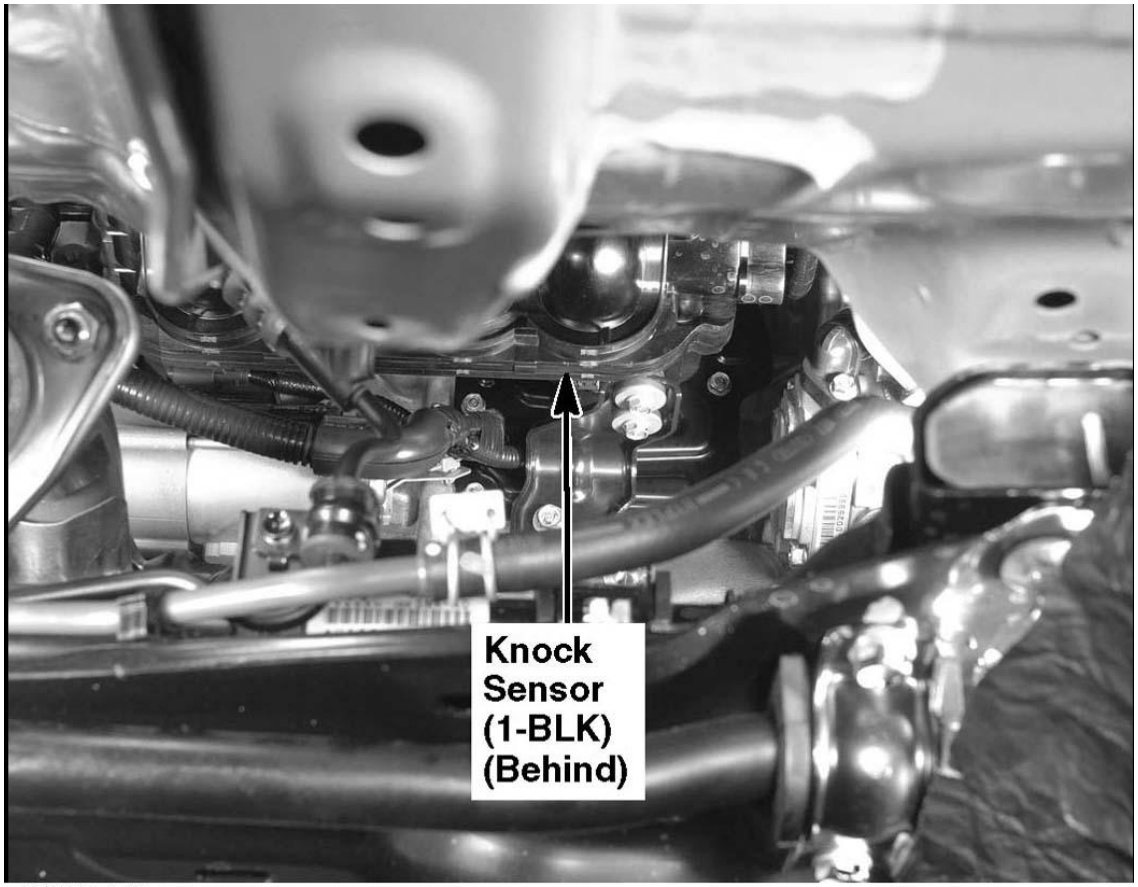
G00434484

Fig. 143: Transmission Housing (A/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



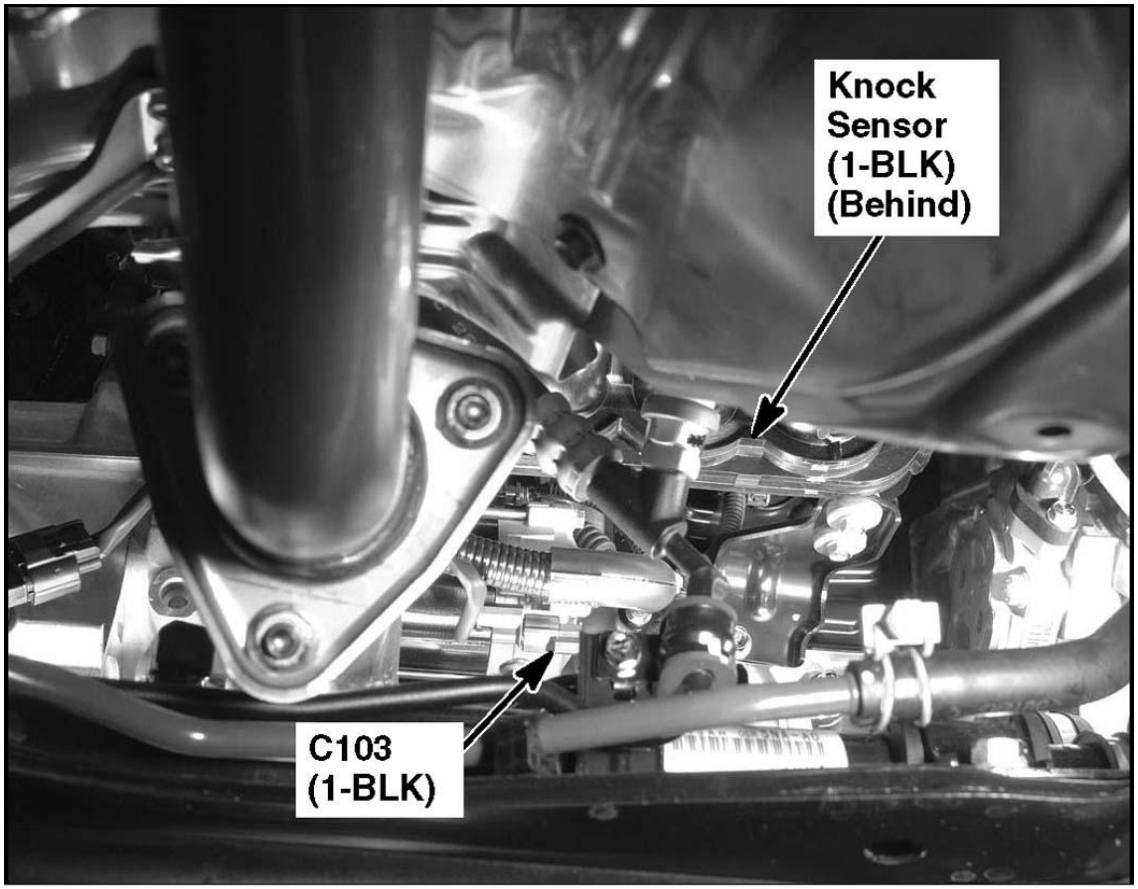
G00434485

Fig. 144: Transmission Housing (M/T) (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



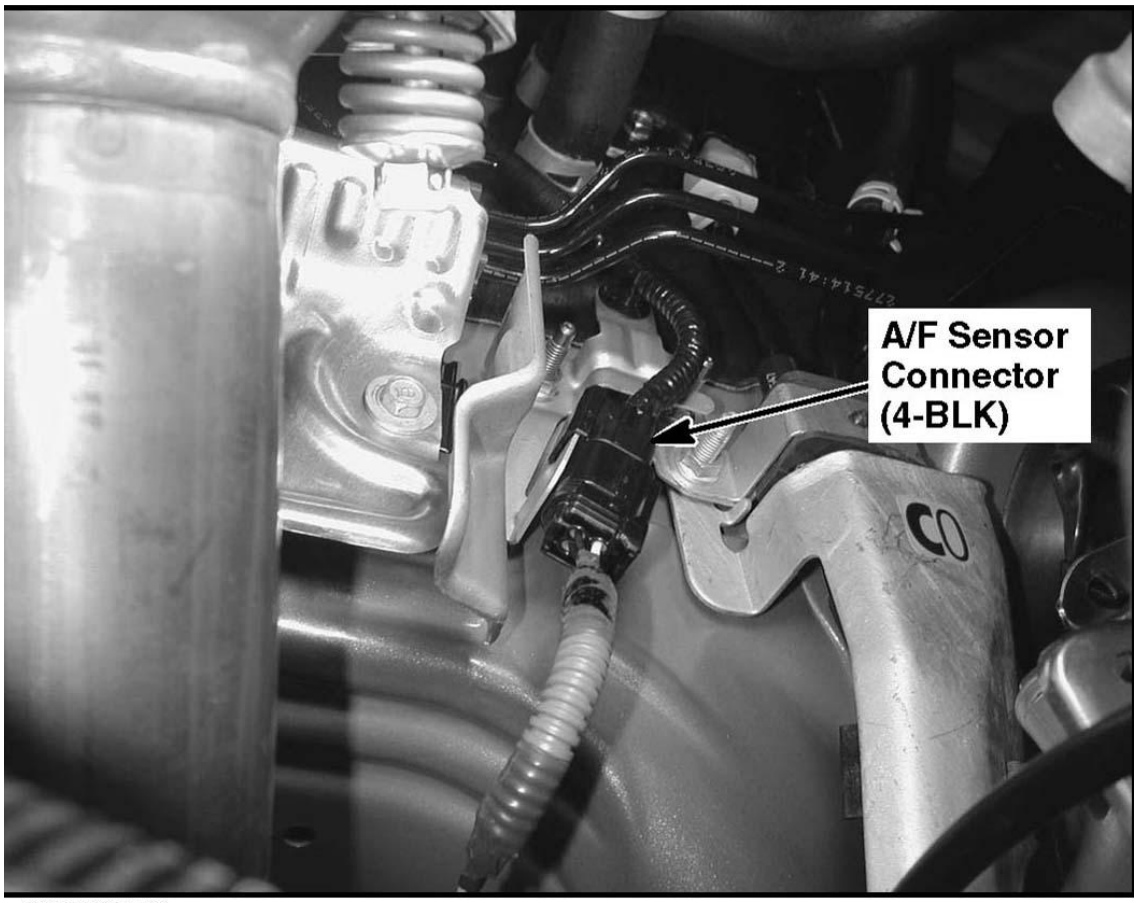
G00434487

Fig. 145: Lower Right Rear Of Engine (Except Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



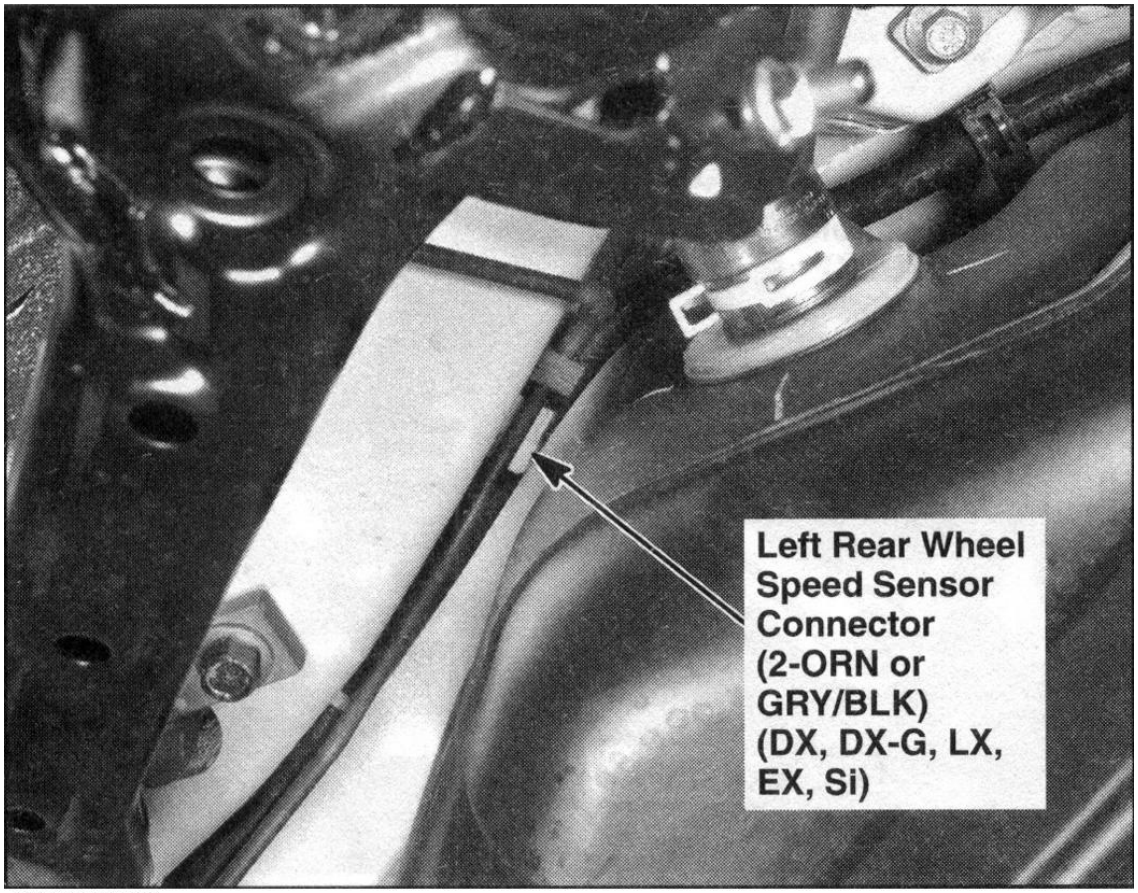
G00434488

Fig. 146: Rear Of Engine (M/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



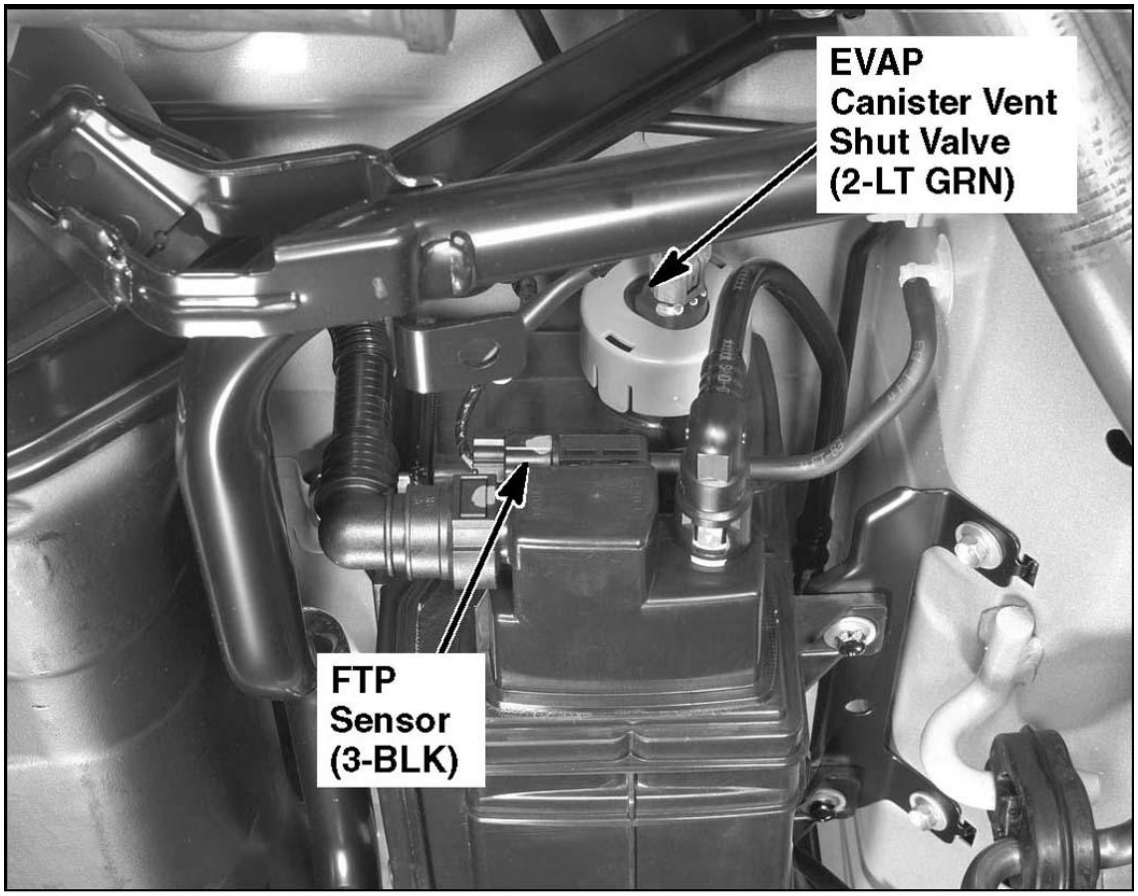
G00434489

Fig. 147: Rear Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



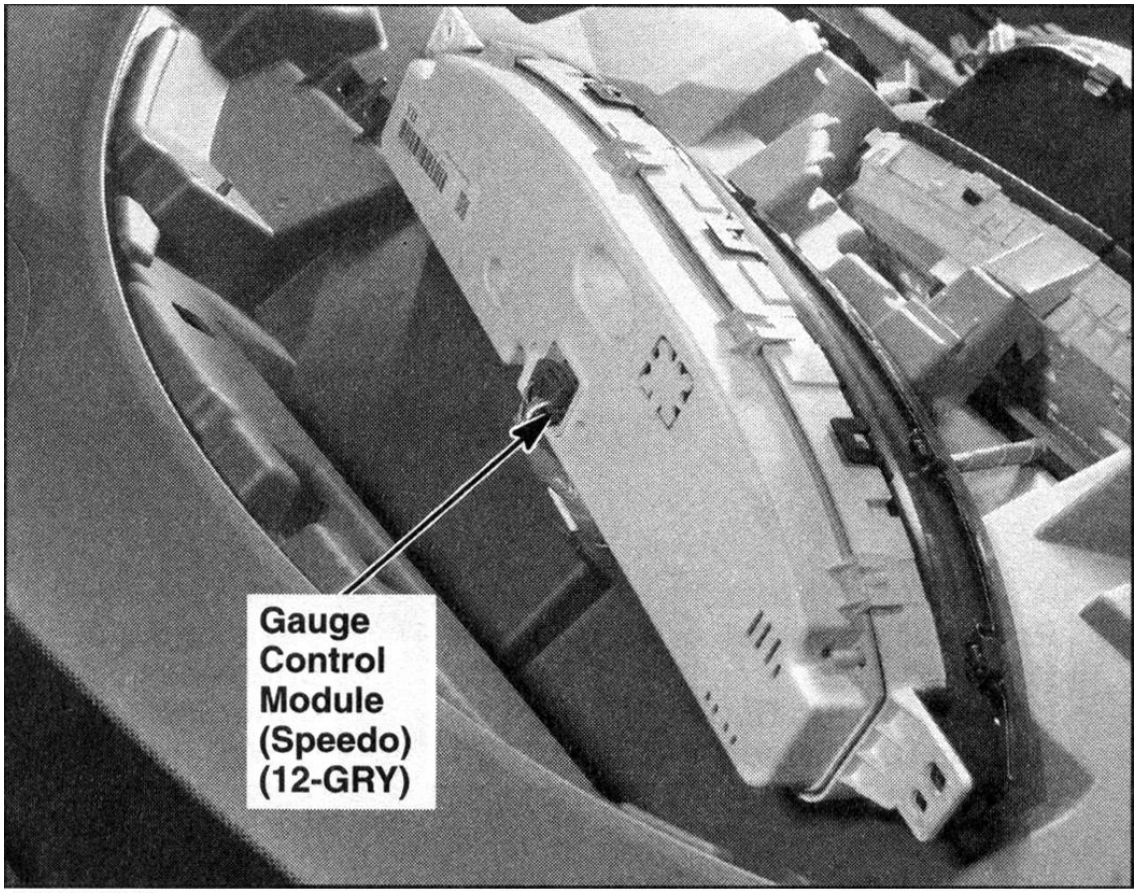
G00447732

Fig. 148: Under Left Rear Of Vehicle (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



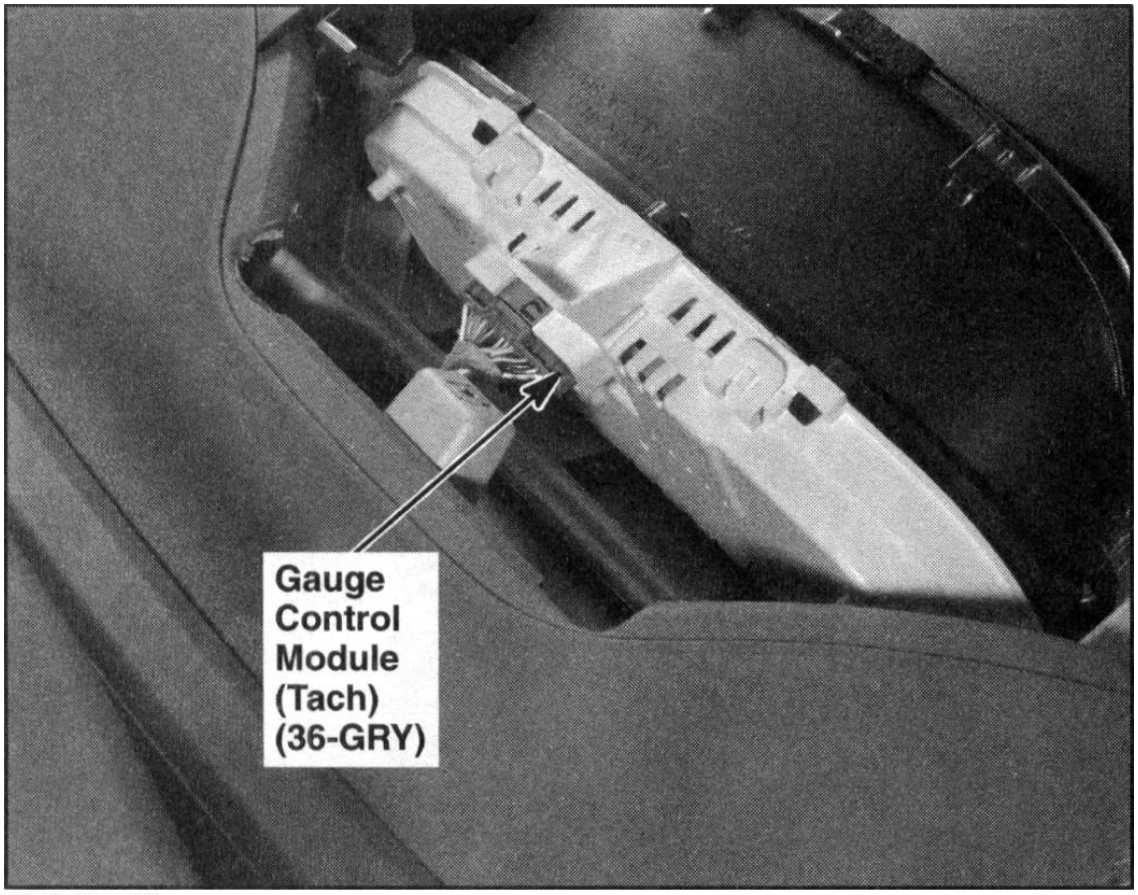
G00434491

Fig. 149: Under Middle Of Vehicle
Courtesy of AMERICAN HONDA MOTOR CO., INC.



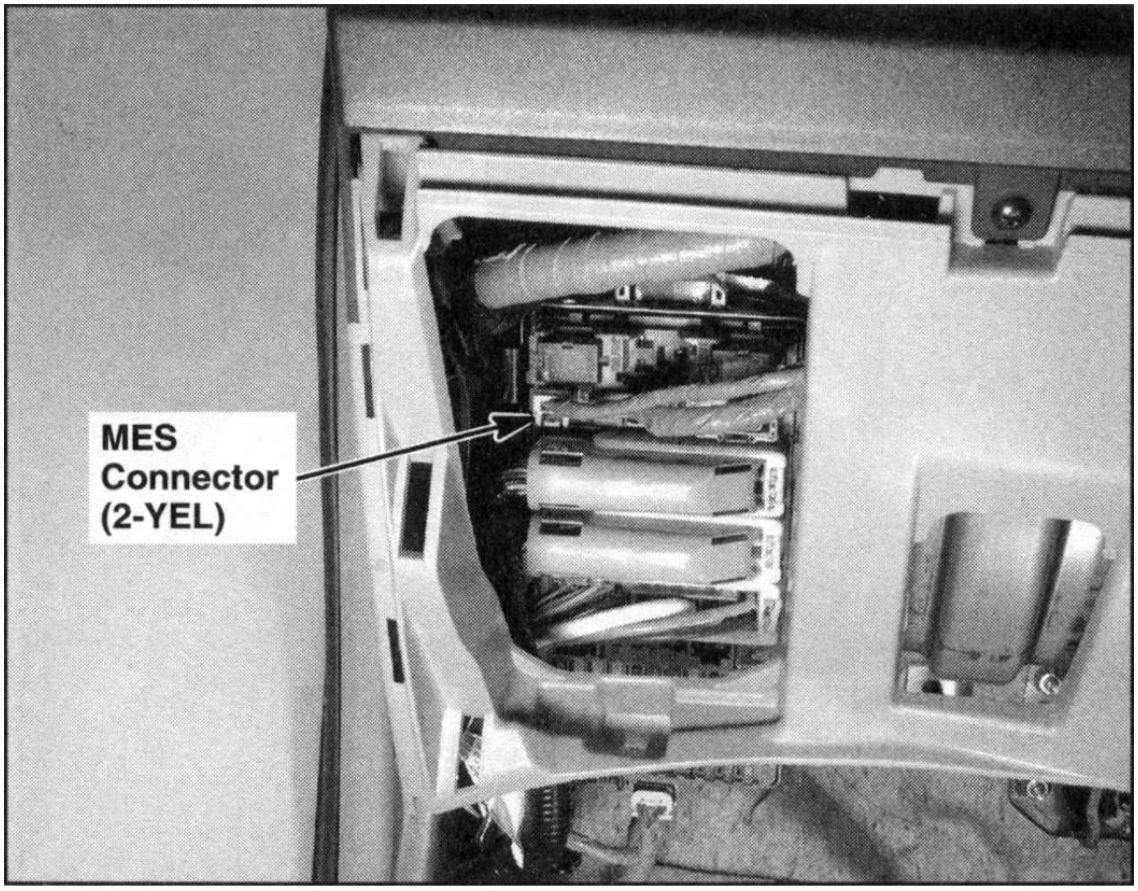
G00447703

Fig. 150: Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



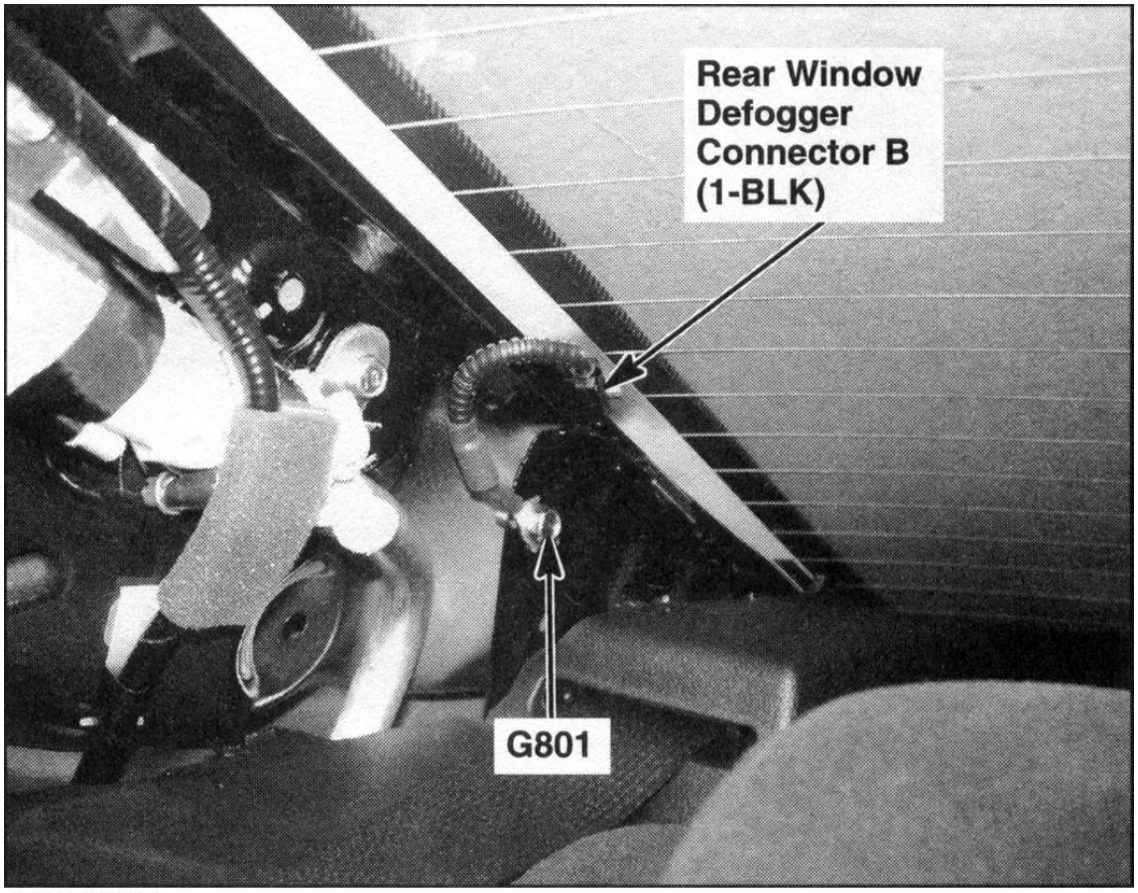
G00447704

Fig. 151: Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



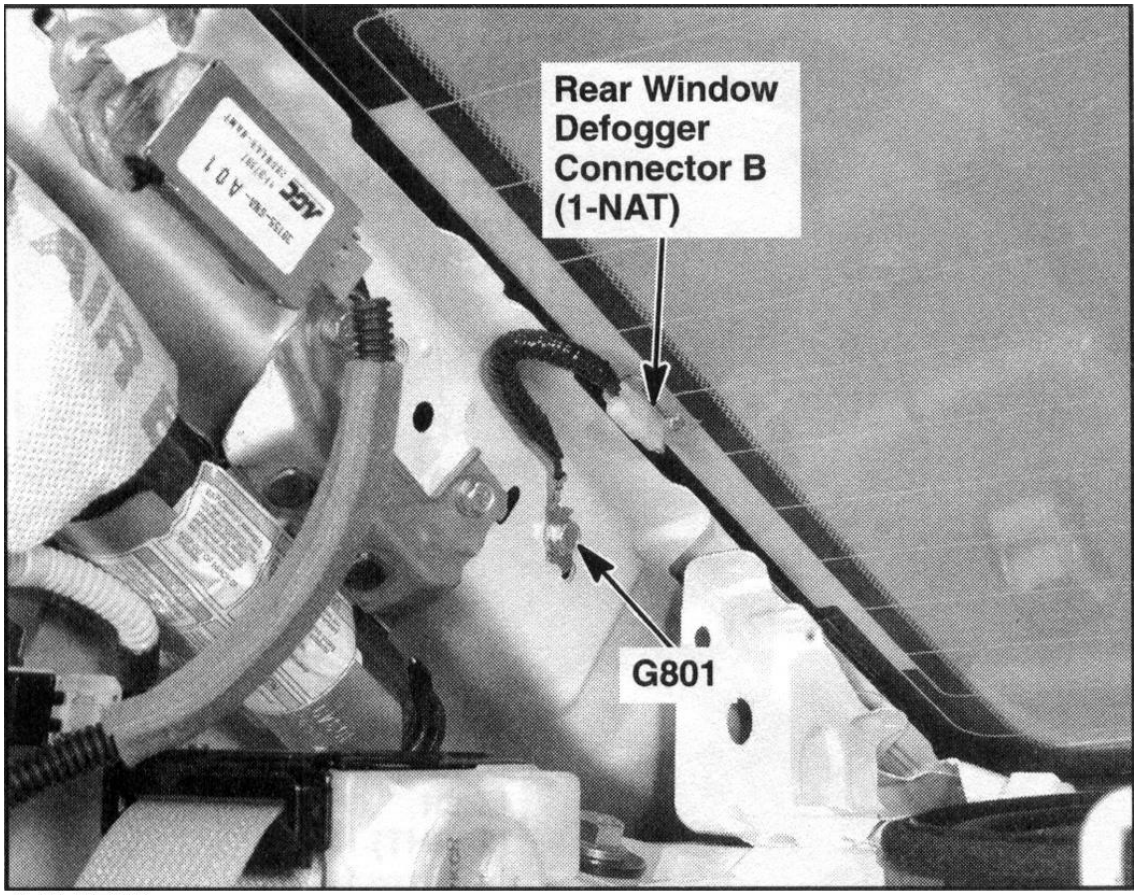
G00447705

Fig. 152: Under Left Side Of Dash
Courtesy of AMERICAN HONDA MOTOR CO., INC.



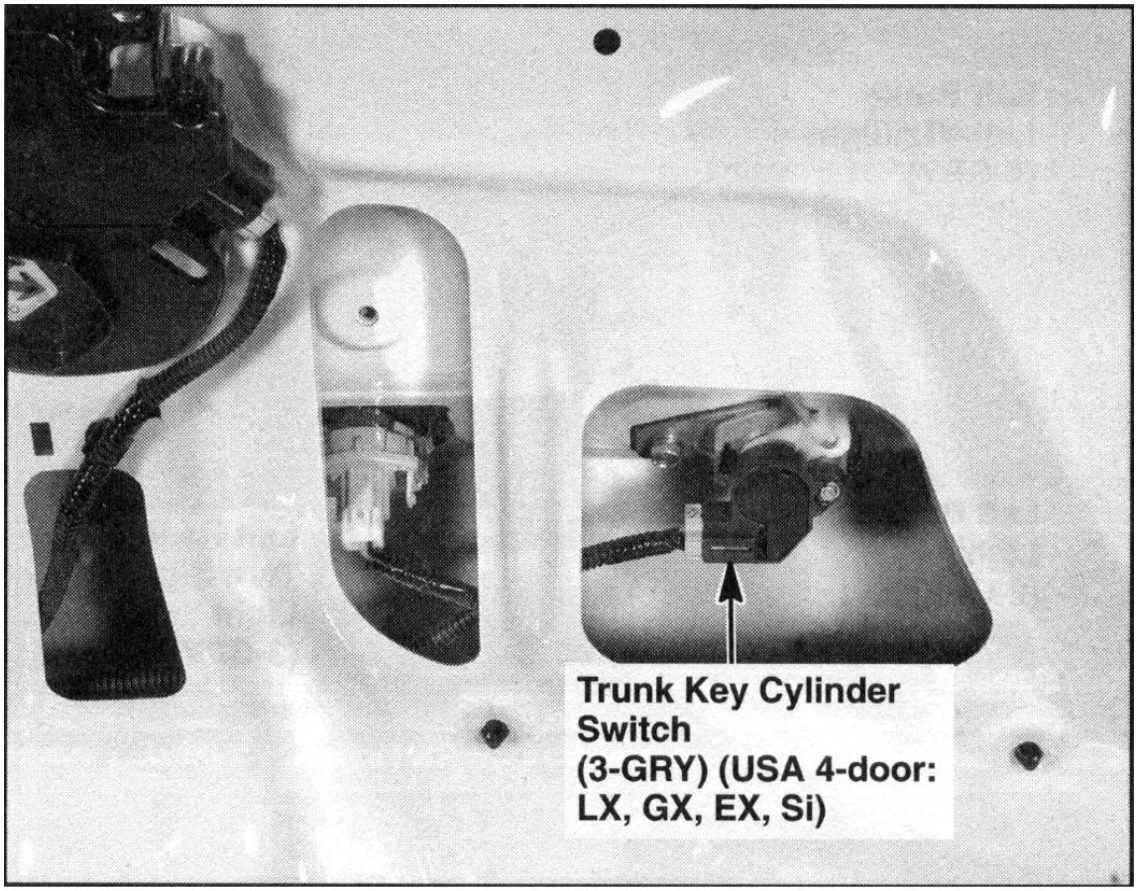
G00447722

Fig. 153: Right "C" Pillar (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



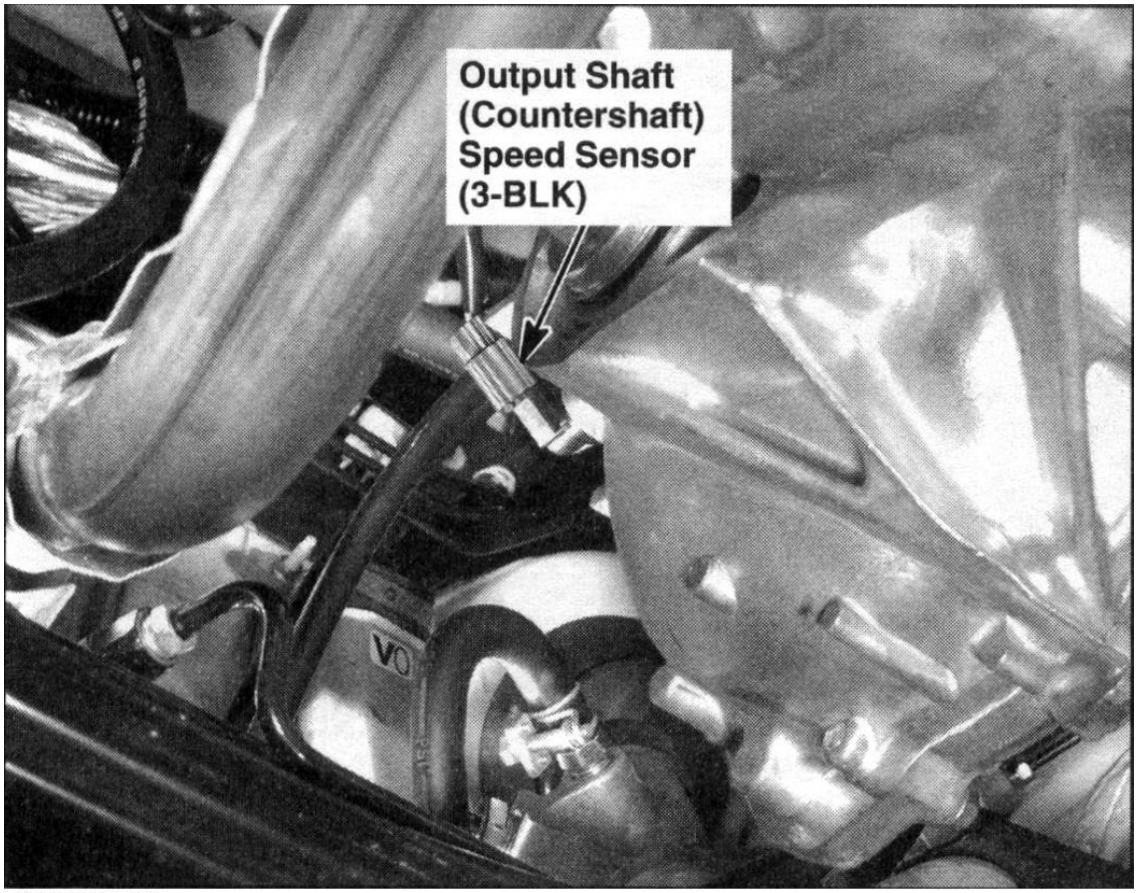
G00447723

Fig. 154: Right C-Pillar (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



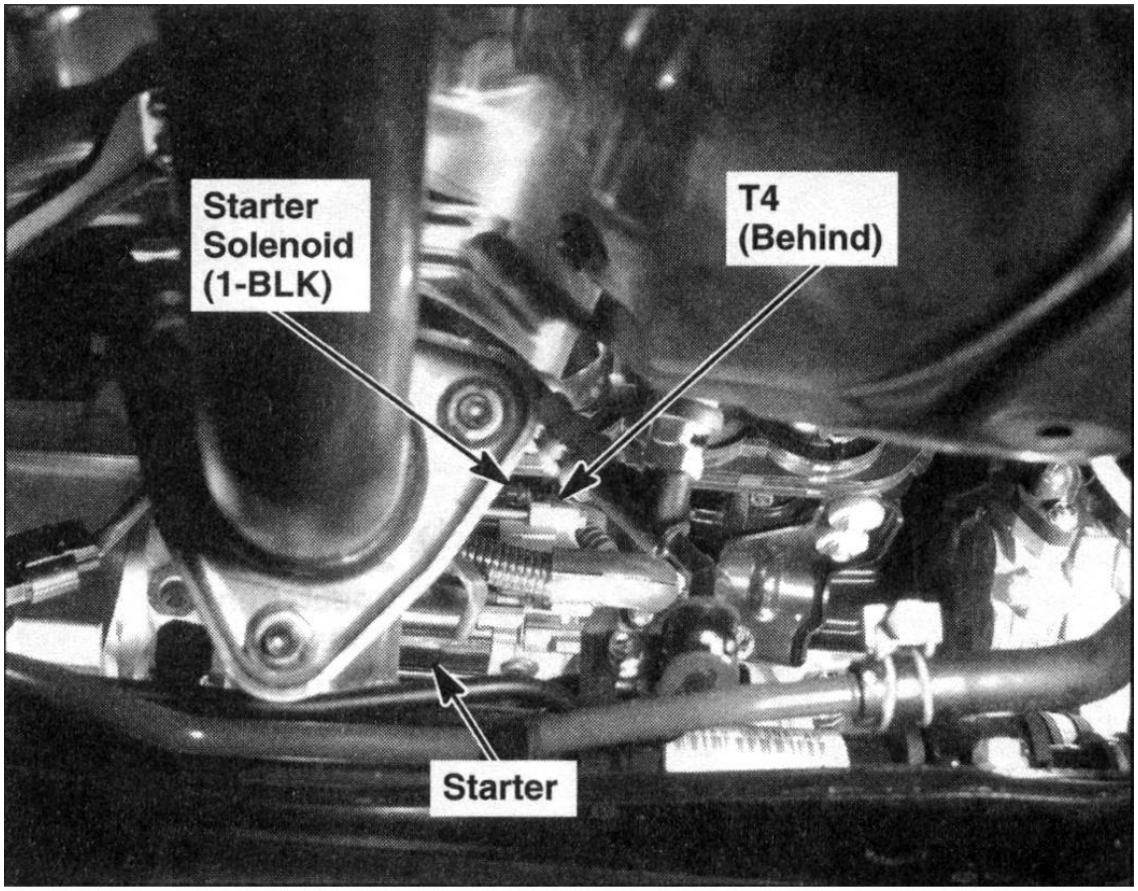
G00447725

Fig. 155: Right Side Of Trunk Lid (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



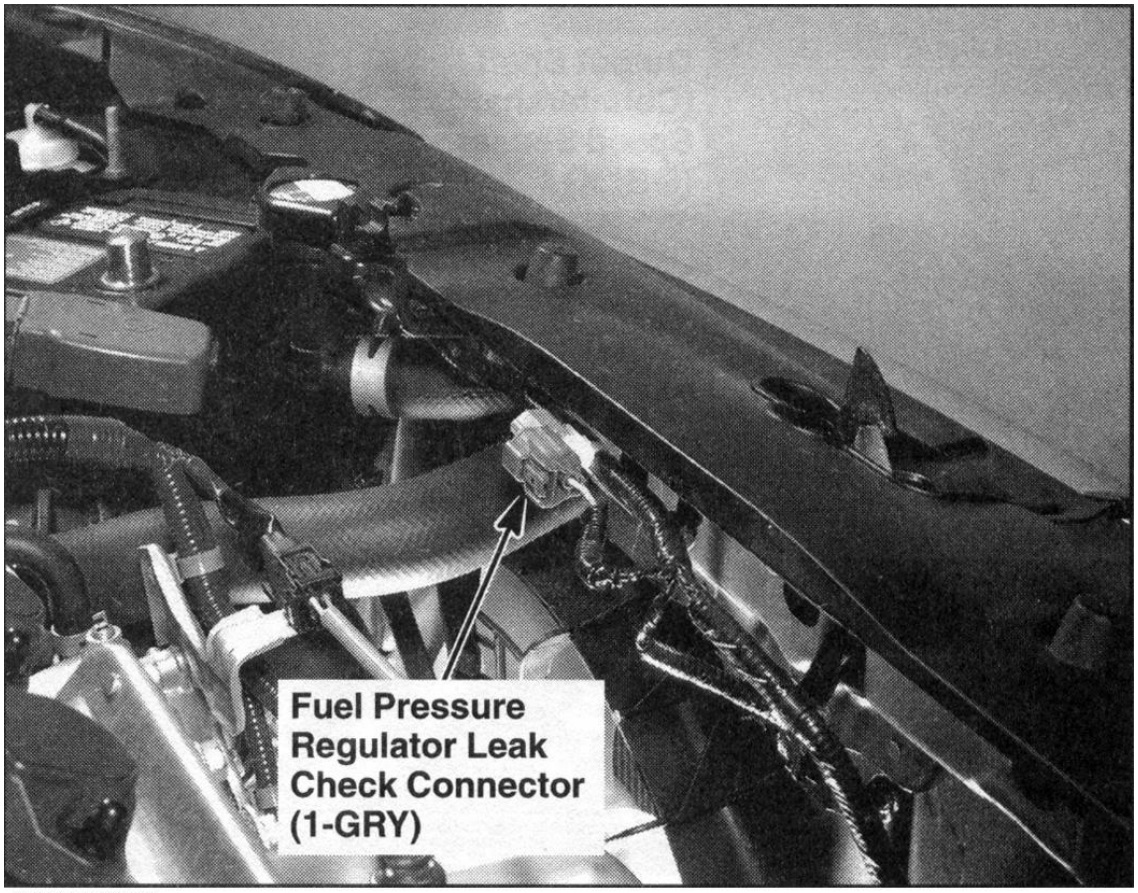
G00447730

Fig. 156: Under Transmission Housing (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



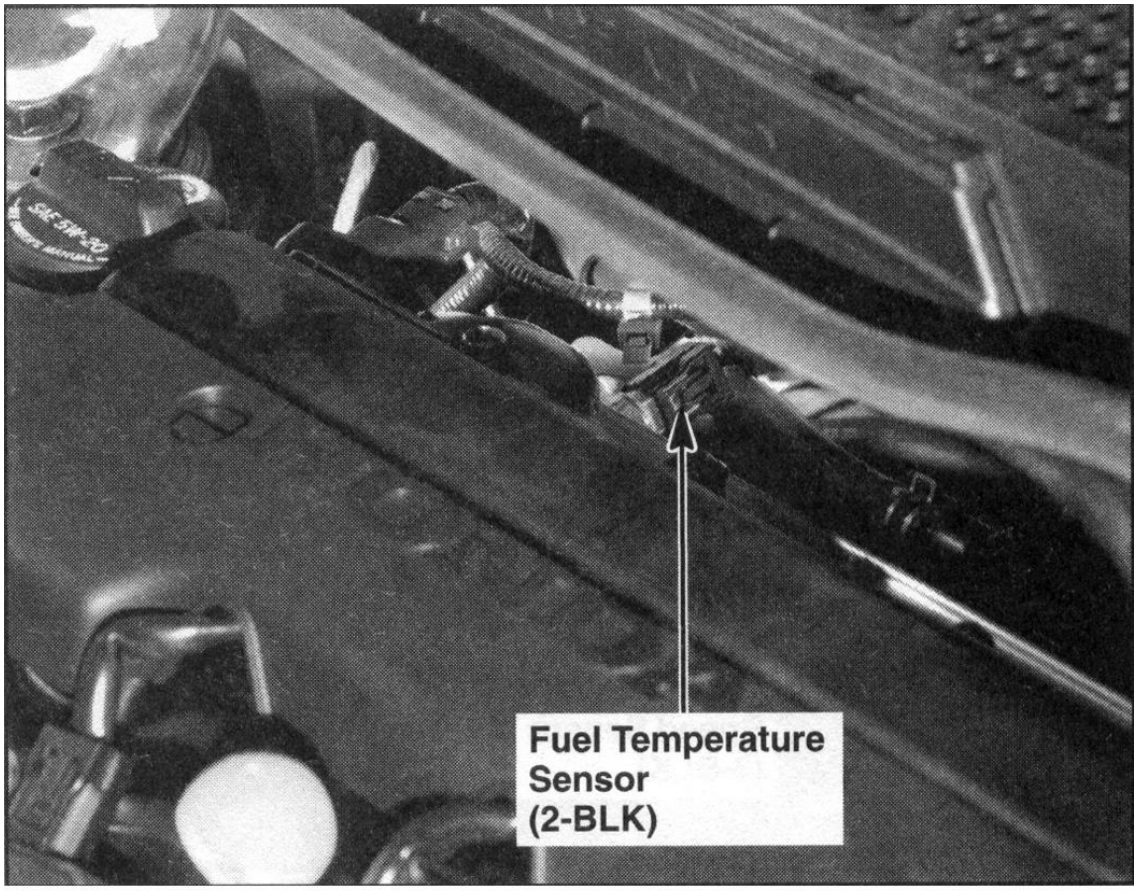
G00447731

Fig. 157: Under Rear Of Engine (M/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



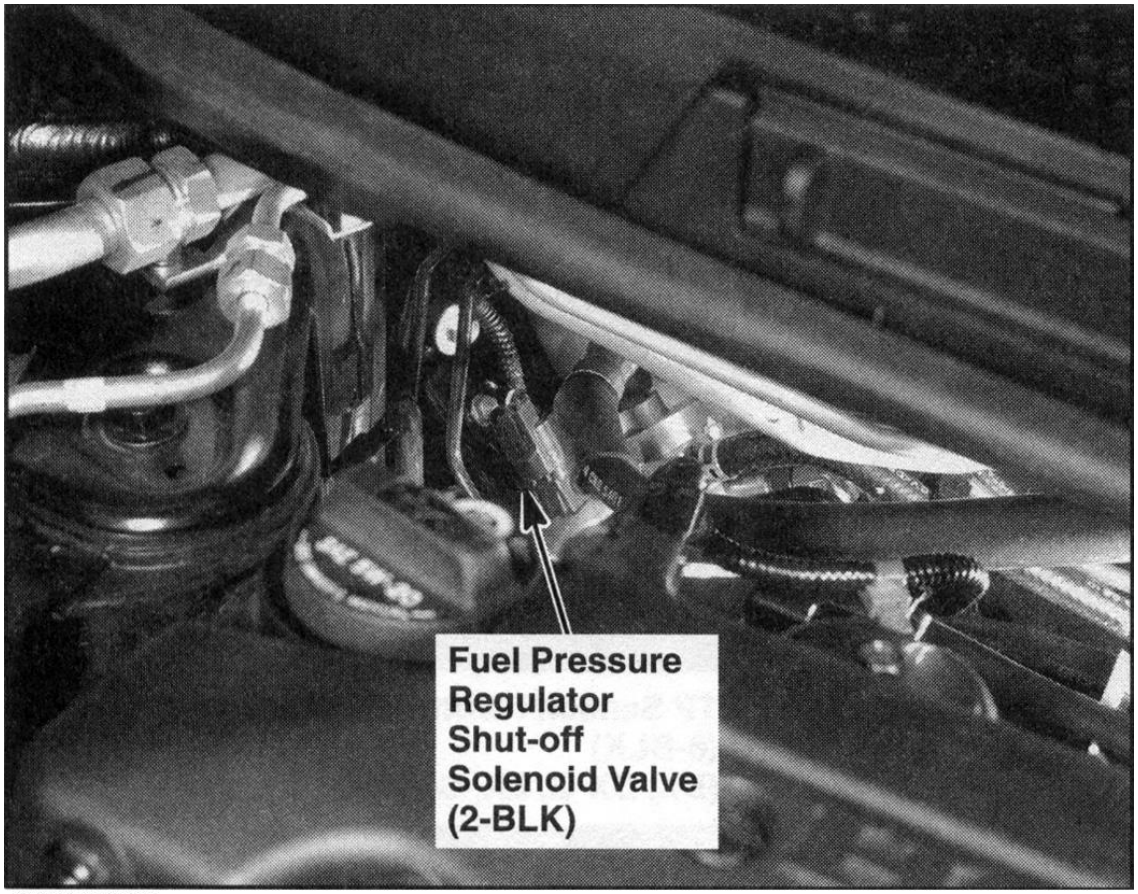
G00447733

Fig. 158: Front Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



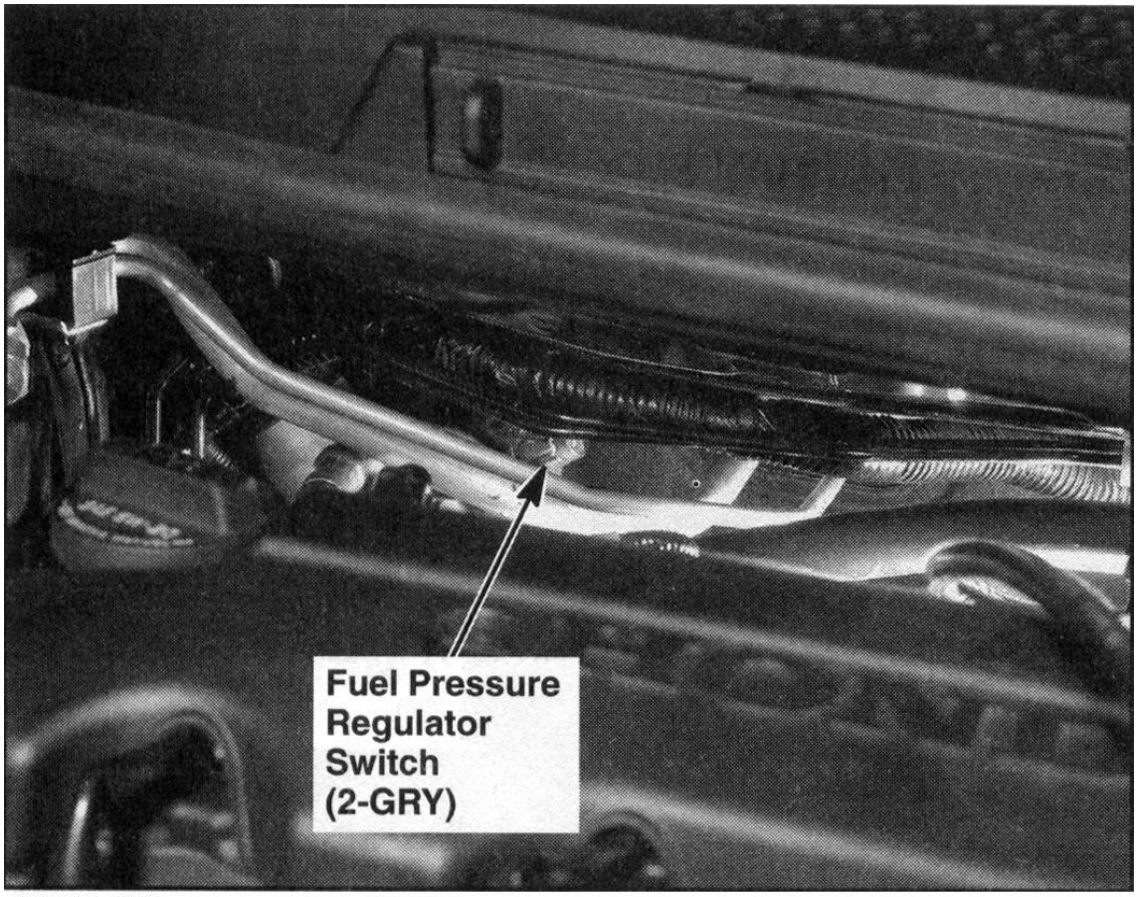
G00447734

Fig. 159: Rear Of Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.



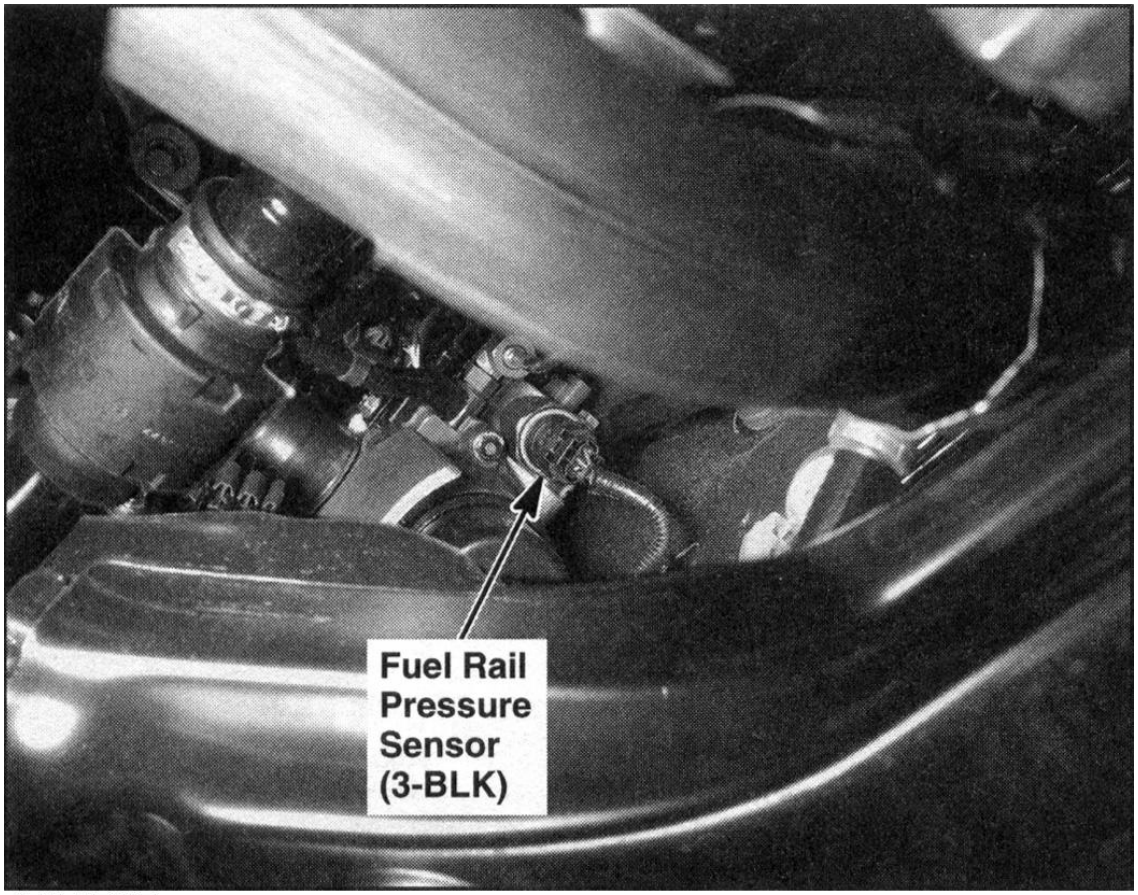
G00447735

Fig. 160: Right Rear Of Engine (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



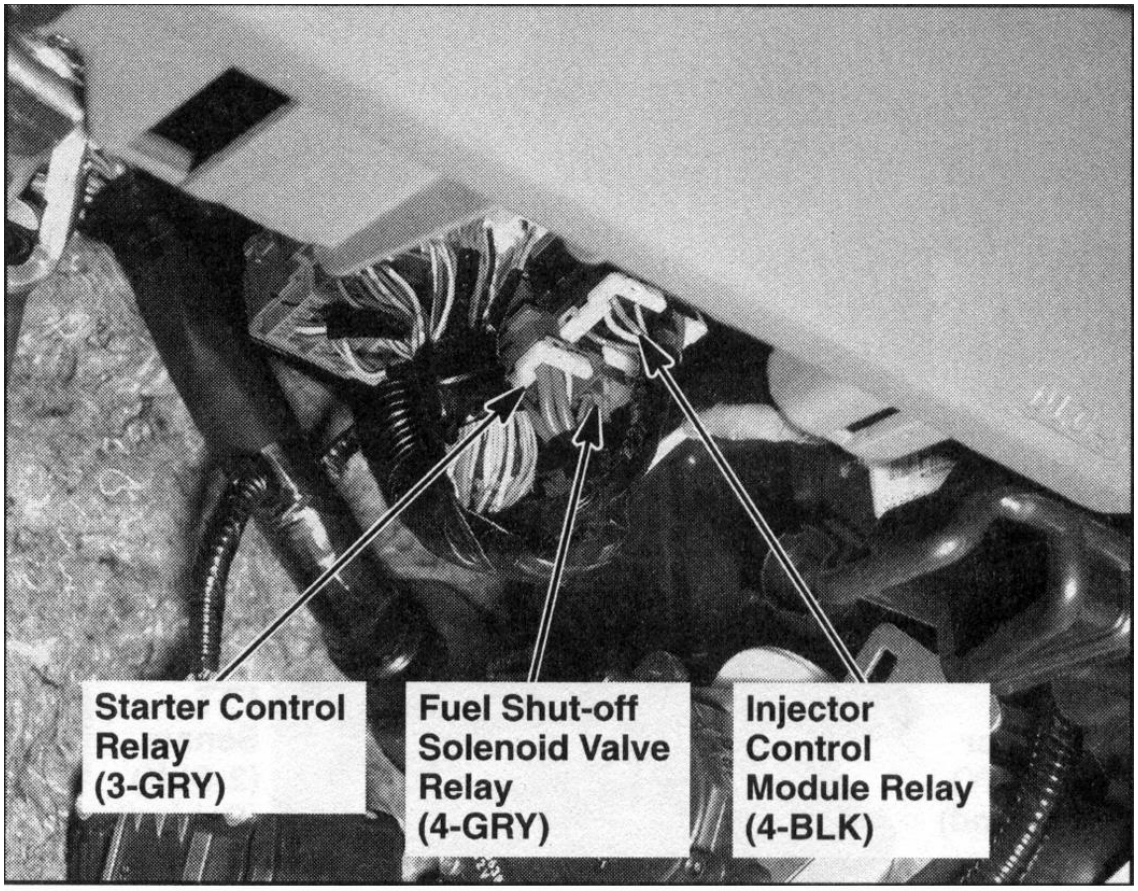
G00447736

Fig. 161: Right Rear Of Engine (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



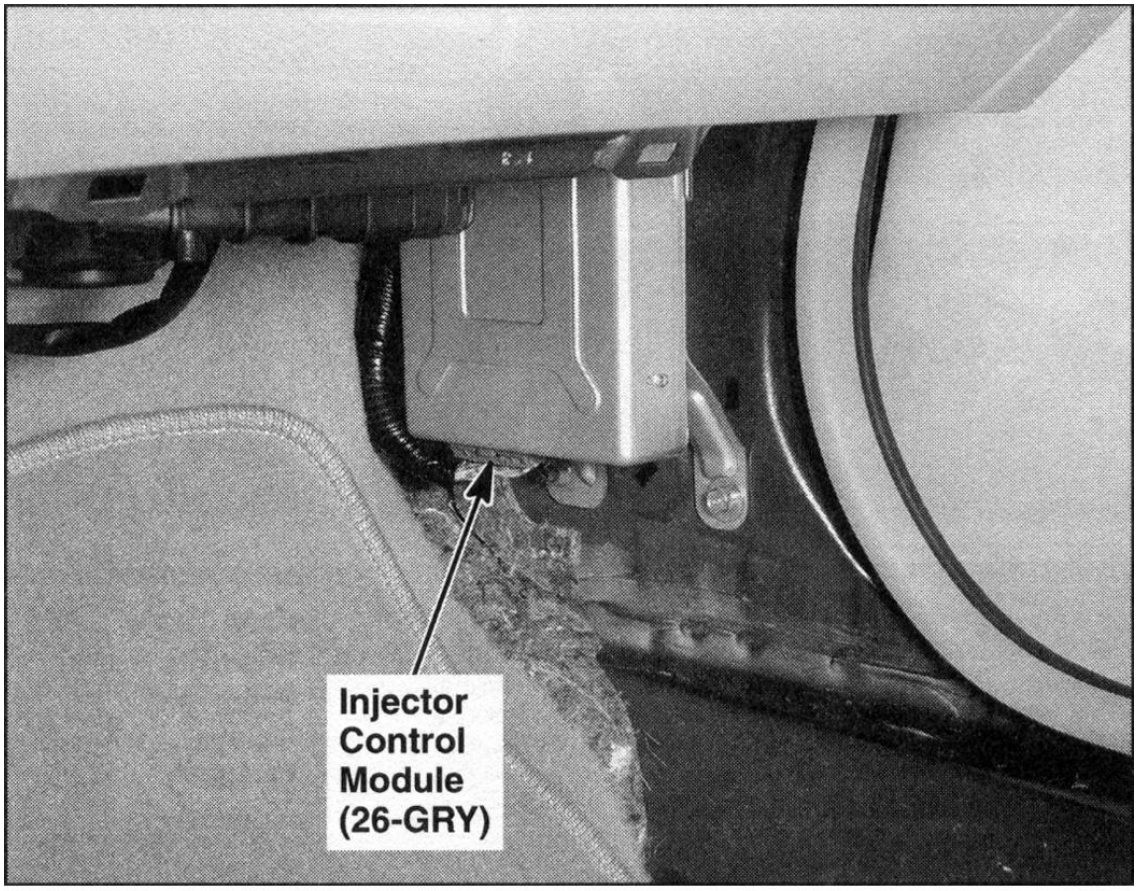
G00447737

Fig. 162: Right Rear Of Engine (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00447738

Fig. 163: Under Left Side Of Dash (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

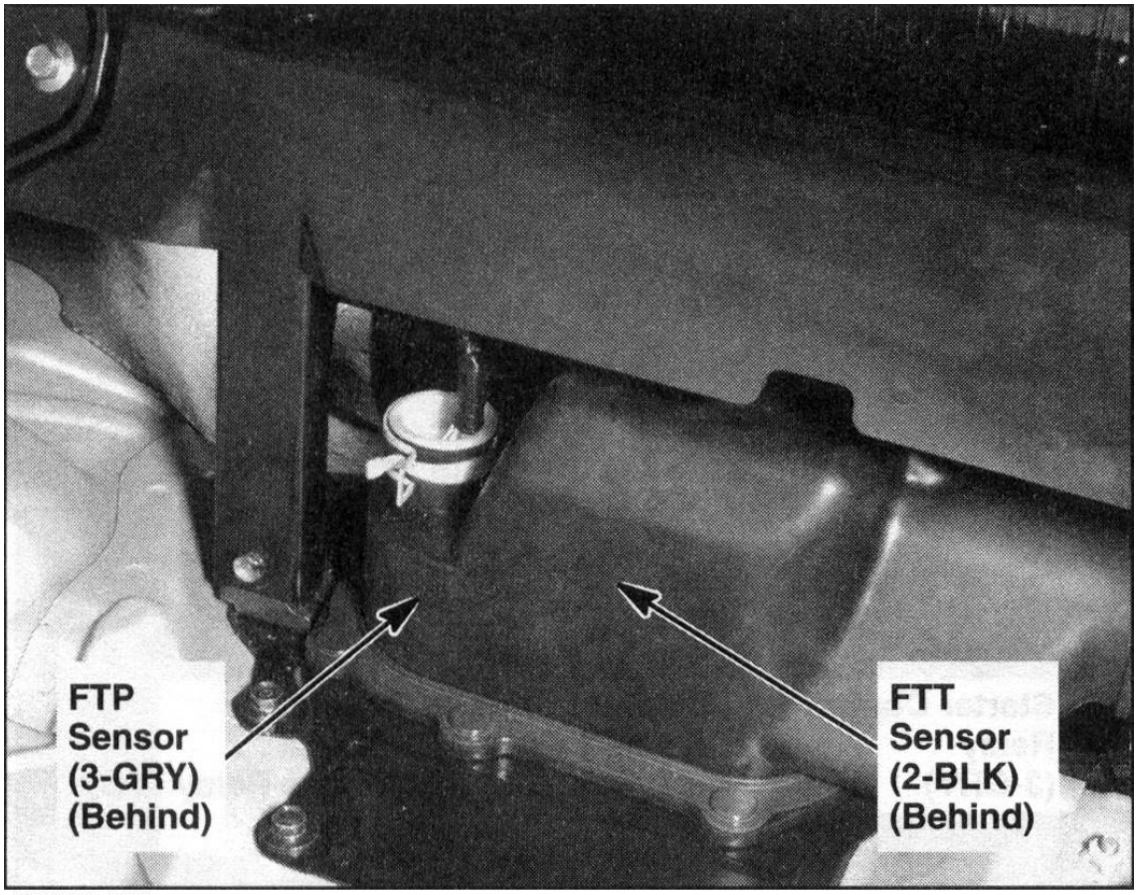


G00447739

Fig. 164: Behind Right Kick Panel (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

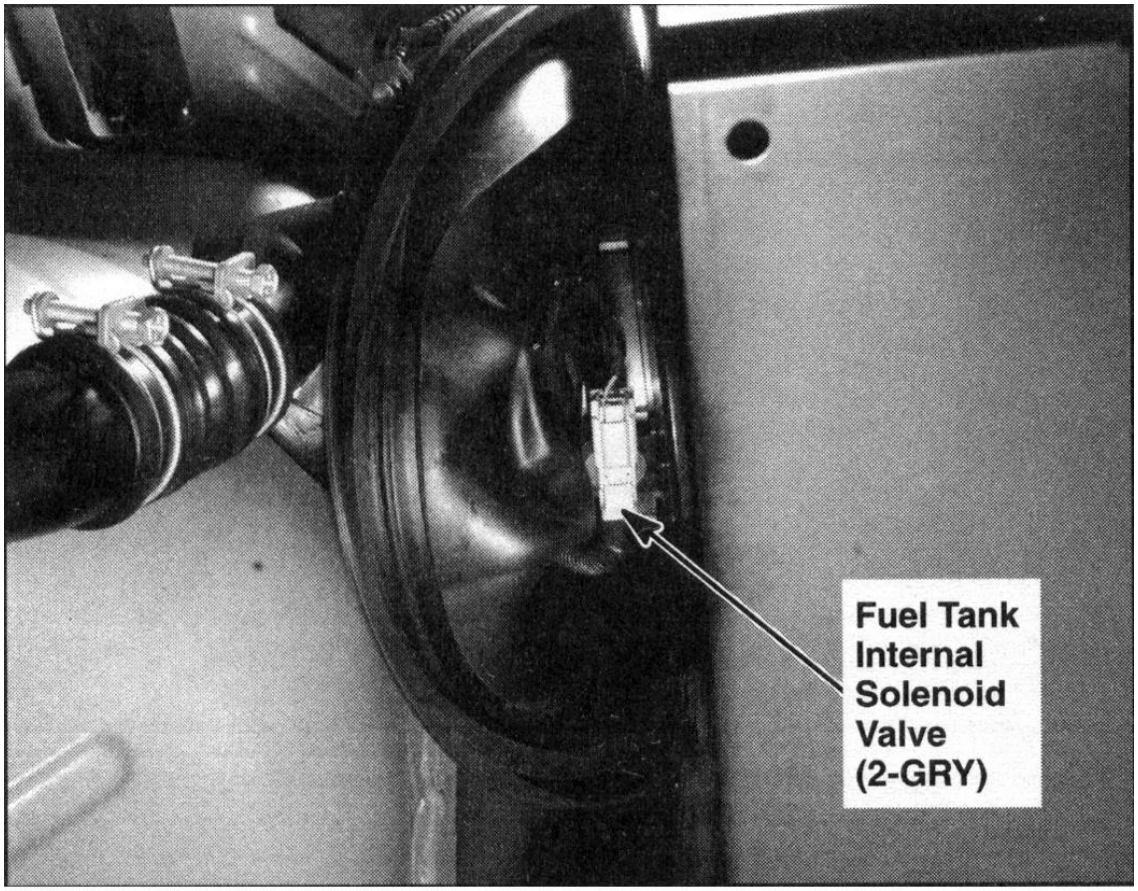
G00447740

Fig. 165: Left Side Of Rear Seat Back (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



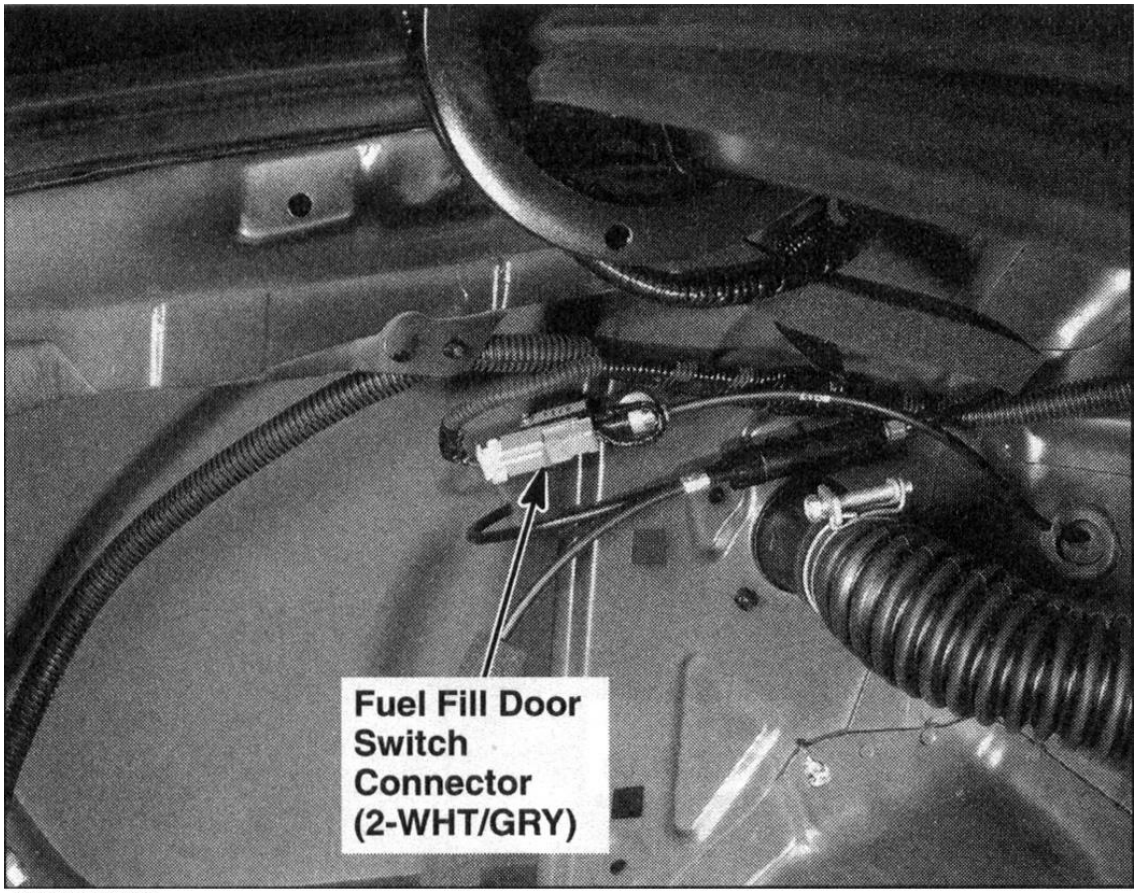
G00447741

Fig. 166: Behind Rear Seat (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



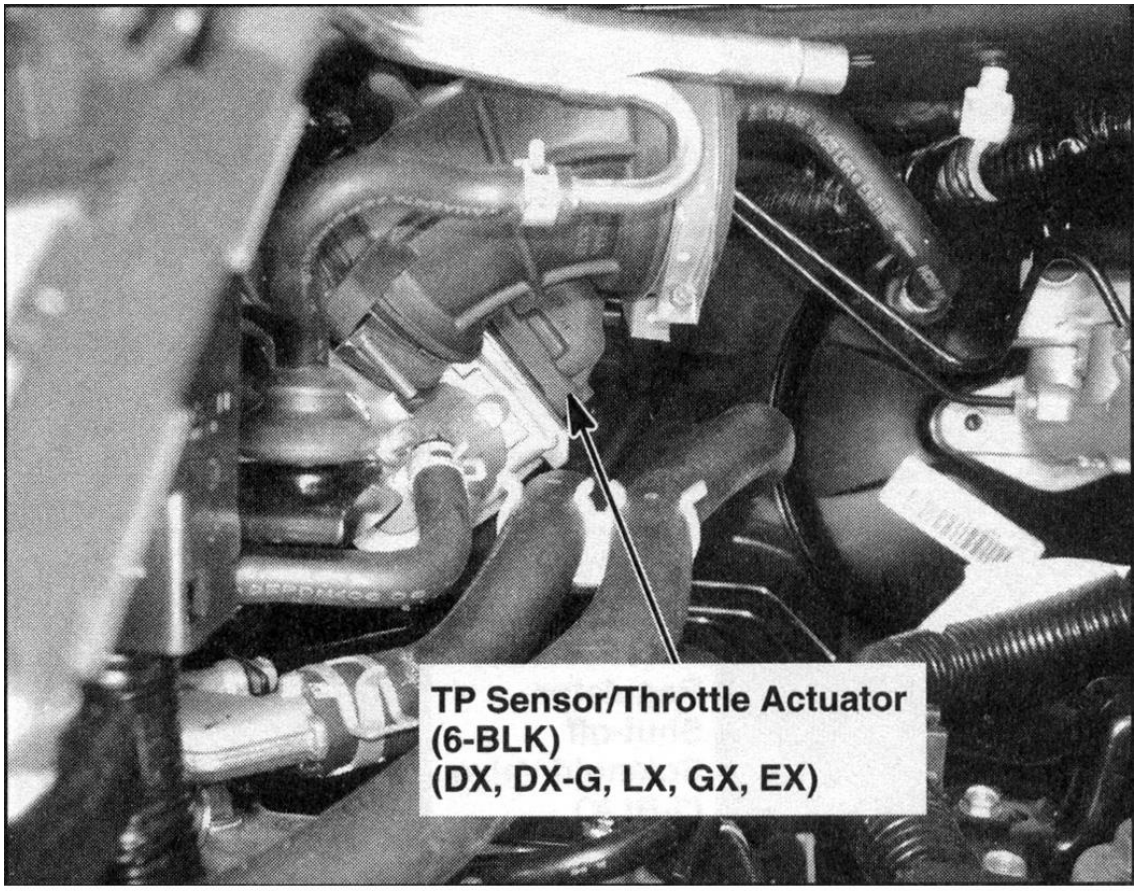
G00447742

Fig. 167: Left Side Of Trunk (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



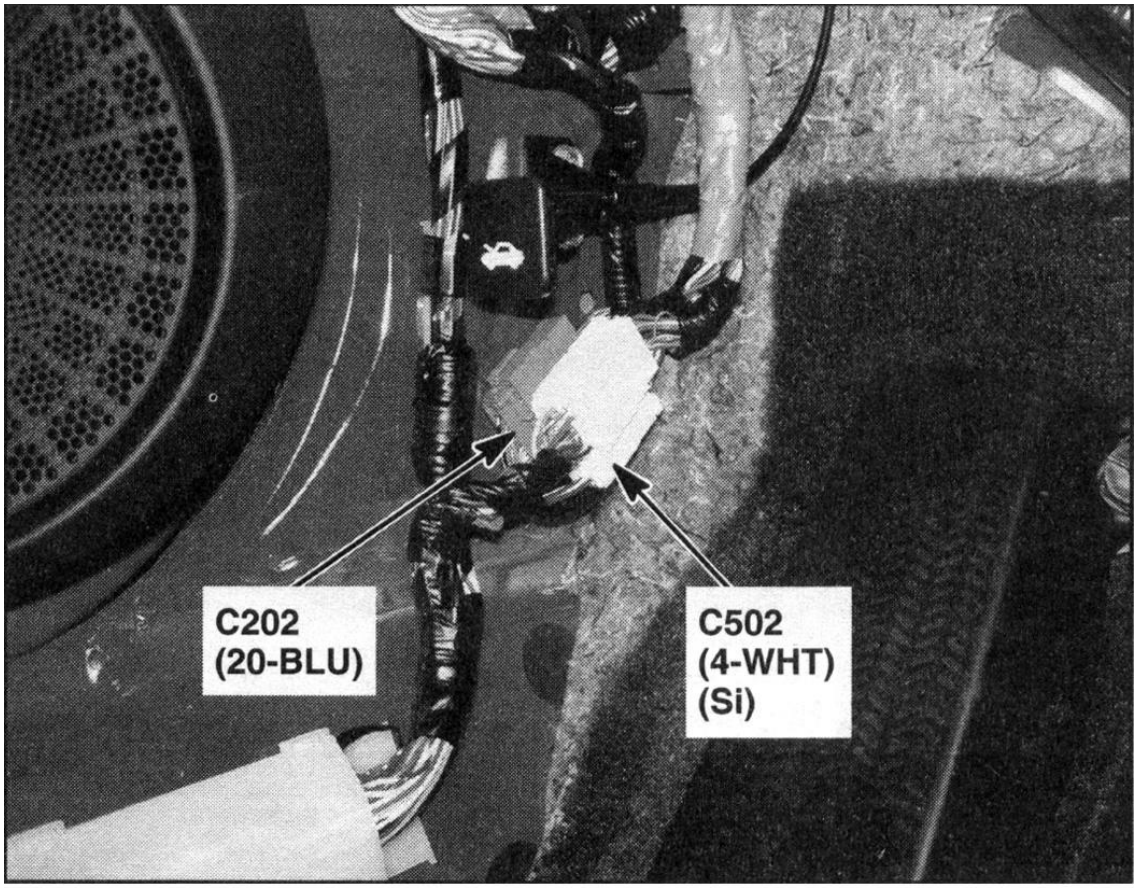
G00447743

Fig. 168: Left Of Rear Shelf (GX)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



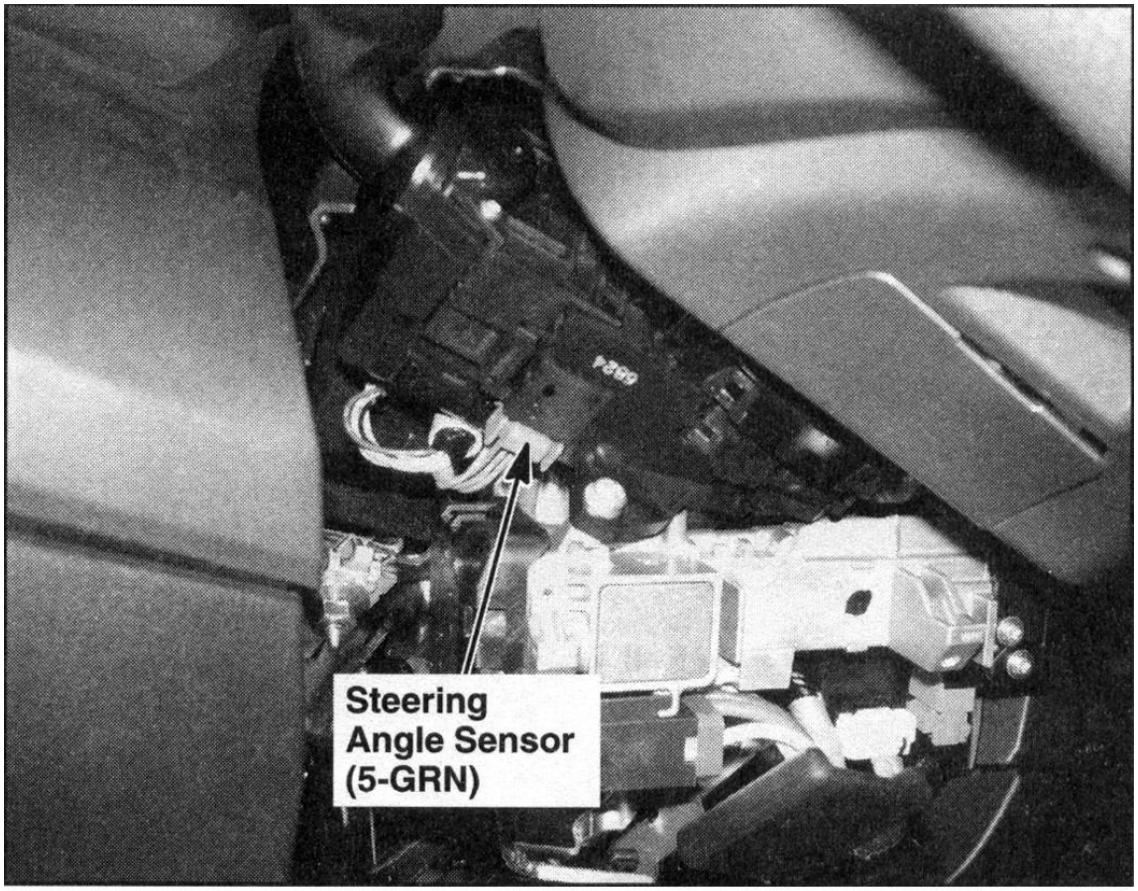
G00447744

Fig. 169: Left Side Of Engine Compartment (Air Duct Removed)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



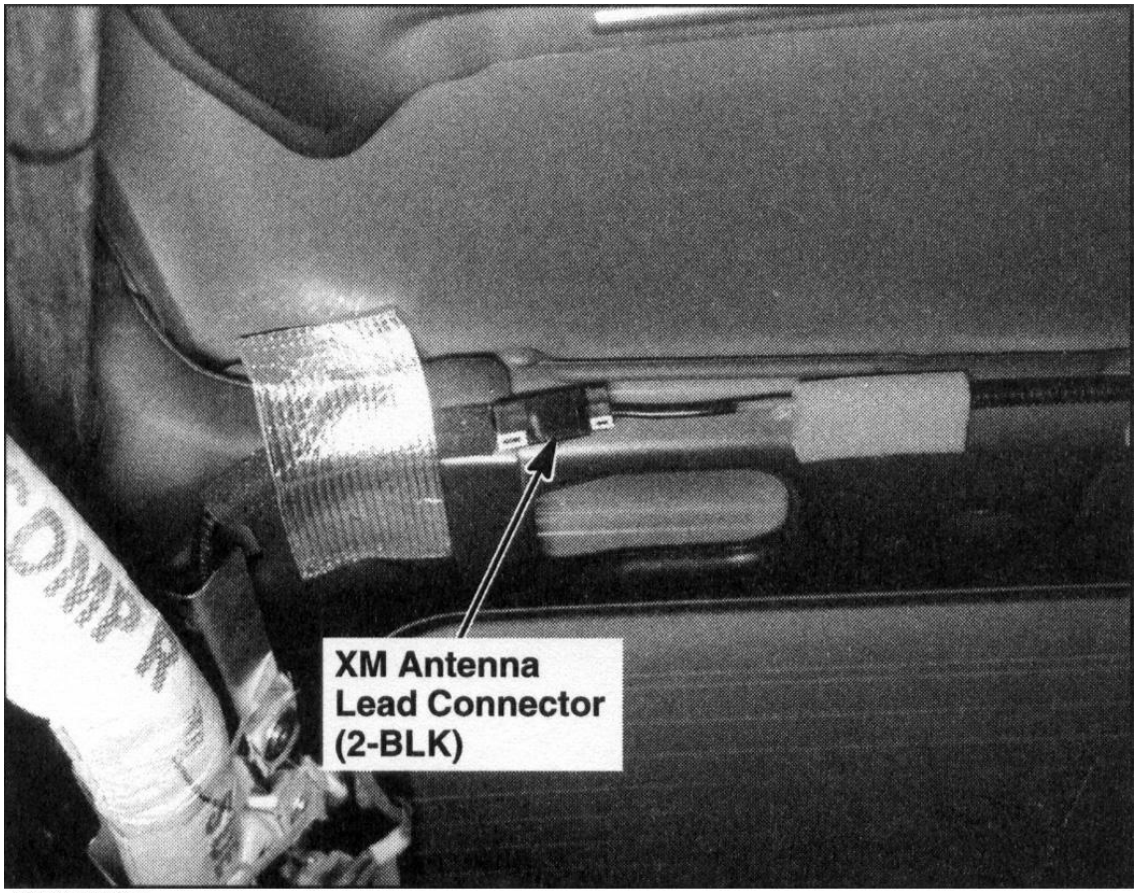
G00447745

Fig. 170: Behind Left Kick Panel (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



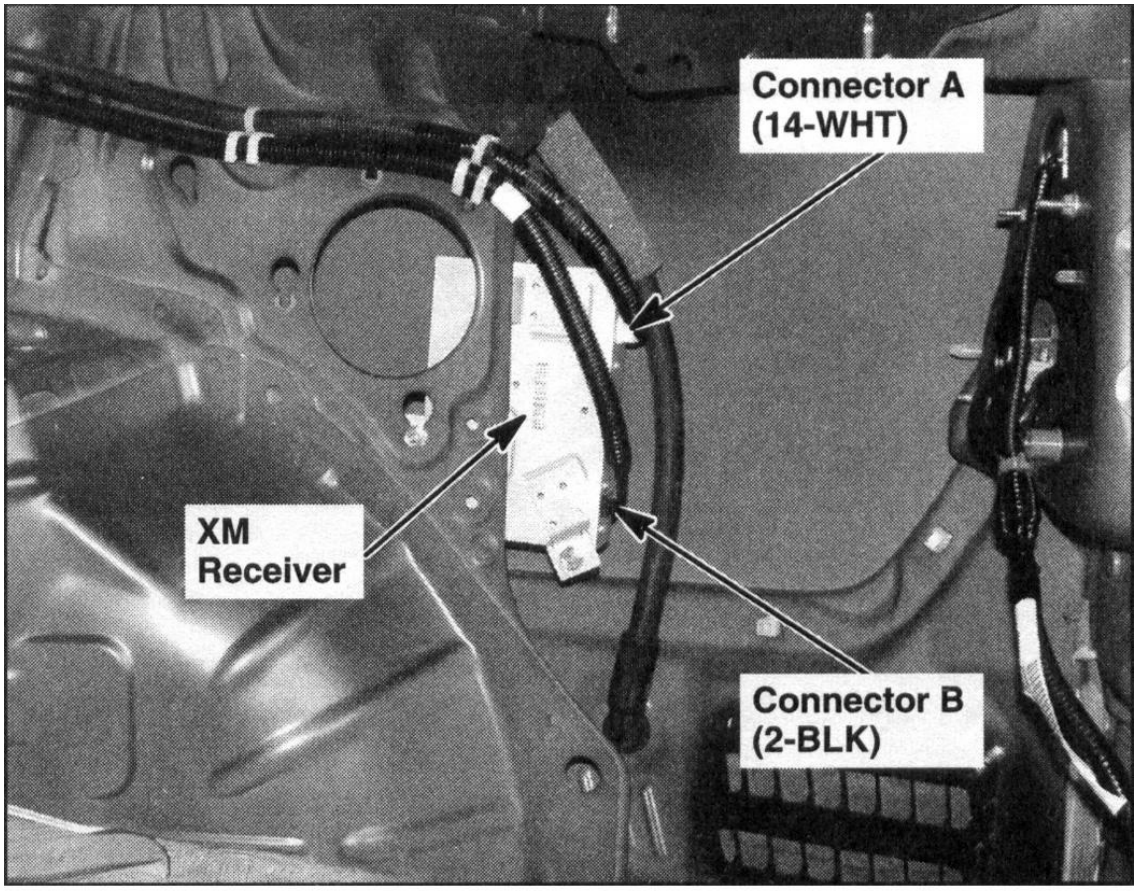
G00447746

Fig. 171: Steering Column Cover (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



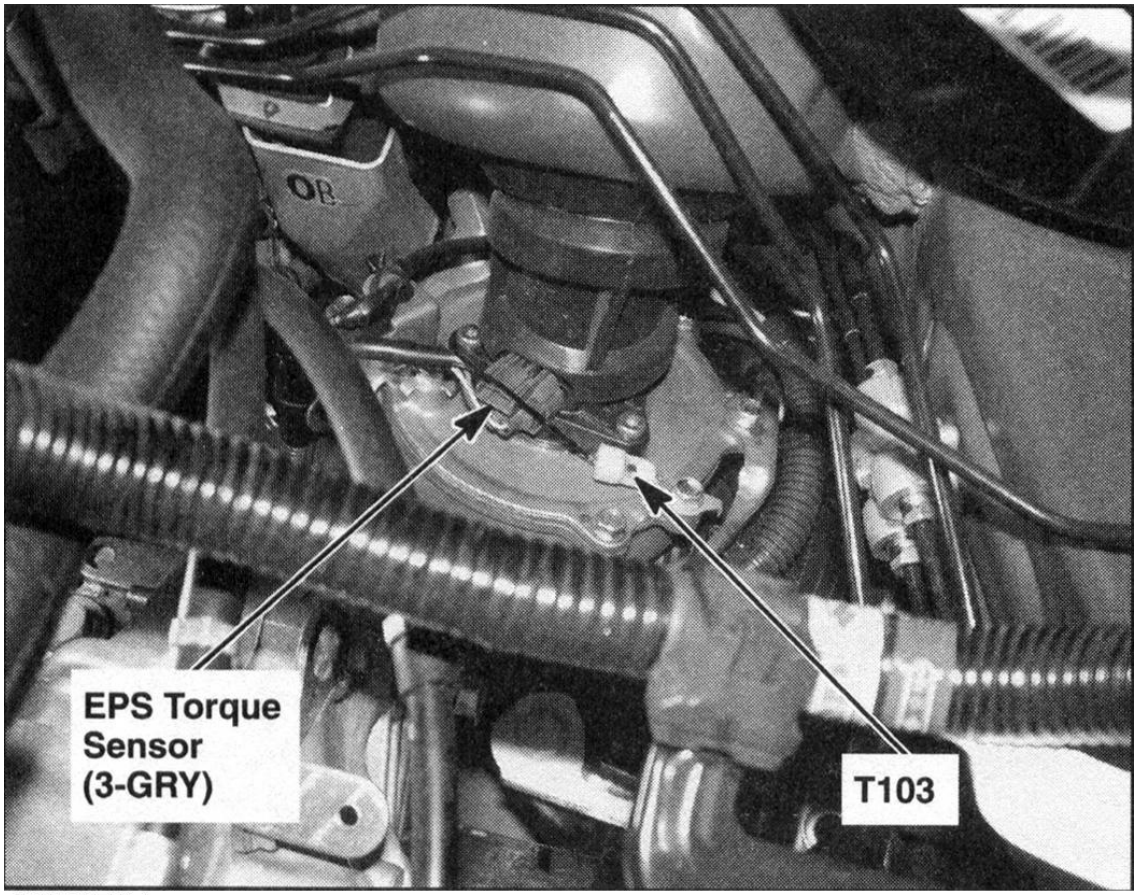
G00447748

Fig. 172: Left Rear Of Roof (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



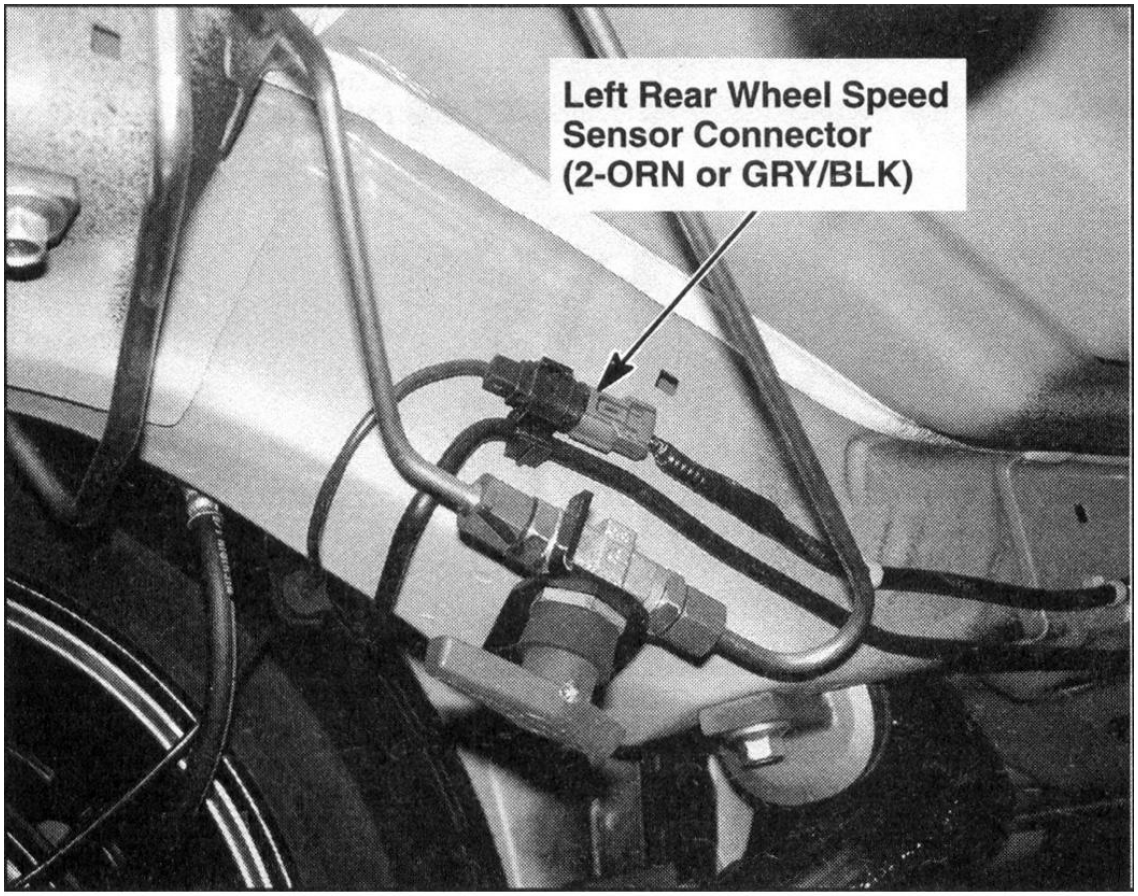
G00447749

Fig. 173: Right Side Of Trunk (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



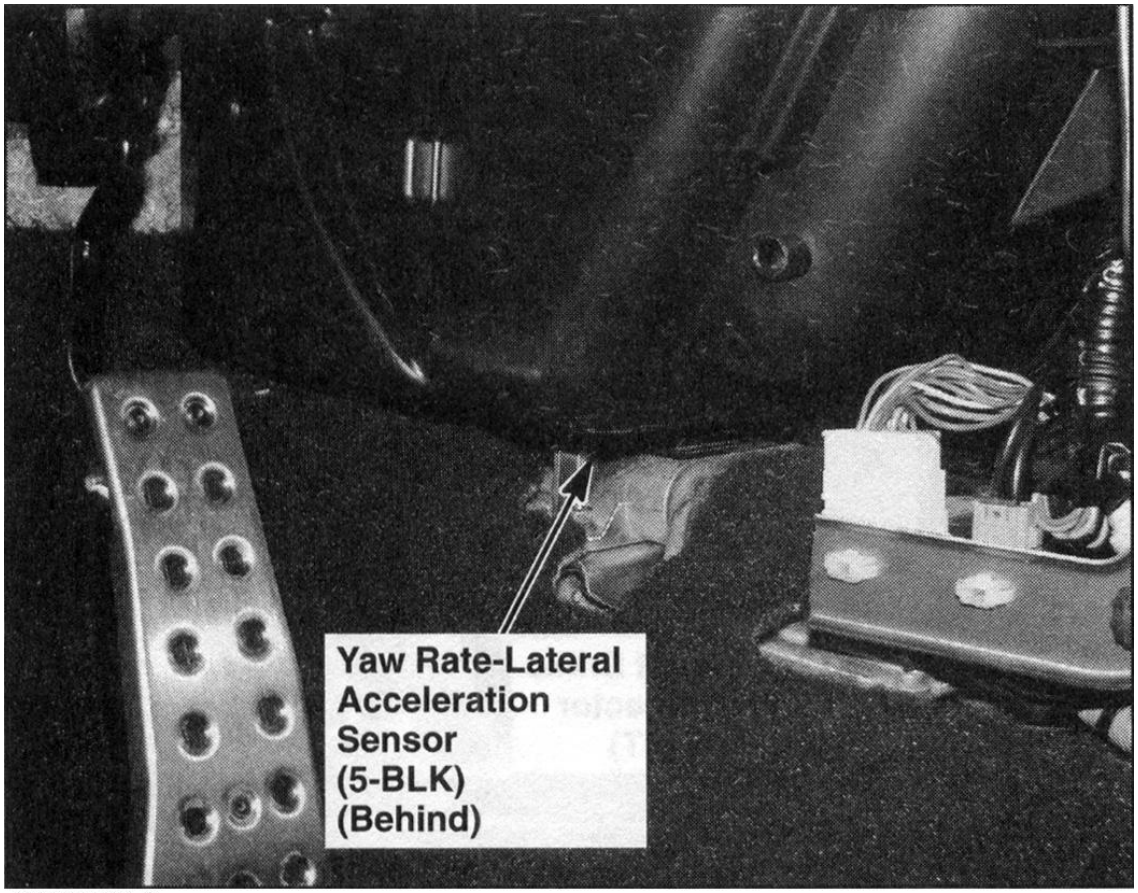
G00447910

Fig. 174: Left Side Of Engine Compartment (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00447911

Fig. 175: Under Left Rear Of Vehicle (Right Similar)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



G00447912

Fig. 176: Under Middle Of Dash (Si)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-08 ENGINE

Fan Controls (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX

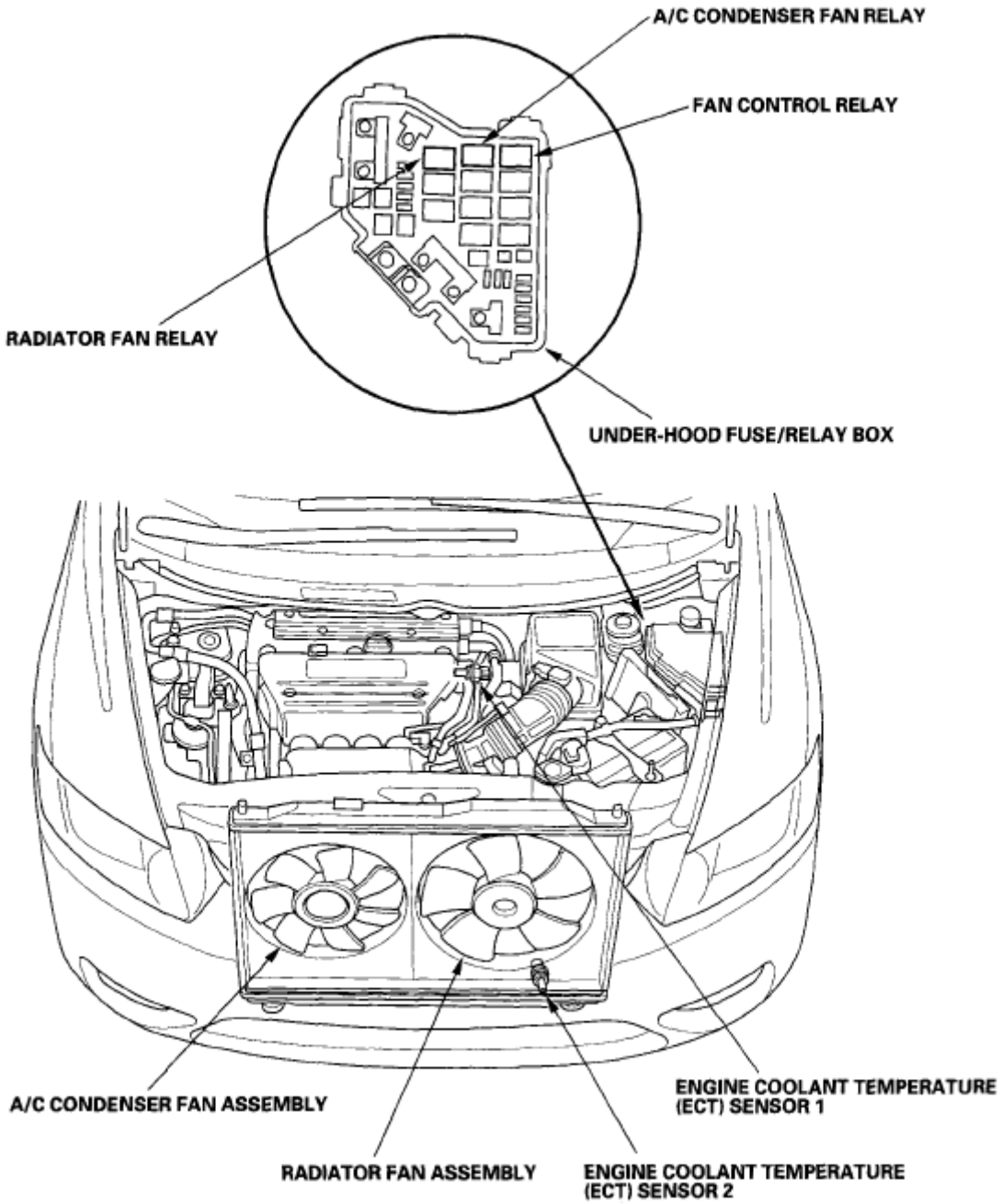


Fig. 1: Identifying A/C Condenser Fan Relay And Radiator Fan Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic Procedure	Also check for
Engine overheats	1. Check the coolant level. 2. Check for any engine coolant leakage (from gaskets, hoses, O-rings, etc.). 3. Check for dirt, leaves, or insects on radiator and condenser. 4. Check for deteriorated coolant. 5. Check for a damaged or deformed fan shroud. 6. Inspect the fan motors (see **FAN MOTOR TEST**) or fan relays (see **POWER RELAY TEST**). 7. Check the radiator cap (see **RADIATOR CAP TEST**). 8. Check the thermostat (see **FAN MOTOR TEST**). 9. Inspect the water pump (see **WATER PUMP INSPECTION**). 10. Check for a plugged or deteriorated radiator hoses. 11. Check for plugged heater core or hoses. 12. Check for a damaged cylinder head gasket.	
The A/C condenser fan runs at low speed, but it does not run at high speed when the engine coolant temperature is above 199 °F (93 °C)	A/C condenser fan high speed circuit troubleshooting (see **A/C CONDENSER FAN HIGH SPEED CIRCUIT TROUBLESHOOTING**).	Cleanliness and tightness of all connectors
With the A/C off and the engine coolant temperature at 199 °F (93 °C) or below, the radiator fan runs at high speed and the A/C condenser fan does not run. When the engine coolant temperature is above 199 °F (93 °C), both fans run at high speed	Remove the fan control relay, and test. • If the relay is faulty, replace it. • If the relay is OK, check for a short in the wire between the fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at high speed with the ignition switch ON (II), the A/C off, and the engine coolant temperature below 194 °F (90 °C)	Check for short in the wire between A/C condenser fan relay 4P socket terminal No. 3 and ECM connector terminal A5.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at low speed with the ignition switch ON (II) and the A/C off	Check for short in the wire between radiator fan relay 4P socket terminal No. 4 and ECM connector terminal A4.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C	Radiator and A/C condenser fans low speed circuit troubleshooting (see **RADIATOR**	Cleanliness and tightness

condenser fan do not run at low speed with the A/C on	**AND A/C CONDENSER FAN LOW SPEED CIRCUIT TROUBLESHOOTING**).	of all connectors
Both the radiator fan and the A/C condenser fan run at low speed, but the radiator fan does not run at high speed when the engine coolant temperature is above 199 °F (93 °C)	**RADIATOR FAN HIGH SPEED CIRCUIT TROUBLESHOOTING** (see).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at high speed when the engine coolant temperature is above 199 T (93 °C)	Check for open in the wire between A/C condenser fan relay 4P socket terminal No. 3 and ECM connector terminal A5.	Cleanliness and tightness of all connectors

CIRCUIT DIAGRAM

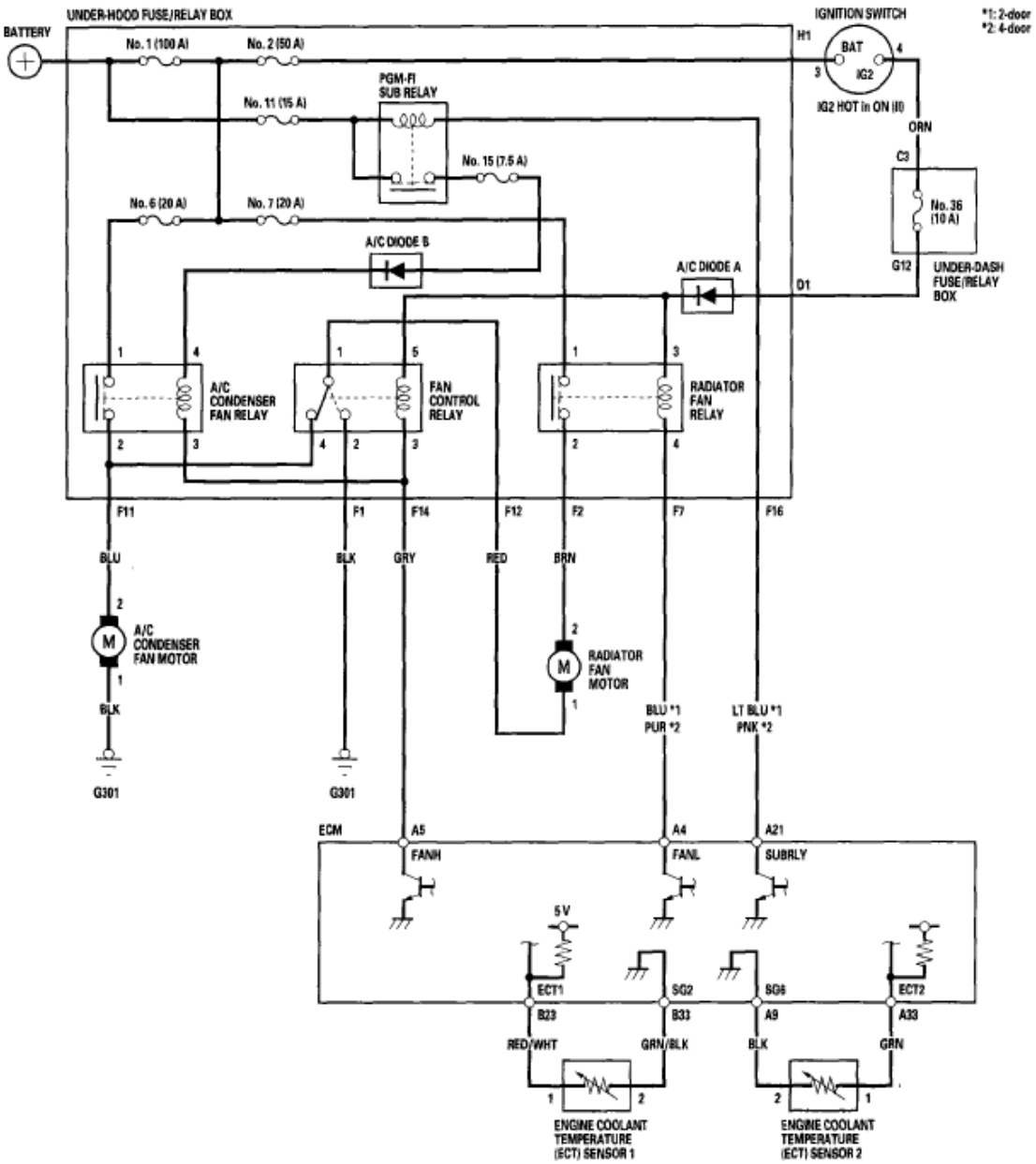


Fig. 2: Fan Controls Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN HIGH SPEED CIRCUIT TROUBLESHOOTING

1. Check the No. 7 (20 A) fuse in the under-hood fuse/relay box and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES -Reinstall the fuse(s), then go to step 2.

   NO -Replace the fuse(s) and recheck. If the fuse continues to blow, locate and repair the short in the circuit between the under-hood fuse/relay box and the radiator fan motor, or between under-dash fuse/relay box connector terminal G12 and under-hood fuse/relay box connector terminal D1.

2. Remove the radiator fan relay and the fan control relay from the under-hood fuse/relay box, and test them.

   Are the relays OK?

   YES -Go to step 3.

   NO -Replace the radiator fan relay and/or fan control relay.

3. Measure the voltage between radiator fan relay 4P socket terminal No. 1 and body ground.

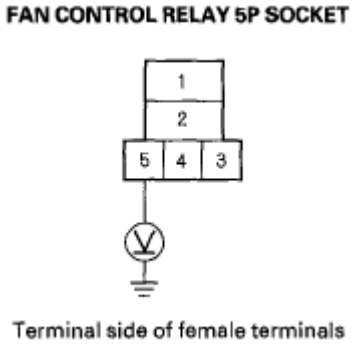


Fig. 3: Measuring Voltage Between Fan Control Relay 5P Socket Terminal 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there battery voltage?

   YES -Go to step 4.

   NO -Replace the under-hood fuse/relay box.

4. Connect fan control relay 5P socket terminals No. 1 and No. 2 with a jumper wire.

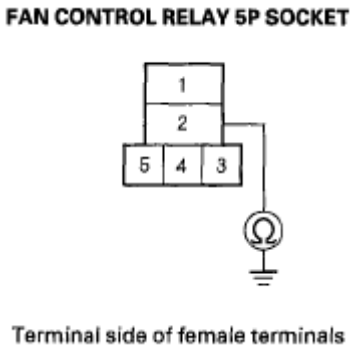


Fig. 4: Checking For Continuity Between Fan Control Relay 5P Socket Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

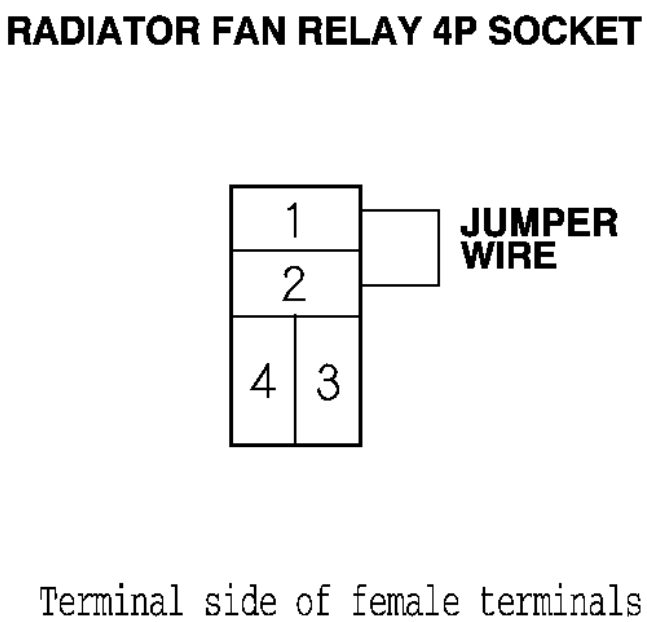


Fig. 5: Terminal Side Of Female Terminals
Courtesy of TOYOTA

Does the radiator fan run at high speed?

YES -Go to step 10.

NO -Go to step 6.

6. Remove the jumper wires, then check for continuity between fan control relay 5P socket terminal No. 2 and body ground.

Is there continuity?

YES -Go to step 7.

NO -Repair open in the wire between fan control relay 5P socket terminal No. 2 and body ground.

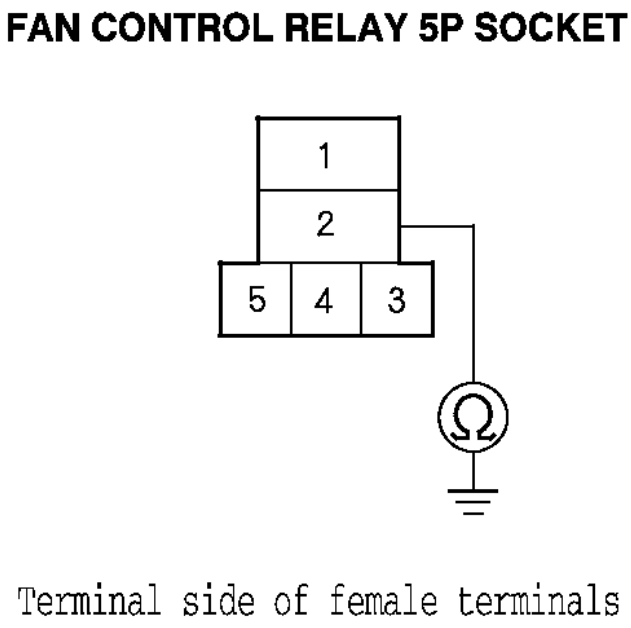


Fig. 6: Fan Control Relay 5P Socket
Courtesy of TOYOTA

7. Test the radiator fan motor.

   Is the motor OK?

   YES -Go to step 8.

   NO -Replace the radiator fan motor.

8. Check for continuity between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2.

   Is there continuity?

   YES -Go to step 9.

   NO -Repair open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2.

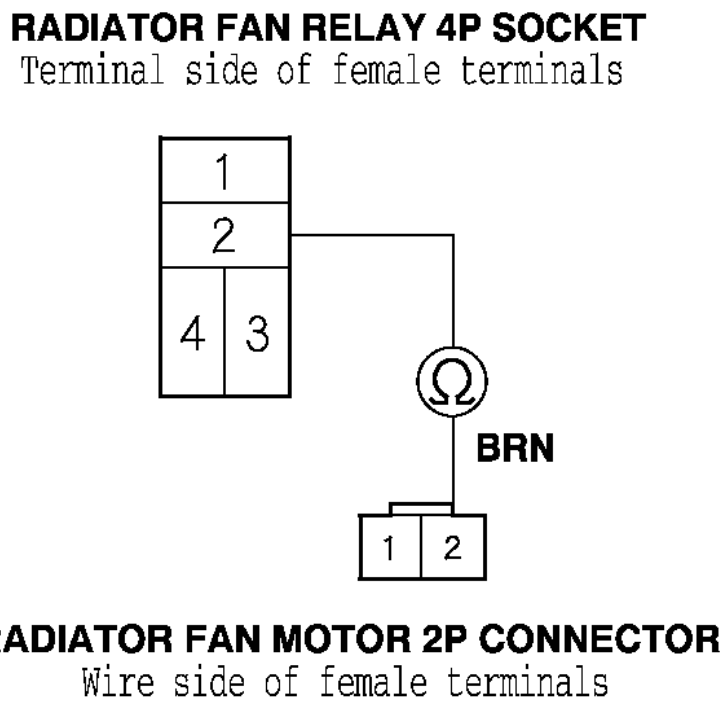


Fig. 7: Radiator Fan Motor 2P Connector - Brown
Courtesy of TOYOTA

9. Check for continuity between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.

   Is there continuity?

   YES -Check for poor connections or loose terminals at the under-hood fuse/relay box, the radiator fan motor, and body ground (G301), then go to step 1.

   NO -Repair open in the wire between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.

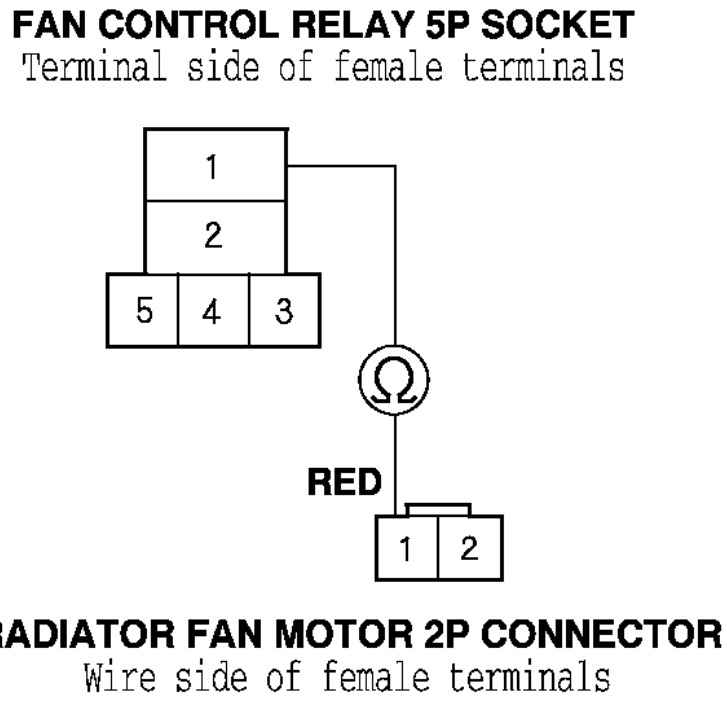


Fig. 8: Radiator Fan Motor 2p Connector - Red
Courtesy of TOYOTA

10. Turn the ignition switch to ON (II).
11. Measure the voltage between radiator fan relay 4P socket terminal No. 3 and body ground.

Is there battery voltage?

YES -Go to step 12.

NO -Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box.

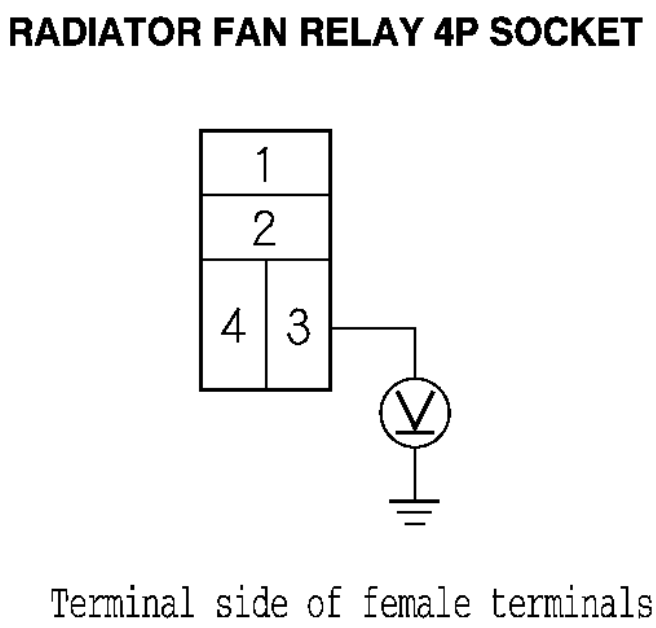


Fig. 9: Radiator Fan Relay 4p Socket
Courtesy of TOYOTA

12. Turn the ignition switch to LOCK (0).
13. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC).
14. Turn the ignition switch to ON (II).
15. Make sure the HDS communicates with the vehicle and the ECM. If it does not communicate, troubleshoot the DLC circuit.
16. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

NOTE: This step must be done to protect the ECM from damage.

17. Disconnect ECM connector A (44P).
18. Check for continuity between radiator fan relay 4P socket terminal No. 4 and ECM connector terminal A4.

Is there continuity?

YES -Go to step 19.

NO -Repair open in the wire between radiator fan relay 4P socket terminal No. 4 and ECM connector terminal A4.

19. Turn the ignition switch to ON (II).
20. Measure the voltage between fan control relay 5P socket terminal No. 5 and body ground.

Is there battery voltage?

YES -Go to step 21.

NO -Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box.

21. Turn the ignition switch to LOCK (0).
22. Check for continuity between fan control relay 5P socket terminal No. 3 and ECM connector terminal A5.

Is there continuity?

YES -Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck. If the symptom goes away with a known-good ECM, replace the original ECM.

NO -Repair open in the wire between fan control relay 5P socket terminal No. 3 and ECM connector terminal A5.

2006-09 ENGINE

Fan Controls (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

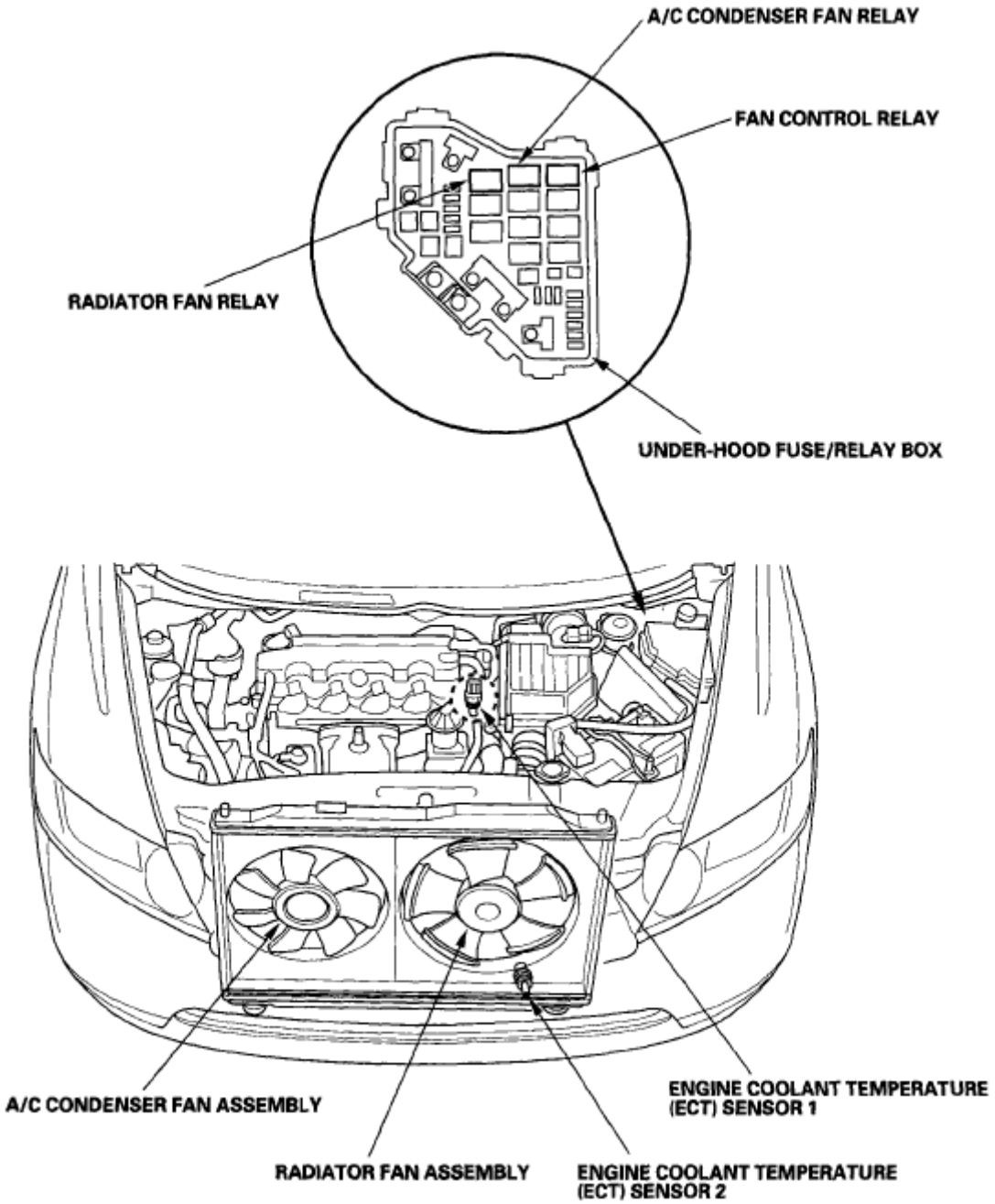


Fig. 1: Identifying Fan Controls Component Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic Procedure	Also check for
Engine overheats	1. Check the coolant level. 2. Check for any engine coolant leakage (from gaskets, hoses, O-rings, etc.). 3. Check for dirt, leaves, or insects on radiator and condenser. 4. Check for deteriorated coolant. 5. Check for a damaged or deformed fan shroud. 6. Inspect the fan motors (see **FAN MOTOR TEST**) or fan relays (see **POWER RELAY TEST**). 7. Check the radiator cap (see **RADIATOR CAP TEST**). 8. Check the thermostat (see **FAN MOTOR TEST**). 9. Inspect the water pump (see **WATER PUMP INSPECTION**). 10. Check for a plugged or deteriorated radiator hoses. 11. Check for plugged heater core or hoses. 12. Check for a damaged cylinder head gasket.	
The A/C condenser fan runs at low speed, but it does not run at high speed when the engine coolant temperature is above 206 °F (96.5 °C)	A/C condenser fan high speed circuit troubleshooting (see **A/C CONDENSER FAN HIGH SPEED CIRCUIT TROUBLESHOOTING**).	Cleanliness and tightness of all connectors
With the A/C off (if equipped) and the engine coolant temperature at 206 °F (96.5 CC) or below, the radiator fan runs at high speed and the A/C condenser fan does not run. When the engine coolant temperature is above 206 °F (96.5 °C), both fans run at high speed	Remove the fan control relay, and test. • If the relay is faulty, replace it. • If the relay is OK, check for a short in the wire between the fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at high speed with the ignition switch ON (II), the A/C off (if equipped), and the engine coolant temperature below 202 T (94.5 °C)	Check for short in the wire between A/C condenser fan relay 4P socket terminal No. 3 and ECM/PCM connector terminal A5.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at low speed with the ignition switch ON (II) and the A/C off (if equipped)	Check for short in the wire between radiator fan relay 4P socket terminal No. 3 and ECM/PCM connector terminal A4.	Cleanliness and tightness of all connectors

Both the radiator fan and the A/C condenser fan do not run at low speed with the A/C on (if equipped)	Radiator and A/C condenser fans low speed circuit troubleshooting (see **RADIATOR AND A/C CONDENSER FAN LOW SPEED CIRCUIT TROUBLESHOOTING**).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at low speed, but the radiator fan does not run at high speed when the engine coolant temperature is above 206 °F (96.5 °C)	**RADIATOR FAN HIGH SPEED CIRCUIT TROUBLESHOOTING** (see).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at high speed when the engine coolant temperature is above 206 °F (96.5 °C)	Check for open in the wire between A/C condenser fan relay 4P socket terminal No. 3 and ECM/PCM connector terminal A5.	Cleanliness and tightness of all connectors

CIRCUIT DIAGRAM

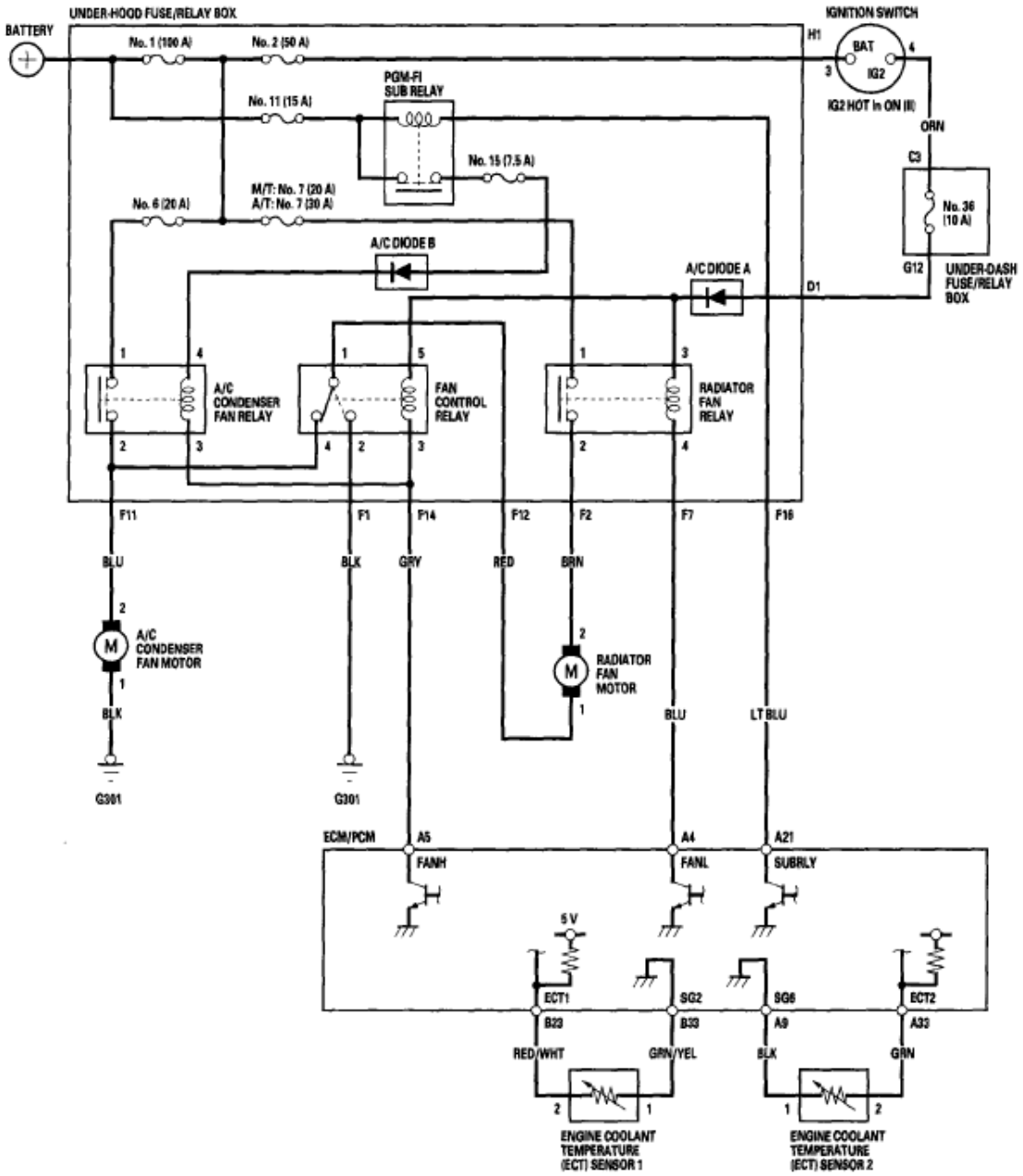


Fig. 2: Fan Controls Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR FAN HIGH SPEED CIRCUIT TROUBLESHOOTING

1. Check the No. 7 (20 A) fuse in the under-hood fuse/relay box and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Is the relay OK?

   YES -Reinstall the fuse(s), then go to step 2.

   NO -Replace the fuse(s) and recheck. If the fuse continues to blow, locate and repair the short in the circuit between the under-hood fuse/relay box and the radiator fan motor, or between under-dash

fuse/relay box connector terminal G12 and under-hood fuse/relay box connector terminal D1.

2. Remove the radiator fan relay and the fan control relay from the under-hood fuse/relay box, and test them.

   Are the relays OK?

   YES - Go to step 3.

   NO - Replace the radiator fan relay and/or fan control relay.

3. Measure the voltage between radiator fan relay 4P socket terminal No. 1 and body ground.

   Is there battery voltage?

   YES - Go to step 4.

   NO - Replace the under-hood fuse/relay box.

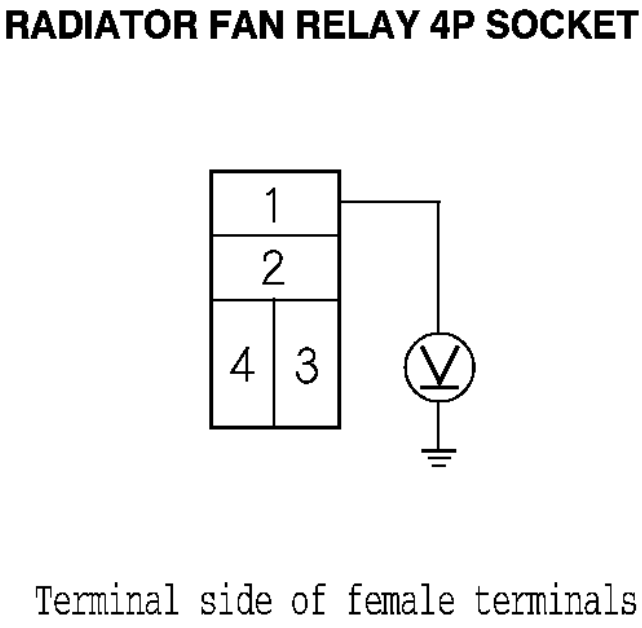


Fig. 3: Radiator Fan Relay 4P Socket
Courtesy of TOYOTA

4. Connect fan control relay 5P socket terminals No. 1 and No. 2 with a jumper wire.

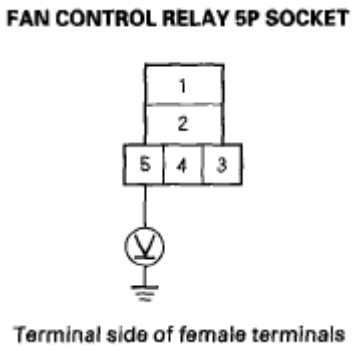


Fig. 4: Measuring Voltage Between Fan Control Relay 5P Socket Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 5.

NO -Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box.

5. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

   Does the radiator fan run at high speed?

   YES -Go to step 10.

   NO -Go to step 6.

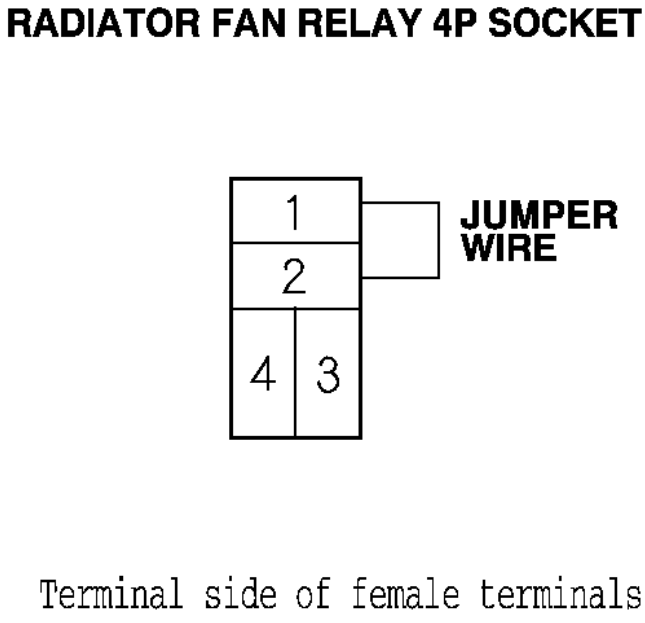


Fig. 5: Radiator Fan Relay 4P Socket Jumper Wire
Courtesy of TOYOTA

6. Remove the jumper wires, then check for continuity between fan control relay 5P socket terminal No. 2 and body ground.

   Is there continuity?

   YES -Go to step 7.

   NO -Repair open in the wire between fan control relay 5P socket terminal No. 2 and body ground.

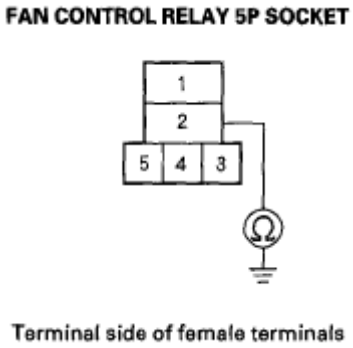


Fig. 6: Checking For Continuity Between Fan Control Relay 5P Socket Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Test the radiator fan motor.

   Is the motor OK?

   YES -Go to step 8.

   NO -Replace the radiator fan motor.

8. Check for continuity between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2.

   Is there continuity?

   YES -Go to step 9

   NO -Repair open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2.

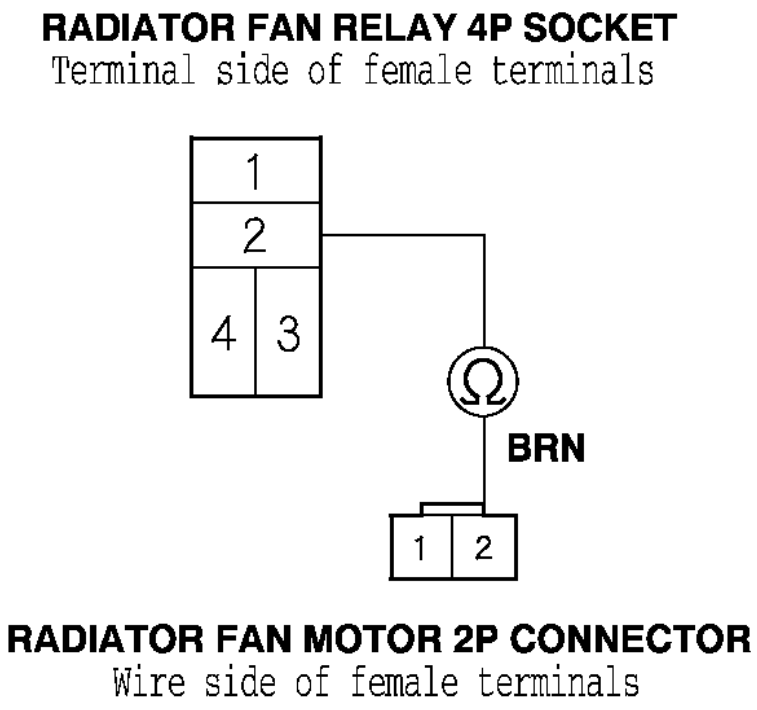


Fig. 7: Radiator Fan Motor 2P Conector - Brown
Courtesy of TOYOTA

9. Check for continuity between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.

   Is there continuity?

   YES -Check for poor connections or loose terminals at the under-hood fuse/relay box, the radiator fan motor, and body ground (G301), then go to step 1.

   NO -Repair open in the wire between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.

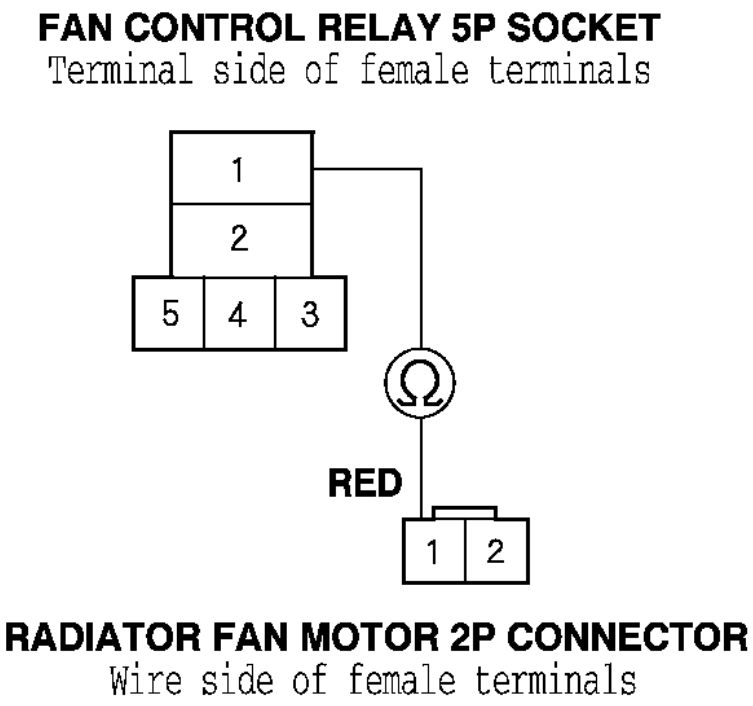


Fig. 8: Radiator Fan Motor 2P Connector - Red
Courtesy of TOYOTA

10. Turn the ignition switch to ON (II).
11. Measure the voltage between radiator fan relay 4P socket terminal No. 3 and body ground.

Is there battery voltage?

YES -Go to step 12.

NO -Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box.

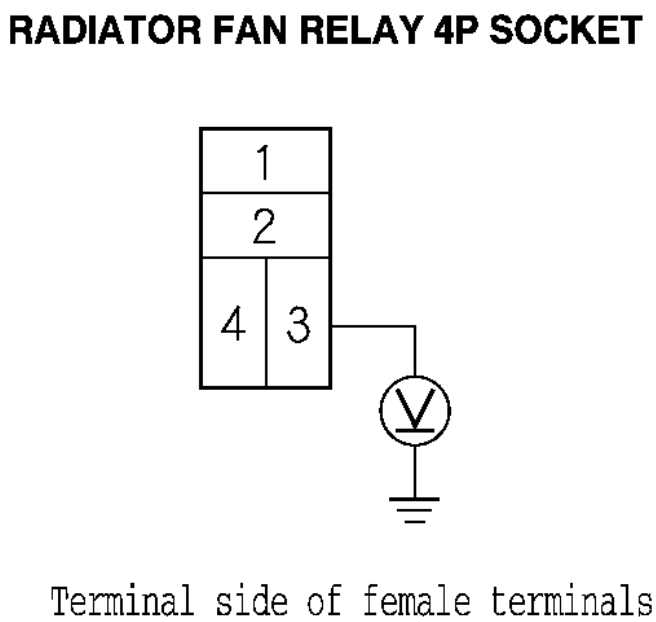


Fig. 9: Radiator Fan Relay 4P Socket Terminal No. 3
Courtesy of TOYOTA

12. Turn the ignition switch to LOCK (0).
13. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC).
14. Turn the ignition switch to ON (II).
15. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit.
16. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

NOTE: This step must be done to protect the ECM/PCM from damage.

17. Disconnect ECM/PCM connector A (44P).
18. Check for continuity between radiator fan relay 4P socket terminal No. 4 and ECM/PCM connector terminal A4.

Is there continuity?

YES -Go to step 19.

NO -Repair open in the wire between radiator fan relay 4P socket terminal No. 4 and ECM/PCM connector terminal A4.

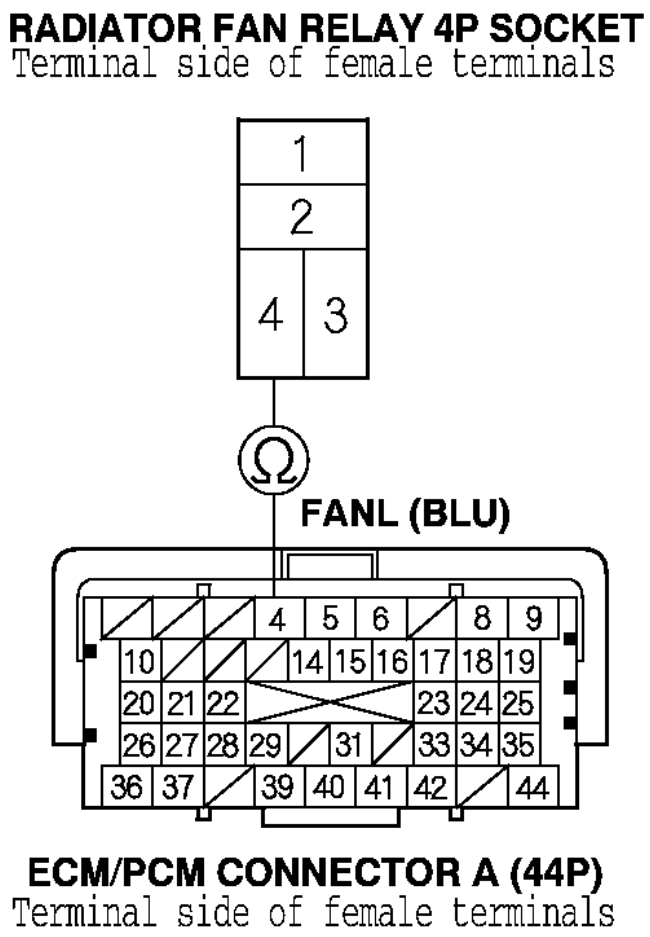


Fig. 10: Radiator Fan Relay 4P Socket - Blue
Courtesy of TOYOTA

19. Turn the ignition switch to ON (II).
20. Measure the voltage between fan control relay 5P socket terminal No. 5 and body ground.

Is there battery voltage?

YES -Go to step 21.

NO -Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box.

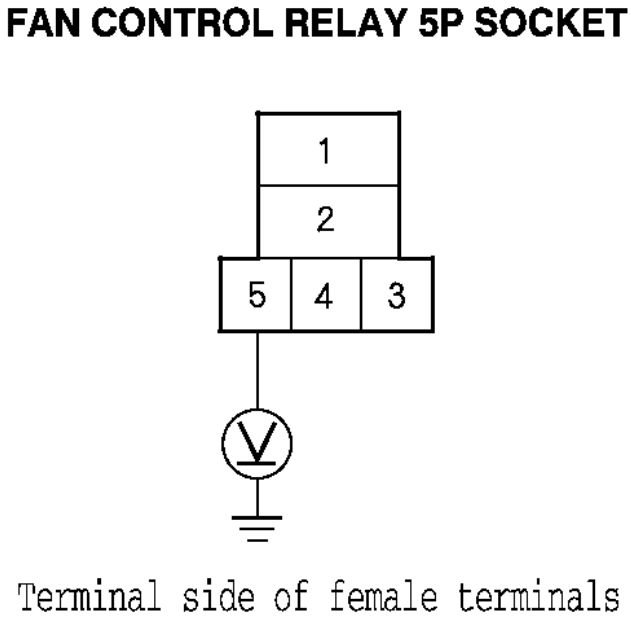


Fig. 11: Fan Control Relay 5P Socket
Courtesy of TOYOTA

21. Turn the ignition switch to LOCK (0).
22. Check for continuity between fan control relay 5P socket terminal No. 3 and ECM/PCM connector terminal A5.

    Is there continuity?

    YES -Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck. If the symptom goes away with a known-good ECM/PCM, replace the original ECM/PCM.

    NO -Repair open in the wire between fan control relay 5P socket terminal No. 3 and ECM/PCM connector terminal A5.

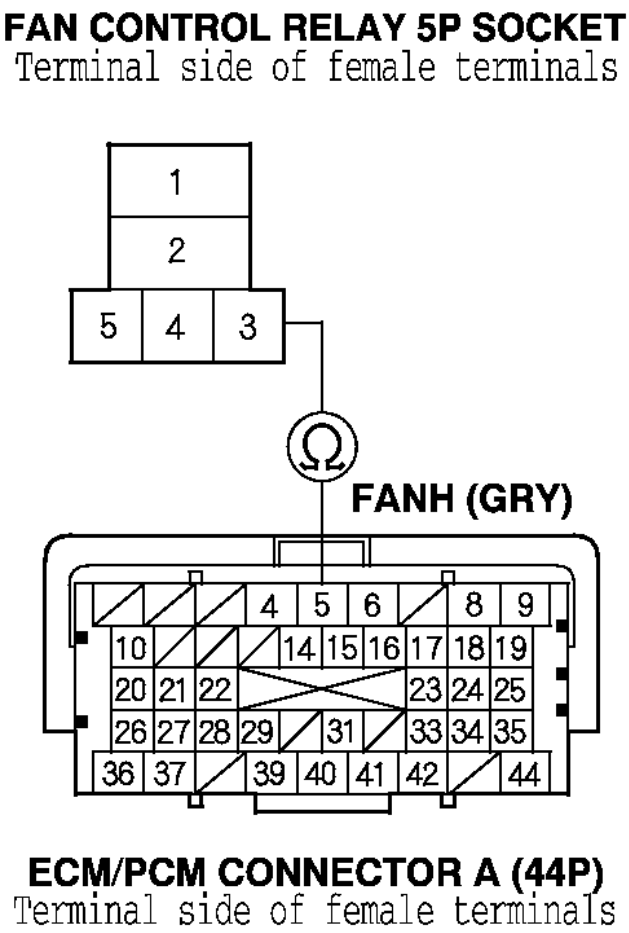


Fig. 12: Fan Control Relay 5P Socket - Grey
Courtesy of TOYOTA

2006-08 ENGINE

Cooling System (K20Z3) - Civic (All Except Si)

BELT ROUTING

For belt routing illustration, see **COMPONENT LOCATION INDEX** in CHARGING SYSTEM article.

COMPONENT LOCATION INDEX

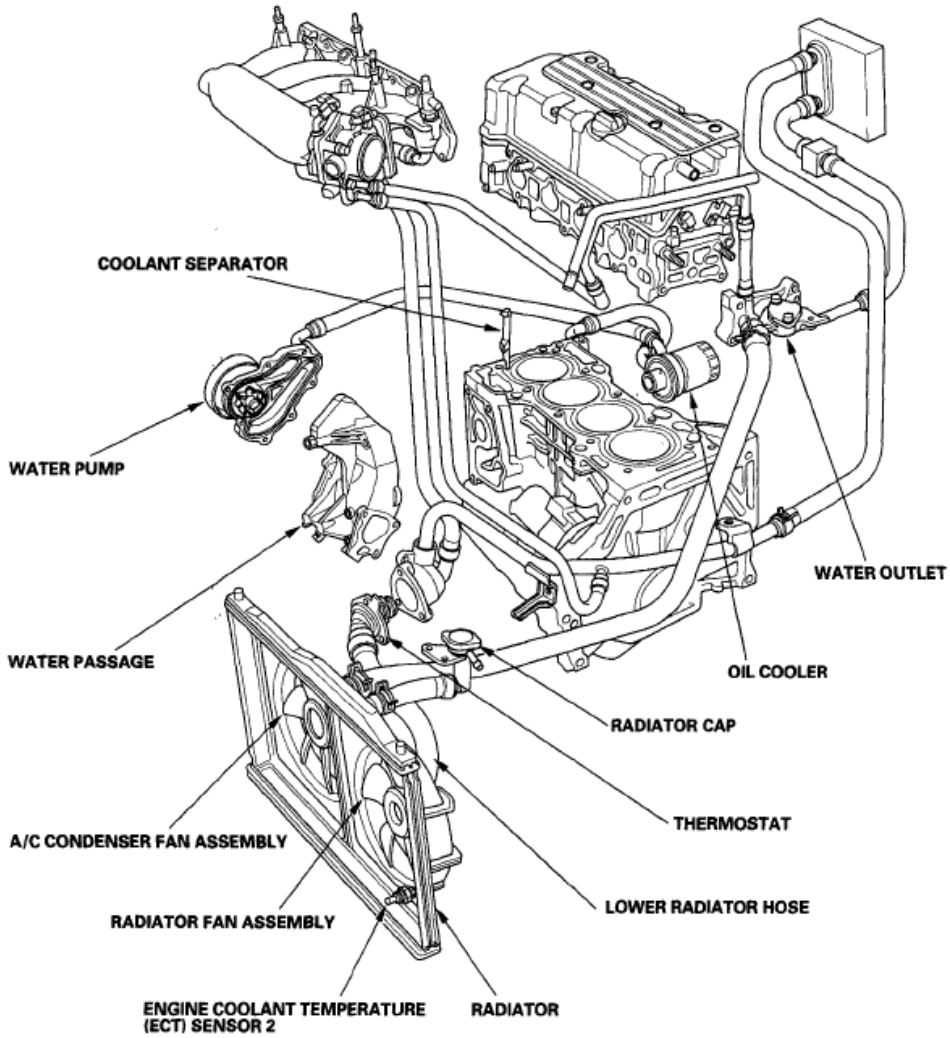


Fig. 1: Identifying Cooling System Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR CAP TEST

1. Remove the radiator cap (A). Wet the seal with engine coolant, then install it on a commercially available pressure tester (B).

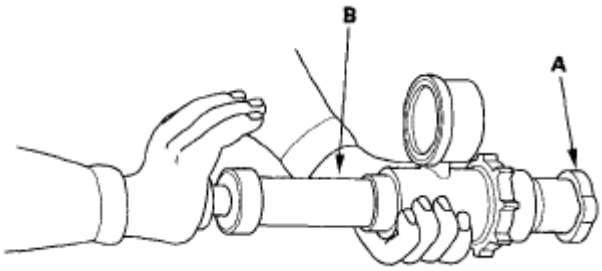


Fig. 2: Installing Cap On Pressure Tester
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

RADIATOR TEST

1. Wait until the engine is cool, then carefully remove the radiator cap, and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).

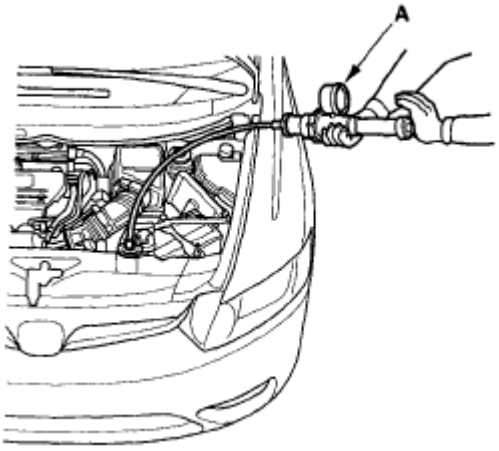


Fig. 3: Attaching Pressure Tester To Radiator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect for engine coolant leaks, and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.
5. Check for engine oil in the coolant and/or coolant in the engine oil.

FAN MOTOR TEST

1. Disconnect the 2P connectors from the radiator fan motor and condenser fan motor.

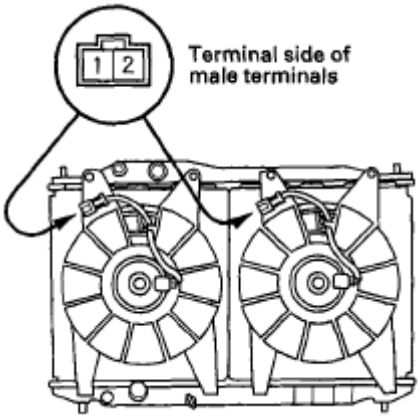


Fig. 4: Identifying 2P Connectors From Radiator Fan Motor And Condenser Fan Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Test the motor by connecting battery power to the terminal No. 2 and ground to the terminal No. 1.
3. If the motor fails to run, or does not run smoothly, replace it.

THERMOSTAT TEST

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.

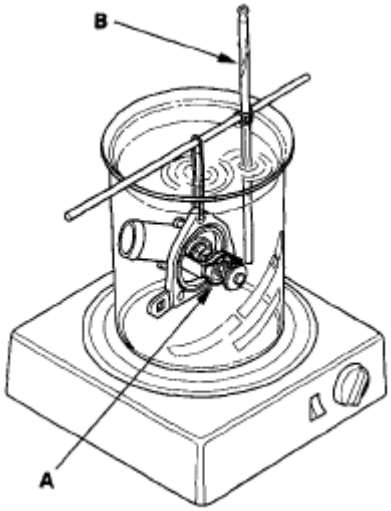


Fig. 5: Identifying Thermostat In Container Of Water
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Heat the water, and check the temperature with a thermometer. Check the temperature when the thermostat first opens, then check the temperature when the thermostat is fully open.
3. Measure the lift height of the thermostat when it is fully open. If the thermostat is not within the specification, replace it.

Standard Thermostat

Lift Height: Above 8.0 mm (0.31 in.)

Starts Opening: 169-176 °F (76-80 °C)

Fully Open: 194 °F (90 °C)

WATER PUMP INSPECTION

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Turn the water pump pulley counterclockwise. Check that it turns freely. If it doesn't turn smoothly, replace the water pump (see **WATER PUMP INSPECTION**).

NOTE: When you check the water pump, you may see a small amount of "weeping" from the bleed holes (A). This it is normal.

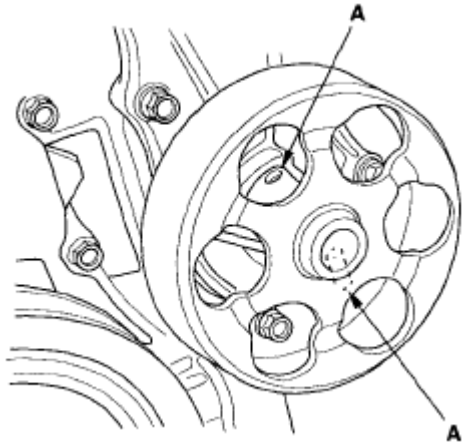


Fig. 6: Identifying Bleed Holes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive belt (see **DRIVE BELT INSPECTION**).

WATER PUMP REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Drain the engine coolant (see **COOLANT CHECK**).
3. Remove the drive belt auto-tensioner pulley (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
4. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
5. Remove the oil cooler joint pipe (A), then remove the seven bolts securing the water pump. Remove the water pump (B).

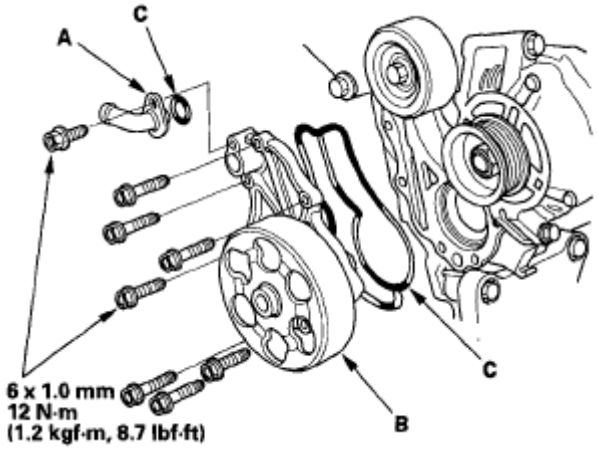


Fig. 7: Identifying Water Pump Components (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Inspect, and clean the O-ring groove and mating surface with the water passage.
7. Install the water pump with new O-rings (C) in the reverse order of removal.
8. Clean up any spilled engine coolant.
9. Install the drive belt auto-tensioner pulley (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
10. Install the crankshaft pulley (see **INSTALLATION**).
11. Install the drive belt (see **DRIVE BELT REMOVAL/INSTALLATION**).
12. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6).

COOLANT CHECK

1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).

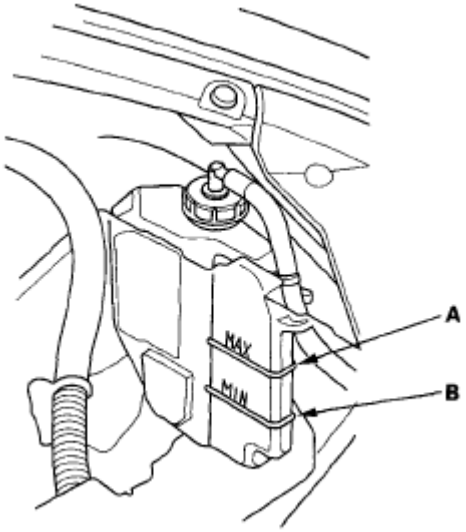


Fig. 8: Identifying MAX Mark And MIN Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark, and inspect the cooling system for leaks.

COOLANT REPLACEMENT

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the drain plug (A), and drain the coolant.

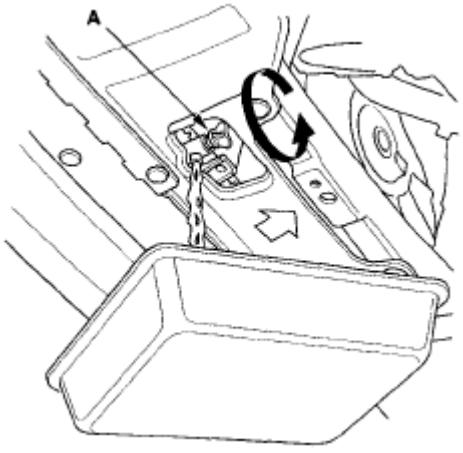


Fig. 9: Loosening Drain Plug
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. After the coolant has drained, tighten the radiator drain plug.
5. Remove the coolant reservoir, and drain the coolant, then reinstall the coolant reservoir.
6. Fill the coolant reservoir to the MAX mark (A) with Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001).

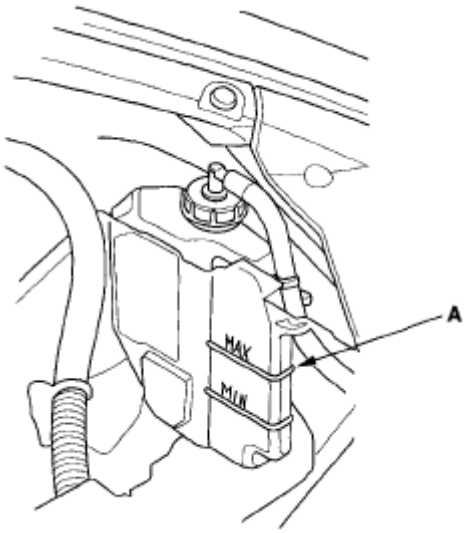


Fig. 10: Identifying MAX Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Pour Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001) into the radiator up to the base of the filler neck.

NOTE:

- **Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.**
- **Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.**

Engine Coolant Capacities (Including the reserve tank capacity of 0.4 L (0.11 US gal))

At Coolant Change: 4.5 L (1.19 US gal)

After Engine Overhaul: 6.8 L (1.80 US gal)

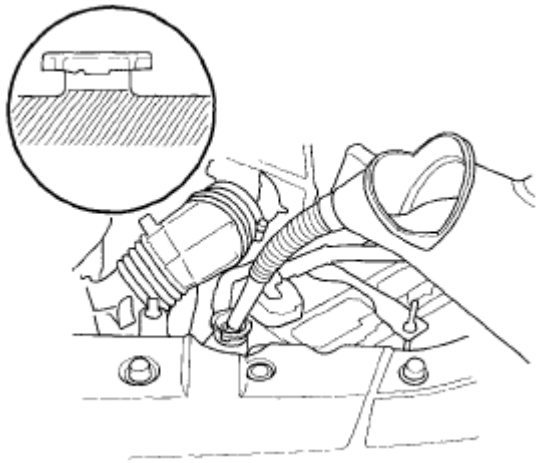


Fig. 11: Identifying Engine Coolant Capacities
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Loosely install the radiator cap.
9. Set the heated temperature control dial to maximum heat.
10. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).
11. Turn off the engine. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
12. Install the radiator cap securely, then start the engine again, and check for leaks.
13. Clean up any spilled engine coolant.
14. Turn the ignition switch to ON (II).'07-10 2 and 4-door models: If the maintenance minder indicated to replace the engine coolant, reset the maintenance minder. If the maintenance minder did not indicate to replace the engine coolant, go to step 14.

    '06 2-door model: If the maintenance minder indicated to replace the engine coolant, reset the maintenance minder. If the maintenance minder did not indicate to replace the engine coolant, notify the customer that the maintenance minder term was not reset and the maintenance minder will indicate to replace the engine coolant before it is actually needed.

15. Turn the ignition switch to LOCK (0).
16. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC). (See **FUEL AND EMISSIONS SYSTEMS (K20Z3)**).
17. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it does not communicate, troubleshoot the DLC circuit. (see **DLC CIRCUIT TROUBLESHOOTING**).
18. Select GAUGES in the BODY ELECTRICAL with the HDS.
19. Select ADJUSTMENT in the GAUGES with the HDS.
20. Select MAINTENANCE MINDER in the ADJUSTMENT menu with the HDS.
21. Select RESET in the MAINTENANCE MINDER with the HDS.
22. Select MAINTENANCE SUB ITEM 5 RESET with the HDS.

THERMOSTAT REPLACEMENT

1. Drain the engine coolant (see **COOLANT CHECK**).
2. Remove the splash shield .
3. Remove the lower hose, then remove the thermostat.

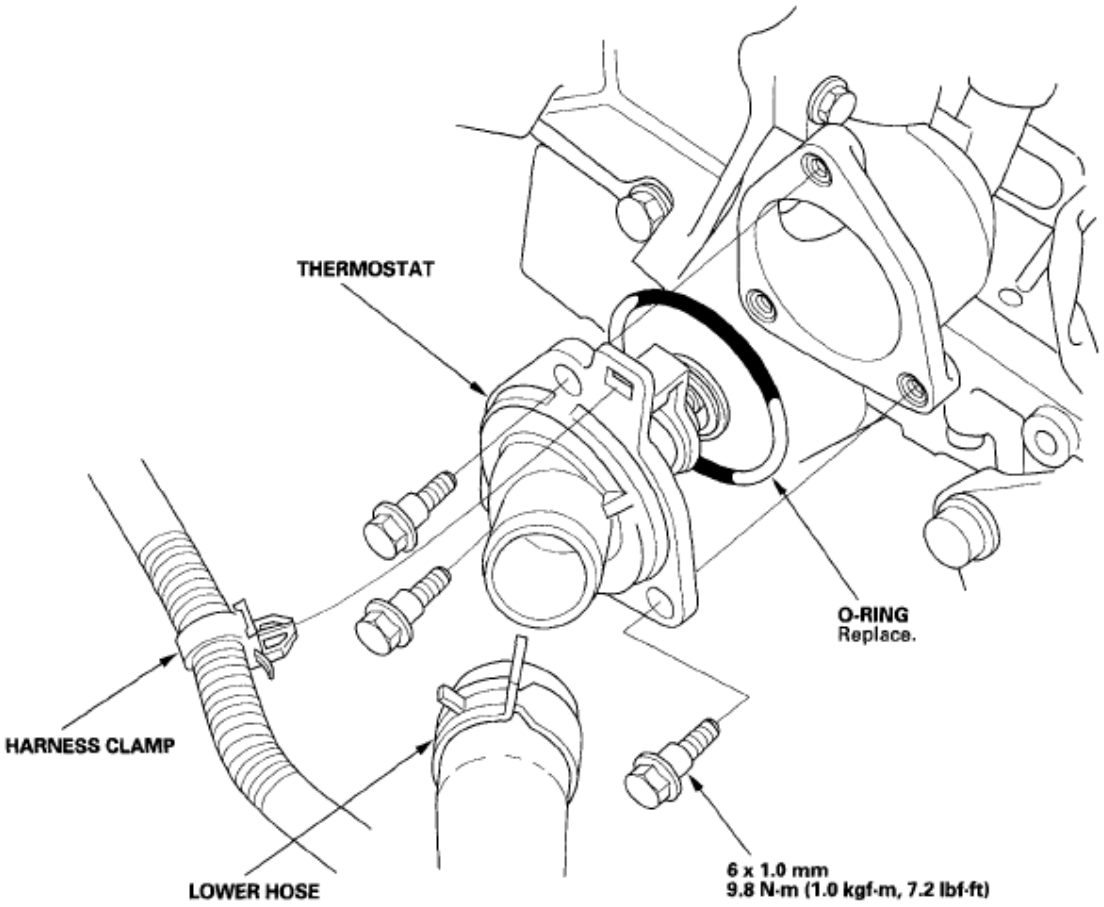


Fig. 12: Identifying Thermostat, Harness Clamp And Lower Hose (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the thermostat with a new O-ring, then install the lower hose.
5. Install the splash shield .

6. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6).
7. Clean up any spilled engine coolant.

WATER PASSAGE REPLACEMENT

1. Drain the engine coolant (see **COOLANT CHECK**).
2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
3. Remove the condenser fan shroud assembly.
4. Remove the A/C compressor without disconnecting the A/C hoses (see step 38 on **ENGINE REMOVAL**).
5. Remove the intake manifold (see **REMOVAL**).
6. Remove a bolt (A) securing the connecting pipe.

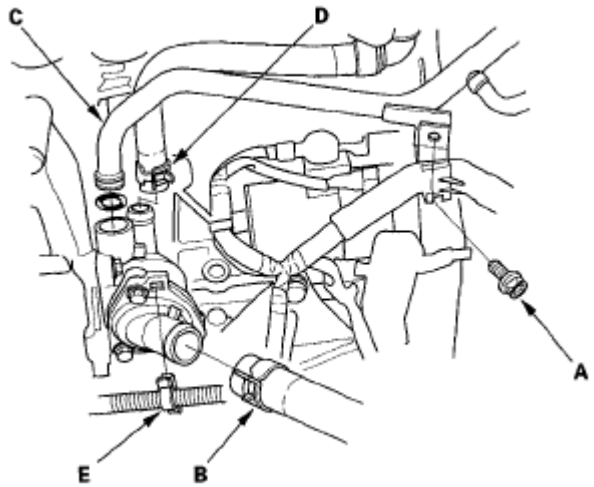


Fig. 13: Identifying Lower Radiator Hose, Connecting Pipe And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the lower radiator hose (B), connecting pipe (C), water bypass hose (D), and harness clamp (E).
8. Remove the positive crankcase ventilation (PCV) hose (A), then remove the water passage (B).

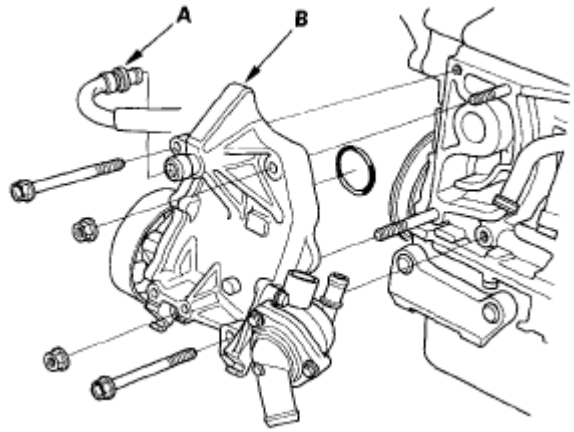


Fig. 14: Identifying Positive Crankcase Ventilation (PCV) Hose And Water Passage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the thermostat housing.

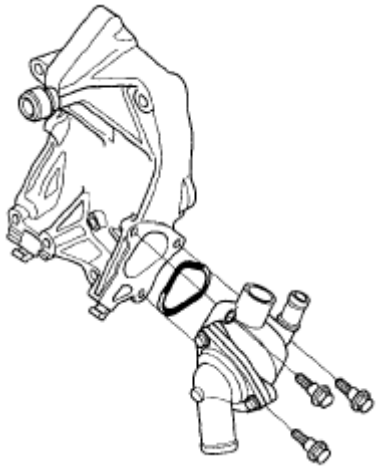


Fig. 15: Identifying Thermostat Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the water pump (see **WATER PUMP INSPECTION**).
11. Install the water pump (see **WATER PUMP INSPECTION**).
12. Install the thermostat housing (A) with a new O-ring (B).

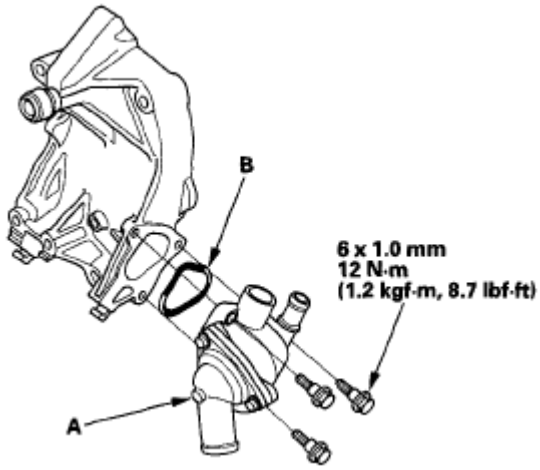


Fig. 16: Identifying Thermostat Housing With New O-Ring (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Clean, and dry the water passage mating surfaces.
14. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the engine block mating surface of the water passage.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and

reapply the liquid gasket.

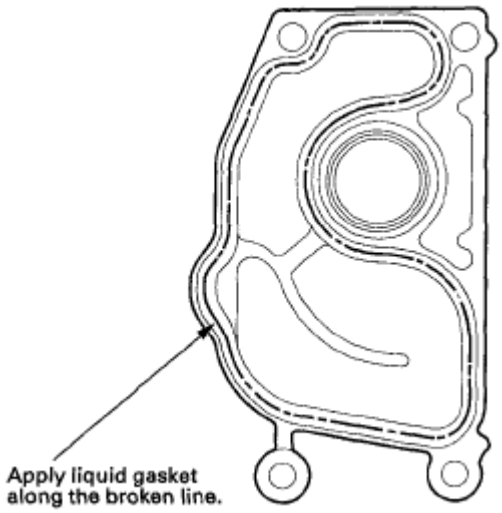


Fig. 17: Identifying Engine Block Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the water passage (A) with a new O-ring (B).

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the water passage.**

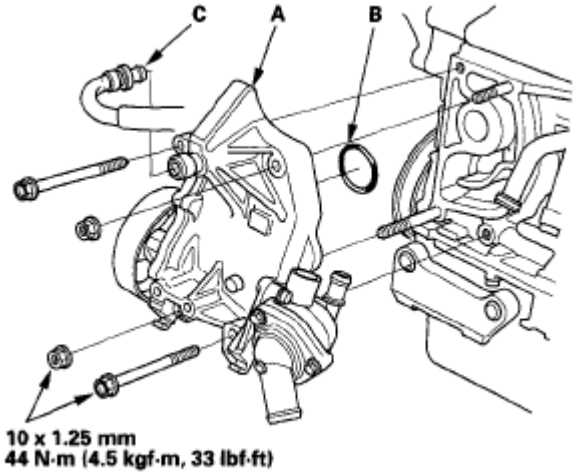


Fig. 18: Identifying Water Passage With New O-Ring (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the PCV hose (C).
17. Install the connecting pipe (A) with a new O-ring (B).

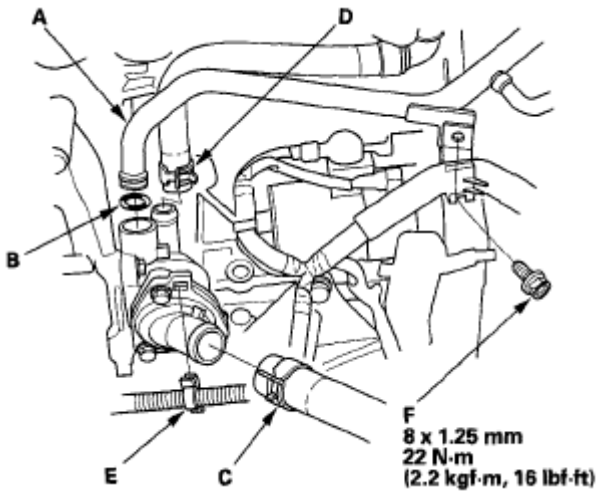


Fig. 19: Identifying Connecting Pipe With New O-Ring (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the lower radiator hose (C), water bypass hose (D), and harness clamp (E).
19. Tighten a bolt (F) securing the connecting pipe.
20. Install the intake manifold (see **INSTALLATION**).
21. Install the A/C compressor (see step 24 on **ENGINE INSTALLATION**).
22. Install the condenser fan shroud assembly.
23. Install the alternator (see **INSTALLATION**).
24. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on).
25. Clean up any spilled engine coolant.

WATER OUTLET REMOVAL AND INSTALLATION

REMOVAL

1. Drain the engine coolant (see **COOLANT CHECK**).
2. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
3. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).

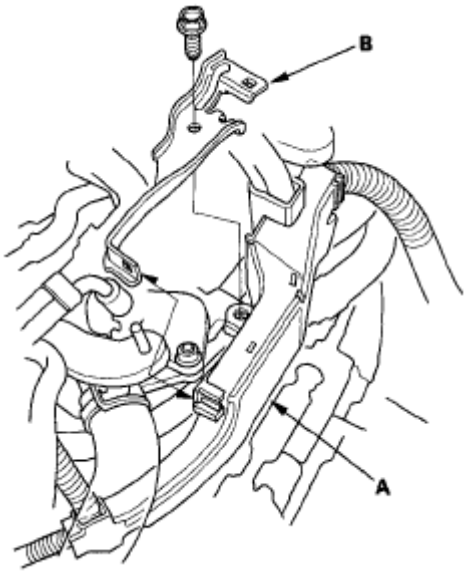


Fig. 20: Identifying Harness Holder Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the upper radiator hose (A), heater hose (B), and water bypass hose (C).

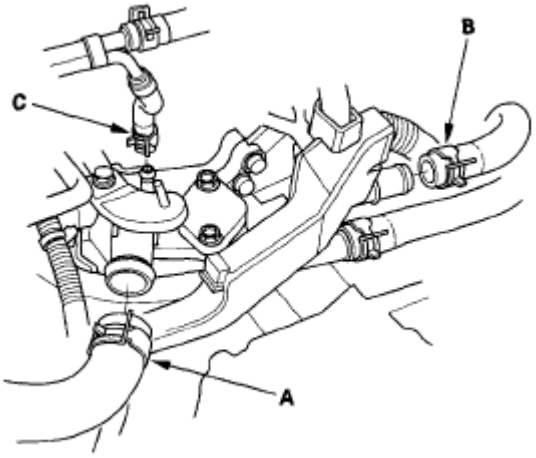


Fig. 21: Identifying Upper Radiator Hose, Heater Hose, And Water Bypass Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the air cleaner housing brackets.

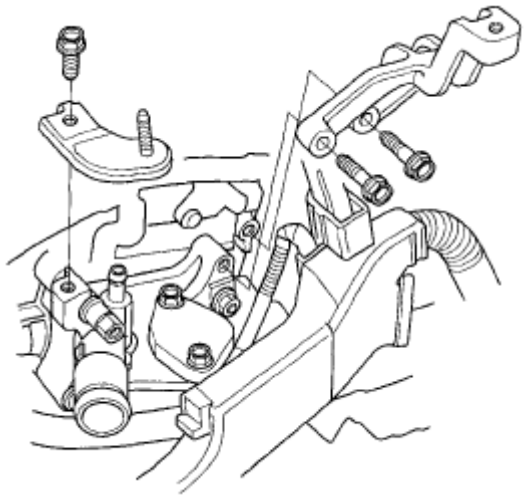


Fig. 22: Identifying Air Cleaner Housing Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the water outlet.

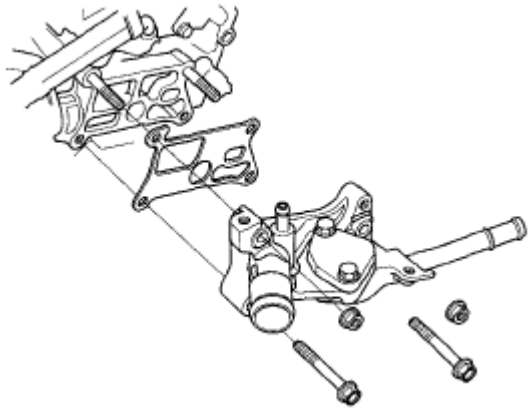


Fig. 23: Identifying Water Outlet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the EGR plate.

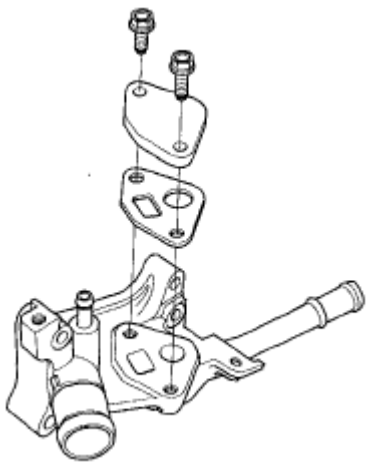


Fig. 24: Identifying EGR Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Install the EGR plate (A) with a new gasket (B).

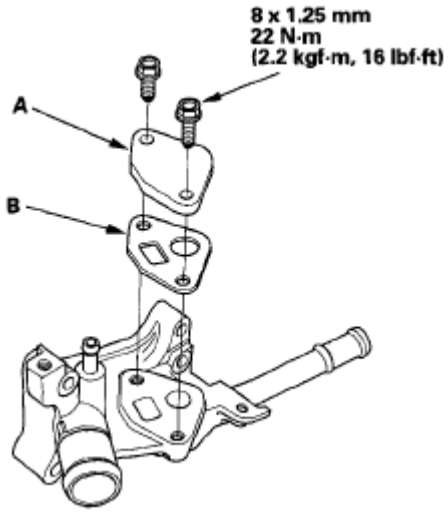


Fig. 25: Identifying EGR Plate With Gasket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the water outlet (A) with a new gasket (B).

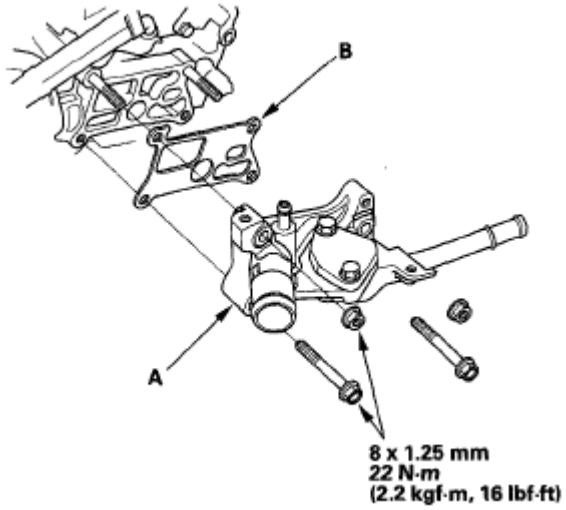


Fig. 26: Identifying Water Outlet With New Gasket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the air cleaner housing brackets.

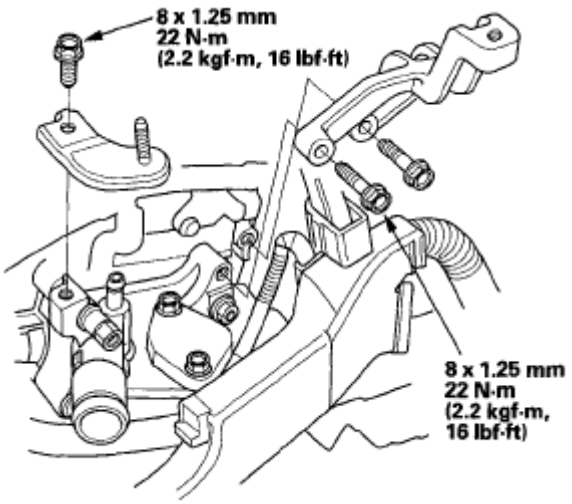


Fig. 27: Identifying Air Cleaner Housing Brackets (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the upper radiator hose (A), heater hose (B), and water bypass hose (C).

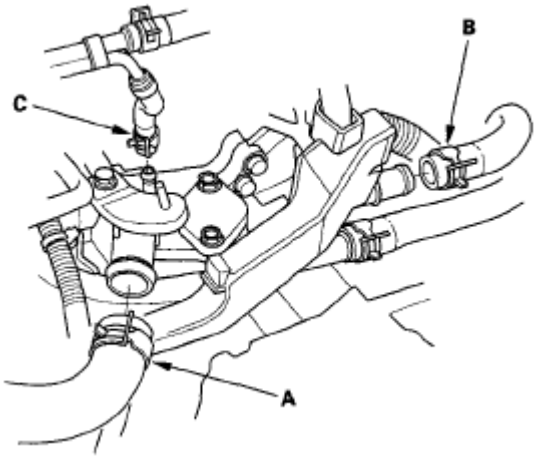


Fig. 28: Identifying Upper Radiator Hose, Heater Hose , And Water Bypass Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the harness holder bracket (A), then install the harness holder (B).

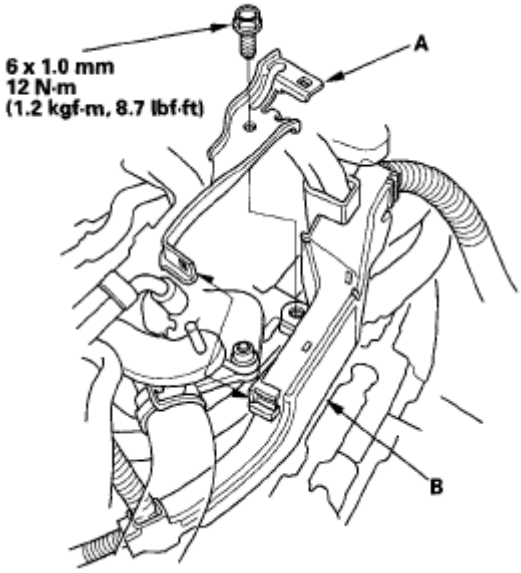


Fig. 29: Identifying Harness Holder Bracket And Harness Holder (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
7. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6).
8. Clean up any spilled engine coolant.

RADIATOR AND FAN REPLACEMENT

1. Do the battery removal procedure (See **BATTERY REMOVAL AND INSTALLATION**).
2. Drain the engine coolant (See **Coolant Check**).
3. Remove the front grille cover (See **FRONT GRILLE COVER REPLACEMENT**).
4. Disconnect the fan motor connectors (A) and hood switch connector (B), then remove the harness clamps (C).

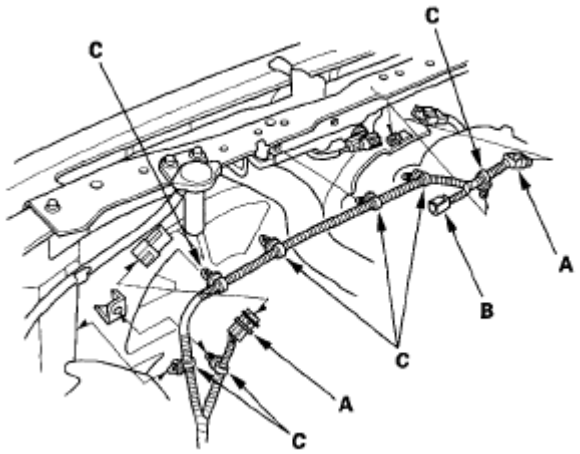


Fig. 30: Identifying Fan Motor Connectors And Hood Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the reservoir hose (A), and remove the radiator cap base mounting bolts (B), and the bolts (C), and the radiator upper brackets (D).

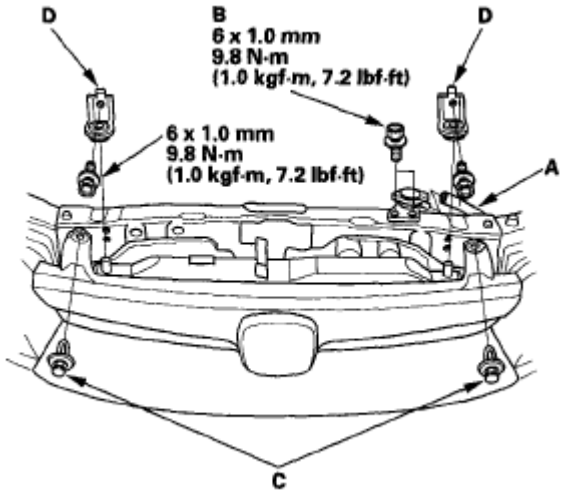


Fig. 31: Identifying Reservoir Hose, Radiator Cap Base Mounting Bolts And Clips (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the upper radiator hose (A).

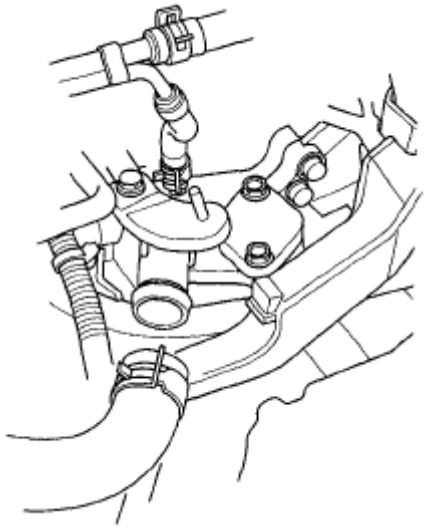


Fig. 32: Identifying Upper Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Raise the vehicle on the lift.
8. Remove the splash shield.

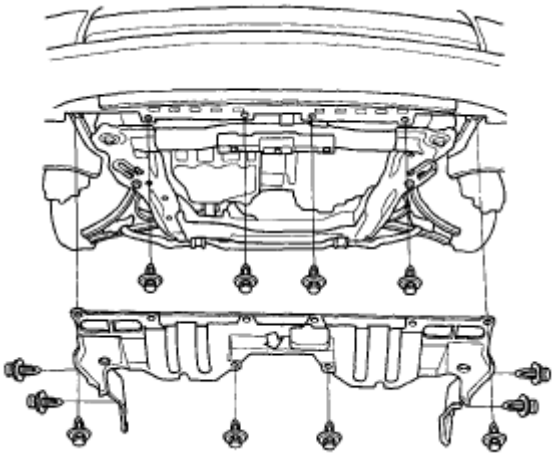


Fig. 33: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the engine coolant temperature (ECT) sensor 2 connector (A), and remove the harness clamp (B).

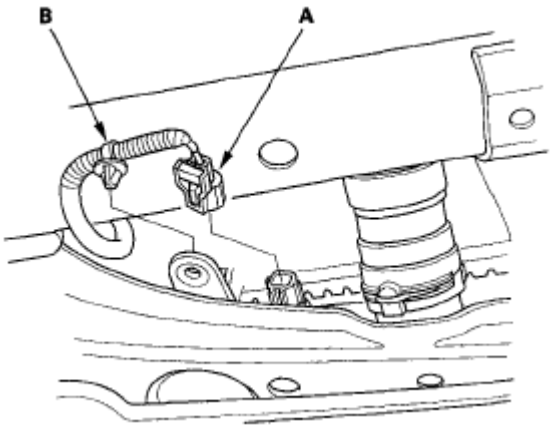


Fig. 34: Identifying Engine Coolant Temperature (ECT) And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the lower radiator hose (C) from the radiator.
11. Remove the condenser bracket mounting bolts (A), then remove the bulkhead (B).

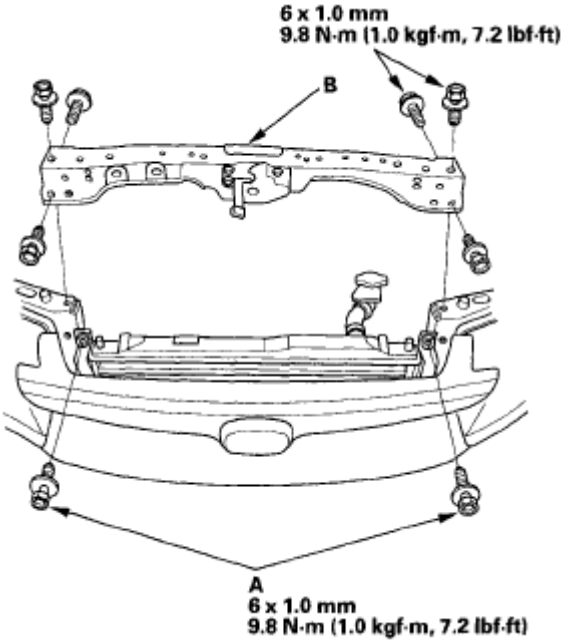


Fig. 35: Identifying Condenser Bracket Mounting Bolts And Bulkhead (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Pull up the radiator, then remove the fan shroud assemblies and other parts from the radiator.

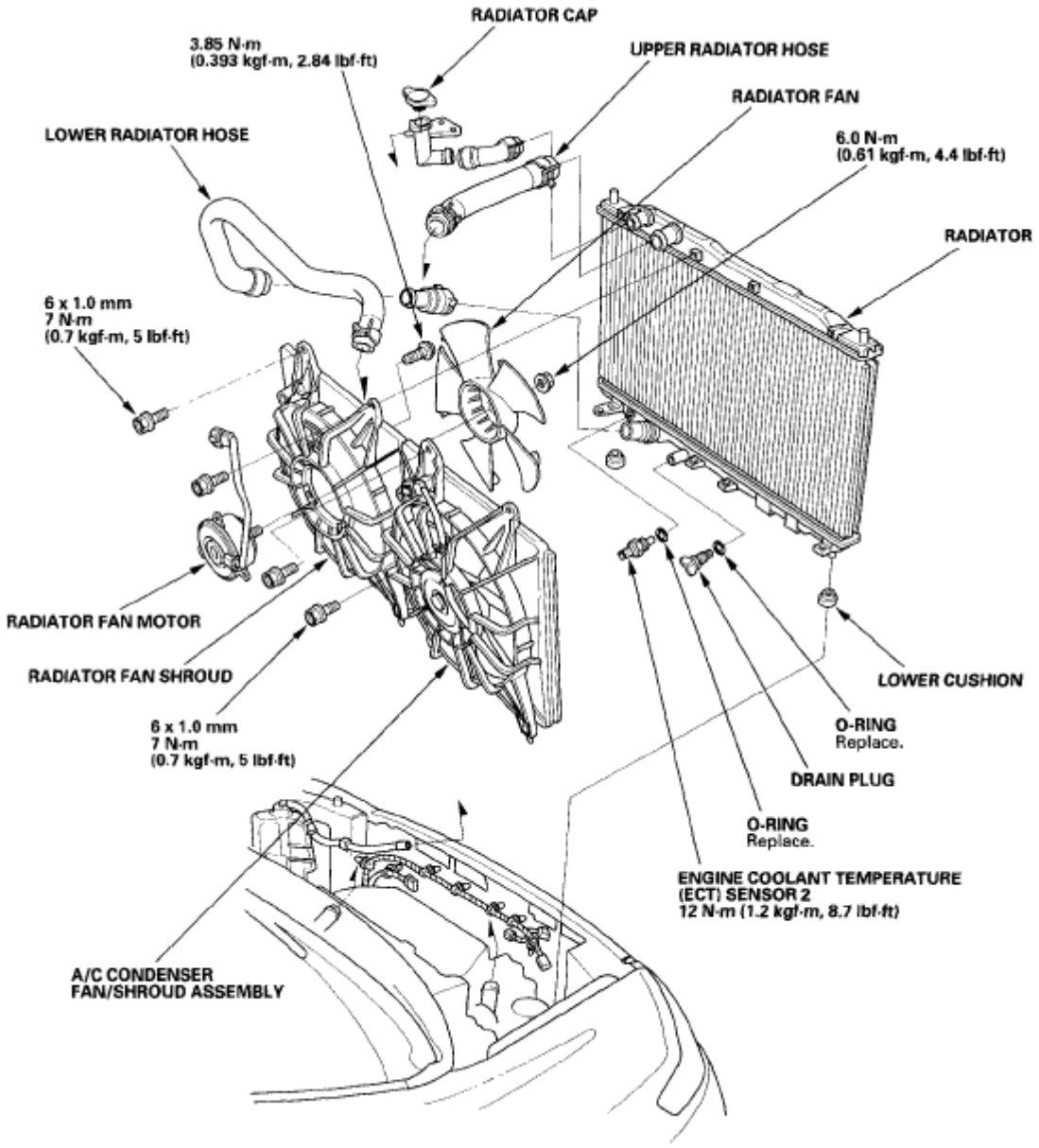


Fig. 36: Identifying Fan Shroud Assemblies And Parts From Radiator (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
14. Connect the lower radiator hose to the radiator.
15. Install the bulkhead in the reverse order of removal. Apply body paint to the bulkhead mounting bolts.
16. Do the battery installation procedure (See **INSTALLATION**).
17. Fill the radiator with engine coolant and bleed the air (see step 6).
18. Clean up any spilled engine coolant.

2006-08 ENGINE

Cooling System (R18A1) - Civic (Except Hybrid)

BELT ROUTING

For belt routing illustration, see **COMPONENT LOCATION INDEX** in CHARGING SYSTEM article.

COMPONENT LOCATION INDEX

NOTE: Refer to the COOLING SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

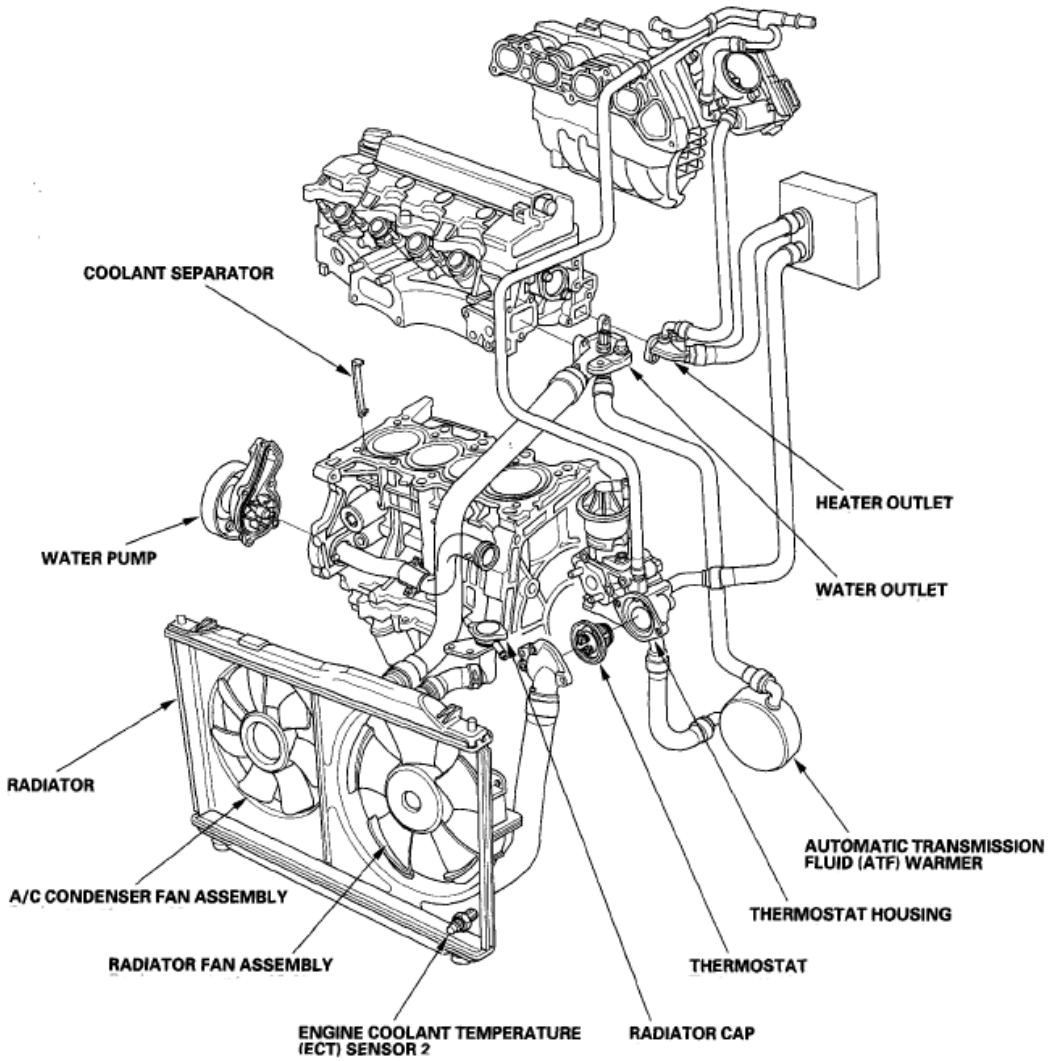


Fig. 1: Identifying Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR CAP TEST

1. Remove the radiator cap (A). Wet the seal with engine coolant, then install it on a commercially

available pressure tester (B).

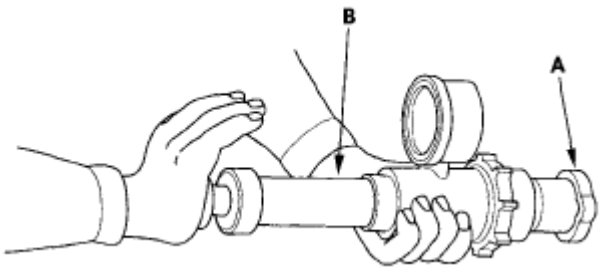


Fig. 2: Testing Radiator Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

RADIATOR TEST

1. Wait until the engine is cool, then carefully remove the radiator cap, and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).

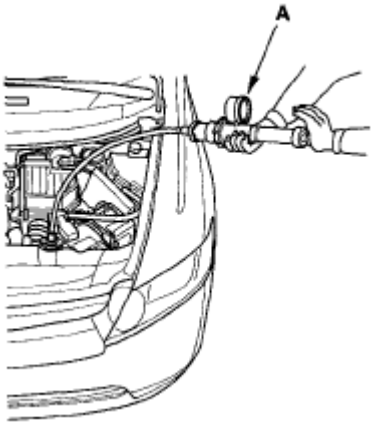


Fig. 3: Testing Radiator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect for engine coolant leaks, and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.
5. Check for engine oil in the coolant and/or coolant in the engine oil.

FAN MOTOR TEST

1. Disconnect the 2P connectors from the radiator fan motor (A) and condenser fan motor (B).

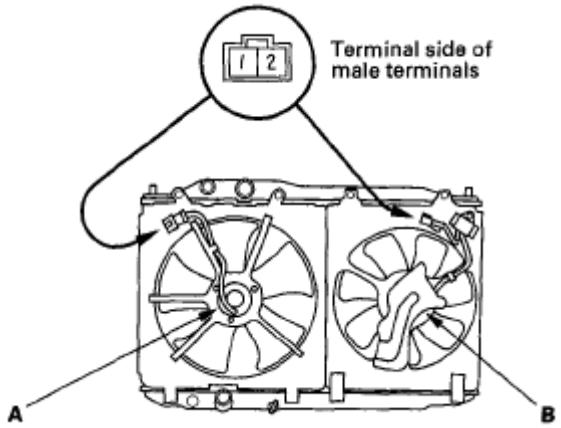


Fig. 4: Identifying Radiator Fan Motor And Condenser Fan Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Test each motor by connecting battery power to the No. 2 terminal and ground to the No. 1 terminal.
3. If either motor fails to run, or does not run smoothly, replace it (see **RADIATOR AND FAN REPLACEMENT**).

THERMOSTAT TEST

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.

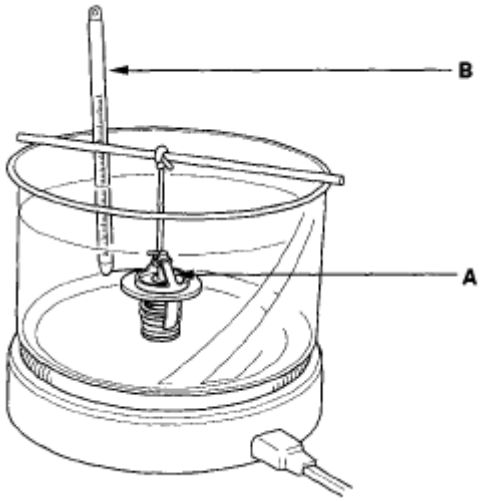


Fig. 5: Checking Temperature When Thermostat Opens
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Heat the water and check the temperature with a thermometer. Check the temperature when the thermostat first opens, then check the temperature when the thermostat is fully open.
3. Measure the lift height of the thermostat when it is fully open.

Standard Thermostat

Lift Height: Above 8.0 mm (0.31 in.)

Starts Opening: 176-183 °F (80-84 °C)

Fully Open: 203 °F (95 °C)

WATER PUMP INSPECTION

1. Loosen the water pump pulley mounting bolts.

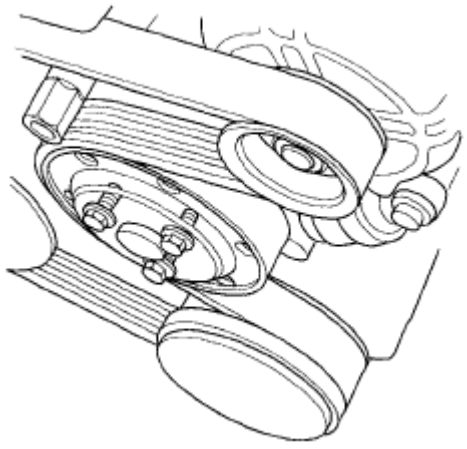


Fig. 6: Identifying Water Pump Pulley Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Remove the water pump pulley.

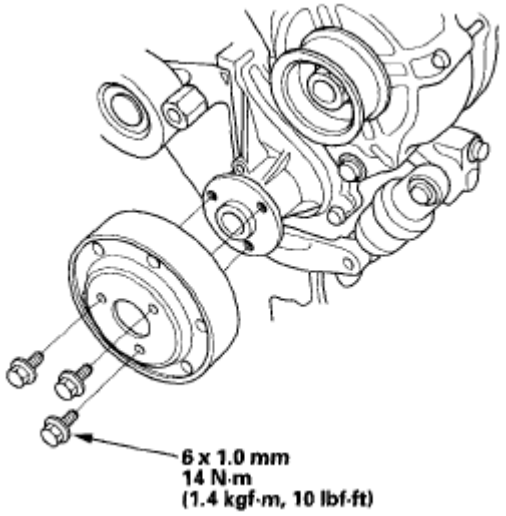


Fig. 7: Identifying Torque Specifications Of Water Pump Pulley Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the water pump counterclockwise. Check that it turns freely. If doesn't turn smoothly, replace the water pump (see **WATER PUMP REPLACEMENT**).

NOTE: When you check the water pump, you may see a small amount of "weeping" from the bleed holes (A). This is normal.

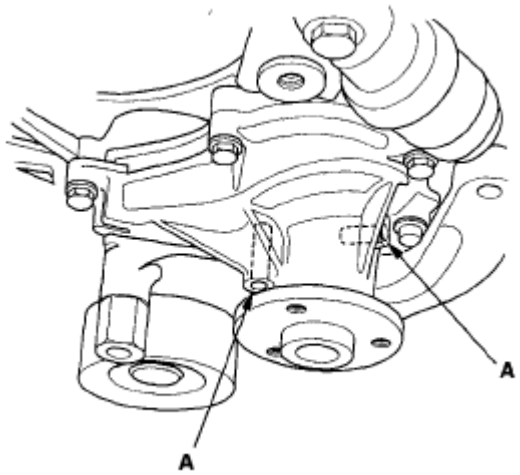


Fig. 8: Identifying Bleed Holes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the water pump pulley.
6. Install the drive belt (see **DRIVE BELT INSPECTION**).
7. Tighten the water pump pulley mounting bolts to the specified torque.

WATER PUMP REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
3. Remove the water pump (A) by removing the five bolts.

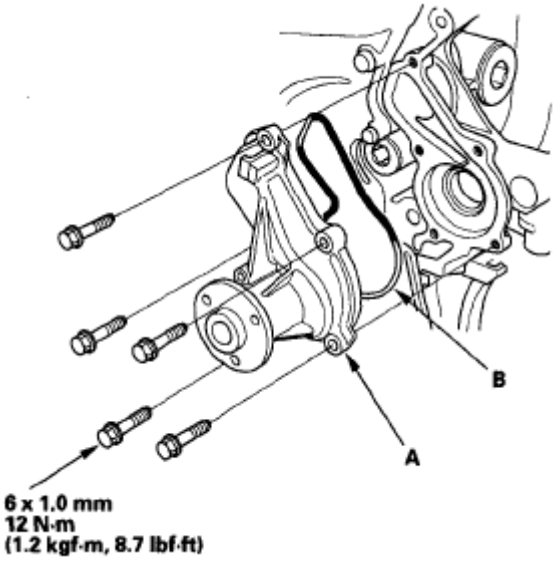


Fig. 9: Identifying Torque Specifications Of Water Pump Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect, and clean the O-ring groove and the mating surface of the engine block.
5. Install the water pump with a new O-ring (B) in the reverse order of removal.
6. Clean up any spilled engine coolant.
7. Install the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
8. Refill the radiator with engine coolant, then bleed the air from the cooling system (see step 8).

COOLANT CHECK

1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).

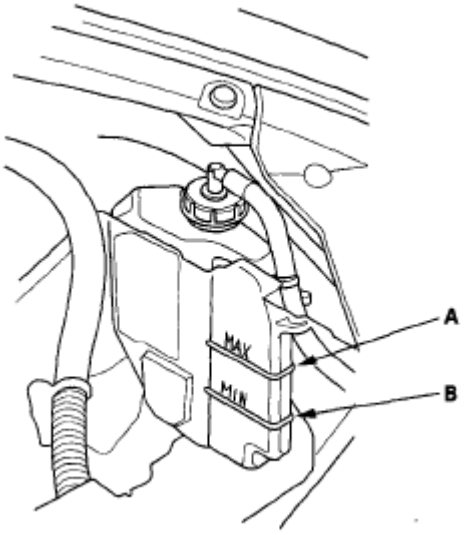


Fig. 10: Identifying Coolant Reservoir MAX Mark And MIN Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it between the MIN and MAX marks, then inspect the cooling system for leaks.

COOLANT REPLACEMENT

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the drain plug (A), and drain the coolant.

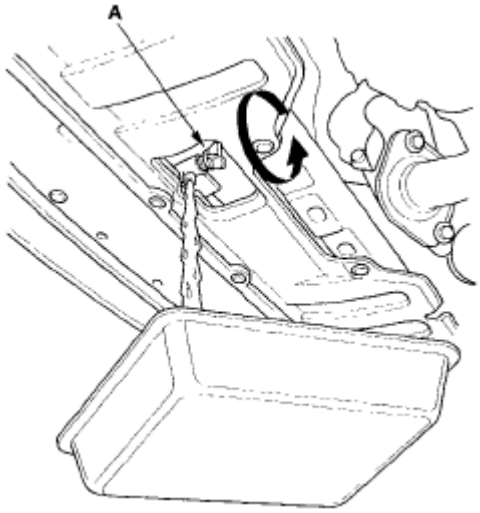


Fig. 11: Identifying Drain Plug
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the drain bolt (A) located at the front of the engine block.

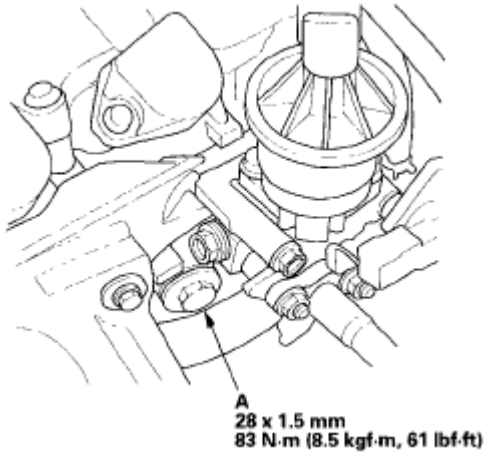


Fig. 12: Identifying Torque Specifications Of Drain Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. After the coolant has drained, apply liquid gasket to the drain bolt threads, then reinstall the bolt with a new washer and tighten it securely.
6. Tighten the radiator drain plug securely.

7. Remove the coolant reservoir, then drain the coolant, and reinstall the reserve tank.
8. Fill the reserve tank to the MAX mark (A) with Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001).

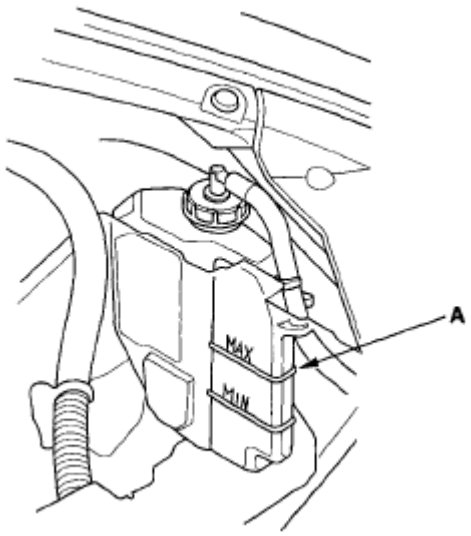


Fig. 13: Identifying Reserve Tank MAX Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

NOTE:

- **Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.**
- **Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.**

Engine Coolant Capacities (Including the reserve tank capacity of 0.4 L (0.11 US gal)):

4-door model:

M/T:

At Coolant Change: 5.2 L (1.37 US gal)

After Engine Overhaul: 6.5 L (1.72 US gal)

A/T:

At Coolant Change: 5.3 L (1.40 US gal)

After Engine Overhaul: 6.7 L (1.77 US gal)

2-door model:

M/T:

At Coolant Change: 5.2 L (1.37 US gal)

After Engine Overhaul: 6.5 L (1.72 US gal)

A/T:

At Coolant Change: 6.5 L (1.45 US gal)

After Engine Overhaul: 7.1 L (1.88 US gal)

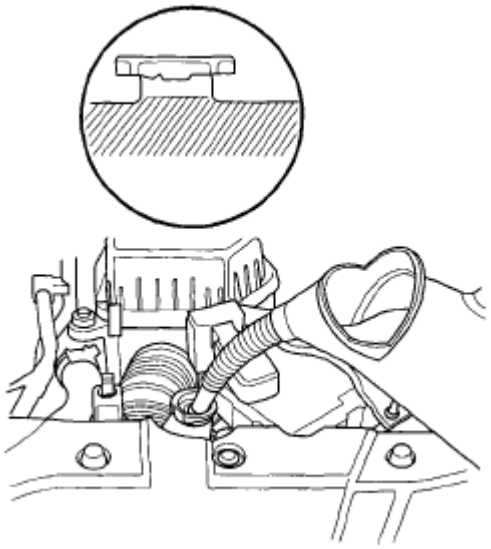


Fig. 14: Pouring Honda Long Life Antifreeze/Coolant Type 2 Into Radiator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Loosely install the radiator cap.
11. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).
12. If the maintenance minder required to replace the engine coolant, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), then go to step 20. If the maintenance minder did not require to replace the engine coolant, go to next step.
13. Connect the HDS to the data link connector.
14. Turn the ignition switch ON (II).
15. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
16. Select BODY ELECTRICAL with the HDS.
17. Select ADJUSTMENT in the GAUGES MENU with the HDS.
18. Select RESET in the MAINTENANCE MINDER with the HDS.
19. Select MAINTENANCE SUB ITEM 5 RESET with the HDS.
20. Turn off the engine. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
21. Put the radiator cap on tightly, then run the engine again, and check for leaks.

22. Clean up any spilled engine coolant.
23. Reset the maintenance information display (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**).

THERMOSTAT REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the harness clamp bracket and thermostat cover, then remove the thermostat.

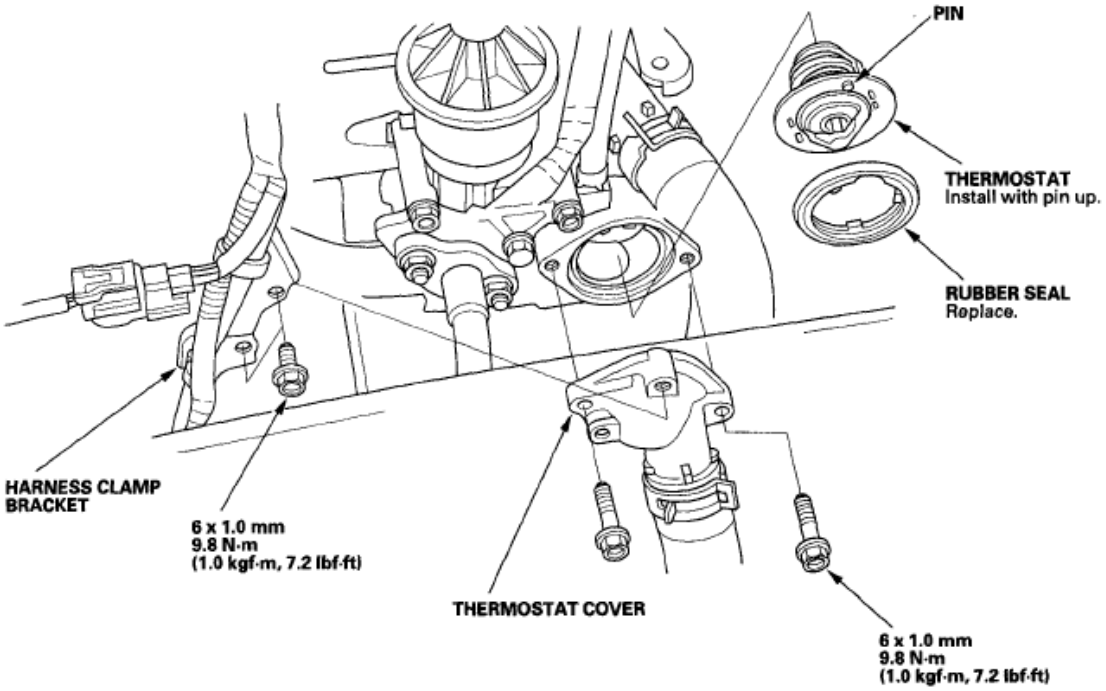


Fig. 15: Identifying Thermostat Cover With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

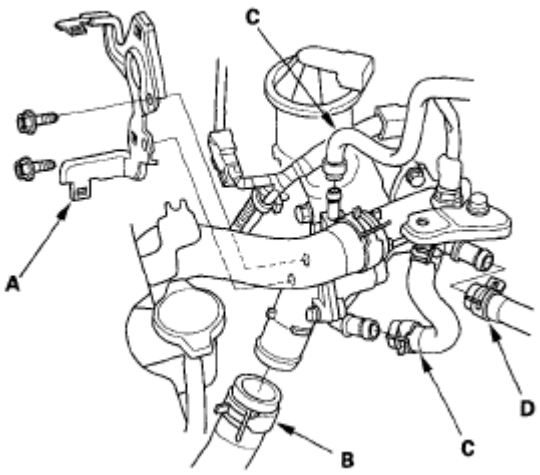
3. Install the thermostat with a new rubber seal.
4. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8).
5. Clean up any spilled engine coolant.

THERMOSTAT HOUSING REMOVAL AND INSTALLATION

REMOVAL

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the harness bracket (A), and cover the air fuel ratio (A/F) sensor connector and secondary heated oxygen sensor (secondary H02S) connector with a tape to protect the connectors from engine coolant, then remove the lower radiator hose (B), the water bypass (C), and the heater hose (D).

M/T



A/T

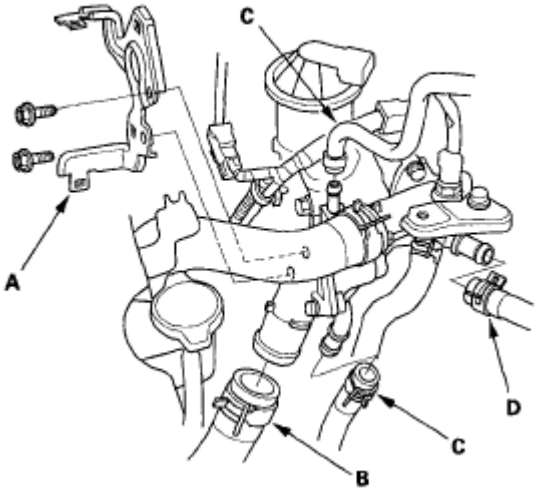


Fig. 16: Identifying Harness Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the exhaust gas recirculation (EGR) pipe.

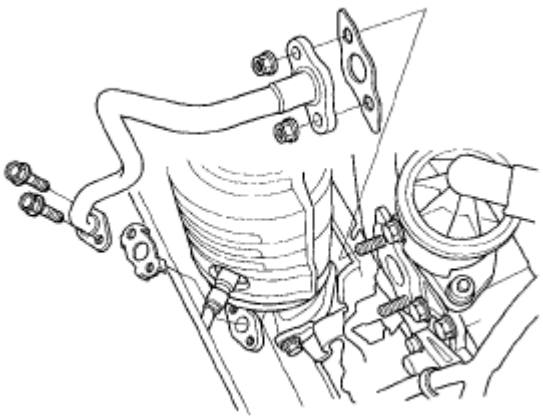


Fig. 17: Identifying Exhaust Gas Recirculation Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the EGR connector.
6. Remove the thermostat housing.

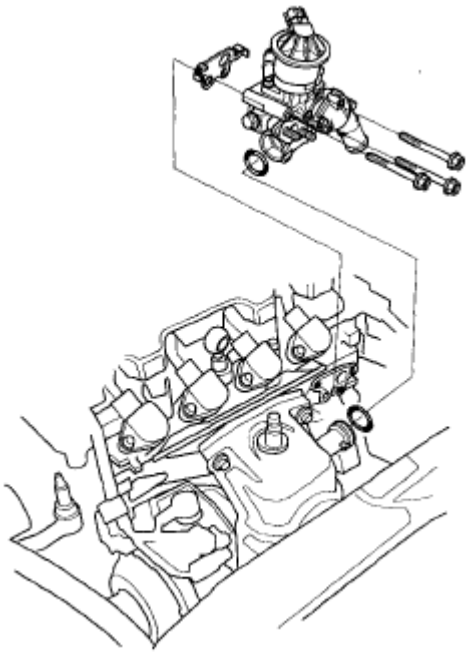


Fig. 18: Identifying Thermostat Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the EGR valve (A), thermostat cover (B), and thermostat (C).

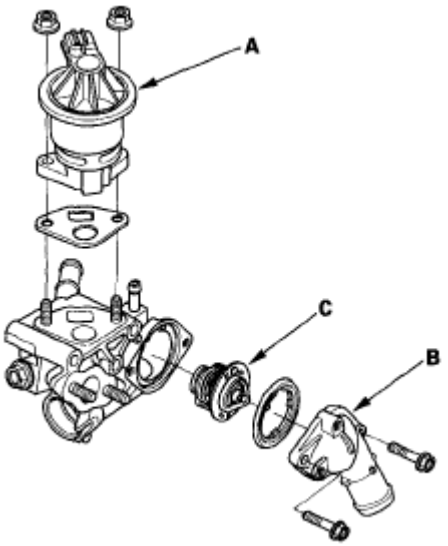


Fig. 19: Identifying EGR Valve, Thermostat Cover And Thermostat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Install the new rubber seal (A) onto the thermostat, then install the thermostat (B) with pin (C) up, and install the thermostat cover (D).

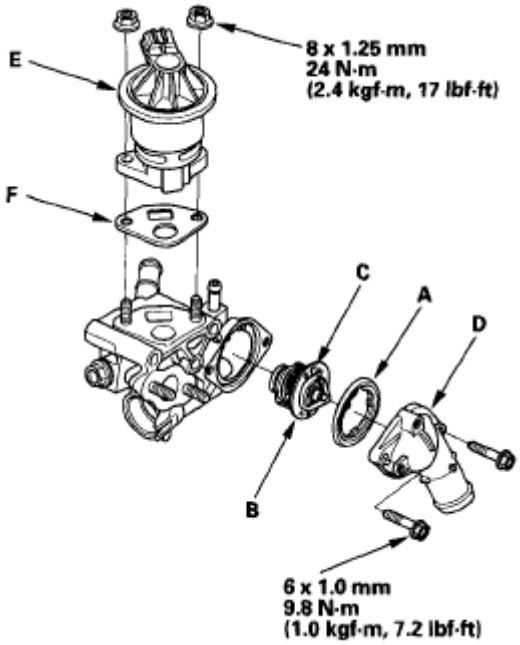


Fig. 20: Identifying Thermostat, Pin And Thermostat Cover With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the EGR valve (E) with a new gasket (F).
3. Install the thermostat housing (A), using a new gasket (B) and new O-ring (C).

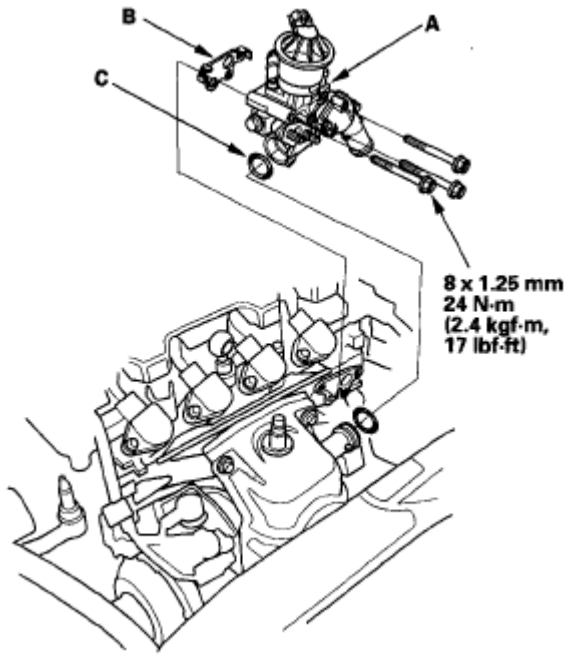


Fig. 21: Identifying Thermostat Housing, Gasket And O-Ring With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Connect the EGR connector.
5. Install the EGR pipe (A), using the new gaskets (B).

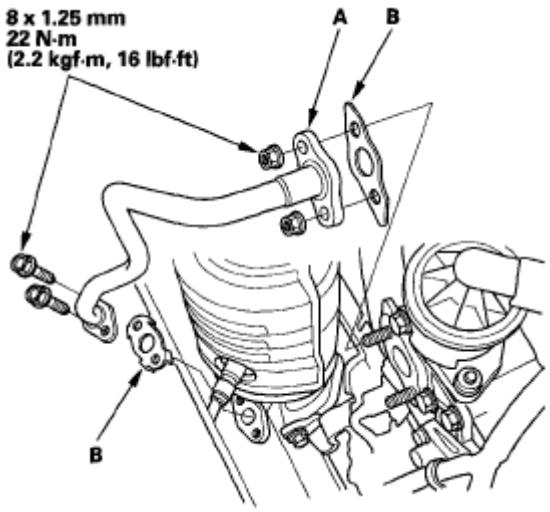


Fig. 22: Identifying EGR Pipe And Gaskets With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the lower radiator hose (A), heater hose (B), and water bypass hoses (C), then install the harness bracket (D).

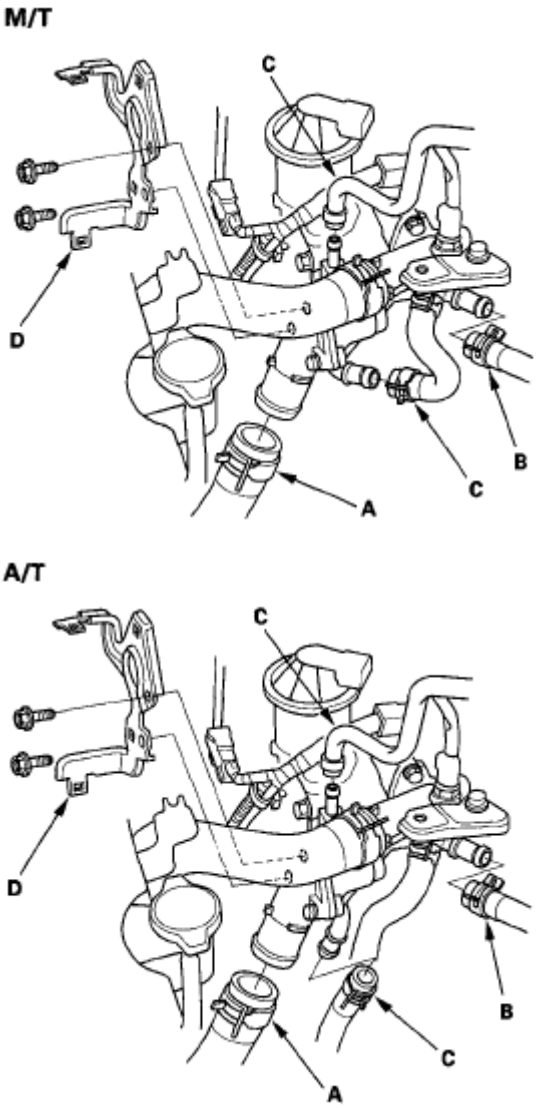


Fig. 23: Identifying Lower Radiator Hose, Heater Hose, And Water Bypass Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
8. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

WATER OUTLET REMOVAL AND INSTALLATION

REMOVAL

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the air cleaner housing bracket (A), then remove the harness holder (B) from the cylinder head.

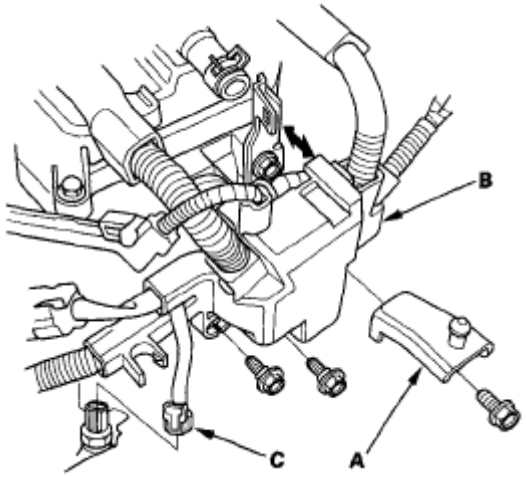


Fig. 24: Identifying Air Cleaner Housing Bracket And Harness Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the engine coolant temperature (ECT) sensor 1 connector (C).
5. Remove the air cleaner housing bracket (A), upper radiator hose (B), and water bypass hose (C).

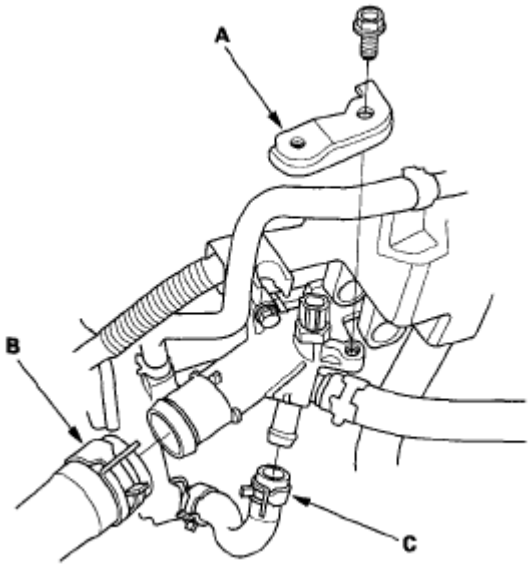


Fig. 25: Identifying Air Cleaner Housing Bracket, Upper Radiator Hose And Water Bypass Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the water outlet (A) and ECT sensor 1 (B).

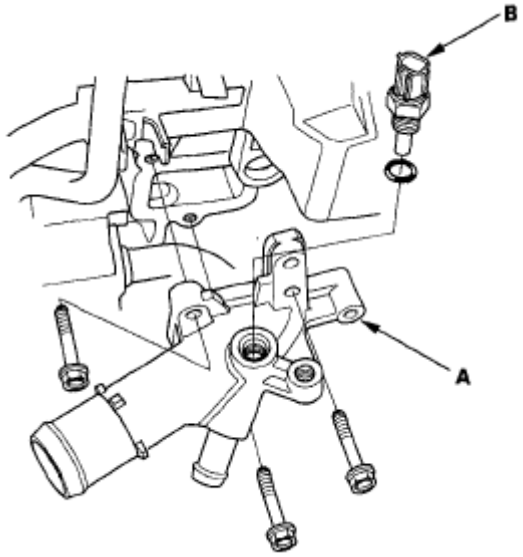


Fig. 26: Identifying Water Outlet And ECT Sensor 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Remove all of the old liquid gasket from the water outlet mating surfaces, bolts, and bolt holes.
2. Clean, and dry the water outlet mating surfaces.
3. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the water outlet.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

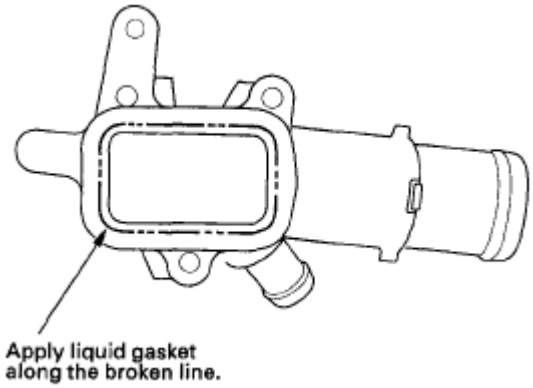


Fig. 27: Identifying Liquid Gasket Applying Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the water outlet (A), then install the ECT sensor 1 (B) with a new O-ring (C).

NOTE:
- **Wait at least 30 minutes to allow liquid gasket to cure before filling**

the engine with coolant.

- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the water outlet.**

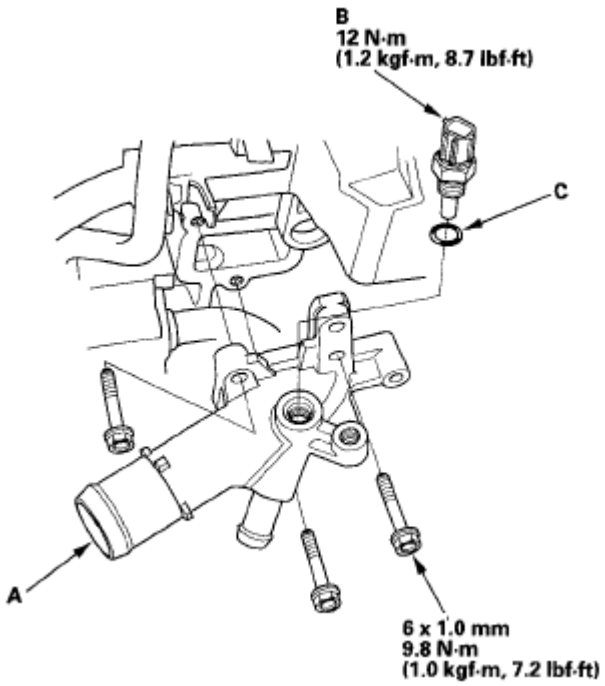


Fig. 28: Identifying Torque Specifications Of Water Outlet Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the air cleaner housing bracket (A), upper radiator hose (B), and water bypass hose (C).

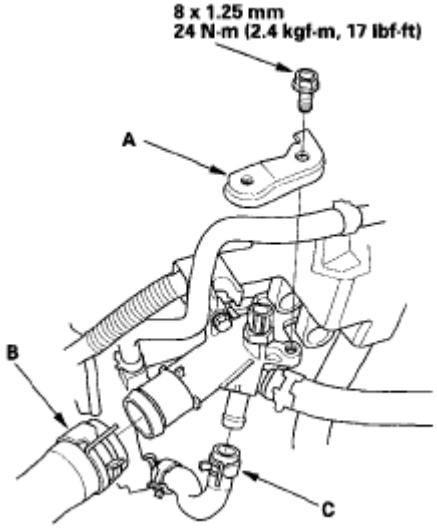


Fig. 29: Identifying Torque Specifications Of Air Cleaner Housing Bracket Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the engine temperature (ECT) sensor 1 connector (A).

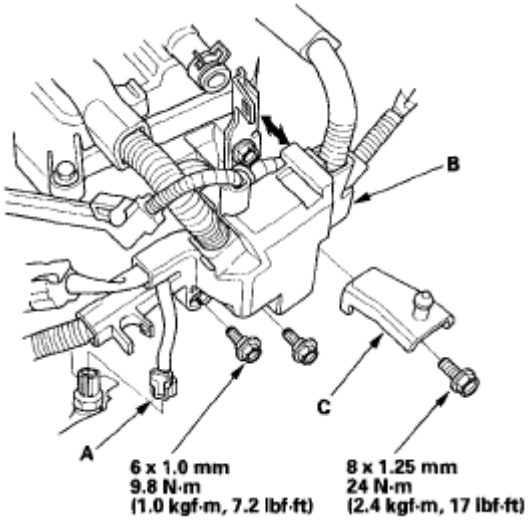


Fig. 30: Identifying Engine Temperature Sensor 1 Connector With Tightening Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the harness holder (B) on the cylinder head, then install the air cleaner housing bracket (C).
8. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
9. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

HEATER OUTLET REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the heater hose (A) from the clamp.

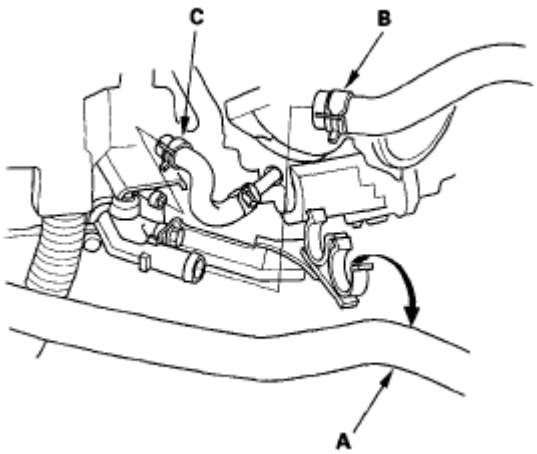


Fig. 31: Identifying Heater Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the heater hose (B) and water bypass hose (C).
5. Remove the heater outlet (A).

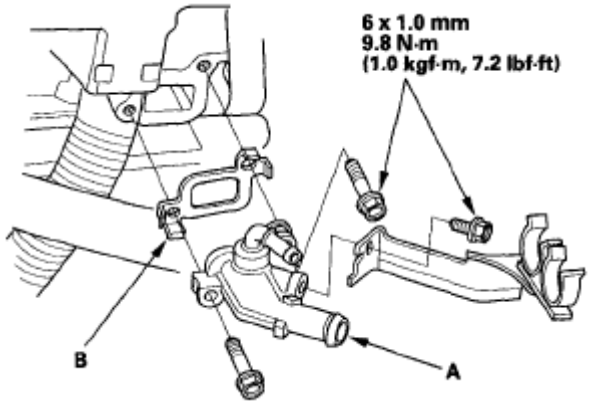


Fig. 32: Identifying Heater Outlet With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the heater outlet with a new gasket (B).
7. Install the other parts in the reverse order of removal.
8. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

RADIATOR AND FAN REPLACEMENT

1. Do the battery removal procedure.
2. Drain the engine coolant
3. Remove the battery.
4. Drain the engine coolant (see **COOLANT REPLACEMENT**).
5. Remove the bulkhead cover.
6. Disconnect the fan motor connectors (A) and hood switch connector (B), then remove the harness clamps (C).

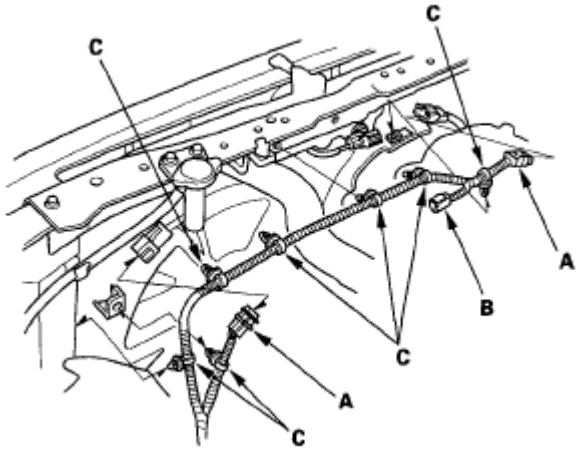


Fig. 33: Identifying Fan Motor Connectors And Hood Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the reservoir hose (A), radiator cap base mounting bolts (B), clips (C), and radiator upper brackets (D).

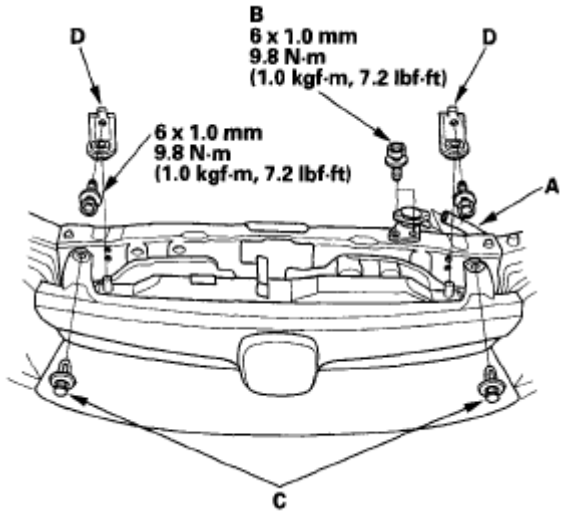


Fig. 34: Identifying Torque Specifications Of Radiator Cap Base Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the upper radiator hose (A) and lower radiator hose (B).

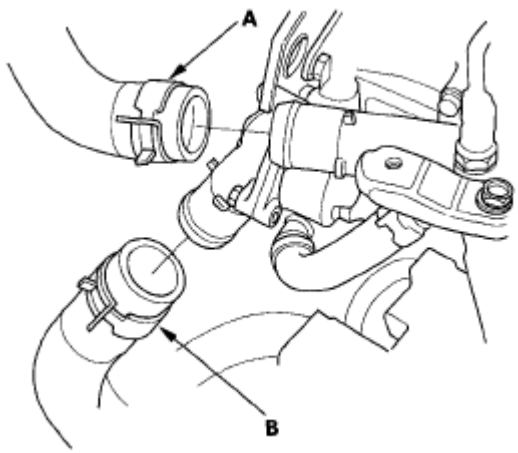


Fig. 35: Identifying Upper Radiator Hose And Lower Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the splash shield.

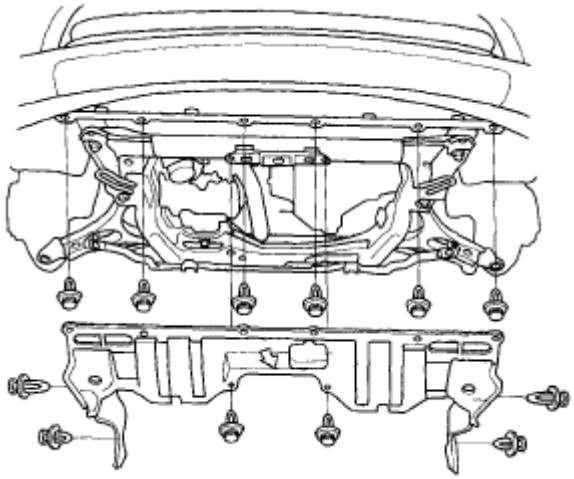


Fig. 36: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the engine coolant temperature (ECT) sensor 2 connector (A), and remove the harness clamp (B).

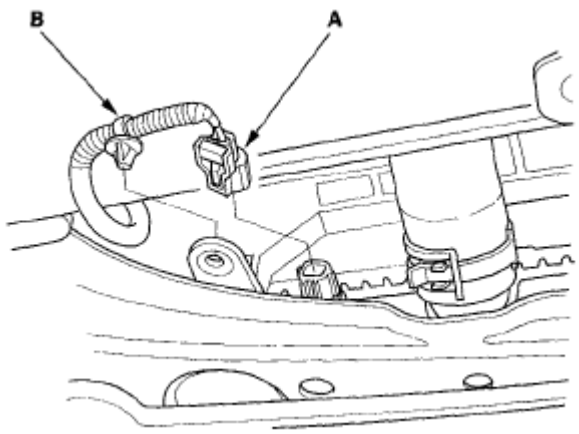


Fig. 37: Identifying Engine Coolant Temperature Sensor 2 Connector And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the condenser bracket mounting bolts (A), then remove the bulkhead (B).

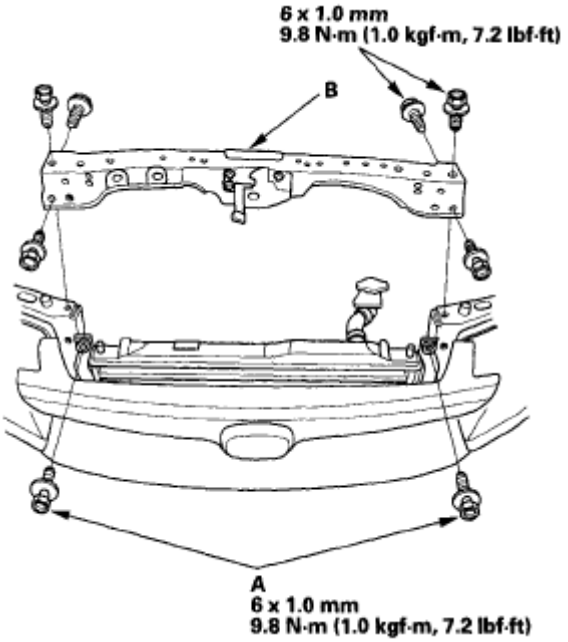


Fig. 38: Identifying Condenser Bracket Mounting Bolts And Bulkhead With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Pull up the radiator, then remove the fan shroud assemblies and other parts from the radiator.

DENSO

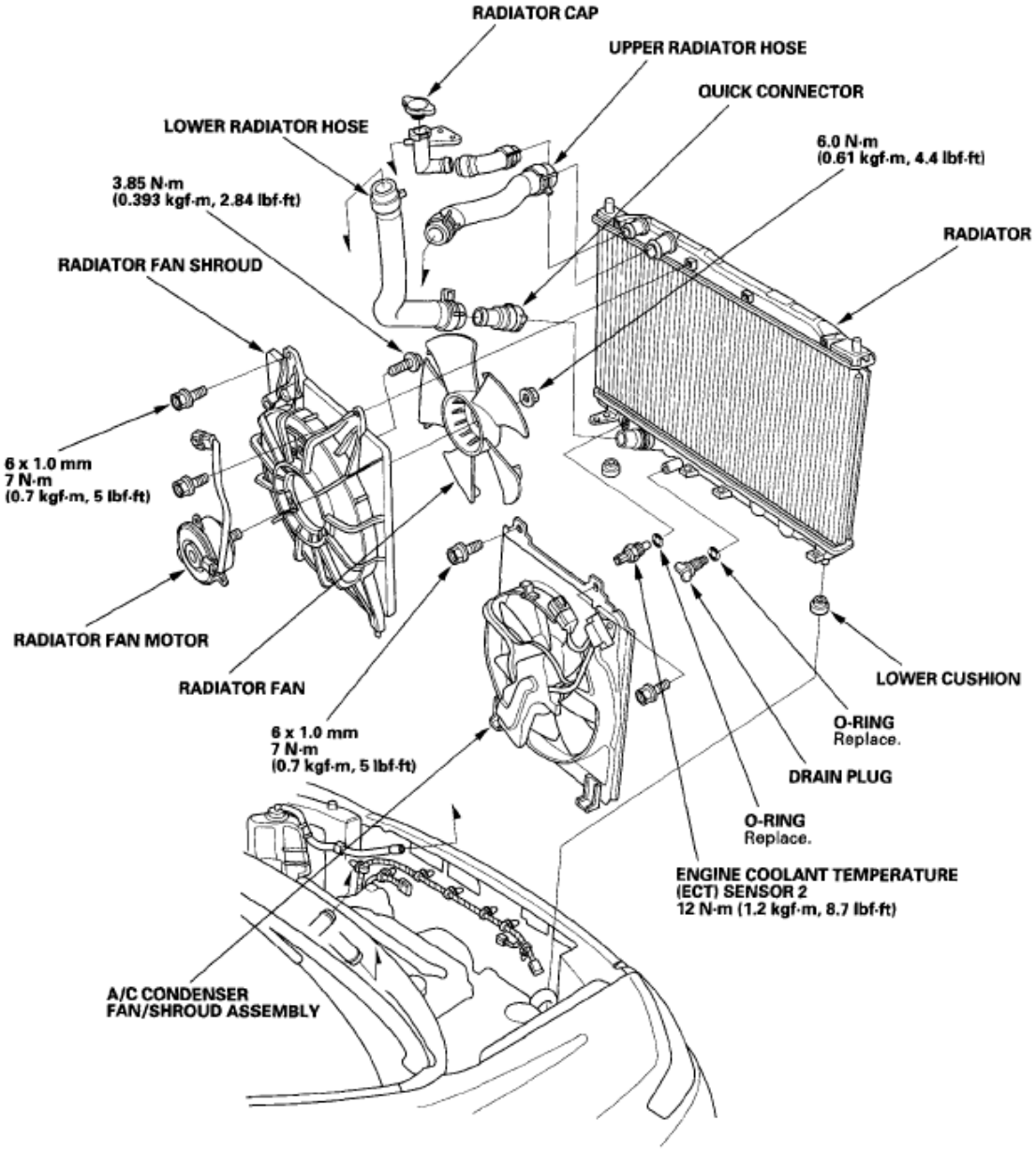


Fig. 39: Identifying Radiator And Fan Components - DENSO - With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CoPAR

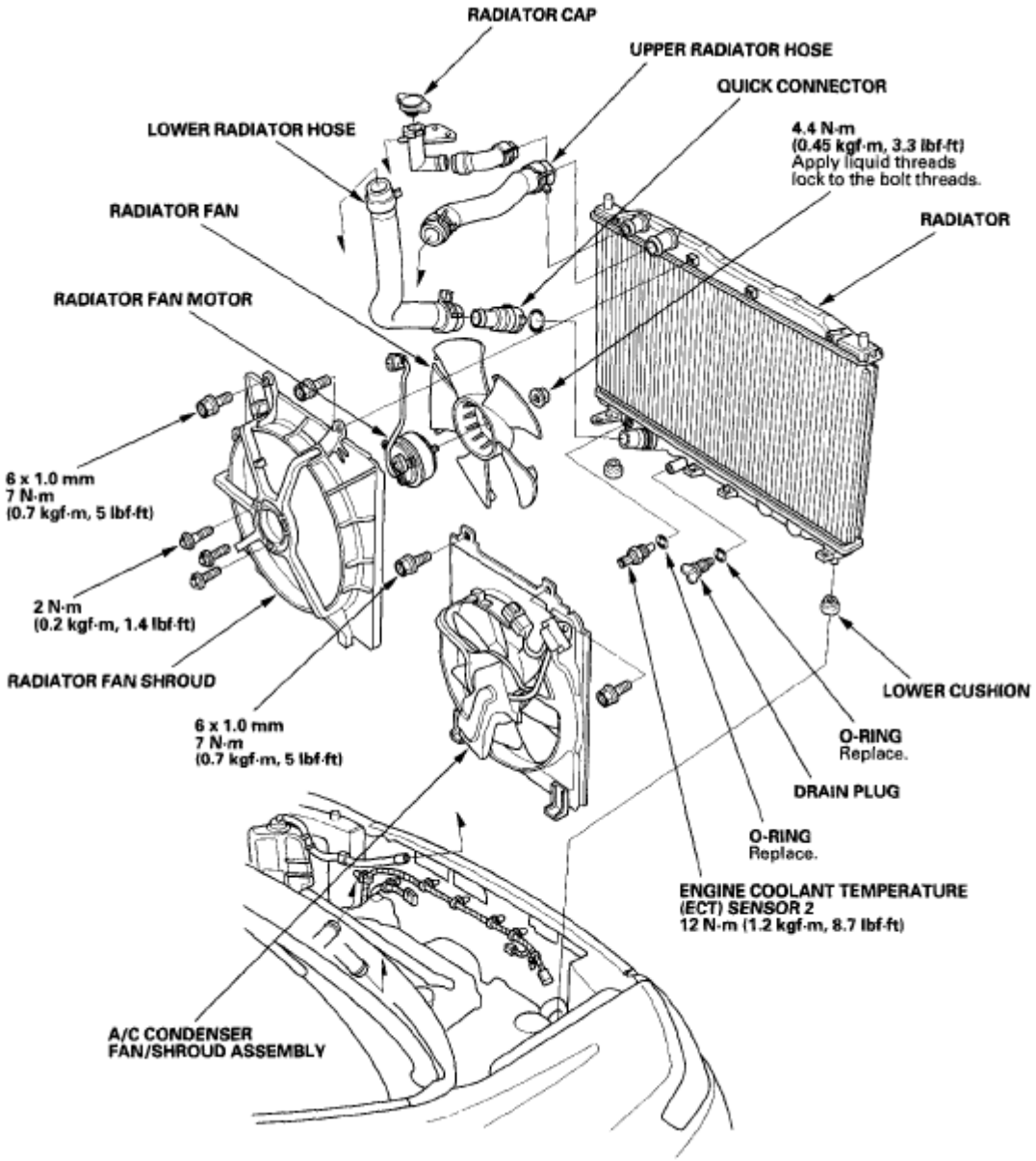


Fig. 40: Identifying Radiator And Fan Components - COPAR - With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
14. Install the bulkhead in the reverse order of removal. Apply body paint to the bulkhead mounting bolts.
15. Install the battery, and connect the positive cable to the battery first, then connect the negative cable.
16. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio preset. Set the clock.
17. Fill the radiator with engine coolant and bleed the air (see step 8).

2006-08 ENGINE PERFORMANCE

Catalytic Converter System (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX

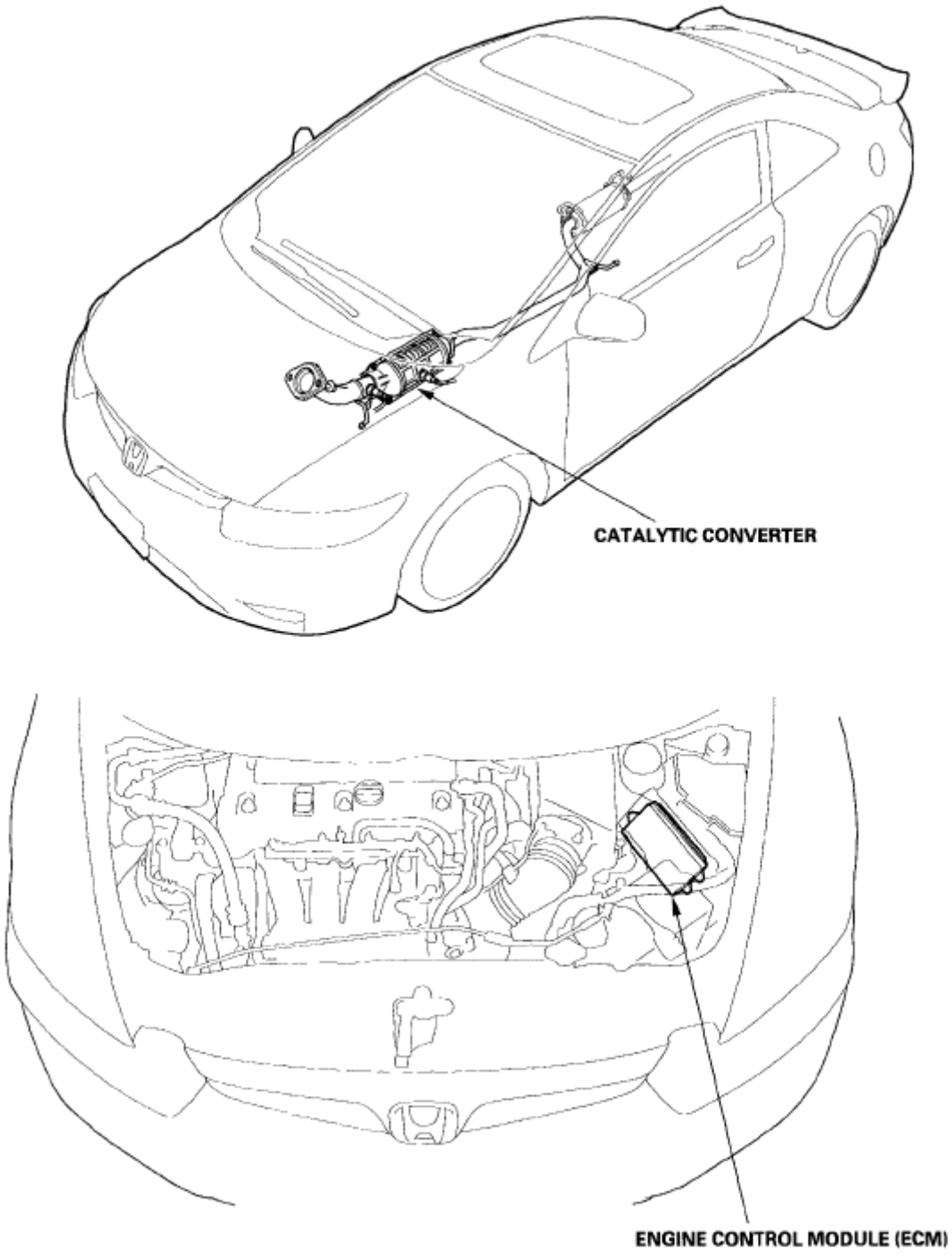


Fig. 1: Identifying Catalytic Converter System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot them first, then recheck for DTC P0420.**

  P0137, P0138: Secondary H02S (Sensor 2) P0141: Secondary H02S (Sensor 2) heater

- **Poor quality fuel may cause this DTC.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in 5th gear
   - Vehicle speed between 45-75 mph (72-120 km/h) for 5 minutes or more with cruise control set
   - '06 model: Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

     '07 model: Maintain the vehicle speed at 55 mph (88 km/h) for 30 seconds or more
5. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

   Does the screen indicate EXECUTING?

   YES -Go to step 6.

   NO -If the screen indicates OUT OF CONDITION, go to step 4 and recheck. If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates FAILED, go to step 8.
6. Continue test driving until a result comes on.
7. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES -Go to step 8.

   NO -If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF

CONDITION, go to step 4 and recheck.

8. Turn the ignition switch OFF.
9. Replace the TWC (see **CATALYTIC CONVERTER REMOVAL/INSTALLATION**).
10. Turn the ignition switch ON (II).
11. Reset the ECM with the HDS.
12. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
13. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
14. Test-drive for about 10 minutes, varying the vehicle speed.
15. Check the CATA MONITOR CONDITION in the DATA LIST with the HDS.

    Is the temperature OK?

    YES -Go to step 16.

    NO -Go to step 13 and recheck.

16. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - '09-10 models: Vehicle speed between 55-75 mph (88-120 km/h) for 10 seconds, then decelerate (with throttle fully closed). Repeat this three or more times
    - '06 and '09-10 models: Vehicle speed at 55 mph (88 km/h) for 5 minutes

      '07-08 models: Vehicle speed at 55 mph (88 km/h) for 30 seconds or more

17. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

    Does the screen indicate EXECUTING?

    YES -Go to step 18.

    NO -Go to step 16 and recheck.

18. Continue test-driving until a result comes on.
19. Check for Temporary DTCs or DTCs with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES -go to the indicated DTCs troubleshooting .

    NO -Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES -Troubleshooting is complete.

NO -If the screen indicates FAILED, check the fuel quality. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13 and recheck.

CATALYTIC CONVERTER REMOVAL/INSTALLATION

1. Remove the A/F sensor (sensor 1) (see **A/F SENSOR REPLACEMENT**).
2. Remove the secondary H02S (sensor 2) (see **A/F SENSOR REPLACEMENT**).
3. Remove the catalytic converter (A).

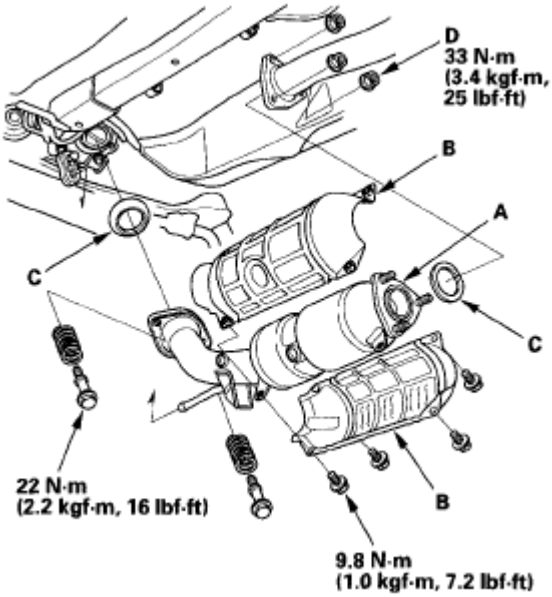


Fig. 2: Identifying Catalytic Converter, Converter Cover & Gaskets (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the converter cover (B).
5. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D).

2006-08 ENGINE

Intake Manifold and Exhaust System - Civic (Except Hybrid)

INTAKE MANIFOLD AND EXHAUST SYSTEM (R18A1)

NOTE: Refer to the INTAKE MANIFOLD AND EXHAUST SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

INTAKE MANIFOLD REMOVAL AND INSTALLATION

Exploded View

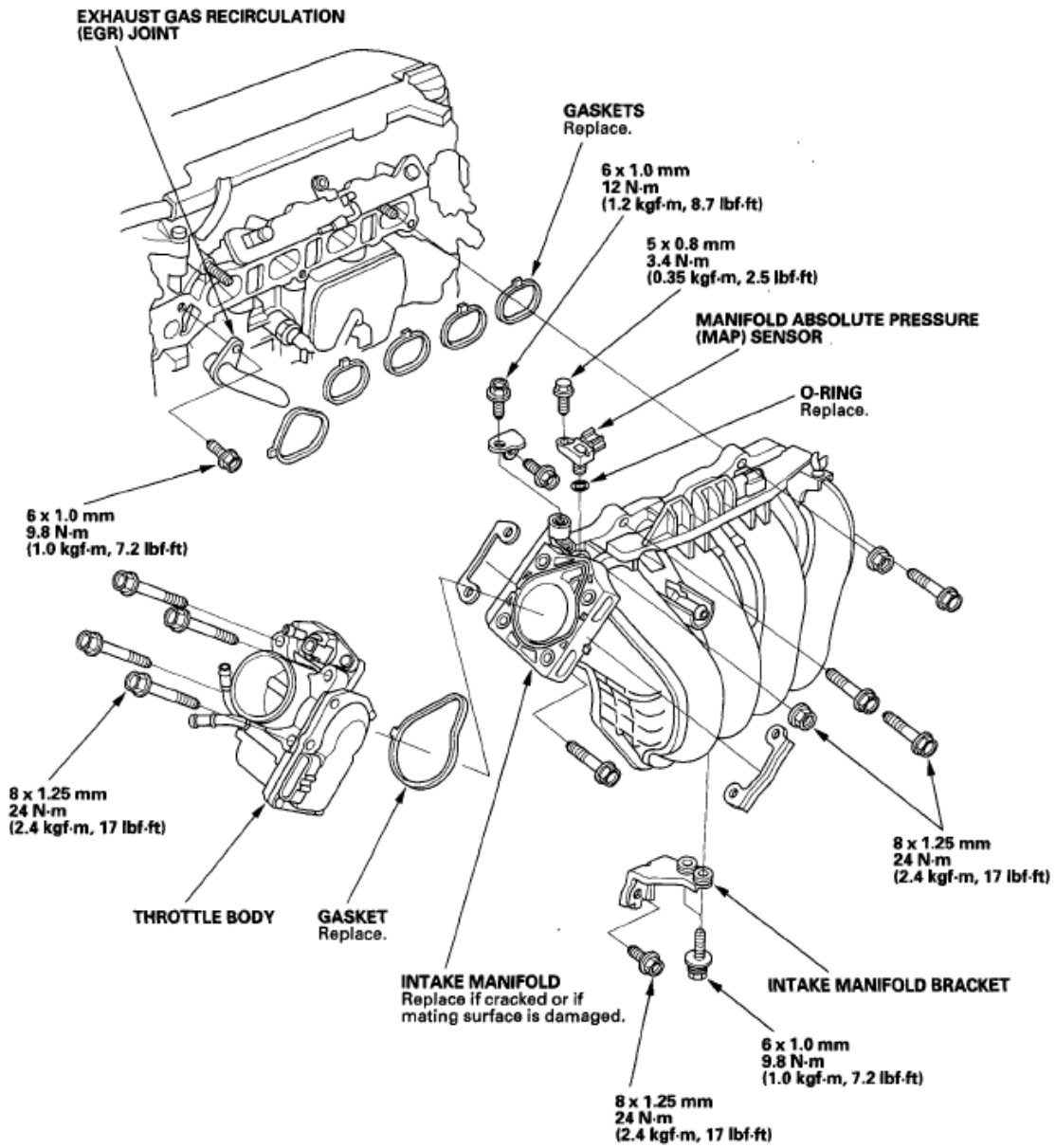


Fig. 1: Exploded View Of Intake Manifold (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal

1. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
2. Relieve the fuel pressure (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
3. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
4. Remove the air intake duct.

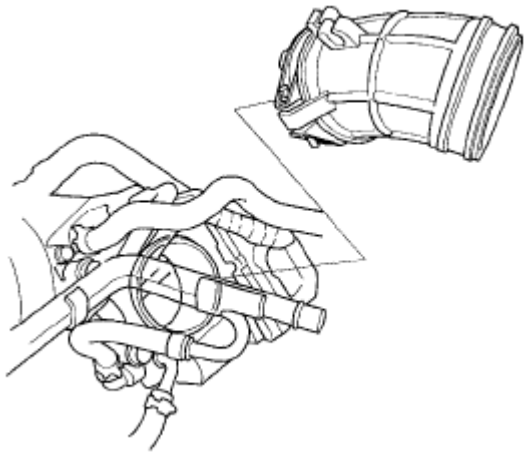


Fig. 2: Identifying Air Intake Duct
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. Remove the injector cover.

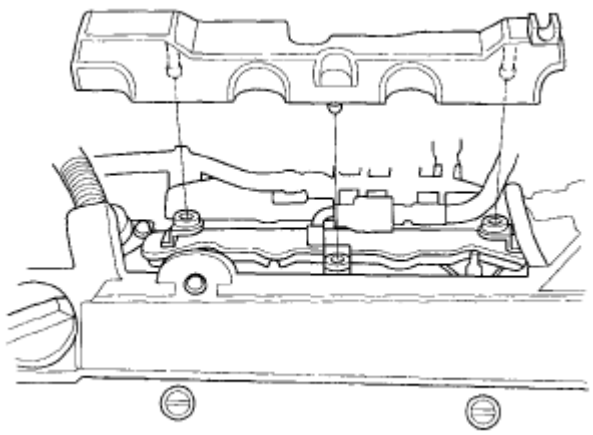


Fig. 3: Identifying Injector Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Remove the evaporative emission (EVAP) canister hose (A), brake booster vacuum hose (B), positive crankcase ventilation (PCV) hose (C), and power steering (P/S) hose clamp (D).

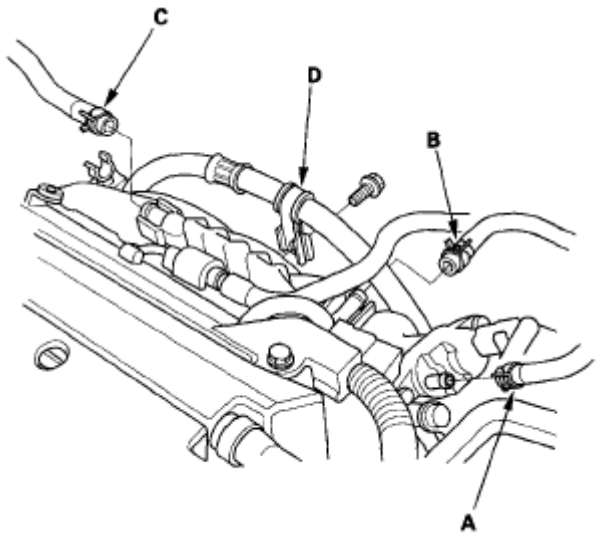


Fig. 4: Identifying Evaporative Emission Canister Hose And Brake Booster Vacuum Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

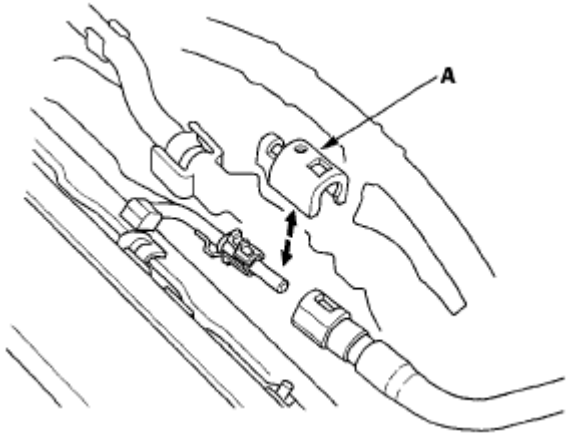


Fig. 5: Identifying Quick-Connect Fitting Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.
   - Throttle actuator connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector
   - Intake manifold tuning (IMT) valve actuator connector
9. Remove the water bypass hoses, then plug the water bypass hoses.

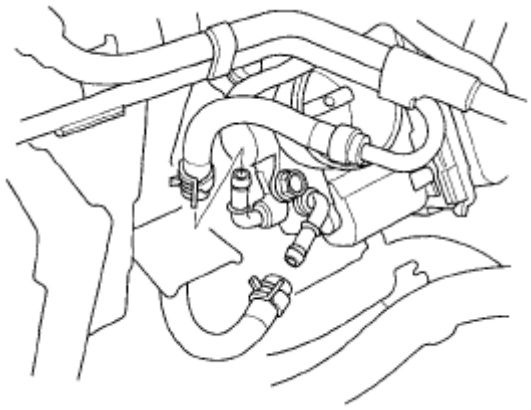


Fig. 6: Identifying Water Bypass Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. Remove the throttle body.

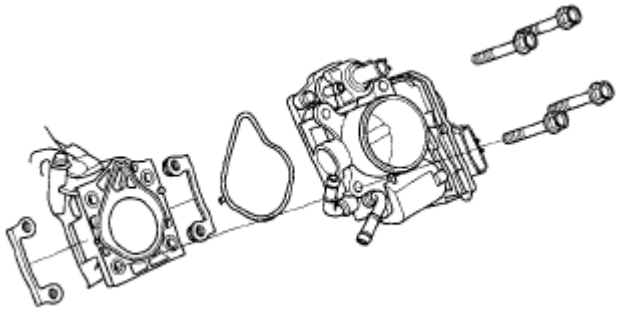


Fig. 7: Identifying Throttle Body
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. Remove the heater hose clamp bracket.

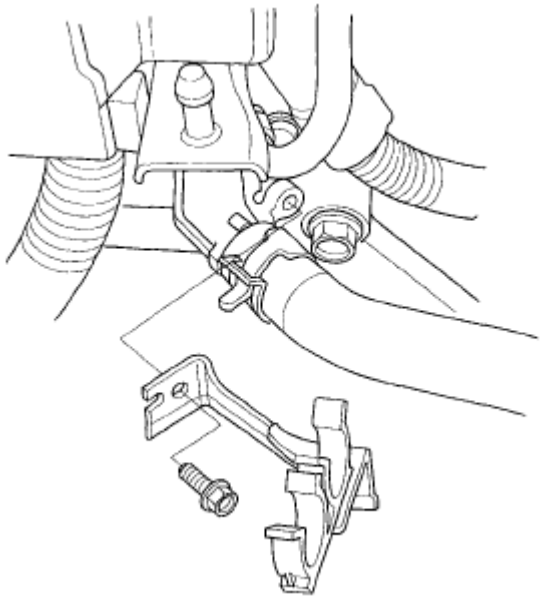


Fig. 8: Identifying Heater Hose Clamp Bracket

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. Raise the vehicle on the lift to full height.
13. Remove the intake manifold bracket.

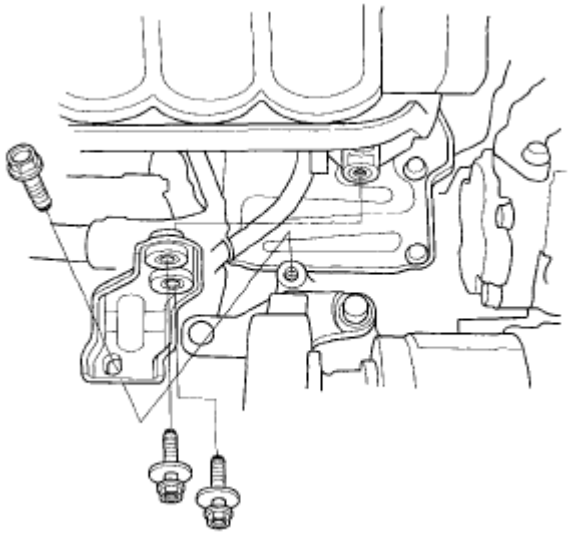


Fig. 9: Identifying Intake Manifold Bracket
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. Lower the vehicle on the lift.
15. Remove the all intake manifold mounting bolts and nuts, then remove the intake manifold from the cylinder head.

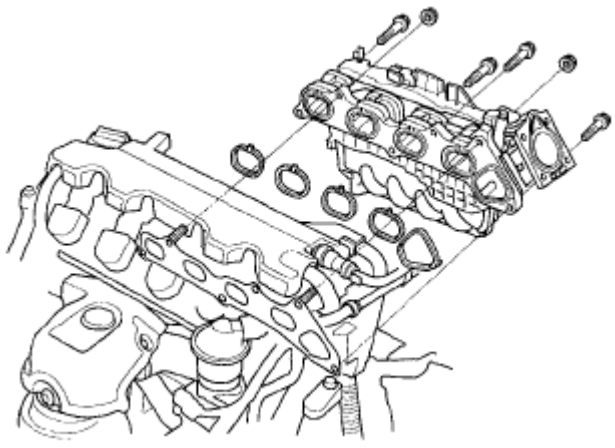


Fig. 10: Identifying Intake Manifold Mounting Bolts And Nuts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

16. Remove the harness clamps, then remove the intake manifold from the vehicle.

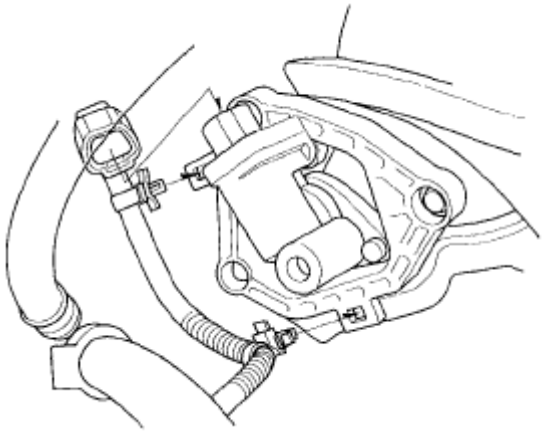


Fig. 11: Identifying Harness Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

1. Install the harness clamps to the intake manifold.

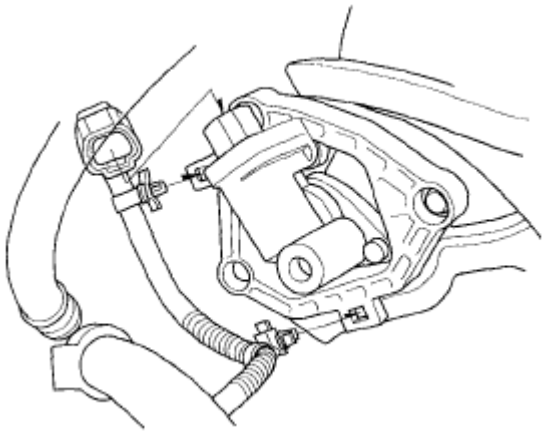


Fig. 12: Identifying Harness Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Install the intake manifold (A) with new gaskets (B), and tighten the bolts and nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.

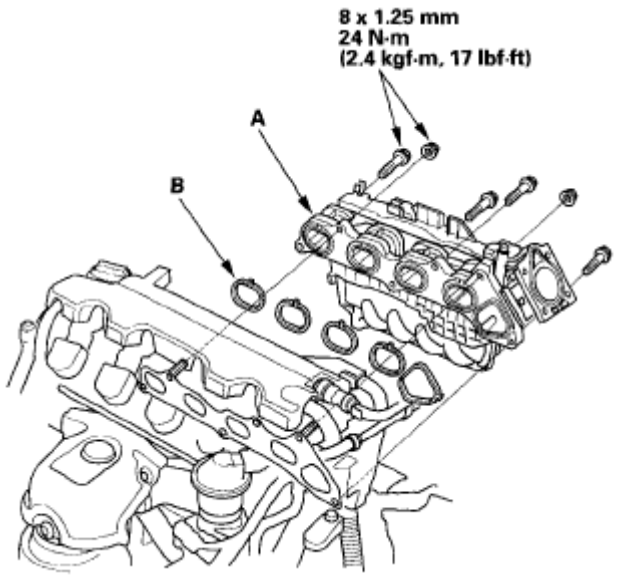


Fig. 13: Identifying Intake Manifold And Gaskets (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Raise the vehicle on the lift to full height.
4. Install the intake manifold bracket (A).

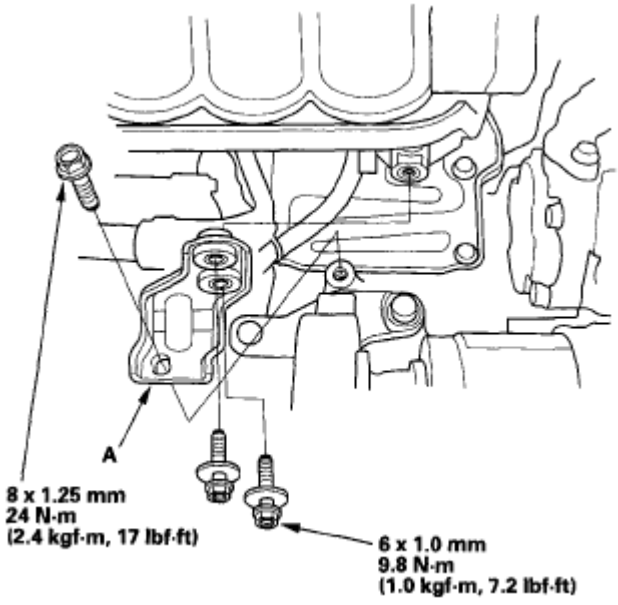


Fig. 14: Identifying Intake Manifold Bracket (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. Lower the vehicle on the lift.
6. Install the heater hose clamp bracket.

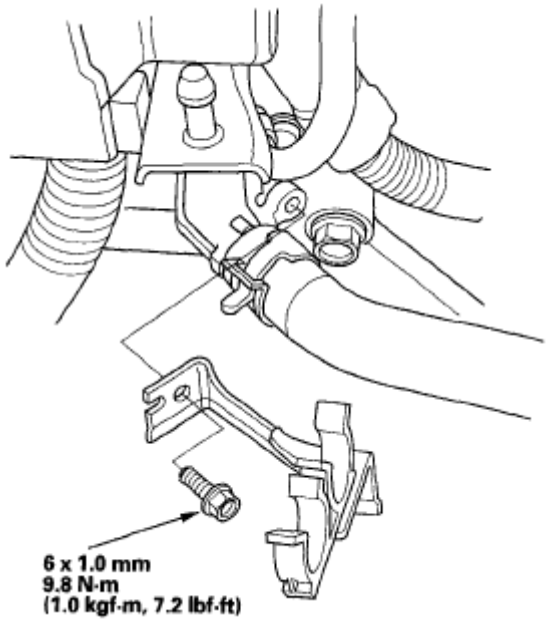


Fig. 15: Identifying Heater Hose Clamp Bracket (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Install the throttle body (A) with a new gasket (B).

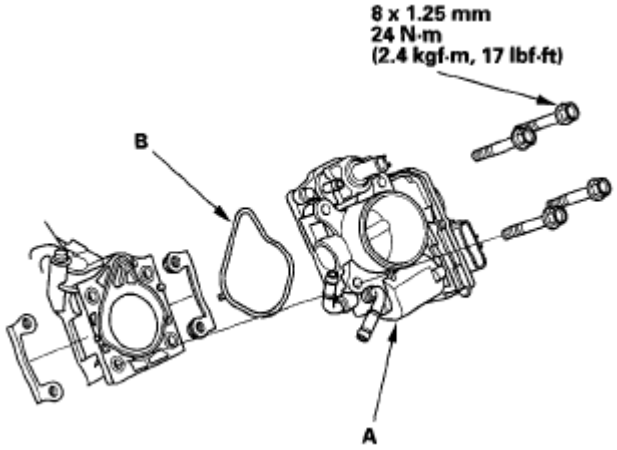


Fig. 16: Identifying Throttle Body And Gasket (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. Install the water bypass hoses.

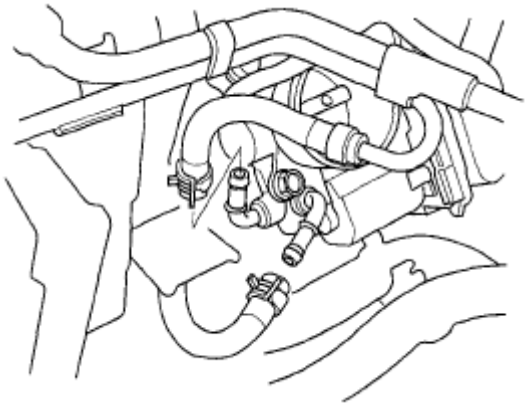


Fig. 17: Identifying Water Bypass Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold.
    - Throttle actuator connector
    - Manifold absolute pressure (MAP) sensor connector
    - Evaporative emission (EVAP) canister purge valve connector
    - Intake manifold tuning (IMT) valve actuator connector
10. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**), then install the quick-connect fitting cover (A).

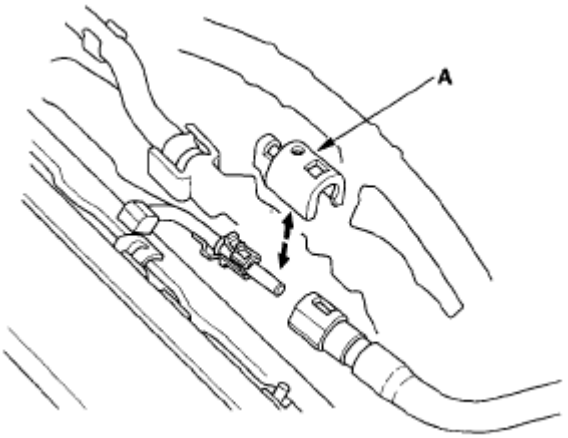


Fig. 18: Identifying Quick-Connect Fitting Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. Install the evaporative emission (EVAP) canister hose (A), brake booster vacuum hose (B), positive crankcase ventilation (PCV) hose (C), and power steering (P/S) hose clamp (D).

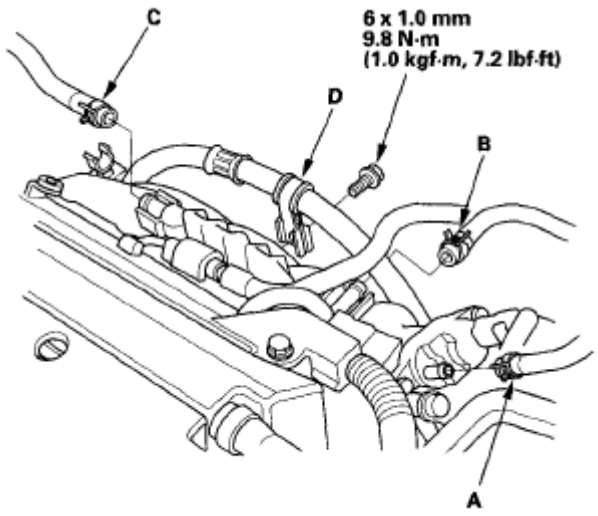


Fig. 19: Identifying Evaporative Emission Canister Hose And Brake Booster Vacuum Hose (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. Install the injector cover.

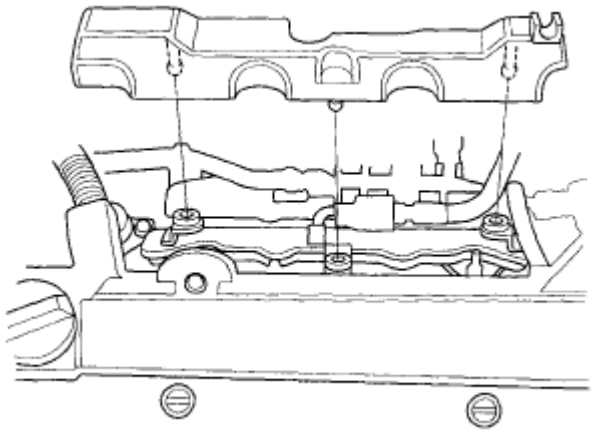


Fig. 20: Identifying Injector Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

13. Install the air intake duct.

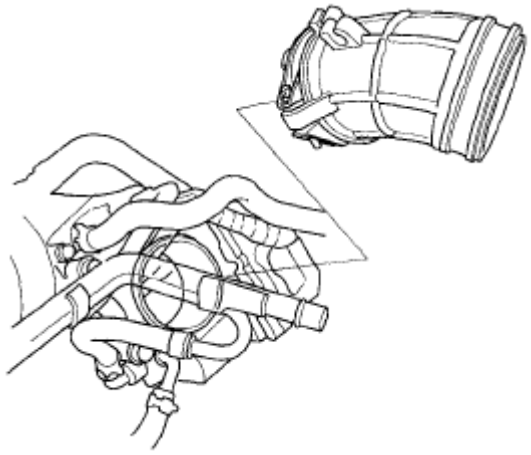


Fig. 21: Identifying Air Intake Duct
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

14. Install the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
15. Install the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
16. Clean up any spilled engine coolant.
17. After installation, check that all tubes, hoses, and connectors are installed correctly.
18. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8 on **COOLANT REPLACEMENT**).

EXHAUST PIPE AND MUFFLER REPLACEMENT

NOTE: Use new gaskets and self-locking nuts when reassembling.

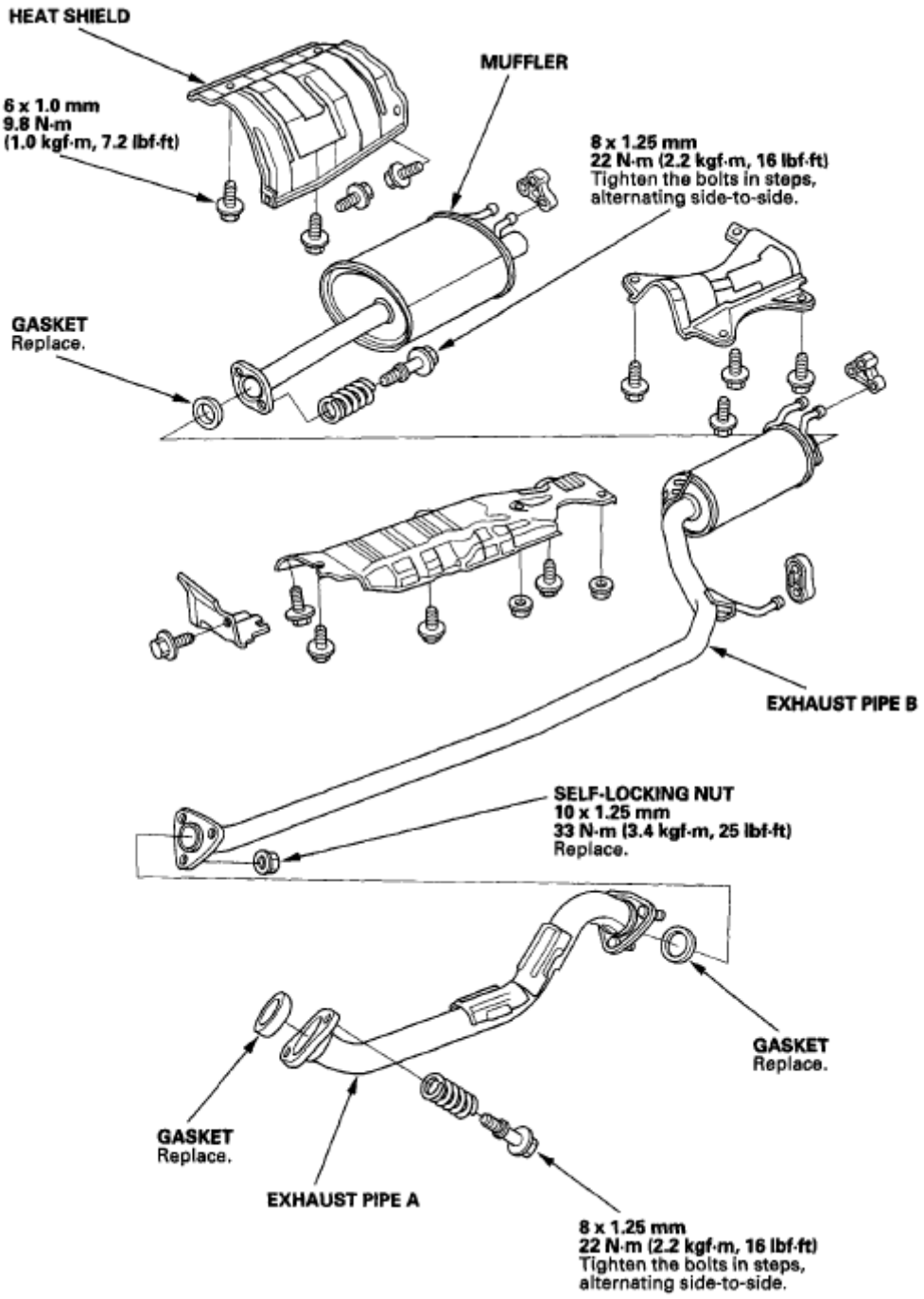


Fig. 22: Identifying Exhaust Pipe And Muffler Components (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INTAKE MANIFOLD AND EXHAUST SYSTEM (K20Z3)

INTAKE MANIFOLD REMOVAL AND INSTALLATION

Exploded View

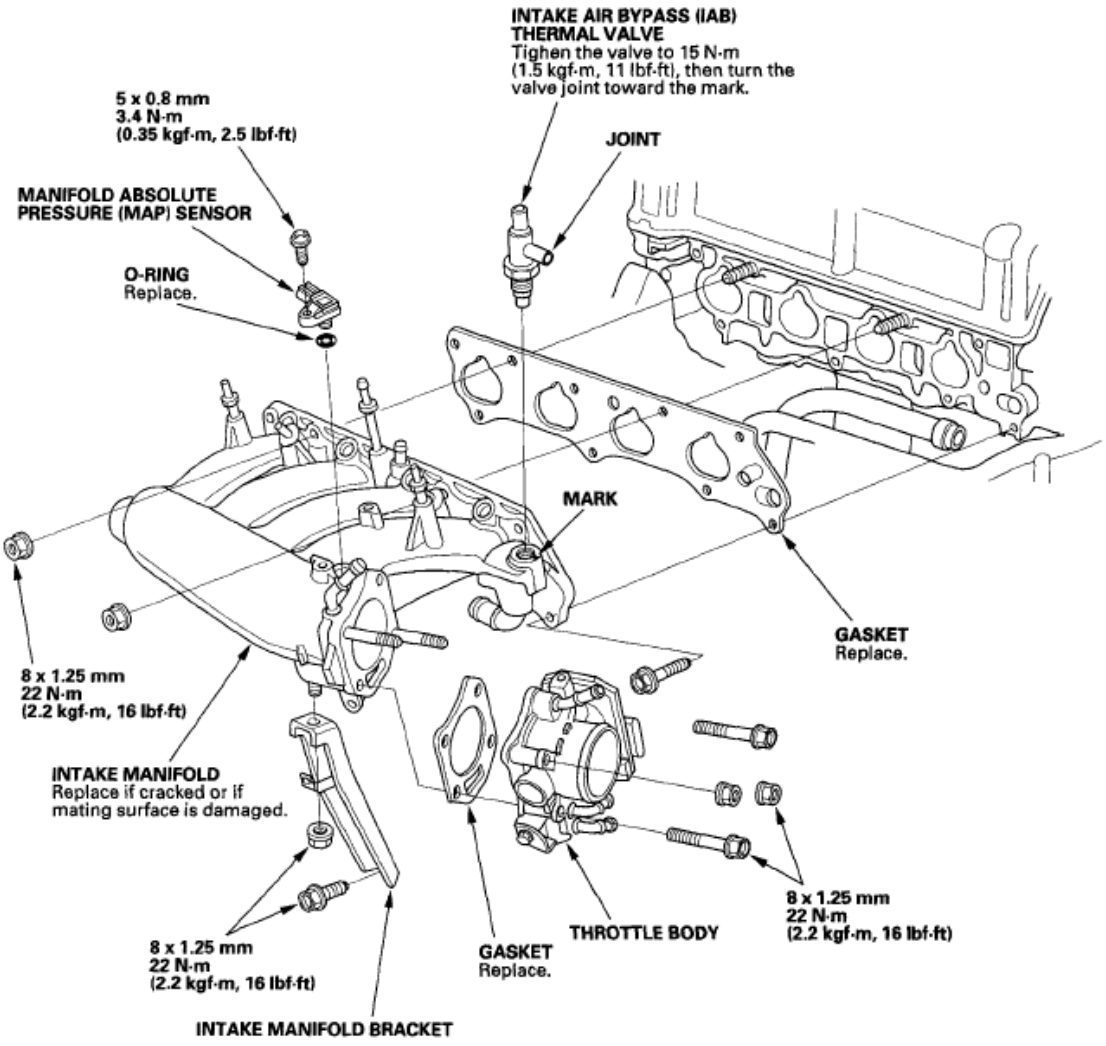


Fig. 23: Exploded View Of Intake Manifold (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal

1. Drain the engine coolant (see **COOLANT CHECK**).
2. Remove the engine cover.

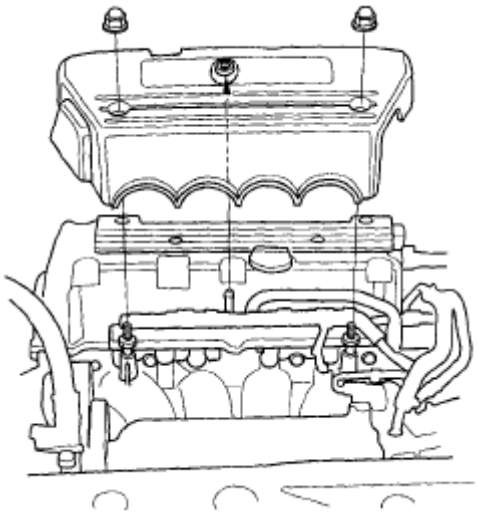


Fig. 24: Identifying Engine Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Remove the vacuum hose (A) and breather pipe (B), then remove the air intake duct (C).

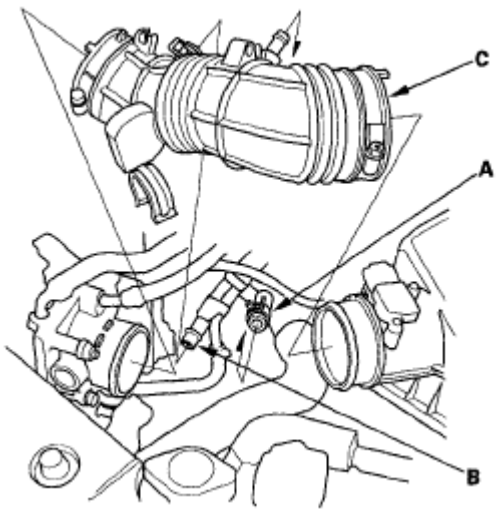


Fig. 25: Identifying Air Intake Duct
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.
   - Four fuel injector connectors
   - Manifold absolute pressure (MAP) sensor connector
   - Throttle actuator connector
5. Remove the ground cable (A) and harness clamp bracket (B), then remove the harness holder (C) from the stay.

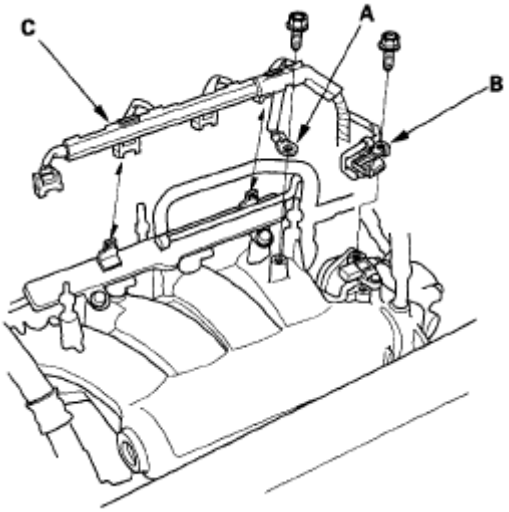


Fig. 26: Identifying Ground Cable, Harness Clamp Bracket And Harness Holder
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Remove the positive crankcase ventilation (PCV) hose (A), evaporative emission (EVAP) canister hose (B) and brake booster vacuum hose (C).

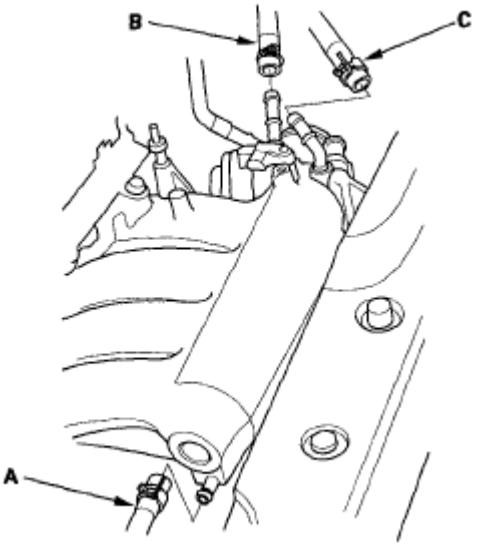


Fig. 27: Identifying Positive Crankcase Ventilation Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Remove the water bypass hoses, then plug the water bypass hoses.

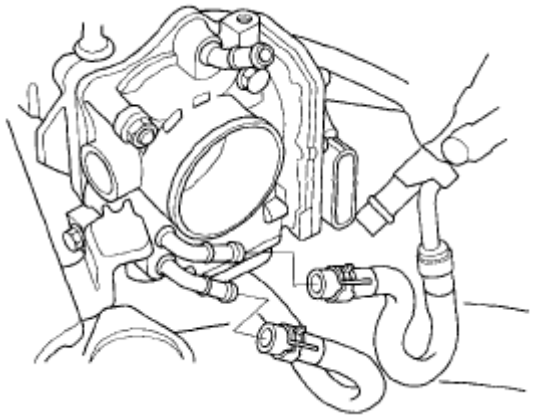


Fig. 28: Identifying Water Bypass Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

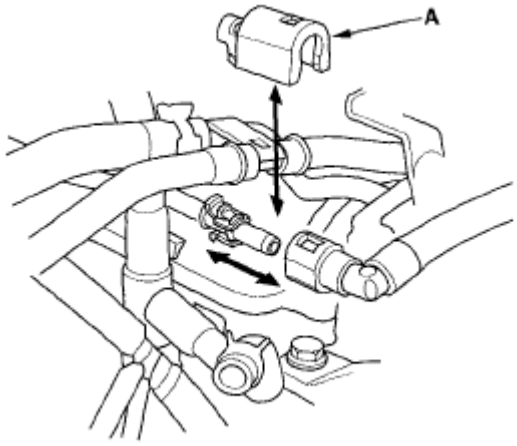


Fig. 29: Identifying Quick-Connect Fitting Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. Raise the vehicle on the lift to full height.
10. Remove the connector (A), then remove the intake manifold bracket (B).

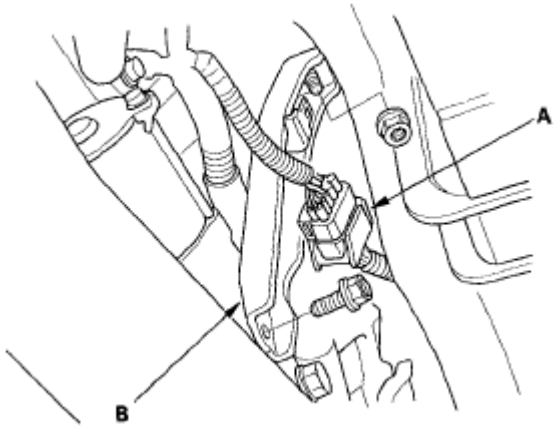


Fig. 30: Identifying Intake Manifold Bracket
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. Lower the vehicle on the lift.
12. Remove the intake manifold (A) from the cylinder head, then remove the water bypass hose (B).

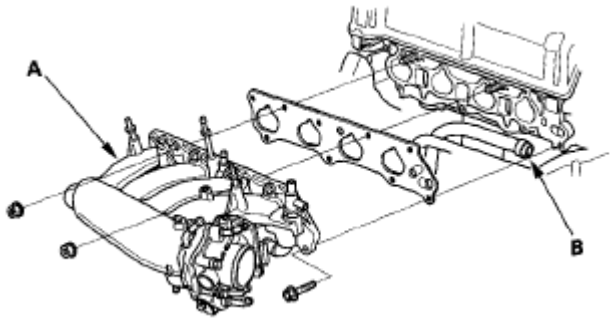


Fig. 31: Identifying Intake Manifold
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

1. Install the water bypass hose (A) to the intake manifold (B), then install the intake manifold with a new gasket (C), and tighten the bolts and nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.

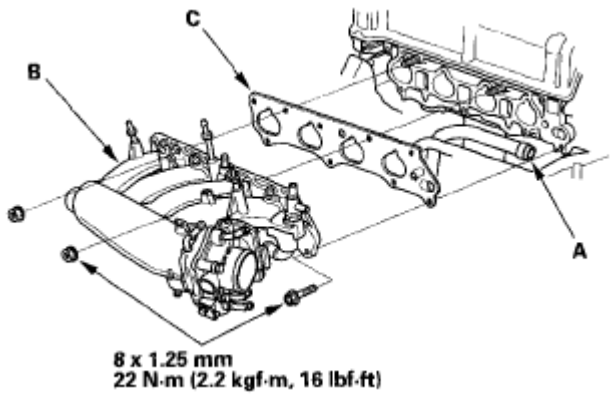


Fig. 32: Identifying Intake Manifold (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Raise the vehicle on the lift to full height.
3. Install the intake manifold bracket (A), then install the connector (B).

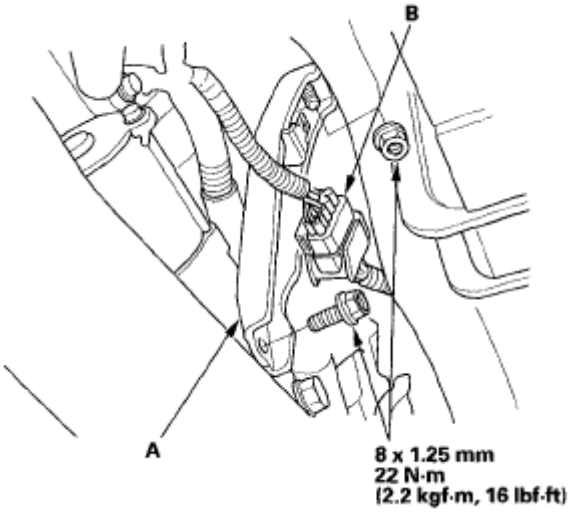


Fig. 33: Identifying Intake Manifold Bracket (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

4. Lower the vehicle on the lift.
5. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (A).

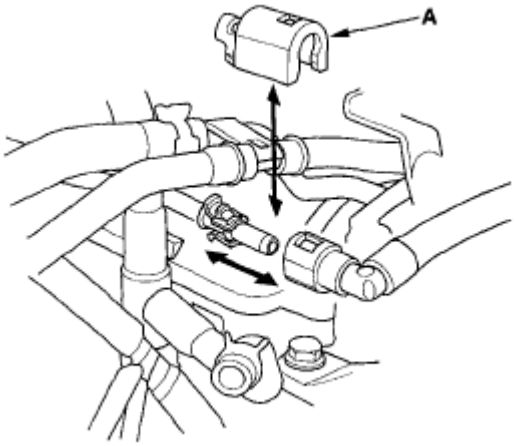


Fig. 34: Identifying Quick-Connect Fitting Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Install the water bypass hoses.

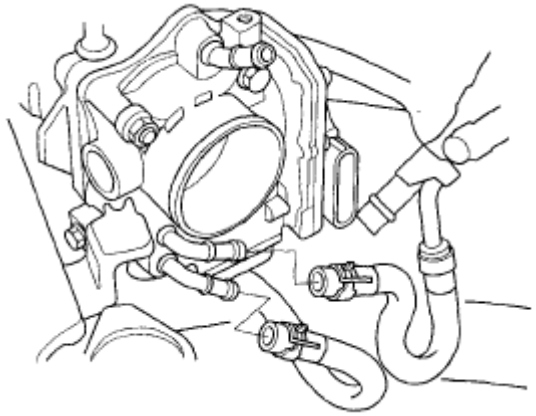


Fig. 35: Identifying Water Bypass Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Install the positive crankcase ventilation (PCV) hose (A), evaporative emission (EVAP) canister hose (B) and brake booster vacuum hose (C).

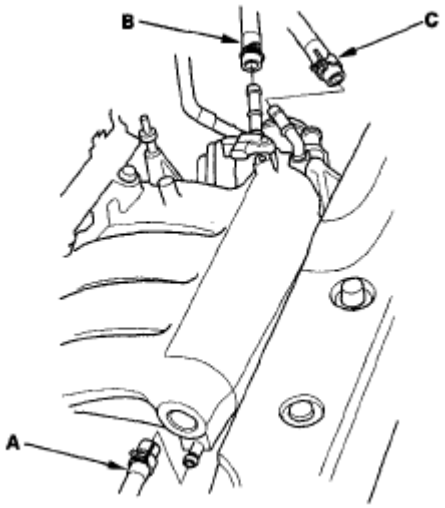


Fig. 36: Identifying Positive Crankcase Ventilation Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

8. Install the harness holder (A) to the stay, then install the ground cable (B) and harness clamp bracket (C).

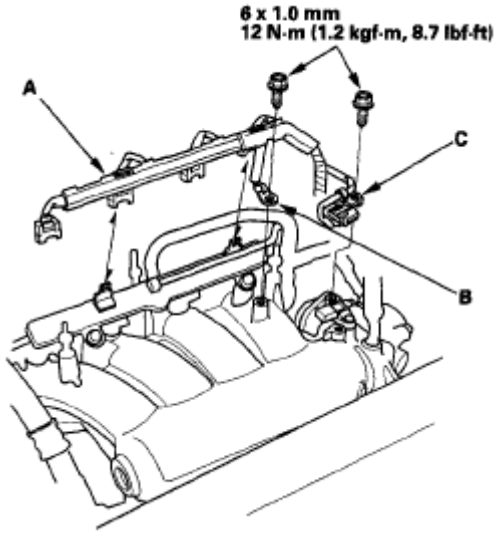


Fig. 37: Identifying Harness Holder (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

9. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold.
    - Four fuel injector connectors
    - Manifold absolute pressure (MAP) sensor connector
    - Throttle actuator connector
10. Install the air intake duct (A), then install the vacuum hose (B) and breather pipe (C).

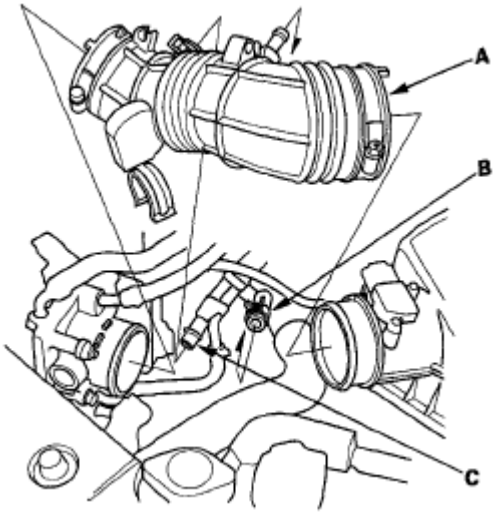


Fig. 38: Identifying Air Intake Duct
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

11. Install the engine cover.

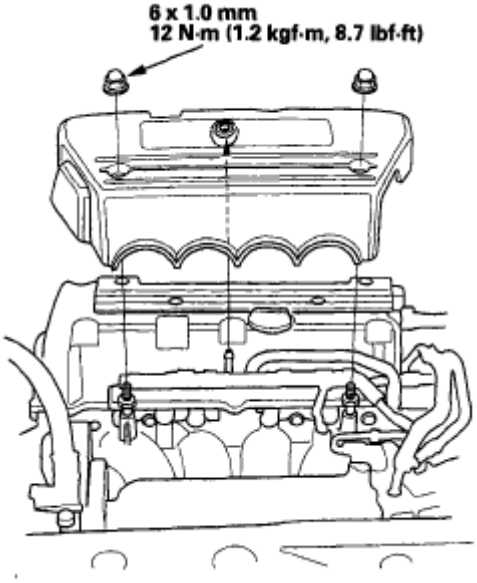


Fig. 39: Identifying Engine Cover (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

12. Clean up any spilled engine coolant.
13. After installation, check that all tubes, hoses and connectors are installed correctly.
14. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on **COOLANT REPLACEMENT**).

EXHAUST MANIFOLD REMOVAL AND INSTALLATION

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Loosen the drain plug in the radiator, and drain the engine coolant (see **COOLANT CHECK**).
3. Remove the under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
4. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

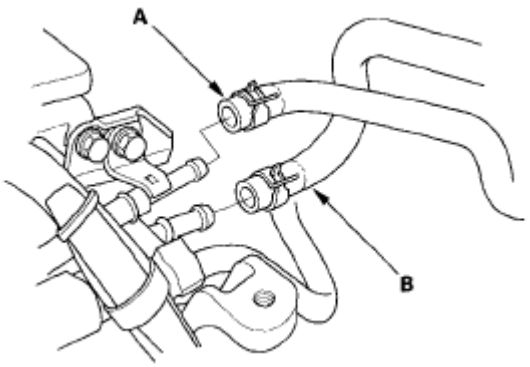


Fig. 40: Identifying Evaporative Emission Canister Hose And Brake Booster Vacuum Hose
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

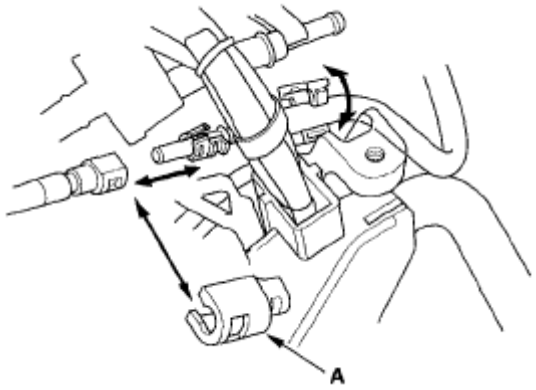


Fig. 41: Identifying Quick-Connect Fitting Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

6. Remove the heater hoses.

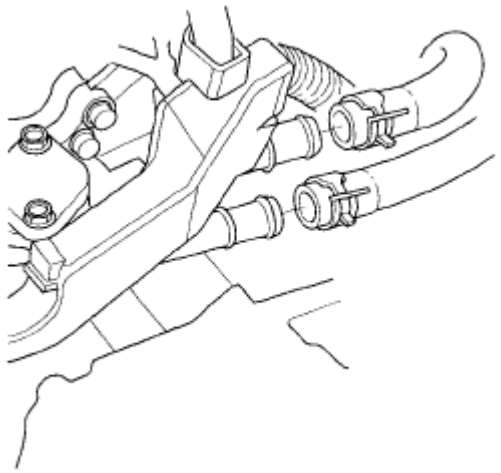


Fig. 42: Identifying Heater Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

7. Remove the rocker arm oil control solenoid (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**).
8. Remove the intermediate shaft heat shield .
9. Remove the cover and exhaust manifold bracket, then remove the exhaust manifold.

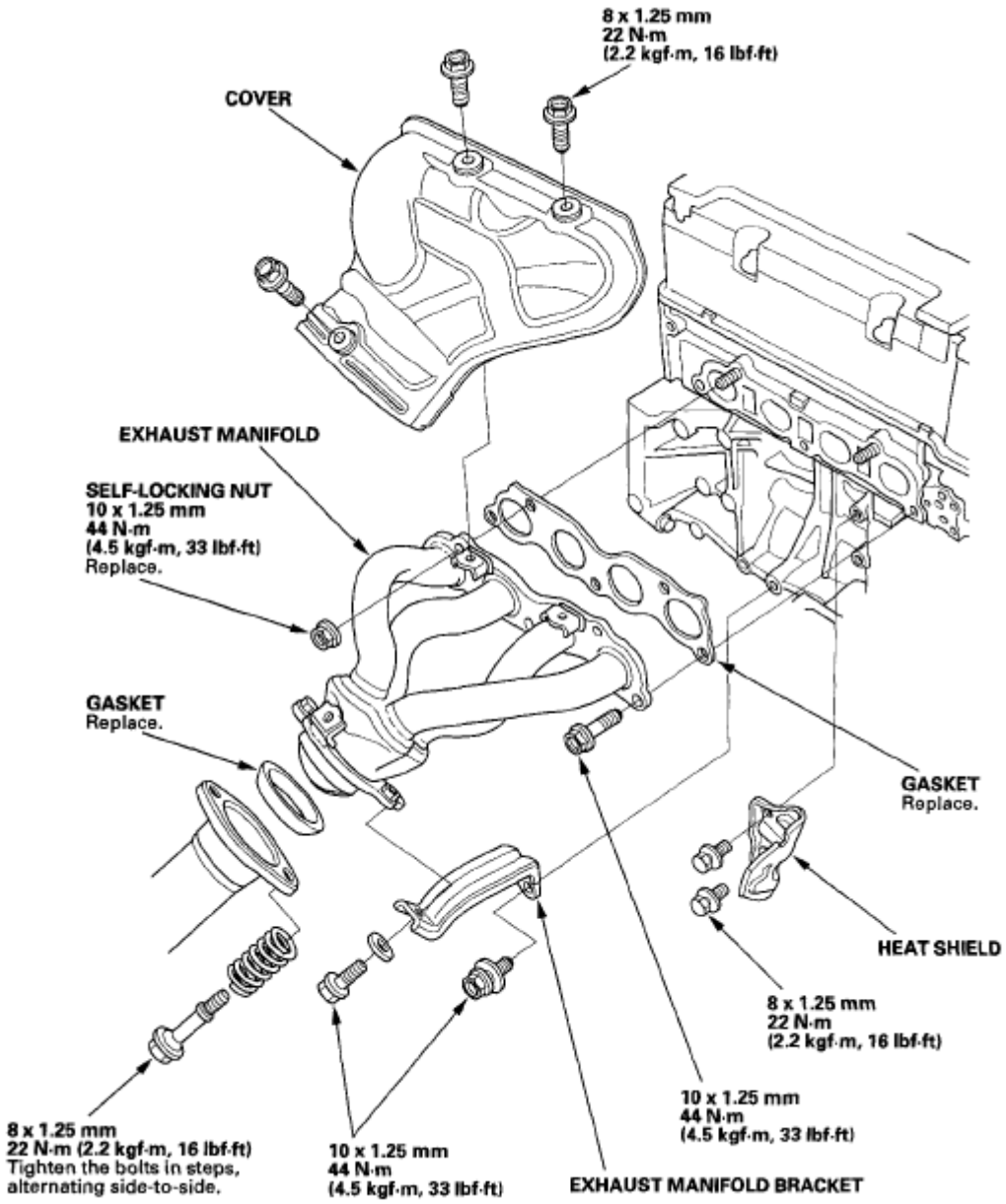


Fig. 43: Exploded View Of Exhaust Manifold (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

10. Install the exhaust manifold and tighten the bolts and nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.
11. Install the other parts in the reverse order of removal.
12. Inspect for leaks: Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
13. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 6 on **COOLANT REPLACEMENT**).

EXHAUST PIPE AND MUFFLER REPLACEMENT

NOTE: Use new gaskets and self-locking nuts when reassembling.

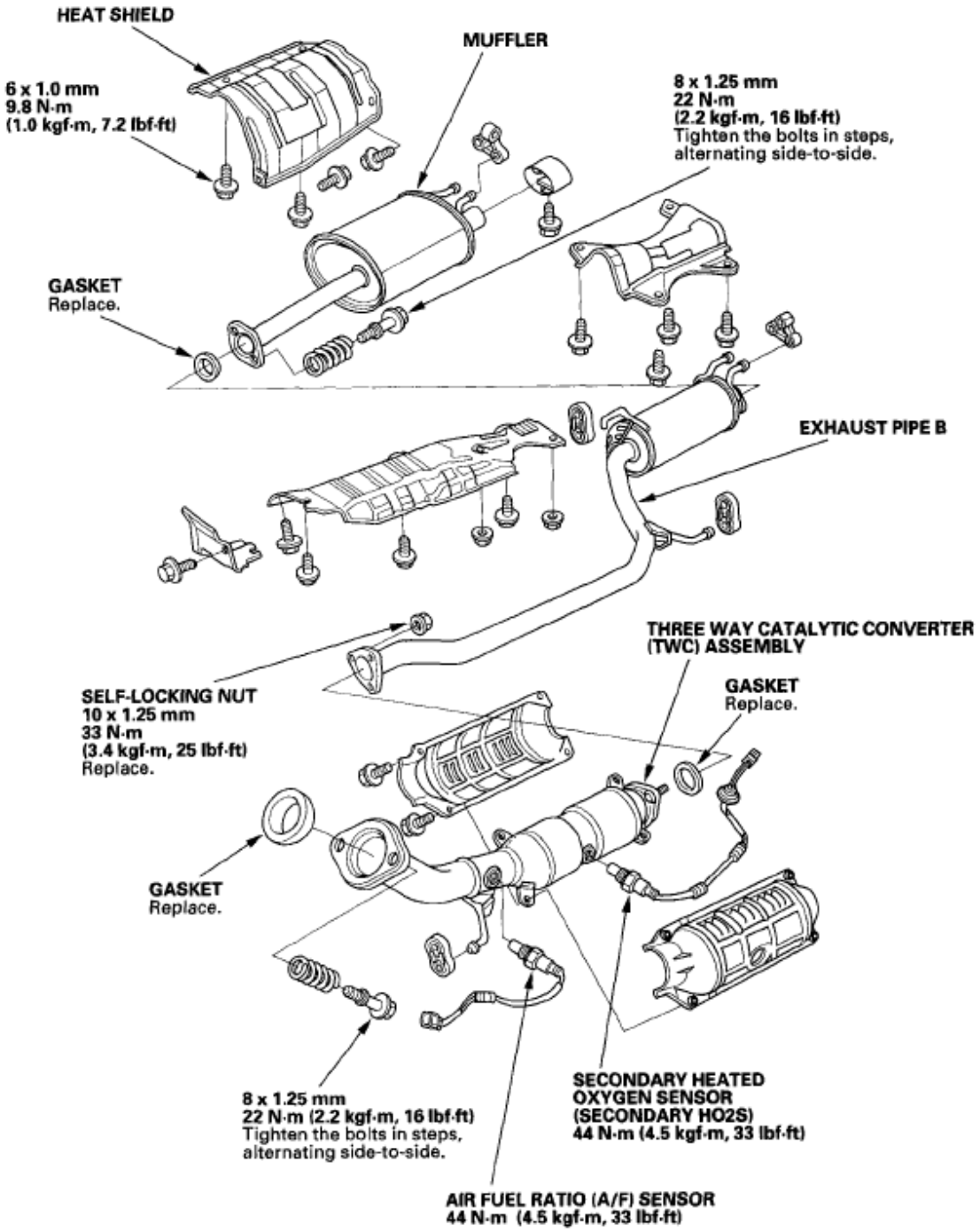


Fig. 44: Exploded View Of Exhaust Pipe And Muffler (With Torque Specifications)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2006-08 ENGINE PERFORMANCE

Fuel Supply System (K20Z3) - Civic (All Except GX & Si)

COMPONENT LOCATION INDEX

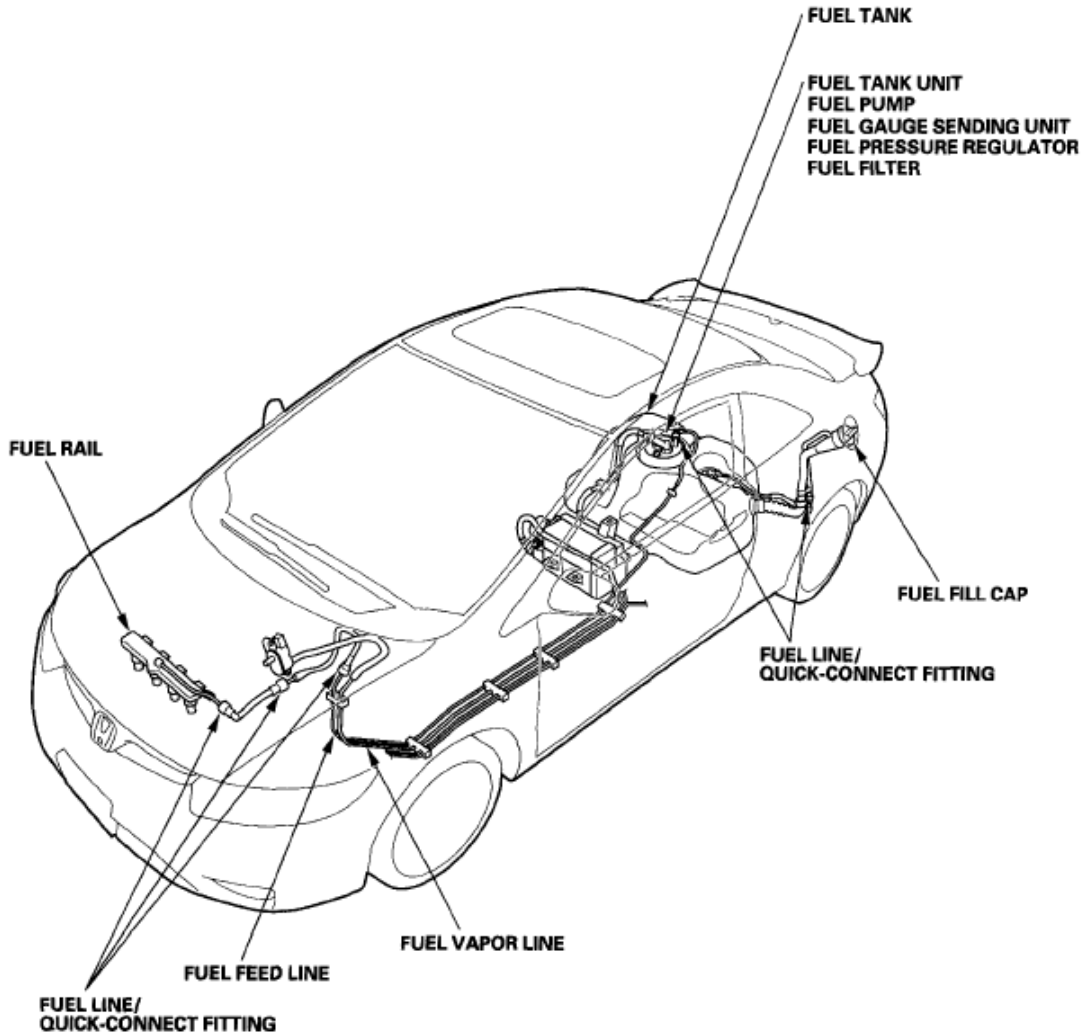
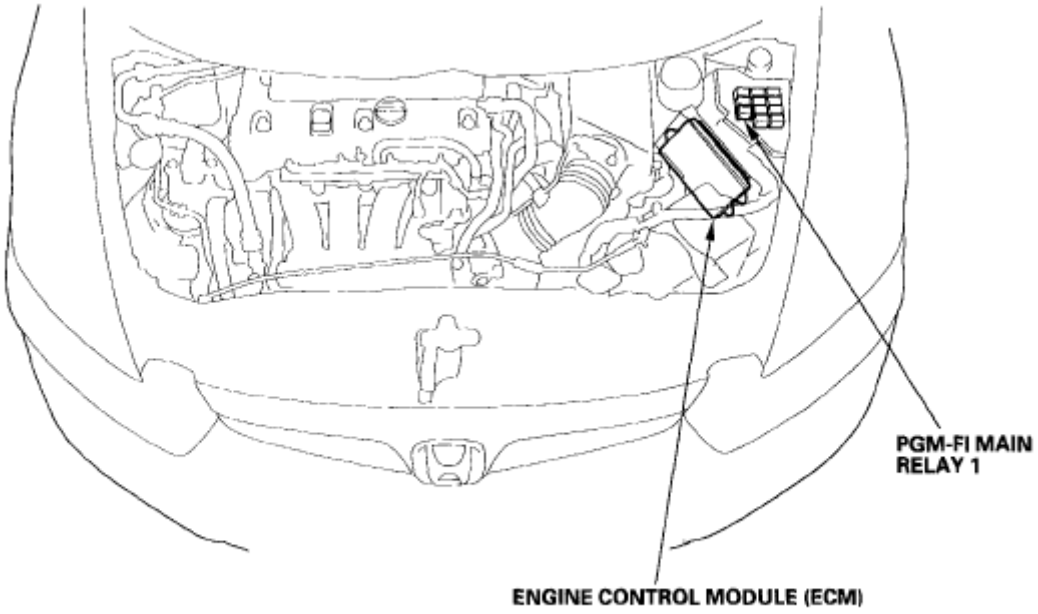


Fig. 1: Identifying Fuel Supply System Component Location (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



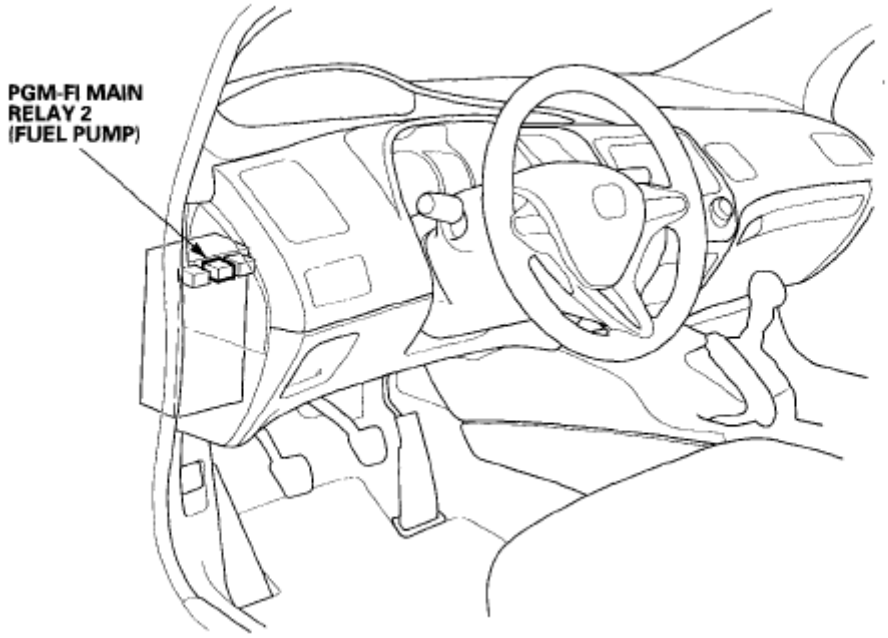


Fig. 2: Identifying Fuel Supply System Component Location (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see**

GENERAL TROUBLESHOOTING INFORMATION).

- **Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.**

1. Test the fuel gauge sending unit (see **FUEL GAUGE SENDING UNIT TEST**).

   Is the fuel gauge sending unit OK?

   YES - Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly.

   NO - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the ECM with the HDS.
4. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0461 indicated?

   YES - Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module (tach), then go to step 1.

   NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0462 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit.

4. Turn the ignition switch OFF.
5. Remove the rear seat cushion (see **SEAT CUSHION**).
6. Remove the rear floor upper cross-member and the access panel from the floor (see **FUEL TANK**

UNIT REMOVAL/INSTALLATION).

7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0463 indicated?

YES - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 22.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge control module (tach) (see **TACHOMETER**).
13. Disconnect the gauge control module (tach) 36P connector.
14. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

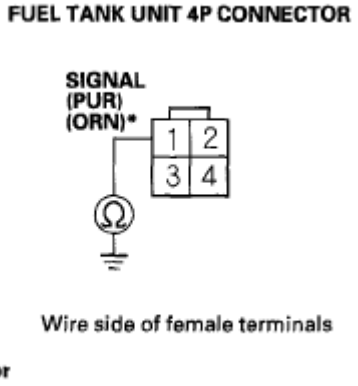


Fig. 3: Checking Continuity Between Fuel Tank Unit 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

***: 4-door**

Is there continuity?

YES - Repair short in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 23.

NO - Go to step 15.

15. Reconnect the gauge control module (tach) 36P connector.
16. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
17. Connect the fuel tank unit 4P connector.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.

20. Set the float (A) to the E position.

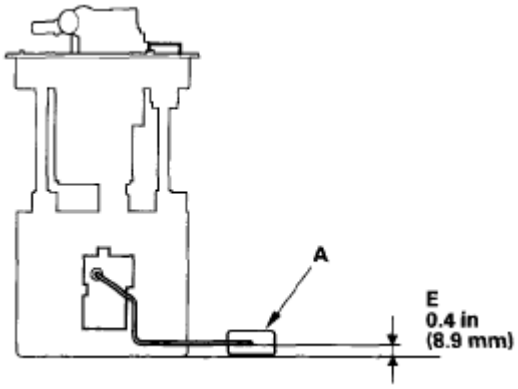


Fig. 4: Setting Float To E Position (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check the fuel gauge.

    Does the gauge move to the empty position?

    YES - Go to step 31.

    NO - Replace the gauge control module (tach), then go to step 22.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Install the parts in the reverse order of removal.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

29. Reconnect all connectors.
30. Install the parts in the reverse order of removal.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0463 indicated?

YES - Go to step 4.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit.

4. Turn the ignition switch OFF.
5. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
6. Remove the rear floor upper cross-member and the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
7. Disconnect the fuel tank unit 4P connector.
8. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

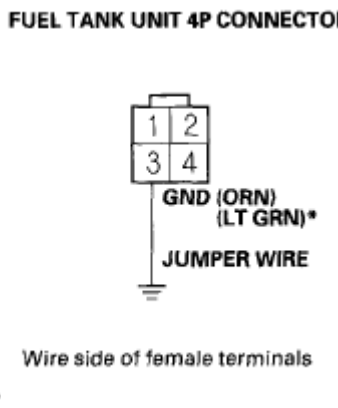


Fig. 5: Connecting Fuel Tank Unit 4P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

***: 4-door**

9. Remove the gauge control module (tach) (see **TACHOMETER**).
10. Disconnect the gauge control module (tach) 36P connector.
11. Check for continuity between gauge control module (tach) 36P connector terminal No. 33 and body ground.

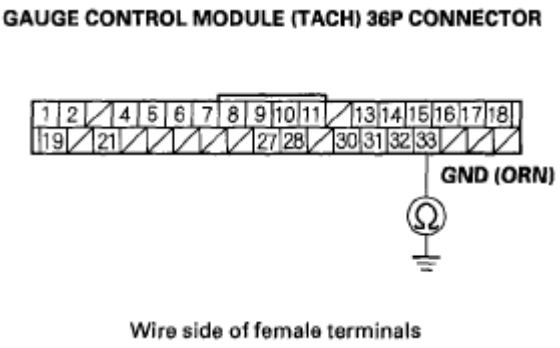


Fig. 6: Checking Continuity Between Gauge Control Module (Tach) 36P Connector Terminal No. 33 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the gauge control module (tach) (GND line) and the fuel gauge sending unit, then go to step 24.

12. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

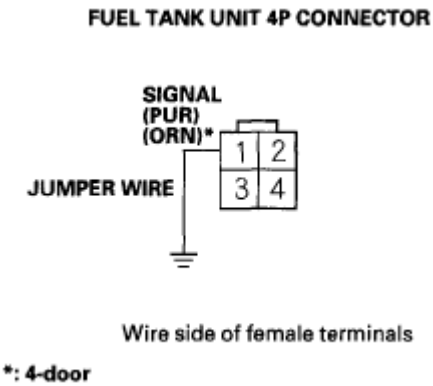


Fig. 7: Connecting Fuel Tank Unit 4P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

***: 4-door**

13. Check for continuity between gauge control module (tach) 36P connector terminal No. 32 and body ground.

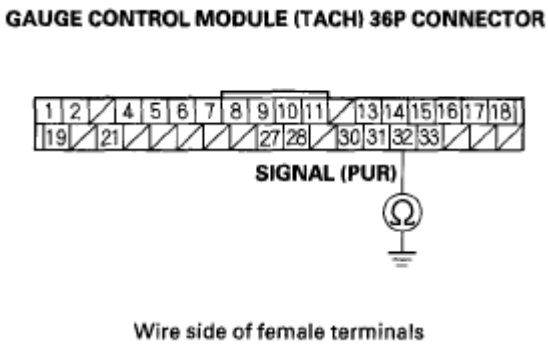


Fig. 8: Checking Continuity Between Gauge Control Module (Tach) 36P Connector Terminal No. 32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Repair open in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 4P connector.
15. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
16. Test the fuel gauge sending unit (see **FUEL GAUGE SENDING UNIT TEST**).

Is the fuel gauge sending unit OK?

YES - Go to step 17.

NO - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 23.

17. Connect the fuel tank unit 4P connector.
18. Reconnect the gauge control module (tach) 36P connector.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.
21. Set the float (A) to the F position.

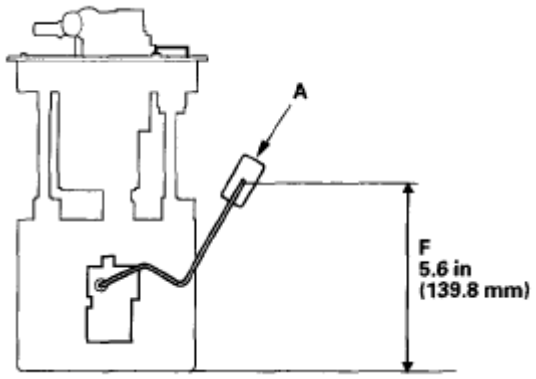


Fig. 9: Setting Float To F Position (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Check the fuel gauge.

    Does the gauge move to the full position?

    YES - Go to step 32.

    NO - Replace the gauge control module (tach) (see **TACHOMETER**), then go to step 23.

23. Turn the ignition switch OFF.
24. Reconnect all connectors.
25. Install the parts in the reverse order of removal.
26. Turn the ignition switch ON (II).
27. Reset the ECM with the HDS.
28. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

30. Reconnect all connectors.
31. Install the parts in the reverse order of removal.
32. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING**

THE ECM), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

FUEL PUMP CIRCUIT TROUBLESHOOTING

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch OFF.
2. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

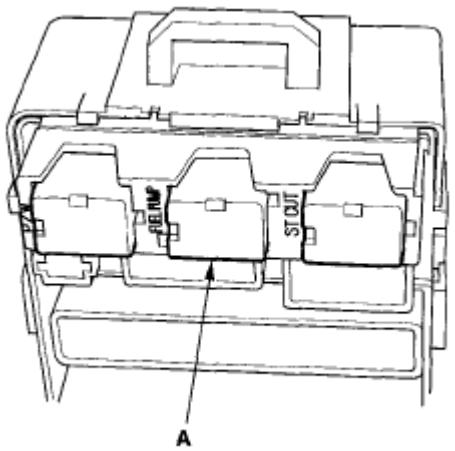


Fig. 10: Identifying PGM-FI Main Relay 2 (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the under-dash fuse/relay box.
4. Turn the ignition switch ON (II).
5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 and body ground.

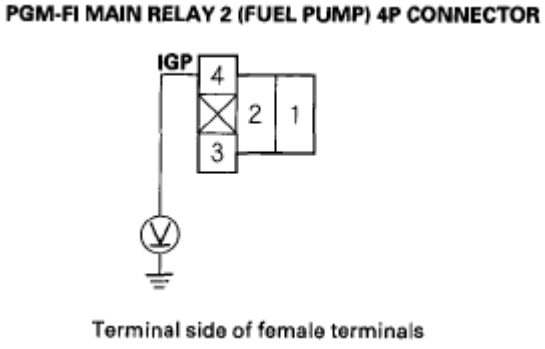


Fig. 11: Measuring Voltage Between PGM-FI Main Relay 2 (Fuel Pump) 4P Connector

Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the under-hood fuse/relay box connector E (10P).
8. Disconnect C101 connector at left side of engine compartment (see **CONNECTOR TO HARNESS INDEX**).
9. Disconnect the under-dash fuse/relay box connector G (21P).
10. Connect under-dash fuse/relay box connector G (21P) terminal No. 4 to body ground with a jumper wire.

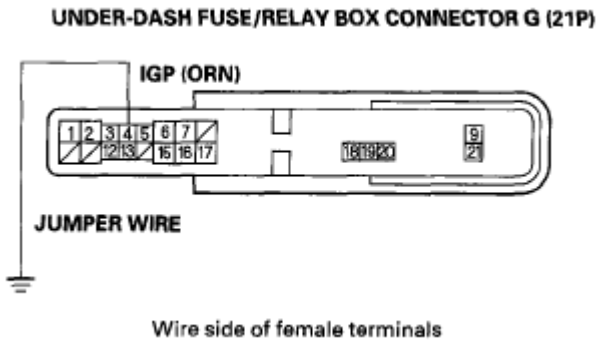


Fig. 12: Connecting Under-Dash Fuse/Relay Box Connector G (21P) Terminal No. 4 To Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between under-hood fuse/relay box connector E (10P) terminal No. 5 and body ground.

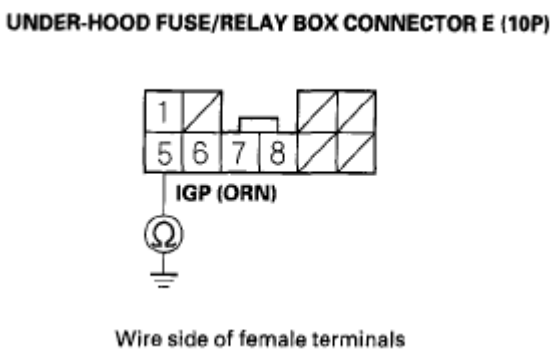


Fig. 13: Checking Continuity Between Under-Hood Fuse/ Relay Box Connector E (10P) Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- Replace PGM-FI main relay 1.
- If needed, replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

NO - Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box.

12. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

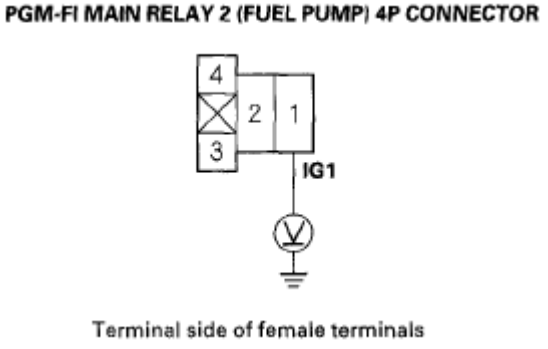


Fig. 14: Measuring Voltage Between PGM-FI Main Relay 2 (Fuel Pump) 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO -

- Check the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.
- If needed, replace the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**).

13. Turn the ignition switch OFF.
14. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 to body ground with a jumper wire.

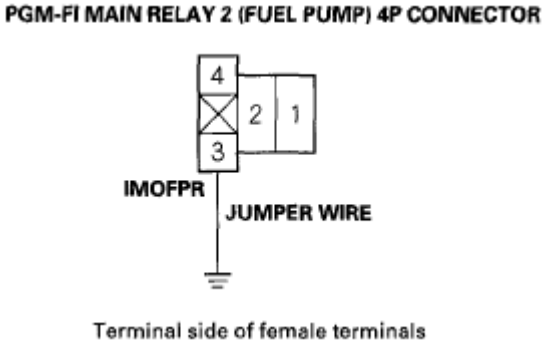


Fig. 15: Connecting PGM-FI Main Relay 2 (Fuel Pump) 4P Connector Terminal No. 3 To Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Jump the SCS line with the HDS.
16. Disconnect ECM connector A (44P).
17. Check for continuity between body ground and ECM connector terminal A15.

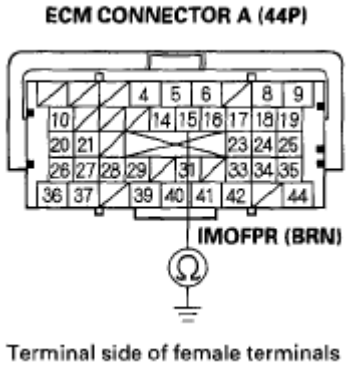


Fig. 16: Checking Continuity Between Body Ground And ECM Connector Terminal A15
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18.

NO - Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM (A15).

18. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then reinstall PGM-FI main relay 2 (FUEL PUMP).
19. Reinstall the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**).
20. Connect ECM connector terminal A6 to body ground with a jumper wire.

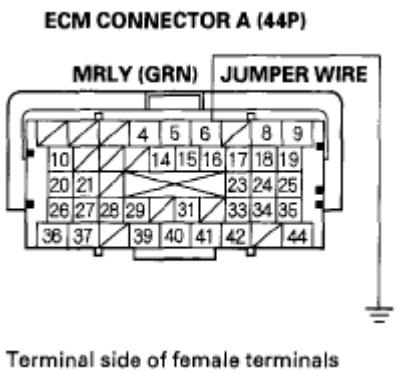


Fig. 17: Connecting ECM Connector Terminal A6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Turn the ignition switch ON (II).
22. Measure voltage between ECM connector terminal A15 and body ground.

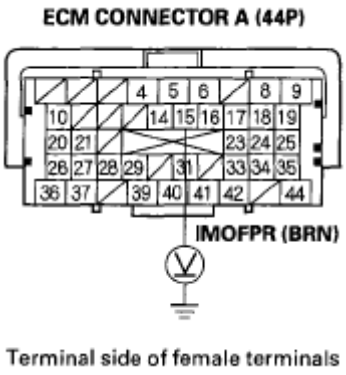


Fig. 18: Measuring Voltage Between ECM Connector Terminal A15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 23.

NO - Replace PGM-FI main relay 2 (FUEL PUMP).

23. Turn the ignition switch OFF.
24. Reconnect ECM connector A (44P).
25. Open the SCS line with the HDS.
26. Turn the ignition switch OFF.
27. Turn the ignition switch ON (II), and measure voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground within 2 seconds.

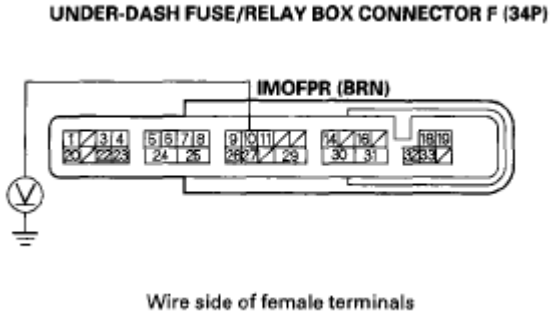


Fig. 19: Measuring Voltage Between Under-Dash Fuse/Relay Box Connector F (34P) Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Go to step 28.

28. Turn the ignition switch ON (II), and measure voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground after 2 seconds.

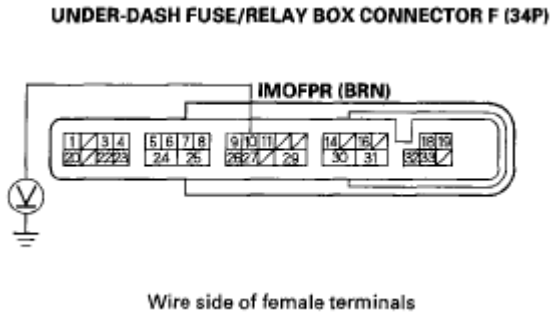


Fig. 20: Measuring Voltage Between Under-Dash Fuse/Relay Box Connector F (34P) Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 29.

NO - If needed, replace the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 29.

29. Turn the ignition switch OFF.
30. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
31. Remove the rear floor upper cross-member, then remove the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
32. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

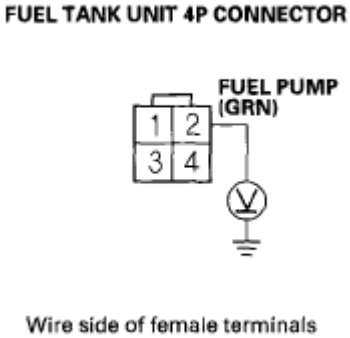


Fig. 21: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 37.

NO - Go to step 33.

33. Turn the ignition switch OFF.
34. Remove PGM-FI main relay 2 (FUEL PUMP).
35. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

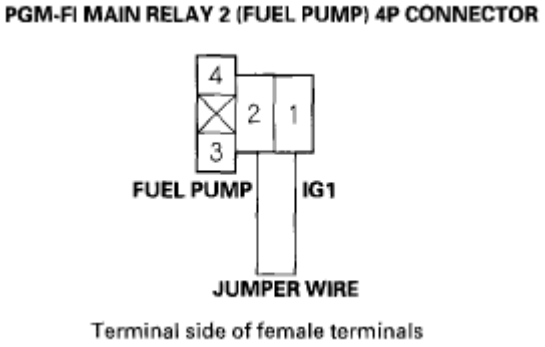


Fig. 22: Connecting PGM-FI Main Relay 2 (Fuel Pump) 4P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

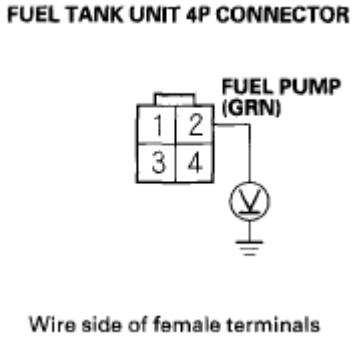


Fig. 23: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Replace PGM-FI main relay 2 (FUEL PUMP).

NO - Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel tank unit 4P connector.

37. Turn the ignition switch OFF.
38. Check for continuity between fuel tank unit 4P connector terminal No. 4 and body ground.

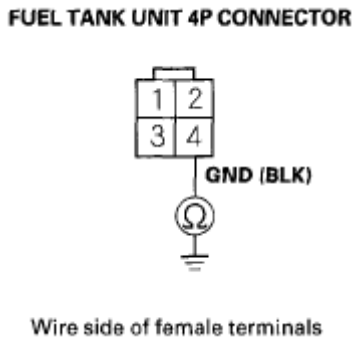


Fig. 24: Checking Continuity Between Fuel Tank Unit 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the fuel pump (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

NO - Repair open in the wire between the fuel tank unit 4P connector and G601; 4-door (see **CONNECTOR TO HARNESS INDEX**), 2-door (see **CONNECTOR TO HARNESS INDEX**).

FUEL PRESSURE RELIEVING

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and disconnecting the fuel tube/quick connect fitting in the engine compartment.

WITH THE HDS

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

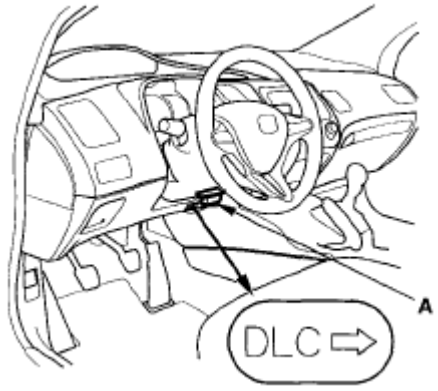


Fig. 25: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the ignition switch ON (II).

5. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
6. Turn the ignition switch OFF.
7. Remove the fuel fill cap to relieve the pressure in the fuel tank.
8. Turn the ignition switch ON (II).
9. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.

NOTE:

- **Do not allow the engine to idle above 1,000 rpm or the ECM will continue to operate the fuel pump.**
- **A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see DTC CLEAR).**

10. Turn the ignition switch OFF.
11. Disconnect the negative cable from the battery.
12. Remove the quick-connect fitting cover (A).

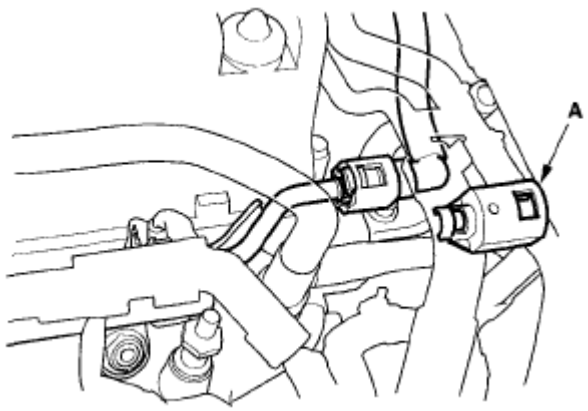


Fig. 26: Removing Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check the fuel quick-connect fitting for dirt, and clean it if needed.
14. Place a rag or shop towel over the quick-connect fitting (A).

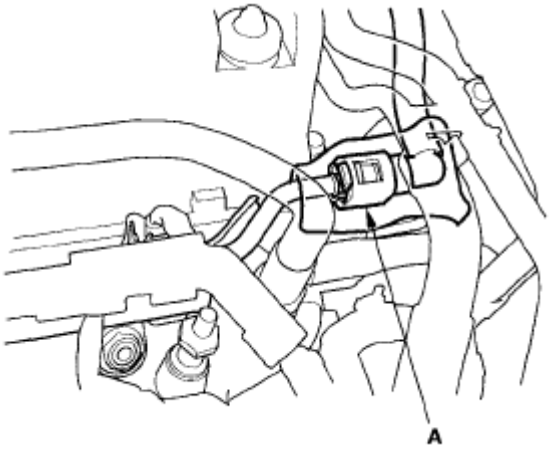


Fig. 27: Placing Rag Or Shop Towel Over Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

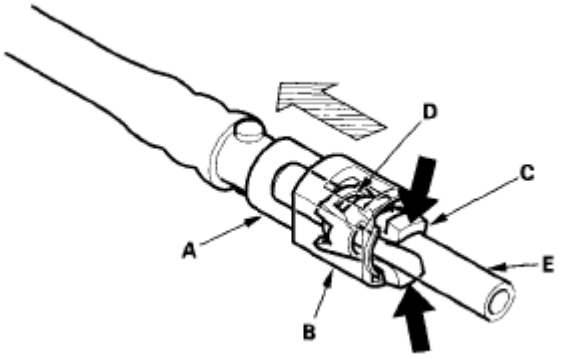


Fig. 28: Disconnecting Quick-Connector Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 in **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
17. Reconnect the negative cable to the battery, then do this:
18. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets, Set the clock (on vehicles without navigation).

WITHOUT THE HDS

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

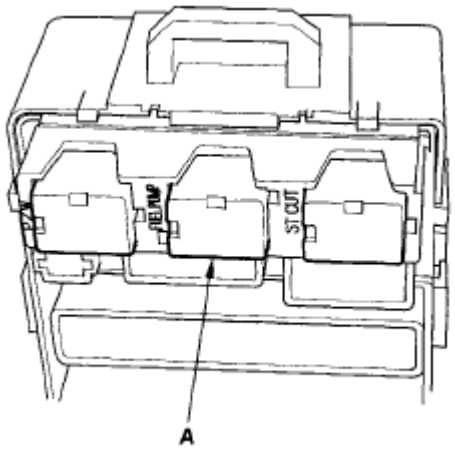


Fig. 29: Identifying PGM-FI Main Relay 2 (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the under-dash fuse/relay box.
4. Start the engine, and let it idle until it stalls.

NOTE: If any DTCs are stored, clear and ignore them.

5. Turn the ignition switch OFF.
6. Remove the fuel fill cap.
7. Disconnect the negative cable from the battery.
8. Remove the quick-connect fitting cover (A).

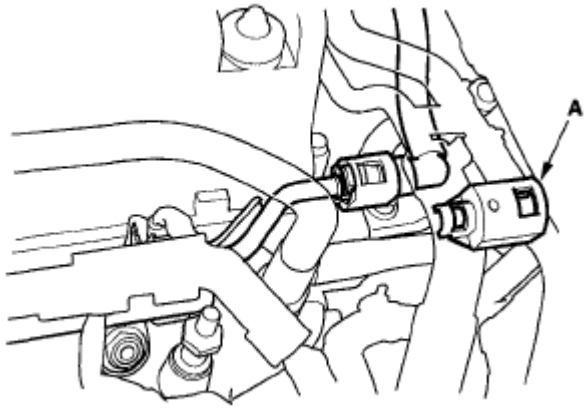


Fig. 30: Removing Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Check the fuel quick-connect fitting for dirt, and clean it if needed.
10. Place a rag or shop towel over the quick-connect fitting (A).

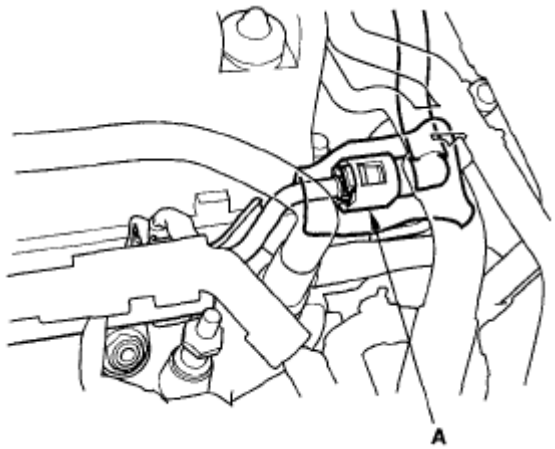


Fig. 31: Placing Rag Or Shop Towel Over Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

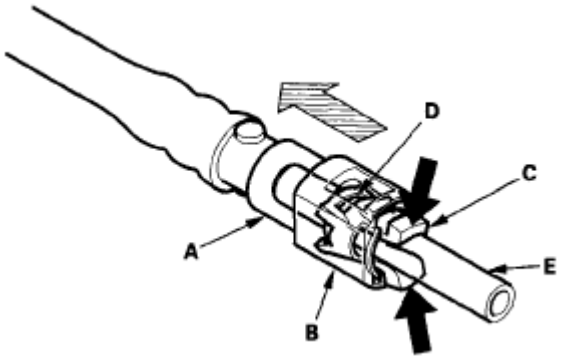


Fig. 32: Disconnecting Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 in **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
13. Reconnect the negative cable to the battery, then do this:
14. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets, Set the clock (on vehicles without navigation).

FUEL PRESSURE TEST

Special Tools Required

- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.

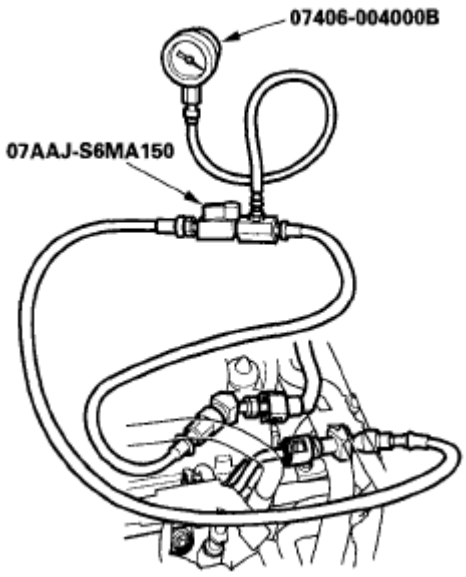


Fig. 33: Attaching Fuel Pressure Gauge Set And Fuel Pressure Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine, and let it idle.
   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: Listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see **FUEL PUMP CIRCUIT TROUBLESHOOTING**).
5. Read the fuel pressure gauge. The pressure should be 330-380 kPa (3.4-3.9 kgf/cm^2 , 48-55 psi).
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**) and the fuel filter (see **FUEL FILTER REPLACEMENT**), then recheck the fuel pressure.

FUEL TANK DRAINING

1. Remove the fuel tank unit (see **REMOVAL**).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
3. Reinstall the fuel tank unit (see **INSTALLATION**).

FUEL LINE INSPECTION

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

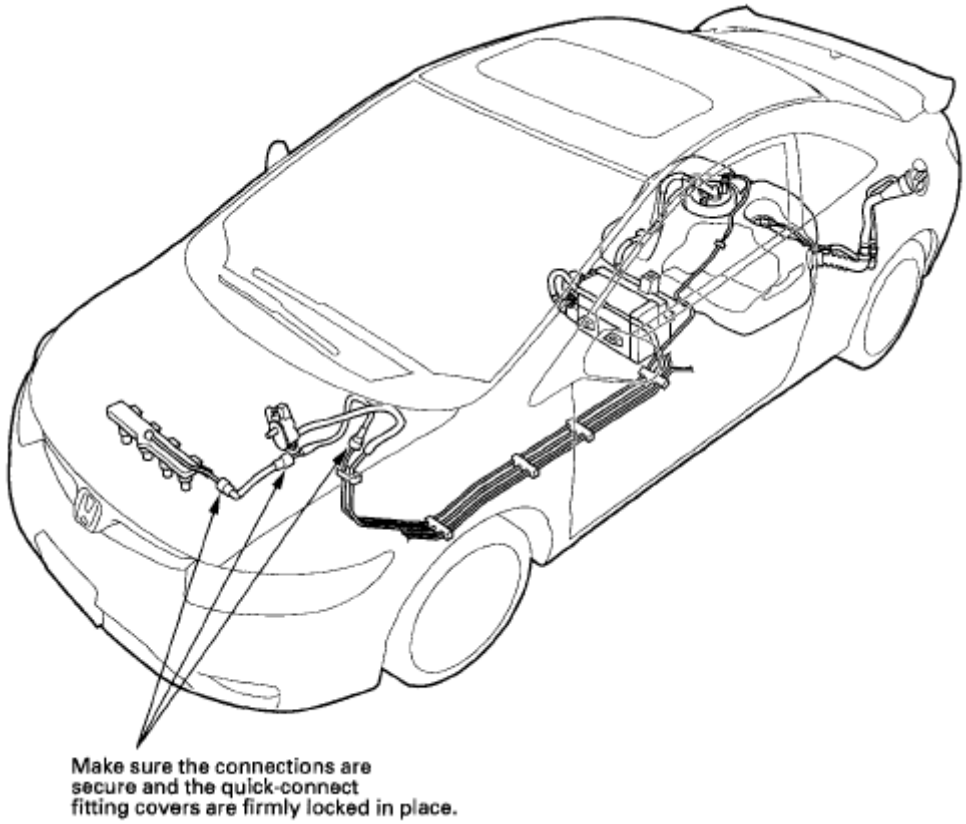


Fig. 34: Checking Fuel System Lines And Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Check all clamps, and make sure they are properly positioned and tightened.

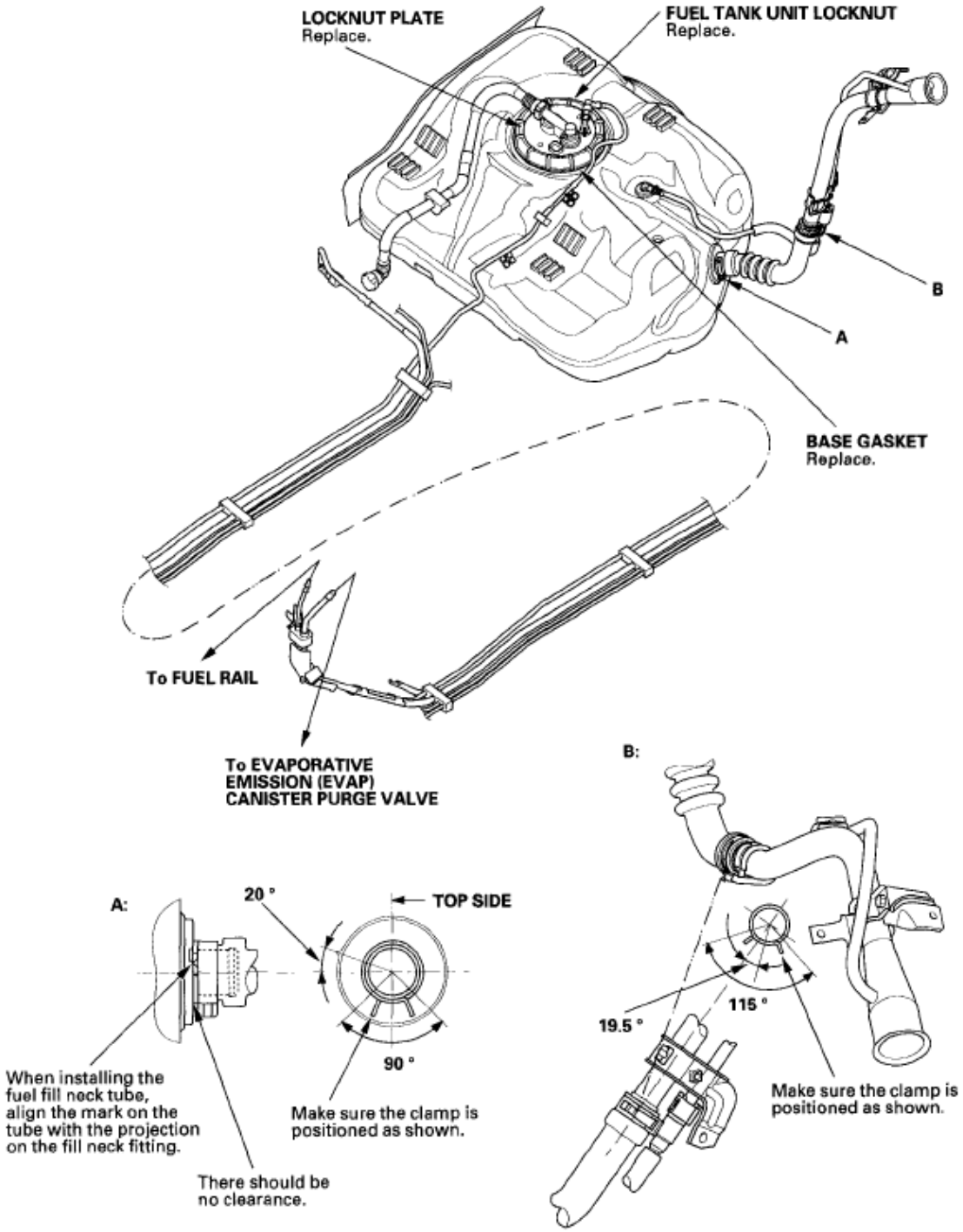


Fig. 35: Checking All Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS

The fuel line/quick-connect fittings (A), (B), (C), (D), and (E) connect the fuel rail (F) to the fuel feed hoses (G), fuel feed hose A to fuel feed hose B (H), fuel feed hose B to the fuel line (I), the fuel line (J) to the fuel tank unit (K), the fuel vapor line (L) to the EVAP canister (M) and the fuel tank vapor recirculation tube (N) to the fuel fill pipe (0). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.

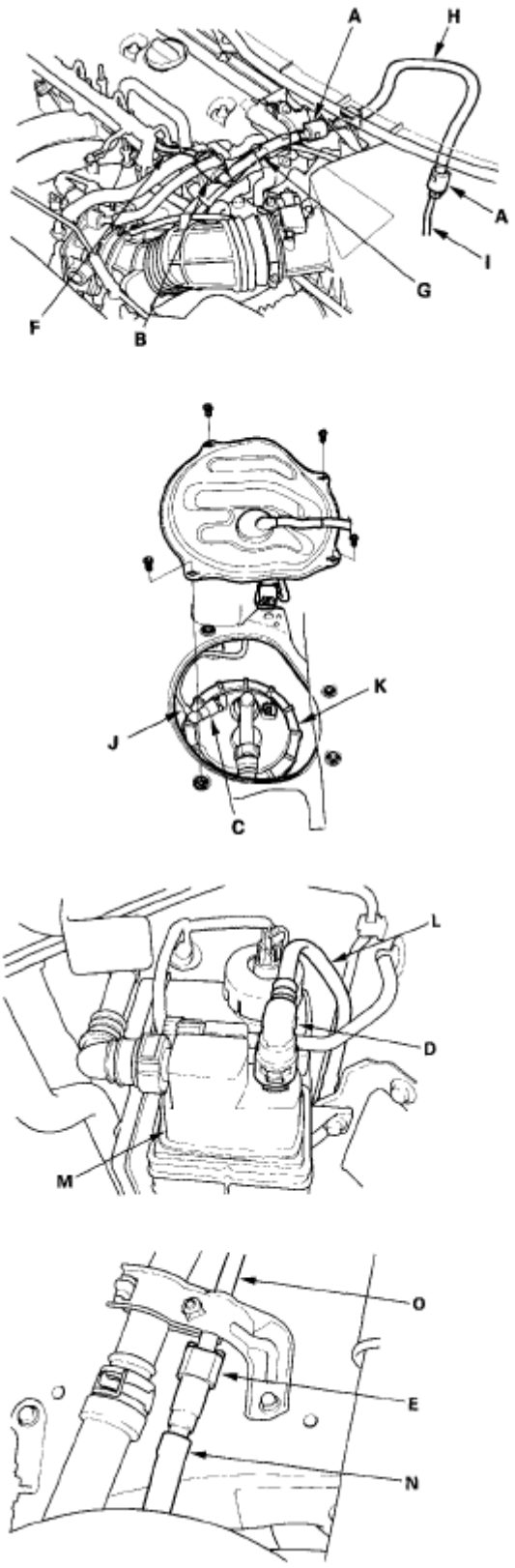


Fig. 36: Precautions For Fuel Line/Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- it has been removed from the line.
- it is damaged.

FUEL LINE/QUICK-CONNECT FITTING

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Green	0.3 in. (6.3 mm)
B	Tokai	Blue green	0.3 in. (8 mm)
C	Sanoh	White	0.4 in. (9.5 mm)
D	Sanoh	White	0.5 in. (12 mm)
E	Tokai	Natural	0.5 in. (12 mm)

FUEL LINE/QUICK-CONNECT FITTING REMOVAL

NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS).

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.

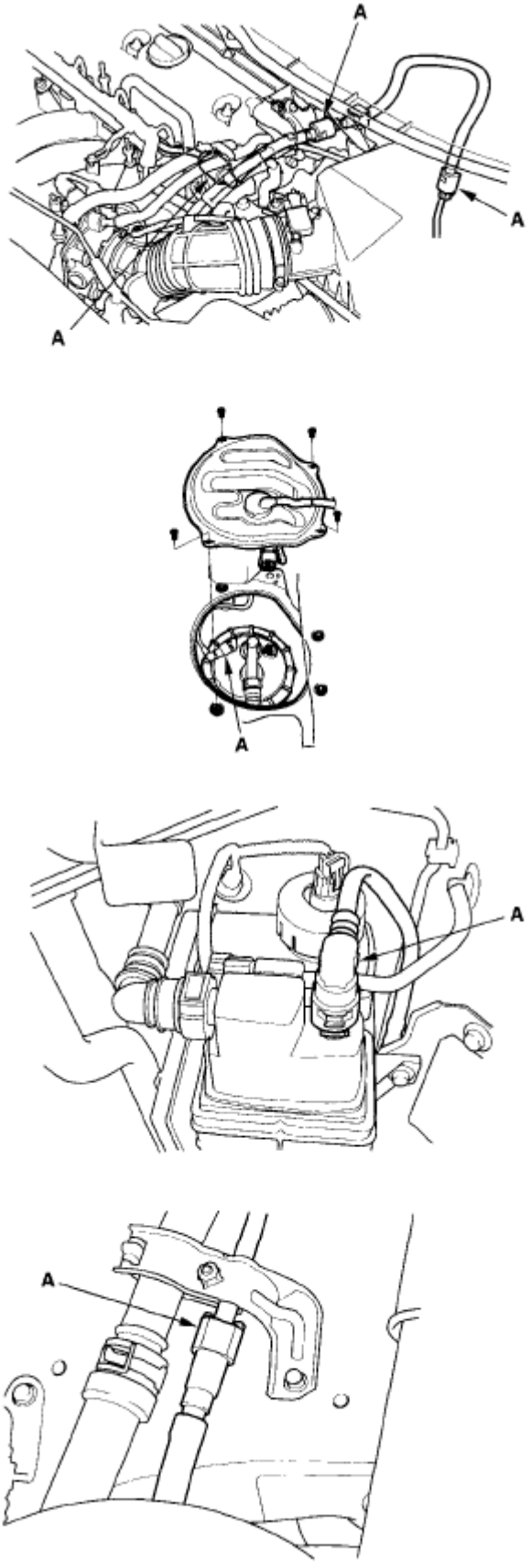


Fig. 37: Checking Fuel Quick-Connect Fittings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:

- **Be careful not to damage the line (D) or other parts. Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

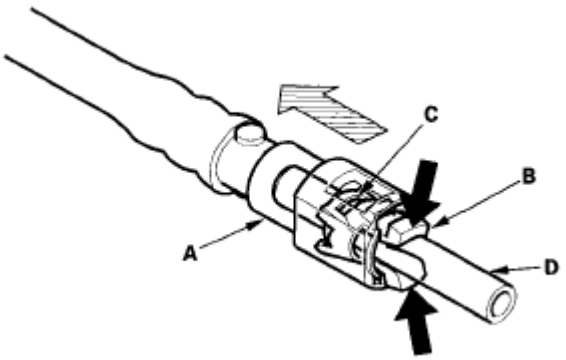


Fig. 38: Removing Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the contact area (A) of the line (B) for dirt or damage.
   - If it is dirty, clean the connector with pressure washer, and dry it with the compressed air.
   - If it is rusty or damaged, replace the fuel filter or the fuel feed line.

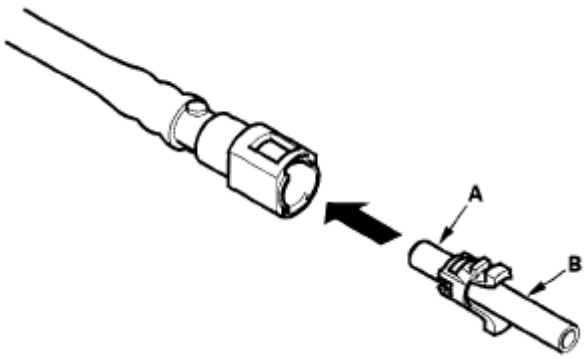


Fig. 39: Checking Contact Area Of Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: The retainer cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- it has been removed from the line.
- it is damaged.

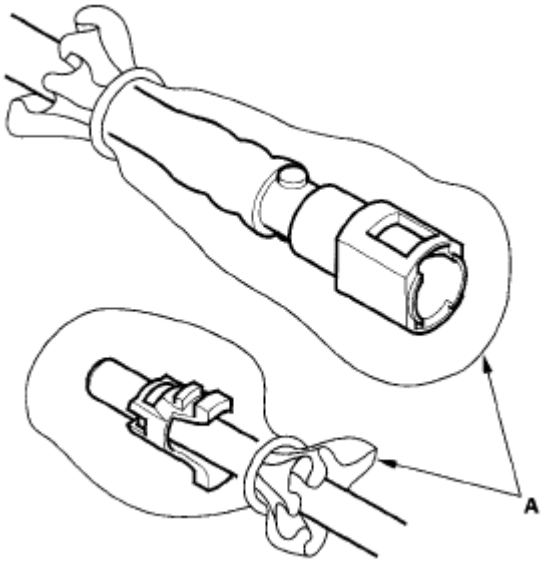


Fig. 40: Covering Disconnected Connector And Line Ends With Plastic Bags
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUEL LINE/QUICK-CONNECT FITTING INSTALLATION

NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

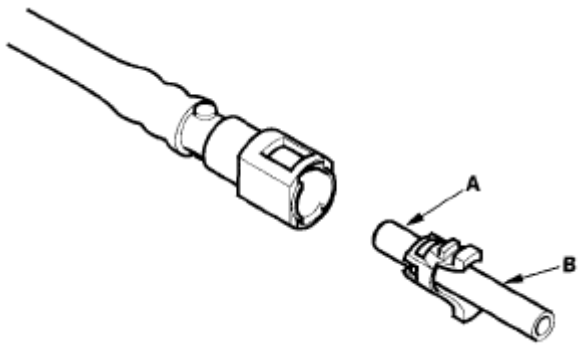


Fig. 41: Checking Contact Area Of Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - replacing the EVAP purge pipe.
   - replacing the EVAP canister.
   - replacing the fuel tank.
   - replacing the fuel fill pipe.
   - removing the retainer from the line.
   - Use the same manufacturer retainer and the same size retainer when the replacing the retainer (see **FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS**).

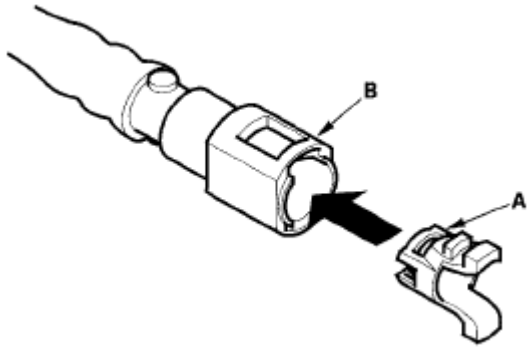


Fig. 42: Inserting Retainer Into Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

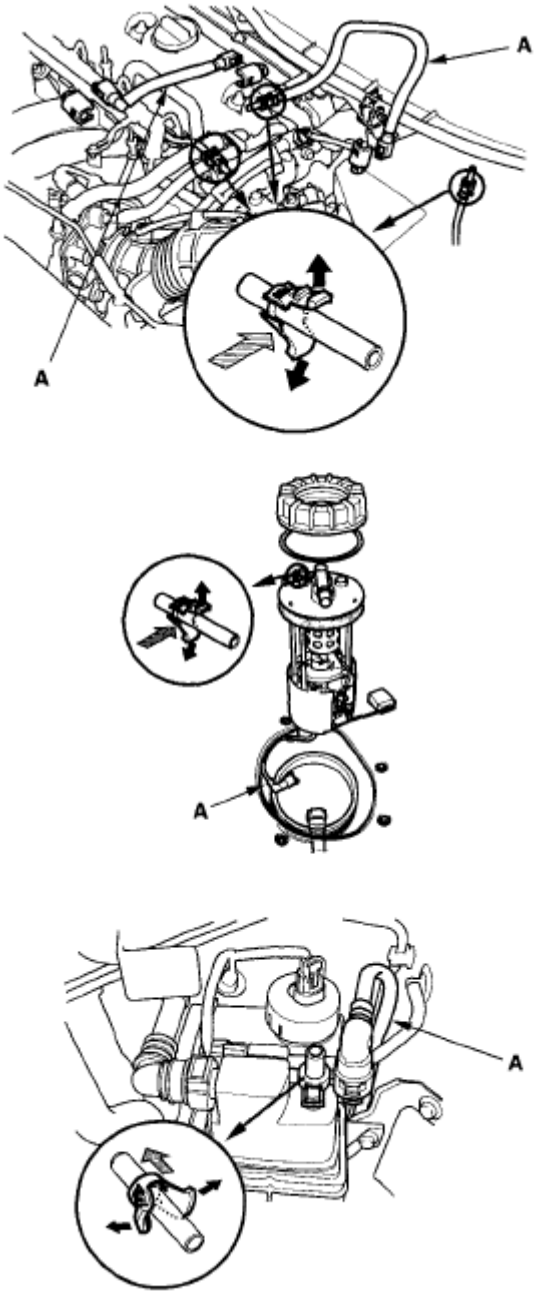


Fig. 43: Connecting Fuel Tube/Quick-Connect Fitting Assembly (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

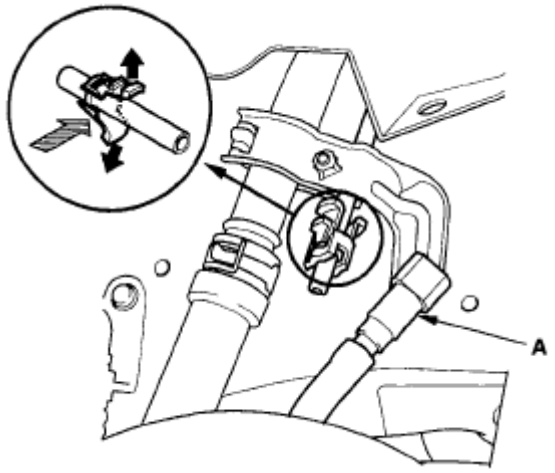


Fig. 44: Connecting Fuel Tube/Quick-Connect Fitting Assembly (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

Connection with new retainer

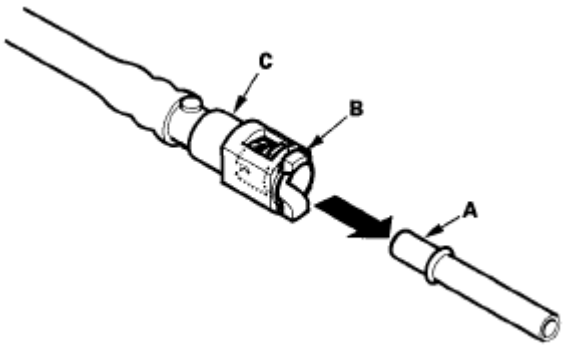


Fig. 45: Aligning Quick-Connect Fittings (Connection With New Retainer)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reconnection to existing retainer

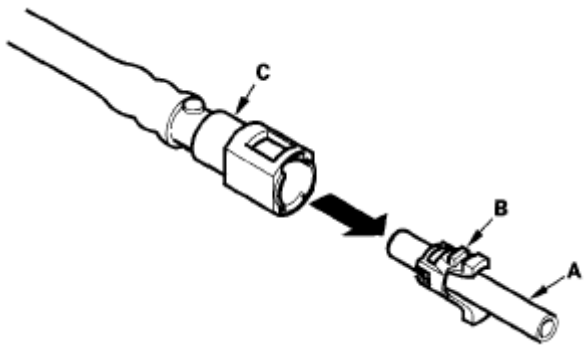


Fig. 46: Aligning Quick-Connect Fittings (Reconnection To Existing Retainer)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connection to new fuel line

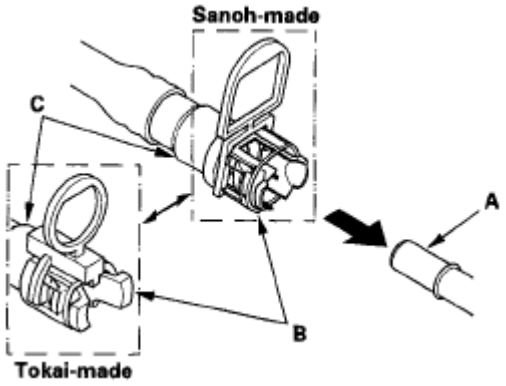


Fig. 47: Aligning Quick-Connect Fittings (Connection To New Fuel Line)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs are firmly locked into place; check visually and also by pulling the connector. When you replace the fuel line with a new one, make sure you remove the ring pull upwards after you confirm the connection is secure.

NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

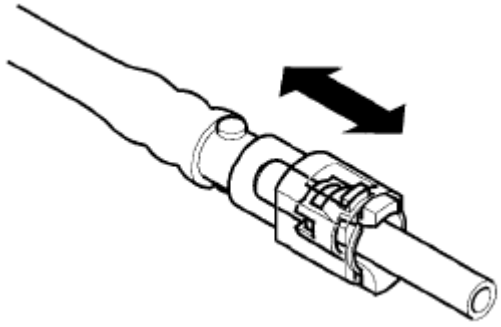


Fig. 48: Securing Connection And Tabs Firmly Locked Into Place

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connection to new fuel line

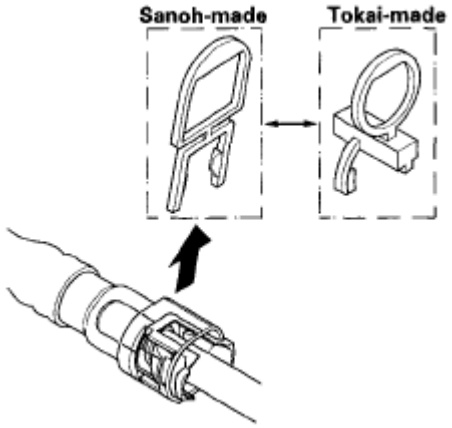


Fig. 49: Securing Connection And Tabs Firmly Locked Into Place (Connection To New Fuel Line)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, and check that there is no leakage in the fuel supply system.

FUEL TANK UNIT REMOVAL/INSTALLATION

Special Tools Required

Fuel pump module locknut wrench 07AAA-SNAA100

REMOVAL

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the fuel fill cap.
3. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
4. Remove the rear floor upper cross-member (A).

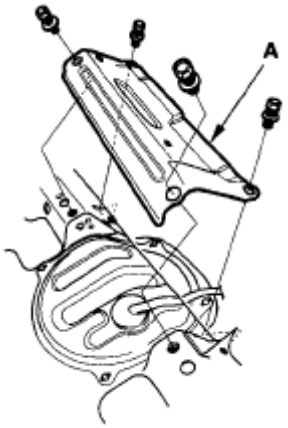


Fig. 50: Removing Rear Floor Upper Cross-Member
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the access panel (A) from the floor.

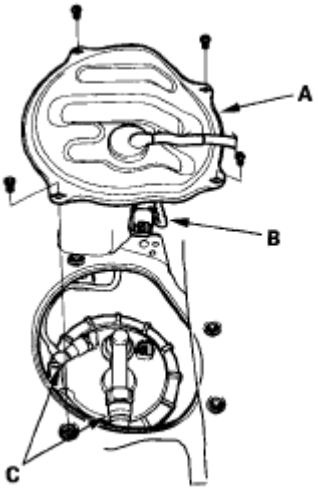


Fig. 51: Removing Access Panel From Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the fuel tank unit 4P connector (B).
7. Disconnect the quick-connect fittings (C) from the fuel tank unit.
8. Using the special tool, loosen the locknut (A).

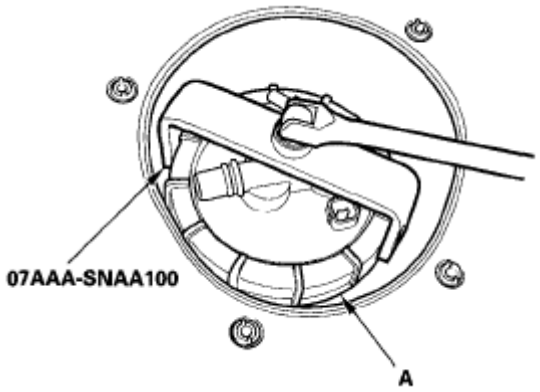


Fig. 52: Loosening Locknut Using Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the locknut (A) and the fuel tank unit (B).

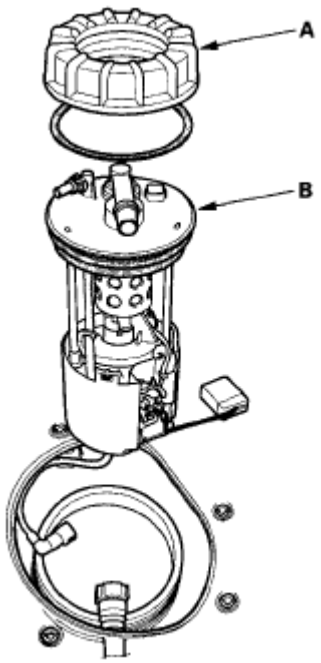


Fig. 53: Removing Locknut And Fuel Tank Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.
   - Be careful not to damage a new base gasket.
   - Be careful not to bend the fuel gauge sending unit.
   - Do not coat the base gasket with oil.

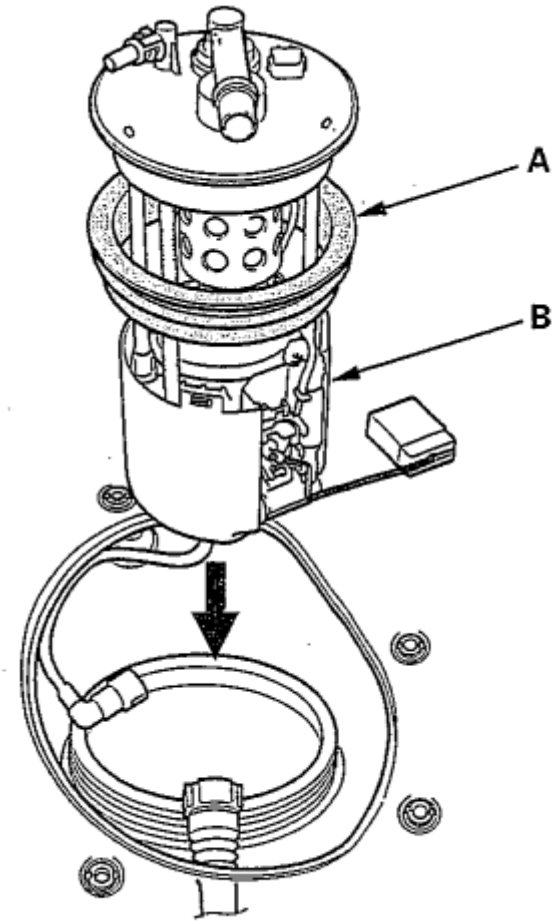


Fig. 54: Identifying Base Gasket And Fuel Tank Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Transfer the base gasket (A) from the fuel tank unit onto the fuel tank.

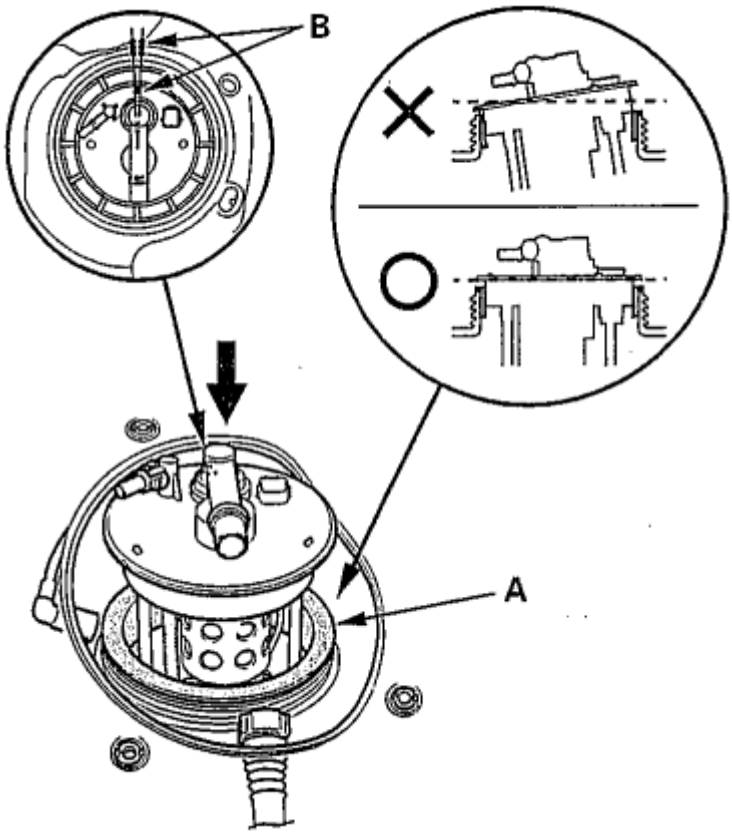


Fig. 55: Identifying Base Gasket From The Fuel Tank, Alignment Marks And Fuel Tank
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until it sits on the base gasket.

NOTE: To prevent a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched

4. Install the new locknut plate (A) and the new locknut (B).

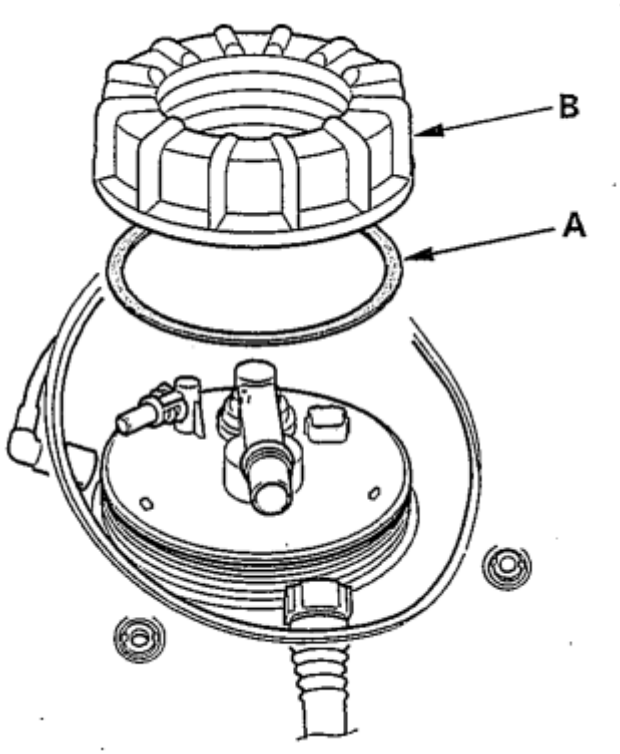


Fig. 56: Identifying Locknut Plate And The Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Using the special tool, tighten a locknut (A) to the specified torque.
   - After tightening, make sure the marks are still aligned.
   - After installation, check the base gasket, visually o by hand, to make sure it is not pinched.

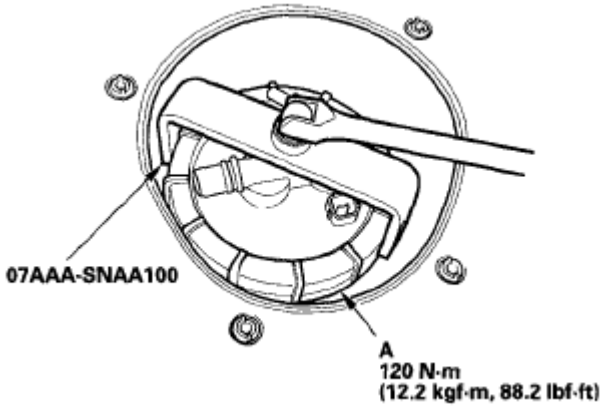


Fig. 57: Tightening Fuel Tank Unit Locknut (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.
7. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.
8. Install the access panel (A) to the floor.

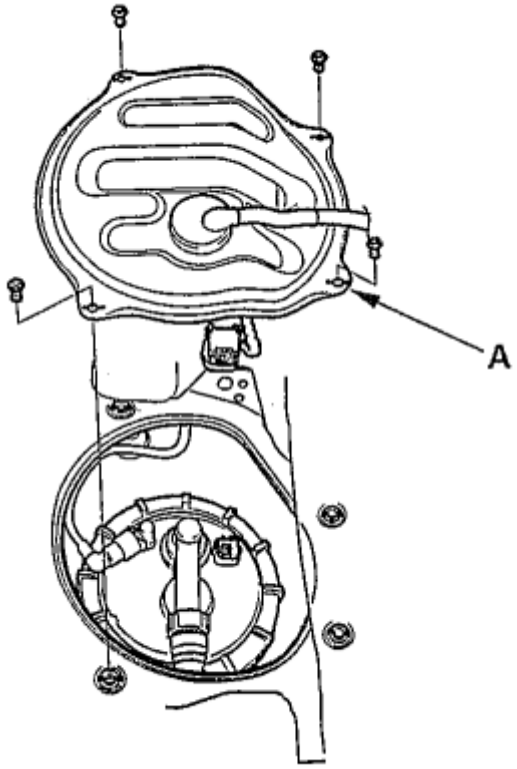


Fig. 58: Installing The Access Panel To The Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the rear floor upper cross-member (A).

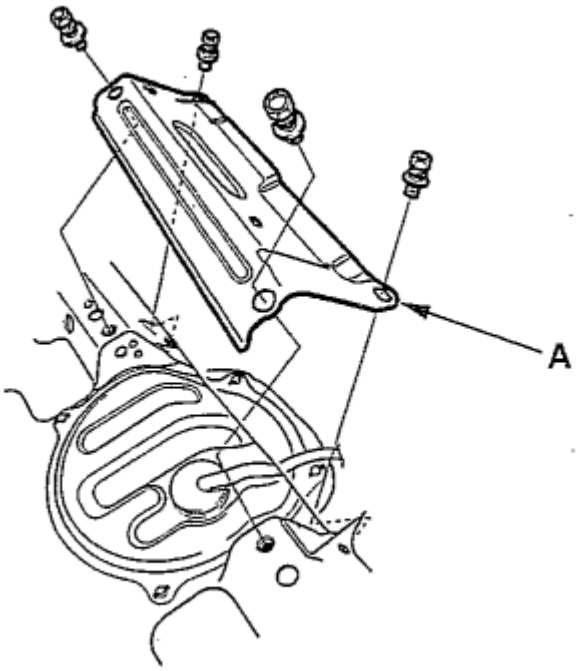


Fig. 59: Installing The Rear Floor Upper Cross-Member
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the rear seat cushion (see **SEAT CUSHION**)

FUEL PRESSURE REGULATOR REPLACEMENT

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the bracket (A).

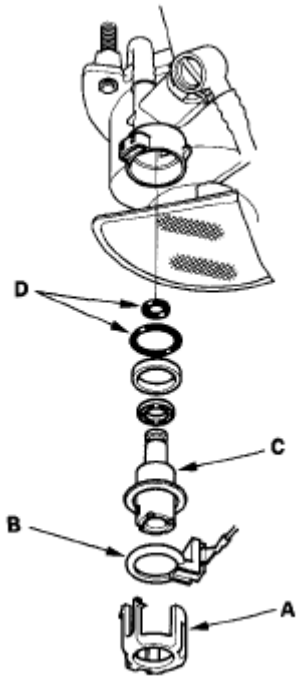


Fig. 60: Removing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground ring (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket (A). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

NOTE: Coat the O-rings with clean engine oil; do not use any other oil. Do not pinch the O-rings during installation.

FUEL FILTER REPLACEMENT

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see **FUEL PRESSURE TEST**), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the fuel filter (A).

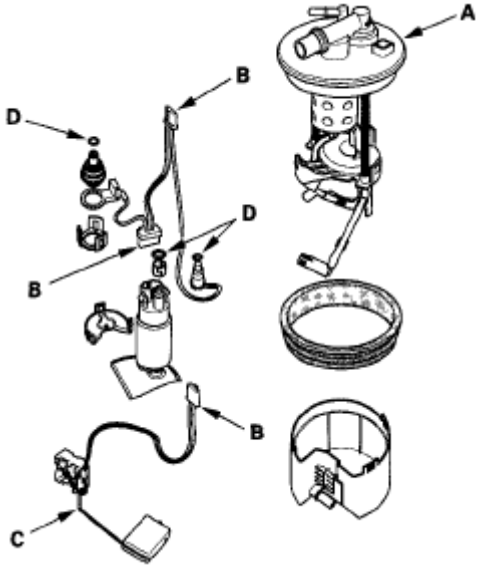


Fig. 61: Removing Fuel Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).

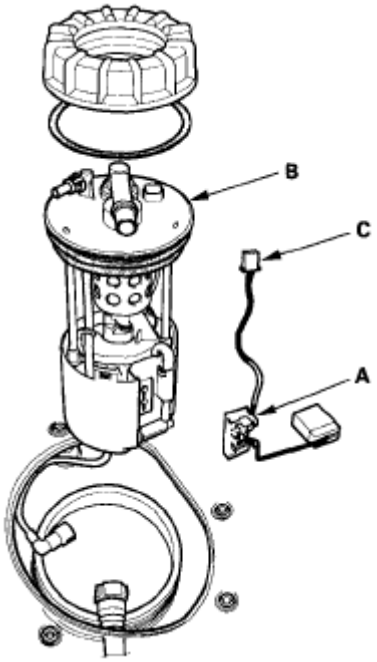


Fig. 62: Removing Fuel Level Sensor (Fuel Sending Unit)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness, make sure the connection is secure and the connector (C) are firmly locked into place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

FUEL TANK REPLACEMENT

1. Drain the fuel tank (see **FUEL PRESSURE TEST**), then disconnect the fuel tank unit 4P connector (A) and quick-connect fitting (B).

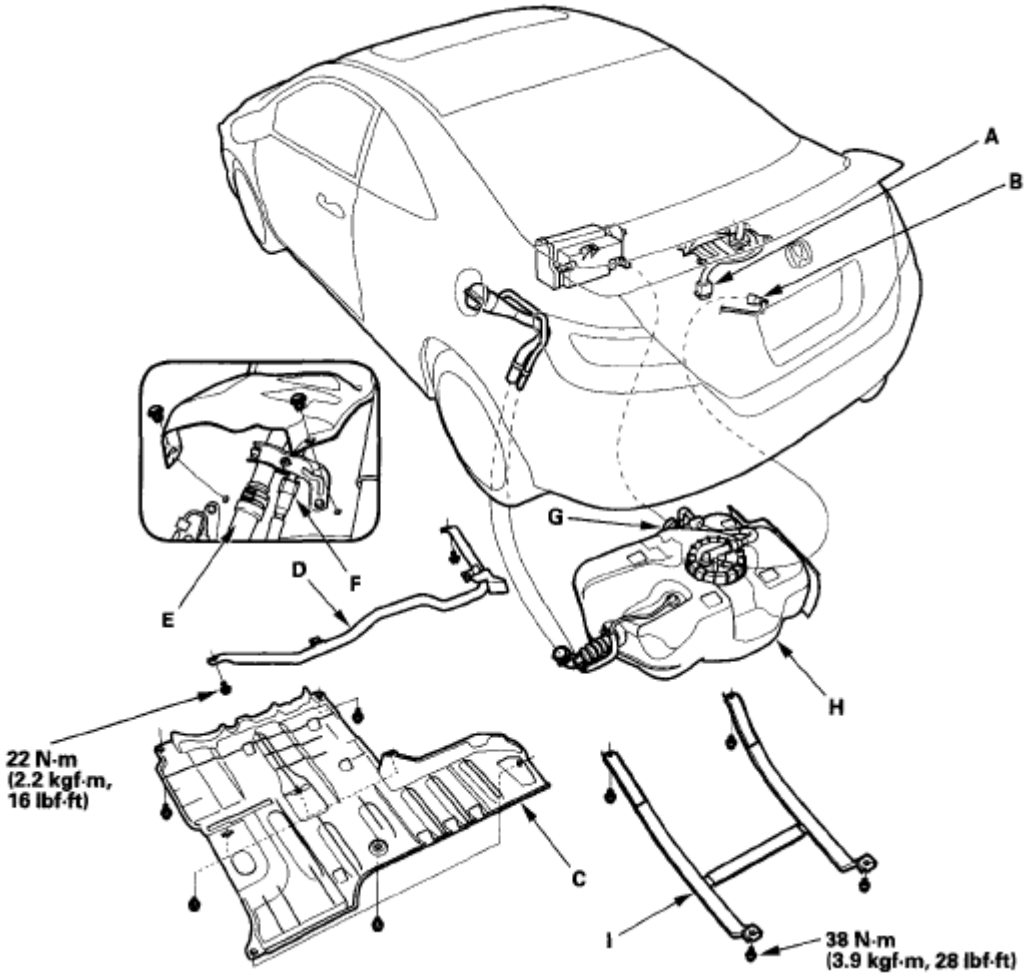


Fig. 63: Disconnecting Fuel Tank Unit 4P And Quick-Connect Fitting (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Lift the vehicle, and support it with jackstands.
3. Remove the cover (C), and the EVAP canister guard (D).
4. Disconnect the fuel fill tube (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
5. Disconnect the quick-connect fitting (F) and the fuel tank vapor recirculation tube (G).
6. Place a jack or other support under the tank (H).
7. Remove the strap bolts and the strap (I).
8. Remove the fuel tank.
9. Install the parts in the reverse order of removal.

FUEL GAUGE SENDING UNIT TEST

NOTE: For the fuel gauge system circuit diagram, refer to the (see CIRCUIT DIAGRAM - GAUGE CONTROL MODULE (TACH)).

1. Check the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.

- If no problem is found, go to step 3.
- If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.

3. Turn the ignition switch OFF.
4. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
5. Remove the rear floor upper cross-member (A).

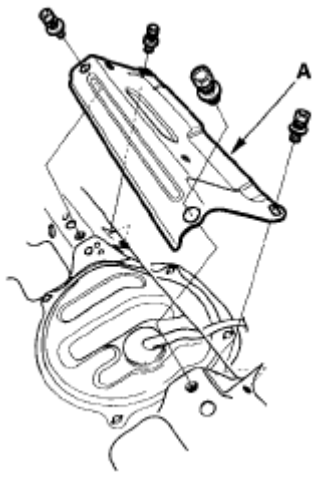


Fig. 64: Removing Rear Floor Upper Cross-Member
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the access panel (A) from the floor.

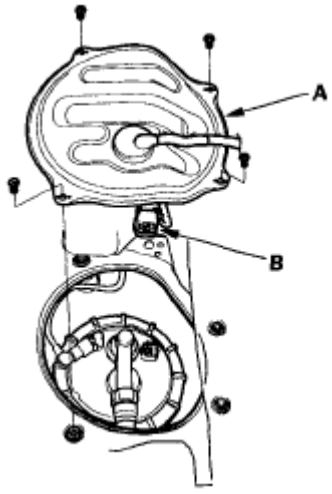


Fig. 65: Removing Access Panel From Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the fuel tank unit 4P connector (B).
8. Measure voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch ON (II). There should be battery voltage.
   - If the voltage is OK, go to step 8.
   - If the voltage is not as specified, check for:
     - a short in the PUR (4-door; ORN) wire to ground.

- an open in the PUR (4-door: ORN) or ORN (4-door: LTGRN) wire.

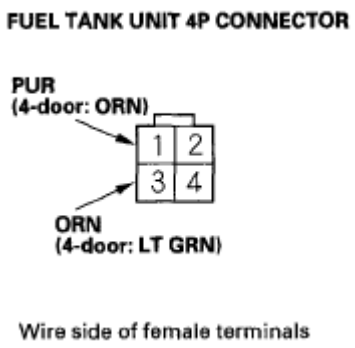


Fig. 66: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminals No. 1 And No. 3 With Ignition Switch ON (II)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Turn the ignition switch OFF.
10. Remove the fuel tank unit from the fuel tank (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
11. Measure resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions. If you do not get the following readings, replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

FUEL TANK UNIT 4P CONNECTOR TERMINALS NO. 1 AND NO. 3 FLOAT POSITION

Float Position	F 5.6 in. (139.8 mm)	1/2 2.9 in. (72.1 mm)	LOW 0.8 in. (19.5 mm)	E 0.4 in. (8.9 mm)
Resistance (ohms)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788

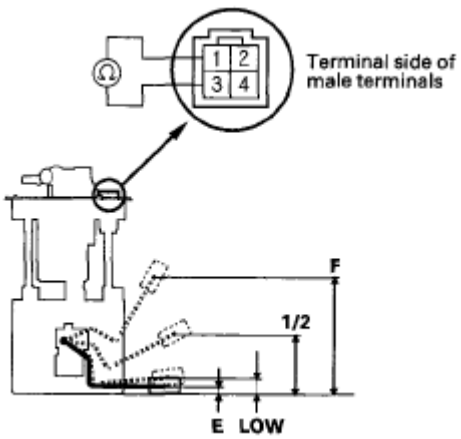


Fig. 67: Measuring Resistance Between Fuel Tank Unit 4P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Reconnect the fuel tank unit 4P connector.
13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds,

then reinstall it.

14. Turn the ignition switch ON (II).
15. Check that the pointer of the fuel gauge indicates "F" with the float at F.
    - If the pointer of the fuel gauge does not indicate "F", replace the gauge assembly.
    - If the gauge is OK, the test is complete.

NOTE:

- **The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.**
- **Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.**

LOW FUEL INDICATOR TEST

1. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).
    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see **TACHOMETER**).
2. Check for body electrical system DTCs.
    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.
3. Do the fuel gauge sending unit test (see **FUEL GAUGE SENDING UNIT TEST**).

2006-08 ENGINE PERFORMANCE

Fuel Supply System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: Refer to the FUEL SUPPLY SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

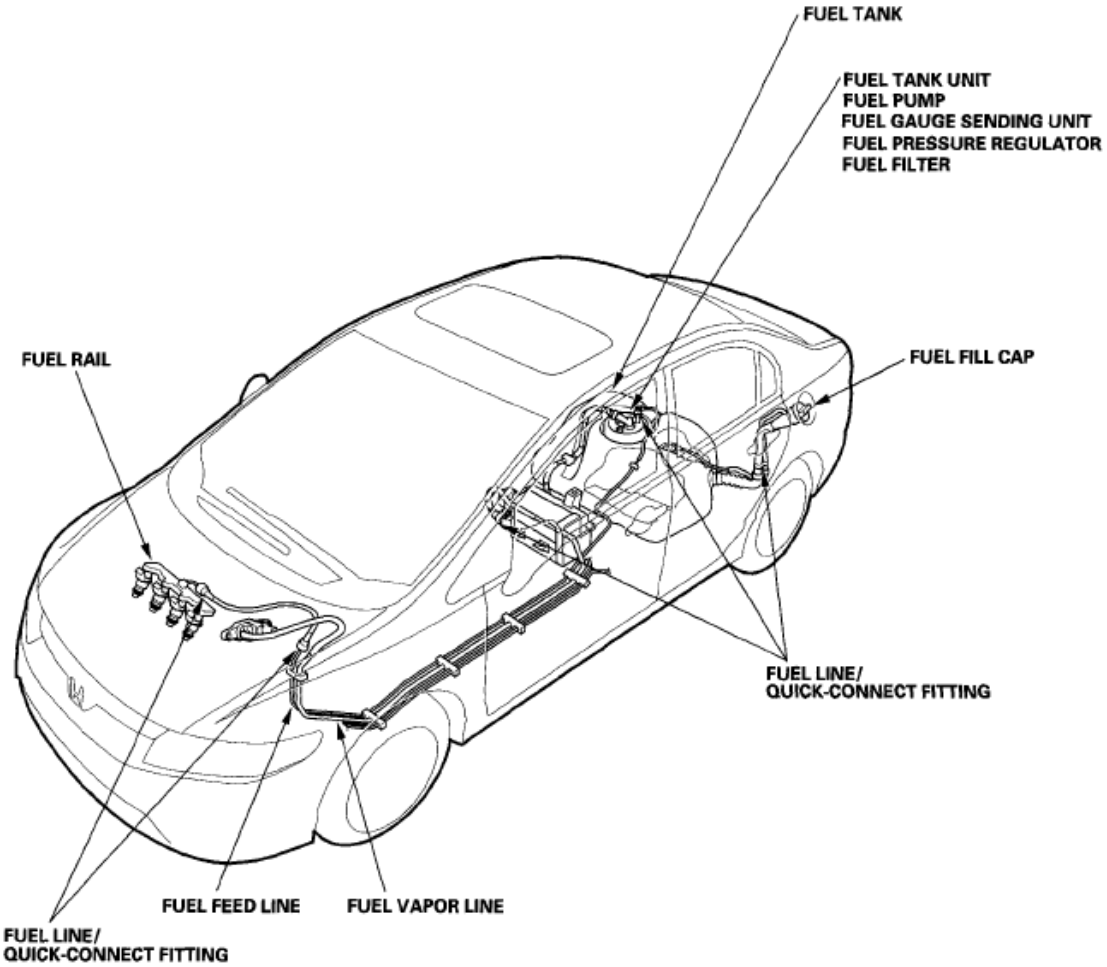
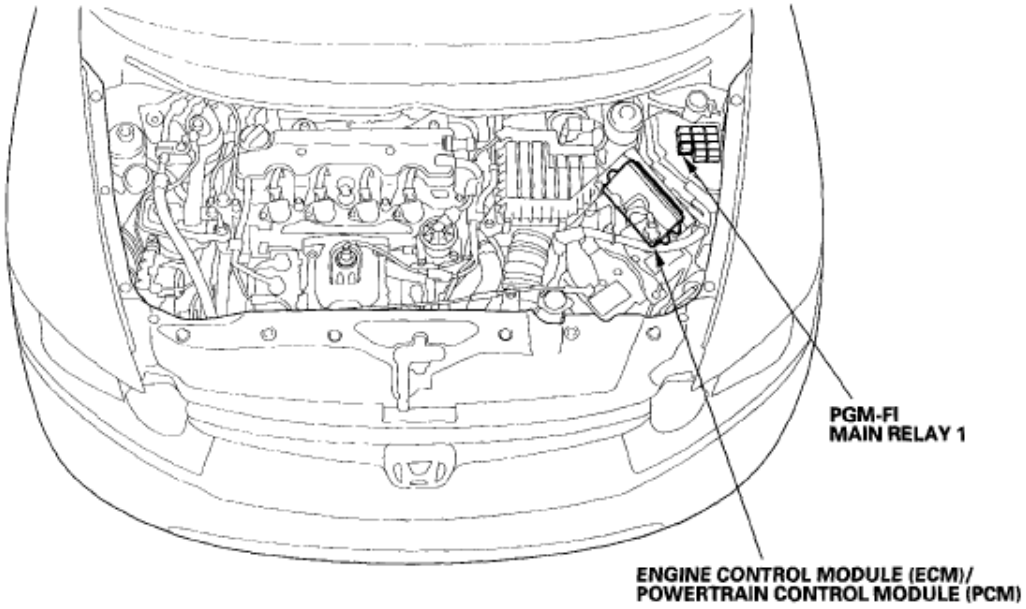


Fig. 1: Identifying Fuel Supply System Component Location (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.



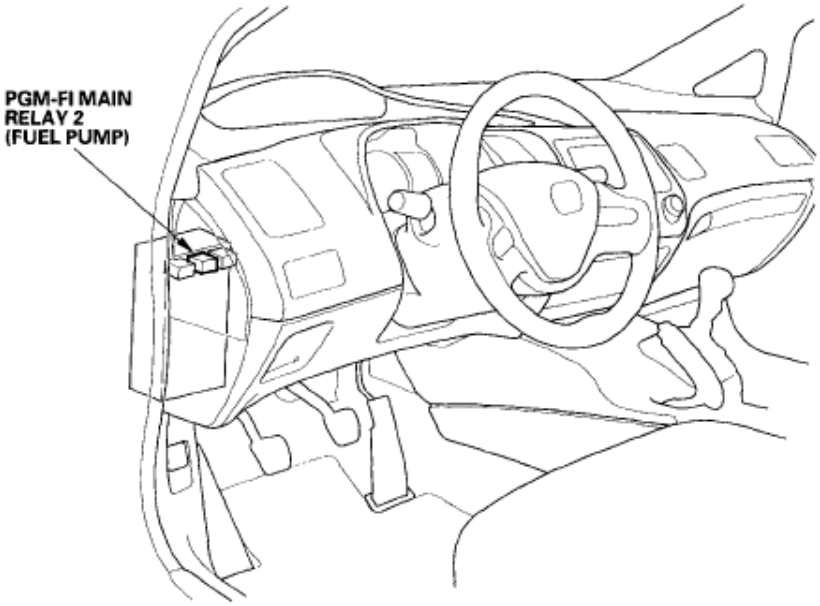


Fig. 2: Identifying Fuel Supply System Component Location (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**

- **Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.**

1. Test the fuel gauge sending unit (see **FUEL GAUGE SENDING UNIT TEST**).

   Is the fuel gauge sending unit OK?

   YES - Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly.

   NO - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0461 indicated?

   YES - Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

   NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0462 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit.

4. Turn the ignition switch OFF.
5. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
6. Remove the rear floor upper cross-member and the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).

7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 22.

    NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge control module (tach) (see **TACHOMETER**).
13. Disconnect the gauge control module (tach) 36P connector.
14. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

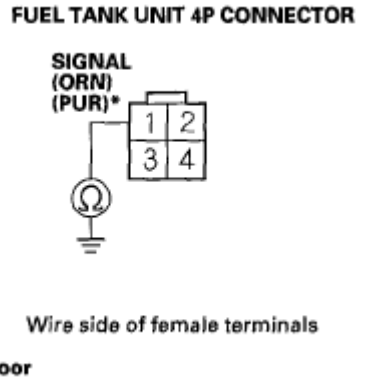


Fig. 3: Checking Continuity Between Fuel Tank Unit 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 23.

NO - Go to step 15.

15. Reconnect the gauge control module (tach) 36P connector.
16. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
17. Connect the fuel tank unit 4P connector.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Set the float (A) to the E position.

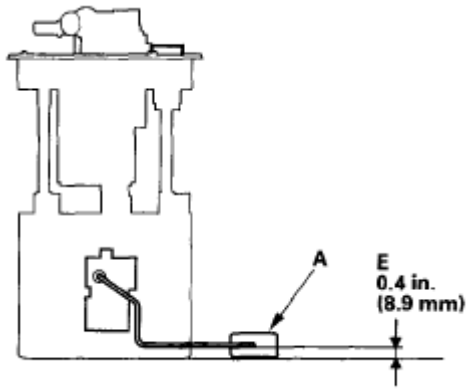


Fig. 4: Setting Float To E Position (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check the fuel gauge.

    Does the gauge move to the empty position?

    YES - Go to step 29.

    NO - Replace the gauge control module (tach) (see **TACHOMETER**), then go to step 22.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Install the parts in the reverse order of removal.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Reconnect all connectors.
31. Install the parts in the reverse order of removal.
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel

gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0463 indicated?

   YES - Go to step 4.

   IMO-Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit.

4. Turn the ignition switch OFF.
5. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
6. Remove the rear floor upper cross-member and the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
7. Disconnect the fuel tank unit 4P connector.
8. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

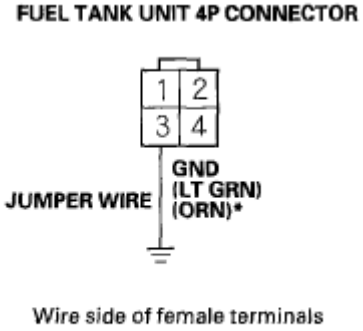


Fig. 5: Connecting Fuel Tank Unit 4P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the gauge control module (tach) (see **TACHOMETER**).

10. Disconnect the gauge control module (tach) 36P connector.
11. Check for continuity between gauge control module (tach) 36P connector terminal No. 33 and body ground.

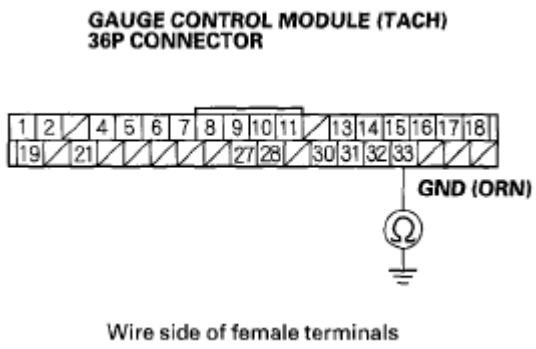


Fig. 6: Checking Continuity Between Gauge Control Module (TACH) Terminal No. 33 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the gauge control module (tach) (GND line) and the fuel gauge sending unit, then go to step 24.

12. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

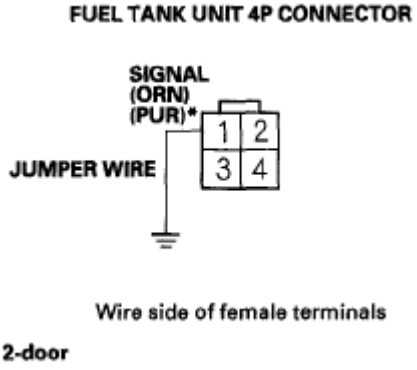


Fig. 7: Connecting Fuel Tank Unit 4P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check for continuity between gauge control module (tach) 36P connector terminal No. 32 and body ground.

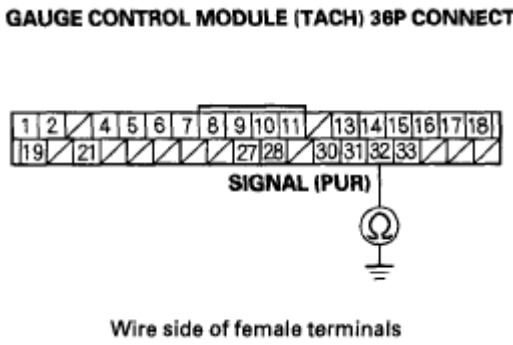


Fig. 8: Checking Continuity Between Gauge Control Module (TACH) Terminal No. 32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Repair open in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 4P connector.
15. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
16. Test the fuel gauge sending unit (see **FUEL GAUGE SENDING UNIT TEST**).

Is the fuel gauge sending unit OK?

YES - Go to step 17.

NO - Replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), then go to step 23.

17. Connect the fuel tank unit 4P connector.
18. Reconnect the gauge control module (tach) 36P connector.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.
21. Set the float (A) to the F position.

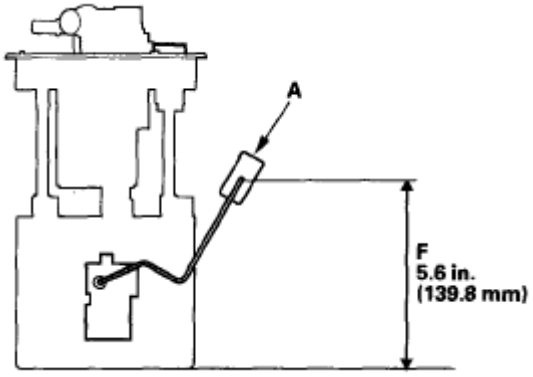


Fig. 9: Setting Float To F Position (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Check the fuel gauge.

    Does the gauge move to the full position?

    YES - Go to step 32.

    NO - Replace the gauge control module (tach) (see **TACHOMETER**), then go to step 23.

23. Turn the ignition switch OFF.
24. Reconnect all connectors.
25. Install the parts in the reverse order of removal.
26. Turn the ignition switch ON (II).
27. Reset the ECM/PCM with the HDS.
28. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

30. Reconnect all connectors.
31. Install the parts in the reverse order of removal.
32. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see

SUBSTITUTING THE ECM/PCM), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

FUEL PUMP CIRCUIT TROUBLESHOOTING

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch OFF.
2. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

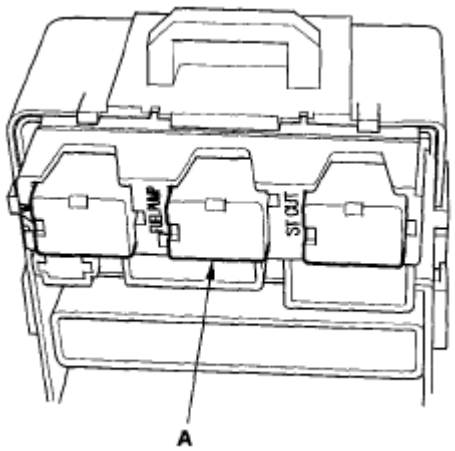


Fig. 10: Removing PGM-FI Main Relay (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the under-dash fuse/relay box.
4. Turn the ignition switch ON (II).
5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 and body ground.

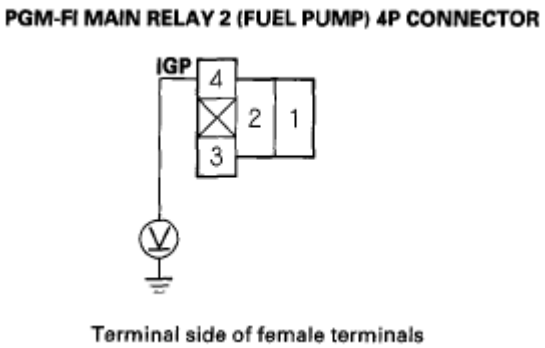


Fig. 11: Measuring Voltage Between PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector

Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the under-hood fuse/relay box connector E (10P).
8. Disconnect C101 connector at left side of engine compartment; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**).
9. Disconnect the under-dash fuse/relay box connector G (21P).
10. Connect under-dash fuse/relay box connector G (21P) terminal No. 4 to body ground with a jumper wire.

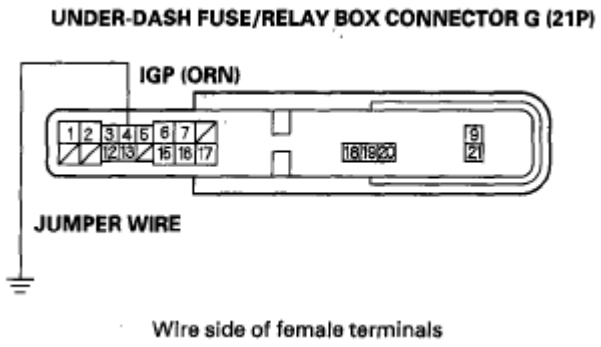


Fig. 12: Connecting Fuse/Relay Box Connector G (21P) Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between under-hood fuse/relay box connector E (10P) terminal No. 5 and body ground.

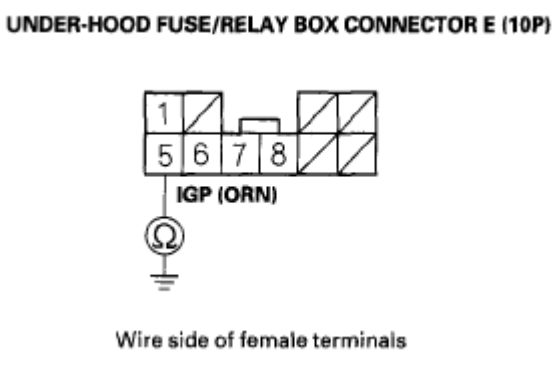


Fig. 13: Checking Continuity Between Fuse/Relay Box Connector E (10P) Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- Replace PGM-FI main relay 1.
- If needed, replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

NO - Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box.

12. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

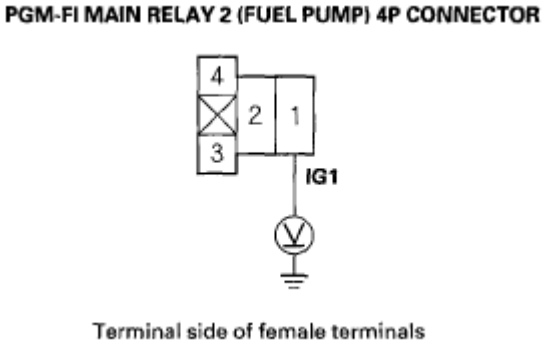


Fig. 14: Measuring Voltage Between PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO -

- Check the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.
- If needed, replace the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**).

13. Turn the ignition switch OFF.
14. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 to body ground with a jumper wire.

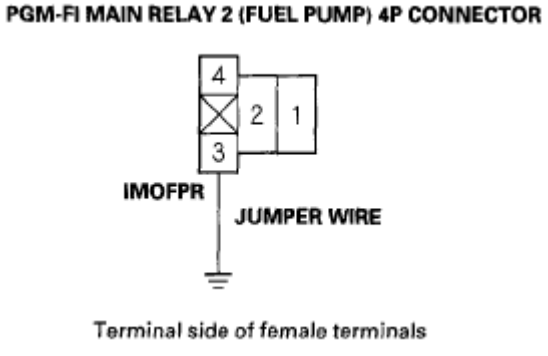


Fig. 15: Connecting PGM-FI Main Relay 2 (FUEL PUMP) 4P Connector Terminal No. 3 To Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between body ground and ECM/PCM connector terminal A15.

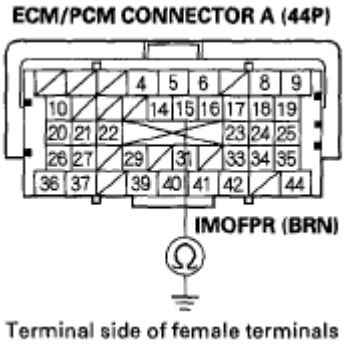


Fig. 16: Checking Continuity Between Body Ground And ECM/PCM Connector Terminal A15
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18.

NO - Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM/PCM (A15).

18. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then reinstall PGM-FI main relay 2 (FUEL PUMP).
19. Reinstall the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**).
20. Connect ECM/PCM connector terminal A6 to body ground with a jumper wire.

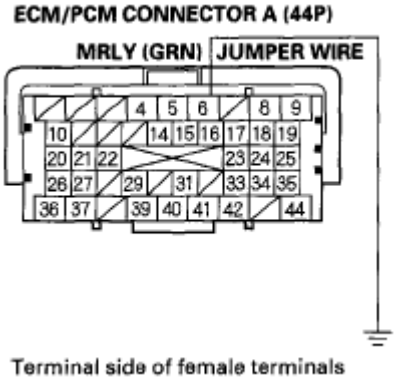


Fig. 17: Connecting ECM/PCM Connector Terminal A6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Turn the ignition switch ON (II).
22. Measure voltage between ECM/PCM connector terminal A15 and body ground.

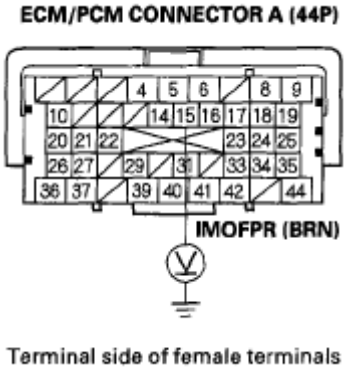


Fig. 18: Measuring Voltage Between ECM/PCM Connector Terminal A15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 23.

NO - Replace PGM-FI main relay 2 (FUEL PUMP).

23. Turn the ignition switch OFF.
24. Reconnect ECM/PCM connector A (44P).
25. Open the SCS line with the HDS.
26. Turn the ignition switch OFF.
27. Turn the ignition switch ON (II), and measure voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground within 2 seconds.

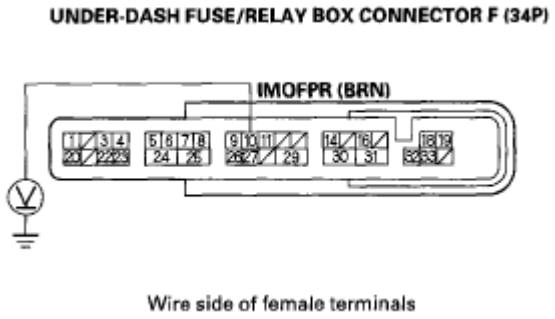


Fig. 19: Measuring Voltage Between Fuse/Relay Box Connector F (34P) Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Go to step 28.

28. Turn the ignition switch ON (II), and measure voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground after 2 seconds.

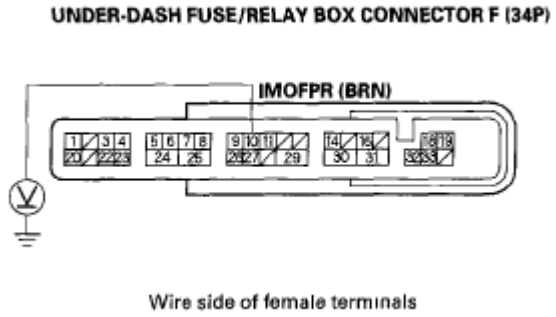


Fig. 20: Measuring Voltage Between Fuse/Relay Box Connector F Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 29.

NO - If needed, replace the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 29.

29. Turn the ignition switch OFF.
30. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
31. Remove the rear floor upper cross-member, then remove the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
32. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

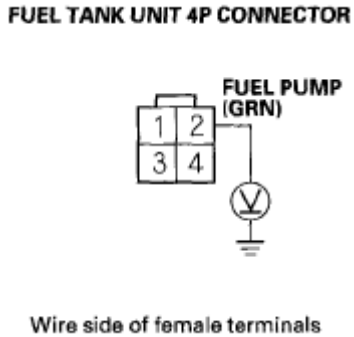


Fig. 21: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 37.

NO - Go to step 33.

33. Turn the ignition switch OFF.
34. Remove PGM-FI main relay 2 (FUEL PUMP).
35. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

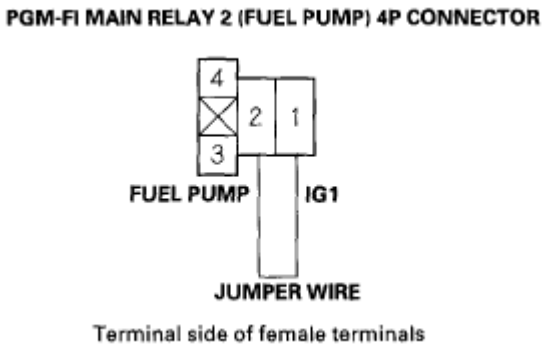


Fig. 22: Connecting PGM-FI Main Relay 4P Connector Terminals No. 1 And 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

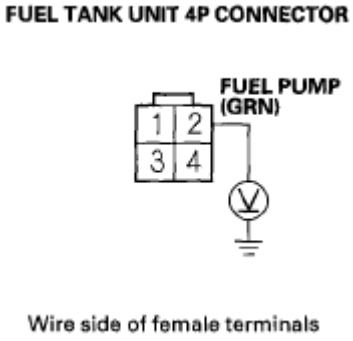


Fig. 23: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Replace PGM-FI main relay 2 (FUEL PUMP).

NO - Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel tank unit 4P connector.

37. Turn the ignition switch OFF.
38. Check for continuity between fuel tank unit 4P connector terminal No. 4 and body ground.

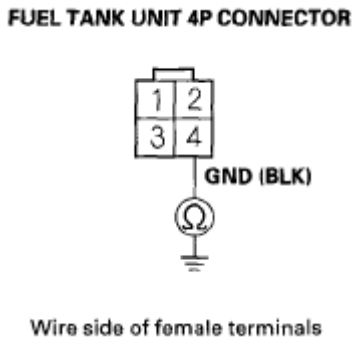


Fig. 24: Checking Continuity Between Fuel Tank Unit 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the fuel pump (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

NO - Repair open in the wire between the fuel tank unit 4P connector and G601; 4-door (see **CONNECTOR TO HARNESS INDEX**), 2-door (see **CONNECTOR TO HARNESS INDEX**).

FUEL PRESSURE RELIEVING

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and disconnecting the fuel tube/quick connect fitting in the engine compartment.

WITH THE HDS

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

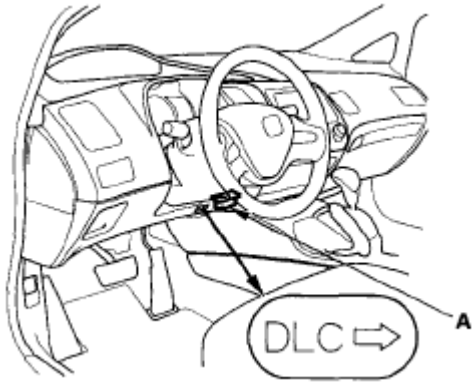


Fig. 25: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the ignition switch ON (II).

5. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
6. Turn the ignition switch OFF.
7. Remove the fuel fill cap to relieve the pressure in the fuel tank.
8. Turn the ignition switch ON (II).
9. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.

NOTE:

- **Do not allow the engine to idle above 1,000 rpm or the ECM/PCM will continue to operate the fuel pump.**
- **A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see HDS CLEAR COMMAND).**

10. Turn the ignition switch OFF.
11. Disconnect the negative cable from the battery.
12. Remove the quick-connect fitting cover (A).

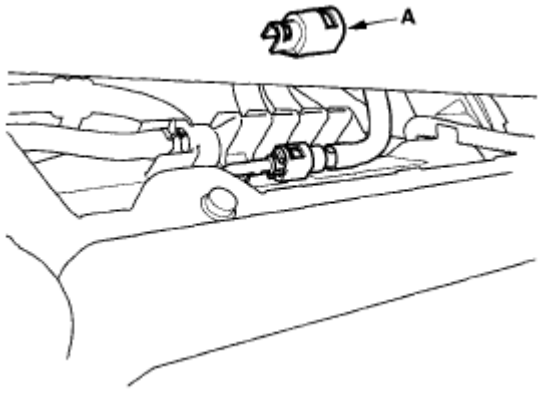


Fig. 26: Removing Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check the fuel quick-connect fitting for dirt, and clean it if needed.
14. Place a rag or shop towel over the quick-connect fitting (A).

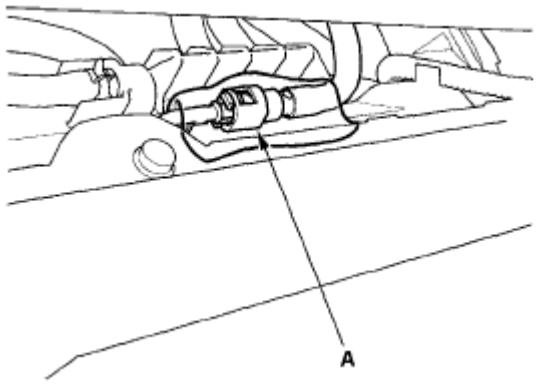


Fig. 27: Placing Rag Or Shop Towel Over Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

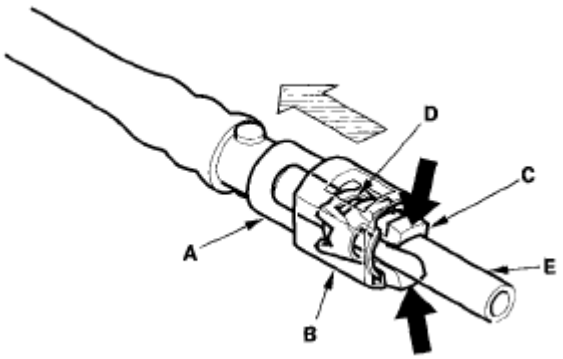


Fig. 28: Disconnecting Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 in **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
17. Reconnect the negative cable to the battery, then do this:
18. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).

WITHOUT THE HDS

1. Remove the under-dash fuse/relay box (see **REMOVAL AND INSTALLATION**), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

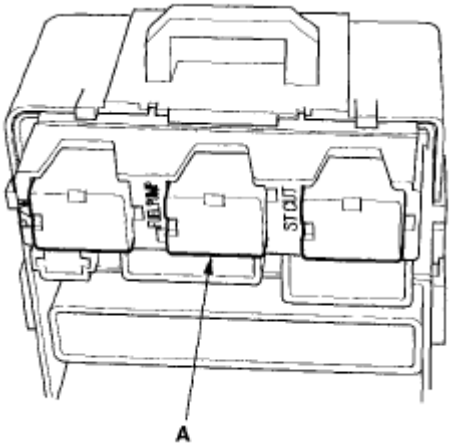


Fig. 29: Removing PGM-FI Main Relay (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Reinstall the under-dash fuse/relay box.
3. Start the engine, and let it idle until it stalls.

NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch OFF.
5. Remove the fuel fill cap.
6. Disconnect the negative cable from the battery.
7. Remove the quick-connect fitting cover (A).

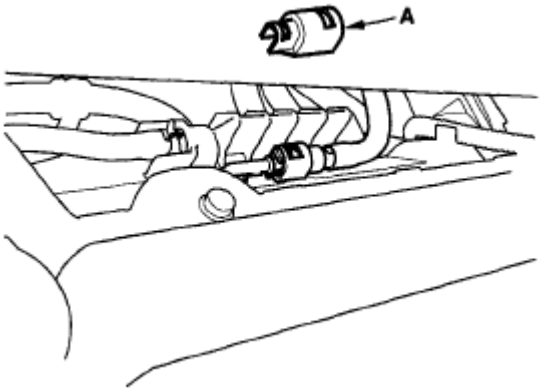


Fig. 30: Removing Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).

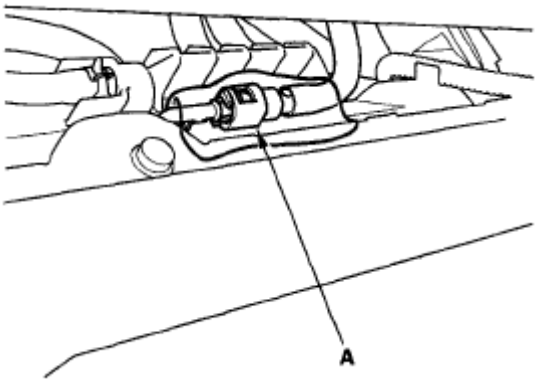


Fig. 31: Placing Rag Or Shop Towel Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- **Be careful not to damage the line (E) or other parts.**
- **Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

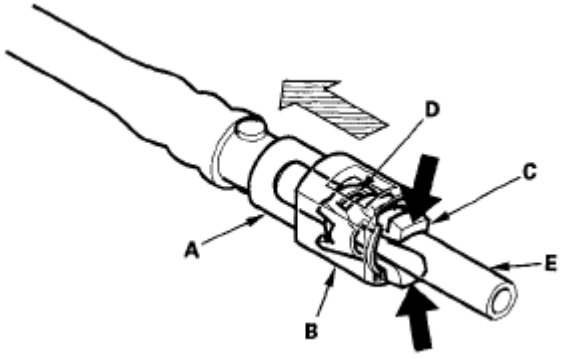


Fig. 32: Disconnecting Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 in **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).
12. Reconnect the negative cable to the battery, then do this:
13. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).

FUEL PRESSURE TEST

Special Tools Required

- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.

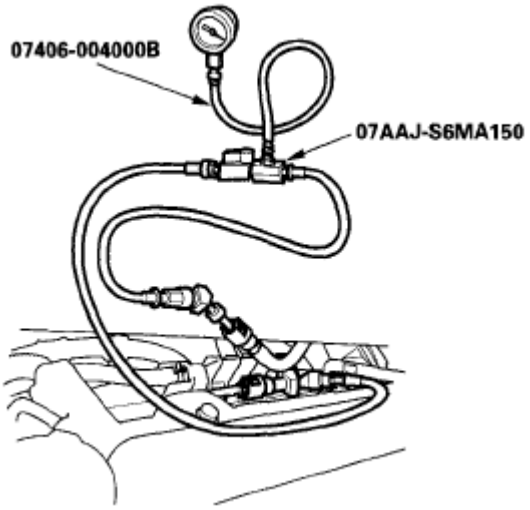


Fig. 33: Attaching Fuel Pressure Gauge Set And Fuel Pressure Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine, and let it idle.
   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: Listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see **FUEL PUMP CIRCUIT TROUBLESHOOTING**).
5. Read the fuel pressure gauge. The pressure should be 380-430 kPa (3.9-4.4 kgf/cm^2 , 55-63 psi).
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**) and the fuel filter (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then recheck the fuel pressure.

FUEL TANK DRAINING

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
3. Reinstall the fuel tank unit (see **INSTALLATION**).

FUEL LINE INSPECTION

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

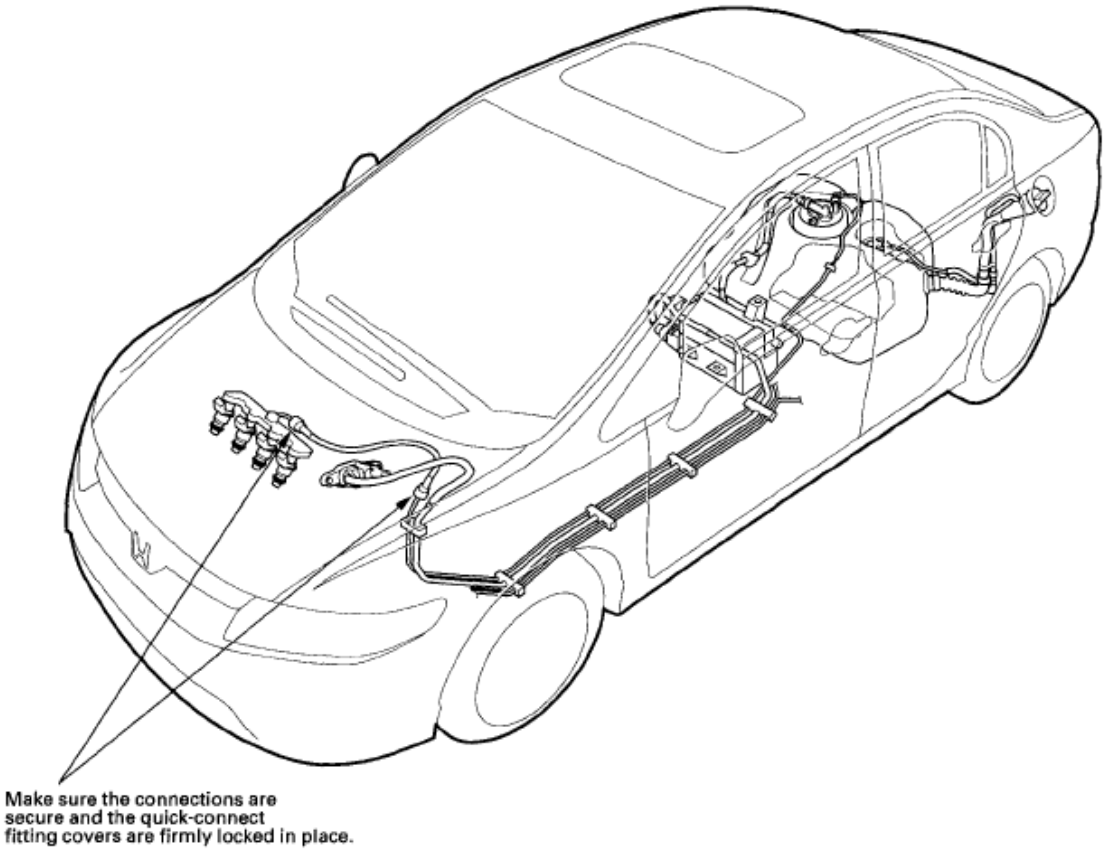


Fig. 34: Checking Fuel System Lines And Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Check all clamps, and make sure they are properly positioned and tightened.

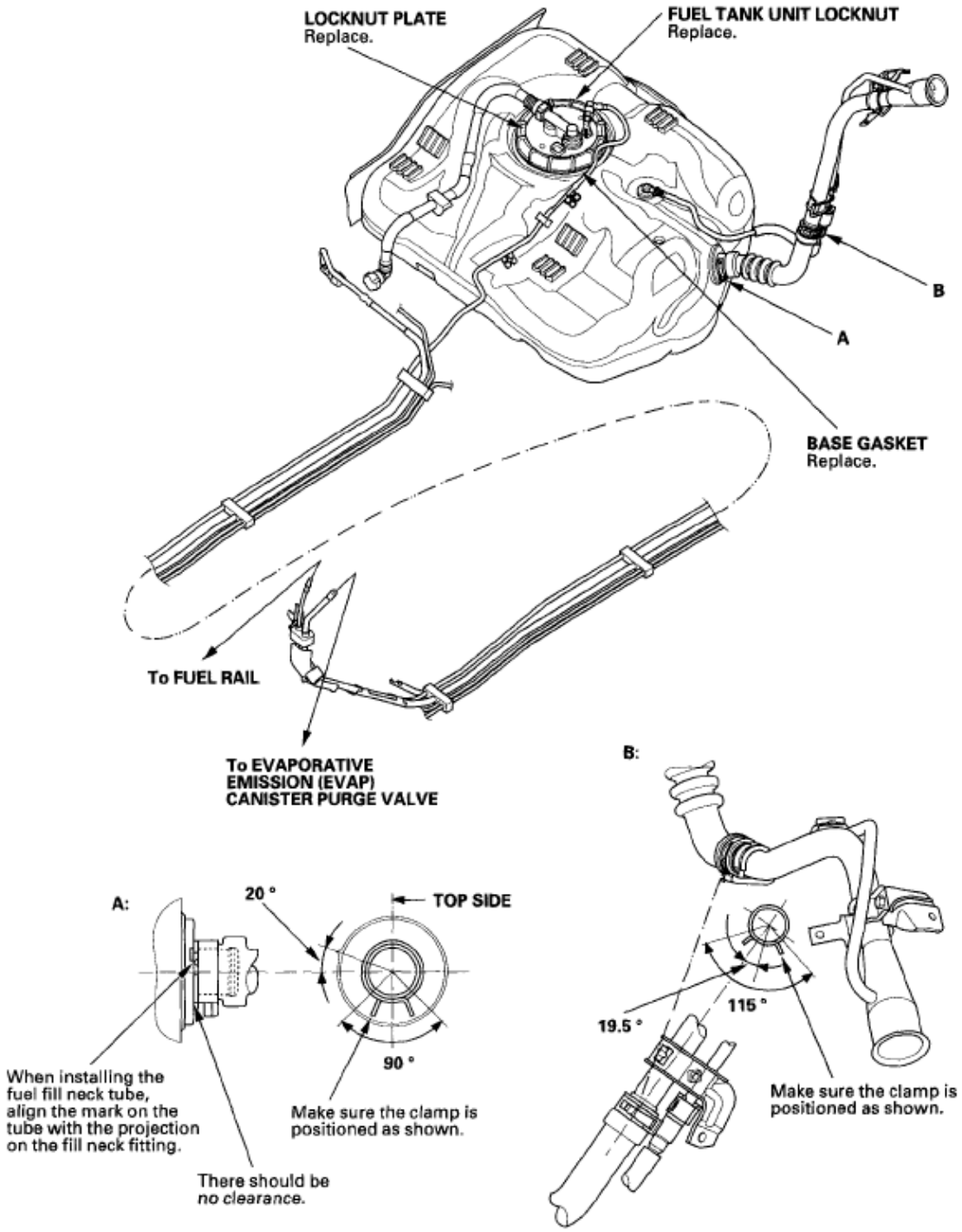


Fig. 35: Checking All Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS

The fuel line/quick-connect fittings (A), (B), (C), and (D) connect the fuel rail (E) to the fuel feed hose (F), the fuel feed hose to the fuel line (G), the fuel line (H) to the fuel tank unit (I), the fuel vapor line (J) to the EVAP canister (K), and the fuel tank vapor recirculation tube (L) to the fuel fill pipe (M). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.

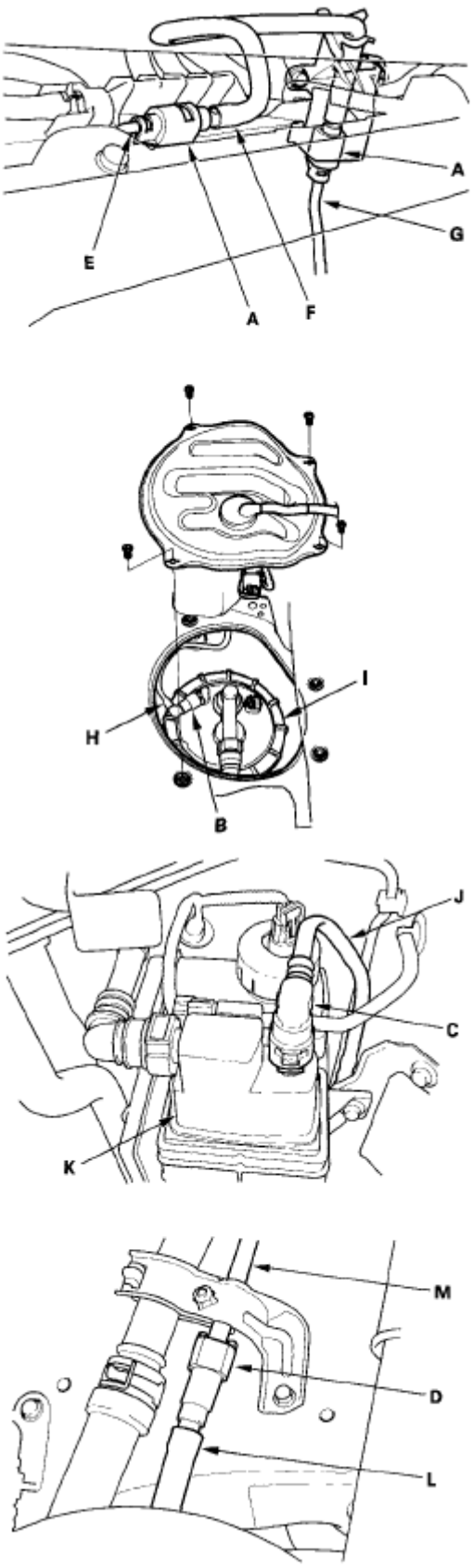


Fig. 36: Precautions For Fuel Line/Quick-Connect Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- it has been removed from the line.
- it is damaged.

FUEL LINE/QUICK-CONNECT FITTING

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Green	0.25 in. (6.3 mm)
B	Sanoh	White	0.4 in. (9.5 mm)
C	Sanoh	White	0.5 in. (12 mm)
D	Tokai	Natural	0.5 in. (12 mm)

FUEL LINE/QUICK-CONNECT FITTING REMOVAL

NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS).

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.

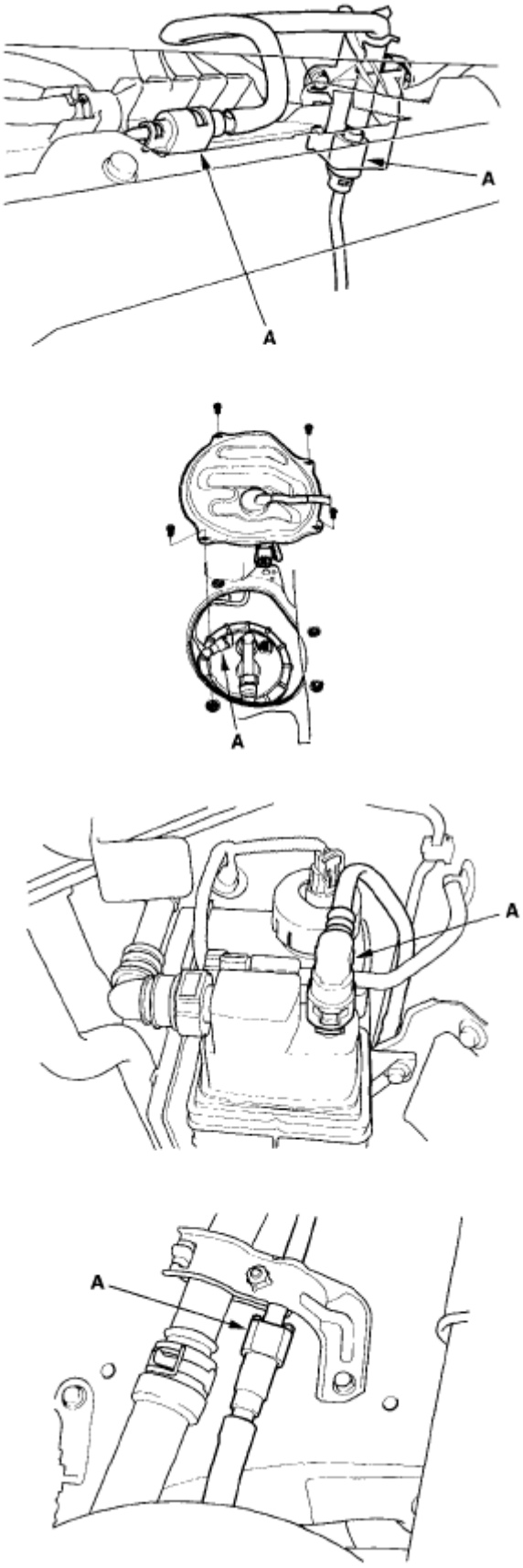


Fig. 37: Checking Fuel Quick-Connect Fittings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:

- **Be careful not to damage the line (D) or other parts. Do not use tools.**
- **If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.**
- **Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.**

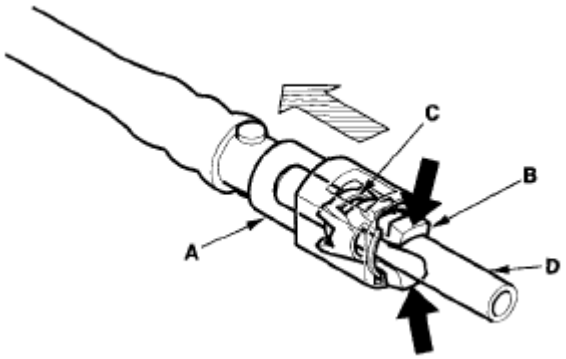


Fig. 38: Pulling Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the contact area (A) of the line (B) for dirt or damage.
   - If it is dirty, clean the connector with a pressure washer, and dry it with the compressed air.
   - If it is rusty or damaged, replace the fuel filter or the fuel feed line.

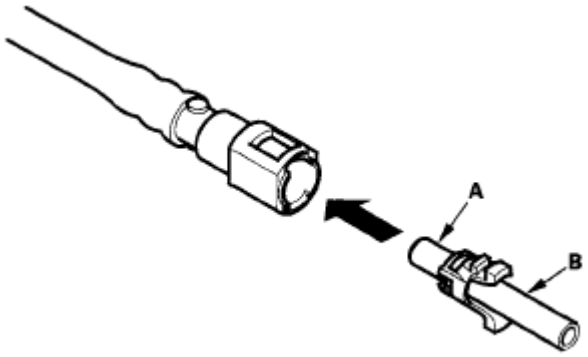


Fig. 39: Checking Contact Area Of Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: **The retainer cannot be reused once it has been removed from the line. Replace the retainer when:**

- **replacing the fuel rail.**
- **replacing the fuel feed line.**
- **replacing the fuel pump.**
- **replacing the fuel filter.**
- **replacing the fuel gauge sending unit.**
- **replacing the EVAP purge pipe.**
- **replacing the EVAP canister.**
- **replacing the fuel tank.**
- **replacing the fuel fill pipe.**
- **it has been removed from the line.**
- **it is damaged.**

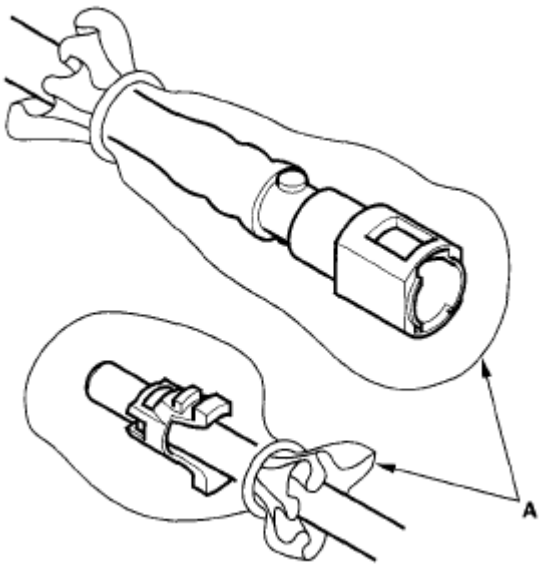


Fig. 40: Covering Connector And Line In Plastic Bags
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUEL LINE/QUICK-CONNECT FITTING INSTALLATION

NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

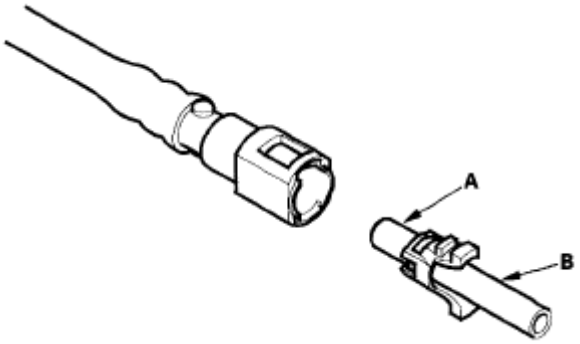


Fig. 41: Checking Contact Area And Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - replacing the EVAP purge pipe.
   - replacing the EVAP canister.
   - replacing the fuel tank.
   - replacing the fuel fill pipe.
   - removing the retainer from the line.
   - Use the same manufacturer retainer and the same size retainer when replacing the retainer (see **FUEL LINE/QUICK-CONNECT FITTING PRECAUTIONS**).

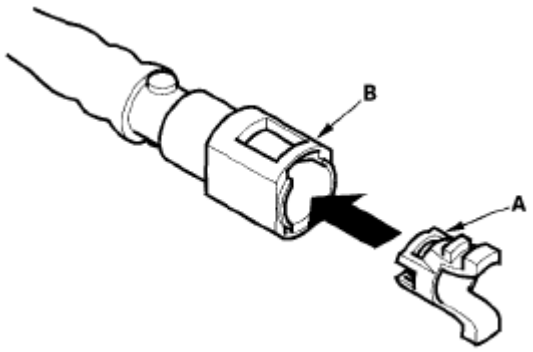
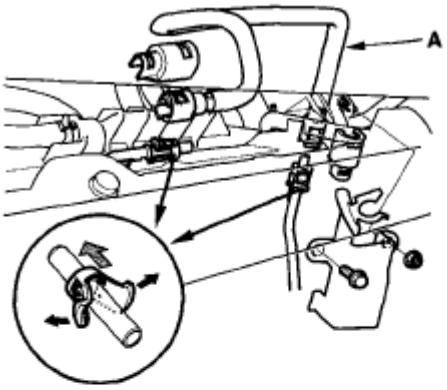
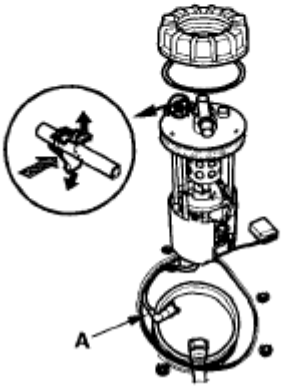


Fig. 42: Inserting Retainer Into Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.


A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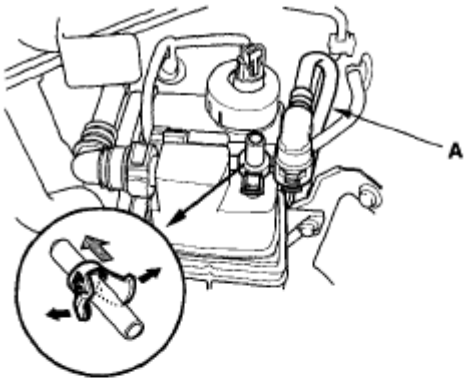
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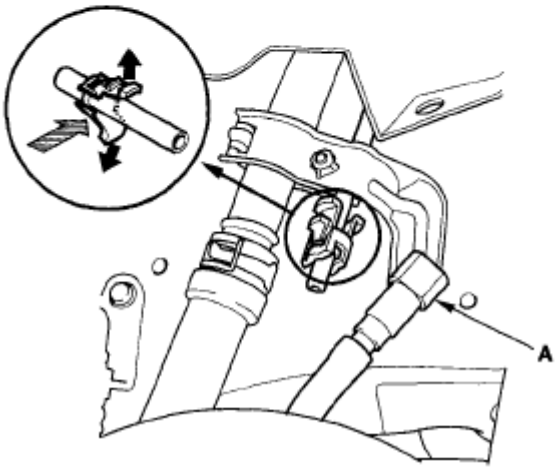

A

Fig. 43: Removing Old Retainer From Mating Line Before Connecting Fuel Tube/Quick-Connect Fitting Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

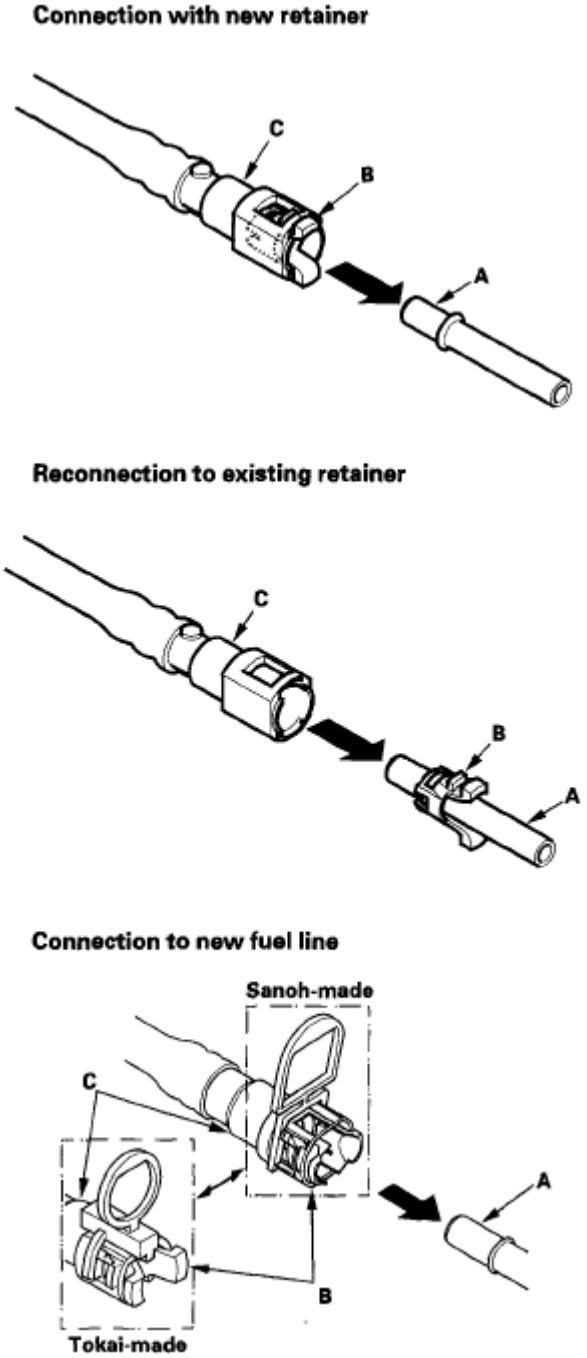


Fig. 44: Aligning Quick-Connect Fittings With Line And Retainer Locking Tabs With

Connector Grooves
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs are firmly locked into place; check visually and also by pulling the connector. When you replace the fuel line with a new one, make sure you remove the ring pull upwards after you confirm the connection is secure.

NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

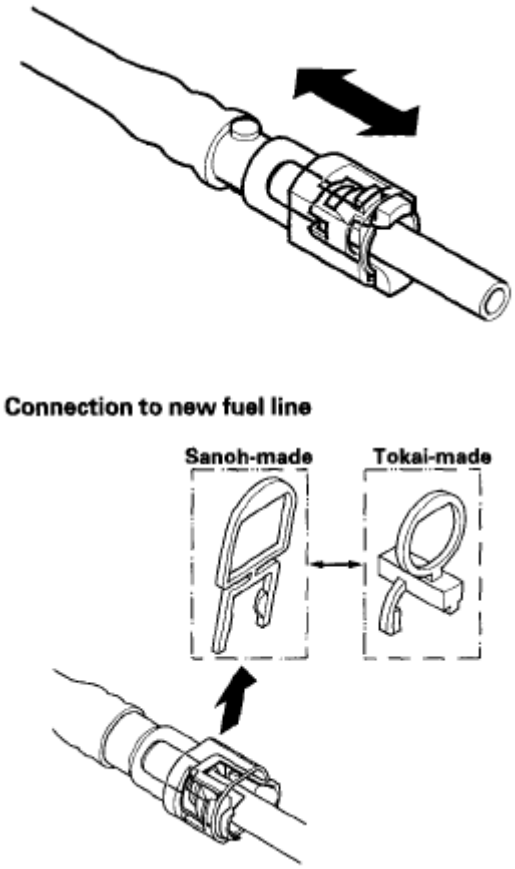


Fig. 45: Making Sure Connection Is Secure And Tabs Are Firmly Locked Into Place
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, and check that there is no leakage in the fuel supply system.

FUEL TANK UNIT REMOVAL/INSTALLATION

Special Tools Required

Fuel pump module locknut wrench 07AAA-SNAA100

REMOVAL

1. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
3. Remove the rear floor upper cross-member (A).

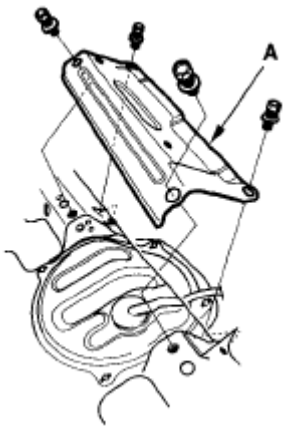


Fig. 46: Removing Rear Floor Upper Cross-Member Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the access panel (A) from the floor.

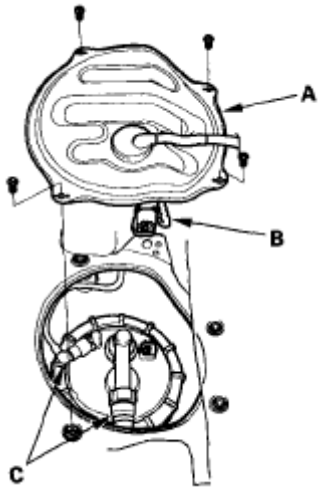


Fig. 47: Removing Access Panel From Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the fuel tank unit 4P connector (B).
6. Disconnect the quick-connect fittings (C) from the fuel tank unit.
7. Using the special tool, loosen the locknut (A).

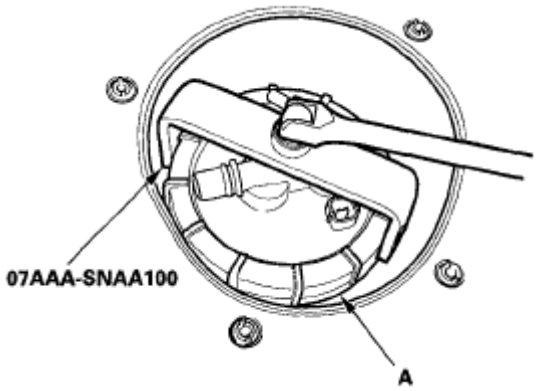


Fig. 48: Loosening Locknut Using Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the locknut (A) and the fuel tank unit (B).

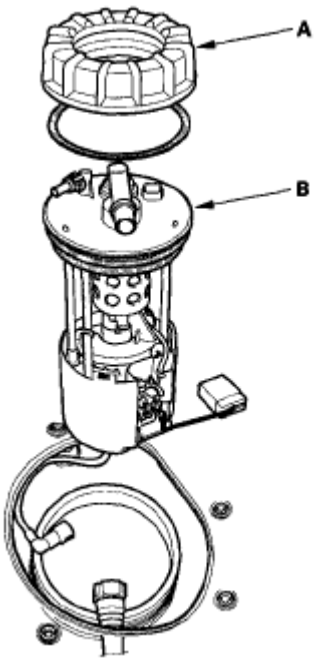


Fig. 49: Identifying Locknut And Fuel Tank Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.
   - Be careful not to damage a new base gasket.
   - Be careful not to bend the fuel gauge sending unit.
   - Do not coat the base gasket with oil.

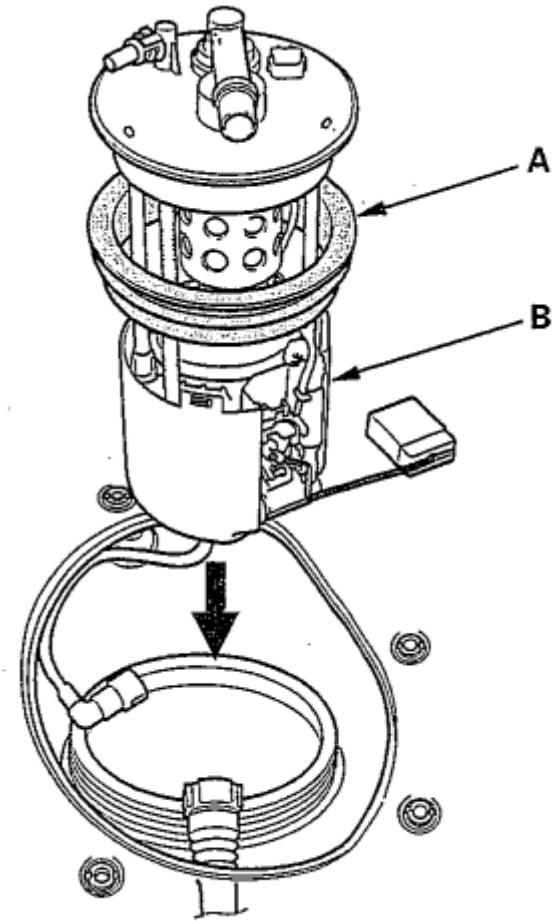


Fig. 50: Identifying Base Gasket And Fuel Tank Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Transfer the base gasket (A) from the fuel tank unit onto the fuel tank.

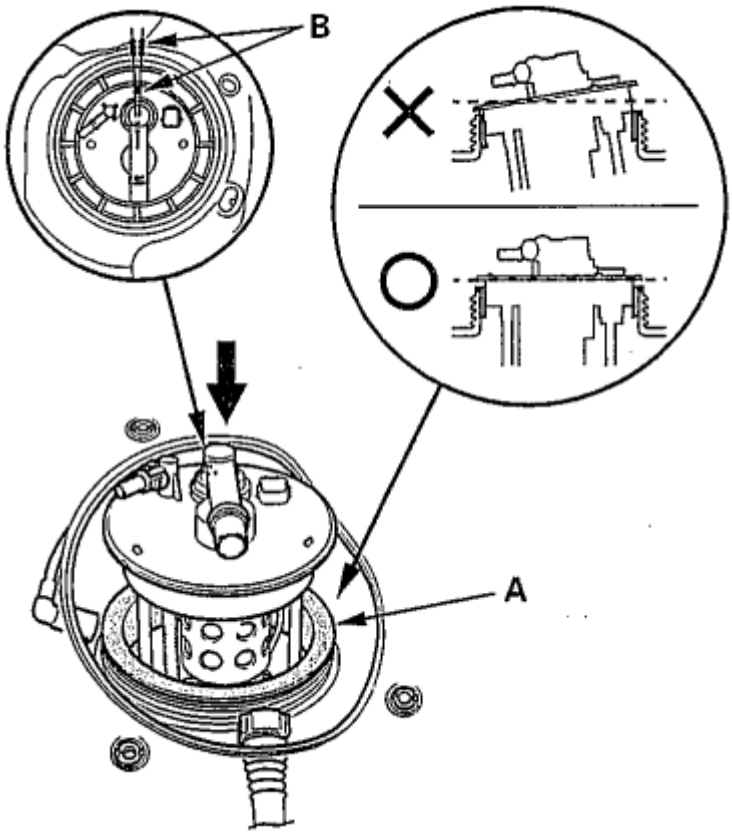


Fig. 51: Identifying Base Gasket From The Fuel Tank, Alignment Marks And Fuel Tank
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until it sits on the base gasket.

NOTE: To prevent a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched

4. Install the new locknut plate (A) and the new locknut (B).

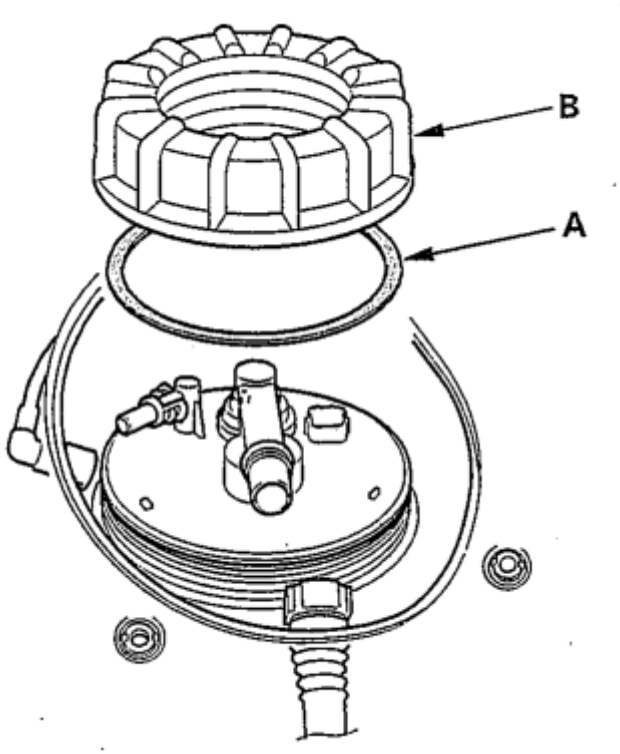


Fig. 52: Identifying Locknut Plate And The Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Using the special tool, tighten a locknut (A) to the specified torque.
   - After tightening, make sure the marks are still aligned.
   - After installation, check the base gasket, visually o by hand, to make sure it is not pinched.

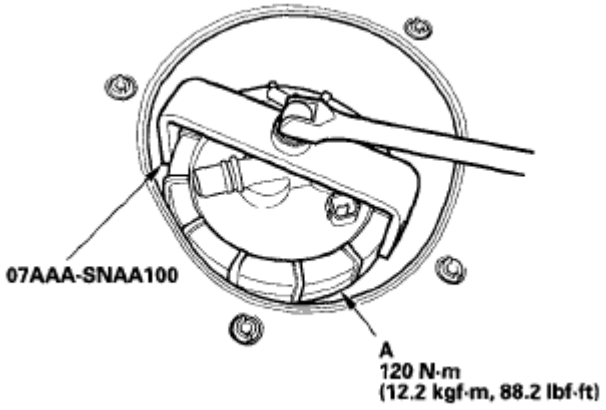


Fig. 53: Tightening Fuel Tank Unit Locknut (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.
7. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.
8. Install the access panel (A) to the floor.

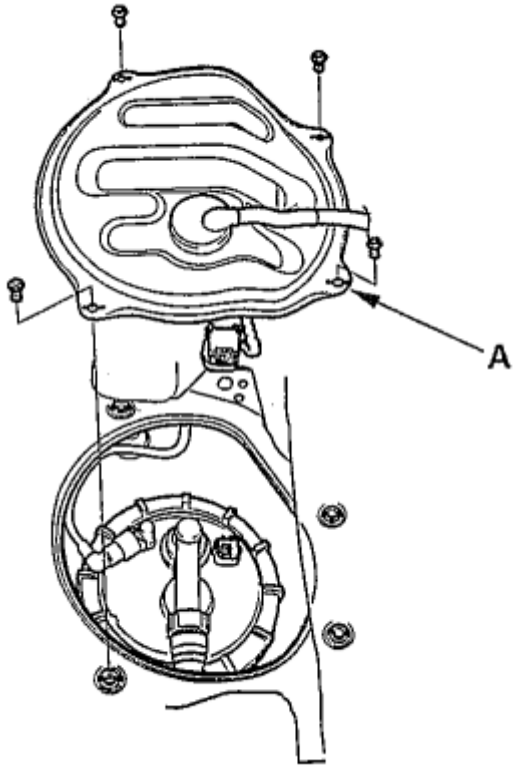


Fig. 54: Installing The Access Panel To The Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the rear floor upper cross-member (A).

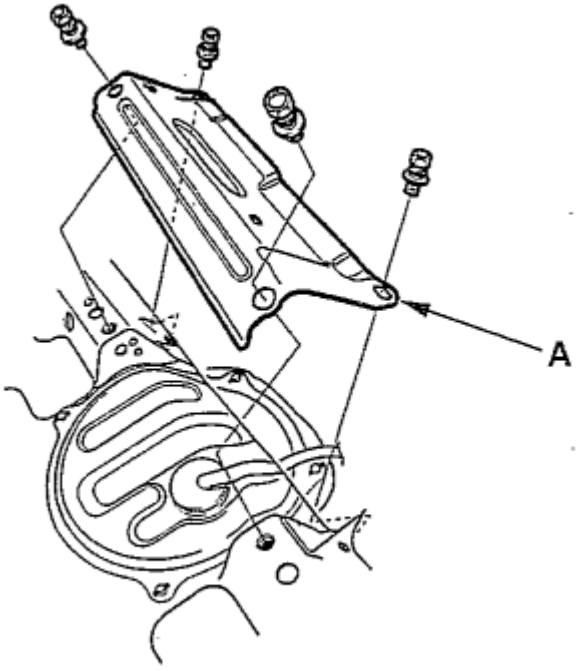


Fig. 55: Installing The Rear Floor Upper Cross-Member
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the rear seat cushion (see **SEAT CUSHION**)
11. Install the fuel fill cap.

FUEL PRESSURE REGULATOR REPLACEMENT

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the bracket (A).

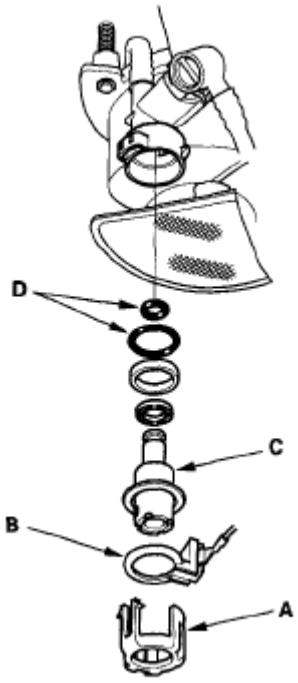


Fig. 56: Removing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground ring (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket (A). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

NOTE: Coat the O-rings with clean engine oil; do not use any other oil. Do not pinch the O-rings during installation.

FUEL FILTER REPLACEMENT

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see **FUEL PRESSURE TEST**), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the fuel filter (A).

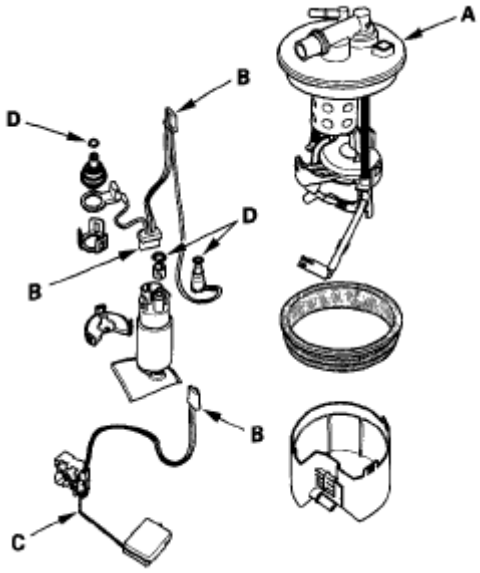


Fig. 57: Removing Fuel Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

NOTE: Coat the O-rings with clean engine oil; do not use any other oil.

FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT

1. Remove the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).

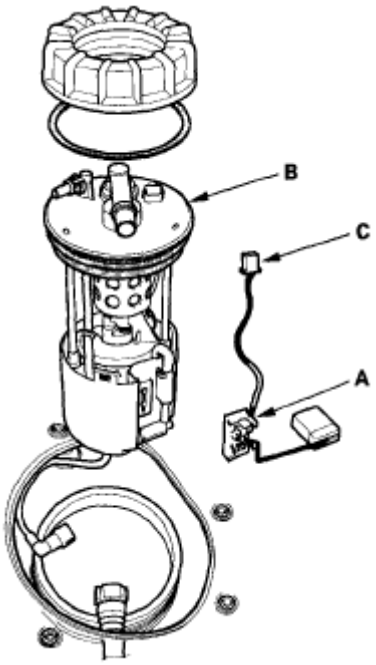


Fig. 58: Removing Fuel Level Sensor From Fuel Tank Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness, make sure the connection is secure and the connectors (C) are firmly locked into place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see **INSTALLATION**).

FUEL TANK REPLACEMENT

1. Drain the fuel tank (see **FUEL PRESSURE TEST**), then disconnect the fuel tank unit 4P connector (A) and the quick-connect fitting (B).

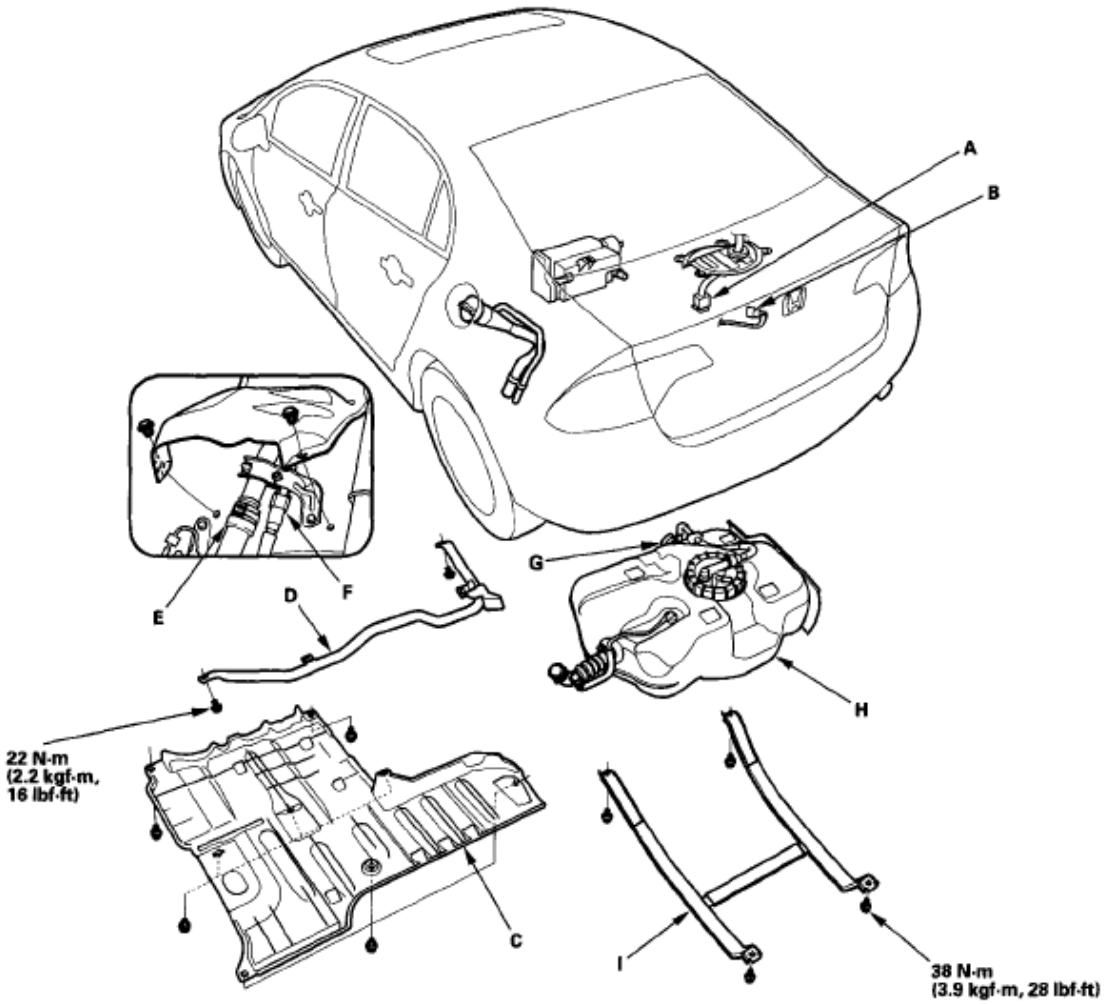


Fig. 59: Disconnecting Fuel Tank Unit 4P Connector And Quick-Connect Fitting (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Lift the vehicle, and support it with jackstands.
3. Remove the cover (C), and the EVAP canister guard (D).
4. Disconnect the fuel fill tube (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
5. Disconnect the quick-connect fitting (F) and the fuel tank vapor recirculation tube (G).
6. Place a jack or other support under the tank (H).
7. Remove the strap bolts and the strap (I).
8. Remove the fuel tank.
9. Install the parts in the reverse order of removal.

FUEL GAUGE SENDING UNIT TEST

NOTE: For the fuel gauge system circuit diagram, refer to the (see CIRCUIT DIAGRAM - GAUGE CONTROL MODULE (TACH)).

1. Check the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.
   - If no problem is found, go to step 3.
   - If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch OFF.
4. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
5. Remove the rear floor upper cross-member (A).

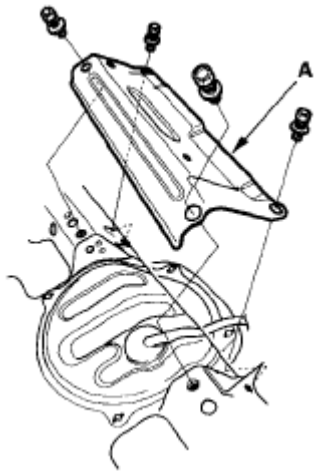


Fig. 60: Removing Rear Floor Upper Cross-Member
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the access panel (A) from the floor.

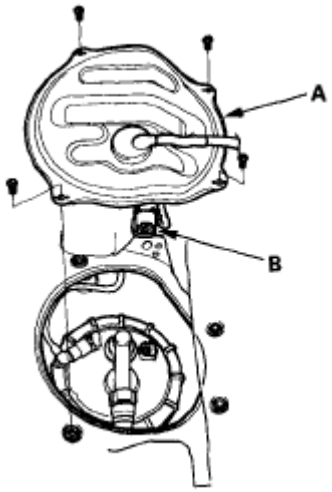


Fig. 61: Removing Access Panel From Floor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the fuel tank unit 4P connector (B).
8. Measure voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch ON (II). There should be battery voltage.

- If the voltage is OK, go to step 9.
- If the voltage is not as specified, check for:
  - a short in the ORN (2-door: PUR) wire to ground.
  - an open in the ORN (2-door: PUR) or LT GRN (2-door: ORN) wire.

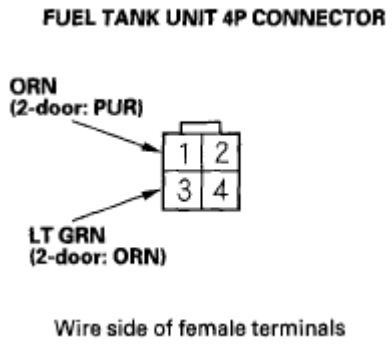


Fig. 62: Measuring Voltage Between Fuel Tank Unit 4P Connector Terminals No. 1 And 3 With Ignition Switch ON (II)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Turn the ignition switch OFF.
10. Remove the fuel tank unit from the fuel tank (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
11. Measure resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions. If you do not get the following readings, replace the fuel gauge sending unit (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**).

FLOAT POSITION RESISTANCE SPECIFICATION

Float Position	F 5.6 in. (139.8 mm)	1/2 2.9 in. (72.1 mm)	LOW 0.8 in. (19.5 mm)	E 0.4 in. (8.9 mm)
Resistance (ohms)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788

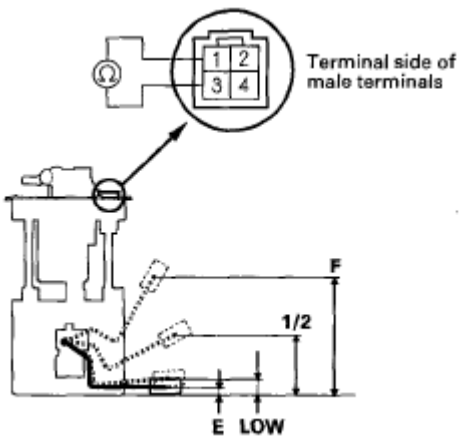


Fig. 63: Measuring Resistance Between Fuel Tank Unit 4P Connector Terminals No 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Reconnect the fuel tank unit 4P connector.
13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.
14. Turn the ignition switch ON (II).
15. Check that the pointer of the fuel gauge indicates "F" with the float at F.
    - If the pointer of the fuel gauge does not indicate "F", replace the gauge assembly.
    - If the gauge is OK, the test is complete.

NOTE:

- **The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.**
- **Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.**

LOW FUEL INDICATOR TEST

1. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).
    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see **TACHOMETER**).
2. Check for body electrical system DTCs.
    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.
3. Do the fuel gauge sending unit test (see **FUEL GAUGE SENDING UNIT TEST**).

2006-08 ENGINE

Ignition System (K20Z3) - Civic (Except Si)

COMPONENT LOCATION INDEX

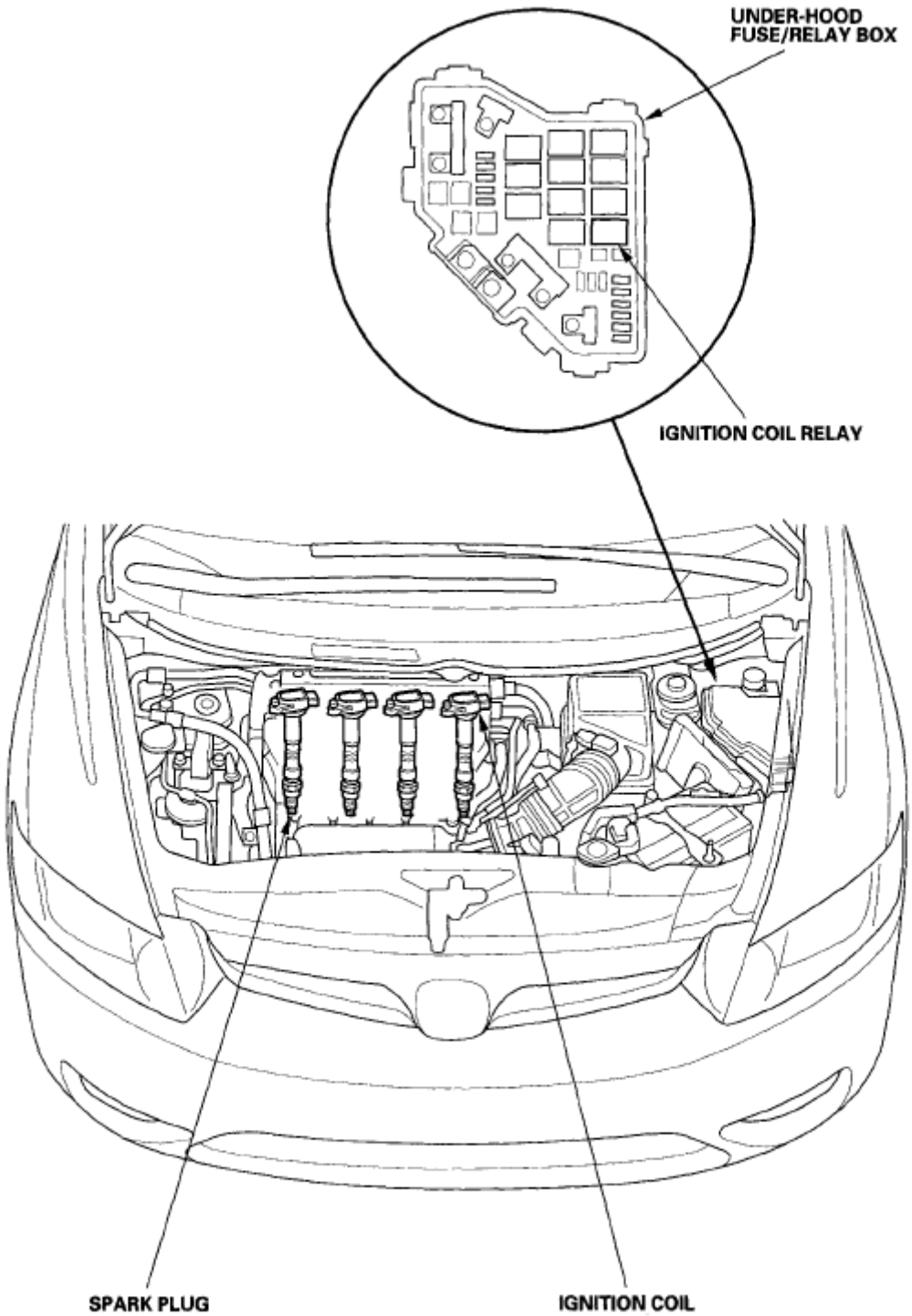


Fig. 1: Identifying Ignition System (K20Z3) Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

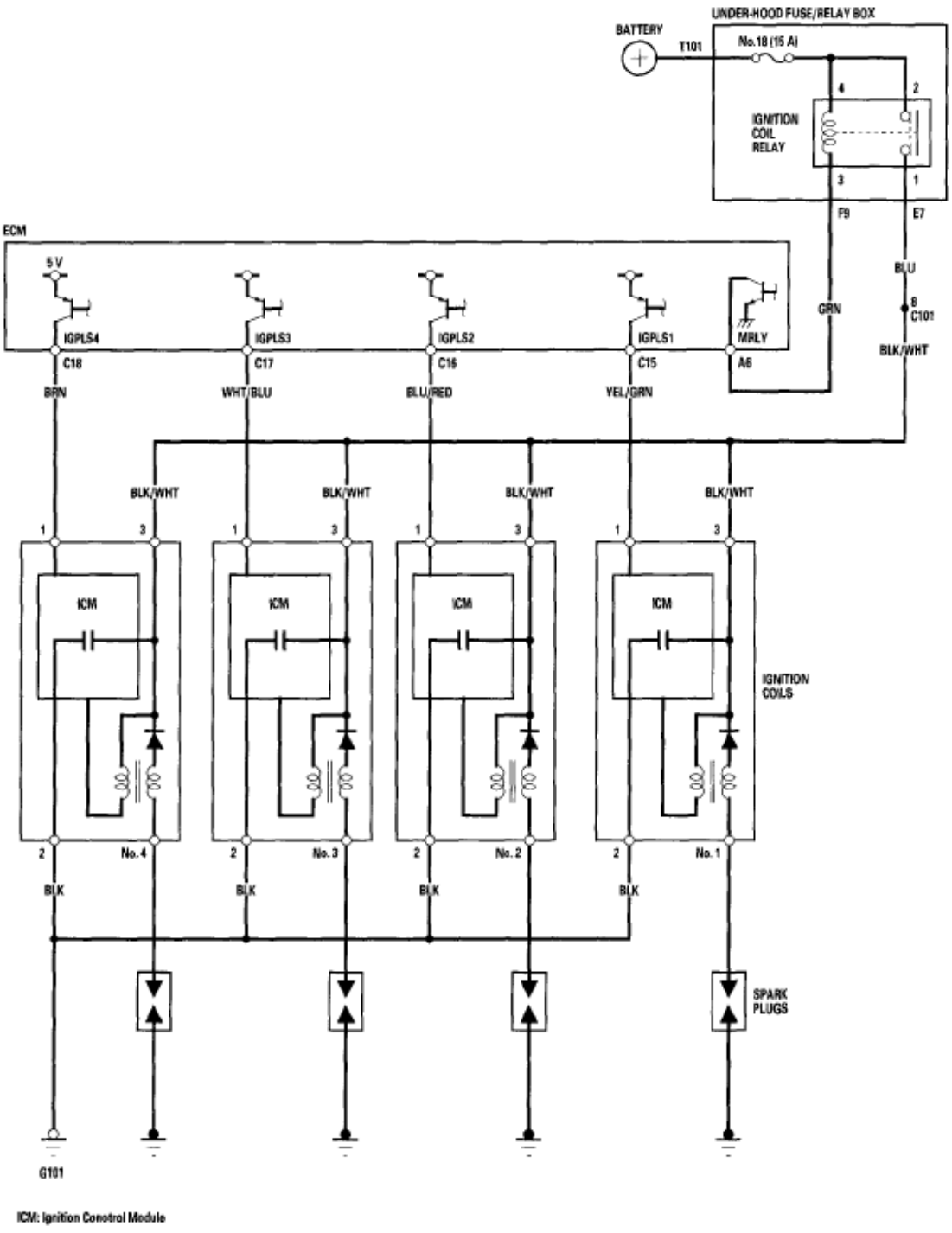


Fig. 2: Ignition System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IGNITION TIMING INSPECTION

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).

3. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs. If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
6. Check the idle speed (see **IDLE SPEED INSPECTION**).
7. Jump the SCS line with the HDS.
8. Connect the timing light to the service loop (white tape).

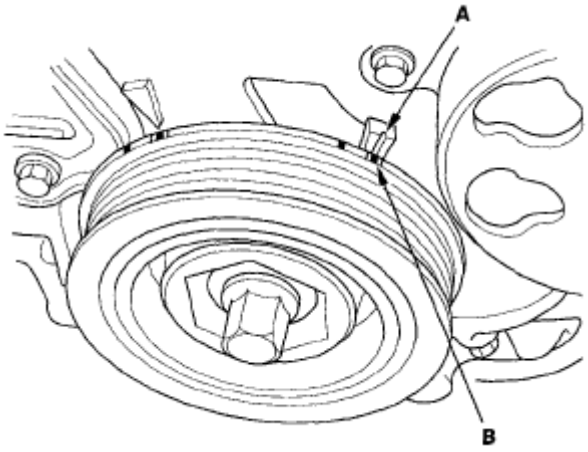


Fig. 3: Identifying Ignition Timing Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Aim the light toward the pointer (A) on the cam chain case. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

   Ignition Timing:

   8 ° ±2 ° BTDC (RED mark (B)) at idle in Neutral

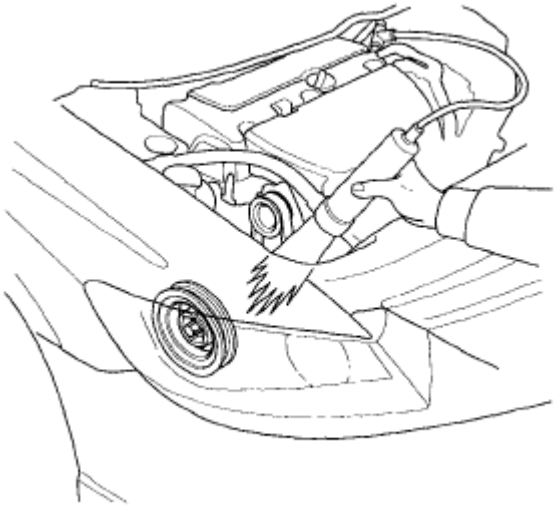


Fig. 4: Checking Ignition Timing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the engine control module (ECM) if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the system work properly, and the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**).
11. Disconnect the HDS and the timing light.

IGNITION COIL REMOVAL/INSTALLATION

1. Remove the under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
2. Remove the ignition coil cover (A), disconnect the ignition coil connectors (B), then remove the ignition coils (C).

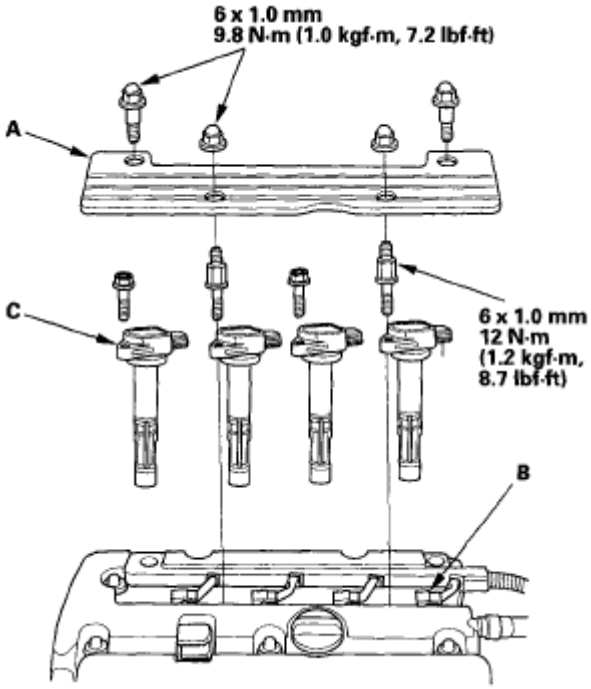


Fig. 5: Identifying Ignition Coil (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the ignition coils in the reverse order of removal.

IGNITION COIL RELAY CIRCUIT TROUBLESHOOTING

1. Check the No. 18 (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES -Go to step 2.

   NO -Replace the fuse.

2. Remove the ignition coil relay from the under-hood fuse/relay box, and test it (see **POWER RELAY**

TEST).

Is the relay OK?

YES -Go to step 3.

NO -Replace the ignition coil relay.

3. Measure the voltage between ignition coil relay 4P socket terminal No. 2 and body ground, then terminal No. 4 and body ground.

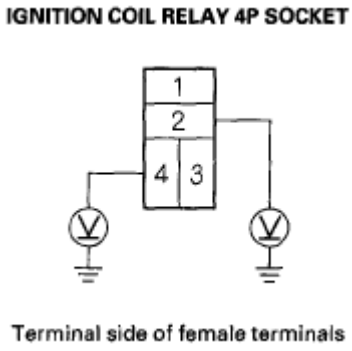


Fig. 6: Checking Voltage Between Ignition Coil Relay 4P Socket Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 4.

NO -Replace the under-hood fuse/relay box.

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.

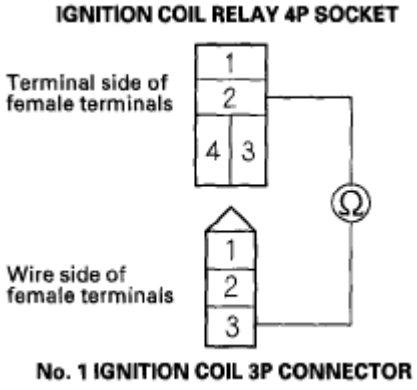


Fig. 7: Checking Continuity Between Ignition Coil Relay 4P Socket Terminal No. 2 And No. 1 Ignition Coil 3P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 5.

NO -Repair open in the wire between ignition coil relay 4P socket terminal No. 2 and ignition coil 3P connector terminal No. 3.

5. Check for continuity between each ignition coil 3P connector terminal No. 2 and the body ground.

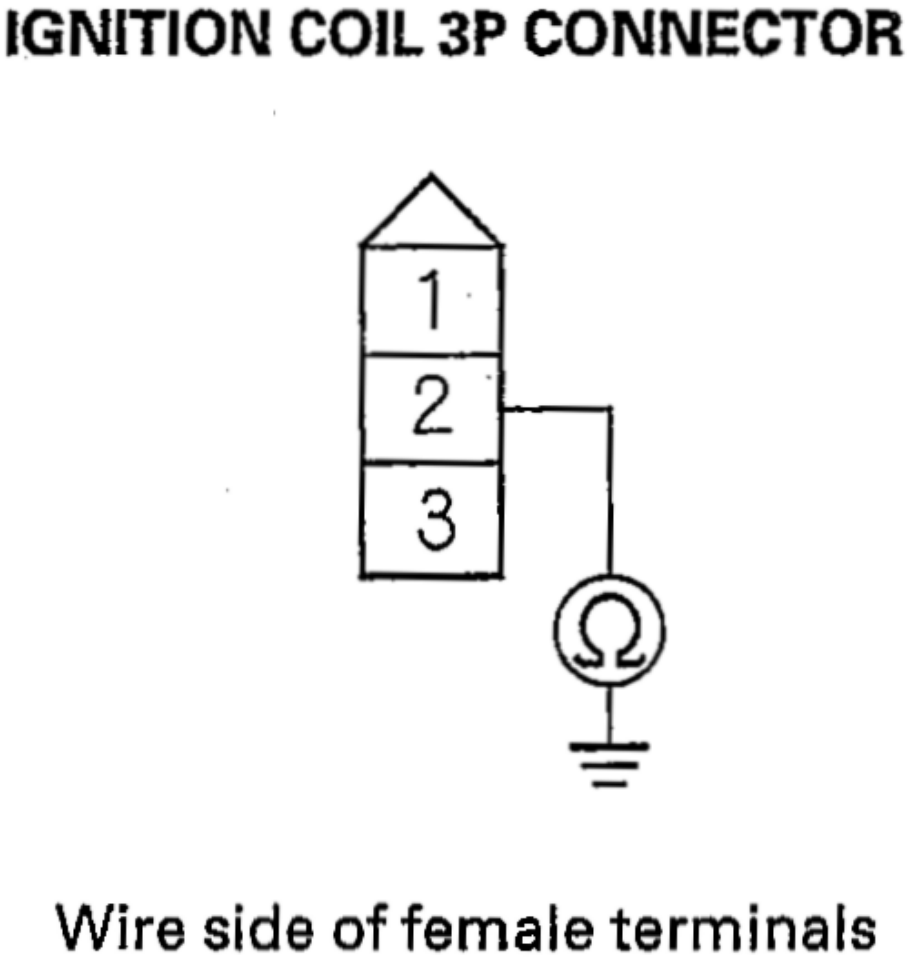


Fig. 8: Checking For Continuity Between Ignition Coil 3P Connector Terminal No. 2 And The Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 6.

NO -Repair open in the wire between ignition coil relay 3P socket terminal No. 2 and body ground.

6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).

7. Turn the ignition switch ON (II).
8. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
9. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

10. Disconnect ECM connector A (44P).
11. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

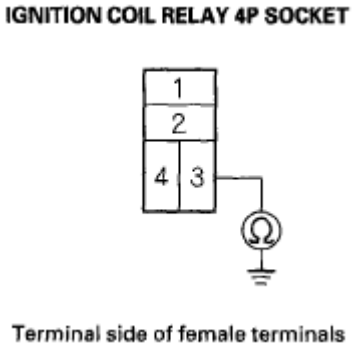


Fig. 9: Checking Continuity Between Ignition Coil Relay 4P Socket Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between ignition coil relay 4P socket terminal No. 3 and ECM (A6).

NO -Go to step 11.

12. Check for continuity between ignition coil relay 4P socket terminal No. 3 and ECM connector terminal A6.

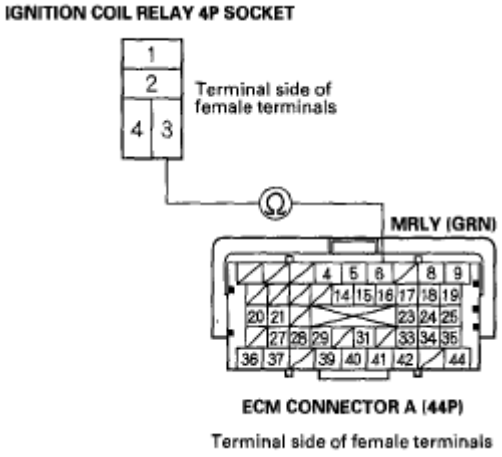


Fig. 10: Checking Continuity Between Ignition Coil Relay 4P Socket Terminal No. 3 And ECM Connector Terminal A6

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -The system is OK at this time. Check for loose or poor connections at the ignition coil relay and the ECM (A6).

NO -Repair open in the wire between ignition coil relay 4P socket terminal No. 3 and the ECM (A6).

SPARK PLUG INSPECTION

1. Remove the spark plugs and inspect the electrodes and ceramic insulator.
    - Burned or worn electrodes may be caused by:
        - Advanced ignition timing
        - Loose spark plug
        - Plug heat range too hot
        - Insufficient cooling
    - Fouled plugs may be caused by:
        - Retarded ignition timing
        - Oil in combustion chamber
        - Incorrect spark plug gap
        - Plug heat range too cold
        - Excessive idling/low speed running
        - Clogged air cleaner element
        - Deteriorated ignition coils

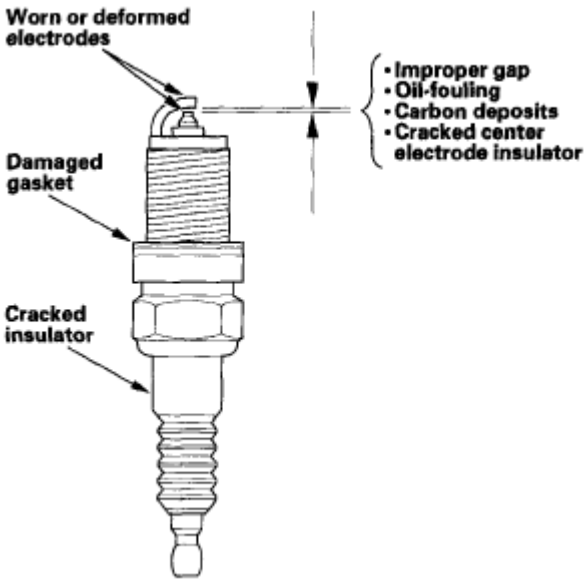


Fig. 11: Identifying Spark Plug Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

NOTE:

- **Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.**
- **When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.**

3. Replace the plug at the specified interval, or if the center electrode is rounded (A), or if the spark plug gap (B) is out of specification. Use only the listed spark plugs.

NOTE: Do not adjust the gap of iridium tip plugs.

Spark Plugs

NGK: IFR7G11KS

DENSO: SK22PR-M11S

Electrode Gap

Standard (New): 1.0-1.1 mm (0.039-0.043 in.)

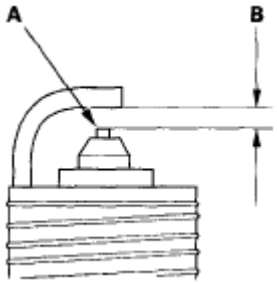


Fig. 12: Identifying Spark Plug Gap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Apply small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Then torque them to 18 N.m (1.8 kgf.m, 13 lbf.ft).

2006-09 ENGINE

Ignition System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: **Go to IGNITION SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.**

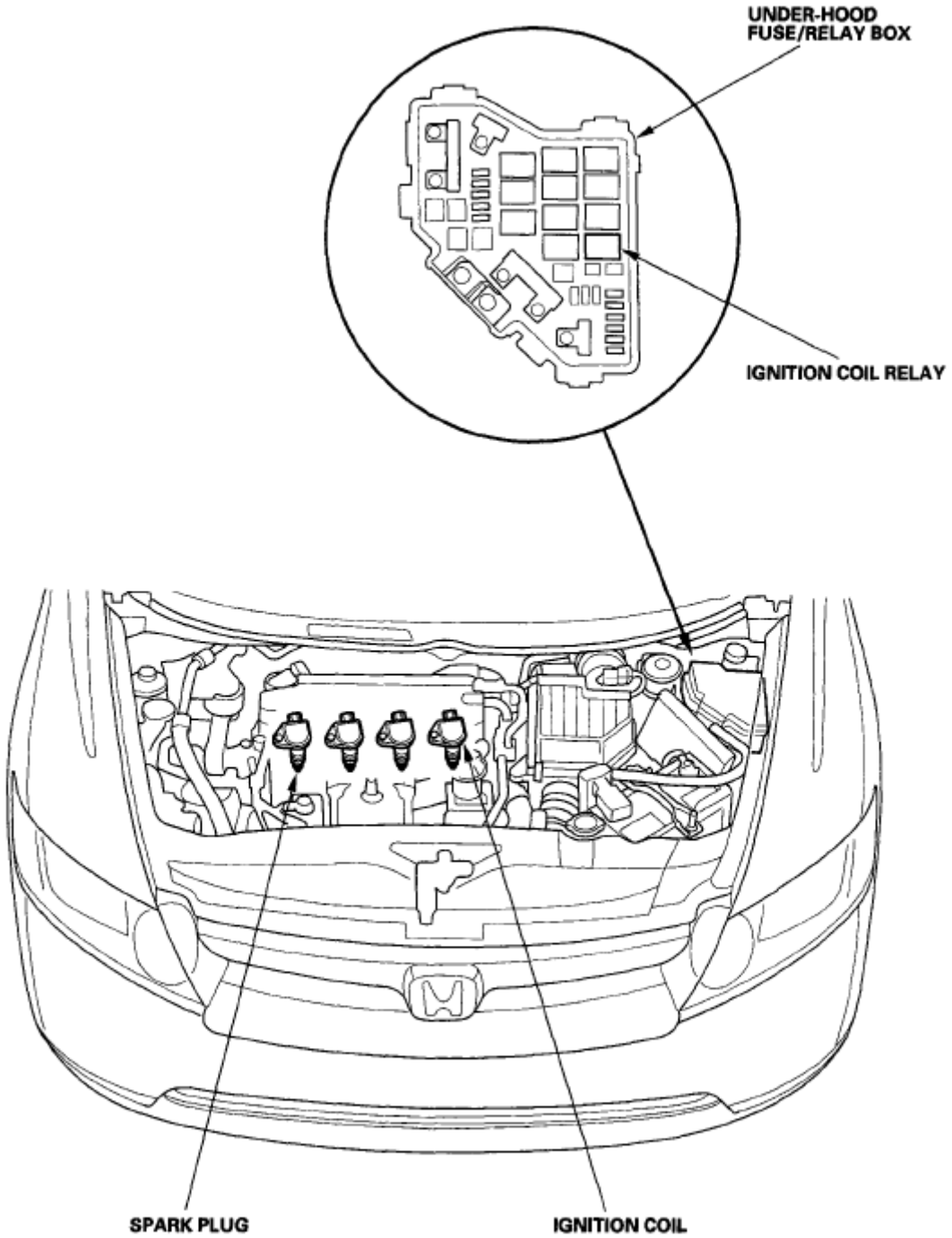


Fig. 1: Identifying Ignition System Component
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

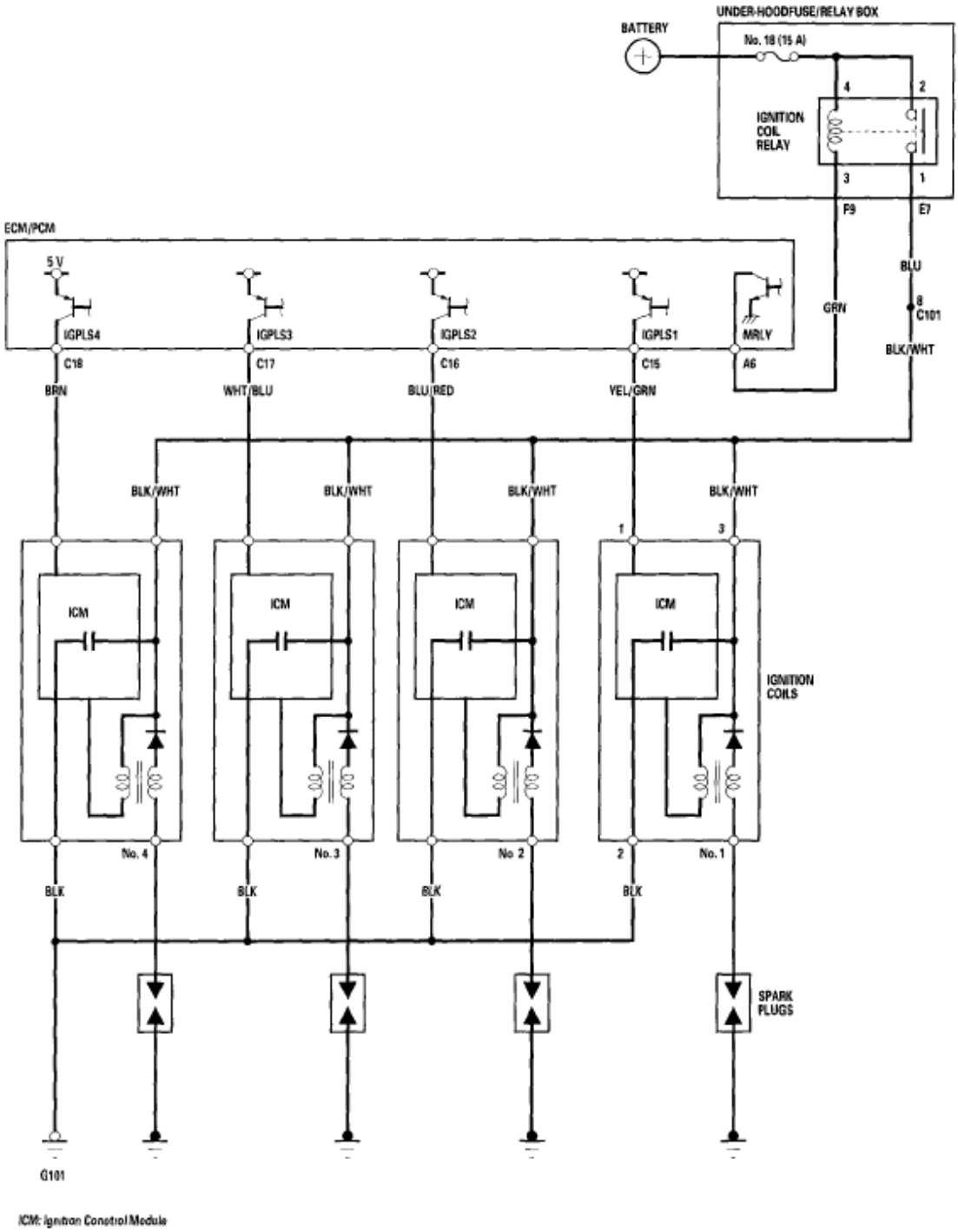


Fig. 2: Ignition System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IGNITION TIMING INSPECTION

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in the P or N position (A/T) or neutral (M/T)) until the radiator fan comes on, then let it idle.
6. Check the idle speed (see **IDLE SPEED INSPECTION**).
7. Jump the SCS line with the HDS.
8. Connect the timing light to the No. 1 ignition coil harness.
9. Aim the light toward the pointer (A) on the cam chain case. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

Ignition Timing

M/T: 8 °±2 ° BTDC (RED mark (B) at idle in Neutral

A/T: 8 °±2 ° BTDC (RED mark (B) at idle in Park or Neutral

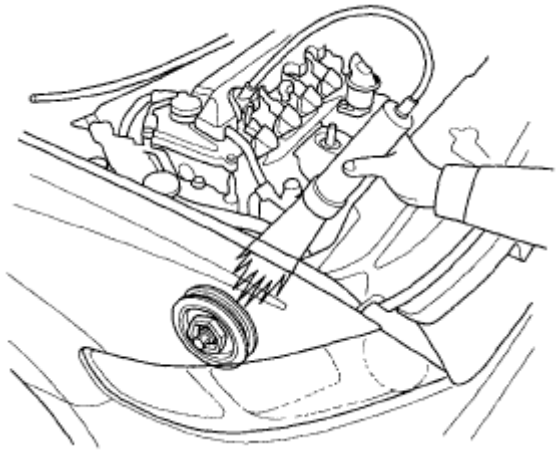


Fig. 3: Aiming Timing Light Toward Pointer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

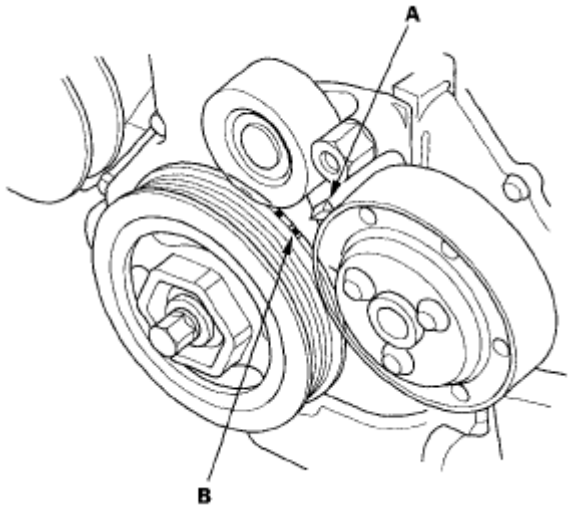


Fig. 4: Identifying Timing Marks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the engine control module (ECM)/powertrain control module (PCM) if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the system works properly, and the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).
11. Disconnect the HDS and the timing light.

IGNITION COIL REMOVAL/INSTALLATION

1. Disconnect the ignition coil connectors (A), then remove the ignition coils (B).

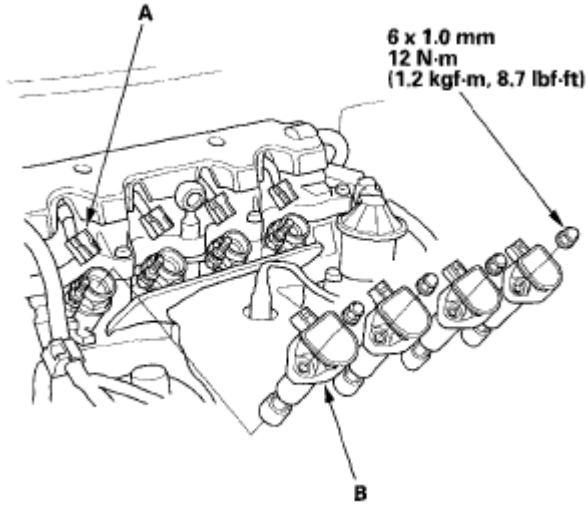


Fig. 5: Disconnecting Ignition Coil Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the ignition coils in the reverse order of removal.

IGNITION COIL RELAY CIRCUIT TROUBLESHOOTING

1. Check the No. 18(15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES -Go to step 2.

   NO -Replace the fuse.

2. Remove the ignition coil relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES -Go to step 3.

   NO -Replace the ignition coil relay.

3. Measure the voltage between ignition coil relay 4P socket terminal No. 2 and body ground, then terminal No. 4 and body ground.

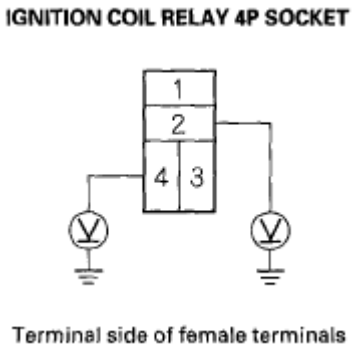


Fig. 6: Measuring Voltage Between Ignition Coil Relay 4P Socket Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there battery voltage?

   YES -Go to step 4.

   NO -Replace the under-hood fuse/relay box.

4. Check for continuity between ignition coil relay 4P socket terminal No. 1 and the No. 1 ignition coil 3P connector terminal No. 3.

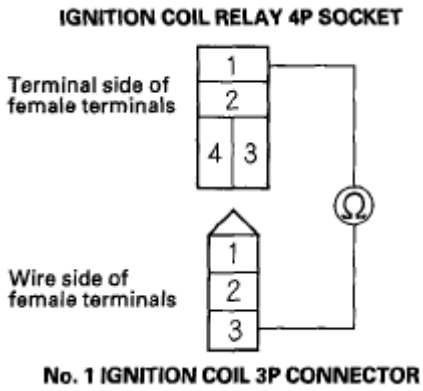


Fig. 7: Checking For Continuity Between Ignition Coil Relay 4P Socket Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 5.

NO -Repair open in the wire between ignition coil relay 4P socket terminal No. 1 and ignition coil 3P connector terminal No. 3.

5. Check for continuity between each ignition coil 3P connector terminal NO. 2 and the body ground.

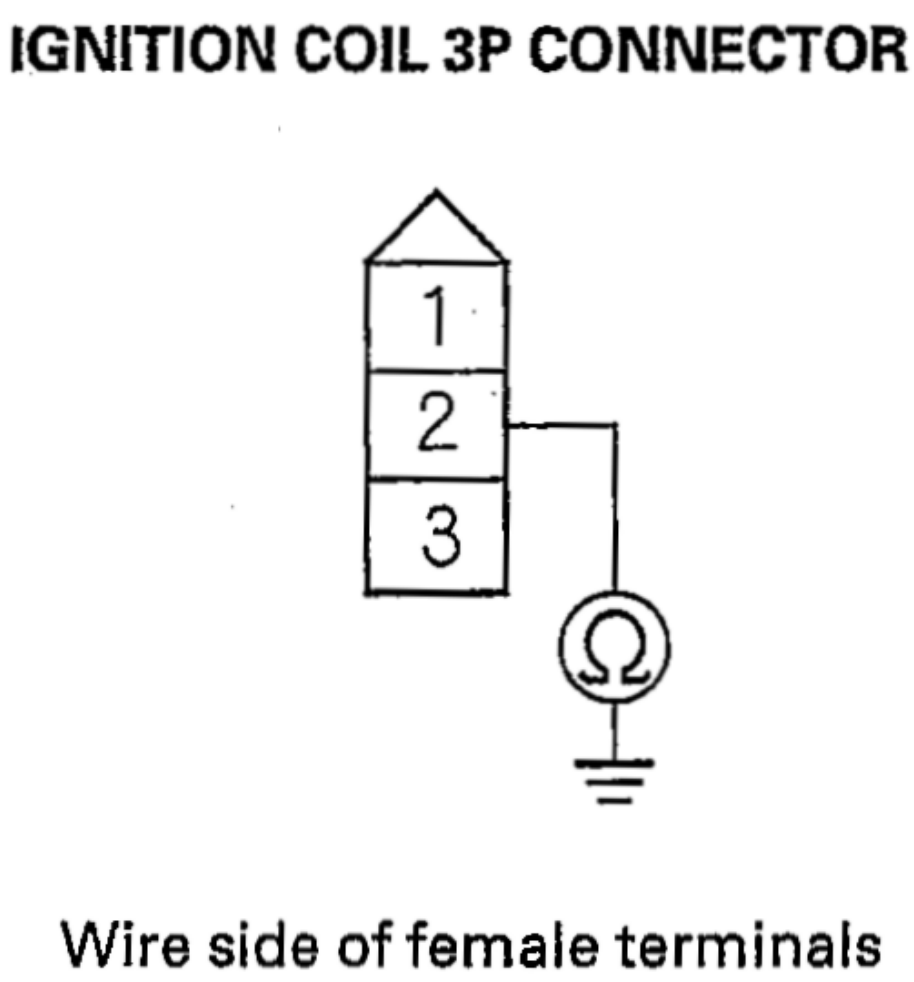


Fig. 8: Checking For Continuity Between Each Ignition Coil 3P Connector Terminal No. 2 And The Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 6.

NO -Repair open in the wire between ignition coil relay 3P socket terminal No. 2 and body ground.

6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
7. Turn the ignition switch ON (II).
8. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
9. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

10. Disconnect ECM/PCM connector A (44P).
11. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

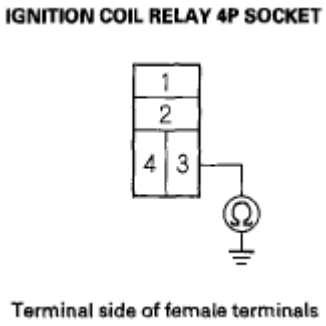


Fig. 9: Checking For Continuity Between Ignition Coil Relay 4P Socket Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between ignition coil relay 4P socket terminal No. 3 and the ECM/PCM (A20).

NO -Go to step 11.

12. Check for continuity between ignition coil relay 4P socket terminal No. 3 and ECM/PCM connector terminal A20.

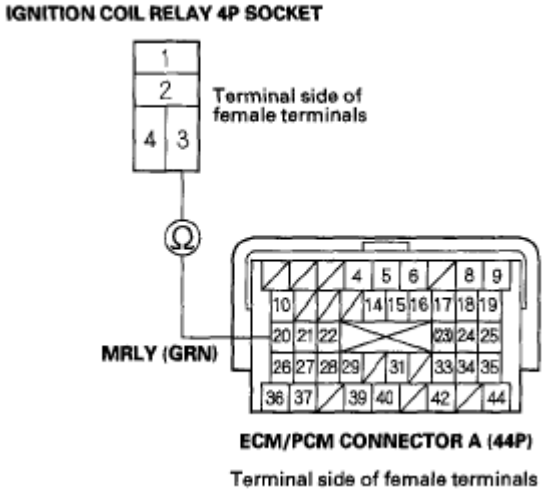


Fig. 10: Checking For Continuity Between Ignition Coil Relay 4P Socket Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -The system is OK at this time. Check for loose or poor connections at the ignition coil relay and the ECM/PCM (A20).

NO -Repair open in the wire between ignition coil relay 4P socket terminal No. 3 and the ECM/PCM

(A20).

SPARK PLUG INSPECTION

1. Remove the spark plugs and inspect the electrodes and the ceramic insulator.
    - Burned or worn electrodes may be caused by:
        - Advanced ignition timing
        - Loose spark plug
        - Plug heat range too hot
        - Insufficient cooling
    - Fouled plugs may be caused by:
        - Retarded ignition timing
        - Oil in combustion chamber
        - Incorrect spark plug gap
        - Plug heat range too cold
        - Excessive idling/low speed running
        - Clogged air cleaner element
        - Deteriorated ignition coils

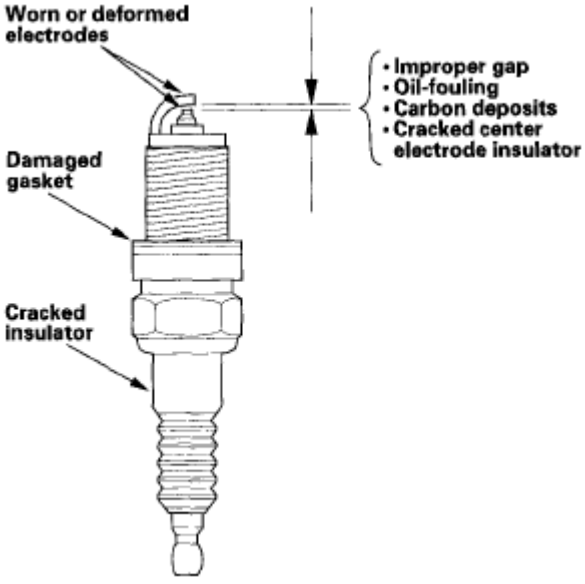


Fig. 11: Identifying Worn Or Deformed Electrodes, Damaged Gasket, Cracked Insulator And Improper Gap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

NOTE:

- **Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.**
- **When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.**

3. Replace the plug at the specified interval, or if the center electrode is rounded (A), or if the spark plug gap is out of specification. Use only the listed spark plugs.

   NOTE: Do not adjust the gap (B) of iridium tip plugs.

   Spark Plugs

   NGK: IZFR6K11S

   DENSO: SKJ20DR-M11S

   Electrode Gap

   Standard (New): 1.0-1.1 mm (0.039-0.043 in.)

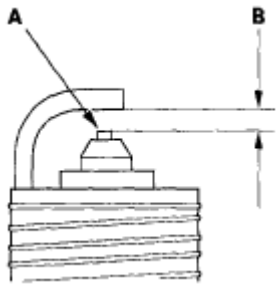


Fig. 12: Identifying Spark Plugs And Electrode Gap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Apply small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Then torque them to 25 N.m (2.5 kgf.m, 18 lbf.ft).

2006-08 ENGINE

Engine Lubrication - Civic (All Except Hybrid & Si)

ENGINE LUBRICATION (R18A1)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1
②	07LAD-SM40100	Attachment, 60 mm	1
③	07749-0010000	Driver	1

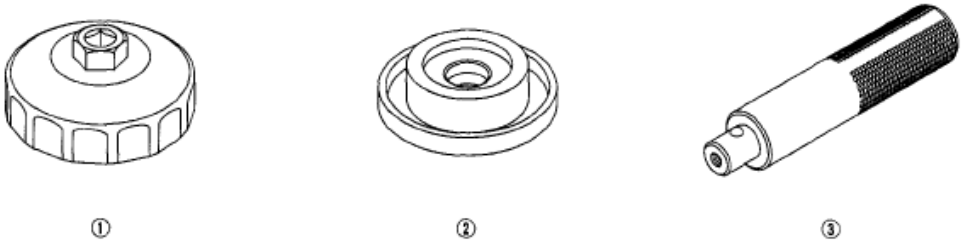


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

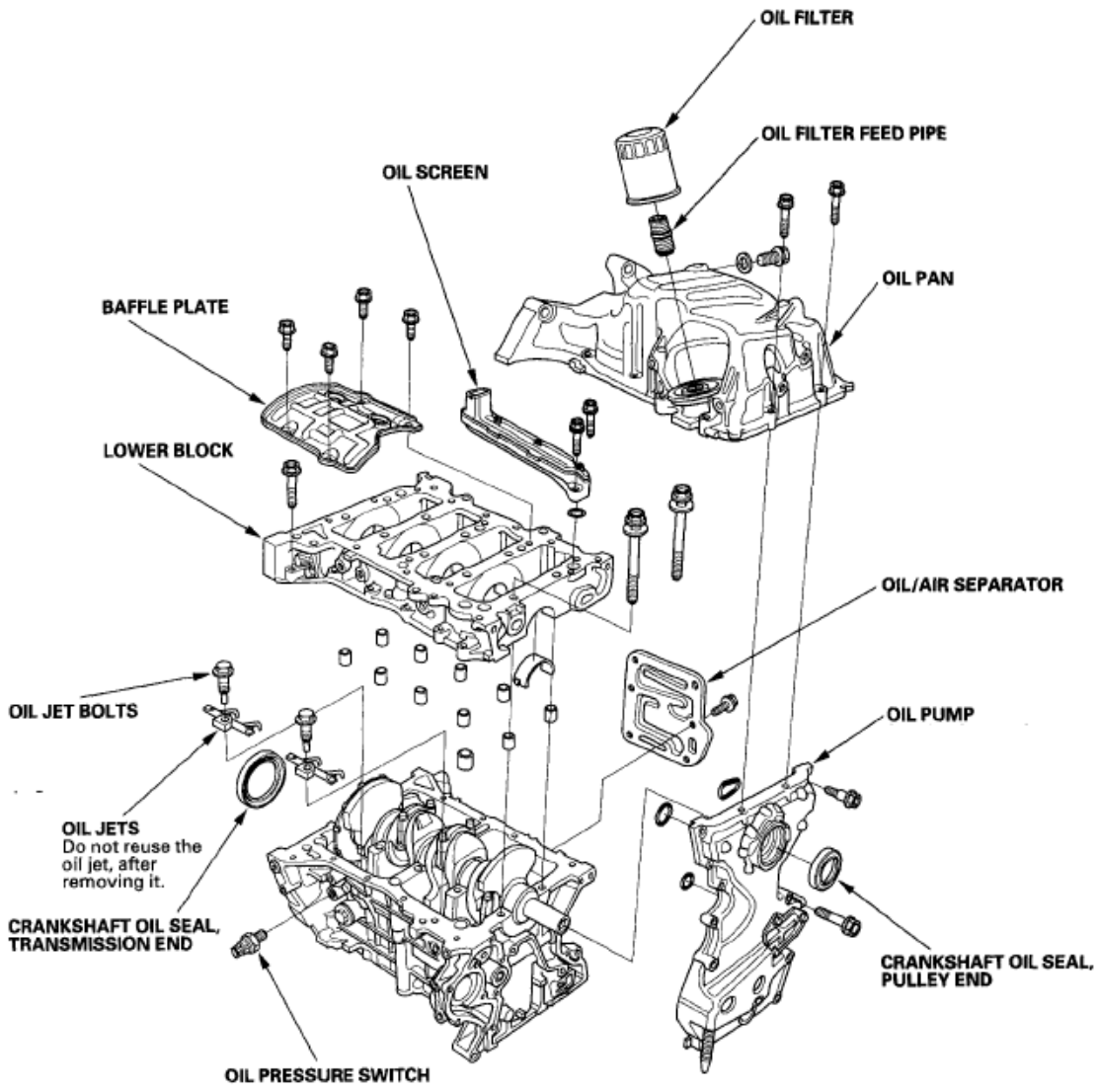


Fig. 2: Identifying Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	1. Check for loose of the engine oil fill cap, oil drain bolt, and oil filter. 2. Check for oil leaks. 3. Check for worn valve guide(s) (see **VALVE INSPECTION**) or worn valve stem seal(s) (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).	

	4. Check for damaged or worn piston ring(s) (see **PISTON RING REPLACEMENT**). 5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see **BLOCK AND PISTON INSPECTION**).	
Low oil pressure indicator does not come on with the ignition switch ON (II)	1. Do the low oil pressure indicator circuit troubleshooting (Open) (see **LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (OPEN)**). 2. Test the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).	An open in the wire between the engine control module (ECM)/ powertrain control module (PCM) and the oil pressure switch
Low oil pressure indicator stays on	1. Check the engine oil level. 2. Do the low oil pressure indicator circuit troubleshooting (Short) (see **LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (SHORT)**). 3. Test the oil pressure switch (see **OIL PRESSURE SWITCH TEST**). 4. Check the engine oil pressure (see **OIL PRESSURE TEST**). 5. Check the oil filter for clogging. 6. Check the oil screen for clogging. 7. Check the relief valve. 8. Inspect the oil pump (see **OIL PUMP OVERHAUL**).	A wire shorted to ground between the ECM/PCM and the oil pressure switch

LOW OIL PRESSURE INDICATOR CIRCUIT DIAGRAM

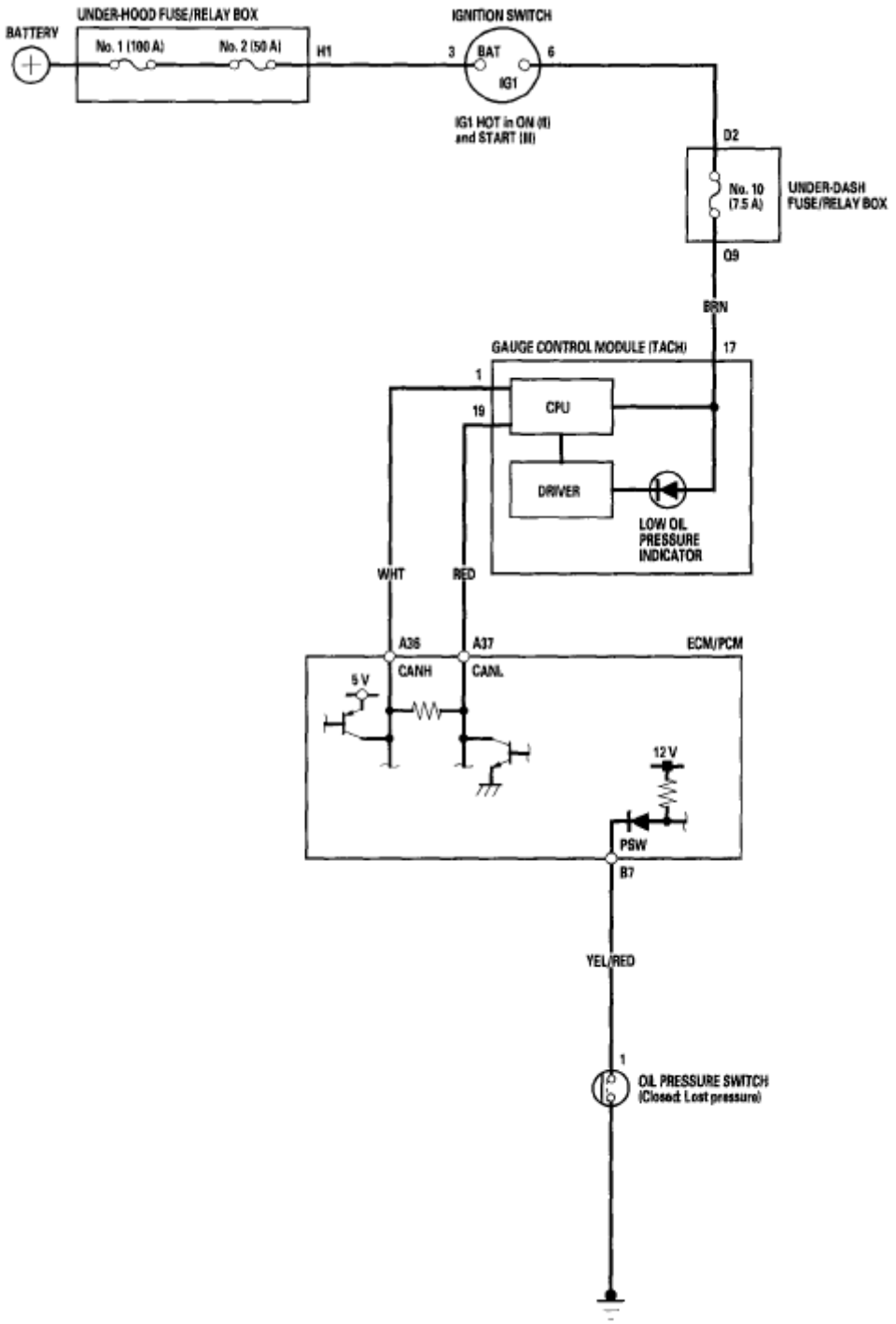


Fig. 3: Low Oil Pressure Indicator Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (OPEN)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT**

TROUBLESHOOTING).

4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose, and repair the cause before continuing with this test.
5. Turn the ignition switch ON (II), select PGM-FI, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "ON" indicated?

   YES -Replace the gauge control module (tach) (see **REPLACEMENT**).

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Check the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

   Is the oil pressure switch OK?

   YES -Go to step 7.

   NO -Replace the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

8. Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

   NOTE: This step must be done to protect the ECM/PCM from damage.

9. Disconnect ECM/PCM connector B (44P) and oil pressure switch connector.
10. Check for continuity between ECM/PCM connector terminal B7 and the oil pressure switch connector.

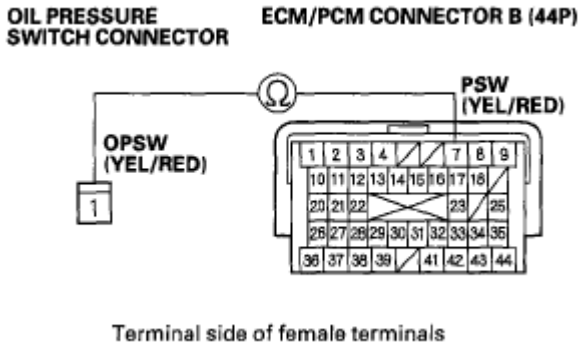


Fig. 4: Checking For Continuity Between ECM/PCM Connector Terminal B7 And Oil Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM

(see **ECM/PCM REPLACEMENT**).

NO -Repair open in the wire between the oil pressure switch and the ECM/PCM.

LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (SHORT)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose, and repair the cause before continuing with this test.
5. Start the engine, select PGM-FI, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "OFF" indicated?

   YES -Replace the gauge control module (tach) (see **REPLACEMENT**).

   NO -Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the oil pressure switch connector.
8. Start the engine, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "OFF" indicated?

   YES -Go to step 9.

   NO -Go to step 11.

9. Turn the ignition switch to LOCK (0).
10. Check the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

    Is the oil pressure switch OK ?

    YES -Do the oil pressure test (see **OIL PRESSURE TEST**).

    NO -Replace the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

11. Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P) and the oil pressure switch connector.

13. Check for continuity between the oil pressure switch connector and body ground.

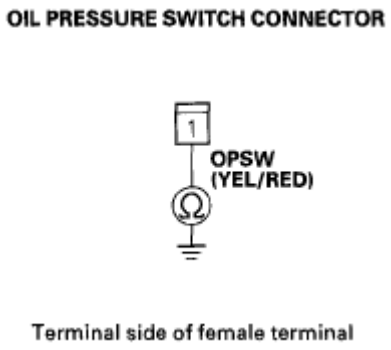


Fig. 5: Checking For Continuity Between Oil Pressure Switch Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to ground in the wire between the oil pressure switch and the ECM/PCM.

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

OIL PRESSURE SWITCH TEST

1. Remove the oil pressure switch connector (A) from the engine oil pressure switch (B).

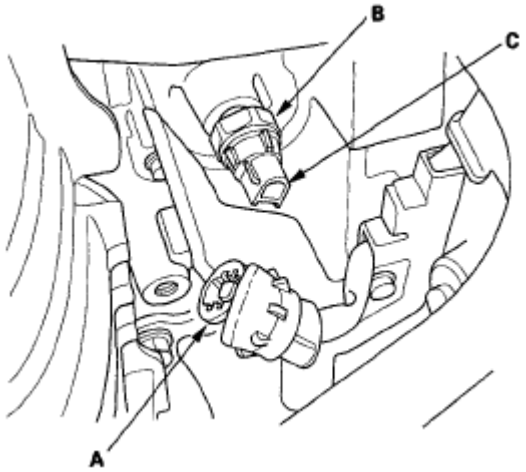


Fig. 6: Identifying Oil Pressure Switch Connector And Engine Oil Pressure Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

OIL PRESSURE SWITCH REPLACEMENT

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.

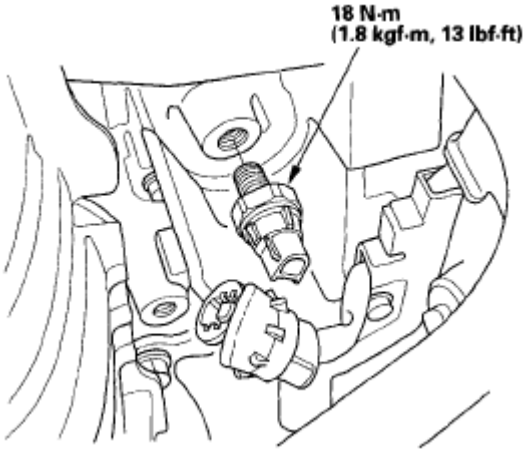


Fig. 7: Identifying Oil Pressure Switch (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove any old liquid gasket from the switch and switch mounting hole.
3. Apply very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

OIL PRESSURE TEST

NOTE: If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, then install an oil pressure gauge (A).

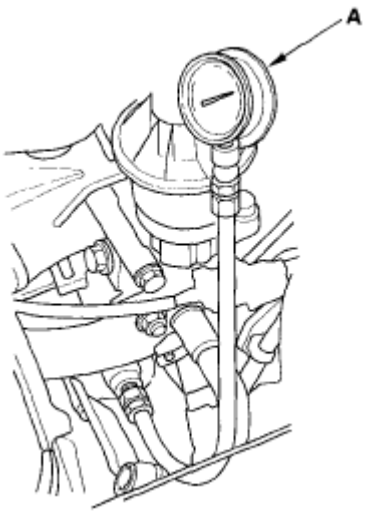


Fig. 8: Identifying Oil Pressure Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

   Engine Oil Temperature: 176°F (80°C)

   Engine Oil Pressure:

   At Idle: 70 kPa (0.7 kgf/^{cm} 2,10 psi) min.

   At 3,000 rpm: 340 kPa (3.5 kgf/cm^2 ,50 psi) min.

4. If the oil pressure is out of specifications, inspect these items:
   - Replace the oil filter (see **ENGINE OIL FILTER REPLACEMENT**).
   - Inspect the oil pressure relief valve (see **OIL PUMP OVERHAUL**).
   - Check the oil screen for clogging.
   - Inspect the oil pump (see **INSPECTION**).

ENGINE OIL REPLACEMENT

1. Warm up the engine.
2. Remove the drain bolt (A), and drain the engine oil.

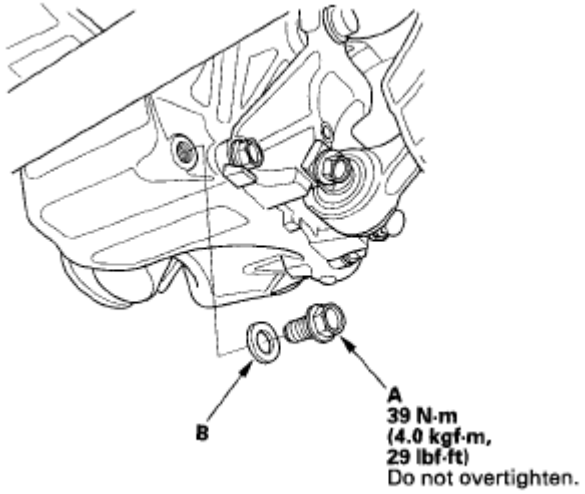


Fig. 9: Identifying Drain Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the drain bolt with a new washer (B).
4. Refill the engine with the recommended oil (see **LUBRICANTS AND FLUIDS**).

   Capacity

   At Oil Change:

3.5 L (3.7 US qt)

At Oil Change including Filter:

3.7 L (3.9 US qt)

After Engine Overhaul:

4.5 L (4.8 US qt)

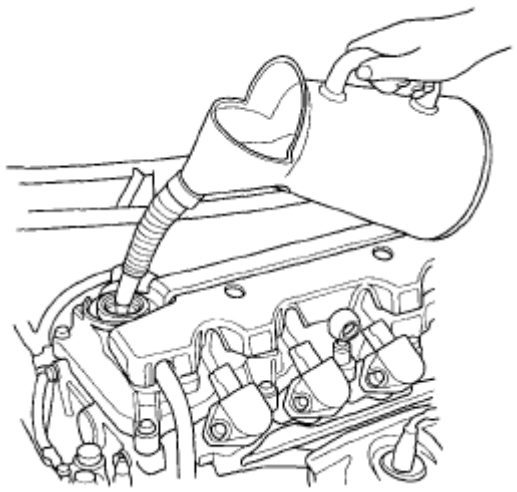


Fig. 10: Filling Engine With Recommended Oil
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. 2006 4-door model and 2007 2 and 4-door models: If the maintenance minder required to replace the engine oil, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), then go to step 13. If the maintenance minder did not require to replace the engine oil, go to step 6.

   2006 2-door model: If the maintenance minder required to replace the engine oil, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), then go to step 13. If the maintenance minder did not require to replace the engine oil, notify the customer that the maintenance minder term is not reset for the item that was replaced and the maintenance minder will show to replace the engine oil before the actual maintenance timing.

6. Connect the HDS to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
7. Turn the ignition switch ON (II).
8. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
9. Select BODY ELECTRICAL with the HDS.
10. Select ADJUSTMENT in the GAUGES MENU with the HDS.
11. Select RESET in the MAINTENANCE MINDER with the HDS.
12. Select RESETTING THE ENGINE OIL LIFE with the HDS.

NOTE: If you changed the ATF at the same time with the engine oil, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

13. Run the engine for more than 3 minutes, then check for oil leakage.
14. Reset the maintenance information display (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**).

ENGINE OIL FILTER REPLACEMENT

Special Tools Required

Oil filter wrench 07HAA-PJ70100

1. Remove the oil filter with the oil filter wrench.
2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the oil pan, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.

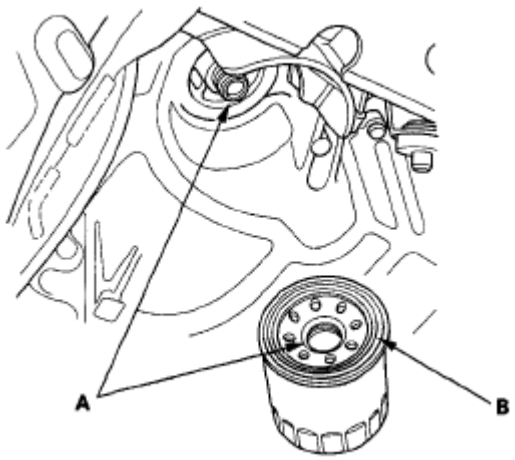


Fig. 11: Identifying Threads And Rubber Seal On Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil filter by hand.
5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

Tighten: 3/4 Turn Clockwise

Tightening Torque: 12 N.m (1.2 kgf.m, 8.7 lbf.ft)

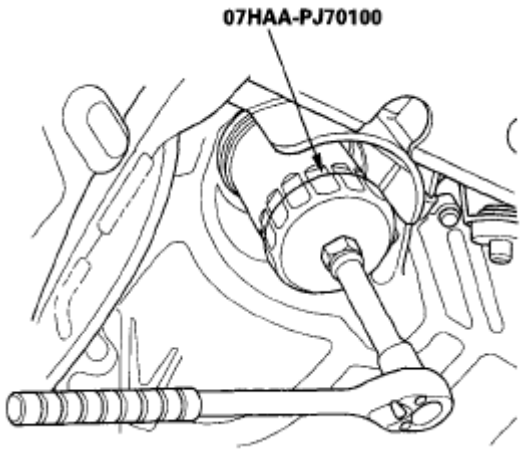
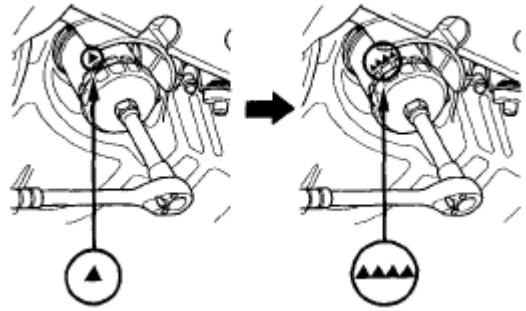


Fig. 12: Identifying Oil Filter Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If four numbers or marks (1 to 4 triangle symbols) are printed around the outside of the filter, you can use the following procedure to tighten the filter.
   - Spin the filter on until its seal lightly seats against the oil pan, and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if triangle mark is at the bottom when the seal is lightly seated, tighten the filter until the triangle mark comes around to the bottom.



Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

Fig. 13: Identifying Filter Marks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

OIL FILTER FEED PIPE REPLACEMENT

1. Remove the filter (see **ENGINE OIL FILTER REPLACEMENT**).
2. Remove the oil filter feed pipe.

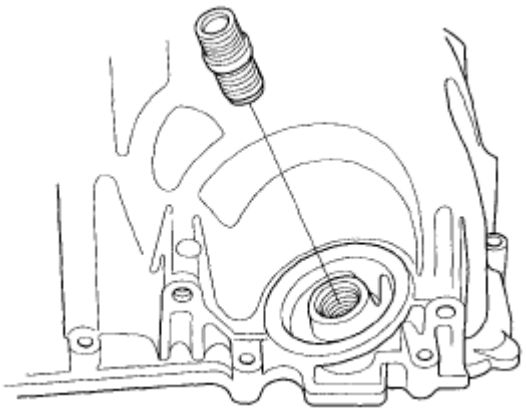


Fig. 14: Identifying Oil Filter Feed Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe. Hold one nut with a wrench, then use a second wrench to tighten the other nut.

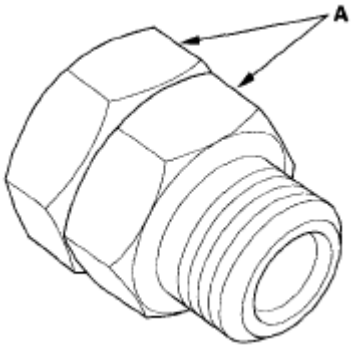


Fig. 15: Identifying Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the oil filter feed pipe to 49 N.m (5.0 kgf.m, 36 lbf.ft), then remove the nuts from the oil filter feed pipe.
5. Install the filter (see **ENGINE OIL FILTER REPLACEMENT**).

OIL JET REPLACEMENT

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Remove the oil jet bolts (A), then remove and discard the oil jets (B).

12 mm oil jet bolt

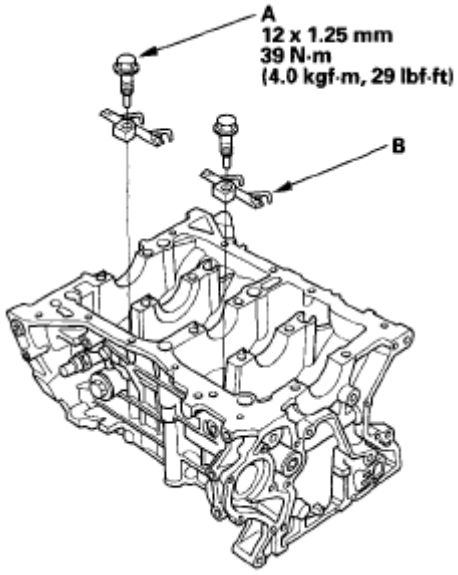


Fig. 16: Identifying Oil Jet Bolts And Oil Jets (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully install the new oil jet, and tighten the oil jet bolt.
4. Install the crankshaft (see **CRANKSHAFT INSTALLATION**).

OIL JET BOLT INSPECTION

1. Remove the oil jet (see **OIL JET REPLACEMENT**).
2. Inspect the oil jet bolt as follows.

12 mm oil jet bolt

- Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the oil intake (1.2 mm (0.05 in.) diameter). Make sure the check ball (A) moves smoothly and has a stroke of about 4.0 mm (0.16 in.).
- Check the oil jet operation with an air nozzle. It should take at least 310 kPa (3.2 kgf/cm^2 , 46 psi) to unseat the check ball.

8 mm oil jet bolt

- Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the nozzle hole (A) (1.2 mm (0.05 in.) diameter).
- Insert the other end of a 0.9 mm (0.04 in.) drill into the oil intake (1.0 mm (0.04 in.) diameter). Make sure the check ball (B) moves smoothly and has a stroke of approximately 4.0 mm (0.16 in.).
- Check the oil jet operation with an air nozzle. It should take at least 310 kPa (3.2 kgf/cm^2 , 46 psi) to unseat the check ball.

NOTE: Replace the oil jet assembly if the nozzle is damaged or bent.

12 mm oil jet bolt

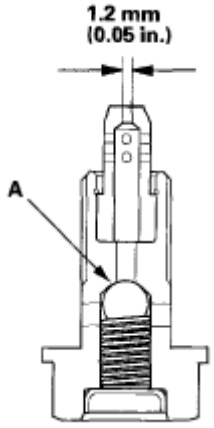


Fig. 17: Identifying Check Ball
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully install the oil jet. The mounting torque is critical.

OIL PUMP OVERHAUL

Exploded View

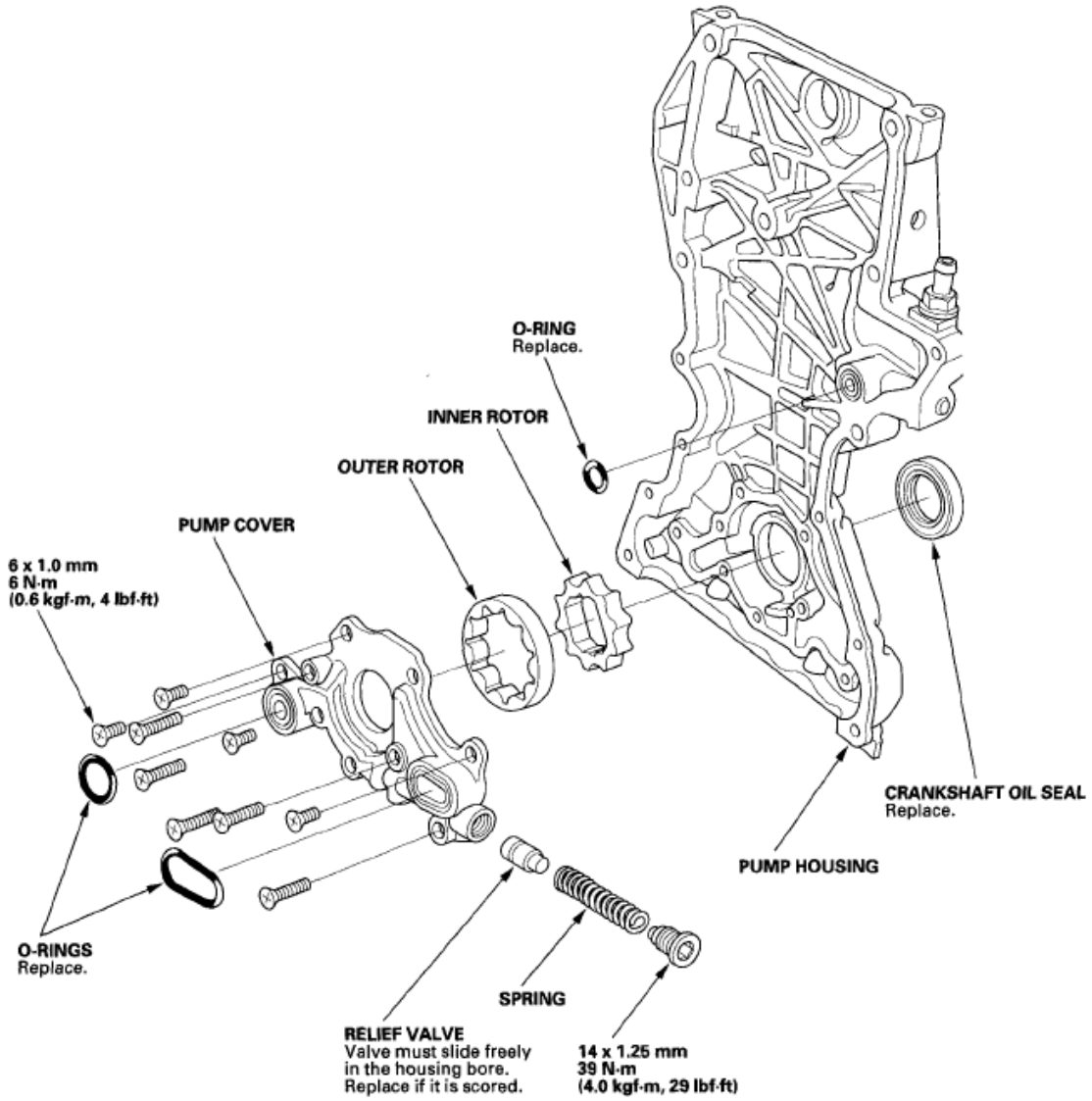


Fig. 18: Exploded View Of Oil Pump (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Removal

1. Remove the front wheels.
2. Remove the splash shield.
3. Remove the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
4. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
5. Remove the positive crankcase ventilation (PCV) hose.

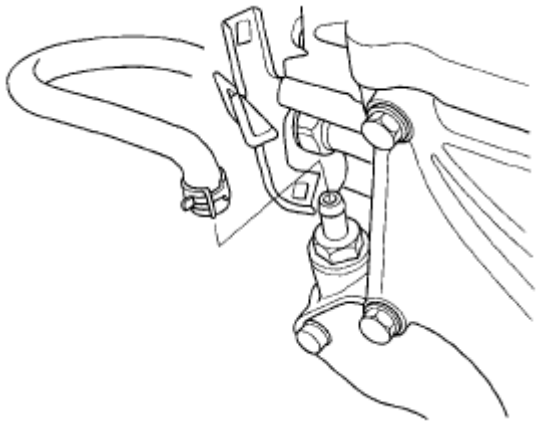


Fig. 19: Identifying Positive Crankcase Ventilation Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
7. Support the engine with a jack and a wood block under the oil pan.
8. Remove the bolt (A) securing the A/C line, then remove the upper torque rod (B).

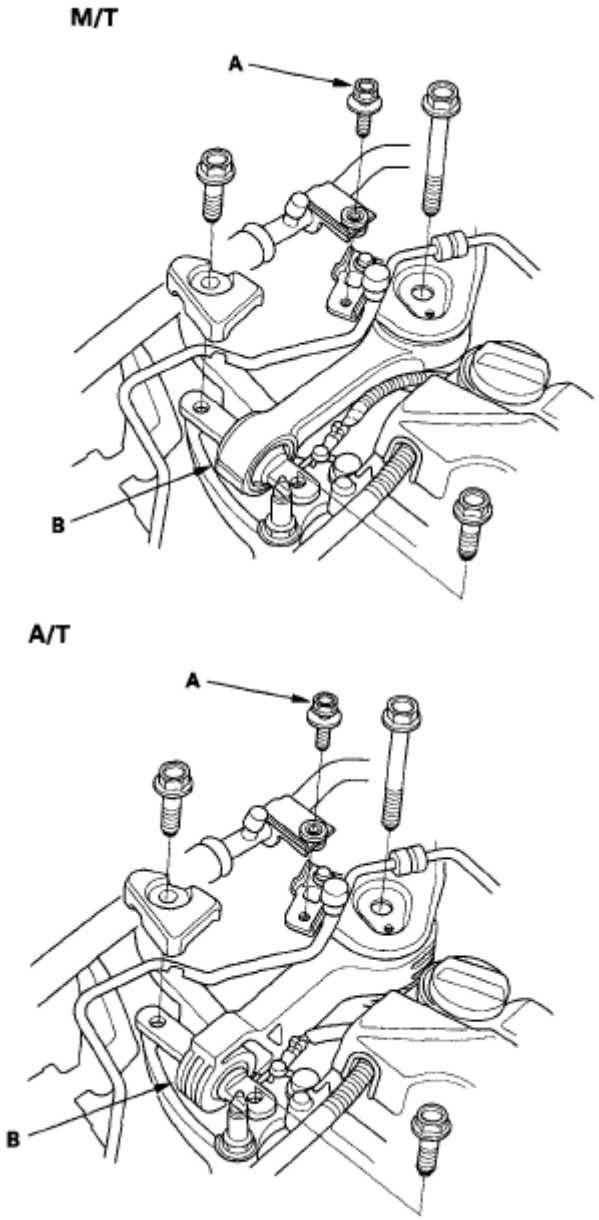


Fig. 20: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the ground cable (A), then remove the side engine mount bracket (B).

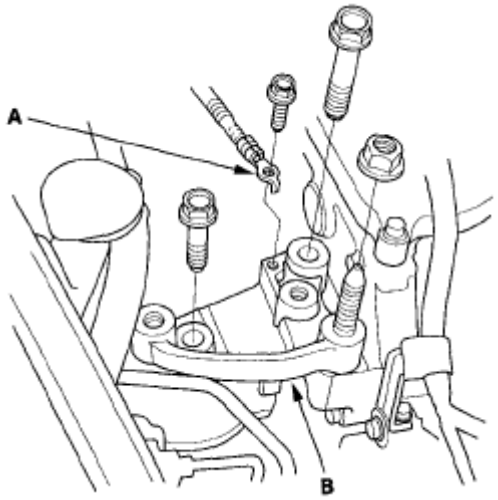


Fig. 21: Identifying Ground Cable And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the oil pump.

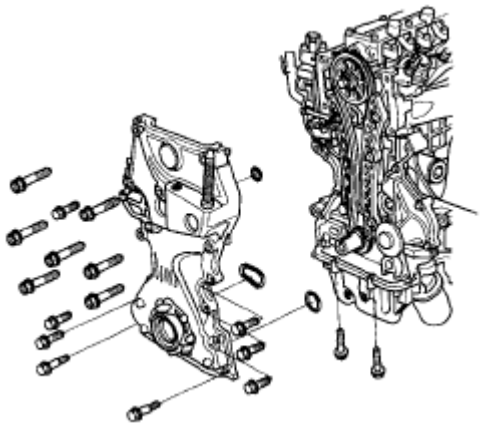


Fig. 22: Identifying Engine Front Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Inspection

1. Remove the screws from the pump housing, then separate the housing and cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

   Inner Rotor-to-Outer Rotor Radial Clearance

   Standard (New): 0.02-0.16 mm

   (0.001-0.006 in.)

   Service Limit: 0.20 mm (0.008 in.)

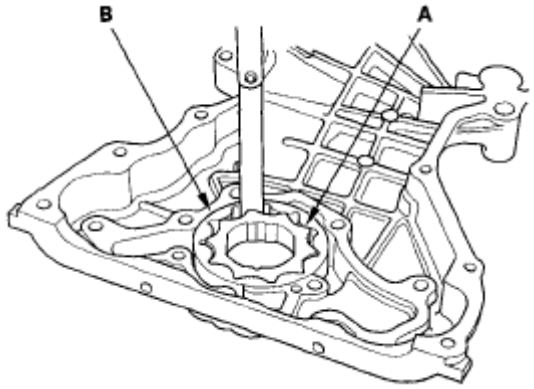


Fig. 23: Identifying Inner Rotor And Outer Rotor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

   Housing-to-Rotor Axial Clearance

   Standard (New): 0.02-0.07 mm

   (0.001-0.003 in.)

   Service Limit: 0.12 mm (0.005 in.)

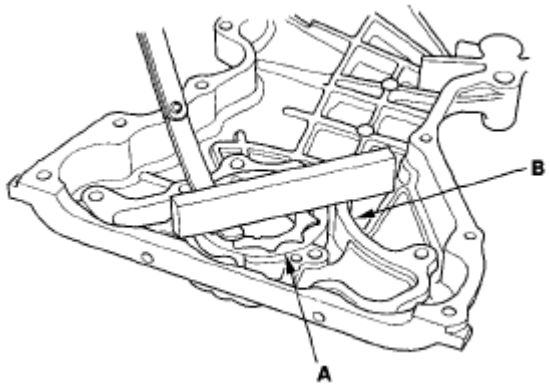


Fig. 24: Identifying Rotors And Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

   Housing-to-Outer Rotor Radial Clearance

   Standard (New): 0.100-0.175 mm

   (0.0039-0.0069 in.)

   Service Limit: 0.20 mm (0.008 in.)

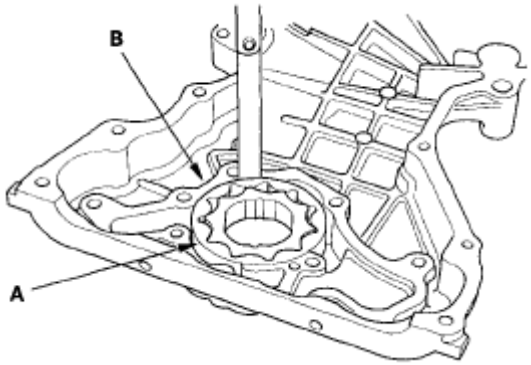


Fig. 25: Identifying Outer Rotor And Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Inspect both rotors and pump housing for scoring or other damage. Replace the parts, if necessary.
6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.
7. Check that the oil pump turns freely.

Installation

1. Check the oil pump oil seal for damage. If the oil seal is damaged, replace the oil seal (see **PULLEY END CRANKSHAFT OIL SEAL INSTALLATION**).
2. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
3. Clean, and dry the oil pump mating surfaces.
4. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

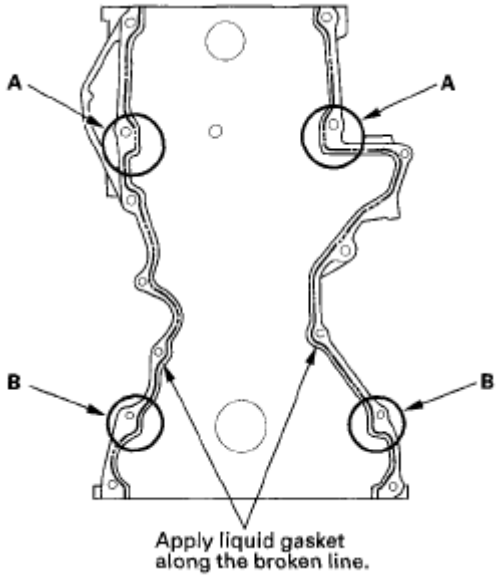


Fig. 26: Identifying Engine Block Upper Surface Contact Areas
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Apply liquid gasket to the engine block upper surface contact areas (A) on the oil pump, and lower block upper surface contact areas (B) on the oil pump.
6. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the oil pump.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

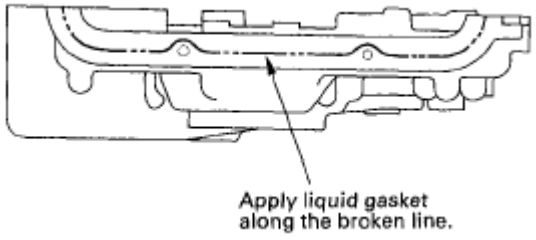


Fig. 27: Identifying Liquid Gasket Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install new O-rings (A) on the oil pump. Set the edge of the oil pump (B) to the edge of the oil pan (C), then install the oil pump on the engine block (D). Loosely install the dowel bolts (E), then tighten the 8 mm bolts (F). Tighten the 6 mm bolts (G) and dowel bolts. Wipe off the excess liquid gasket on the oil pan and oil pump mating area.

NOTE:

- **When installing the oil pump, do not slide the bottom surface onto the oil pan mounting surface.**

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the oil pump.**

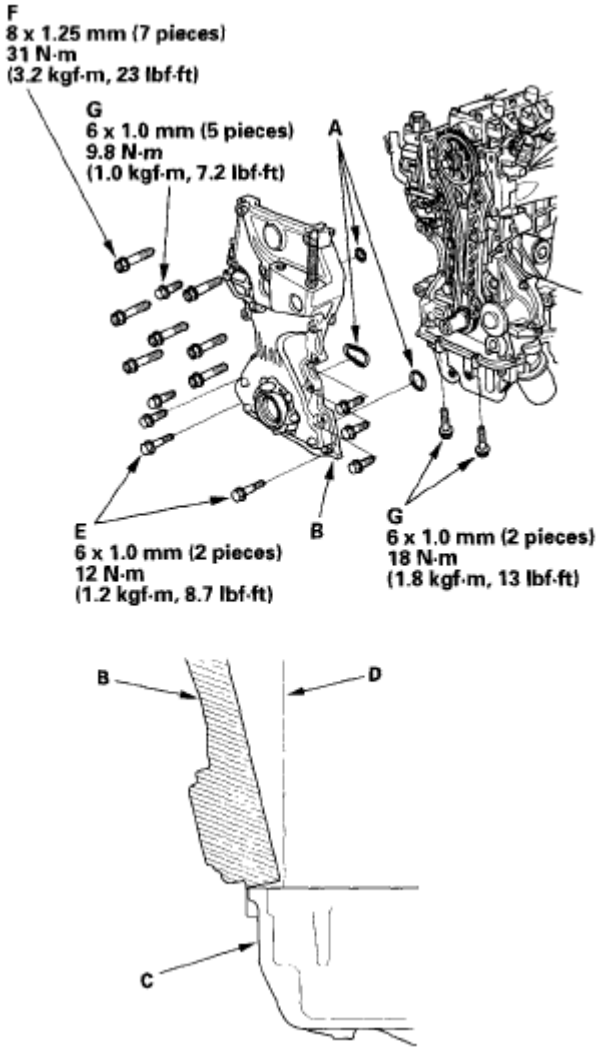


Fig. 28: Identifying O-Rings And Edge Of Oil Pump (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B), and loosely tighten the bolt (C).

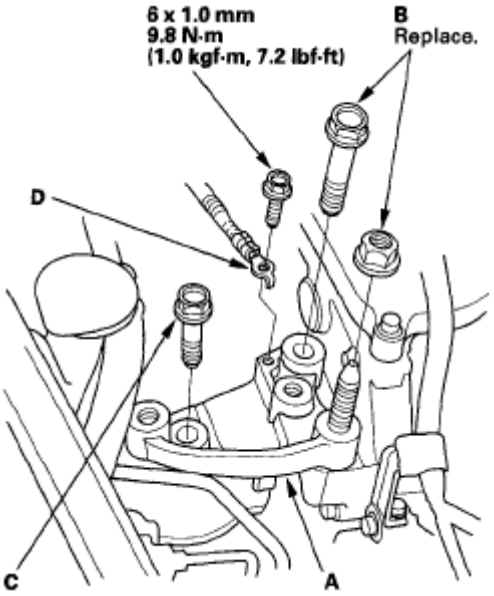
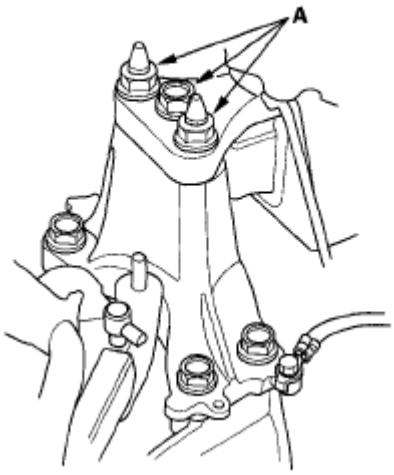


Fig. 29: Identifying Side Engine Mount Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the ground cable (D).
10. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
11. Loosen the transmission mounting bolt and nuts (A).

M/T



A/T

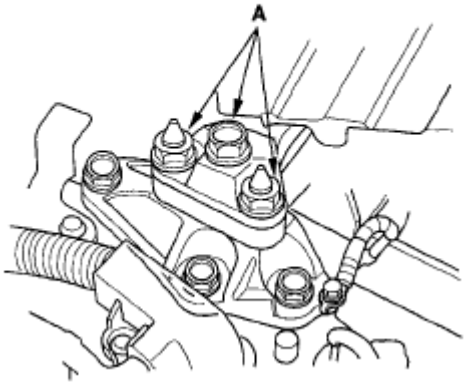


Fig. 30: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Raise the vehicle on the lift to full height.
13. Loosen the lower torque rod mounting bolt (A).

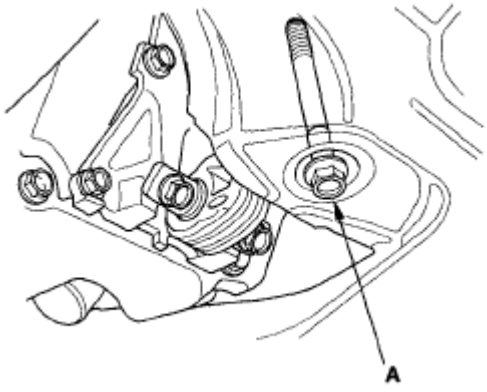


Fig. 31: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Lower the vehicle on the lift.

15. Tighten the side engine mount mounting bolts and nut.

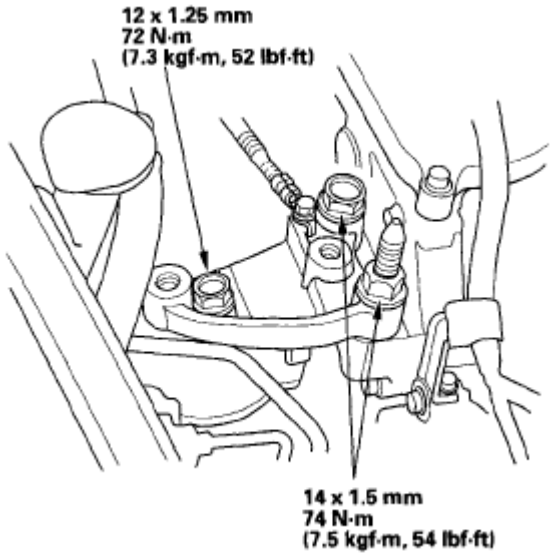


Fig. 32: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Tighten the transmission mounting bolt and nuts.

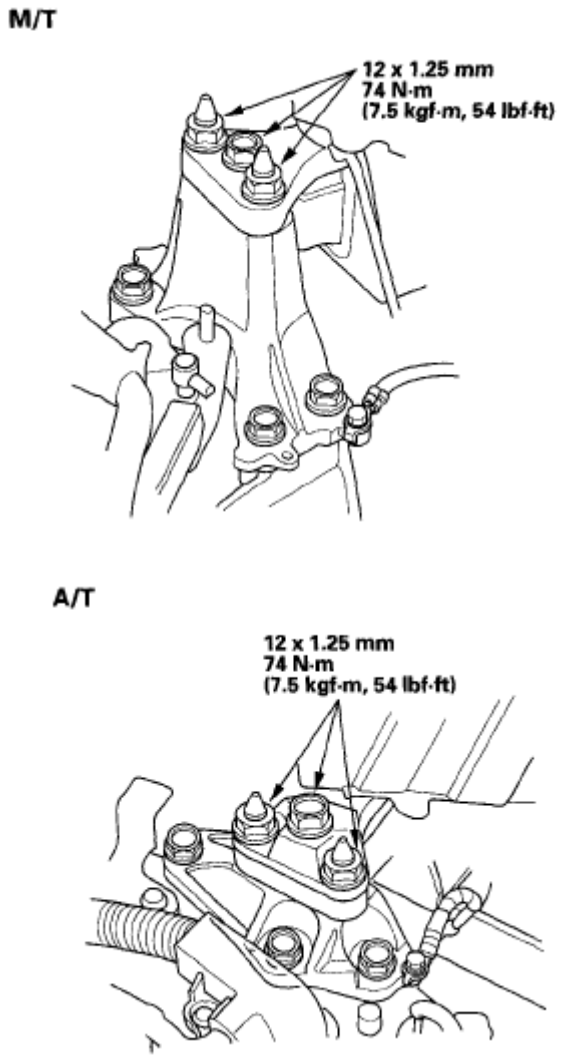


Fig. 33: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Raise the vehicle on the lift to full height.
18. Tighten the lower torque rod mounting bolt.

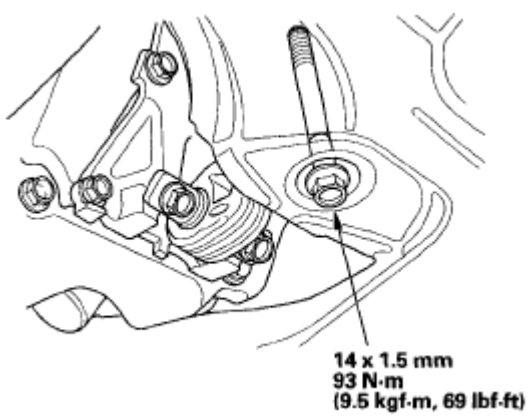


Fig. 34: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Lower the vehicle on the lift.
20. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
21. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

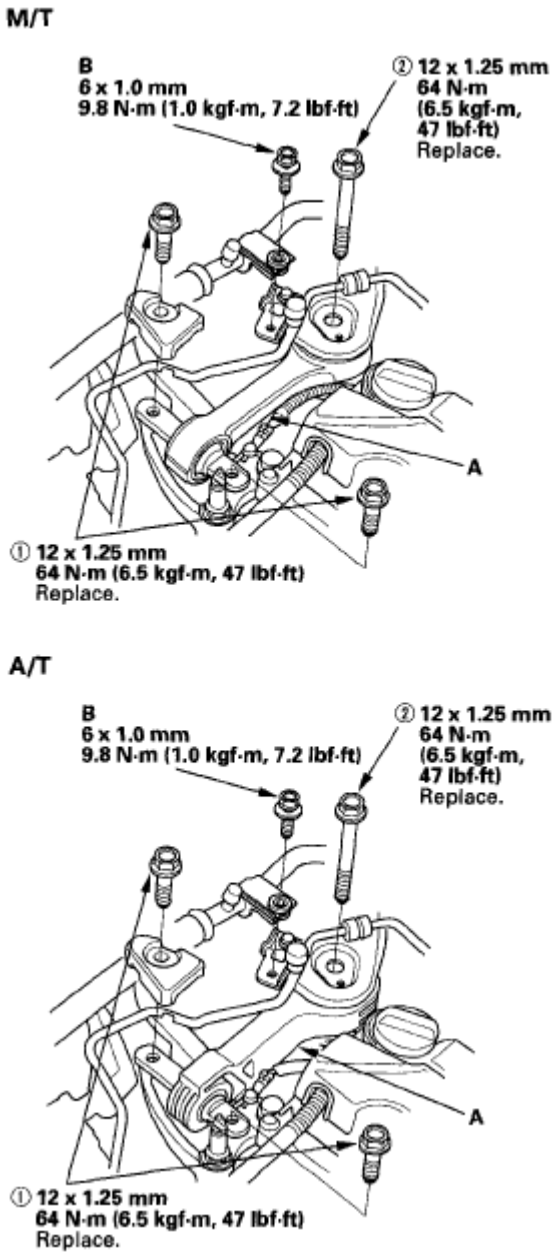


Fig. 35: Identifying Upper Torque Rod Mounting Bolts And Tightening Sequence (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the bolt (B) securing the A/C line.
23. Install the crankshaft pulley (see **INSTALLATION**).
24. Install the positive crankcase ventilation (PCV) hose.

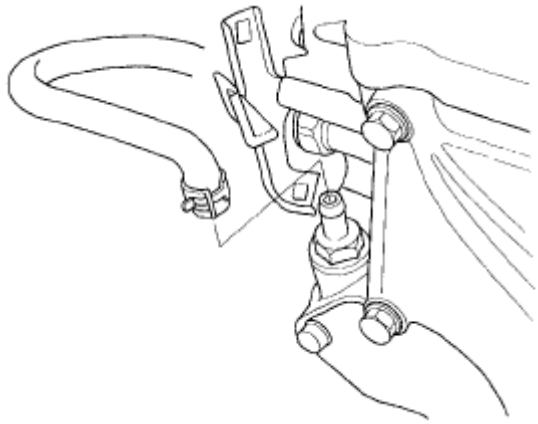


Fig. 36: Identifying Positive Crankcase Ventilation Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
26. Install the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
27. Install the splash shield.
28. Install the front wheels.

PULLEY END CRANKSHAFT OIL SEAL INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Attachment, 60 mm 07LAD-SM40100

1. Using the special tools, Gently tap in the new oil seal until the driver bottoms on the oil pump.

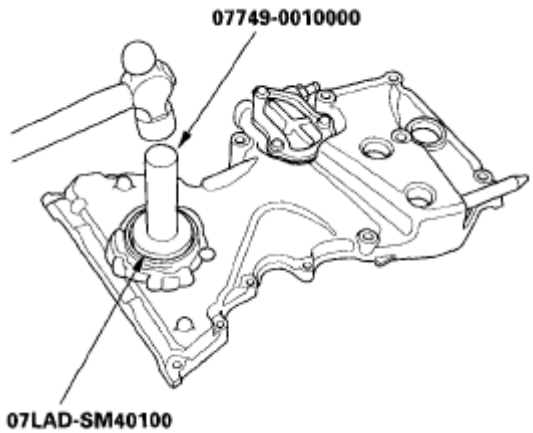


Fig. 37: Positioning Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL/AIR SEPARATOR INSTALLATION

1. Remove all of the old liquid gasket from the oil/air separator mating surfaces, bolts, and bolt holes.

2. Clean, and dry the oil/air separator mating surfaces.
3. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil/air separator.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

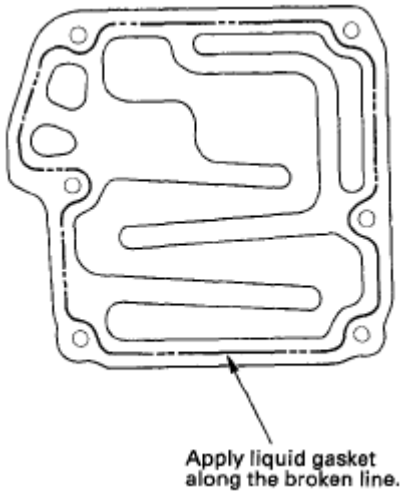


Fig. 38: Identifying Liquid Gasket Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil/air separator.

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the oil/air separator.**

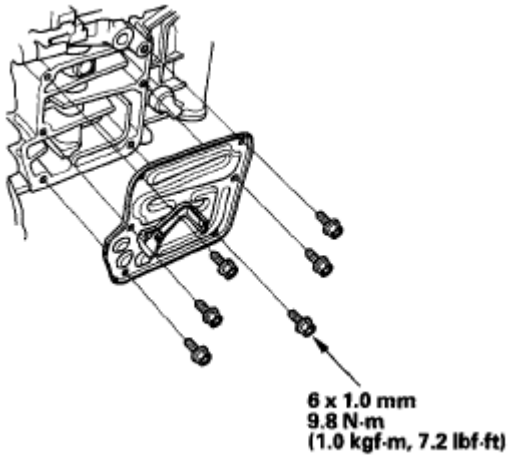
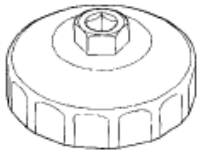


Fig. 39: Identifying Oil/Air Separator Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE LUBRICATION (K20Z3)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1



①

Fig. 40: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

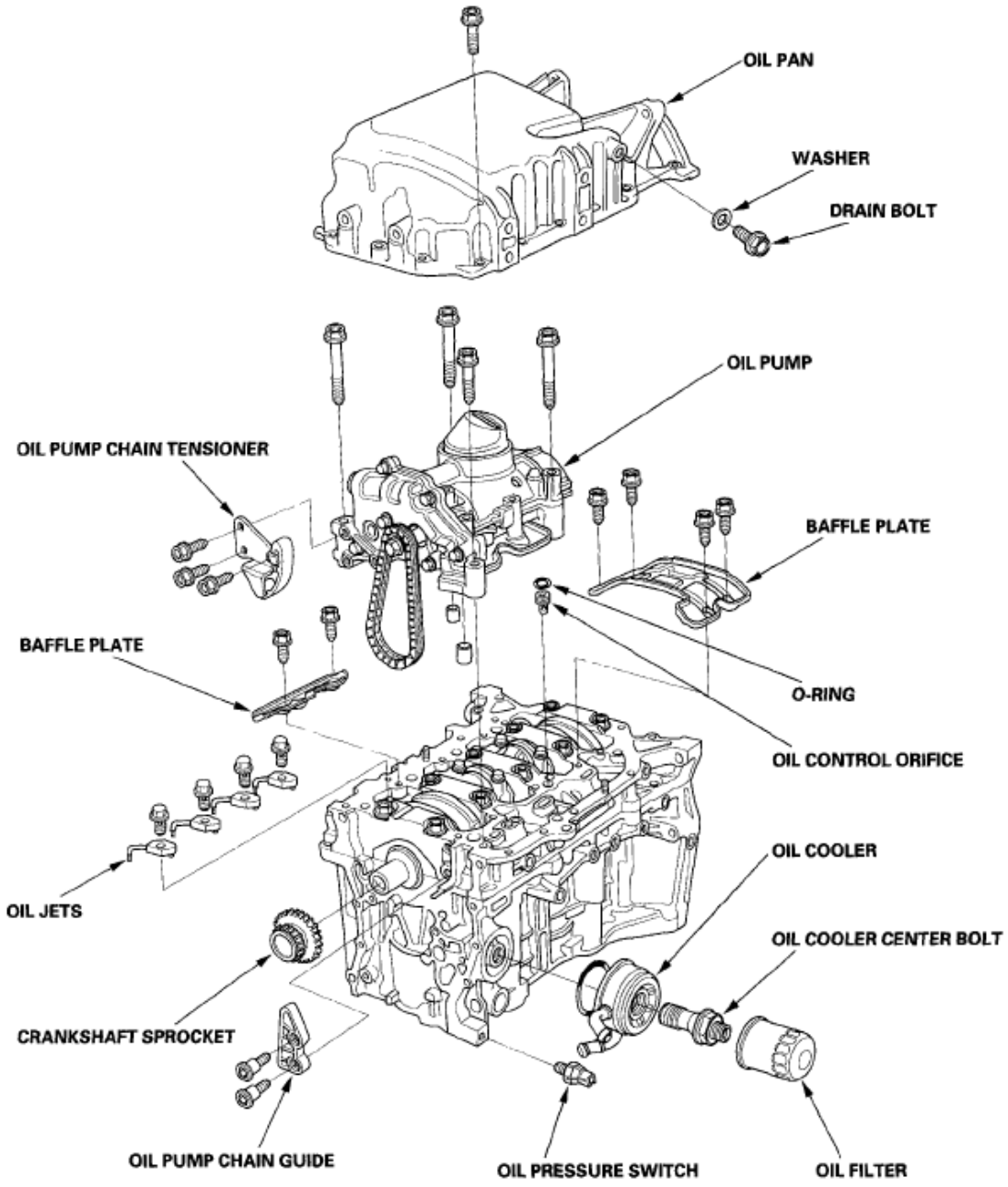


Fig. 41: Identifying Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	1. Check for loose of the engine oil fill cap, oil drain bolt, and oil filter. 2. Check for oil leaks.	

	3. Check for worn valve guide(s) (see **VALVE INSPECTION**) or worn valve stem seal(s) (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**). 4. Check for damaged or worn piston ring(s) (see **PISTON RING REPLACEMENT**). 5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see **BLOCK AND PISTON INSPECTION**).	
Low oil pressure indicator does not come on with the ignition switch ON (II)	1. Do the low oil pressure indicator circuit troubleshooting (Open) (see **LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (OPEN)**). 2. Test the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).	An open in the wire between the engine control module (ECM) and the oil pressure switch
Low oil pressure indicator stays on	1. Check the engine oil level. 2. Do the low oil pressure indicator circuit troubleshooting (Short) (see **LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (SHORT)**). 3. Test the oil pressure switch (see **OIL PRESSURE SWITCH TEST**). 4. Check the engine oil pressure (see **OIL PRESSURE TEST**). 5. Check the oil filter for clogging. 6. Check the oil screen for clogging. 7. Check the relief valve (see **OIL PUMP OVERHAUL**). 8. Test the oil pump (see **OIL PUMP INSPECTION**).	A wire shorted to ground between the ECM and the oil pressure switch

LOW OIL PRESSURE INDICATOR CIRCUIT DIAGRAM

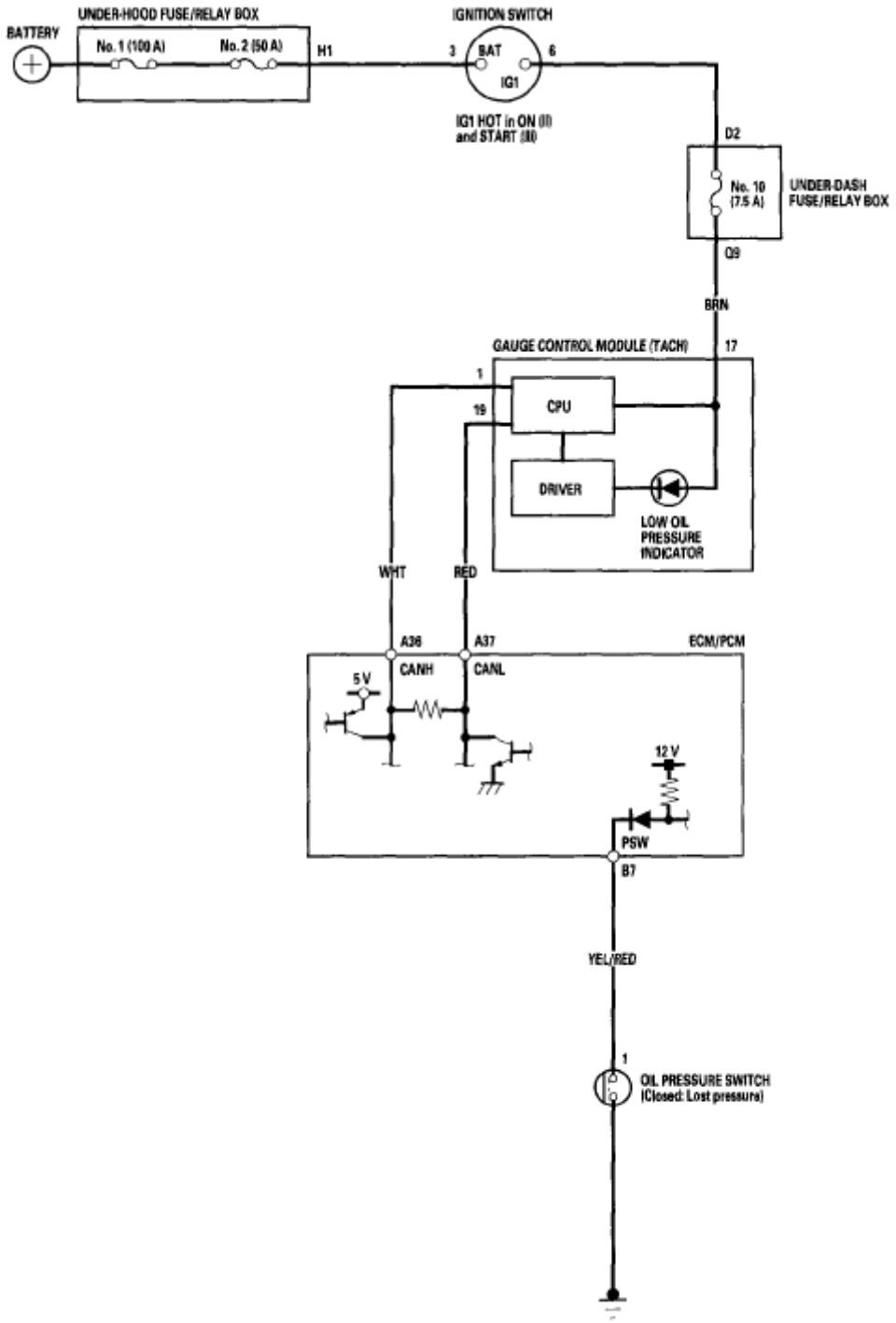


Fig. 42: Low Oil Pressure Indicator Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (OPEN)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose, and repair the cause before continuing with this test.
5. Turn the ignition switch ON (II), select PGM-FI, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "ON" indicated?

   YES -Replace the gauge control module (tach) (see **REPLACEMENT**).

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Check the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

   Is the oil pressure switch OK?

   YES -Go to step 7.

   NO -Replace the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

8. Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

   NOTE: This step must be done to protect the ECM from damage.

9. Disconnect ECM connector B (44P) and the oil pressure switch connector.
10. Check for continuity between ECM connector terminal B7 and the oil pressure switch connector.

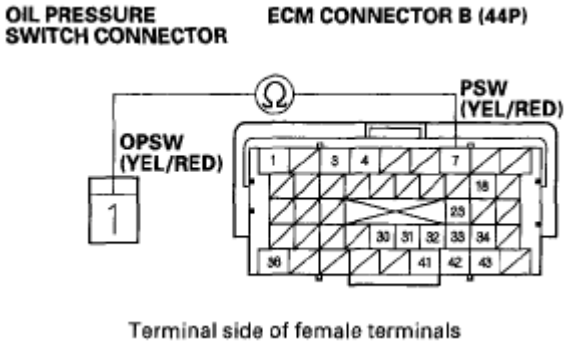


Fig. 43: Checking For Continuity Between ECM Connector Terminal B7 And Oil Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO -Repair open in the wire between the oil pressure switch and the ECM.

LOW OIL PRESSURE INDICATOR CIRCUIT TROUBLESHOOTING (SHORT)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose, and repair the cause before continuing with this test.
5. Start the engine, select PGM-FI, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "OFF" indicated?

   YES -Replace the gauge control module (tach) (see **REPLACEMENT**).

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the oil pressure switch connector.
8. Start the engine, and check the OIL PRESSURE SWITCH in the DATA LIST with the HDS.

   Is "OFF" indicated?

   YES -Go to step 9.

   NO -Go to step 11.

9. Turn the ignition switch to LOCK (0).
10. Check the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

    Is the oil pressure switch OK?

    YES -Do the oil pressure test (see **OIL PRESSURE TEST**).

    NO -Replace the oil pressure switch (see **OIL PRESSURE SWITCH TEST**).

11. Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the ECM from damage.

12. Disconnect ECM connector B (44P) and the oil pressure switch connector.
13. Check for continuity between the oil pressure switch connector and body ground.

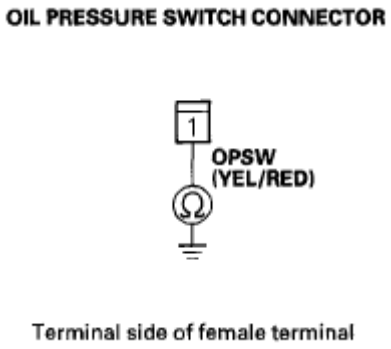


Fig. 44: Checking For Continuity Between Oil Pressure Switch Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the oil pressure switch and the ECM.

NO -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

OIL PRESSURE SWITCH TEST

1. Remove the oil pressure switch connector (A) from the engine oil pressure switch (B).

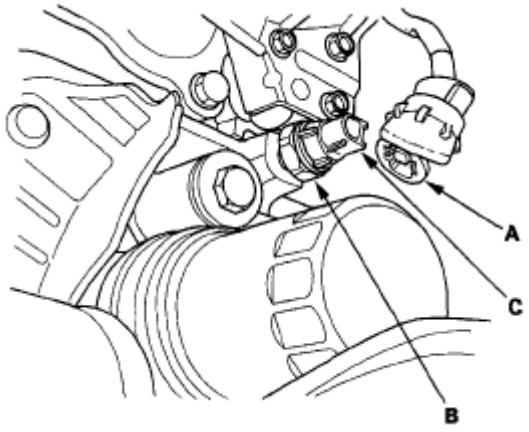


Fig. 45: Identifying Oil Pressure Switch Connector And Engine Oil Pressure Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

OIL PRESSURE SWITCH REPLACEMENT

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.

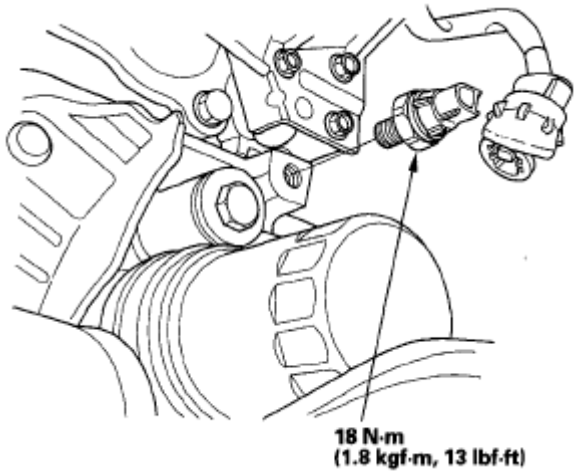


Fig. 46: Identifying Torque Specifications Of Oil Pressure Switch (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove any old liquid gasket from the switch and switch mounting hole.
3. Apply very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

OIL PRESSURE TEST

NOTE: If the oil pressure warning light stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, and install an oil pressure gauge (A).

Fig. 47: Identifying Oil Pressure Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

   Engine Oil Temperature: 176°F (80°C)

   Engine Oil Pressure:

   At Idle: 70 kPa (0.7 kgf/cm^2 ,10 psi) min.

   At 3,000 rpm: 300 kPa (3.1 kgf/cm^2 ,44 psi) min.

4. If the oil pressure is out of specifications, inspect these items:
   - Replace the oil filter (see **ENGINE OIL FILTER REPLACEMENT**).
   - Inspect the oil pressure relief valve (see **OIL PUMP OVERHAUL**).
   - Check the oil screen for clogging.
   - Check the oil pump (see **OIL PUMP INSPECTION**).

ENGINE OIL REPLACEMENT

1. Warm up the engine.
2. Remove the drain bolt (A), and drain the engine oil.

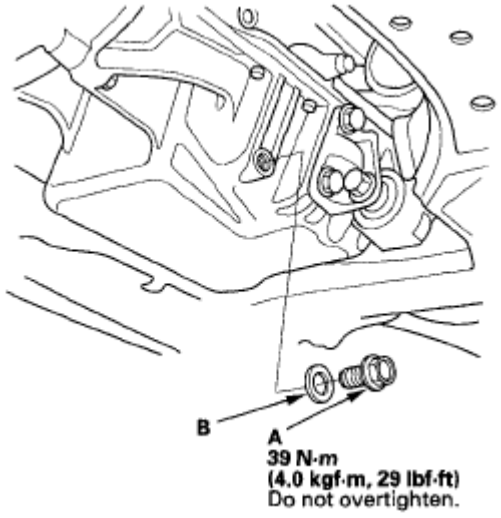


Fig. 48: Identifying Torque Specifications Of Drain Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Reinstall the drain bolt with a new washer (B).
4. Refill the engine with the recommended oil (see **LUBRICANTS AND FLUIDS**).

   Capacity

   At Oil Change: 4.2 L (4.4 US qt)

At Oil Change including Filter: 4.4 L (4.6 US qt)

After Engine Overhaul: 5.5 L (5.8 US qt)

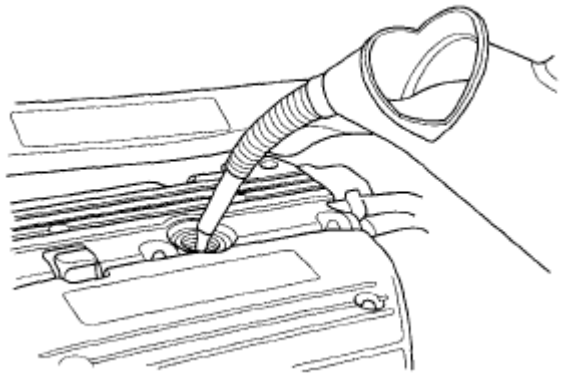


Fig. 49: Filling Engine With Recommended Oil
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the maintenance minder required to replace the engine oil, reset the maintenance minder (see **MAINTENANCE MINDER**), then go to step 8. If the maintenance minder did not require to remove the engine oil, go to step 6.
6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
7. Turn the ignition switch ON (II).
8. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't communicate, troubleshoot the DLC circuit (see **GENERAL TROUBLESHOOTING INFORMATION**).
9. Select BODY ELECTRICAL with the HDS.
10. Select ADJUSTMENT in the GAUGES MENU with the HDS.
11. Select RESET in the MAINTENANCE MINDER with the HDS
12. Select RESETTING THE ENGINE OIL LIFE with the HDS.
13. Run the engine for at least 3 minutes, then check for oil leakage.
14. Reset the maintenance information display (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**).

ENGINE OIL FILTER REPLACEMENT

Special Tools Required

Oil filter wrench 07HAA-PJ70100

1. Remove the oil filter with the special oil filter wrench.
2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the oil cooler, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.

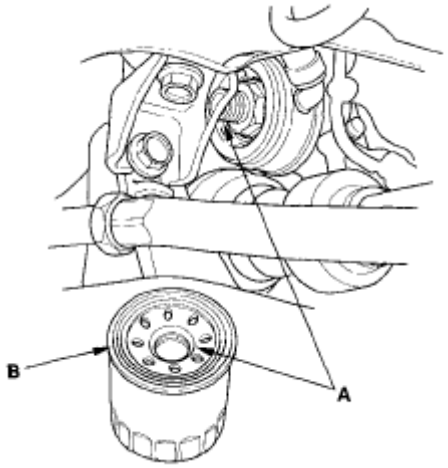


Fig. 50: Identifying Threads And Rubber Seal On Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil filter by hand.
5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

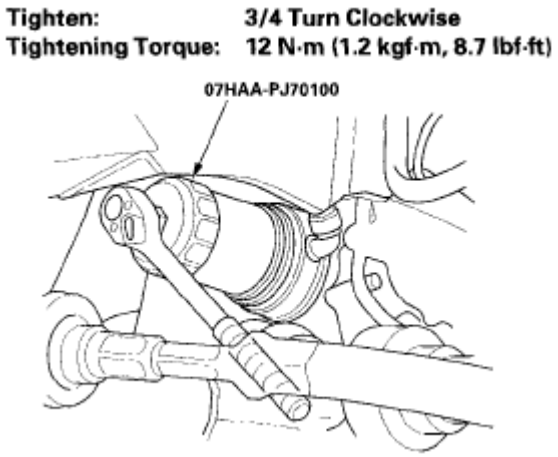
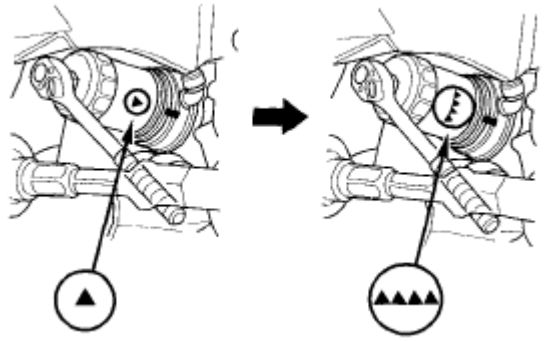


Fig. 51: Identifying Oil Filter Wrench (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If four numbers or marks (1 to 4 or dtrif to dtrif) are printed around the outside of the filter, use the following procedure to tighten the filter.
    - Spin the filter on until its seal lightly seats against the oil cooler, and note which number or mark is at the bottom.
    - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 1 comes around the bottom.



Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

Fig. 52: Identifying Marks On Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Cooler Replacement

1. Remove the oil filter (see **ENGINE OIL FILTER REPLACEMENT**).
2. Remove the oil cooler bypass hoses (A) and oil cooler center bolt (B), then remove the oil cooler (C).

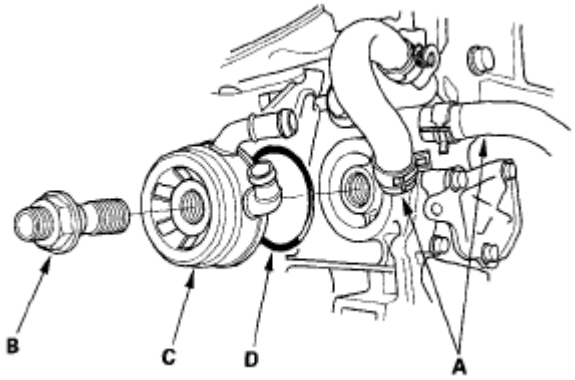


Fig. 53: Identifying Oil Cooler Center Bolt And Oil Cooler
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the oil cooler using a new O-ring (D). Tighten the oil cooler center bolt to 74 N.m (7.5 kgf.m, 54 lbf.ft).
4. Install the oil filter (see **ENGINE OIL FILTER REPLACEMENT**).

OIL JET INSPECTION

1. Remove the oil jet, and inspect it as follows.
   - Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the nozzle hole (A) (1.2 mm (0.05 in.) diameter).
   - Insert the other end of a 1.1 mm (0.04 in.) drill into the oil intake (1.2 mm (0.05 in.) diameter). Make sure the check ball (B) moves smoothly and has a stroke of approximately 4.0 mm (0.16 in.).
   - Check the oil jet operation with an air nozzle. It should take at least 200 kPa (2.0 kgf/cm^2 ,28 psi) to unseat the check ball.

NOTE: Replace the oil jet assembly if the nozzle is damaged or bent.

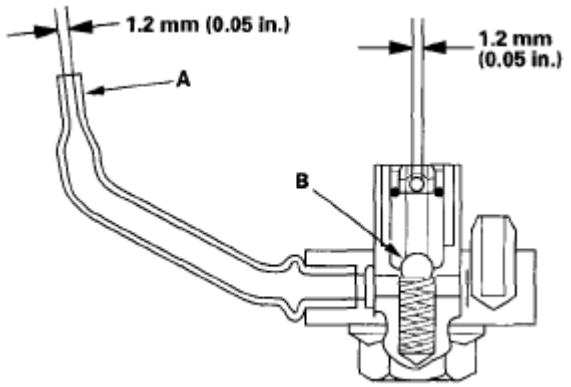


Fig. 54: Identifying Nozzle Hole Drill Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Carefully install the oil jet. The mounting torque is critical.

   Torque: 16 N.m (1.6 kgf.m, 12 lbf.ft)

OIL PUMP OVERHAUL

Exploded View

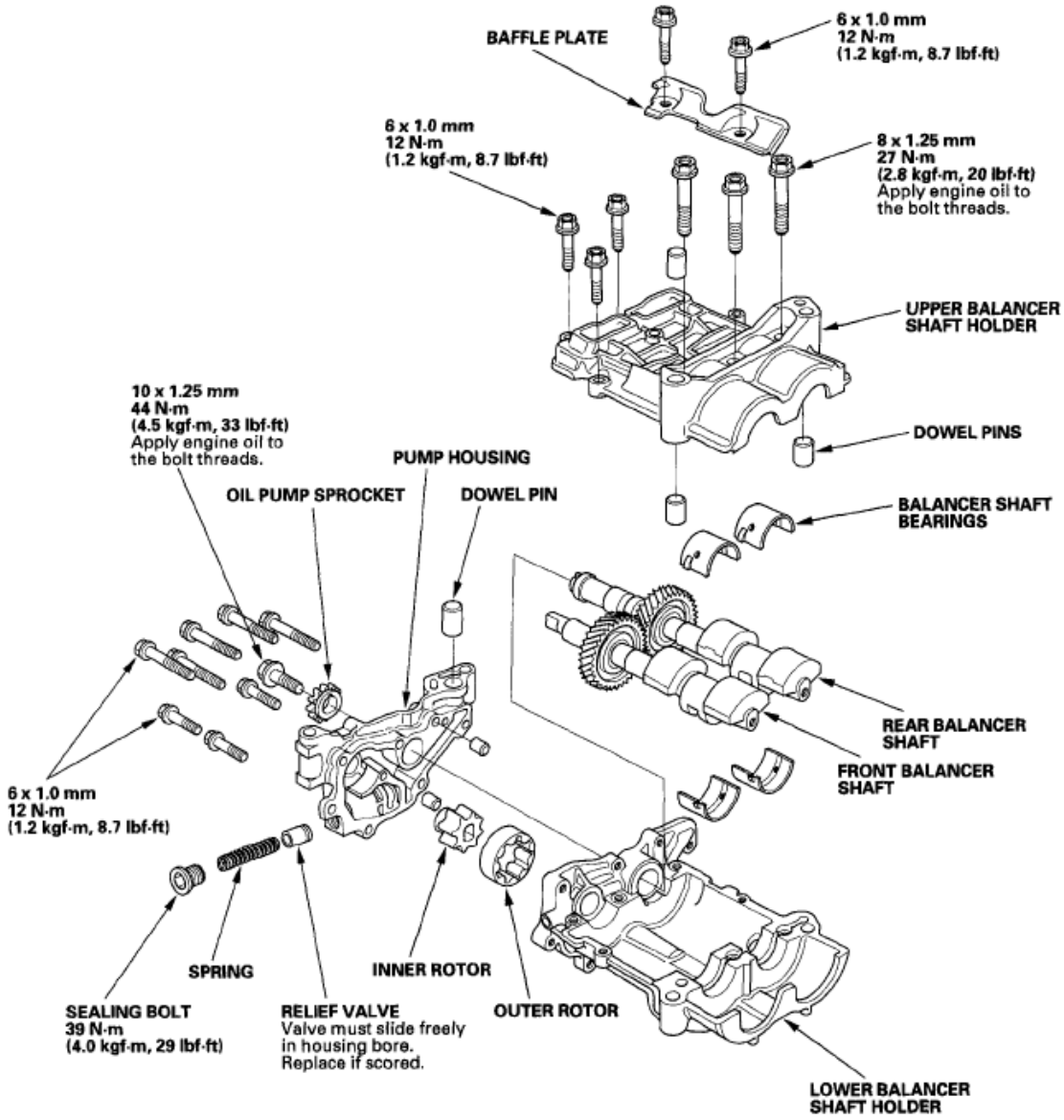


Fig. 55: Exploded View Of Oil Pump (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Oil Pump Removal

1. Turn the crankshaft pulley so its top dead center (TDC) mark (A) lines up with the pointer (B).

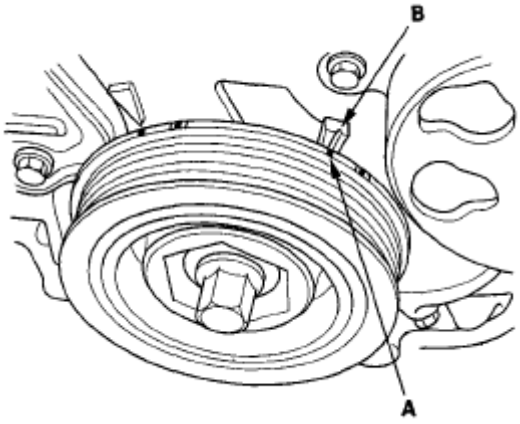


Fig. 56: Identifying Crankshaft Pulley Top Dead Center Mark Lines Up With Pointer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil pan (see **OIL PAN REMOVAL**).
3. Remove and discard the oil pump chain tensioner.

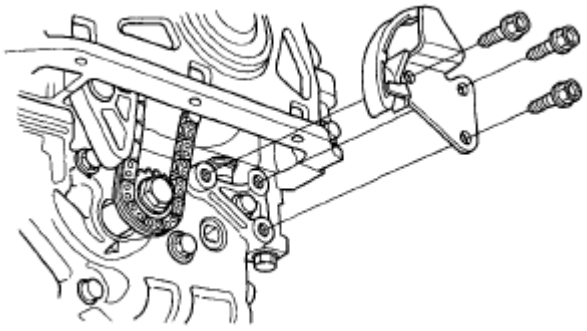


Fig. 57: Identifying Oil Pump Chain Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. To hold the rear balancer shaft, insert a 6 mm pin driver (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.

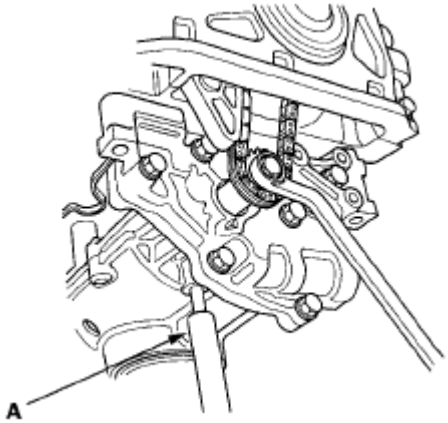


Fig. 58: Identifying Pin Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Loosen the oil pump sprocket mounting bolt.
6. Remove the oil pump sprocket (A), then remove the oil pump(B).

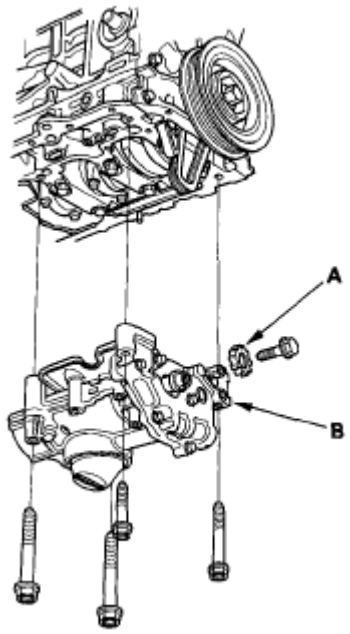


Fig. 59: Identifying Oil Pump Sprocket And Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Oil Pump Inspection

1. Remove the pump housing.

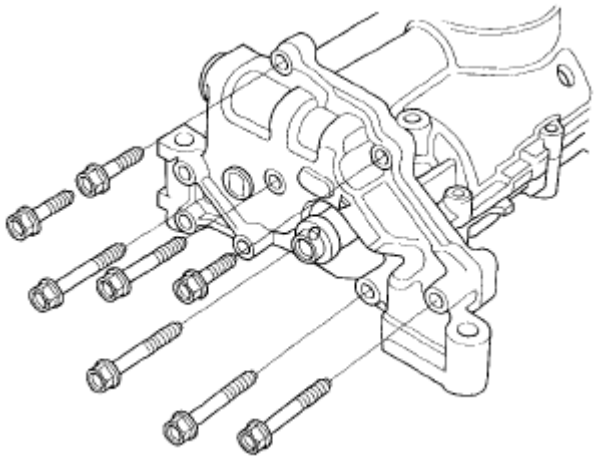


Fig. 60: Identifying Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

Inner Rotor-to-Outer Rotor Radial Clearance Standard (New): 0.06-0.16 mm (0.002-0.006 in.)
Service Limit: 0.20 mm (0.008 in.)

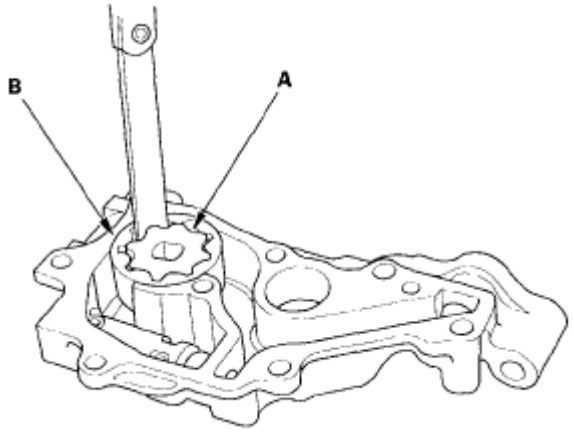


Fig. 61: Identifying Inner Rotor And Outer Rotor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check the housing-to-rotor axial clearance between the rotor (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump.

   Housing-to-Rotor Axial Clearance

   Standard (New): 0.035-0.070 mm (0.0014-0.0028 in.)

   Service Limit: 0.12 mm (0.005 in.)

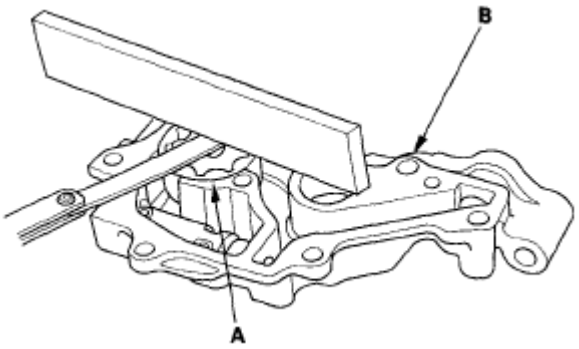


Fig. 62: Identifying Rotor And Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

   Housing-to-Outer Rotor Radial Clearance

   Standard (New): 0.15-0.21 mm (0.006-0.008 in.)

   Service Limit: 0.23 mm (0.009 in.)

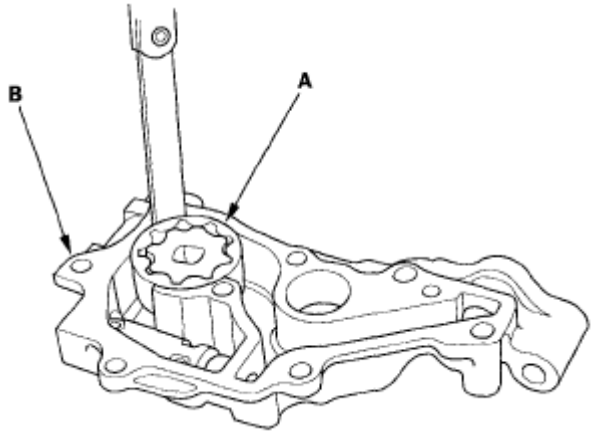


Fig. 63: Identifying Outer Rotor And Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.

Balancer Shaft Inspection

1. Seat the balancer shaft by pushing it away from the oil pump sprocket end of the oil pump.
2. Zero the dial indicator against the end of the balancer shaft, then push the balancer shaft back and forth and read the end play.

Balancer Shaft End Play

Front Balancer Shaft:

Standard (New): 0.063-0.108 mm

(0.0025-0.0043 in.)

Service Limit: 0.14 mm (0.0055 in.)

Rear Balancer Shaft:

Standard (New): 0.063-0.108 mm

(0.0025-0.0043 in.)

Service Limit: 0.14 mm (0.0055 in.)

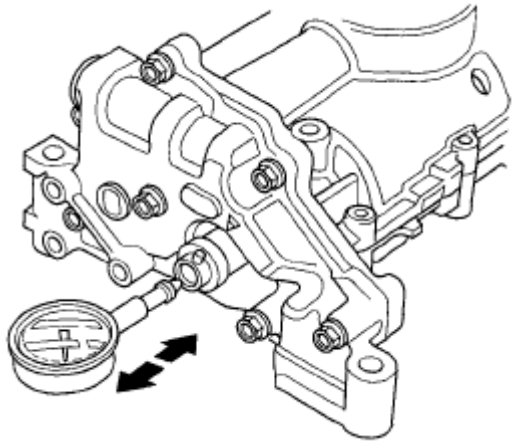


Fig. 64: Identifying Zero Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the baffle plate (A) and upper balancer shaft holder (with bearings) (B), then remove the front balancer shaft (C) and rear balancer shaft (D).

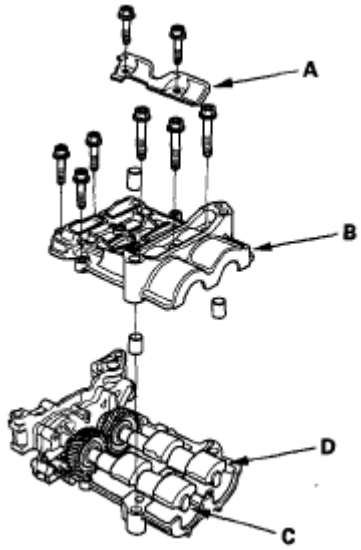


Fig. 65: Identifying Baffle Plate And Upper Balancer Shaft Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the inner diameter of the No. 1 bearing for the front balancer shaft hole and the rear balancer shaft hole.

Bearing Inner Diameter

Front:

Standard (New): 20.000-20.020 mm

(0.7874-0.7882 in.)

Service Limit: 20.03 mm (0.789 in.)

Rear:

Standard (New): 24.000-24.020 mm

(0.9449-0.9457 in.)

Service Limit: 24.03 mm (0.946 in.)

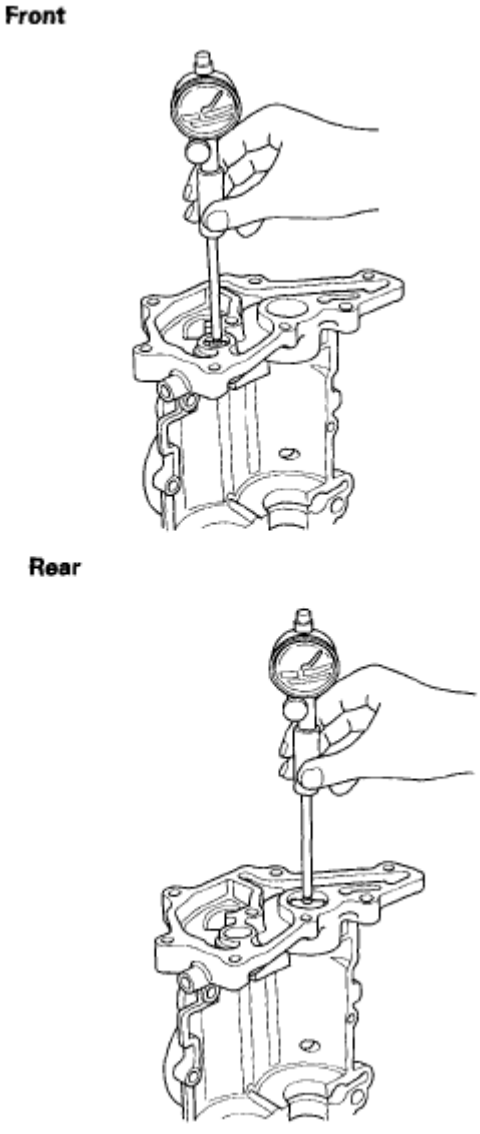


Fig. 66: Measuring Inner Diameter Of No. 1 Bearing For Front Balancer Shaft Hole And Rear Balancer Shaft Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the diameters of the No. 1 journals on the front balancer shaft and rear balancer shaft.

Journal Diameter

Front:

Standard (New): 19.938-19.950 mm

(0.7850-0.7854 in.)

Service Limit: 19.92 mm (0.784 in.)

Rear:

Standard (New): 23.938-23.950 mm

(0.9424-0.9429 in.)

Service Limit: 23.92 mm (0.942 in.)

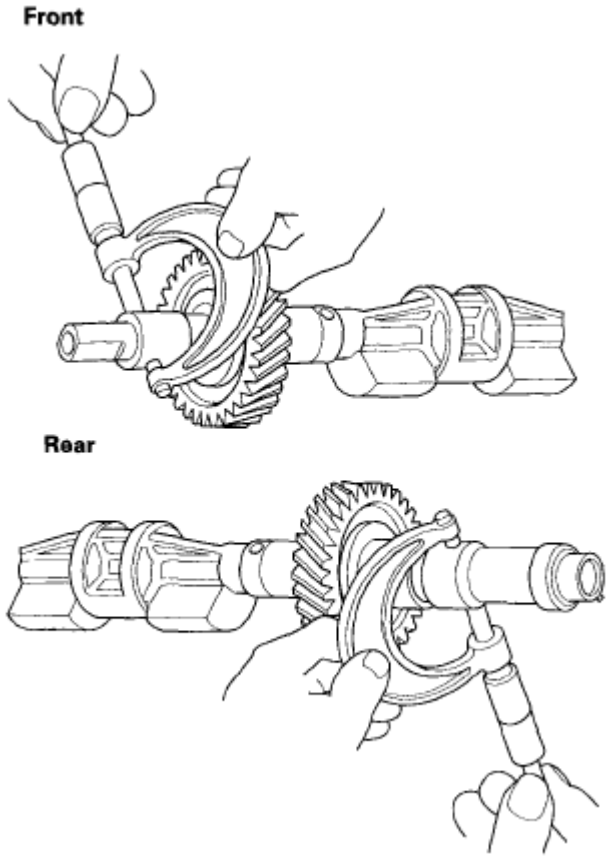


Fig. 67: Measuring Diameters Of No. 1 Journals On Front Balancer Shaft And Rear Balancer Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Clean both balancer shaft No. 2 journals and bearing halves with a clean shop towel.
7. Place one strip of plastigage across each No. 2 journal.
8. Reinstall the bearings and upper balancer shaft holder, then torque the bolts.

NOTE: Do not rotate the balancer shafts during inspection.

9. Remove the upper balancer shaft holder and bearings again, and measure the widest part with the

plastigage. If the balancer shaft No. 2 journal oil clearance is out-of-tolerance, install new bearings, and recheck. If it is still out-of-tolerance, replace the balancer shafts.

No. 2 Journal Oil Clearance

Standard (New): 0.060-0.120 mm

(0.0024-0.0047 in.)

Service Limit: 0.15 mm (0.006 in.)

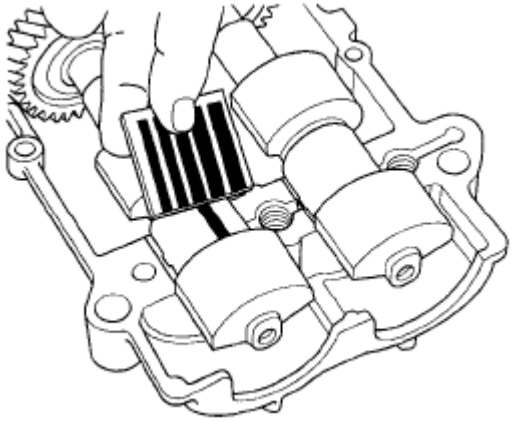


Fig. 68: Measuring Widest Part With Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Align the punch mark on the rear balancer shaft in the center of the two punch marks on the front balancer shaft, then install the balancer shafts on the lower balancer shaft holder.

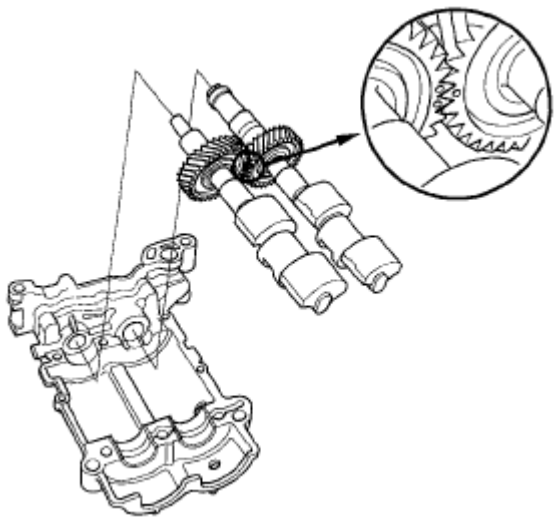


Fig. 69: Aligning Punch Mark On Rear Balancer Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Apply engine oil to the threads of the 8 mm bolts (A).

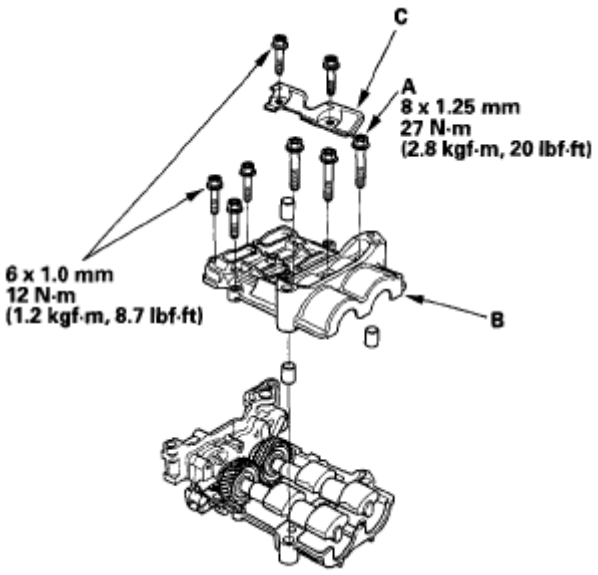


Fig. 70: Identifying Upper Balancer Shaft Holder Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the upper balancer shaft holder (B) and baffle plate (C).
13. Install the pump housing.

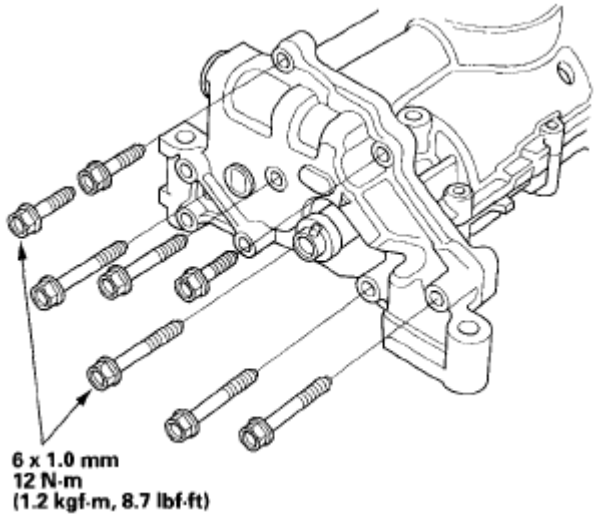


Fig. 71: Identifying Pump Housing Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PUMP INSTALLATION

1. Make sure the No. 1 piston top dead center (TDC) mark (A) lines up with the pointer (B).

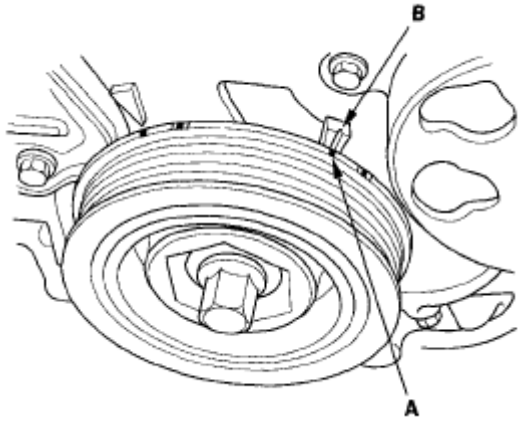


Fig. 72: Positioning Top Dead Center Mark Lines Up With Pointer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Align the dowel pin (A) on the rear balancer shaft with the mark (B) on the oil pump.

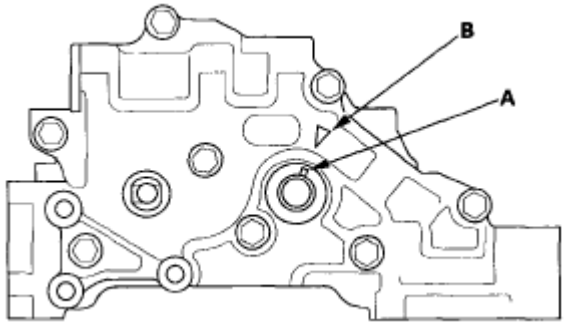


Fig. 73: Aligning Dowel Pin On Rear Balancer Shaft With Mark On Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. To hold the rear balancer shaft, insert a 6 mm pin driver (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.

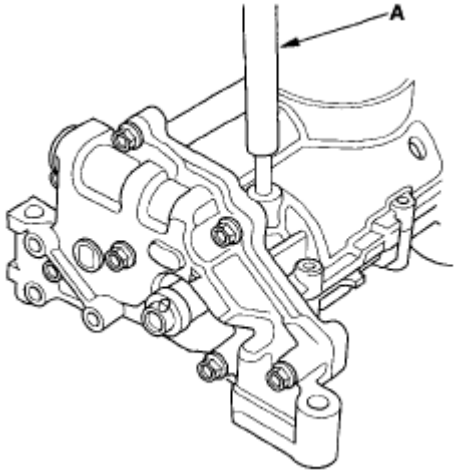


Fig. 74: Identifying Pin Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Apply engine oil to the threads of the oil pump sprocket mounting bolt (A).

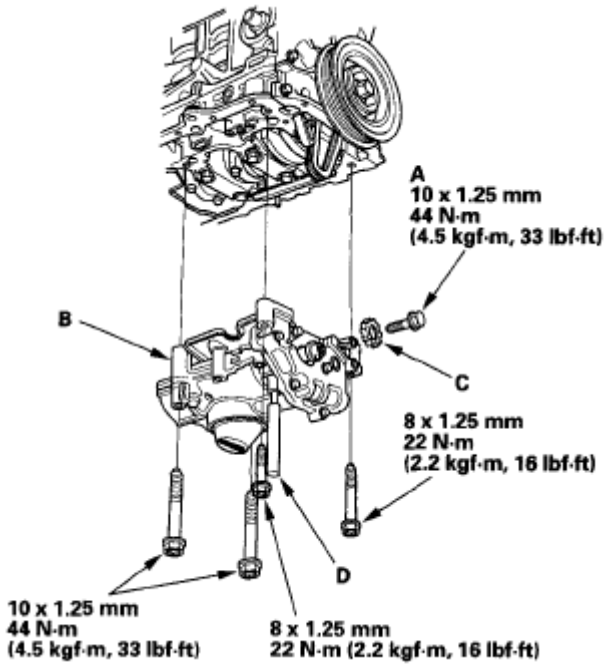


Fig. 75: Identifying Oil Pump Sprocket Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Loosely install the oil pump (B), then install the oil pump sprocket (C).
6. Remove the pin driver (D).
7. Tighten the oil pump mounting bolts.
8. Squeeze the new oil pump chain tensioner (A), then install the set clip (B) on it as shown.

NOTE: The set clip is supplied with the oil pump chain tensioner.

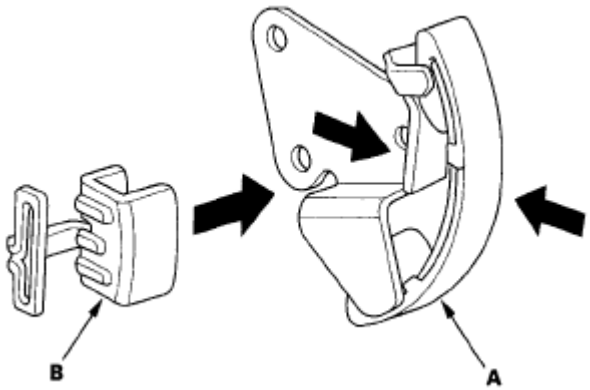


Fig. 76: Identifying Oil Pump Chain Tensioner And Set Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the new oil pump chain tensioner.

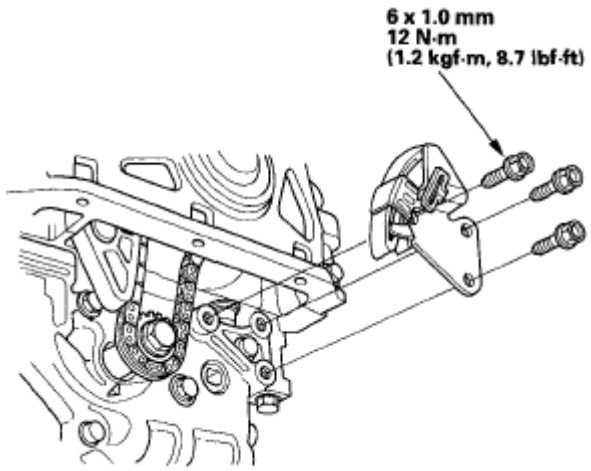


Fig. 77: Identifying Oil Pump Chain Tensioner Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the set clip from the oil pump chain tensioner.

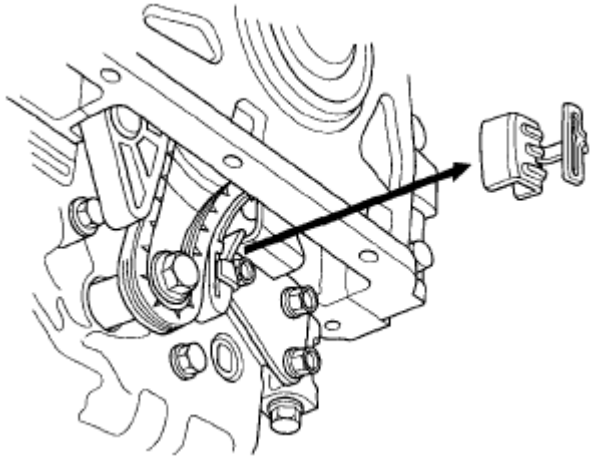


Fig. 78: Identifying Set Clip Of Oil Pump Chain Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the oil pan (see **OIL PAN INSTALLATION**).

2006-08 ENGINE

Cylinder Head - Civic (Except Hybrid)

CYLINDER HEAD (R18A1)

NOTE: Refer to the CYLINDER HEAD (GX) (SUPPLEMENT) article for additional information for the GX model.

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07PAD-0010000	Stem Seal Driver	1
⑥	070AB-RJA0100	Crankshaft Pulley Holder	1
⑦	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑧	07757-PJ1010A	Valve Spring Compressor Attachment	1

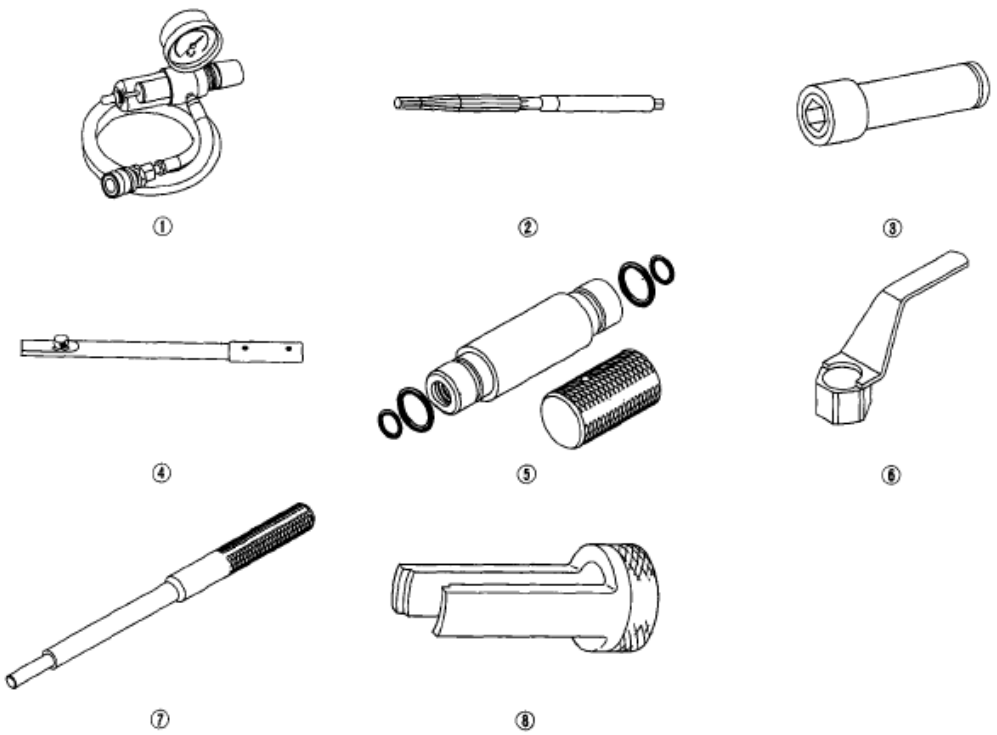


Fig. 1: Identifying Cylinder Head - Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

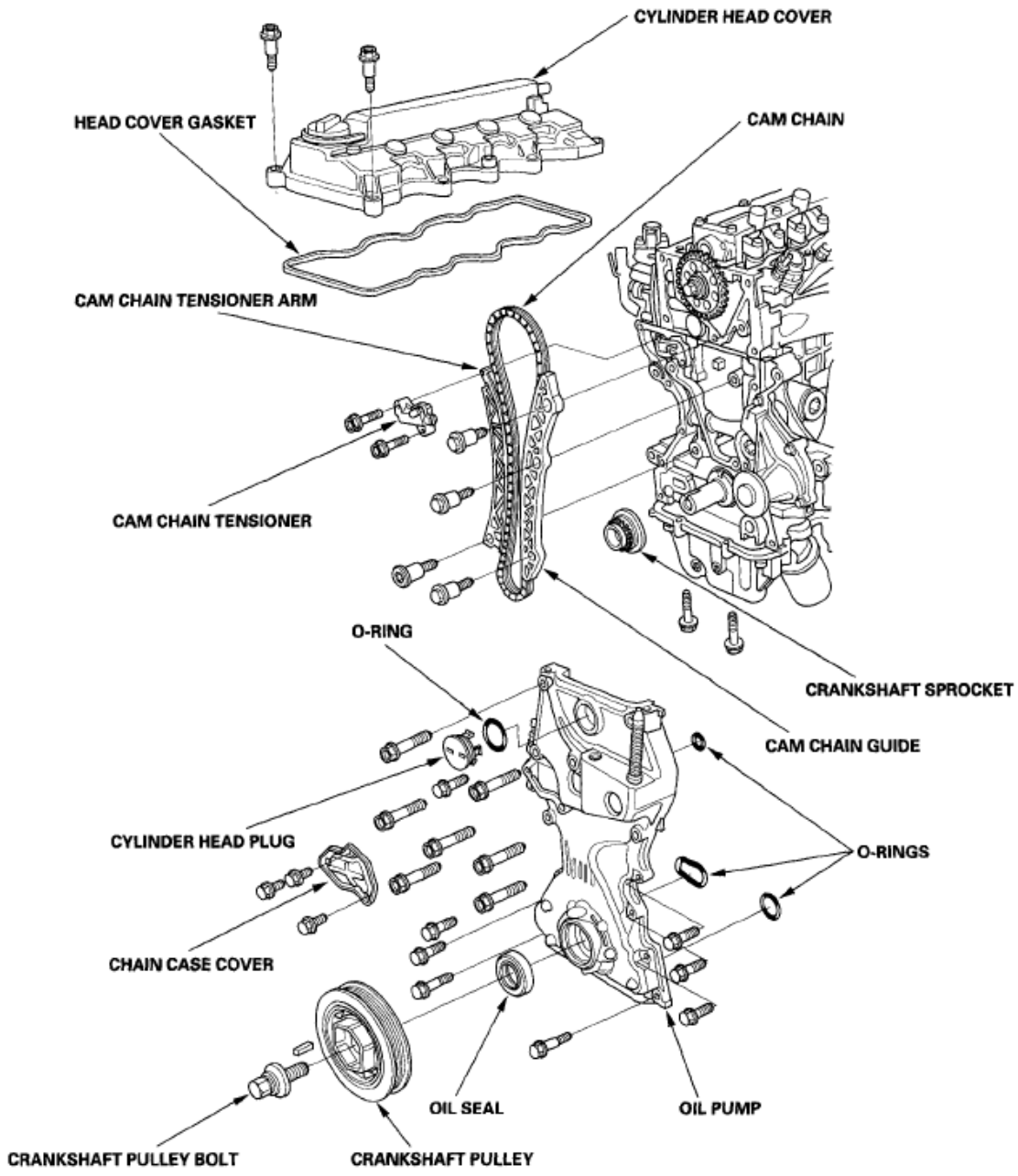


Fig. 2: Identifying Cylinder Head Component Location (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

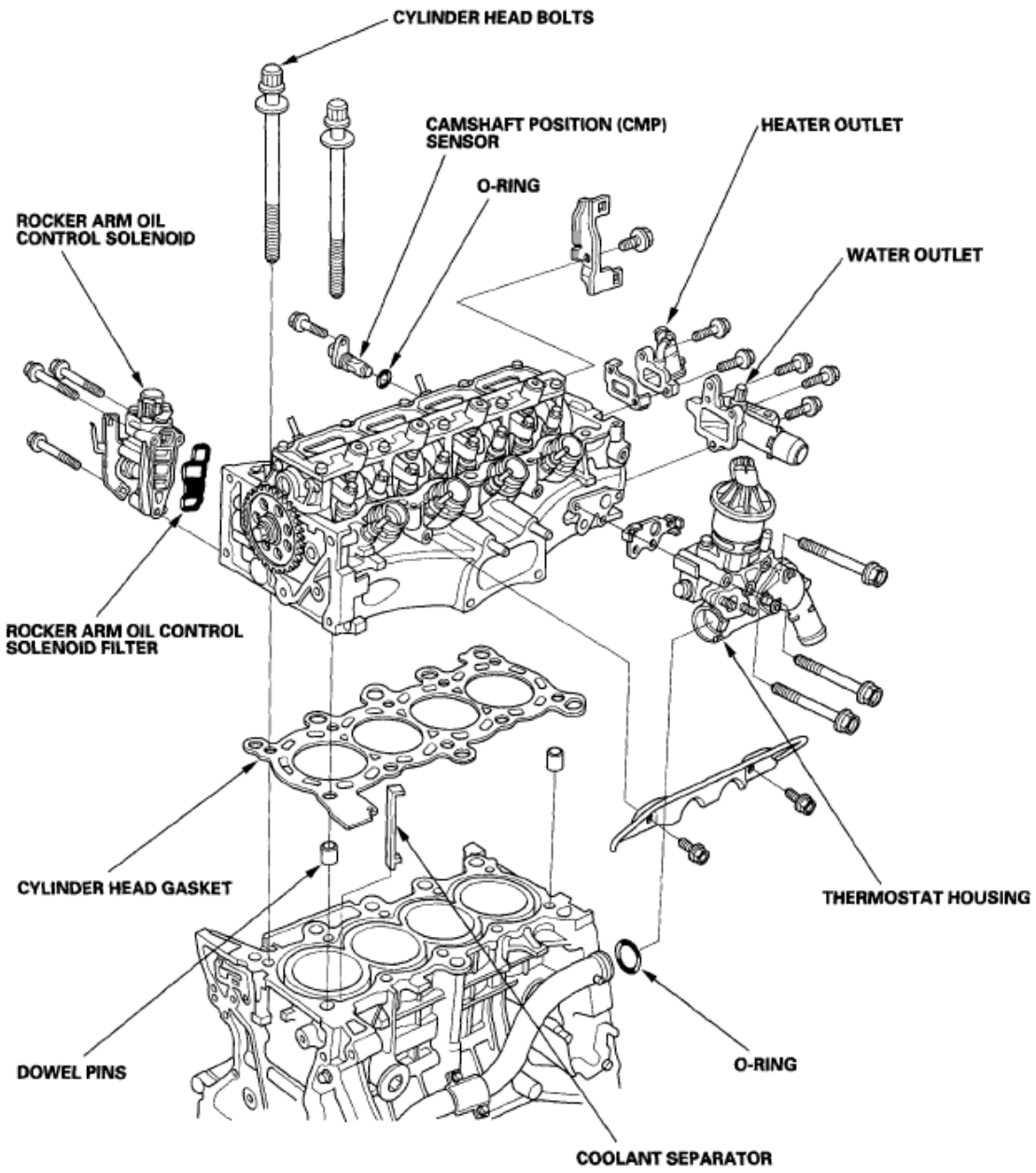


Fig. 3: Identifying Cylinder Head Component Location (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

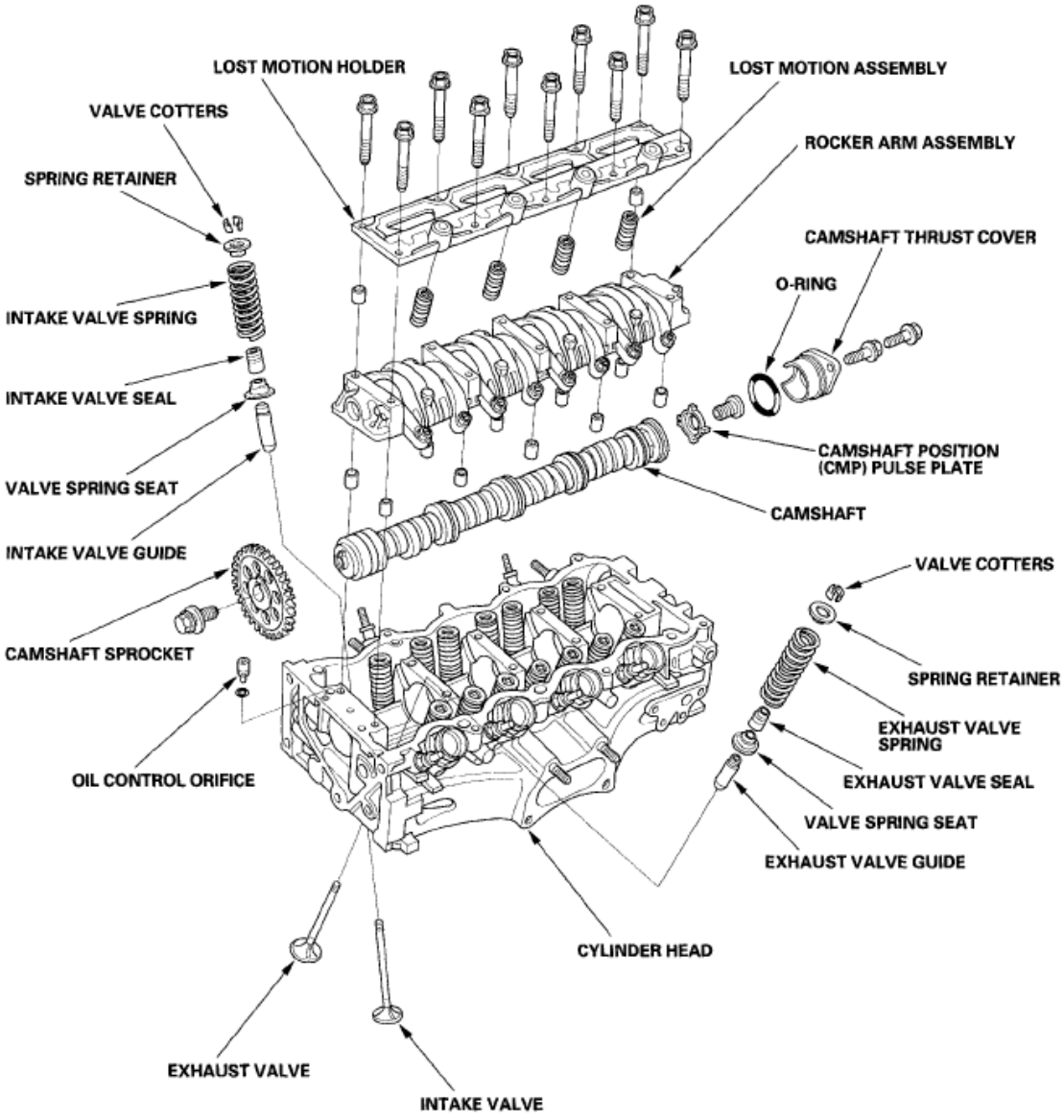


Fig. 4: Identifying Cylinder Head Component Location (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE COMPRESSION INSPECTION

NOTE: After this inspection, you must reset the engine control module (ECM)/ powertrain control module (PCM), otherwise the ECM/PCM will continue to stop the injectors from functioning.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

6. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF function on the HDS.
7. Turn the ignition switch to LOCK (0).
8. Remove the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
9. Remove the four spark plugs.
10. Attach the compression gauge to a spark plug hole.

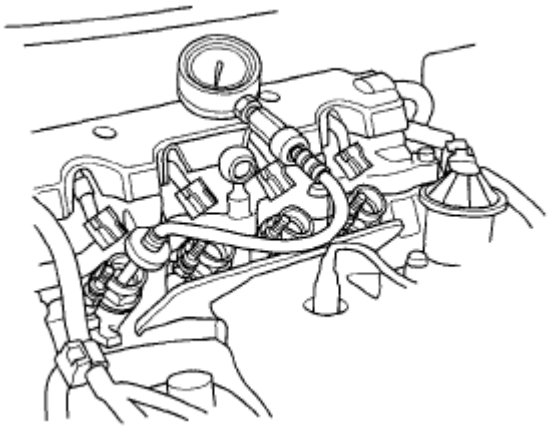


Fig. 5: Attaching Compression Gauge To Spark Plug Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Open the throttle fully, crank the engine with the starter motor and measure the compression.

    Compression Pressure:

    Above 880 kPa (9.0 kgf/cm^2 , 128 psi)

12. Measure the compression on the remaining cylinders.

    Maximum Variation:

    Within 200 kPa (2.0 kgf/cm^2 , 28 psi)

13. If the compression is not within specifications, check the following items, then remeasure the compression.
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore
14. Remove the compression gauge from the spark plug hole.
15. Install the four spark plugs (see **SPARK PLUG INSPECTION**).
16. Install the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
17. Select ECM/PCM reset (see **ECM/PCM RESET**) to cancel the ALL INJECTORS OFF function on the HDS.
18. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

VTEC ROCKER ARM TEST

Special Tools Required

Air pressure regulator 07AAJ-PNAA101

1. Start the engine, and let it run for 5 minutes, then turn OFF the ignition switch.
2. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
3. Set the No. 1 piston at top dead center (TDC) (see step 2).
4. Move the intake secondary rocker arm A for the No. 1 cylinder. The secondary rocker arm A should move independently of the secondary rocker arm B.
   - If the intake secondary rocker arm A moves freely, go to step 5.
   - If the intake secondary rocker arm A does not move, remove the secondary rocker arms as an assembly, then check that the pistons in the secondary rocker arms move smoothly. If any rocker arm needs replacing, replace the secondary rocker arms as an assembly, and retest.

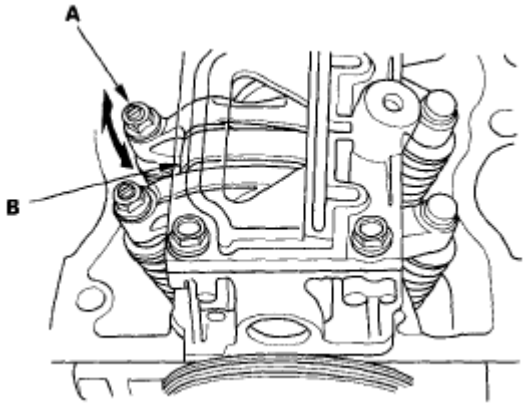


Fig. 6: Identifying Intake Secondary Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Repeat step 4 on the remaining intake secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 6.
6. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4.0 kgf/cm^2 , 57 psi).
7. Inspect the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
8. Install a 10 x 1.0 mm adapter to the inspection hole, then connect the air pressure regulator.

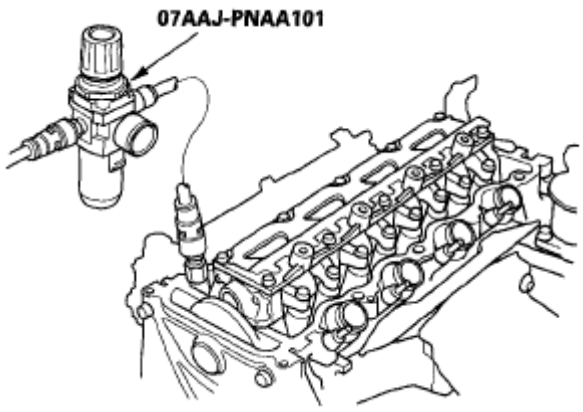


Fig. 7: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Loosen the valve on the regulator, and apply the specified air pressure.

   Specified Air Pressure:

   290 kPa (3.0 kgf/cm^2 , 42 psi)

10. With the specified air pressure applied, move the intake secondary rocker arm A for the No. 1 cylinder. The secondary rocker arm A and secondary rocker arm B should move together.

    If the intake secondary rocker arm A does not move, remove the secondary rocker arms as an assembly, and check that the pistons in the secondary rocker arms move smoothly. If any rocker arm needs replacing, replace the secondary rocker arms as an assembly, and retest.

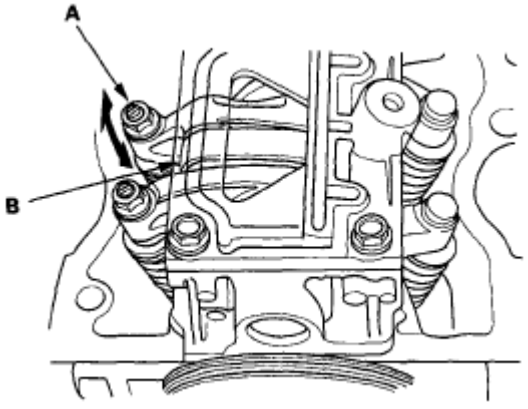


Fig. 8: Identifying Intake Secondary Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the air pressure regulator and the 10 x 1.0 mm adapter.
12. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

VALVE CLEARANCE ADJUSTMENT

NOTE: Adjust the valves only when the cylinder head temperature is less than 100°F

(38°C).

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Set the No. 1 piston at top dead center (TDC). The "UP" mark (A) on the camshaft sprocket should be at the top, and the TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.

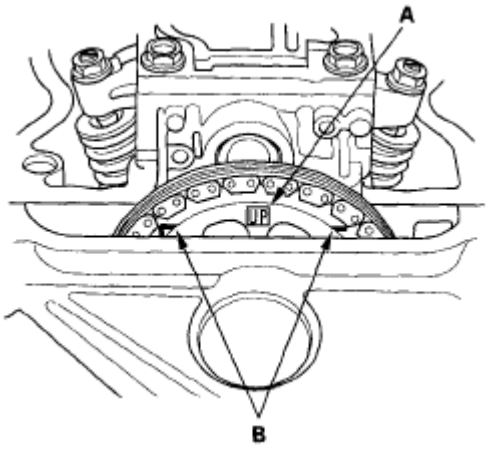


Fig. 9: Identifying UP Mark On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Select the correct thickness feeler gauge for the valves you're going to check.

Valve Clearance

Intake: 0.18-0.22 mm (0.007-0.009 in.)

Exhaust: 0.23-0.27 mm (0.009-0.011 in.)

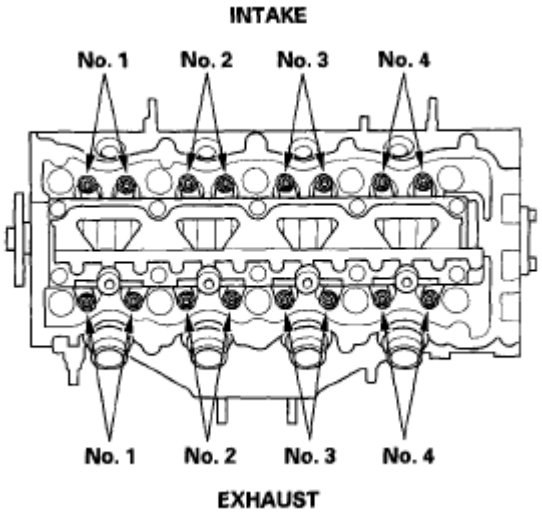


Fig. 10: Identifying Intake And Exhaust Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on No. 1 cylinder and slide it back and forth; you should feel a slight amount of drag.

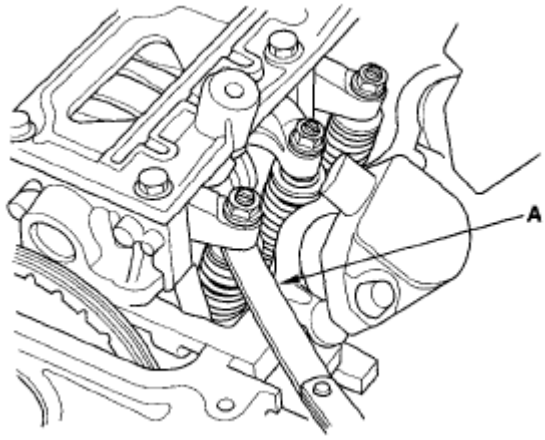


Fig. 11: Identifying Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If you feel too much or too little drag, loosen the locknut, and turn the adjusting screw (A) until the drag on the feeler gauge is correct.

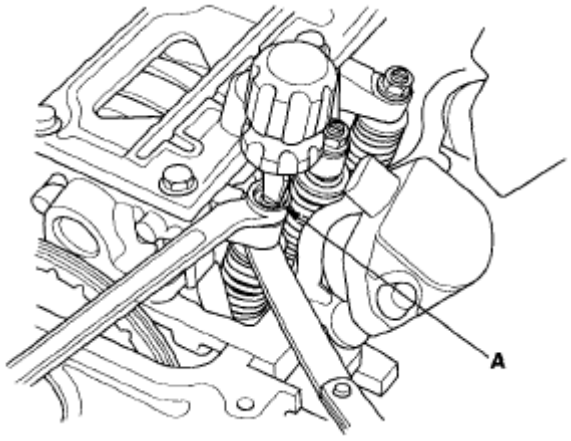


Fig. 12: Identifying Adjusting Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.
7. Tighten the locknut.

Specified Torque:

7 x 0.75 mm

14 N.m (1.4 kgf.m, 10 lbf.ft)

8. Recheck the valve clearance. Repeat the adjustment if necessary.
9. Rotate the crankshaft clockwise. Align the No. 3 piston TDC groove (A) on the camshaft sprocket

with the top edge of the head.

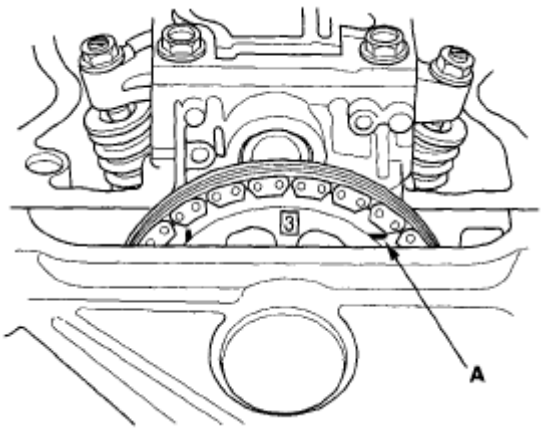


Fig. 13: Aligning No. 3 Piston TDC Groove On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check, and if necessary, adjust the valve clearance on No. 3 cylinder.
11. Rotate the crankshaft clockwise. Align the No. 4 piston TDC groove (A) on the camshaft sprocket with the top edge of the head.

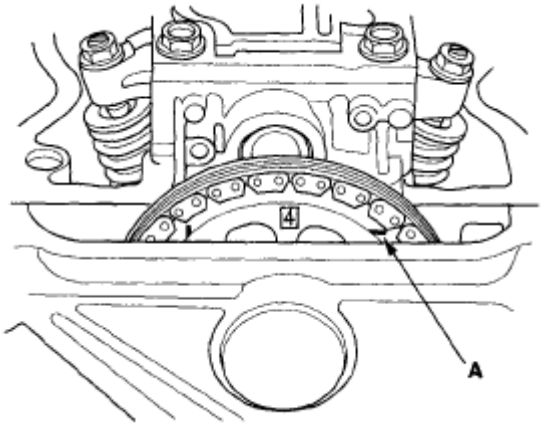


Fig. 14: Aligning No. 4 Piston TDC Groove On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check, and if necessary, adjust the valve clearance on No. 4 cylinder.
13. Rotate the crankshaft clockwise. Align the No. 2 piston TDC groove (A) on the camshaft sprocket with the top edge of the head.

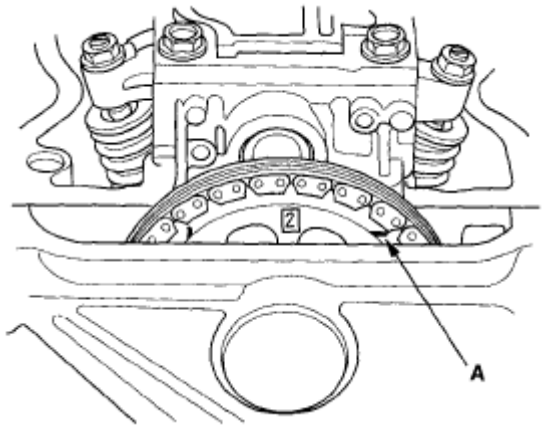


Fig. 15: Aligning No. 2 Piston TDC Groove On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Check, and if necessary, adjust the valve clearance on No. 2 cylinder.
15. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

CRANKSHAFT PULLEY REMOVAL AND INSTALLATION

Special Tools Required

- Holder handle 07JAB-001020A
- Crankshaft pulley holder 070AB-RJA0100
- Socket, 19 mm 07JAA-001020A, or a commercially available 19 mm socket

Removal

1. Remove the right front wheel.
2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Hold the pulley with the holder handle (A) and holder (B).

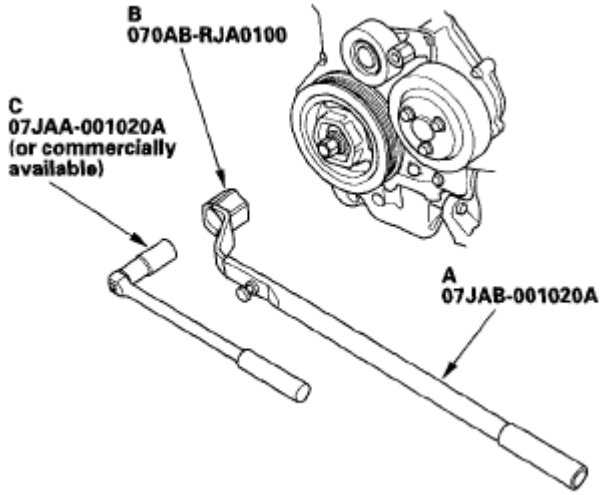


Fig. 16: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

Installation

1. Clean the crankshaft pulley (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

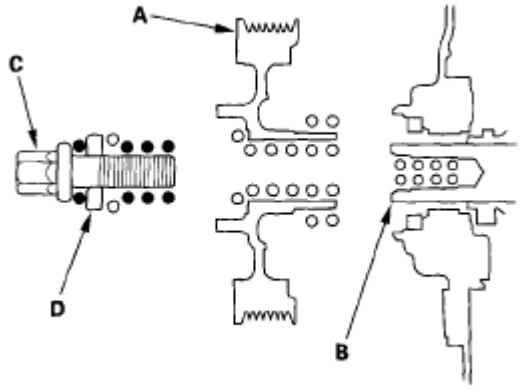


Fig. 17: Identifying Crankshaft Pulley Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the crankshaft pulley, and hold the pulley with the handle (A) and holder attachment (B).

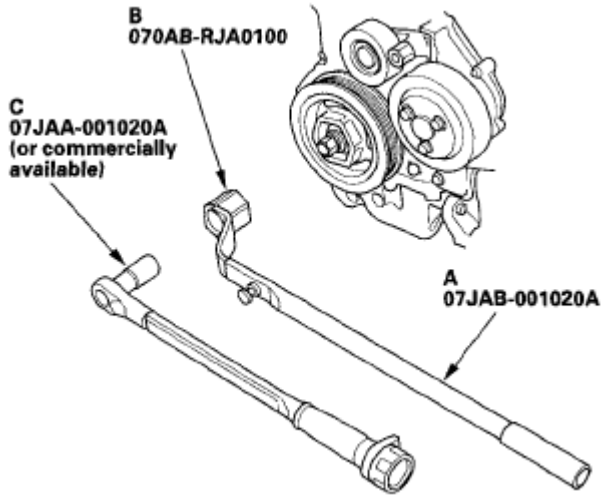


Fig. 18: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Tighten the bolt to 69 N.m (7.0 kgf.m, 51 lbf.ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.
4. Mark the bolt head (A) and the crankshaft pulley (B) as shown, then tighten the bolt an additional 90° (The mark on the bolt head line up with the mark on the crankshaft pulley).

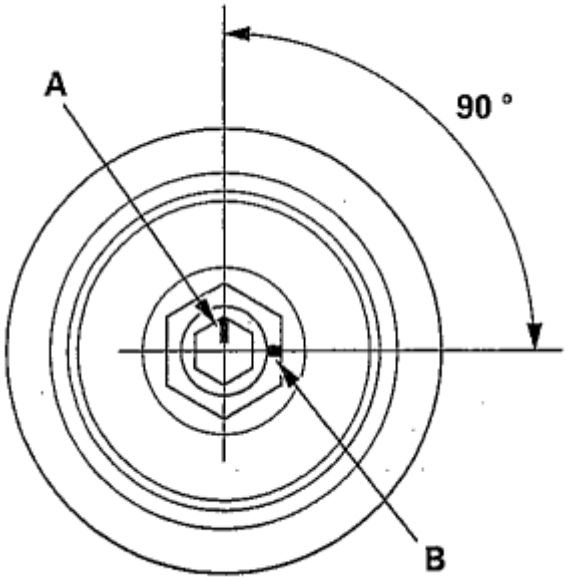


Fig. 19: Marking The Bolt Head And The Crankshaft Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the drive belt (see **DRIVE BELT INSPECTION**).
6. Install the right front wheel.

CAM CHAIN REMOVAL

NOTE: Keep the cam chain away from magnetic fields.

1. Remove the front wheels.
2. Remove the splash shield.
3. Remove the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
4. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
5. Set the No. 1 piston at top dead center (TDC). The "UP" mark (A) on the camshaft sprocket should be at the top, and the TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.

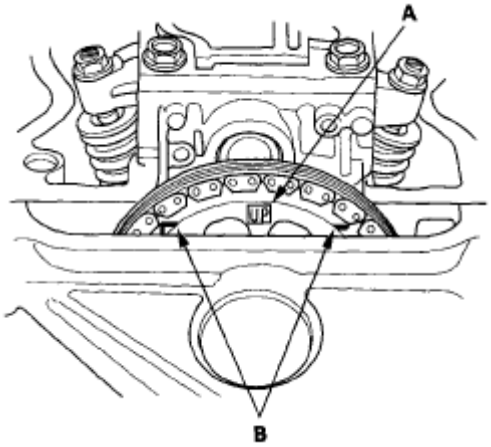


Fig. 20: Identifying UP Mark On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the positive crankcase ventilation (PCV) hose.

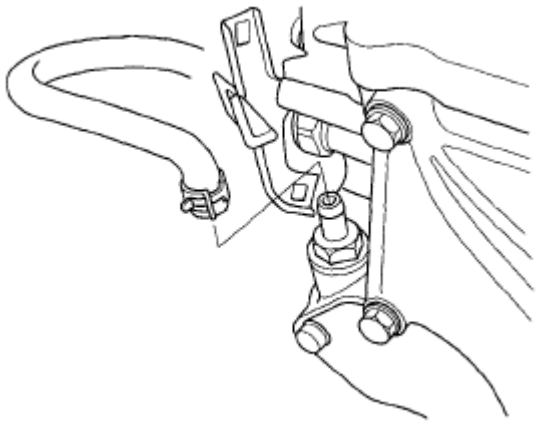


Fig. 21: Identifying Positive Crankcase Ventilation (PCV) Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
8. Support the engine with a jack and a wood block under the oil pan.
9. Remove the bolt (A) securing the A/C line, then remove the upper torque rod (B).

M/T

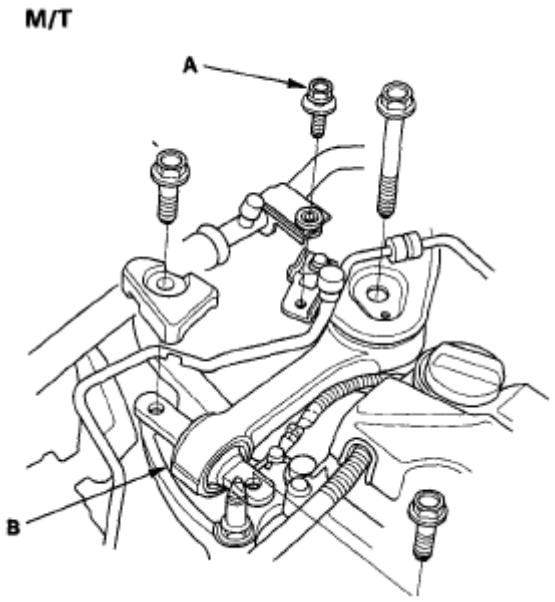


Fig. 22: Identifying A/C Line Bolt - M/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T

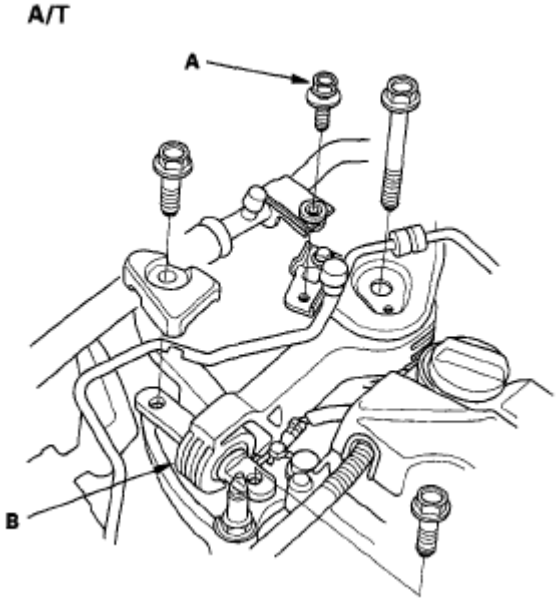


Fig. 23: Identifying A/C Line Bolt - A/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the ground cable (A), then remove the side engine mount bracket (B).

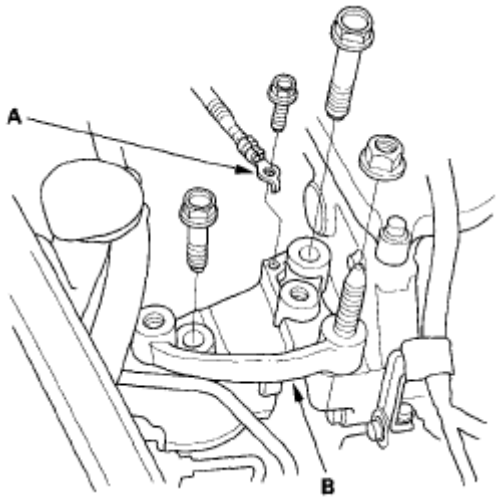


Fig. 24: Identifying Ground Cable And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the oil pump.

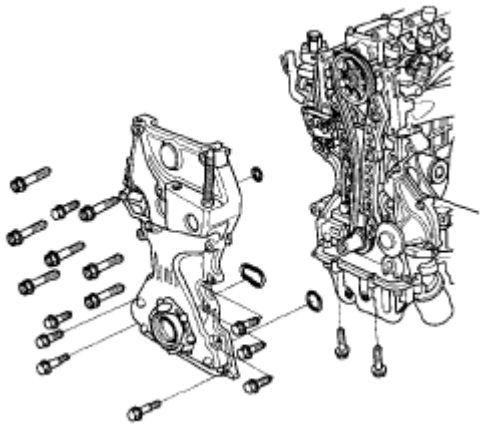


Fig. 25: Identifying Oil Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Measure the tensioner rod length between the tensioner body and bottom of the flat surface section on the tensioner rod. If the length is more than the service limit, replace the cam chain.

    Tensioner Rod Length

    Service Limit: 14.5 mm (0.57 in.)

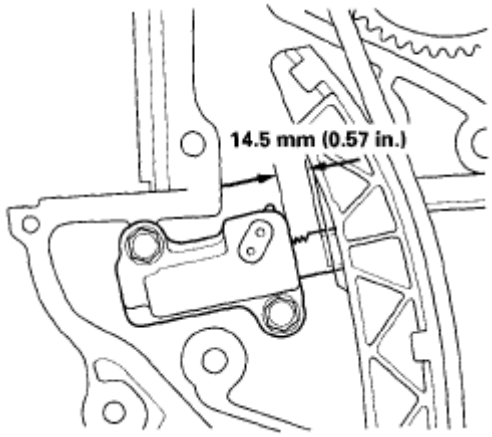


Fig. 26: Measuring Tensioner Rod Length Between Tensioner Body And Bottom Of Flat Surface Section On Tensioner Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Loosely install the crankshaft pulley.
14. Turn the crankshaft counterclockwise to compress the auto-tensioner.

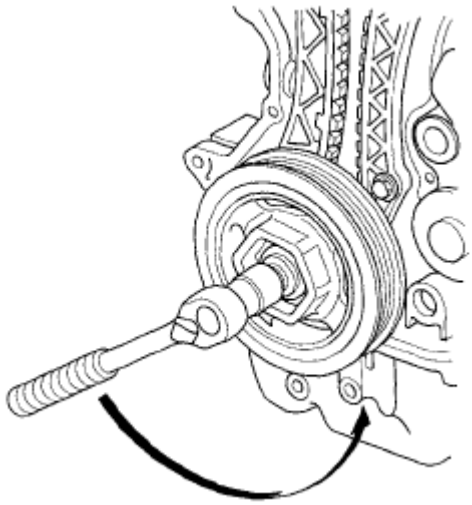


Fig. 27: Turning Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.0 mm (0.04 in.) diameter pin (C) into the holes. Turn the crankshaft clockwise to secure the pin.

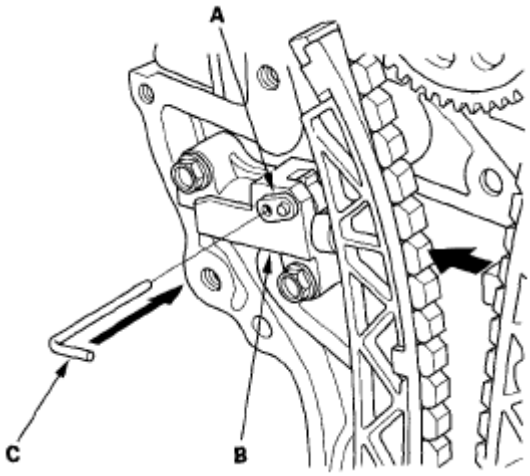


Fig. 28: Aligning Holes On Lock And Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the auto-tensioner.

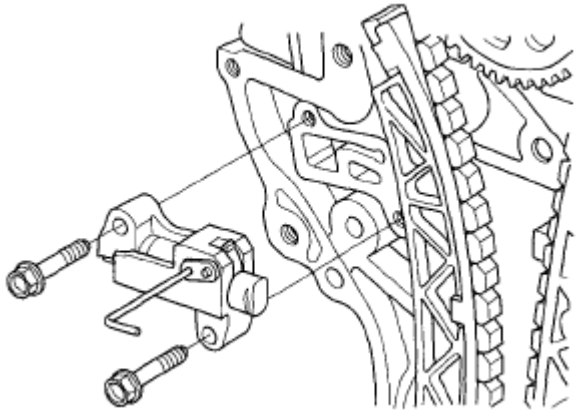


Fig. 29: Identifying Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the crankshaft pulley.
18. Remove the cam chain guide (A) and cam chain tensioner arm (B).

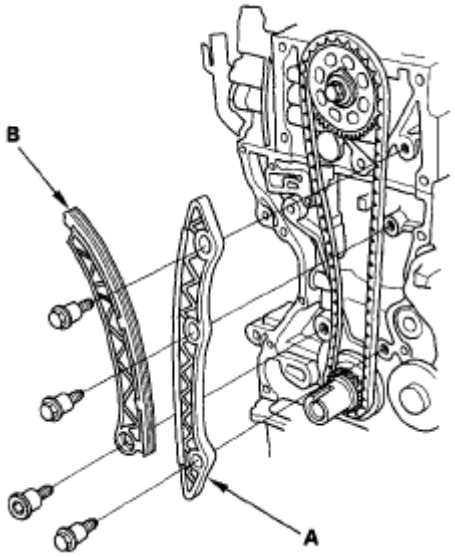


Fig. 30: Identifying Cam Chain Guide
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the cam chain.

CAM CHAIN INSTALLATION

NOTE: Keep the cam chain away from magnetic fields.

1. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.

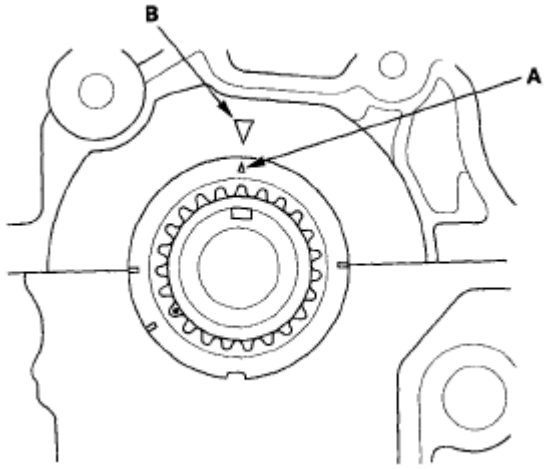


Fig. 31: Aligning TDC Mark On Crankshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Set the camshaft to TDC. The "UP" mark (A) on the camshaft sprocket should be at the top, and the TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.

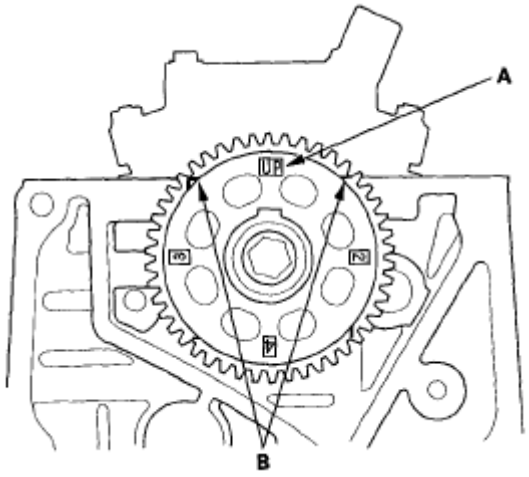


Fig. 32: Identifying UP Mark On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the cam chain on the crankshaft sprocket with the colored piece (A) aligned with the mark (B) on the crankshaft sprocket.

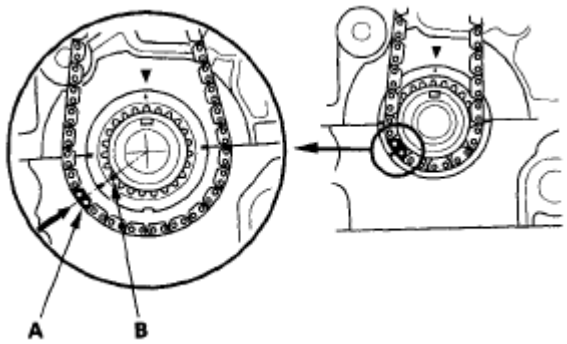


Fig. 33: Aligning Mark On Crankshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the cam chain on the camshaft sprocket with the colored link plate (A) aligned with the mark (B) on the camshaft sprocket.

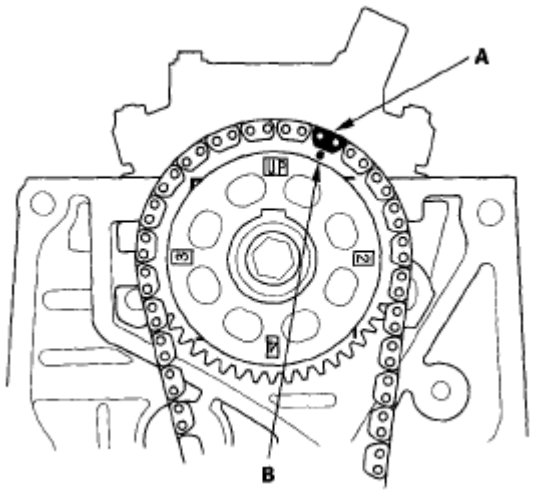


Fig. 34: Identifying Colored Link Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the cam chain guide (A) and cam chain tensioner arm (B).

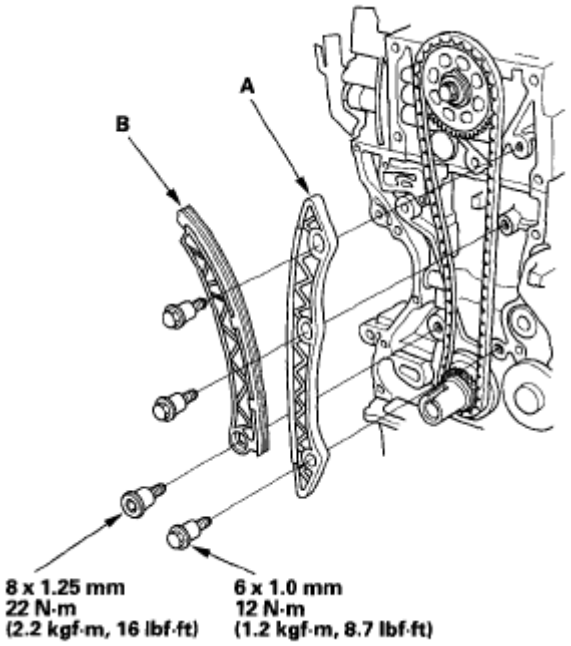


Fig. 35: Identifying Cam Chain Guide
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the auto-tensioner.

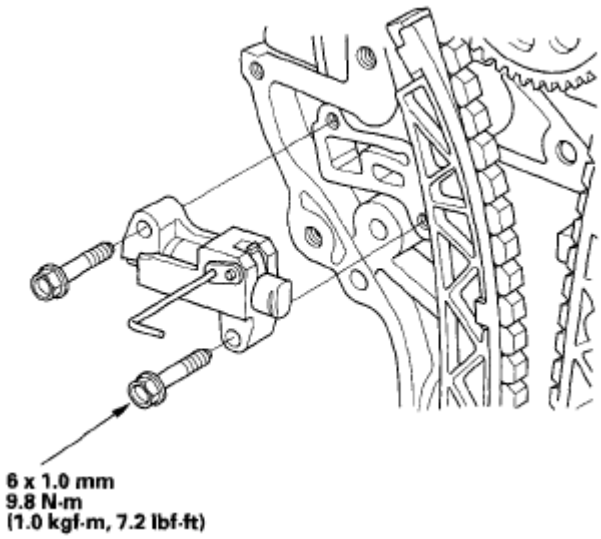


Fig. 36: Identifying Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the pin or lock pin from the auto-tensioner.

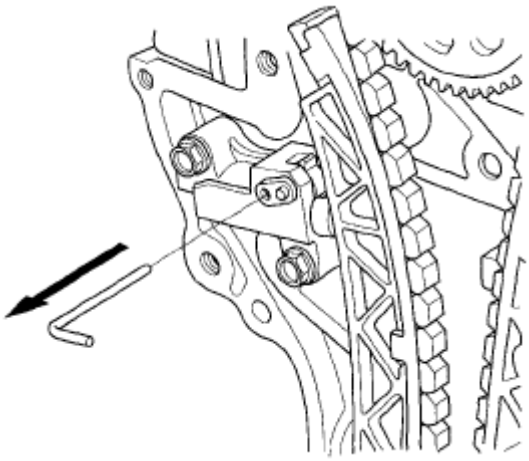


Fig. 37: Locating Pin Or Lock Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check the oil pump oil seal for damage. If the oil seal is damaged, replace the oil seal (see **PULLEY END CRANKSHAFT OIL SEAL INSTALLATION**).
9. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
10. Clean, and dry the oil pump mating surfaces.
11. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

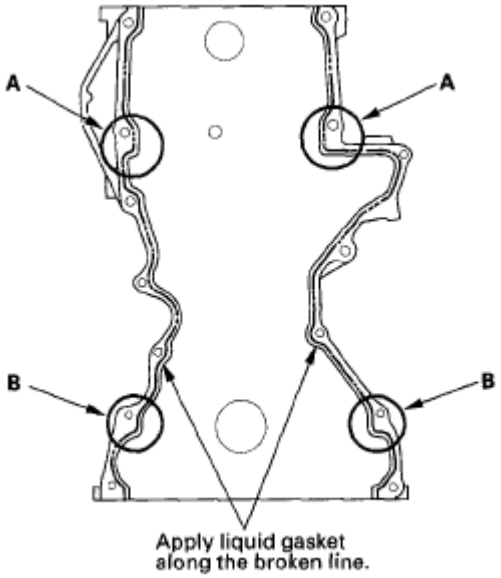


Fig. 38: Identifying Applying Area Of Liquid Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Apply liquid gasket to the engine block upper surface contact areas (A) on the oil pump and lower block upper surface contact areas (B) on the oil pump.
13. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the oil pump.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

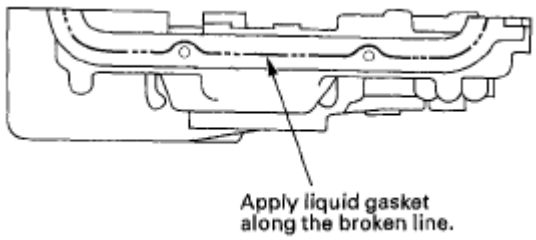


Fig. 39: Identifying Applying Liquid Gasket Broken Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install new O-rings (A) on the oil pump. Set the edge of the oil pump (B) to the edge of the oil pan (C), then install the oil pump on the engine block (D). Loosely install the dowel bolts (E), then tighten the 8 mm bolts (F). Tighten the 6 mm bolts (G) and dowel bolts. Wipe off the excess liquid gasket on the oil pan and oil pump mating area.

NOTE:

- **When installing the oil pump, do not slide the bottom surface onto the oil pan mounting surface.**
- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the oil pump.**

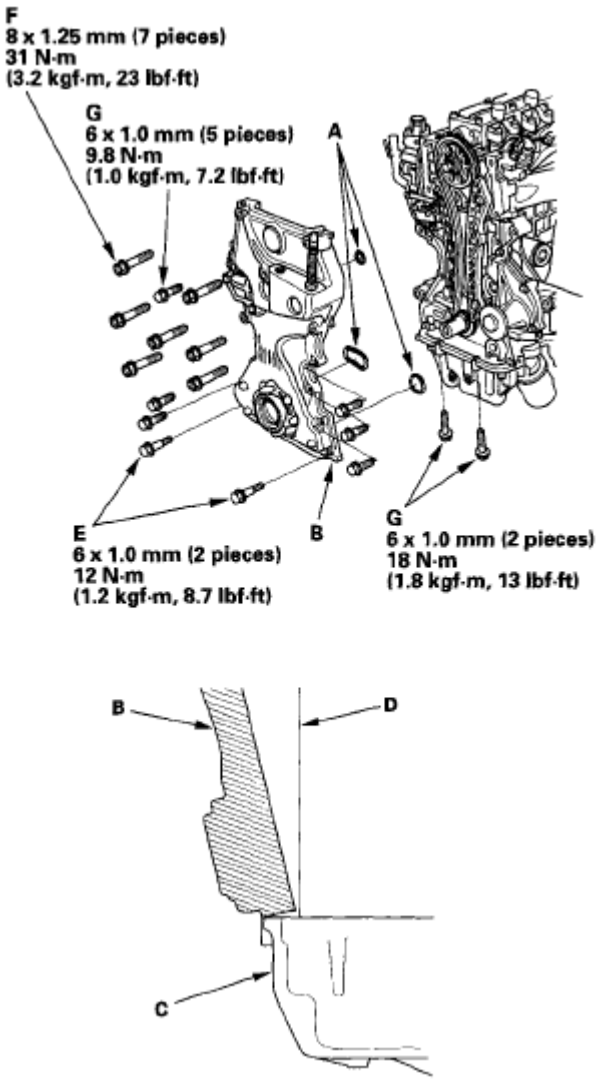


Fig. 40: Installing Oil Pump (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B), and loosely tighten the bolt (C).

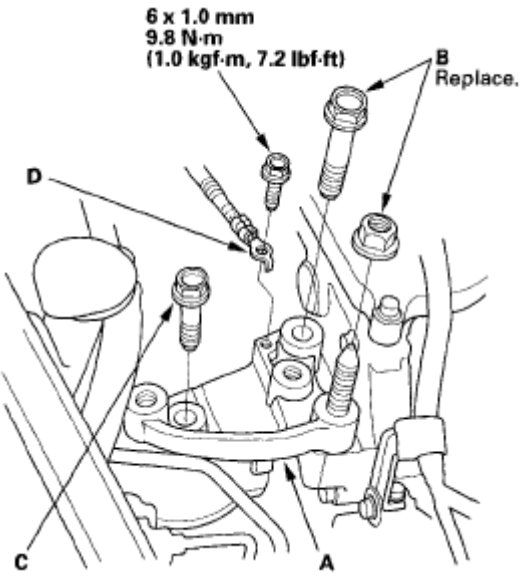


Fig. 41: Identifying Side Engine Mount Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the ground cable (D).
17. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
18. Loosen the transmission mounting bolt and nuts (A).

M/T

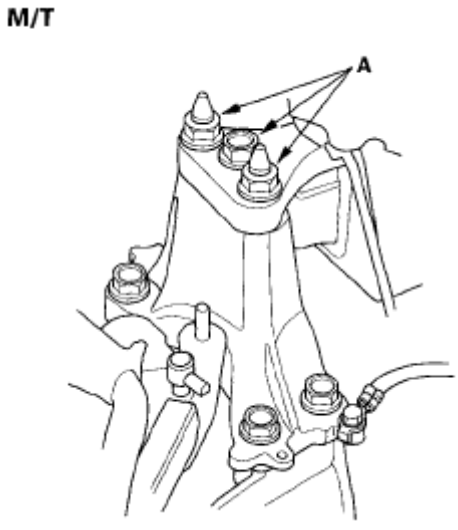


Fig. 42: Identifying Transmission Mounting Bolt And Nuts - M/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T

A/T

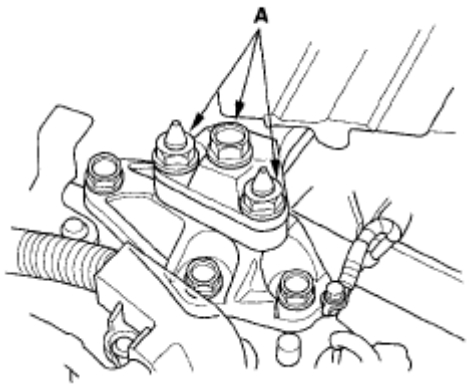


Fig. 43: Identifying Transmission Mounting Bolt And Nuts - A/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Raise the vehicle on the lift to full height.
20. Loosen the lower torque rod mounting bolt (A).

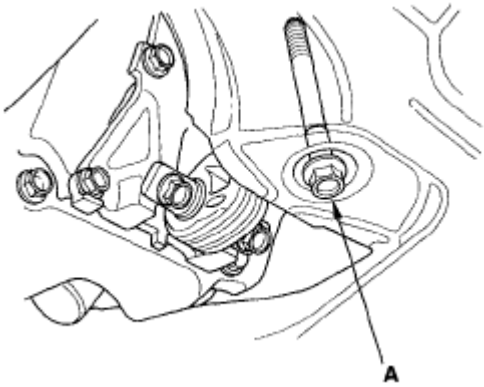


Fig. 44: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Lower the vehicle on the lift.
22. Tighten the side engine mount mounting bolts and nut.

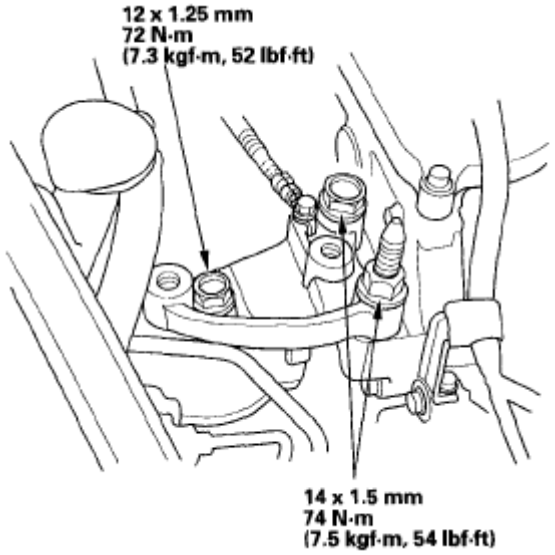


Fig. 45: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Tighten the transmission mounting bolt and nuts.

M/T

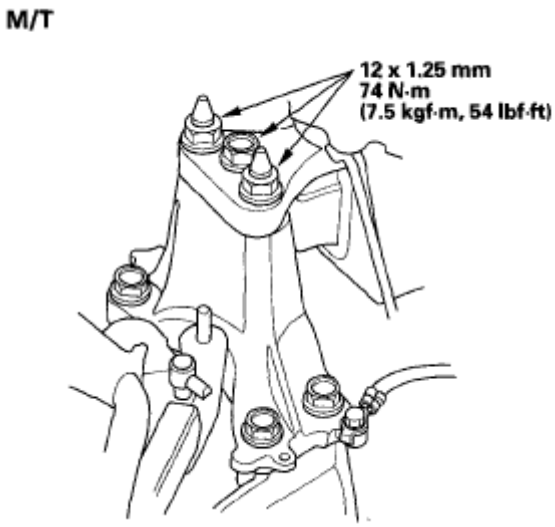


Fig. 46: Identifying Transmission Mounting Bolt And Nuts - M/T (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T

A/T

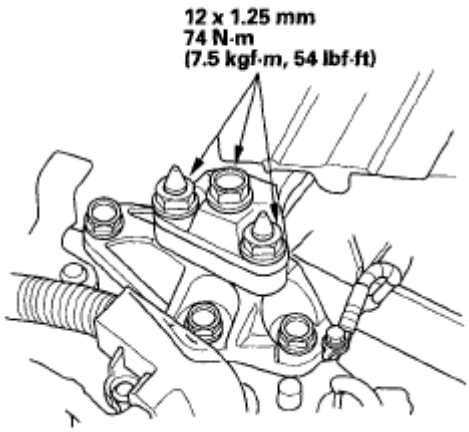


Fig. 47: Identifying Transmission Mounting Bolt And Nuts - A/T (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Raise the vehicle on the lift to full height.
25. Tighten the lower torque rod mounting bolt.

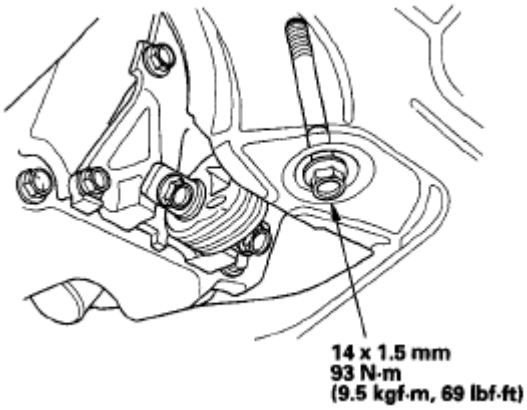


Fig. 48: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Lower the vehicle on the lift.
27. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
28. Install the upper torque rod (A), then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

M/T

M/T

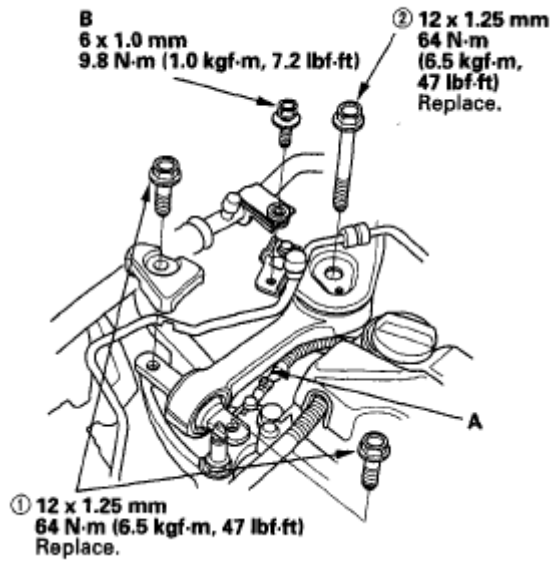


Fig. 49: Identifying Upper Torque Rod Mounting Bolts - M/T (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T

A/T

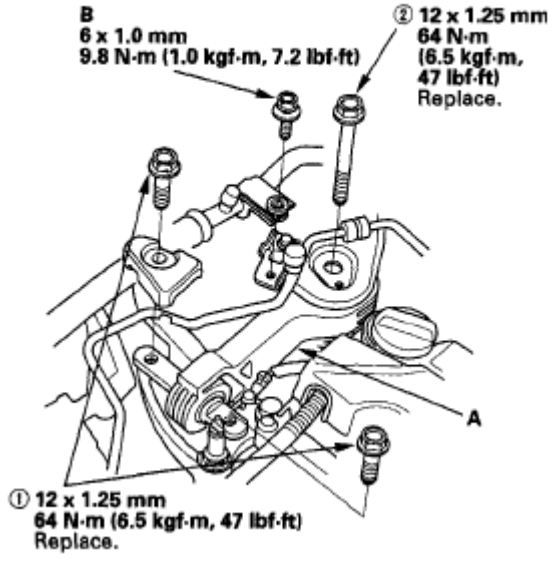


Fig. 50: Identifying Upper Torque Rod Mounting Bolts - A/T (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Install the bolt (B) securing the A/C line.
30. Install the crankshaft pulley (see **INSTALLATION**).
31. Install the positive crankcase ventilation (PCV) hose.

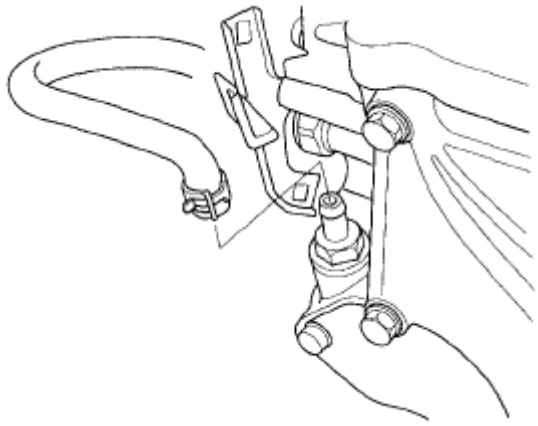


Fig. 51: Identifying Positive Crankcase Ventilation (PCV) Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
33. Install the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
34. Install the splash shield.
35. Install the front wheels.
36. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **ECM/PCM RESET**).

AUTO-TENSIONER REMOVAL AND INSTALLATION

Removal

1. Remove the chain case cover.

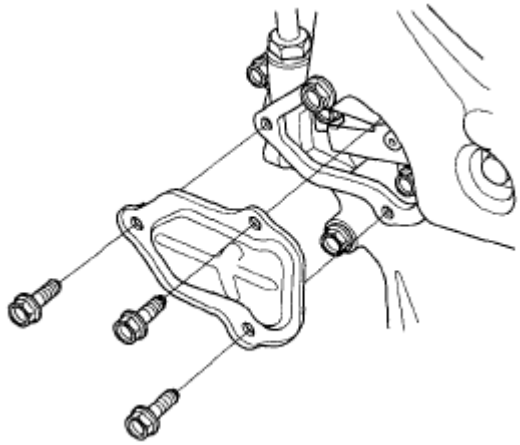


Fig. 52: Identifying Chain Case Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the crankshaft counterclockwise to compress the auto-tensioner.

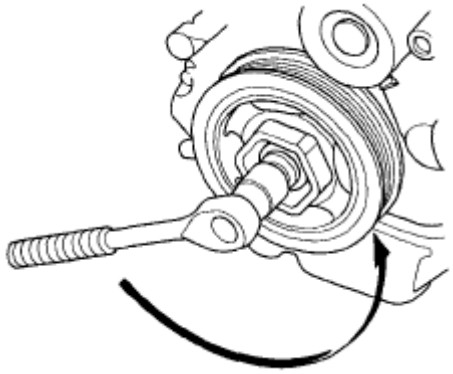


Fig. 53: Turning Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.0 mm (0.04 in.) diameter pin (C) into the holes. Turn the crankshaft clockwise to secure the pin.

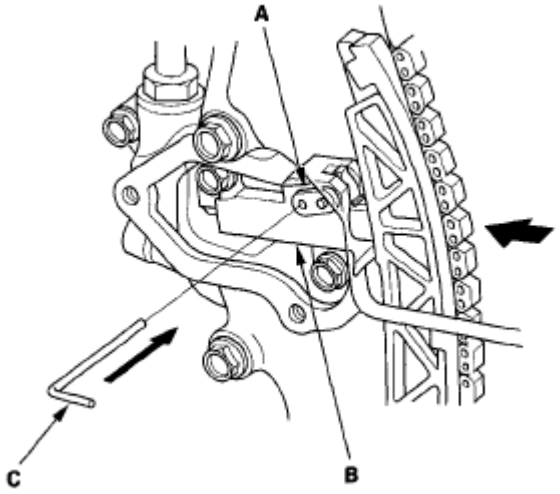


Fig. 54: Aligning Holes On Lock And Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the auto-tensioner.

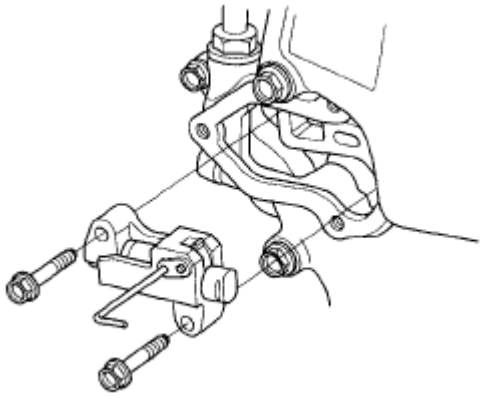


Fig. 55: Identifying Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install the auto-tensioner.

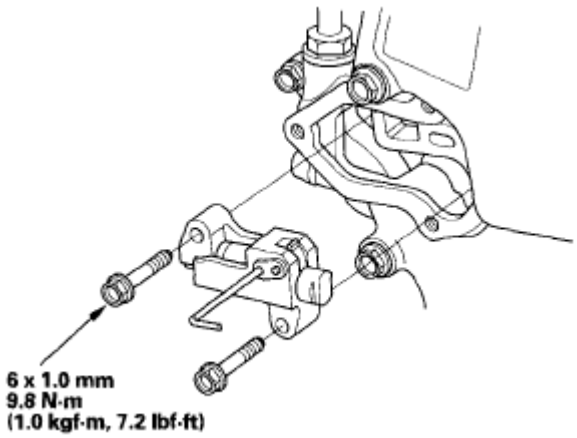


Fig. 56: Identifying Auto-Tensioner (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the pin from the auto-tensioner.

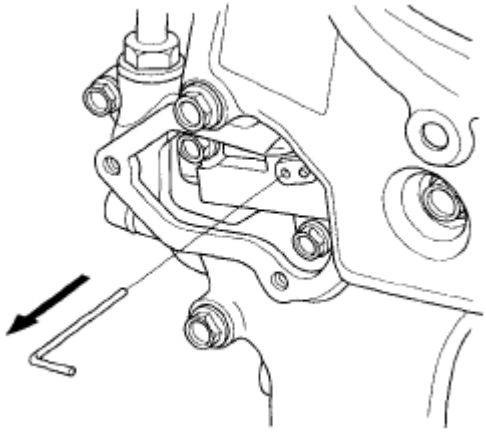


Fig. 57: Identifying Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove all of the old liquid gasket from the chain case cover mating surfaces, bolts, and bolt holes.
4. Clean and dry the chain case cover mating surfaces.
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the oil pump mating surface of the chain case cover.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

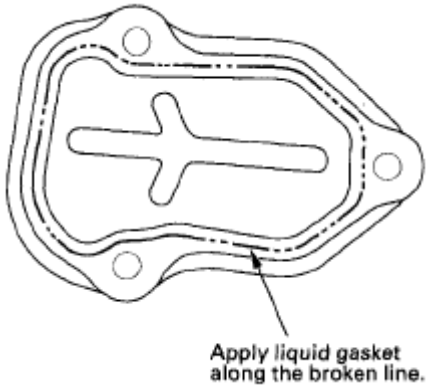


Fig. 58: Identifying Broken Line Of Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the chain case cover.

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the chain case.**

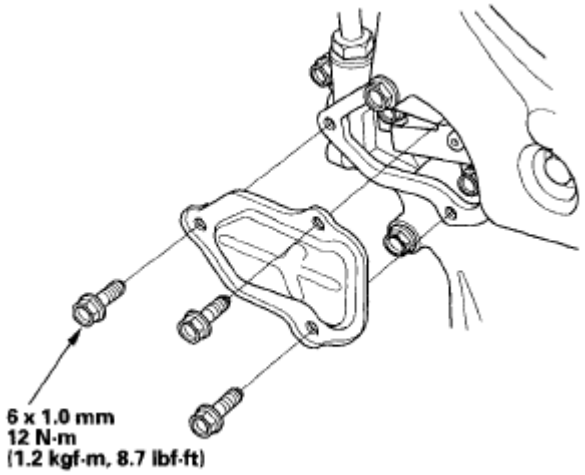


Fig. 59: Identifying Chain Case Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD COVER REMOVAL

1. Remove the harness cover.

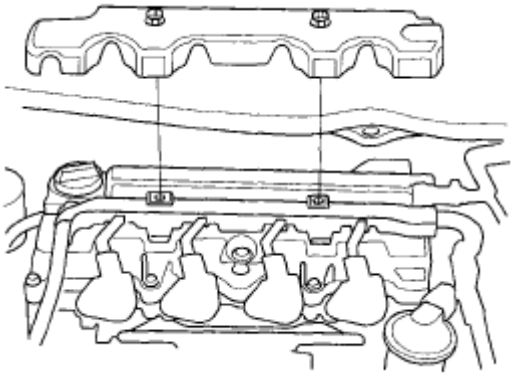


Fig. 60: Identifying Harness Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the injector cover.

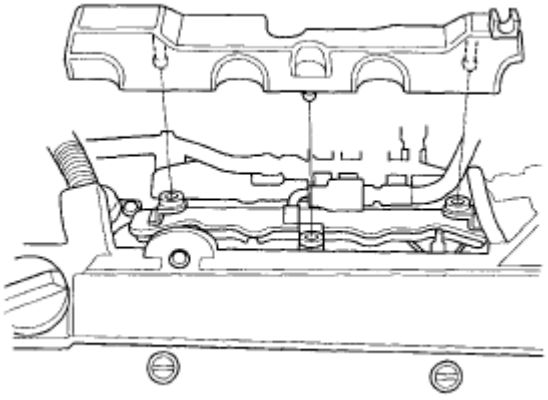


Fig. 61: Identifying Injector Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the four ignition coil connectors. Remove the four bolts (A) securing the harness holders, then remove the front harness holder (B) from the bracket.

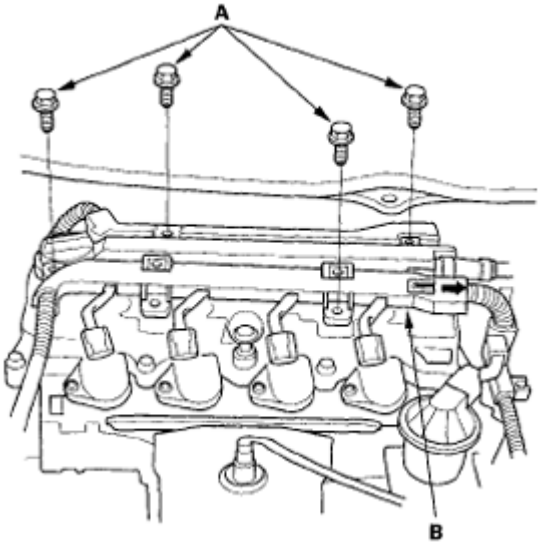


Fig. 62: Identifying Harness Holders Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.

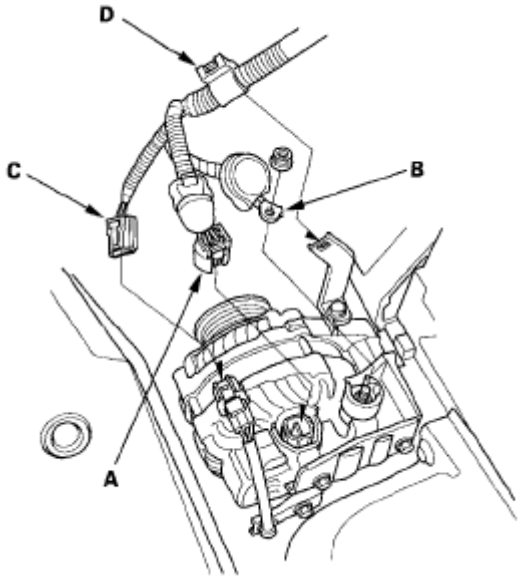


Fig. 63: Identifying Alternator Connector And BLK Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the A/C compressor clutch connector (C), and remove the harness clamp (D).
6. Remove the dipstick (A) and breather hose (B).

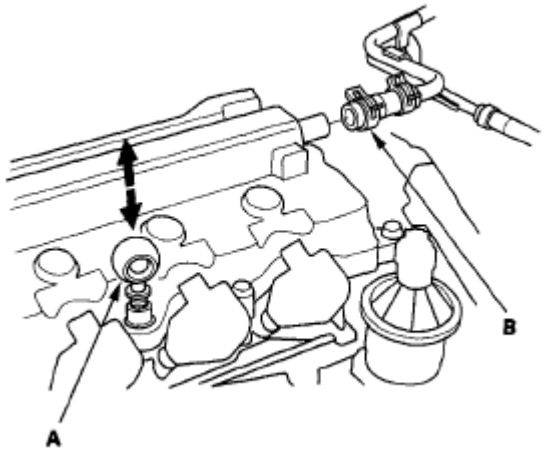


Fig. 64: Identifying Dipstick And Breather Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the cylinder head cover.

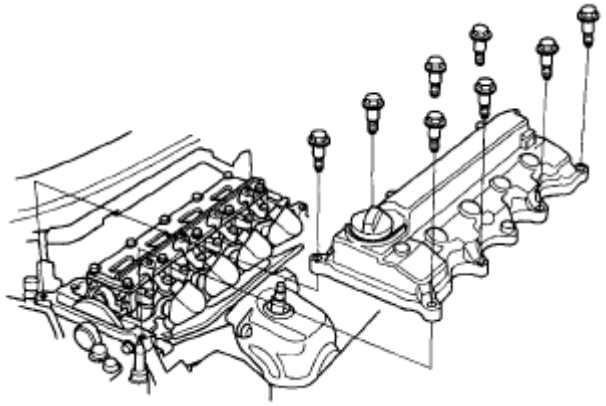


Fig. 65: Identifying Cylinder Head Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD COVER INSTALLATION

1. Thoroughly clean the head cover gasket and the groove.
2. Install the head cover gasket (A) in the groove of the cylinder head cover (B).

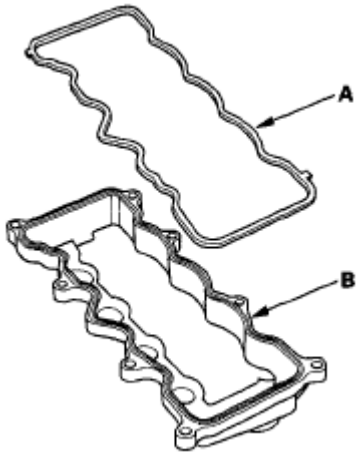


Fig. 66: Identifying Head Cover Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check that the mating surfaces are clean and dry.
4. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, on the oil pump mating areas.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

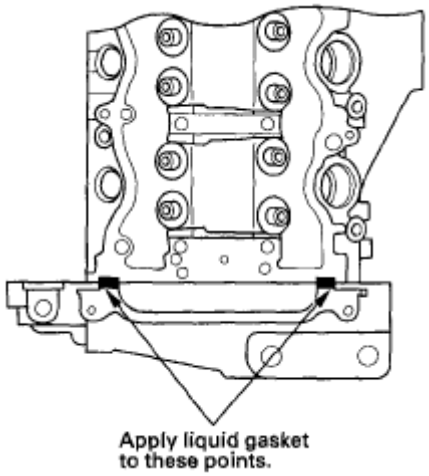


Fig. 67: Identifying Liquid Gasket Applying Points
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the cylinder head cover, and tighten the bolts in two or three steps. In the final step, tighten all the bolts, in sequence, to 9.8 N.m (1.0 kgf.m, 7.2 lbf.ft).

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the head cover.**

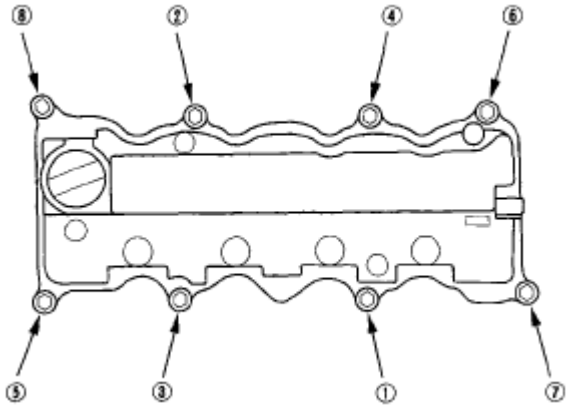


Fig. 68: Identifying Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the dipstick (A) and breather hose (B).

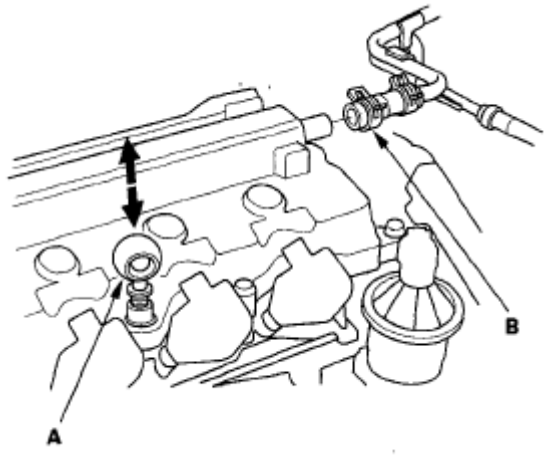


Fig. 69: Identifying Dipstick And Breather Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Connect the alternator connector (A) and BLK wire (B) to the alternator.

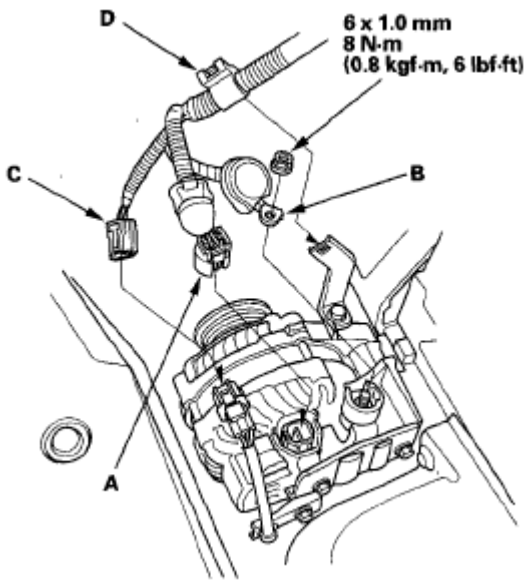


Fig. 70: Identifying Alternator Connector And BLK Wire (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Connect the A/C compressor clutch connector (C), and install the harness clamp (D).
9. Install the front harness holder (A) to the bracket, then tighten the four bolts (B) securing the harness holders.

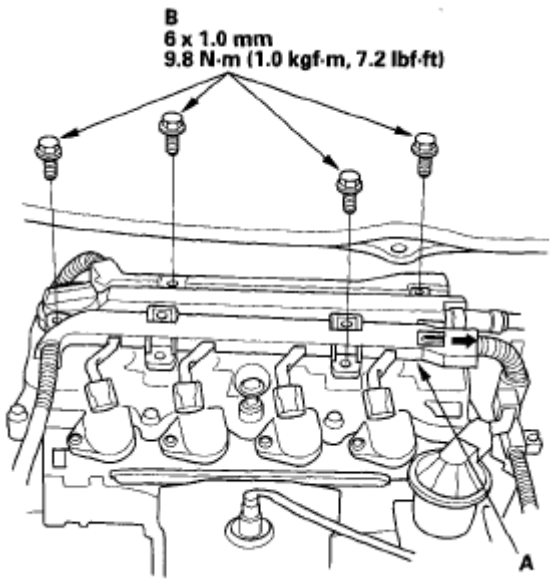


Fig. 71: Identifying Front Harness Holder (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Connect the four ignition coil connectors.
11. Install the injector cover.

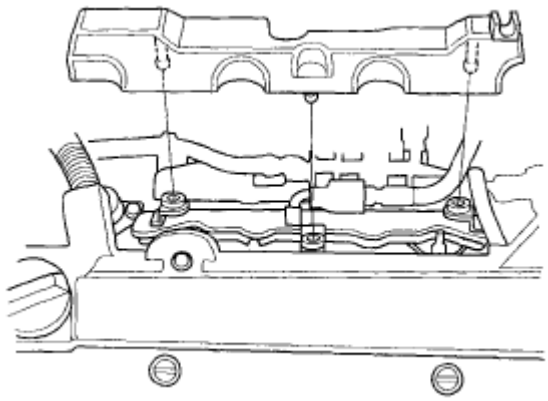


Fig. 72: Identifying Injector Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the harness cover.

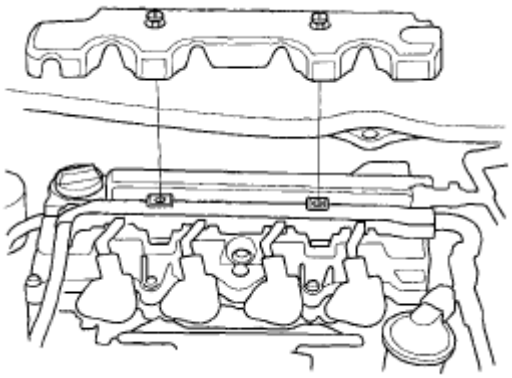


Fig. 73: Identifying Harness Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD REMOVAL

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the wiring and terminals, unplug the wiring connectors carefully while holding the connector portion.**
- **To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100°F (38°C) before loosening the cylinder head bolts.**
- **Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.**

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
3. Disconnect the negative cable from the battery.
4. Drain the engine coolant (see **COOLANT REPLACEMENT**).
5. Remove the drive belt (see **DRIVE BELT INSPECTION**).
6. Remove the intake manifold (see **REMOVAL**).
7. Remove the harness clamps (A), and remove the positive crankcase ventilation (PCV) hose from the clamp (B).

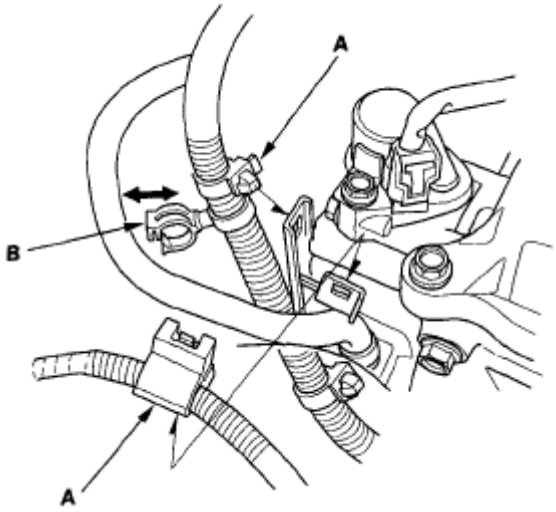


Fig. 74: Identifying Positive Crankcase Ventilation Hose Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the air cleaner housing bracket (A), then remove the harness holder (B) from the cylinder head.

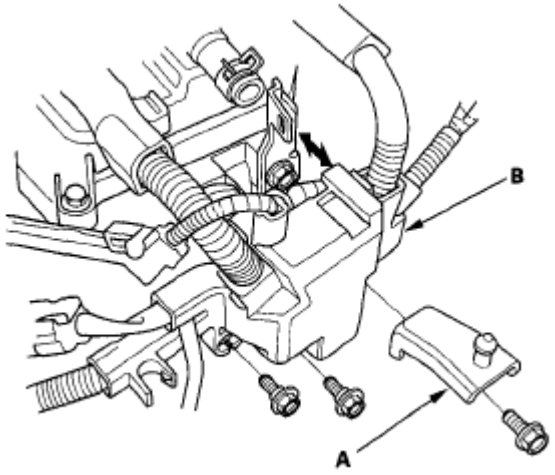


Fig. 75: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. M/T model: Remove the upper radiator hose (A) and heater hose (B).

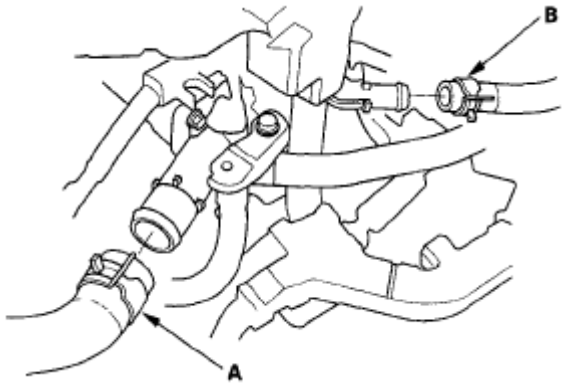


Fig. 76: Identifying Upper Radiator Hose And Heater Hose - M/T Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. A/T model: Remove the upper radiator hose (A), heater hose (B), and water bypass hose (C).

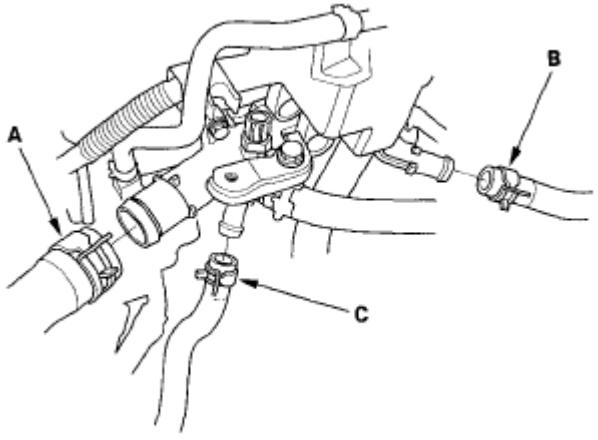


Fig. 77: Identifying Upper Radiator Hose And Heater Hose - A/T Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Air fuel ratio (A/F) sensor connector
    - Secondary heated oxygen sensor (secondary HO2S) connector
    - Exhaust gas recirculation (EGR) valve connector
    - Rocker arm oil control solenoid connector
    - Rocker arm oil pressure switch connector
12. Remove the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
13. Remove the three way catalytic converter (TWC) (see **CATALYTIC CONVERTER REMOVAL/INSTALLATION**).
14. Remove the thermostat housing (see **THERMOSTAT HOUSING REMOVAL AND INSTALLATION**).
15. Remove the cam chain (see **CAM CHAIN REMOVAL**).
16. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts, in sequence, 1/3 of a turn at a

time; repeat the sequence until all bolts are loosened.

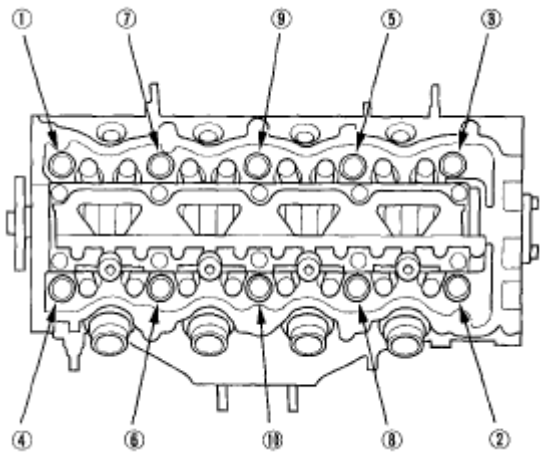


Fig. 78: Identifying Cylinder Head Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the cylinder head.

CMP PULSE PLATE REMOVAL AND INSTALLATION

Removal

1. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
2. Remove the air cleaner housing bracket (A), then remove the harness holder (B) from the cylinder head.

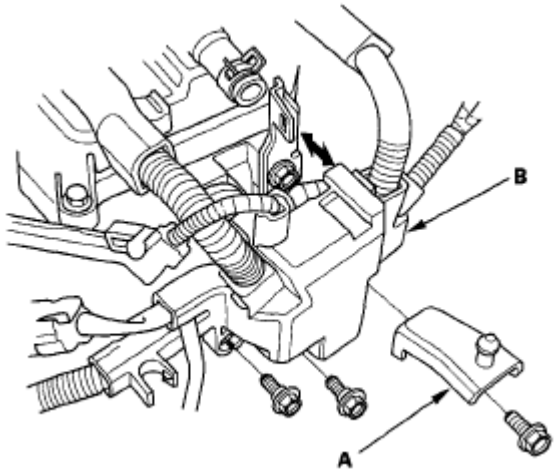


Fig. 79: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
4. Remove the camshaft thrust cover.

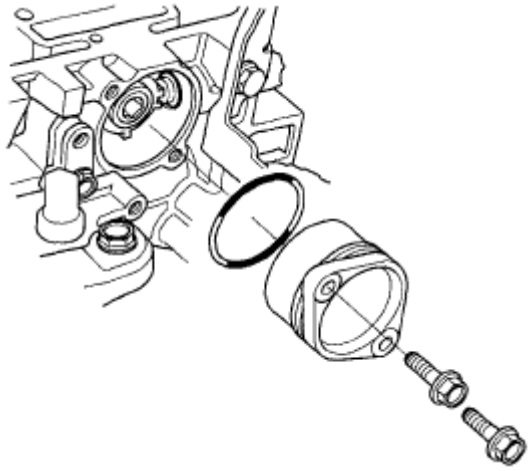


Fig. 80: Identifying Camshaft Thrust Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Hold the camshaft with a 27 mm open-end wrench, then loosen the bolt.

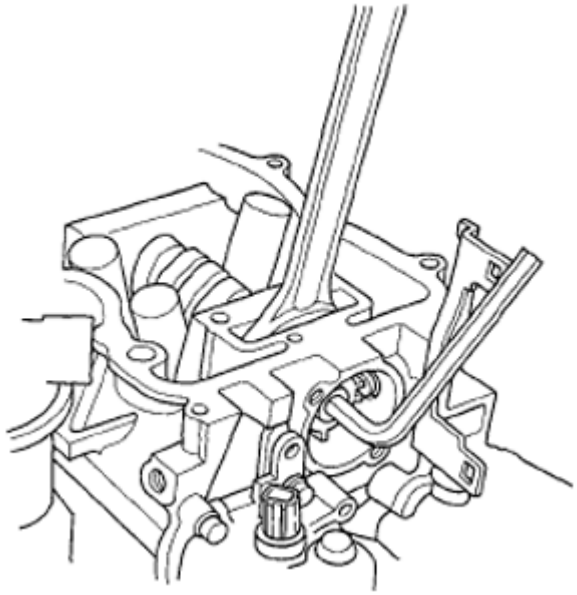


Fig. 81: Holding Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the camshaft position (CMP) pulse plate.

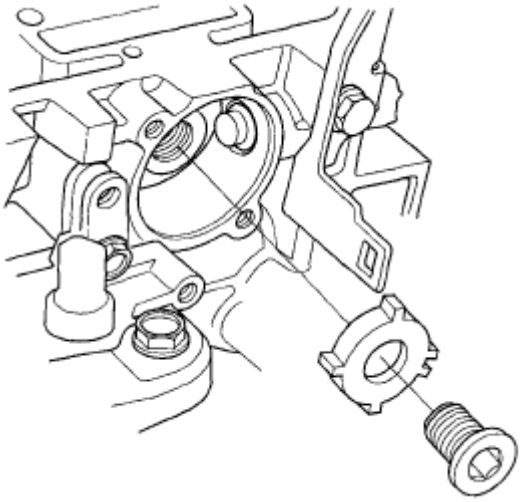


Fig. 82: Identifying Camshaft Position Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install the CMP pulse plate.

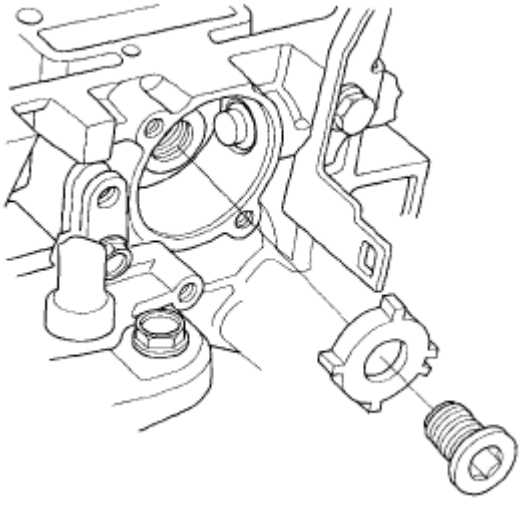


Fig. 83: Identifying CMP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Hold the camshaft with a 27 mm open-end wrench, then tighten the bolt.

   Specified Torque:

   14 x 1.5 mm

   34 N.m (3.5 kgf.m, 25 lbf.ft)

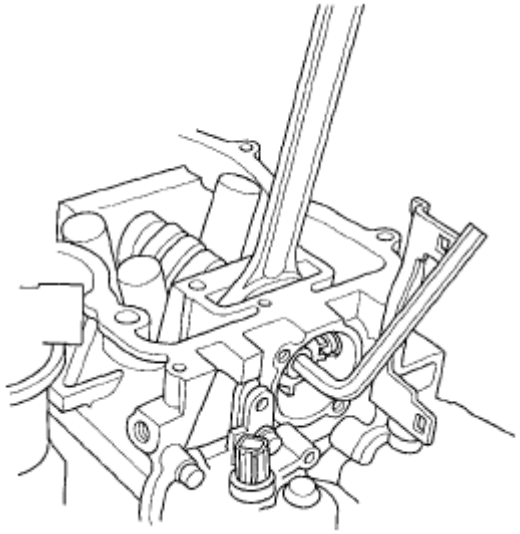


Fig. 84: Holding Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the camshaft thrust cover (A), use a new O-ring (B).

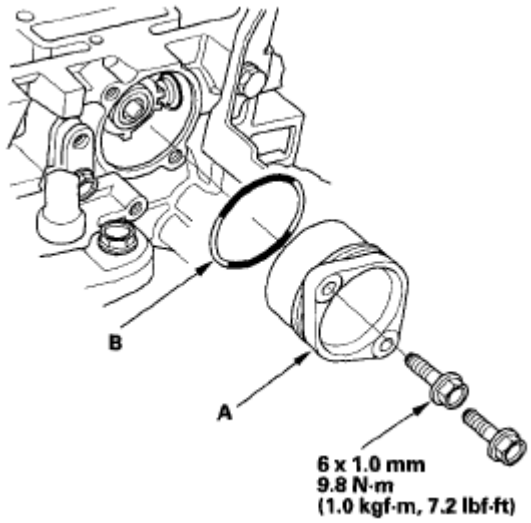


Fig. 85: Identifying Camshaft Thrust Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the rocker arm assembly (see **CAMSHAFT INSTALLATION**).
5. Install the harness holder (A) on the cylinder head, then Install the air cleaner housing bracket (B).

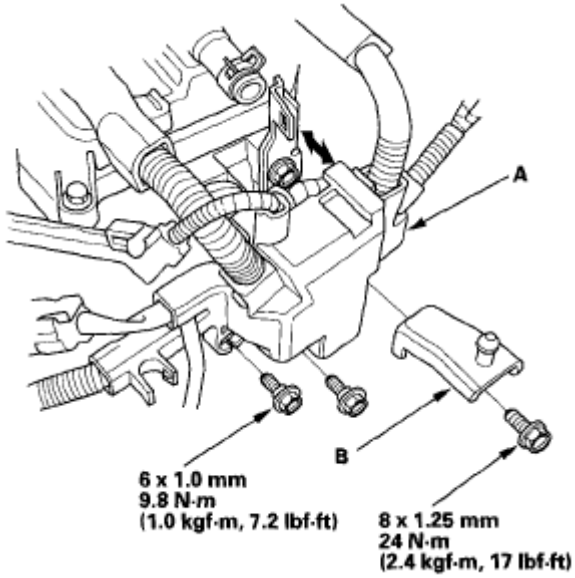


Fig. 86: Identifying Air Cleaner Housing Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).

CAMSHAFT SPROCKET REMOVAL AND INSTALLATION

Removal

1. Remove the cam chain (see **CAM CHAIN REMOVAL**).
2. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
3. Hold the camshaft with a 27 mm open-end wrench, then loosen the bolt.

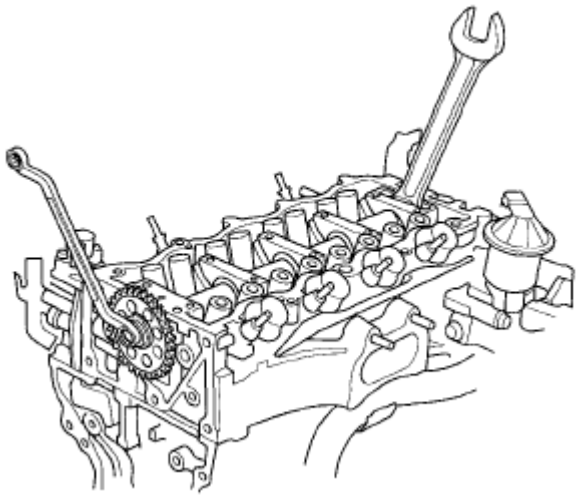


Fig. 87: Holding Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the camshaft sprocket.

Installation

1. Install the camshaft sprocket.
2. Apply new engine oil to the threads of the camshaft sprocket mounting bolt, and install it. Hold the camshaft with a 27 mm open-end wrench, then tighten the bolt.

   Specified Torque:

   10 x 1.25 mm

   56 N.m (5.7 kgf.m, 41 lbf.ft)

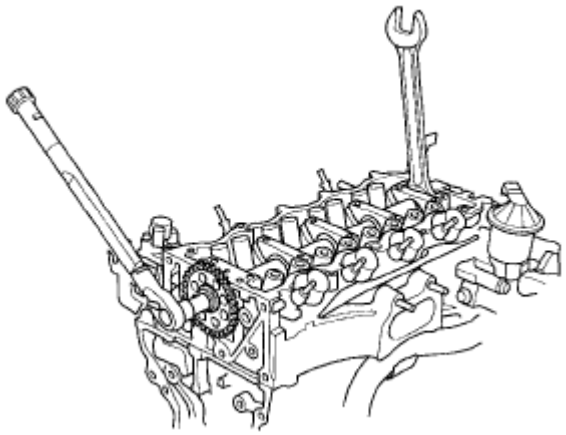


Fig. 88: Tightening Camshaft Sprocket Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the rocker arm assembly (see **CAMSHAFT INSTALLATION**).
4. Install the cam chain (see **CAM CHAIN INSTALLATION**).

CYLINDER HEAD INSPECTION FOR WARPAGE

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Inspect the camshaft (see **CAMSHAFT INSPECTION**).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
   - If warpage is less than 0.08 mm (0.003 in.) cylinder head resurfacing is not required.
   - If warpage is between 0.08 mm (0.003 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
   - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 115 mm (4.53 in.).

   Cylinder Head Height

   Standard (New): 114.95-115.05 mm (4.526-4.530 in.)

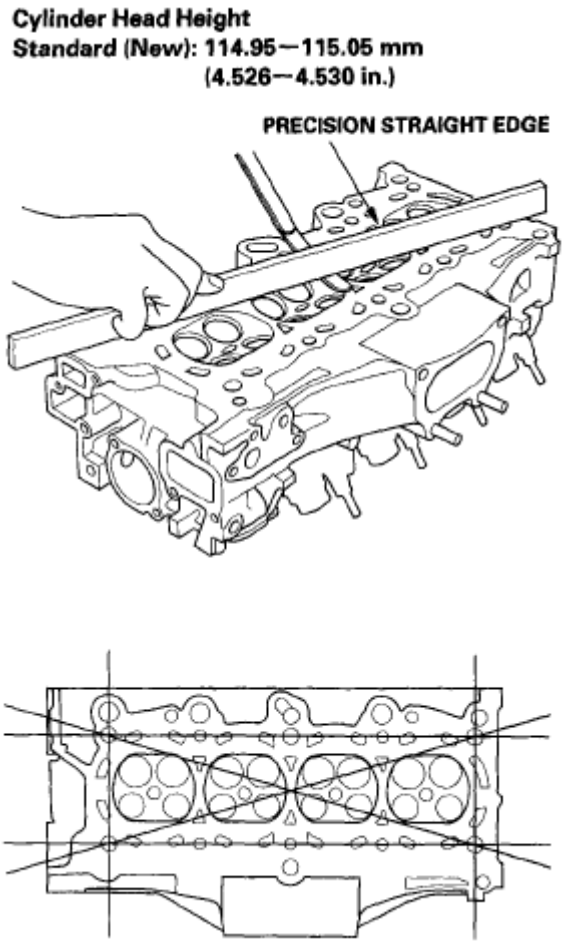


Fig. 89: Checking Cylinder Head For Warpage (With Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM ASSEMBLY REMOVAL

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Loosen the rocker arm adjusting screws (A).

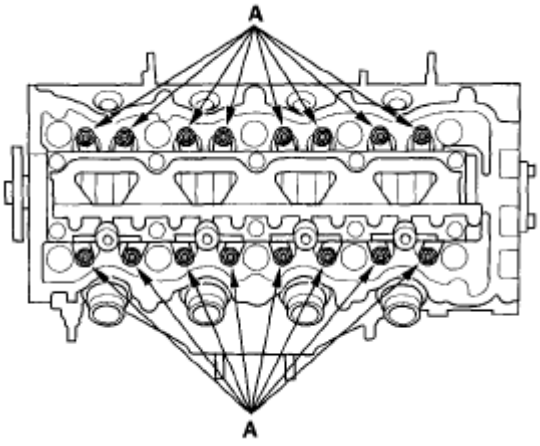


Fig. 90: Identifying Rocker Arm Adjusting Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the lost motion holder bolts. To prevent damaging the lost motion holder and rocker shaft, unscrew the bolts, in sequence, two turns at a time.

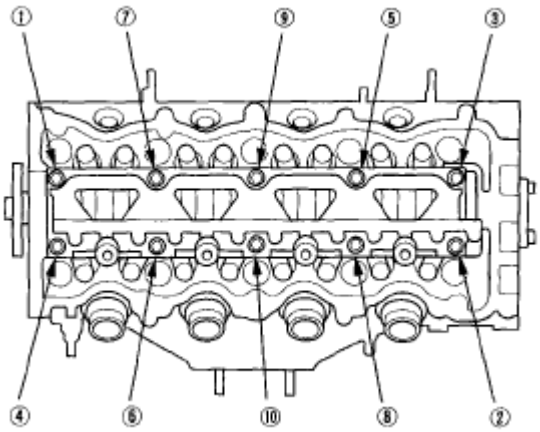


Fig. 91: Identifying Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the lost motion holder (A) and lost motion assemblies (B).

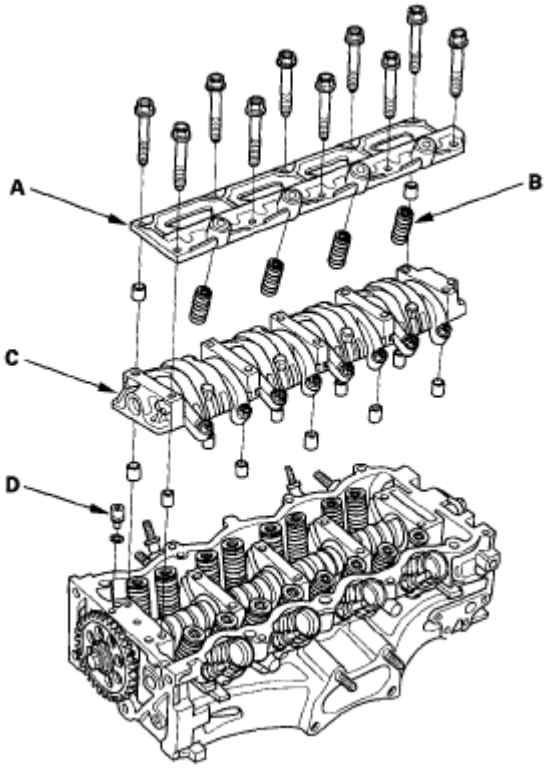


Fig. 92: Identifying Lost Motion Holder And Lost Motion Assemblies
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the rocker arm assembly (C), then remove the oil control orifice (D).

ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY

NOTE:

- **Identify each part as it is removed so that each item can be reinstalled in its original position.**
- **Inspect the rocker arm shaft and rocker arms (see ROCKER ARM AND SHAFT INSPECTION).**
- **If reused, the rocker arms must be installed in the same positions.**
- **When removing, or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders and rocker arms on the shaft.**
- **Remove the rocker shaft bolt before removing the rocker shaft from the No. 5 rocker shaft holder.**
- **Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.**
- **Bundle the intake secondary rocker arms with rubber bands to keep them together as a set.**
- **When replacing the intake rocker arm assembly, remove the fastening hardware from the new intake rocker arm assembly.**

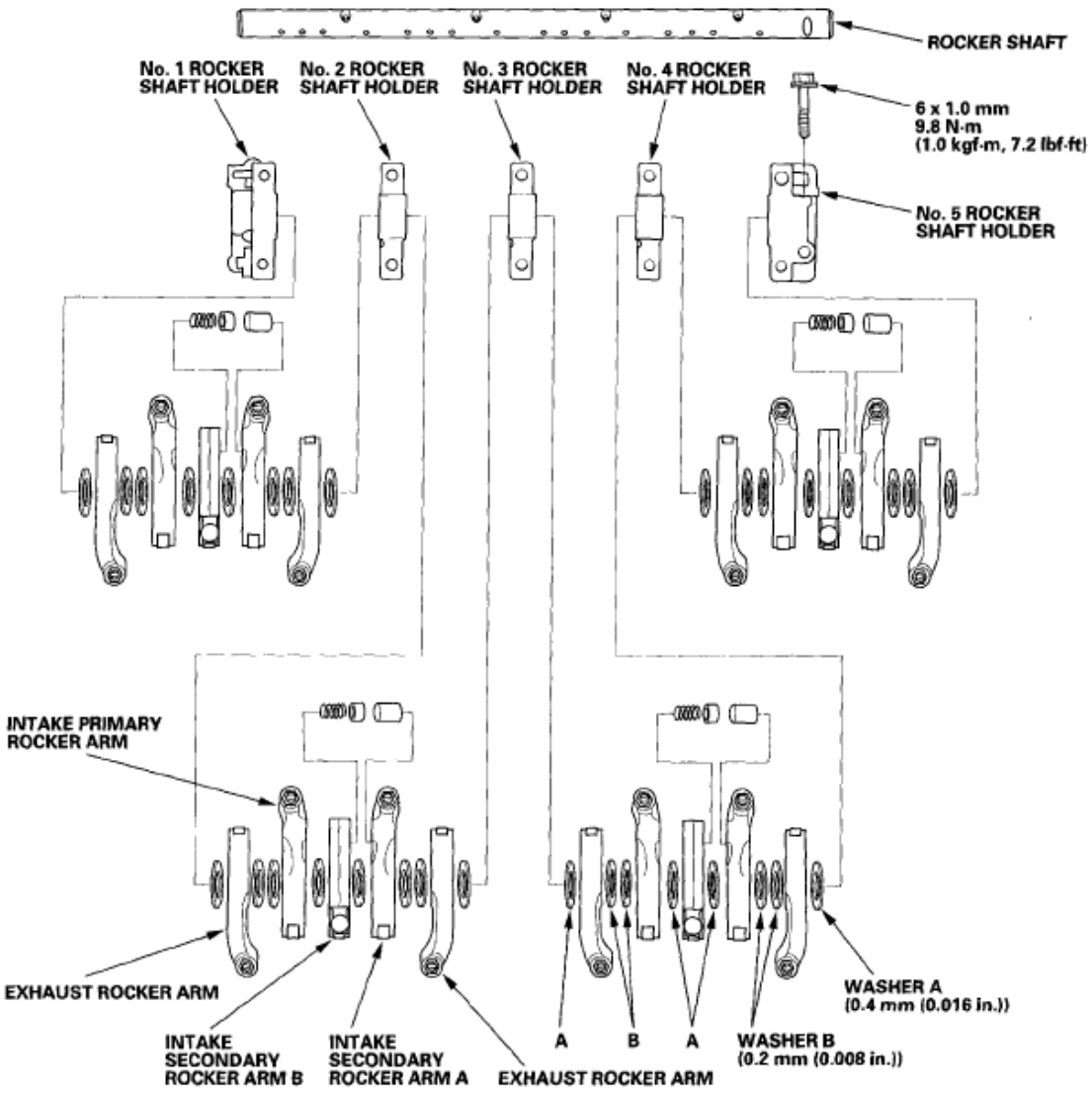


Fig. 93: Exploded View Of Rocker Arm And Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT INSPECTION

1. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
2. Disassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
3. Measure the diameter of the shaft at the first rocker location.

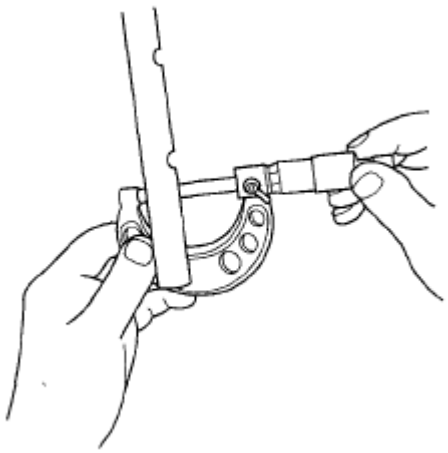


Fig. 94: Measuring Diameter Of Shaft First Rocker Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Zero the gauge (A) to the shaft diameter.

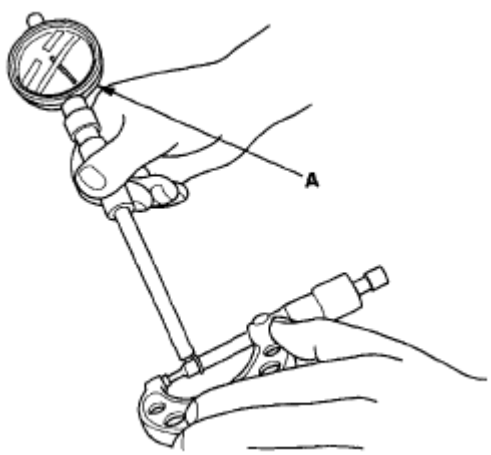


Fig. 95: Checking Shaft Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Rocker Arm-to-Shaft Clearance

Standard (New): 0.019-0.050 mm (0.0007-0.0020 in.)

Service Limit: 0.08 mm (0.0031 in.)

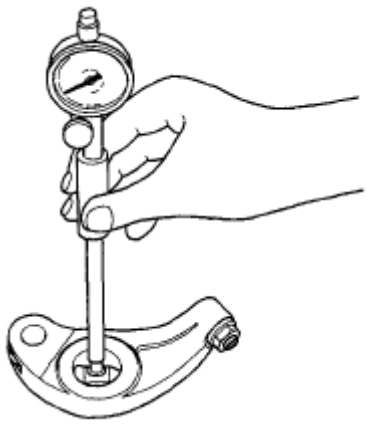


Fig. 96: Measuring Inside Diameter Of Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Repeat for all rockers and both shafts. If the clearance is beyond the service limit, replace the rocker shaft and all out of service limit rocker arms. If any intake secondary rocker arm needs replacement, replace the secondary rocker arms as an assembly.

VTEC Rocker Arms

7. Inspect the rocker arm pistons (B). Push on them manually. If they do not move smoothly, replace the rocker arm set.

NOTE:

- **Apply new engine oil to the pistons when reassembling.**
- **When reassembling secondary rocker arm A, carefully apply air pressure to the oil passage of the rocker arm.**

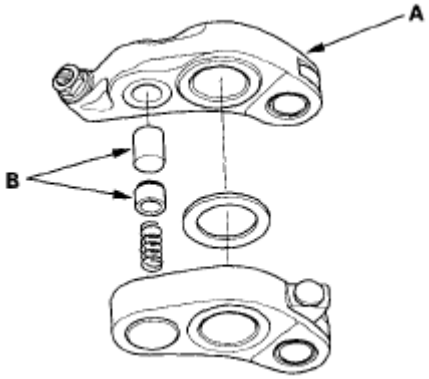


Fig. 97: Identifying Secondary Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Reassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
9. Install the rocker arm assembly (see **CAMSHAFT INSTALLATION**).

CAMSHAFT REMOVAL

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
3. Remove the camshaft sprocket (see **CAMSHAFT SPROCKET REMOVAL AND INSTALLATION**).
4. Remove the camshaft position (CMP) sensor (see **CKP SENSOR REPLACEMENT**).
5. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

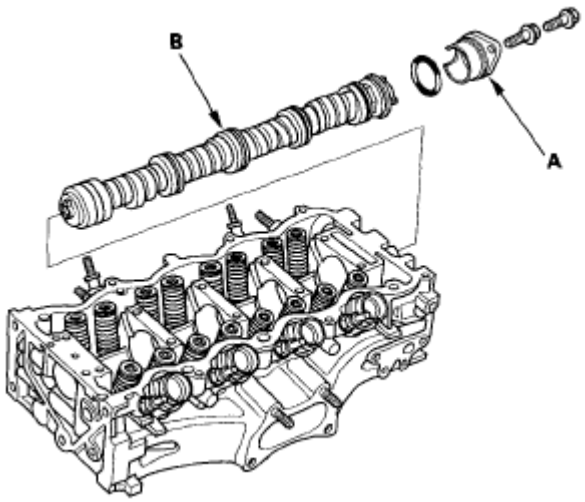


Fig. 98: Identifying Camshaft Thrust Cover And Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CAMSHAFT INSPECTION

1. Remove the camshaft sprocket (see **CAMSHAFT SPROCKET REMOVAL AND INSTALLATION**).
2. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
3. Put the rocker shaft holders on the cylinder head, then tighten the bolts, in sequence, to the specified torque.

   Specified Torque:

   6 x 1.0 mm

   15 N.m (1.5 kgf.m, 11 lbf.ft)

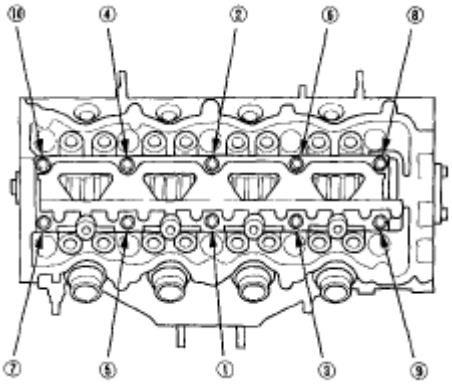


Fig. 99: Identifying Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Seat the camshaft by pushing it toward the rear of the cylinder head.
5. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth, and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play

   Standard (New): 0.050-0.250 mm (0.002-0.010 in.)

   Service Limit: 0.4 mm (0.02 in.)

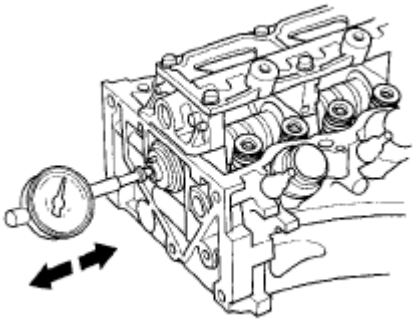


Fig. 100: Measuring Camshaft End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the camshaft (see **CAMSHAFT INSPECTION**).
7. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
8. Measure the diameter of each camshaft journal.

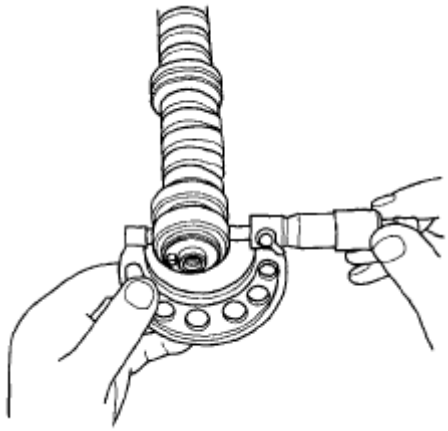


Fig. 101: Measuring Diameter Of Camshaft Journal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Zero the gauge to the journal diameter.

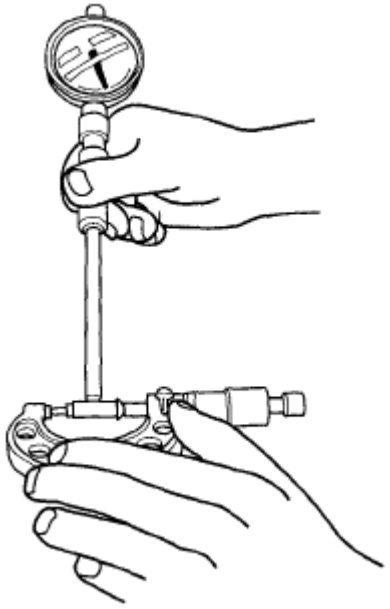


Fig. 102: Checking Journal Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.
    - If the camshaft-to-holder clearance is within limits, go to step 12.
    - If the camshaft-to-holder clearance is beyond the service limit, and the camshaft has been replaced, replace the cylinder head.
    - If the camshaft-to-holder clearance is beyond the service limit, and the camshaft has not been replaced, go to step 11.

Camshaft-to-Holder Oil Clearance

Standard (New): 0.045-0.084 mm (0.0018-0.0033 in.)

Service Limit: 0.15 mm (0.006 in.)

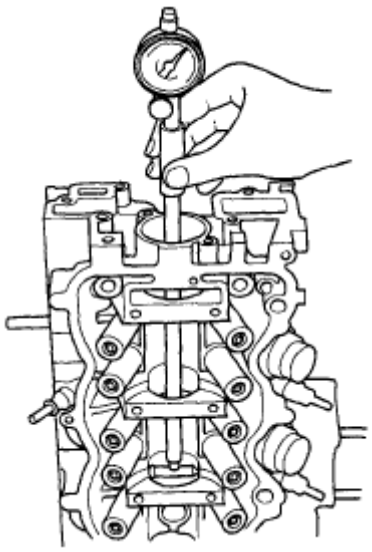


Fig. 103: Checking Camshaft-To-Holder Oil Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check the total runout with the camshaft supported on V-blocks.
    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft, and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)

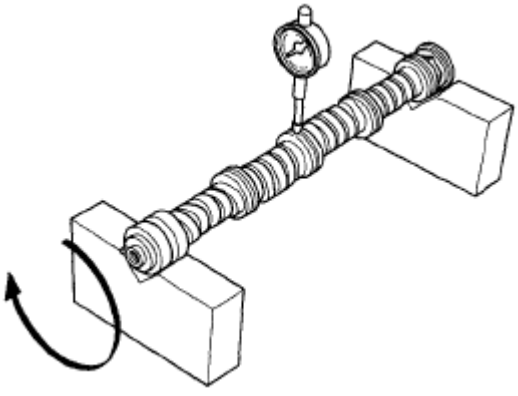


Fig. 104: Checking Camshaft Total Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Measure cam lobe height.

CAM LOBE HEIGHT STANDARD

	INTAKE	EXHAUST
PRI	35.754 mm (1.4076 in.)	
SEC A	35.358 mm (1.3920 in.)	35.813 mm (1.4100 in.)
SEC B	36.027 mm (1.4184 in.)	

PRI: Primary

EX: Exhaust

SEC: Secondary

C/C: Cam Chain

IN: Intake

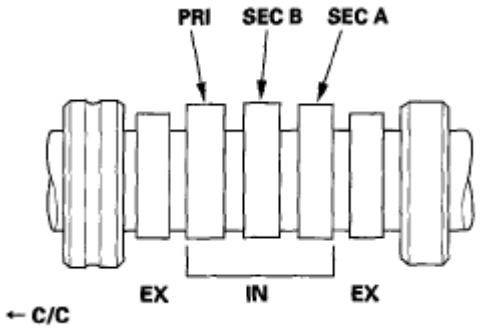


Fig. 105: Checking Cam Lobe Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE, SPRING, AND VALVE SEAL REMOVAL

Special Tools Required

Valve spring compressor attachment 07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Using an appropriate-sized socket (A), and plastic mallet (B), lightly tap the valve retainer to loosen the valve cotters.

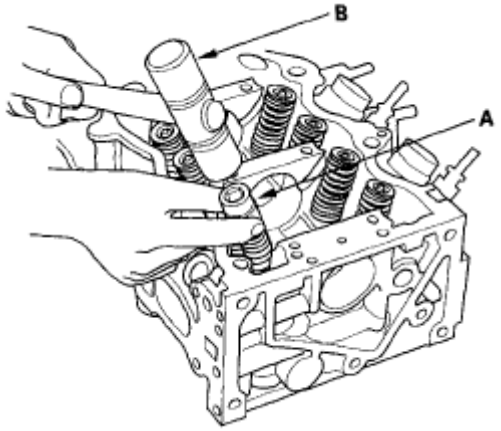


Fig. 106: Tapping Valve Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the valve spring compressor attachment and valve spring compressor. Compress the spring, and remove the valve cotters.

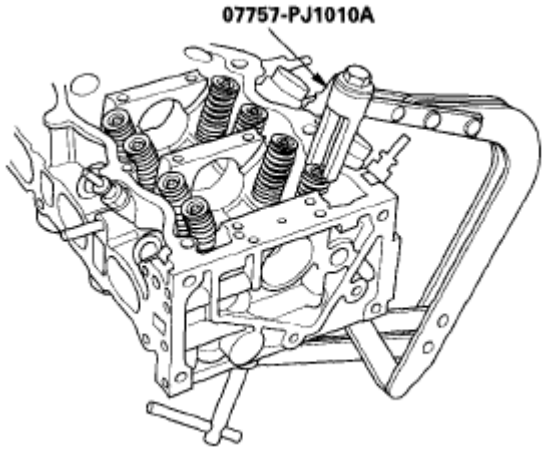


Fig. 107: Compressing Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the valve spring compressor, valve spring compressor attachment, spring retainer, and spring.
5. Install the valve guide seal remover (A).

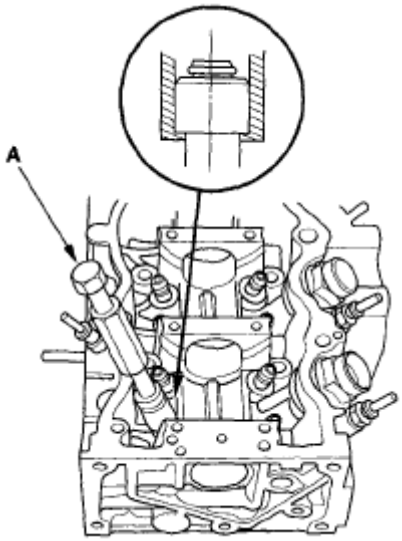


Fig. 108: Identifying Valve Guide Seal Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the valve seal.

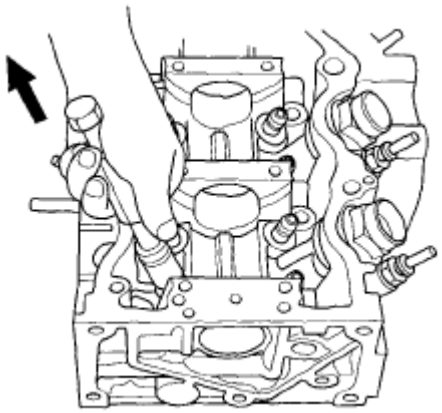


Fig. 109: Identifying Valve Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve spring seat and valve.

VALVE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Measure the valve in these areas.

Intake Valve Dimensions

A Standard (New): 31.85-32.15 mm (1.254-1.267 in.)

B Standard (New): 116.40-117.00 mm (4.583-4.606 in.)

C Standard (New): 5.48-5.49 mm (0.2157-0.2161 in.)

C Service Limit: 5.45 mm (0.215 in.)

Exhaust Valve Dimensions

A Standard (New): 25.90-26.10 mm (1.020-1.028 in.)

B Standard (New): 115.65-116.25 mm (4.553-4.577 in.)

C Standard (New): 5.45-5.46 mm (0.2146-0.2150 in.)

C Service Limit: 5.42 mm (0.213 in.)

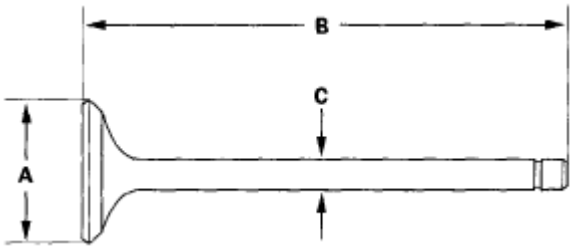


Fig. 110: Measuring Exhaust Valve Dimensions
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE STEM-TO-GUIDE CLEARANCE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance

Standard (New): 0.04-0.10 mm (0.002-0.004 in.)

Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.10-0.16 mm (0.004-0.006 in.)

Service Limit: 0.22 mm (0.009 in.)

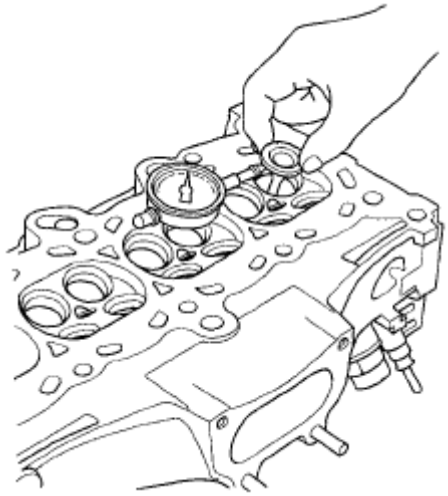


Fig. 111: Checking Intake Valve Stem-To-Guide Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Subtract the valve stem O.D. (measured with a micrometer) from the valve guide I.D. (measured with an inside micrometer or ball gauge). Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

   Intake Valve Stem-to-Guide Clearance

   Standard (New): 0.02-0.05 mm (0.0008-0.0020 in.)

   Service Limit: 0.08 mm (0.003 in.)

   Exhaust Valve Stem-to-Guide Clearance

   Standard (New): 0.05-0.08 mm (0.0020-0.0031 in.)

   Service Limit: 0.11 mm (0.004 in.)

VALVE GUIDE REPLACEMENT

Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

1. Inspect the valve stem-to-guide clearance (see **VALVE INSPECTION**).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.

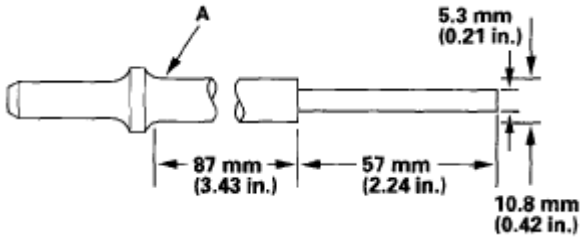


Fig. 112: Identifying Air-Impact Valve Guide Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C. Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.

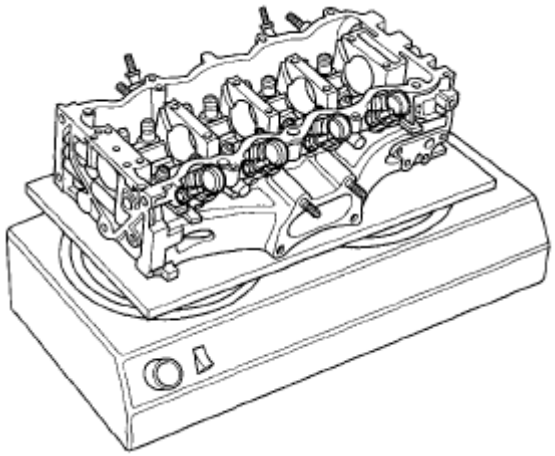


Fig. 113: Heating Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.
6. Turn the head over, and drive the guide out toward the camshaft side of the head.

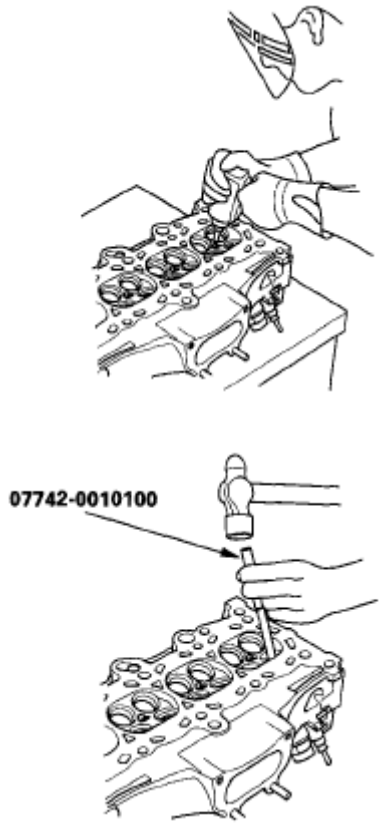


Fig. 114: Tapping Valve Guide
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. If a valve guide still won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Take out the new guide(s) from the freezer, one at a time, as you need them.
9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the valve guide driver to drive the guide to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

Valve Guide Installed Height 18.25-18.75 mm (0.719-0.738 in.)

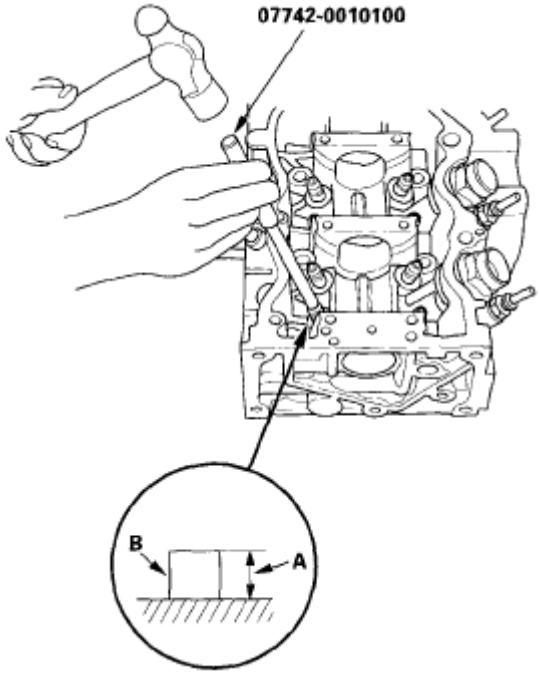


Fig. 115: Identifying Valve Guide Installed Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Coat both the reamer and the valve guide with cutting oil.
11. Rotate the reamer clockwise to the full length of the valve guide bore.

Fig. 116: Rotating Reamer To Valve Guide Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Continue to rotate the reamer clockwise while drawing it from the bore.
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.
14. Check the clearance with a valve (see **VALVE INSPECTION**). Verify that a valve slides into the intake and exhaust valve guides without getting stuck.

VALVE SEAT RECONDITIONING

1. Inspect the valve stem-to-guide clearance (see **VALVE INSPECTION**). If the valve guides are worn, replace them (see **VALVE GUIDE REPLACEMENT**) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.

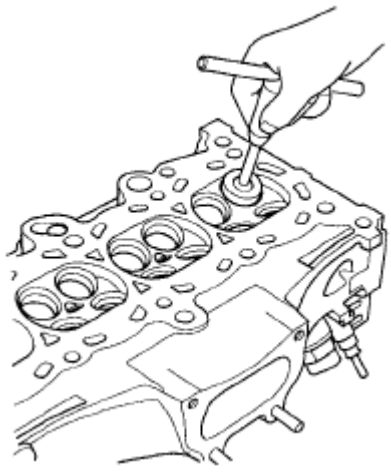


Fig. 117: Cutting Valve Seats Using Valve Seat Cutter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully cut a 45° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper edge of the seat with the 30 ° cutter and the lower edge of the seat with the 60 ° cutter. Check the width of the seat and adjust accordingly.

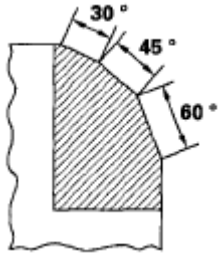


Fig. 118: Identifying Bevel Upper Edge Of Seat Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Make one more very light pass with the 45° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Intake:

Standard (New): 0.85-1.15 mm (0.033-0.045 in.)

Service Limit: 1.6 mm (0.06 in)

Exhaust:

Standard (New): 1.25-1.55 mm (0.049-0.061 in.)

Service Limit: 2.0 mm (0.08 in.)

6. After resurfacing the seat, inspect it for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.

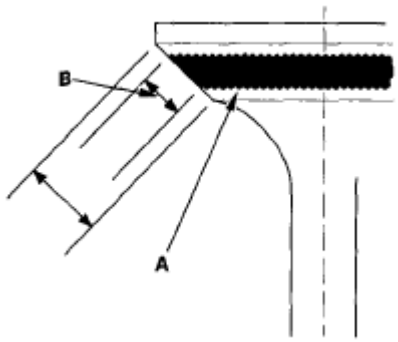


Fig. 119: Identifying Valve Seat Width
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
   - If it is too high (closer to the valve stem), you must make a second cut with the 60° cutter to move it down, then one more cut with the 45° cutter to restore seat width.
   - If it is too low (closer to the valve edge), you must make a second cut with the 30° cutter to move it up, then one more cut with the 45° cutter to restore seat width.

NOTE: The final cut should always be made with the 45° cutter.

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height

Standard (New): 67.2-67.4 mm (2.646-2.654 in.)

Service Limit: 67.7 mm (2.665 in.)

Exhaust Valve Stem Installed Height

Standard (New): 58.4-58.6 mm (2.299-2.307 in.)

Service Limit: 58.9 mm (2.319 in.)

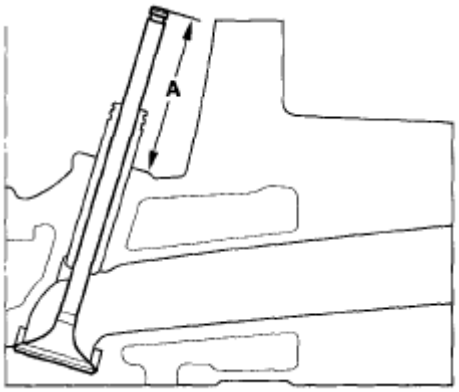


Fig. 120: Measuring Intake Valve Stem Installed Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the valve stem installed height is beyond the service limit, replace the valve and recheck. If it is still beyond the service limit, replace the cylinder head; the valve seat in the head is too deep.

VALVE, SPRING, AND VALVE SEAL INSTALLATION

Special Tools Required

- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

NOTE: Exhaust valve seals (C) have a black spring (D), and intake valve seals (E) have a white spring (F); they are not interchangeable.

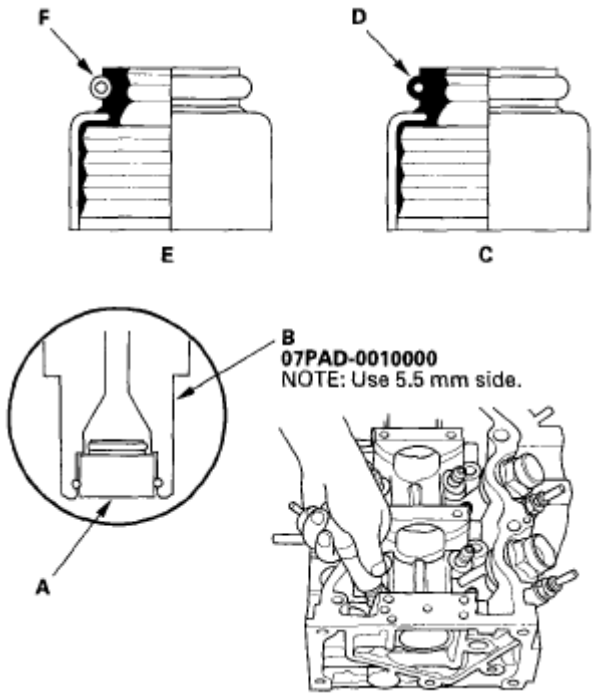


Fig. 121: Identifying Valve Seals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the valve spring and valve retainer. Place the end of the valve spring with the closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and valve spring compressor. Compress the spring, and install the valve cotters.

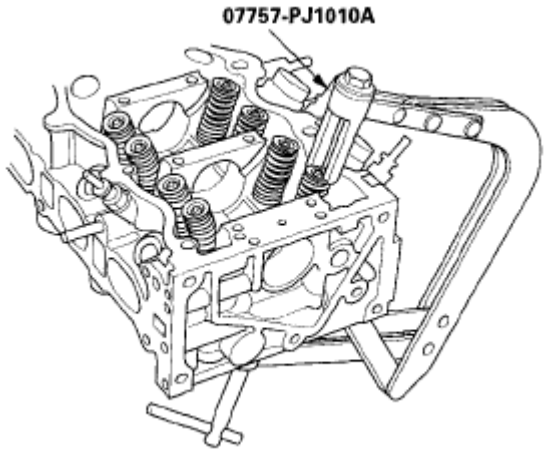


Fig. 122: Compressing Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve spring compressor and valve spring compressor attachment.
8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.

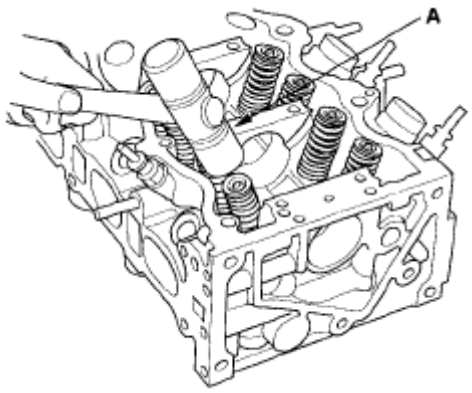


Fig. 123: Tapping End Of Valve Stem
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CAMSHAFT INSTALLATION

1. Install the camshaft (A) into the cylinder head, then install the camshaft thrust cover (B) with new O-ring (C).

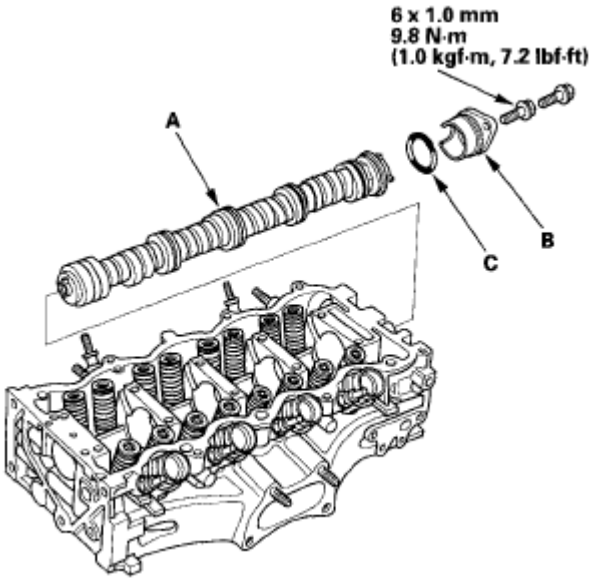


Fig. 124: Identifying Camshaft And Camshaft Thrust Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the camshaft position (CMP) sensor with a new O-ring (see **CKP SENSOR REPLACEMENT**).
3. Install the camshaft sprocket (see **CAMSHAFT SPROCKET REMOVAL AND INSTALLATION**).
4. Install the rocker arm assembly (see **CAMSHAFT INSTALLATION**).
5. Install the cylinder head (see **CYLINDER HEAD INSTALLATION**).

ROCKER ARM ASSEMBLY INSTALLATION

1. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see **ROCKER**

ARM AND SHAFT DISASSEMBLY/REASSEMBLY).

2. Install the oil control orifice (A) with a new O-ring (B), then install the rocker arm assembly (C).

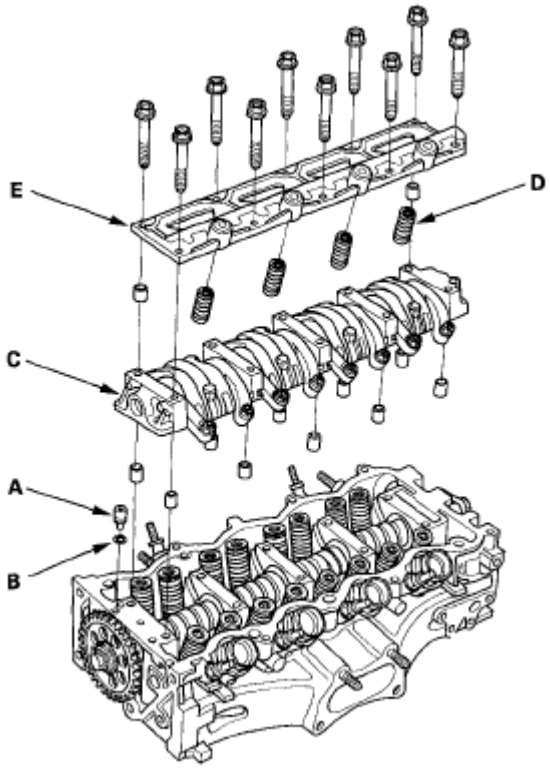


Fig. 125: Identifying Rocker Arm Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the lost motion assembles (D) and the lost motion holder (E).
4. Tighten each bolts two turns at a time in sequence.

Specified Torque:

6 x 1.0 mm 15 N.m (1.5 kgf.m, 11 lbf.ft)

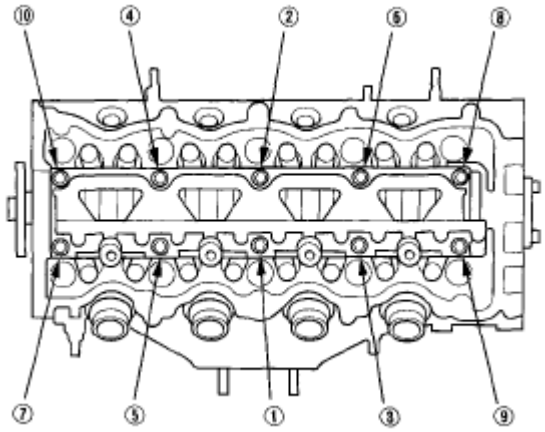


Fig. 126: Identifying Bolt Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
6. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

CYLINDER HEAD INSTALLATION

1. Clean the cylinder head and engine block surface.
2. Install the new coolant separator (A) in the engine block when replacing the engine block.

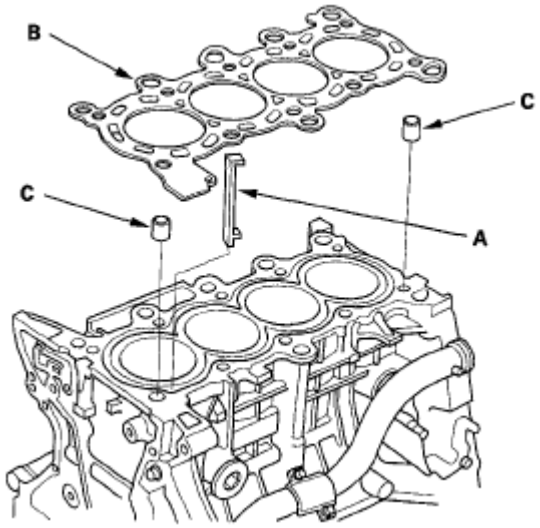


Fig. 127: Identifying Coolant Separator And Cylinder Head Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new cylinder head gasket (B) and dowel pins (C) on the engine block. Always use a new cylinder head gasket.
4. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.

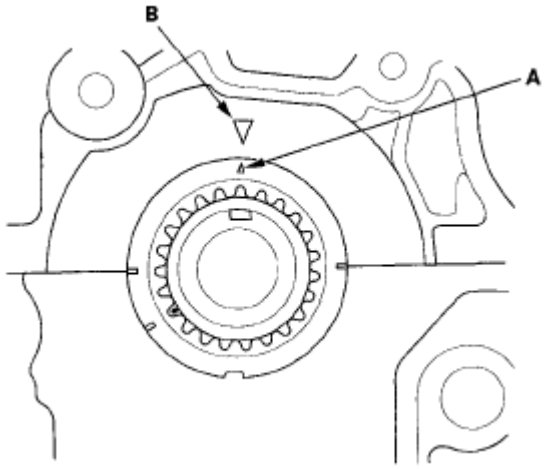


Fig. 128: Aligning TDC Mark On Crankshaft Sprocket With Pointer On Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Set the camshaft TDC. The "UP" mark (A) on the camshaft sprocket should be at the top, and the

TDC grooves (B) on the camshaft sprocket should line up with the top edge of the head.

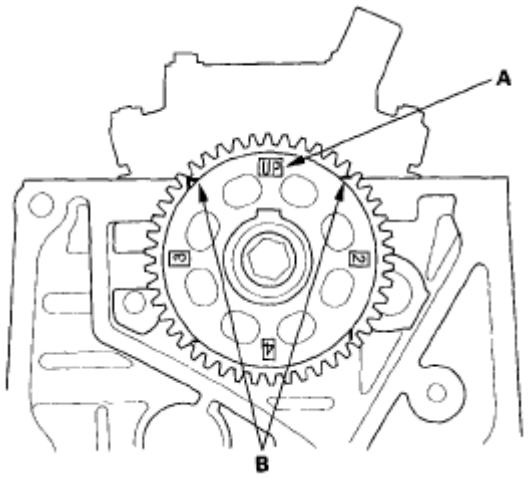


Fig. 129: Identifying UP Mark On Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the cylinder head on the engine block.
7. Measure the diameter of each cylinder head bolt at point A and point B.

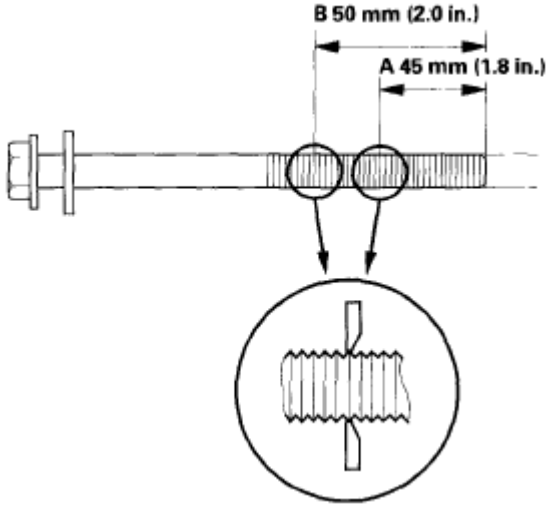


Fig. 130: Measuring Diameter Of Cylinder Head Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.
9. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.
10. Tighten the cylinder head bolts in sequence to 39 N.m (4.0 kgf.m, 29 lbf.ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retighten it from the first step.

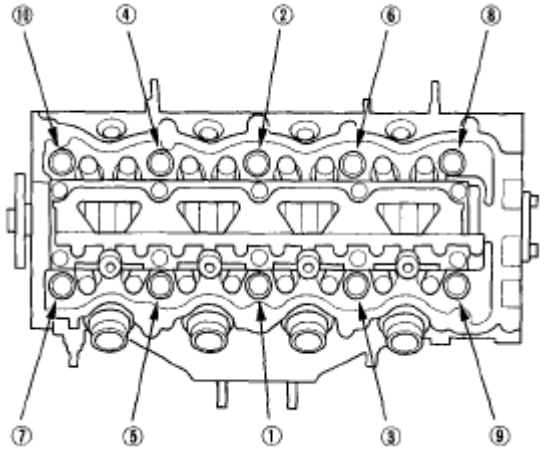


Fig. 131: Identifying Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. After torquing, tighten all cylinder head bolts in two steps (90° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 60 °.

NOTE: Remove the cylinder head bolt if you tightened it beyond the specified angle, and go back to step 7 of the procedure. Do not loosen it back to the specified angle.

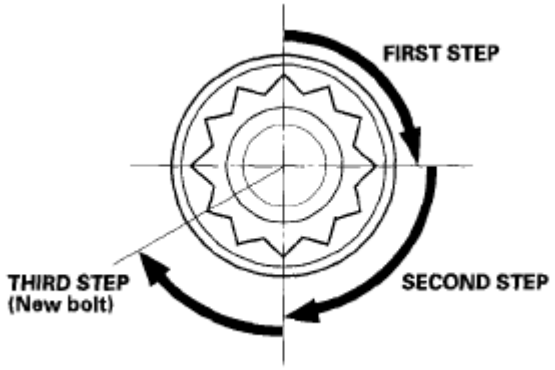


Fig. 132: Identifying Bolt Tightening Step
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the cam chain (see **CAM CHAIN INSTALLATION**).
13. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
14. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
15. Install the thermostat housing (see **INSTALLATION**).
16. Install the three way catalytic converter (TWC) (see **CATALYTIC CONVERTER REMOVAL/INSTALLATION**).
17. Connect the engine wire harness connectors, and install the wire harness clamps to the cylinder head.
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Air fuel ratio (A/F) sensor connector

- Secondary heated oxygen sensor (secondary HO2S) connector
- Exhaust gas recirculation (EGR) valve connector
- Rocker arm oil control solenoid connector
- Rocker arm oil pressure switch connector

18. M/T model: Install the upper radiator hose (A) and heater hose (B).

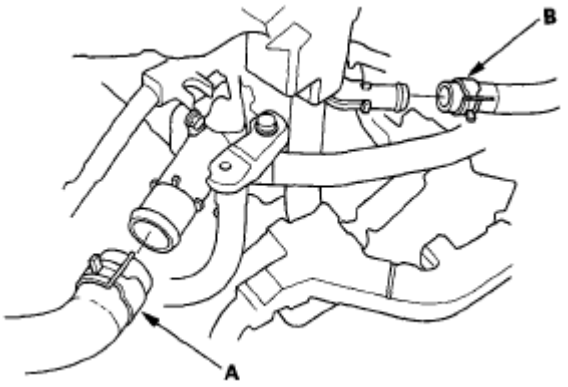


Fig. 133: Identifying Upper Radiator Hose - M/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. A/T model: Install the upper radiator hose (A), heater hose (B), and water bypass hose (C).

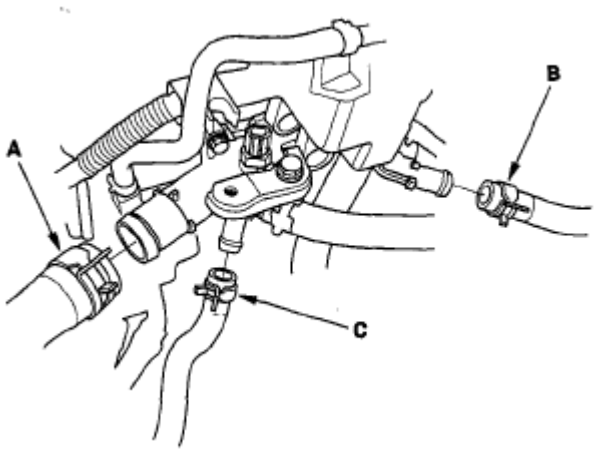


Fig. 134: Identifying Upper Radiator Hose - A/T
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the harness holder (A) on the cylinder head, then install the air cleaner housing bracket (B).

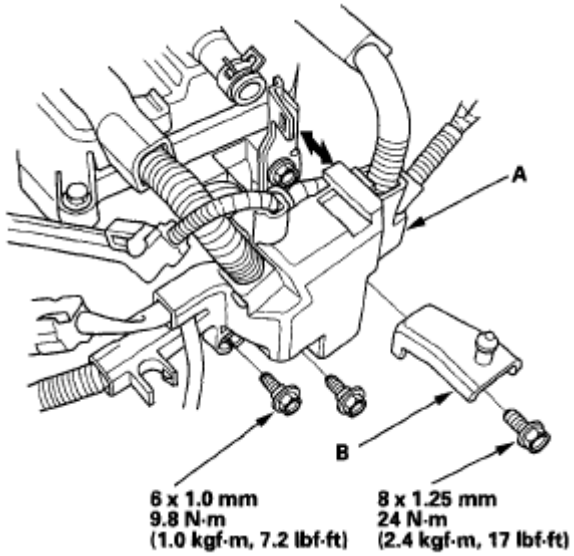


Fig. 135: Identifying Air Cleaner Housing Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the harness clamps (A), and remove the positive crankcase ventilation (PCV) hose from the clamp (B).

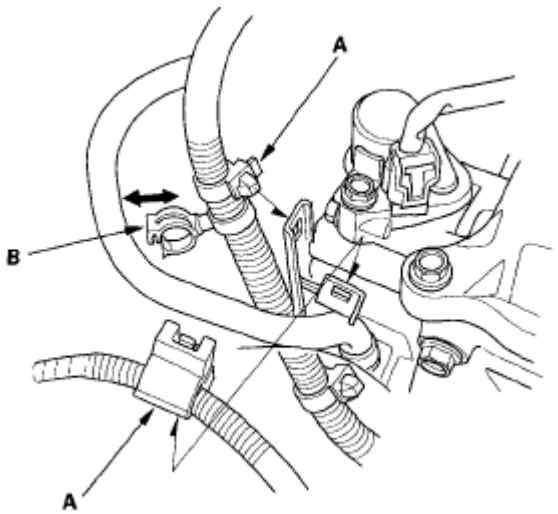


Fig. 136: Identifying Positive Crankcase Ventilation Hose Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the intake manifold (see **INSTALLATION**).
23. Install the drive belt (see **DRIVE BELT INSPECTION**).
24. Clean the battery posts and cable terminals. Assemble them, and apply grease to prevent corrosion.
25. After installation, check that all tubes, hoses, and connectors are installed correctly.
26. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
27. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on **COOLANT REPLACEMENT**).

28. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **ECM/PCM RESET**).
29. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
30. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).
31. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
32. Set the clock.

CYLINDER HEAD (K20Z3)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07MAA-PR70110	Adjuster	1
⑥	07MAA-PR70120	Locknut Wrench	1
⑦	07NAB-001040A	Holder Attachment, 50 mm	1
⑧	07PAD-0010000	Stem Seal Driver	1
⑨	07ZAJ-PNAA101	VTEC Air Adapter	2
⑩	07ZAJ-PNAA200	VTEC Air Stopper	1
⑪	07ZAJ-PNAA300	Air Joint Adapter	1
⑫	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑬	07746-0010400	Attachment, 52 x 55 mm	1
⑭	07749-0010000	Driver	1
⑮	07757-PJ1010A	Valve Spring Compressor Attachment	1

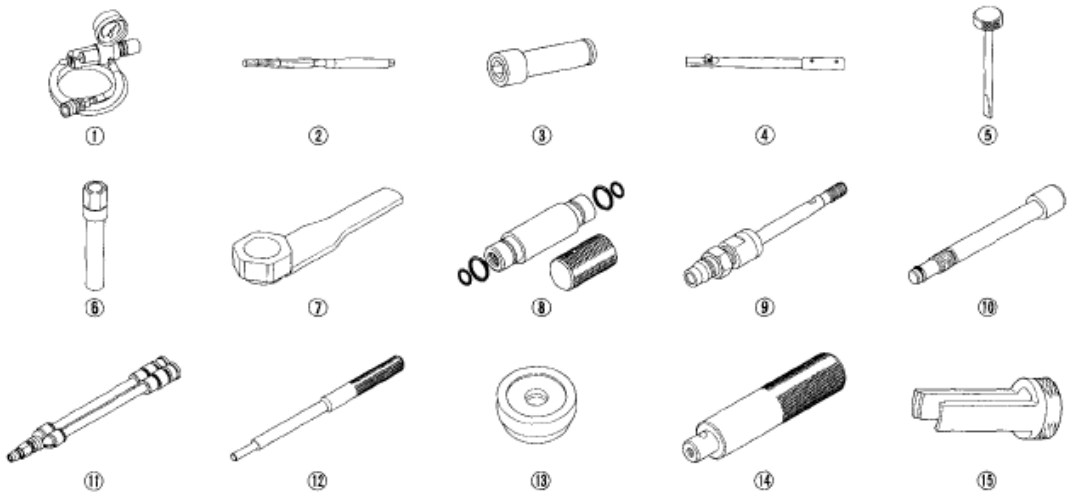


Fig. 137: Identifying Cylinder Head - Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

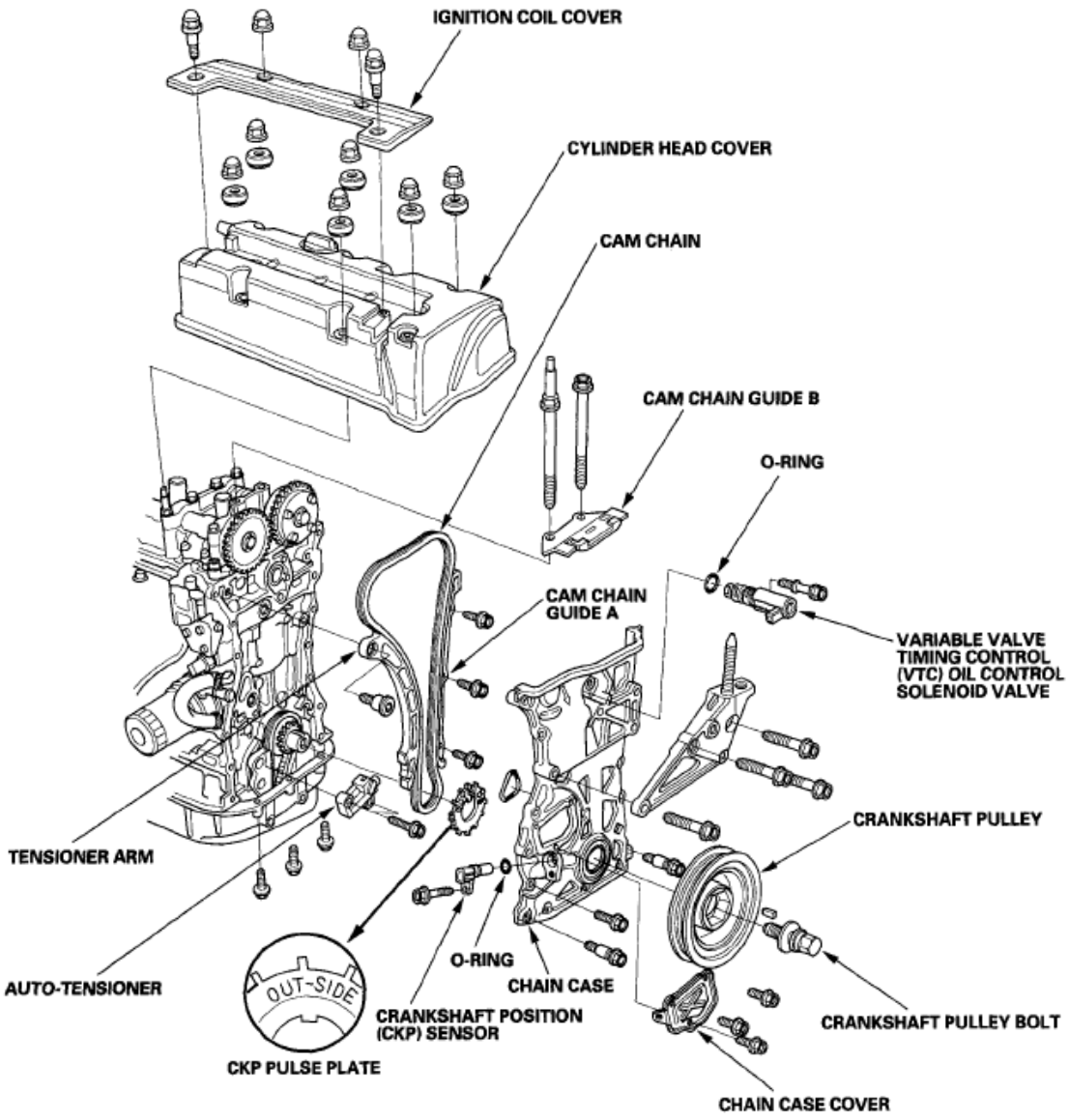


Fig. 138: Identifying Cylinder Head Component Location (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

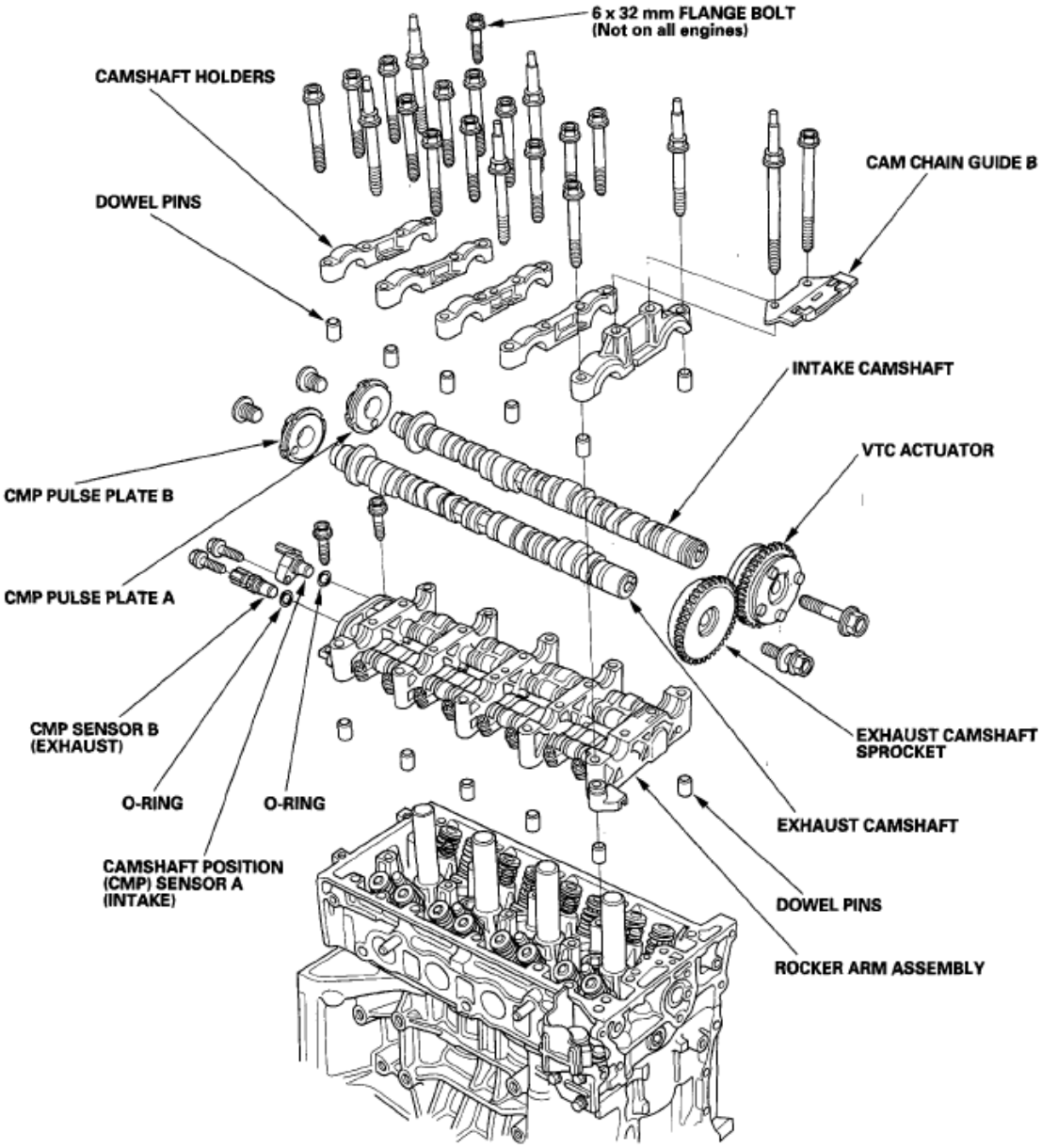


Fig. 139: Identifying Cylinder Head Component Location (2 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

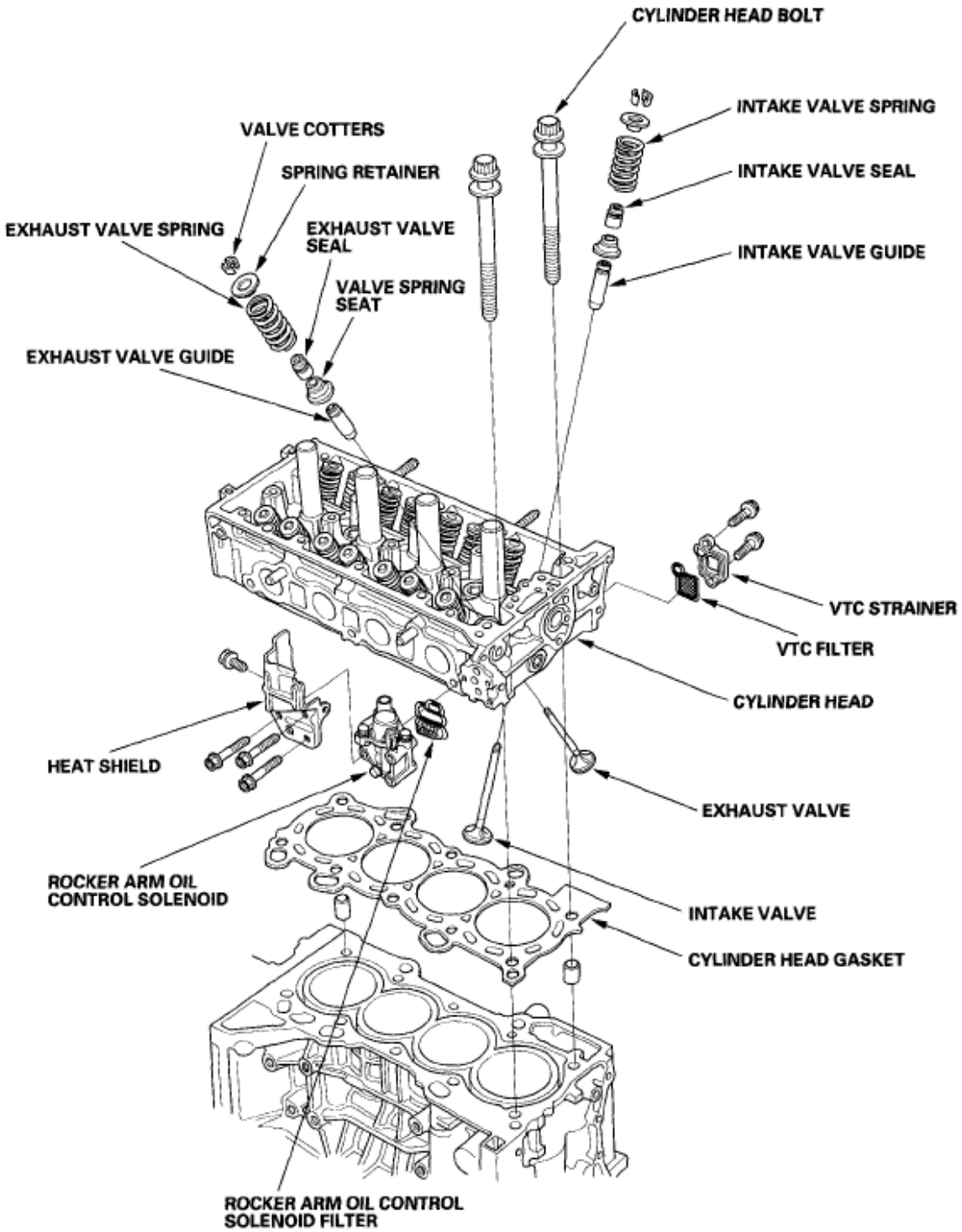


Fig. 140: Identifying Cylinder Head Component Location (3 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE COMPRESSION INSPECTION

NOTE: After this inspection, you must reset the engine control module (ECM), otherwise the ECM will continue to stop the injectors from functioning.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.

3. Connect the HDS to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
6. Select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
7. Turn the ignition switch to LOCK (0).
8. Remove the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
9. Remove the four spark plugs.
10. Attach the compression gauge to the spark plug hole.

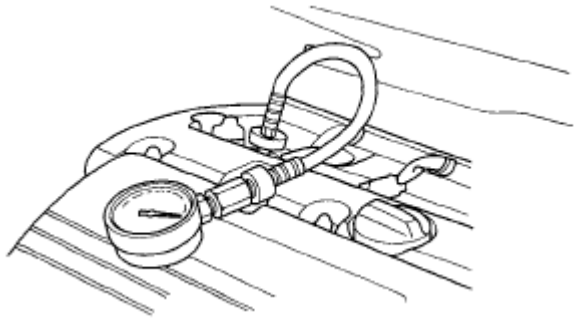


Fig. 141: Attaching Compression Gauge To Spark Plug Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Open the throttle fully, then crank the engine with the starter motor and measure the compression.

    Compression Pressure:

    Above 930 kPa (9.5 kgf/cm^2 , 135 psi)

12. Measure the compression on the remaining cylinders.

    Maximum Variation:

    Within 200 kPa (2.0 kgf/cm^2 , 28 psi)

13. If the compression is not within specifications, check the following items, then remeasure the compression.
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore
14. Remove the compression gauge from the spark plug hole.
15. Install the four spark plugs (see **SPARK PLUG INSPECTION**).
16. Install the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
17. Select the ECM reset (see **HDS CLEAR COMMAND**) to cancel the ALL INJECTORS OFF

function on the HDS.

18. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

VTEC ROCKER ARM TEST

Special Tools Required

- Air pressure regulator 07AAJ-PNAA101
- VTEC air adapter 07ZAJ-PNAA101
- VTEC air stopper 07ZAJ-PNAA200
- Air joint adapter 07ZAJ-PNAA300

1. Start the engine and let it run for 5 minutes, then turn the ignition switch OFF.
2. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
3. Set the No. 1 piston at TDC (see step 6).
4. Move the secondary rocker arm (A) for No. 1 cylinder. The secondary rocker arm should move independently of the mid rocker arm (B).
   - If the secondary rocker arm does not move, remove the mid, primary, and secondary rocker arms as an assembly, and check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, and test.
   - If the secondary rocker arm moves freely, go to step 5.

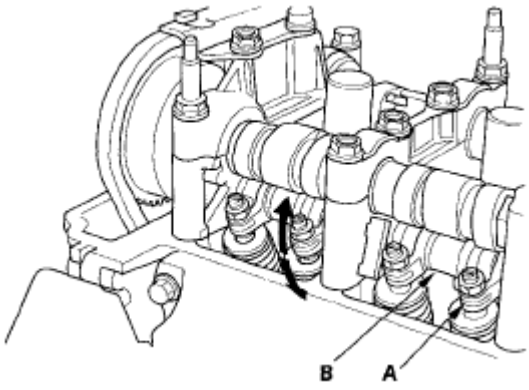


Fig. 142: Identifying Mid, Primary And Secondary Rocker Arms
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Repeat step 4 on the remaining secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 6.
6. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4.0 kgf/cm^2 , 57 psi).
7. Inspect the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).
8. Remove the sealing bolt (A) from the relief hole, and install the VTEC air stopper (B).

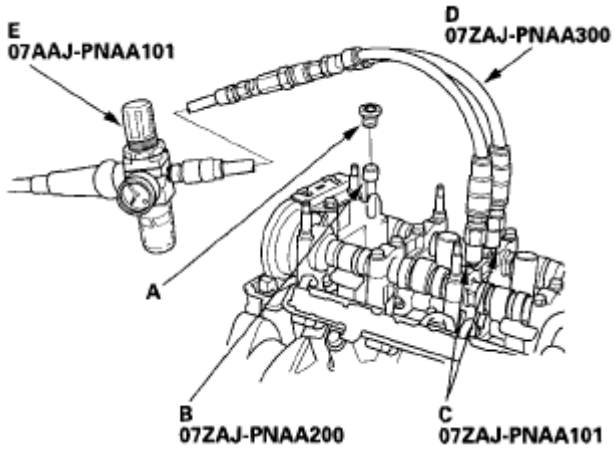


Fig. 143: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the No. 2 and No. 3 camshaft holder bolts, and install the VTEC air adapters (C) finger-tight.
10. Connect the air joint adapter (D) and air pressure regulator (E).
11. Loosen the valve on the regulator, and apply the specified air pressure.

Specified Air Pressure: 290 kPa (3.0 kgf/cm^2 , 42 psi)

NOTE: If the synchronizing piston does not move after applying air pressure; move the rocker arm up and down manually by rotating the crankshaft clockwise.

12. With the specified air pressure applied, move the secondary rocker arm (A) for the No. 1 cylinder. The mid rocker arm (B), primary rocker arm (C), and secondary rocker arm should move together.
    - If the mid and primary rocker arms do not move together with the secondary rocker arm, remove the mid, primary, and secondary rocker arms as an assembly, and check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, and retest.

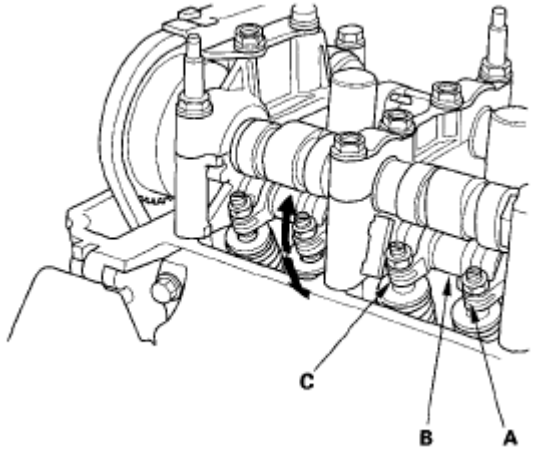


Fig. 144: Identifying Mid, Primary And Secondary Rocker Arms
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the special tools.
14. Tighten the camshaft holder mounting bolts to 22 N.m (2.2 kgf.m, 16 lbf.ft).
15. Tighten the sealing bolt to 20 N.m (2.0 kgf.m, 14 lbf.ft).
16. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

VTC ACTUATOR INSPECTION

1. Remove the cam chain (see **CAM CHAIN REMOVAL**).
2. Loosen the rocker arm adjusting screws (see step 2).
3. Remove the camshaft holder (see step 3).
4. Remove the intake camshaft.
5. Check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator clockwise and counterclockwise. If the VTC actuator is not locked, replace the VTC actuator.
6. Seal the advance holes (A) and retard holes (B) in the No. 1 camshaft journal with tape.

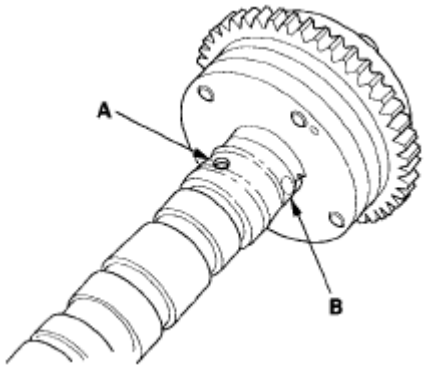


Fig. 145: Identifying Advance And Retard Holes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Punch a hole in the tape over one of the advance holes.
8. Apply air to the advance hole to release the lock.

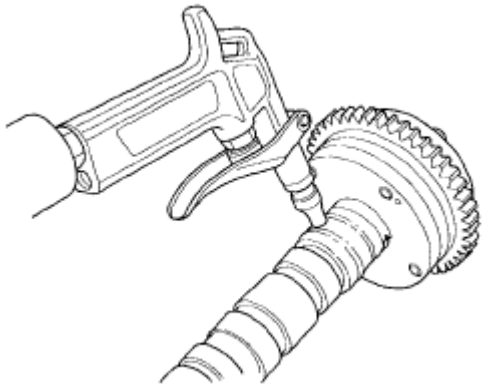


Fig. 146: Applying Air To Advance Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Check that the VTC actuator moves smoothly. If the VTC actuator does not move smoothly, replace

the VTC actuator.

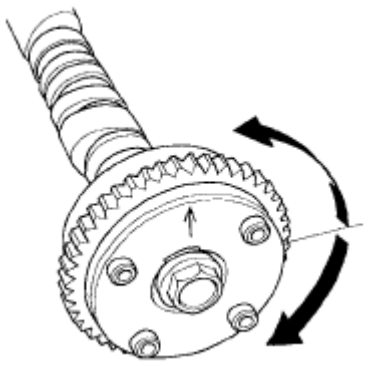


Fig. 147: Identifying VTC Actuator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the tape and adhesive reside from the No. 1 camshaft journal.
11. Make sure the punch marks on the VTC actuator and exhaust camshaft sprocket are facing up, then set the camshafts in the rocker shaft holder (see step 6).
12. Set the camshaft holders and chain guide B in place (see step 7).
13. Tighten the camshaft holder bolts to the specified torque (see step 8).
14. Hold the camshaft, and turn the VTC actuator clockwise until you hear it click. Make sure to lock the VTC actuator by turning it.
15. Install the cam chain (see **CAM CHAIN INSTALLATION**).
16. Adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).

VALVE CLEARANCE ADJUSTMENT

Special Tools Required

- Adjuster 07MAA-PR70110
- Locknut wrench 07MAA-PR70120

NOTE: Adjust the valves only when the cylinder head temperature is less than 100°F (38°C).

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.

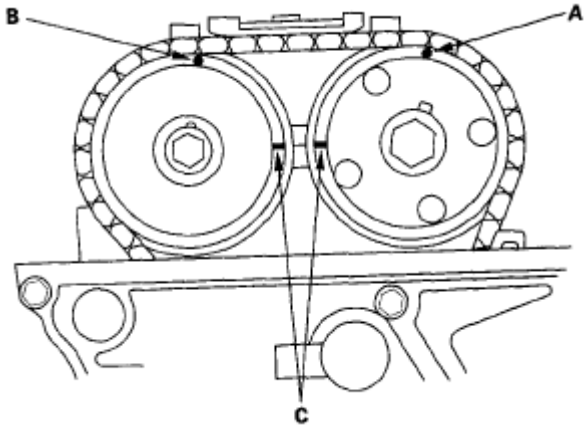


Fig. 148: Aligning TDC Marks On VTC Actuator And Exhaust Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Select the correct thickness feeler gauge for the valves you're going to check.

   Valve Clearance

   Intake: 0.21-0.25 mm (0.008-0.010 in.)

   Exhaust: 0.25-0.29 mm (0.010-0.011 in.)

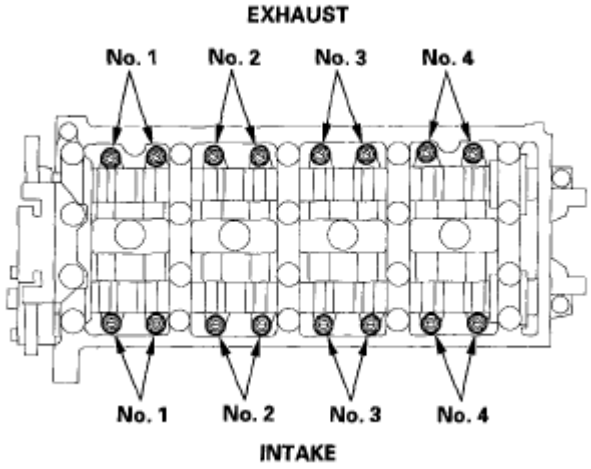


Fig. 149: Identifying Intake And Exhaust Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem, and slide it back and forth; you should feel a slight amount of drag.

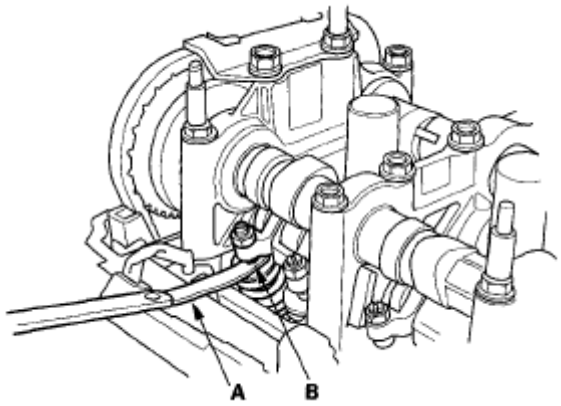


Fig. 150: Identifying Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If you feel too much or too little drag, loosen the locknut with the special tools, and turn the adjusting screw until the drag on the feeler gauge is correct.

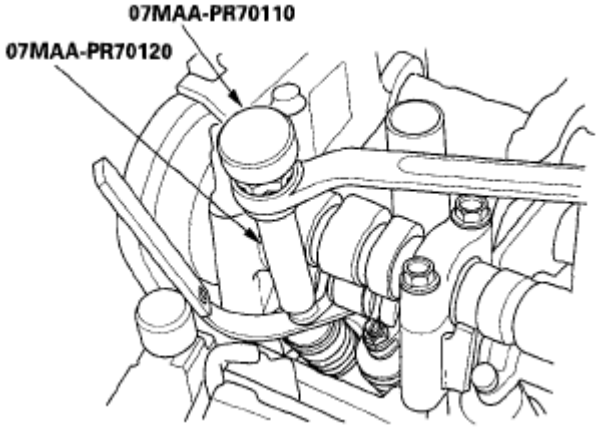


Fig. 151: Identifying Adjusting Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the locknut to 20 N.m (2.0 kgf.m, 14 lbf.ft), and recheck the clearance. Repeat the adjustment if necessary.
7. Rotate the crankshaft 180° clockwise (camshaft pulley turns 90°).

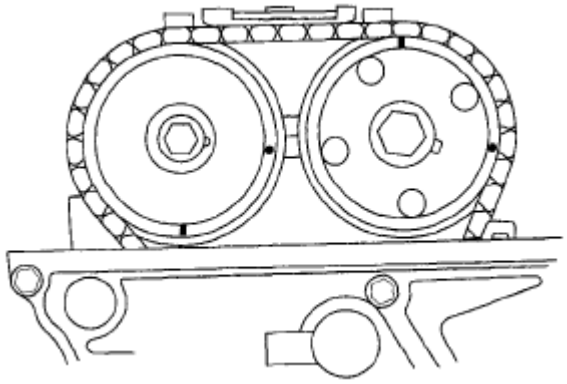


Fig. 152: Rotating Crankshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.
9. Rotate the crankshaft 180° clockwise (camshaft pulley turns 90°).

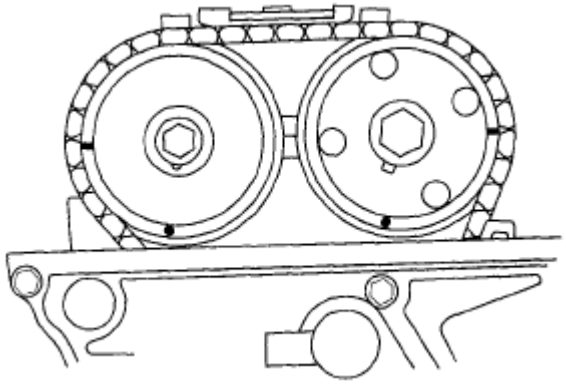


Fig. 153: Rotating Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check and, if necessary, adjust the valve clearance on No. 4 cylinder.
11. Rotate the crankshaft 180° clockwise (camshaft pulley turns 90°).

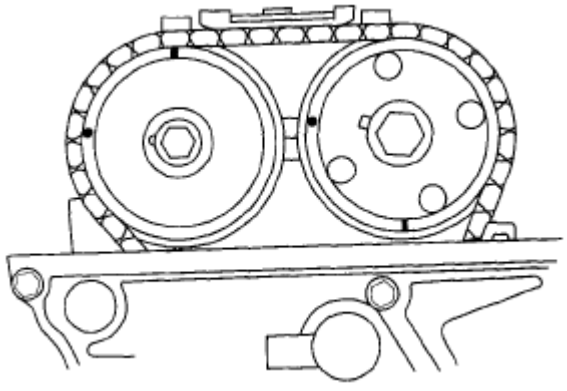


Fig. 154: Rotating Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check and, if necessary, adjust the valve clearance on No. 2 cylinder.
13. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).

CRANKSHAFT PULLEY REMOVAL AND INSTALLATION

Special Tools Required

- Holder handle 07JAB-001020A
- Crankshaft pulley holder 070AB-RJA0100
- Socket, 19 mm 07JAA-001020A or a commercially available 19 mm socket

Removal

1. Remove the front wheels.
2. Remove the splash shield .
3. Remove the drive belt (see **DRIVE BELT INSPECTION**).
4. Hold the pulley with holder handle (A) and holder attachment (B).

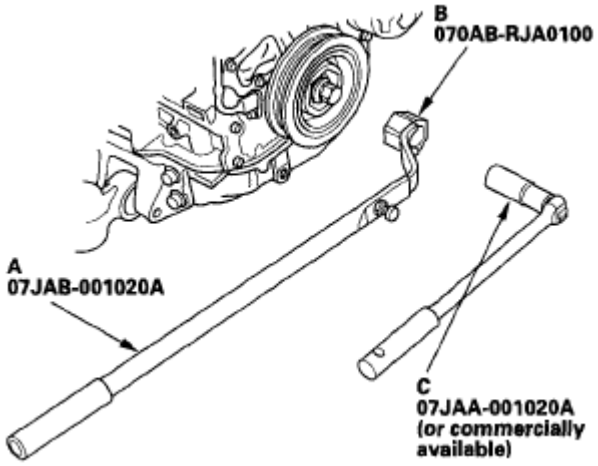


Fig. 155: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the bolt with a 19 mm socket (C) and breaker bar, then remove the crankshaft.

Installation

1. Clean the crankshaft pulley (A), crankshaft (B), bolt (C), and washer (D). Lubricate as shown.

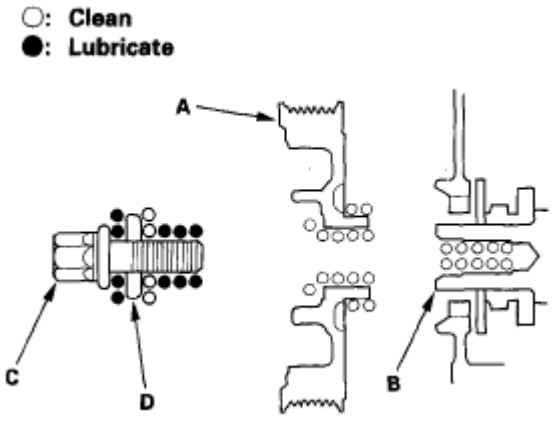


Fig. 156: Identifying Crankshaft Pulley Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the crankshaft pulley, and hold the pulley with holder handle (A) and holder attachment (B).

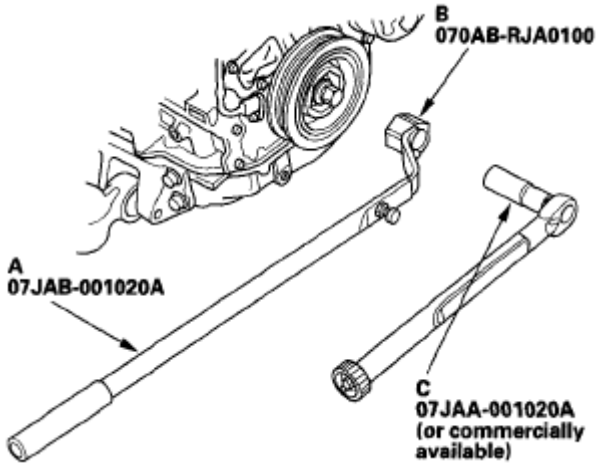


Fig. 157: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Tighten the bolt to 49 N.m (5.0 kgf.m, 36 lbf.ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.
4. Mark the bolt head (A) and the crankshaft pulley (B) as shown, them tighten the bolt an additional 90° (The mark on the bolt head line up with the mark on the crankshaft pulley).

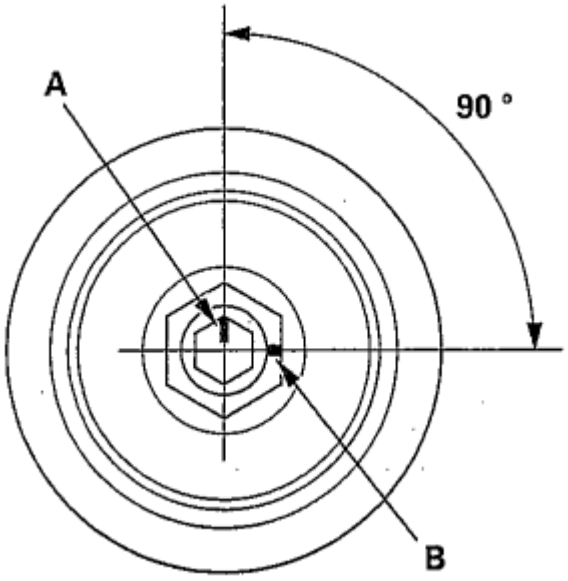


Fig. 158: Marking The Bolt Head And The Crankshaft Pulley
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the drive belt (see **DRIVE BELT INSPECTION**).
6. Install the splash shield .
7. Install the right front wheel.

CAM CHAIN REMOVAL

NOTE: Keep the cam chain away from magnetic fields.

1. Remove the front wheels.
2. Remove the splash shield .
3. Drain the engine coolant (see **COOLANT CHECK**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
6. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.

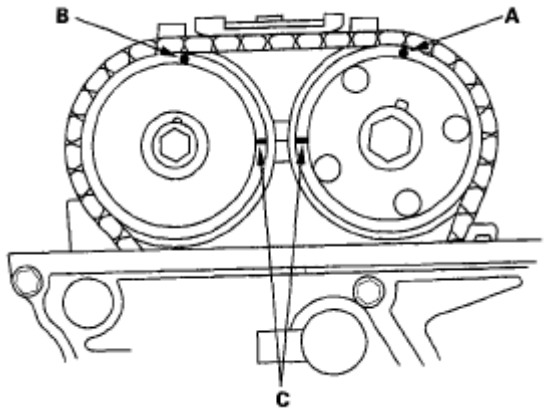


Fig. 159: Aligning TDC Marks On VTC Actuator And Exhaust Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the oil cooler hose joint pipe from the water pump.

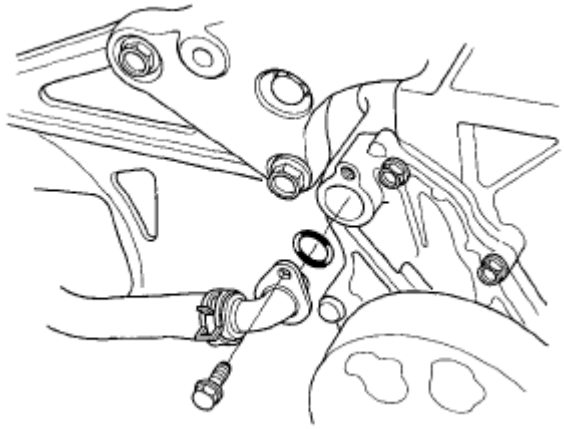


Fig. 160: Identifying Oil Cooler Hose Joint Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Disconnect the crankshaft position (CKP) sensor connector (A) and VTC oil control solenoid valve connector (B).

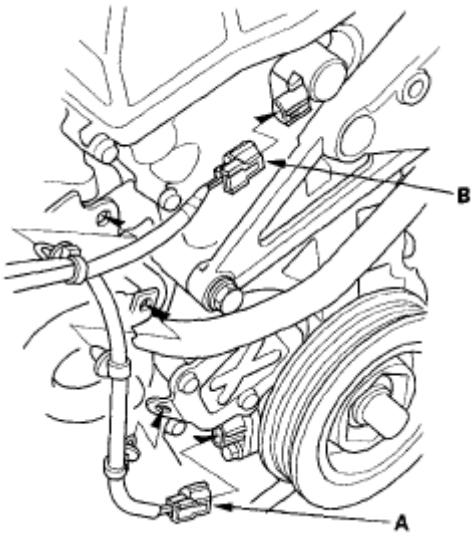


Fig. 161: Identifying Crankshaft Position (CKP) Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
10. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
11. Support the engine with a jack and a wood block under the oil pan.
12. Remove the upper torque rod (A).

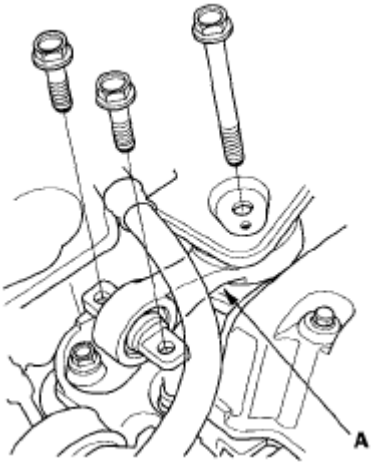


Fig. 162: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the ground cable (A), then remove the side engine mount bracket (B).

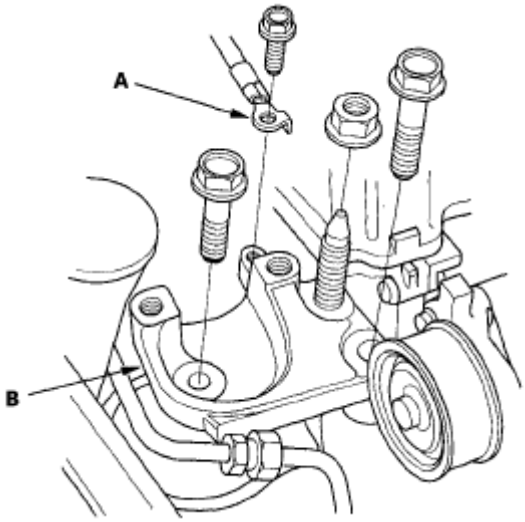


Fig. 163: Identifying Ground Cable And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the side engine mount bracket.

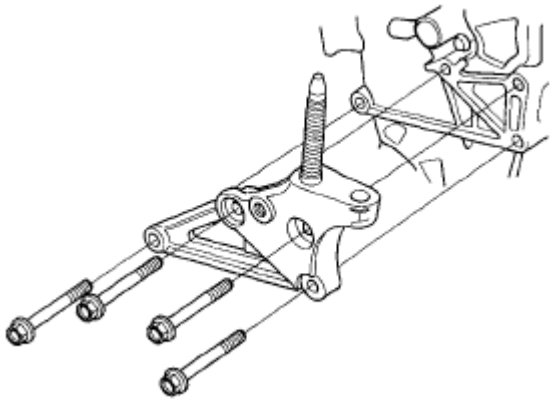


Fig. 164: Identifying Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the cam chain case.

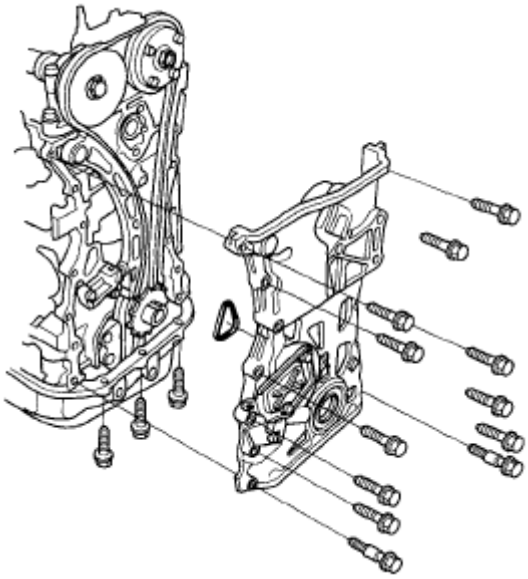


Fig. 165: Identifying Cam Chain Case
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Loosely install the crankshaft pulley.
17. Turn the crankshaft counterclockwise to compress the auto-tensioner.

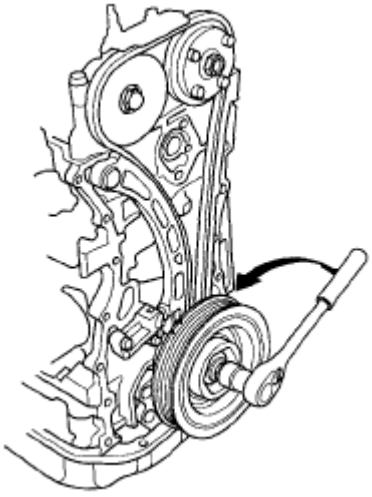


Fig. 166: Turning Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.2 mm (0.05 in.) diameter pin or lock pin (P/N 14511-PNA-003) (C) into the holes. Turn the crankshaft clockwise to secure the pin.

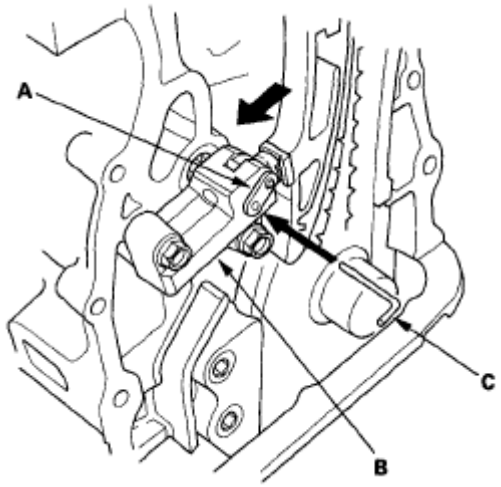


Fig. 167: Aligning Holes On Lock And Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the auto-tensioner.

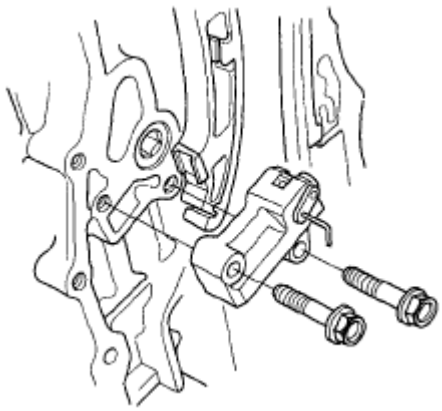


Fig. 168: Identifying Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the crankshaft pulley.
21. Remove the cam chain guide B.

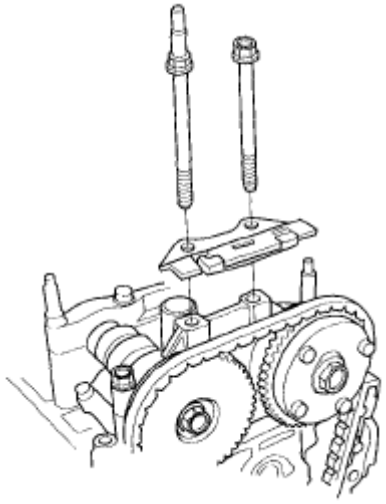


Fig. 169: Identifying Cam Chain Guide
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the cam chain guide A (A) and tensioner arm (B).

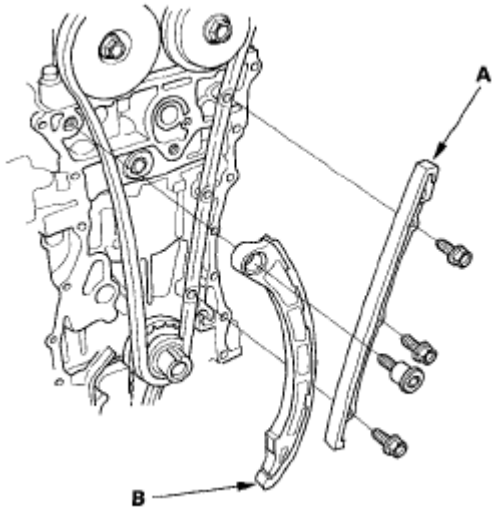


Fig. 170: Identifying Cam Chain Guide And Tensioner Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the cam chain.

CAM CHAIN INSTALLATION

NOTE:

- **Keep the cam chain away from magnetic fields.**
- **Before this procedure, check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator counterclockwise. If not locked, turn the VTC actuator clockwise until it stops, then recheck it. If it is still not locked, replace the VTC actuator.**

1. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.

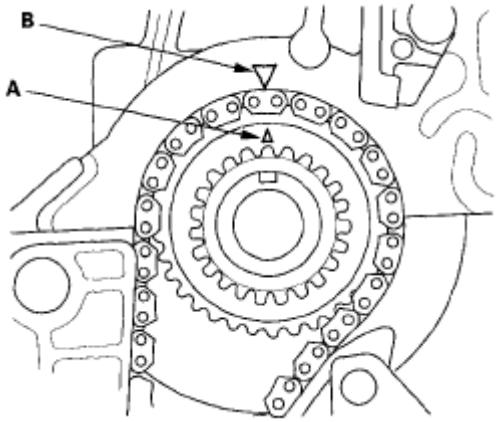


Fig. 171: Aligning TDC Mark On Crankshaft Sprocket With Pointer On Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Set the camshafts to TDC. The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.

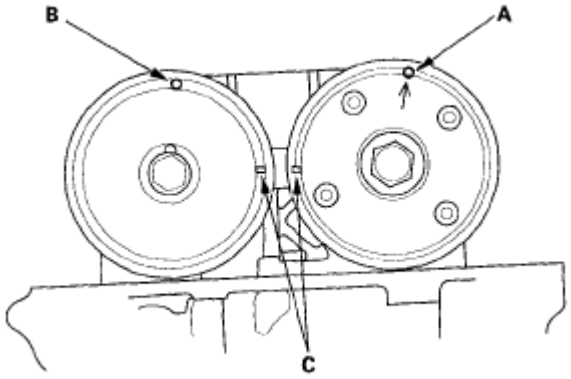


Fig. 172: Aligning TDC Marks On VTC Actuator And Exhaust Camshaft Sprocket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. To hold the intake camshaft, insert a cam holder sets (07AAB-RWCA120) (A) into the maintenance hole in camshaft position (CMP) pulse plate A (B) and through No. 5 rocker shaft holder (C).

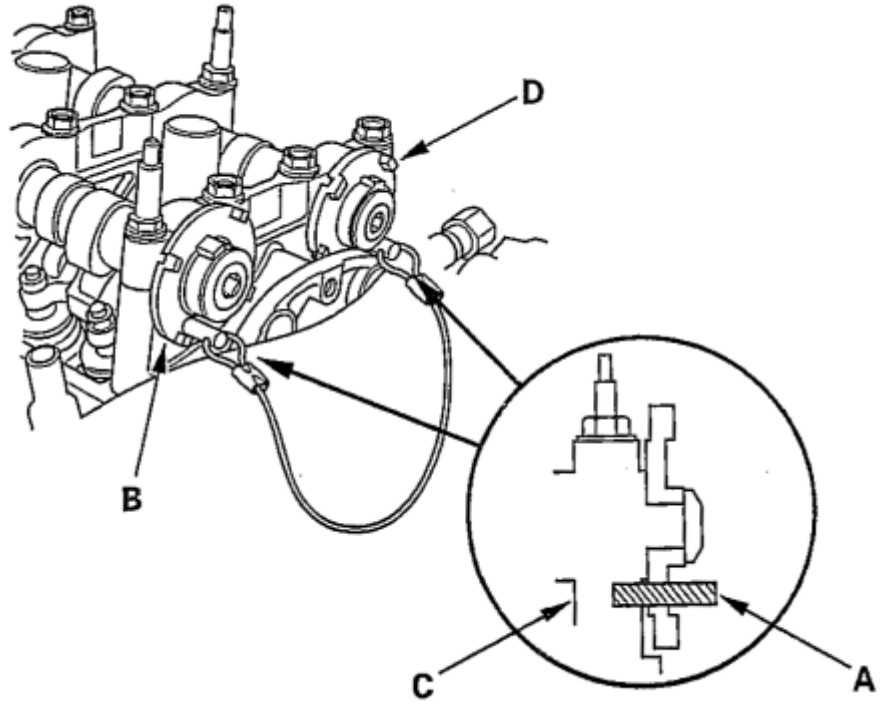


Fig. 173: Cam Holder Sets Inserted Into The Maintenance Hole In Camshaft Position Pulse Plate A And Through No. 5 Rocker Shaft Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. To hold the exhaust camshaft, cam holder sets (A) into the maintenance hole in CMP pulse plate B (D) and through No. 4 rocker shaft holder (C).
5. Install the cam chain on the crankshaft sprocket with the colored link plate (A) aligned with the mark (B) on the crankshaft sprocket.

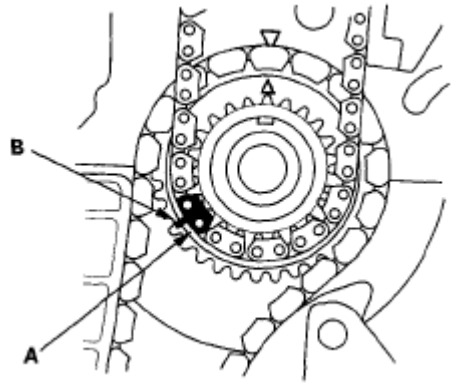


Fig. 174: Identifying Colored Link Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the cam chain on the VTC actuator and the exhaust camshaft sprocket with the punch marks (A) aligned with the two colored link plates (B).

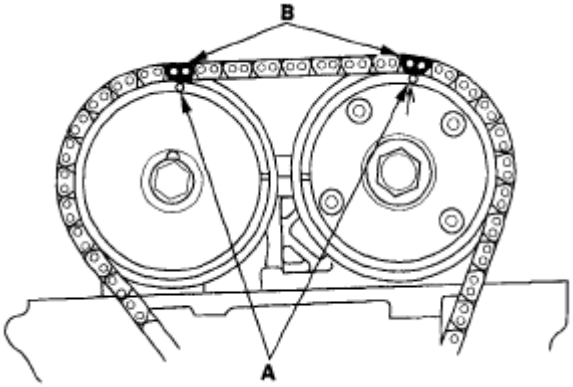


Fig. 175: Identifying Colored Link Plates
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the cam chain guide A (A) and tensioner arm (B).

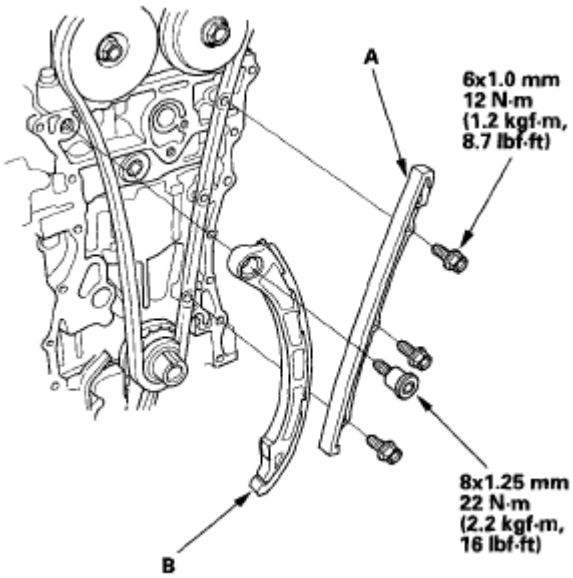


Fig. 176: Identifying Cam Chain Guide And Tensioner Arm (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the auto-tensioner.

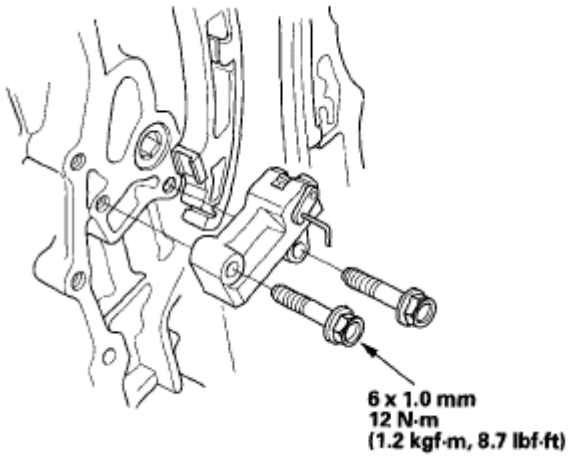


Fig. 177: Identifying Auto-Tensioner (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the cam chain guide B.

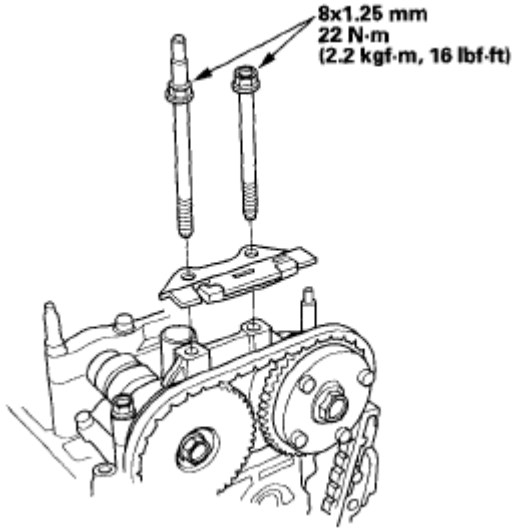


Fig. 178: Identifying Cam Chain Guide (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the pin or lock pin (P/N 14511-PNA-003) from the auto-tensioner.

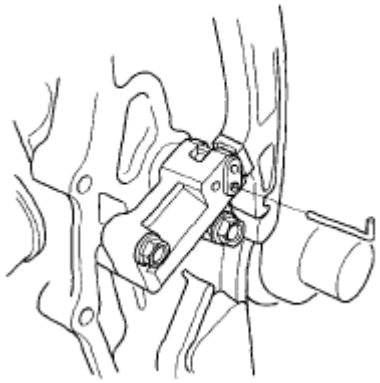


Fig. 179: Identifying Lock Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the cam holder sets.

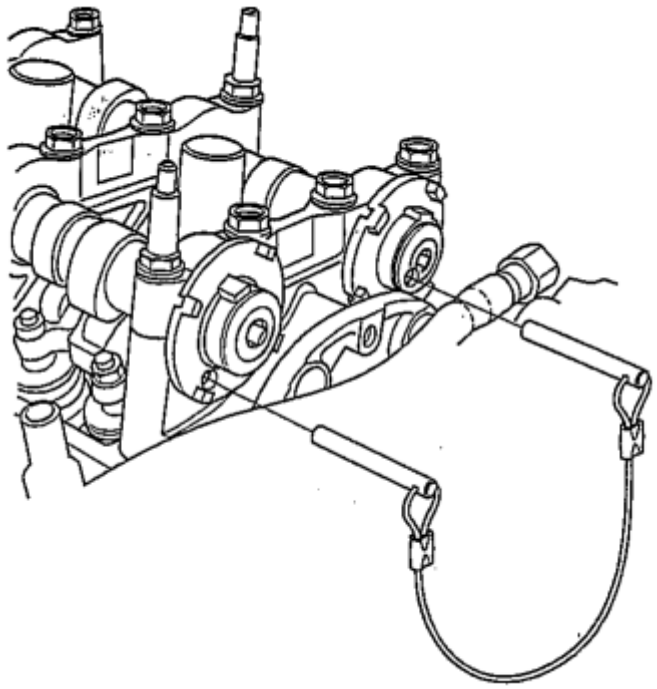


Fig. 180: Removing the cam holder sets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the CKP pulse plate.

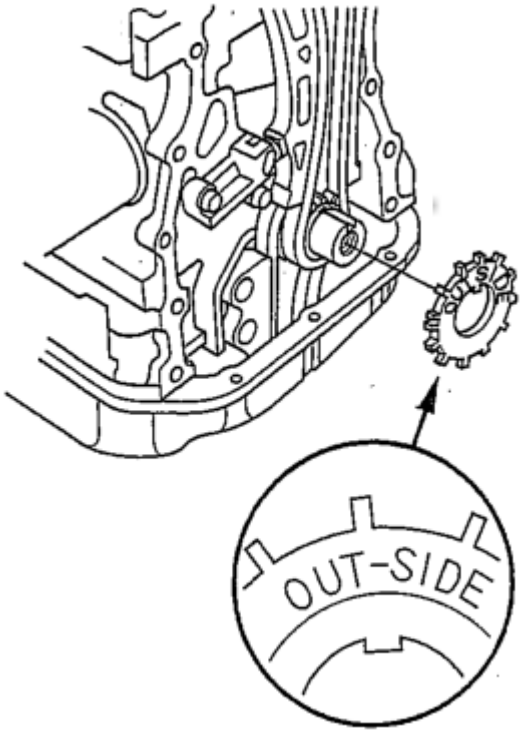


Fig. 181: Installing The CKP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see **CHAIN CASE OIL SEAL INSTALLATION**).
14. Remove old liquid gasket from the chain case mating surfaces, bolts, and bolt holes.
15. Clean, and dry the chain case mating surfaces.
16. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case.

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

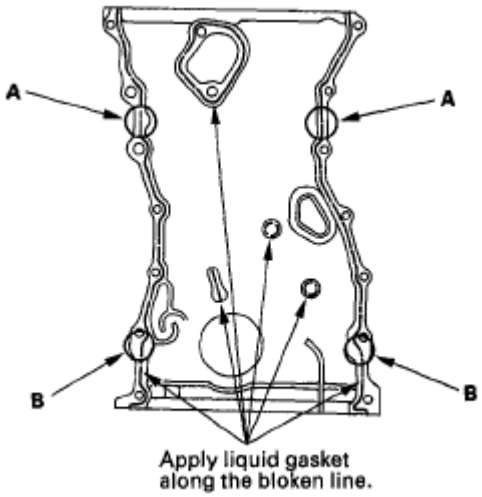


Fig. 182: Identifying Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Apply liquid gasket to the engine block upper surface contact areas (A) on the chain case and lower block upper surface contact areas (B) on the chain case.
18. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case.

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

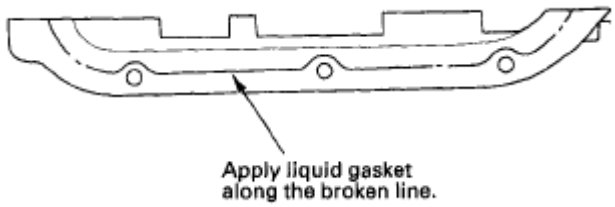


Fig. 183: Identifying Broken Line Of Liquid Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install a new O-ring (A) on the chain case. Set the edge of the chain case (B) to the edge of the oil pan (C), then install the chain case on the engine block (D). Wipe off the excess liquid gasket on the oil pan and chain case mating area.

NOTE:

- **When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.**
- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the chain case.**

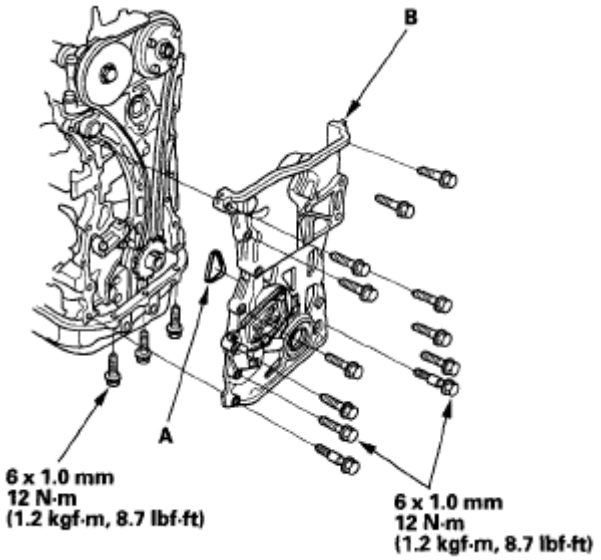


Fig. 184: Identifying Chain Case (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

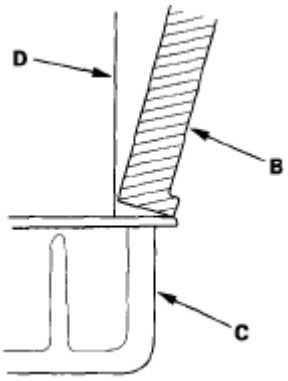


Fig. 185: Identifying Oil Pan
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the side engine mount bracket.

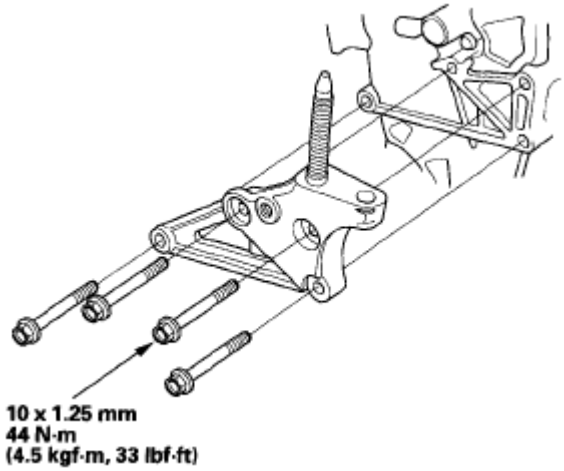


Fig. 186: Identifying Side Engine Mount Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B), and loosely tighten the bolt (C).

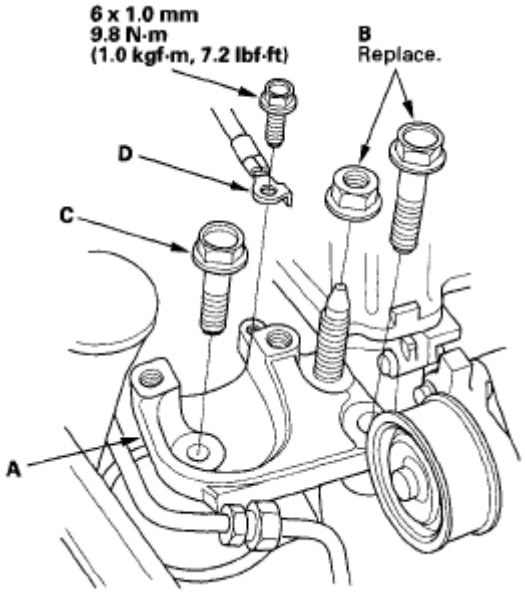


Fig. 187: Identifying Side Engine Mount Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the ground cable (D).
23. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
24. Loosen the transmission mounting bolt and nuts (A).

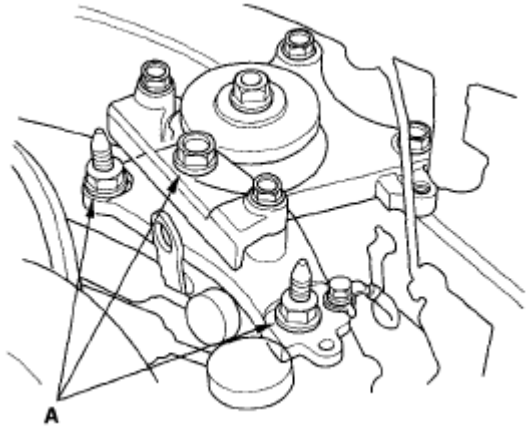


Fig. 188: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Raise the vehicle on the lift to full height.
26. Loosen the lower torque rod mounting bolt (A).

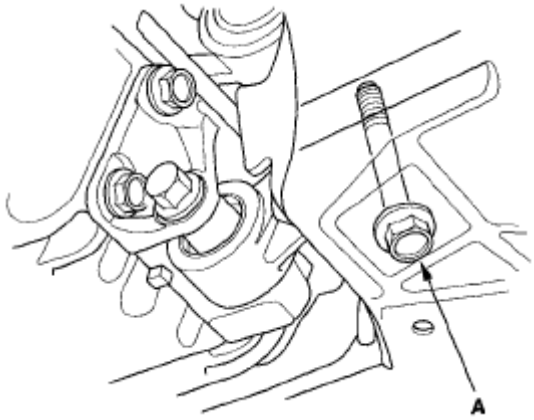


Fig. 189: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Loosen the front mount mounting bolt (A).

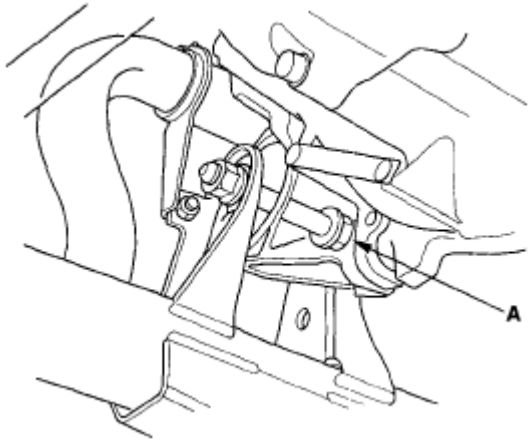


Fig. 190: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Lower the vehicle on the lift.
29. Tighten the side engine mount mounting bolts and nut.

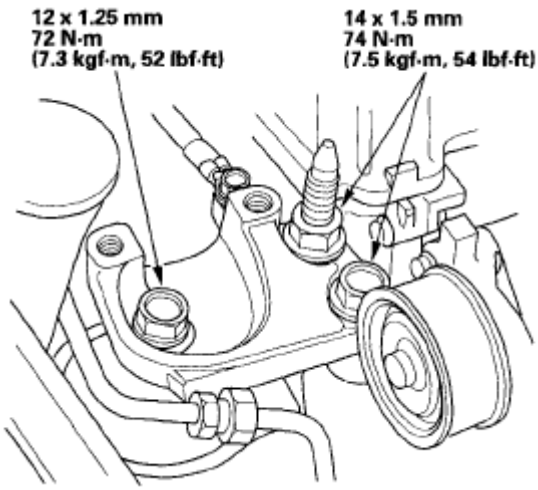


Fig. 191: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Tighten the transmission mounting bolt and nuts.

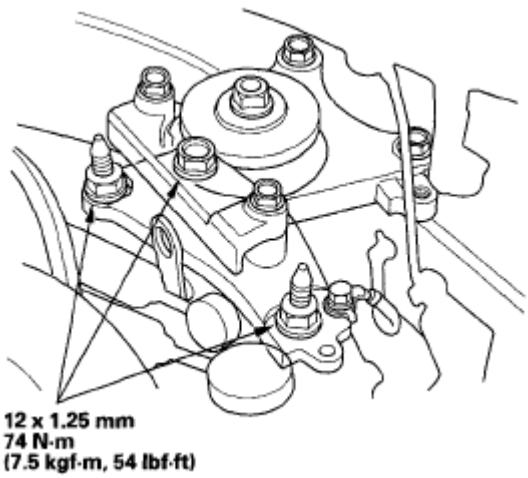


Fig. 192: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Raise the vehicle on the lift to full height.
32. Tighten the lower torque rod mounting bolt.

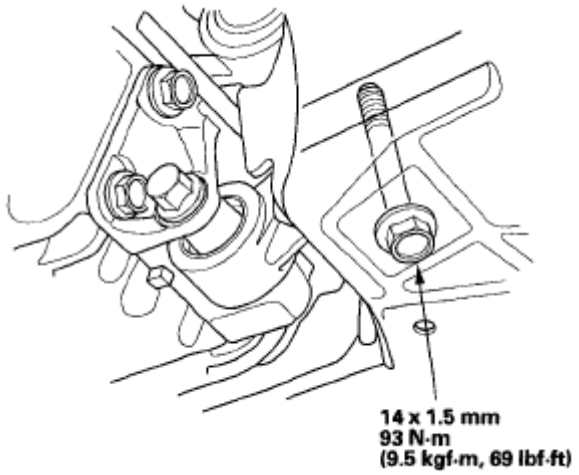


Fig. 193: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Lower the vehicle on the lift.
34. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
35. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

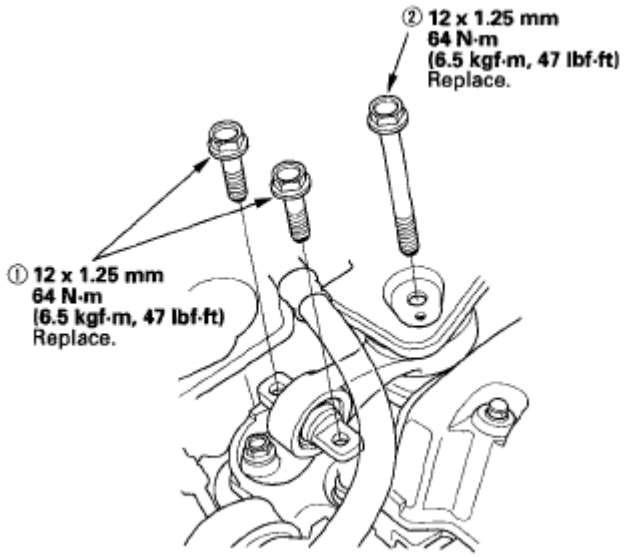


Fig. 194: Identifying Upper Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Raise the hoist to full height, and tighten the front mount mounting bolt.

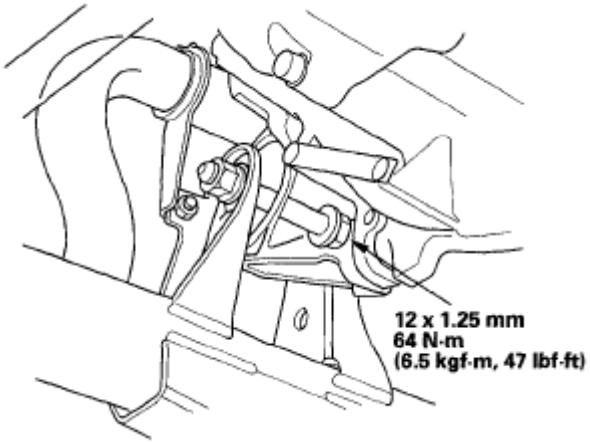


Fig. 195: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Install the crankshaft pulley (see **CAM CHAIN REMOVAL**).
38. Install the splash shield .
39. Lower the vehicle on the lift.
40. Install the variable valve timing control (VTC) oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
41. Connect the crankshaft position (CKP) sensor connector (A) and VTC oil control solenoid valve connector (B).

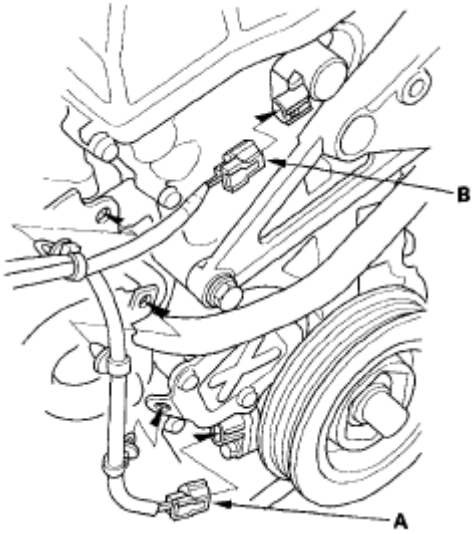


Fig. 196: Identifying Crankshaft Position (CKP) Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the oil cooler hose joint pipe (A) with a new O-ring (B).

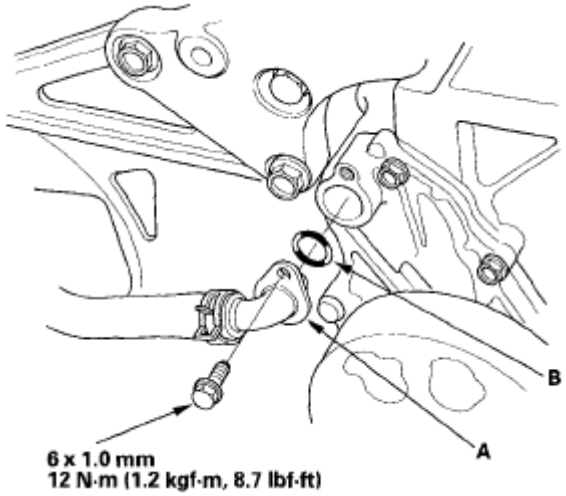


Fig. 197: Identifying Oil Cooler Hose Joint Pipe (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
44. Install the drive belt (see **DRIVE BELT INSPECTION**).
45. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 6 on **COOLANT CHECK**).
46. Do the CKP pattern clear/CKP learn procedure (see **HDS CLEAR COMMAND**).

AUTO-TENSIONER REMOVAL AND INSTALLATION

Removal

1. Remove the chain case cover.

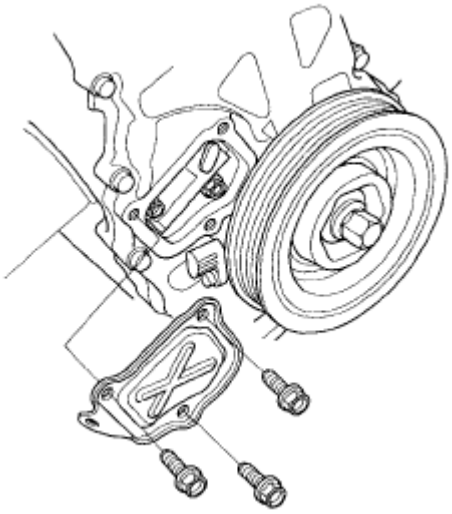


Fig. 198: Identifying Chain Case Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the crankshaft counterclockwise to compress the auto-tensioner.

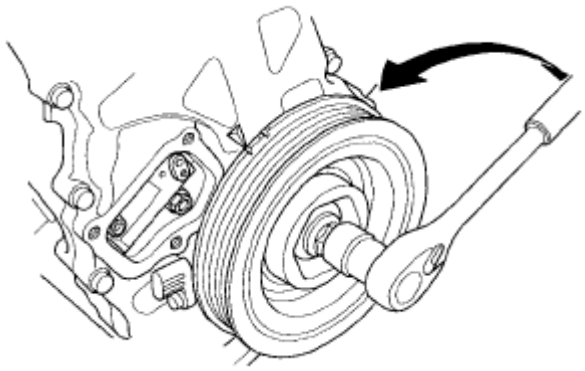


Fig. 199: Turning Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.2 mm (0.05 in.) diameter pin or lock pin (P/N 14511-PNA-003) (C) into the holes. Turn the crankshaft clockwise to secure the pin.

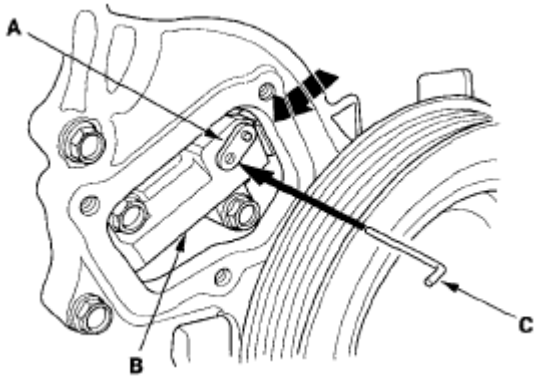


Fig. 200: Aligning Holes On Lock And Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the auto-tensioner.

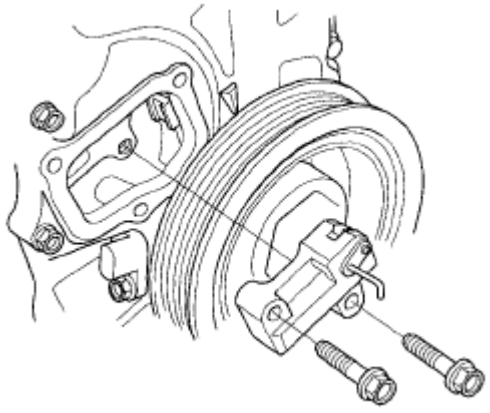


Fig. 201: Identifying Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Installation

1. Install the auto-tensioner.

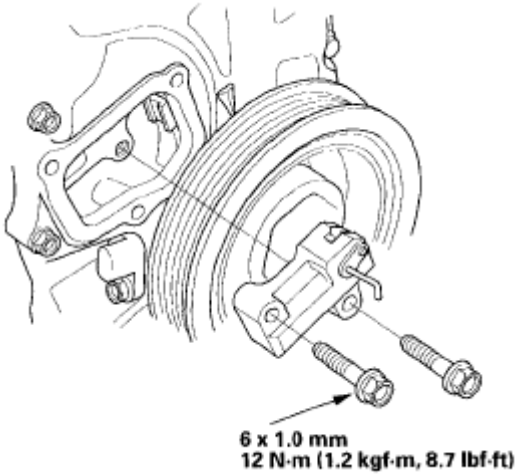


Fig. 202: Identifying Auto-Tensioner (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the pin or lock pin (P/N 14511-PNA-003) from the auto-tensioner.

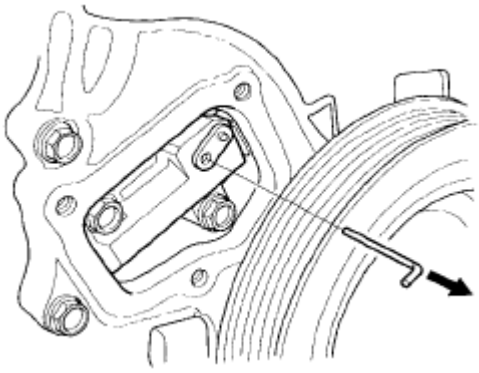


Fig. 203: Identifying Lock Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove all of the old liquid gasket from the chain case cover mating surfaces, bolts, and bolt holes.
4. Clean, and dry the chain case cover mating surfaces.
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the chain case mating surface of the chain case cover.

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

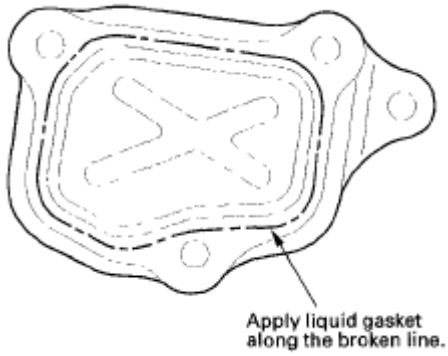


Fig. 204: Identifying Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the chain case cover.

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the chain case cover.**

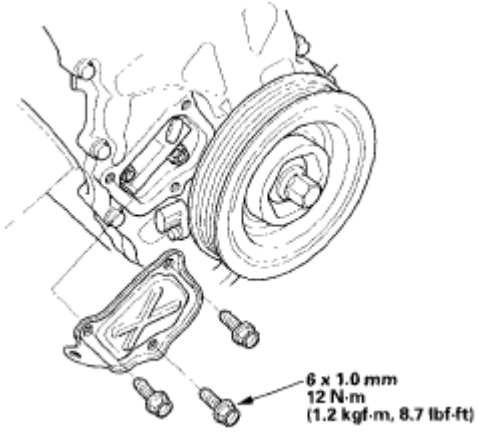


Fig. 205: Identifying Chain Case Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHAIN CASE OIL SEAL INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Use the special tools to drive a new oil seal squarely into the chain case to the specified installed height.

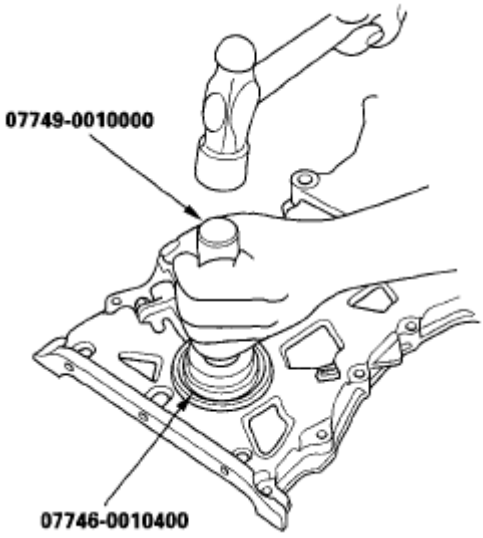


Fig. 206: Installing Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the distance between the chain case surface and oil seal.

   Oil Seal Installed Height:

   33.0-33.7 mm (1.30-1.33 in.)

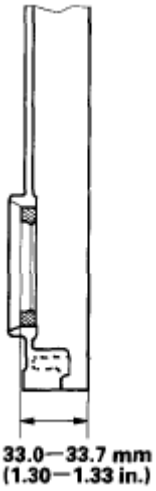


Fig. 207: Measuring Distance Between Chain Case Surface And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CAM CHAIN INSPECTION

1. Remove the front wheels.
2. Remove the splash shield .
3. Drain the engine coolant (see **COOLANT CHECK**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).

6. Set the No. 1 piston at top dead center (TDC). The punch mark on the variable valve timing control (VTC) actuator and the punch mark on the exhaust camshaft sprocket should be at the top. Align the TDC marks on the VTC actuator and exhaust camshaft sprocket (see step 6).
7. Remove the oil cooler hose joint pipe from the water pump (see step 7).
8. Disconnect the crankshaft position (CKP) sensor connector and VTC oil control solenoid valve connector (see step 8).
9. Remove the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
10. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
11. Support the engine with a jack and a wood block under the oil pan.
12. Remove the upper torque rod (see step 12).
13. Remove the ground cable, then remove the side engine mount bracket (see step 13).
14. Remove the side engine mount bracket (see step 14).
15. Remove the cam chain case (see step 15).
16. Measure the tensioner rod length between the tensioner body and bottom of the flat surface section on the tensioner rod. If the length is more than the service limit, replace the cam chain and the oil pump chain.

    Tensioner Rod Length

    Service Limit: 13.5 mm (0.53 in.)

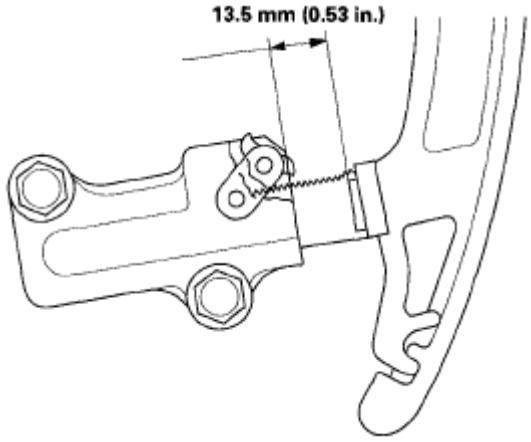


Fig. 208: Checking Tensioner Rod Length
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see **CHAIN CASE OIL SEAL INSTALLATION**).
18. Remove all of the old liquid gasket from the chain case mating surfaces, bolt and bolt holes.
19. Clean, and dry the chain case mating surfaces.
20. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case (see step 16).

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

21. Apply liquid gasket to the engine block upper surface contact areas on the chain case and lower block upper surface contact areas on the chain case (see step 17).
22. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case (see step 18).

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

23. Install the new O-ring on the chain case. Set the edge of the chain case to the edge of the oil pan, then install the chain case on the engine block (see step 19). Wipe off the excess liquid gasket on the oil pan and chain case mating area.

NOTE:

- **When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.**
- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the chain case.**

24. Install the side engine mount bracket (see step 20).
25. Install the side engine mount bracket, then loosely tighten the new bolt and nut, and loosely tighten the bolt. Install the ground cable (see step 21).
26. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
27. Loosen the transmission mounting bolt and nuts (see step 24).
28. Raise the hoist to full height.
29. Loosen the lower torque rod mounting bolt (see step 26).
30. Loosen the front mount mounting bolt (see step 27).
31. Lower the vehicle on the hoist.
32. Tighten the side engine mount mounting bolts and nut (see step 29).
33. Tighten the transmission mounting bolt and nuts (see step 30).
34. Raise the vehicle on the lift to full height.
35. Tighten the lower torque rod mounting bolt (see step 32).
36. Lower the vehicle on the lift.
37. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
38. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered

sequence shown (see step 35).

39. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt (see step 36).
40. Install the splash shield .
41. Lower the vehicle on the lift.
42. Install the variable valve timing control (VTC) oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
43. Connect the crankshaft position (CKP) sensor connector and VTC oil control solenoid valve connector (see step 41).
44. Install the oil cooler hose joint pipe to the water pump (see step 42).
45. Install the crankshaft pulley (see **CAM CHAIN REMOVAL**).
46. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
47. Install the drive belt (see **DRIVE BELT INSPECTION**).
48. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 6 on **COOLANT CHECK**).
49. Do the CKP pattern clear/CKP learn procedure (see **HDS CLEAR COMMAND**).

CKP PULSE PLATE REPLACEMENT

1. Remove the front wheels.
2. Remove the splash shield .
3. Drain the engine coolant (see **COOLANT CHECK**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
6. Set the No. 1 piston at top dead center (TDC). The punch mark on the variable valve timing control (VTC) actuator and the punch mark on the exhaust camshaft sprocket should be at the top. Align the TDC marks on the VTC actuator and exhaust camshaft sprocket (see step 6).
7. Remove the oil cooler hose joint pipe from the water pump (see step 7).
8. Disconnect the crankshaft position (CKP) sensor connector and VTC oil control solenoid valve connector (see step 8).
9. Remove the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
10. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
11. Support the engine with a jack and a wood block under the oil pan.
12. Remove the upper torque rod (see step 12).
13. Remove the ground cable, then remove the side engine mount bracket (see step 13).
14. Remove the side engine mount bracket (see step 14).
15. Remove the cam chain case (see step 15 .
16. Remove the CKP pulse plate.

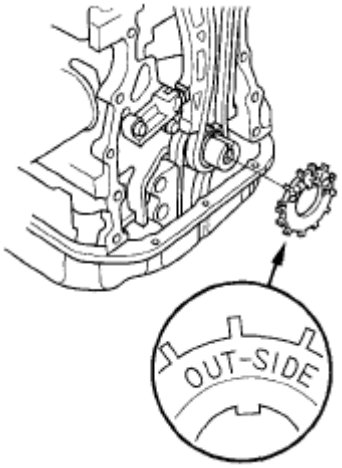


Fig. 209: Identifying CKP Pulse Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the CKP pulse plate.
18. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see **CHAIN CASE OIL SEAL INSTALLATION**).
19. Remove all of the old liquid gasket from the chain case mating surfaces, bolt and bolt holes.
20. Clean, and dry the chain case mating surfaces.
21. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case (see step 16).

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

22. Apply liquid gasket to the engine block upper surface contact areas on the chain case and lower block upper surface contact areas on the chain case (see step 17).
23. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case (see step 18).

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

24. Install a new O-ring on the chain case. Set the edge of the chain case to the edge of the oil pan, then install the chain case on the engine block (see step 19). Wipe off the excess liquid gasket on the oil pan and chain case mating area.

NOTE:

- **When installing the chain case, do not slide the bottom surface**

onto the oil pan mounting surface.

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the chain case.**

25. Install the side engine mount bracket (see step 20).
26. Install the side engine mount bracket, then loosely tighten the new bolt and nut, and loosely tighten the bolt. Install the ground cable (see step 21).
27. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
28. Loosen the transmission mounting bolt and nuts (see step 24).
29. Raise the vehicle on the lift to full height.
30. Loosen the lower torque rod mounting bolt (see step 26).
31. Loosen the front mount mounting bolt (see step 27 on).
32. Lower the vehicle on the lift.
33. Tighten the side engine mount mounting bolts and nut (see step 29 on).
34. Tighten the transmission mounting bolt and nuts (see step 30 on).
35. Raise the vehicle on the lift to full height.
36. Tighten the lower torque rod mounting bolt (see step 32 on).
37. Lower the vehicle on the lift.
38. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
39. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown (see step 35 on).
40. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt (see step 36 on).
41. Install the splash shield .
42. Lower the vehicle on the lift.
43. Install the variable valve timing control (VTC) oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
44. Connect the crankshaft position (CKP) sensor connector and VTC oil control solenoid valve connector (see step 41 on).
45. Install the oil cooler hose joint pipe to the water pump (see step 42 on).
46. Install the crankshaft pulley (see **CAM CHAIN REMOVAL**).
47. Install the cylinder head cover (see **CYLINDER HEAD COVER INSTALLATION**).
48. Install the drive belt (see **DRIVE BELT INSPECTION**).
49. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 6 on **COOLANT CHECK**).
50. Do the CKP pattern clear/CKP learn procedure (see **HDS CLEAR COMMAND**).

CYLINDER HEAD COVER REMOVAL

1. Remove the engine cover.

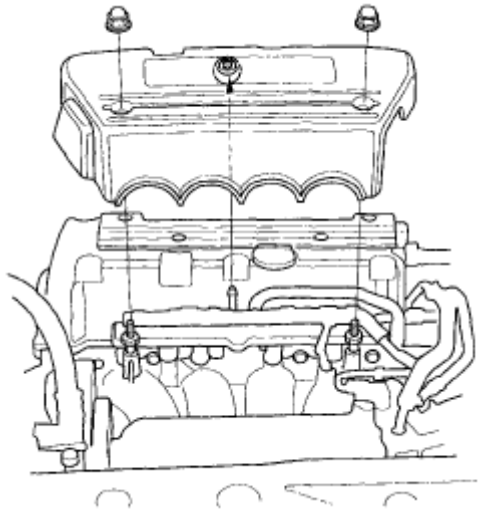


Fig. 210: Identifying Engine Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the four ignition coils (see **IGNITION COIL REMOVAL/INSTALLATION**).
3. Disconnect the evaporative emission (EVAP) canister purge valve connector.
4. Remove the dipstick (A) and the breather hose (B).

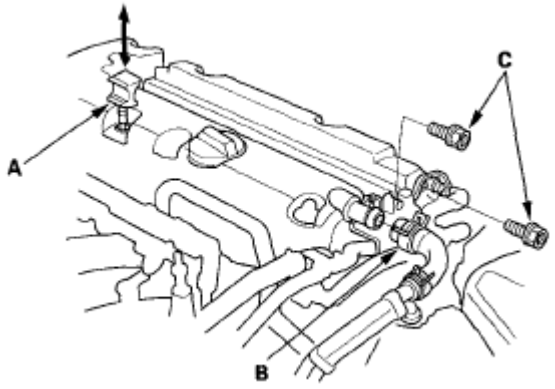


Fig. 211: Identifying Dipstick And Breather Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove two bolts (C) securing the evaporative emission (EVAP) canister purge valve bracket.
6. Remove the cylinder head cover.

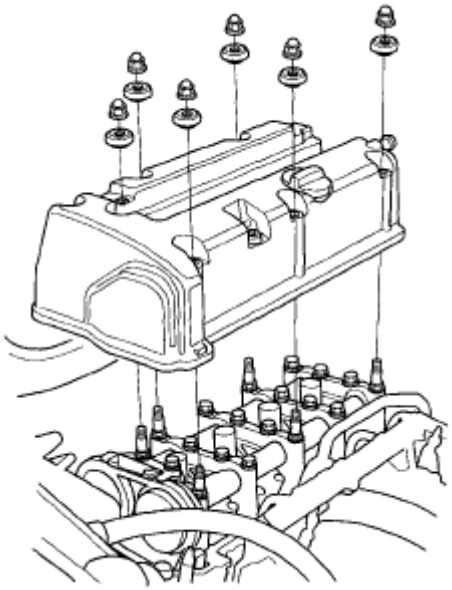


Fig. 212: Identifying Cylinder Head Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD COVER INSTALLATION

1. Thoroughly clean the head cover gasket and the groove.
2. Install the head cover gasket (A) in the groove of the cylinder head cover (B).

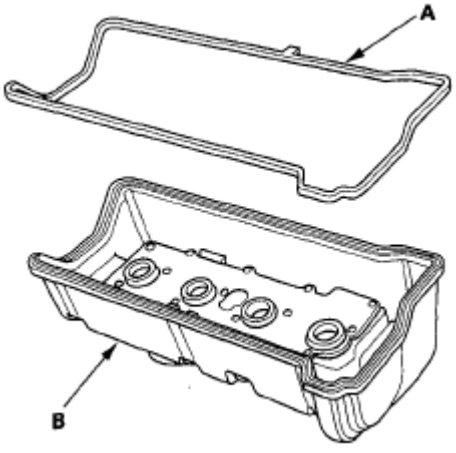


Fig. 213: Identifying Head Cover Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check that the mating surfaces are clean and dry.
4. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, on the chain case and the No. 5 rocker shaft holder mating areas.

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket,**

remove the old liquid gasket and residual, then reapply new liquid gasket.

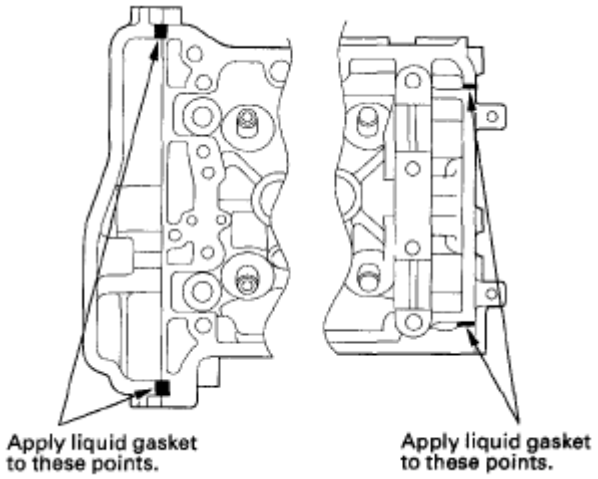


Fig. 214: Identifying Liquid Gasket Applying Points
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Set the spark plug seals (A) on the spark plug tubes. Place the cylinder head cover (B) on the cylinder head, then slide the cover slightly back and forth to seat the head cover gasket.

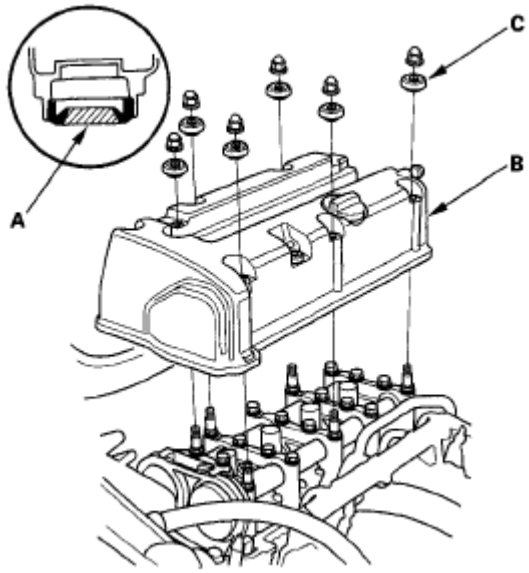


Fig. 215: Identifying Spark Plug Seals And Cylinder Head Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.
7. Tighten the bolts in two or three steps. In the final step tighten all bolts, in sequence, to 12 N.m (1.2 kgf.m, 8.7 lbf.ft).

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**

- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the head cover.**

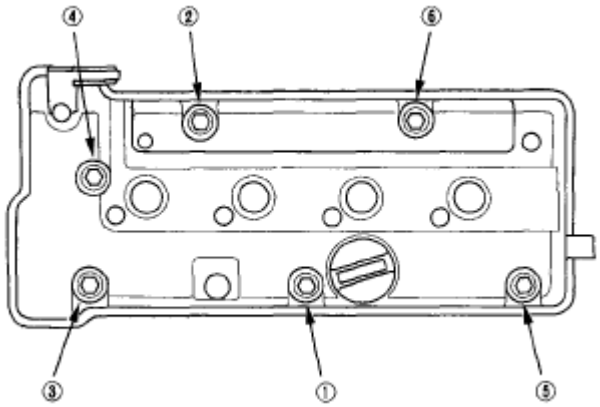


Fig. 216: Identifying Cylinder Head Cover Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install two bolts (A) securing the evaporative emission (EVAP) canister purge valve bracket.

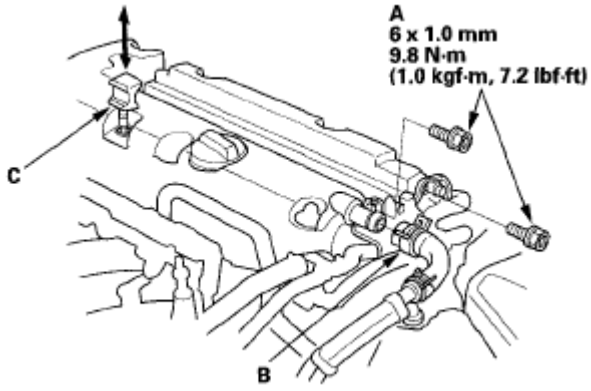


Fig. 217: Identifying Breather Hose And Dipstick (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the breather hose (B) and the dipstick (C).
10. Connect the evaporative emission (EVAP) canister purge valve connector.
11. Install the four ignition coils, (see **IGNITION COIL REMOVAL/INSTALLATION**).
12. Install the engine cover.

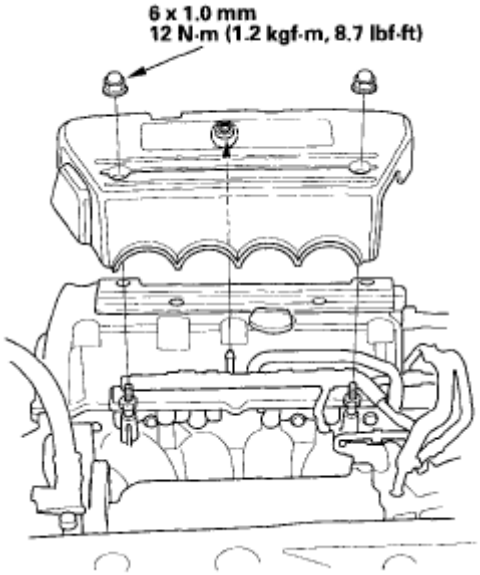


Fig. 218: Identifying Engine Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER HEAD REMOVAL

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the wiring and terminals, unplug the wiring connectors carefully while holding the connector portion.**
- **To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100°F (38°C) before loosening the cylinder head bolts.**
- **Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.**

1. Relieve fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Drain the engine coolant (see **COOLANT CHECK**).
3. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Remove the intake manifold (see **REMOVAL**).
6. Remove the exhaust manifold (see **EXHAUST MANIFOLD REMOVAL AND INSTALLATION**).
7. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

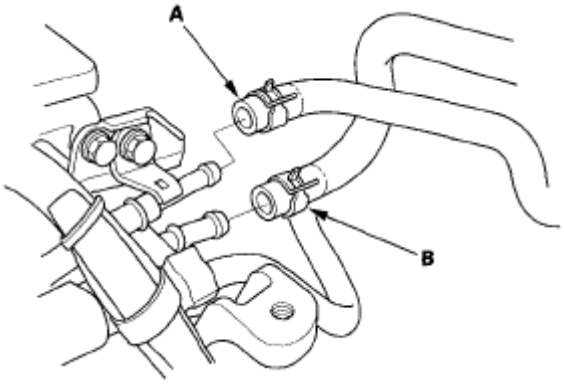


Fig. 219: Identifying Evaporative Emission (EVAP) Canister Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

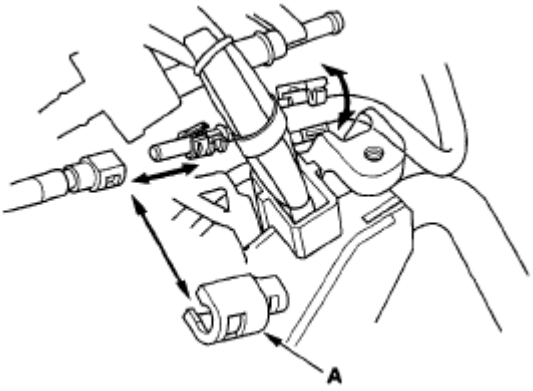


Fig. 220: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).

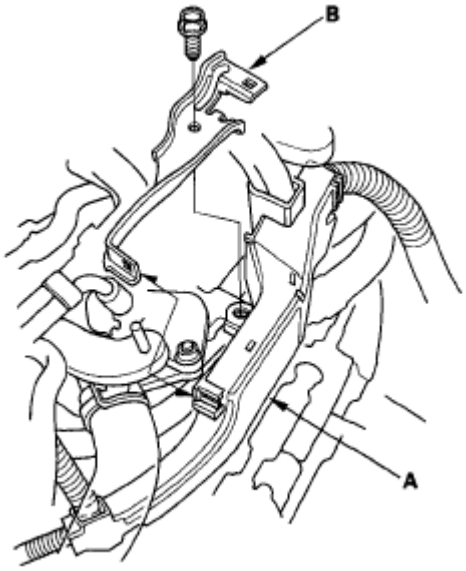


Fig. 221: Identifying Harness Holder Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the upper radiator hose (A) and heater hoses (B).

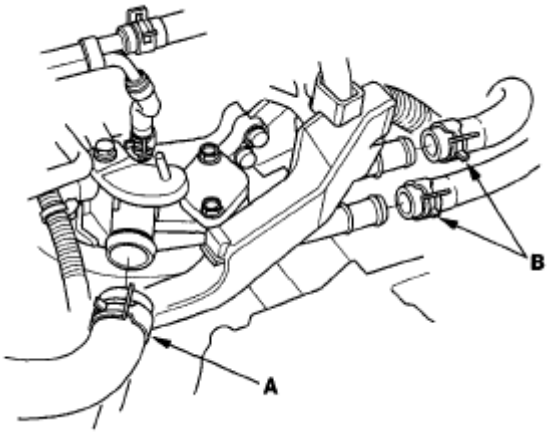


Fig. 222: Identifying Upper Radiator Hose And Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the bolt securing the connecting pipe.

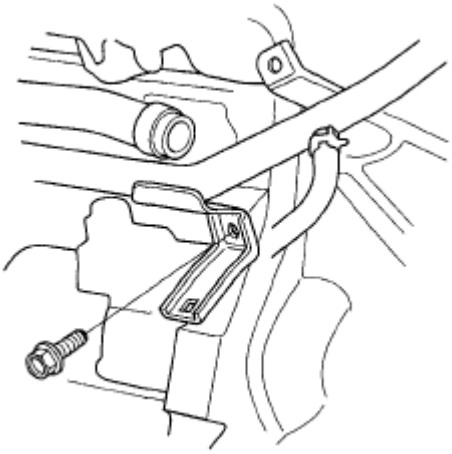


Fig. 223: Identifying Connecting Pipe Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor A (Intake) connector
    - Camshaft position (CMP) sensor B (Exhaust) connector
    - Rocker arm oil control solenoid connector
    - Rocker arm oil pressure switch connector
    - EVAP canister purge valve connector
13. Remove the cam chain (see **CAM CHAIN REMOVAL**).

14. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
15. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

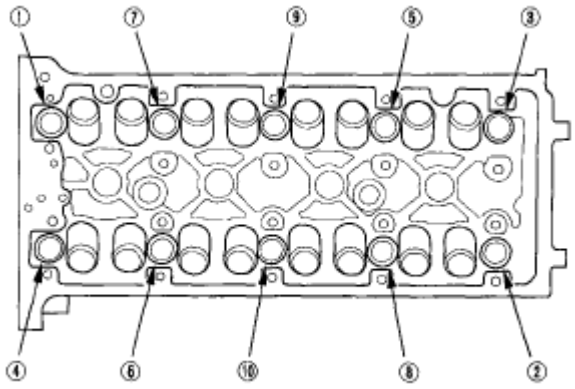


Fig. 224: Identifying Cylinder Head Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the cylinder head.

CMP PULSE PLATE A REPLACEMENT

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Remove camshaft position (CMP) sensor A (see **CMP SENSOR A REPLACEMENT**).
3. Hold the camshaft with a 27 mm open-end wrench, then loosen the bolt.

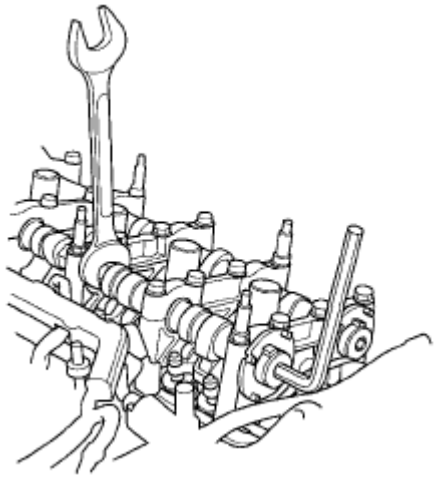


Fig. 225: Holding Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove camshaft position (CMP) pulse plate A.

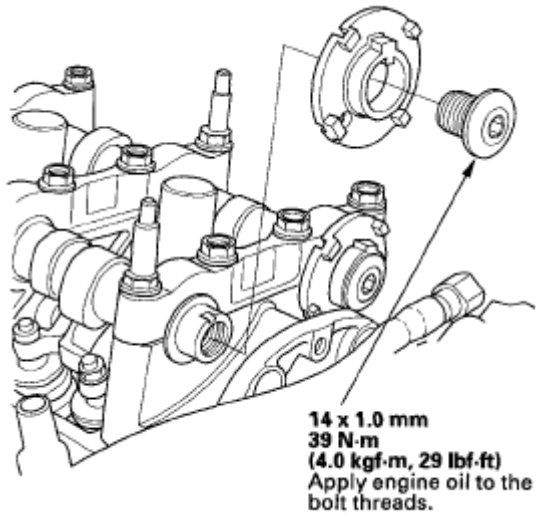


Fig. 226: Identifying Camshaft Position (CMP) Pulse Plate A (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install CMP pulse plate A in the reverse order of removal.

CMP PULSE PLATE B REPLACEMENT

1. Remove the cylinder head cover (see **CYLINDER HEAD COVER REMOVAL**).
2. Remove camshaft position (CMP) sensor B (see **CMP SENSOR B REPLACEMENT**).
3. Hold the camshaft with a 27 mm open-end wrench, then loosen the bolt.

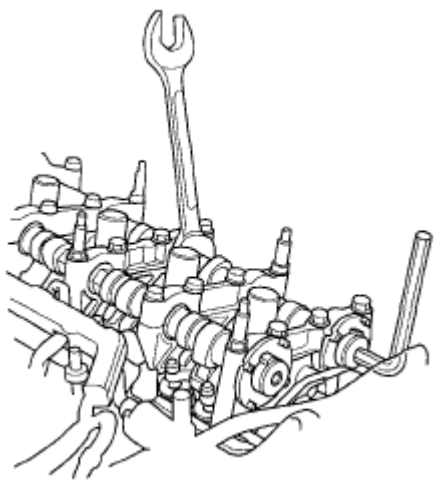


Fig. 227: Identifying Hold Camshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove camshaft position (CMP) pulse plate B.

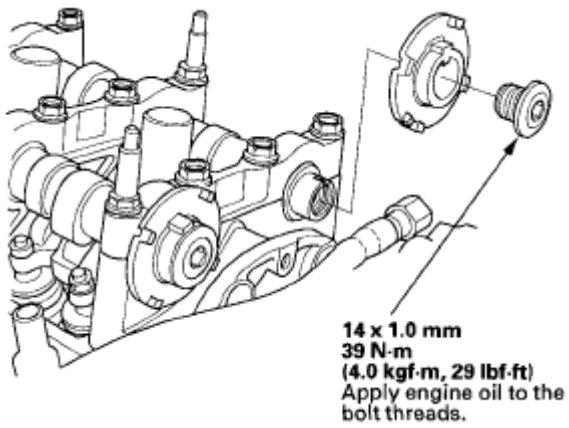


Fig. 228: Identifying Camshaft Position (CMP) Pulse Plate B (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install CMP pulse plate B in the reverse order of removal.

VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT

Removal

1. Remove the cam chain (see **CAM CHAIN REMOVAL**).
2. Hold the camshaft with a 27 mm open-end wrench, then loosen the variable valve timing control (VTC) actuator mounting bolt and exhaust camshaft sprocket mounting bolt.

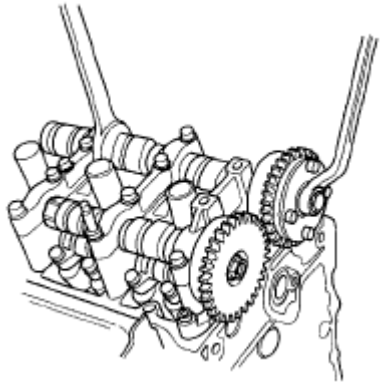


Fig. 229: Removing Exhaust Camshaft Sprocket Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. To the VTC actuator is reused, do the following steps.
   - 1 Remove the intake camshaft, and seal the advance holes and retard holes in the No. 1 camshaft journal with tape (see step 6).
   - 2 Punch a hole in the tape over one of the advance holes (see step 7).
   - 3 Apply air to the advance hole to release the lock (see step 8).
   - 4 Remove the tape from the No. 1 camshaft journal.
4. Remove the VTC actuator and exhaust camshaft sprocket.

Installation

1. Install the VTC actuator and exhaust camshaft sprocket.

NOTE: Install the VTC actuator to unlock position.

2. Apply engine oil to the threads of the VTC actuator mounting bolt and exhaust camshaft mounting bolt, then install them.
3. Hold the camshaft with an open-end wrench, then tighten the bolts.

Specified Torque

VTC Actuator Mounting Bolt:

12 x 1.25 mm

113 N.m (11.5 kgf.m, 83 lbf.ft)

Exhaust Camshaft Sprocket Mounting Bolt: 10 x 1.25 mm

72 N.m (7.3 kgf.m, 53 lbf.ft)

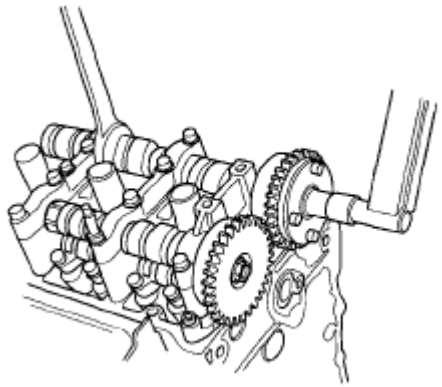


Fig. 230: Installing Exhaust Camshaft Sprocket Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Hold the camshaft, and turn the VTC actuator clockwise until you hear it click. Make sure to lock the VTC actuator by turning it.
5. Install the cam chain (see **CAM CHAIN INSTALLATION**).

CYLINDER HEAD INSPECTION FOR WARPAGE

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Inspect the camshaft (see **CAMSHAFT INSPECTION**).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
   - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
   - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
   - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 104 mm (4.09 in.).

Cylinder Head Height

Standard (New): 103.95-104.05 mm (4.093-4.096 in.)

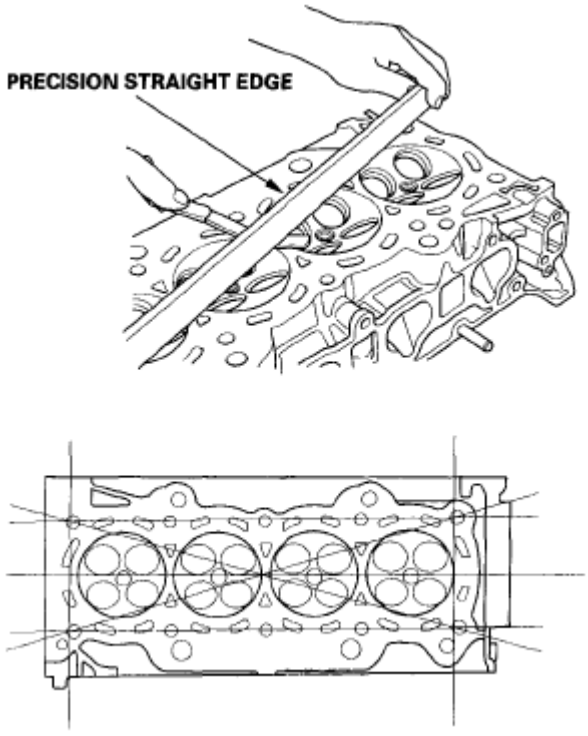


Fig. 231: Checking Cylinder Head For Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM ASSEMBLY REMOVAL

1. Remove the cam chain (see **CAM CHAIN REMOVAL**).
2. Loosen the rocker arm adjusting screws (A).

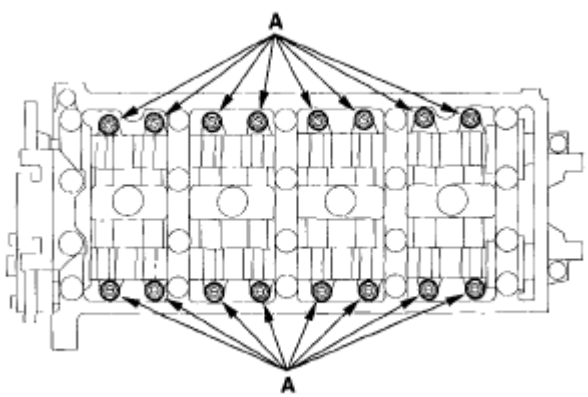


Fig. 232: Identifying Rocker Arm Adjusting Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the camshaft holder bolts. To prevent damaging the camshafts, unscrew the bolts, in sequence, two turns at a time.

NOTE: Bolt (1) is not on all engines.

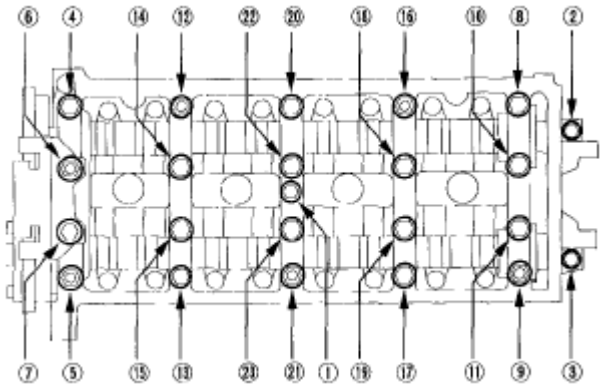


Fig. 233: Identifying Camshaft Holder Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the cam chain guide B, camshaft holders, and camshafts.
5. Insert the bolts (A) into the rocker shaft holder, then remove the rocker arm assembly (B).

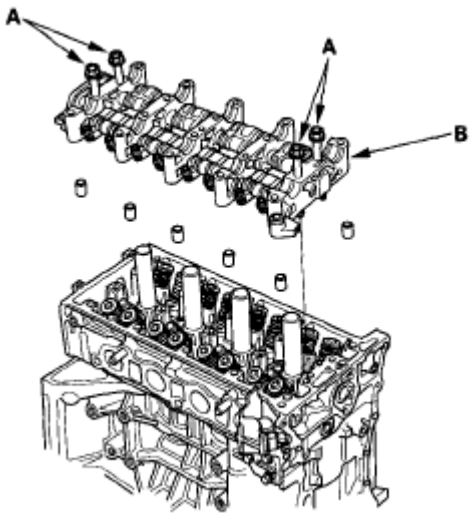


Fig. 234: Identifying Rocker Arm Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY

NOTE:

- **Identify each part as it is removed so that each item can be installed.**
- **Inspect the rocker arm shaft and rocker arms (see ROCKER ARM AND SHAFT INSPECTION).**
- **If reused, the rocker arms must be installed in the same positions.**
- **When removing, or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders and rocker arms on the shaft.**
- **Prior to reassembling, clean all the parts in solvent, dry them, and apply**

lubricant to any contact points.

- **Bundle the rocker arms with rubber bands to keep them together as a set.**
- **When replacing the VTEC rocker arm assembly, remove the fastening hardware from the new VTEC rocker arm assembly.**

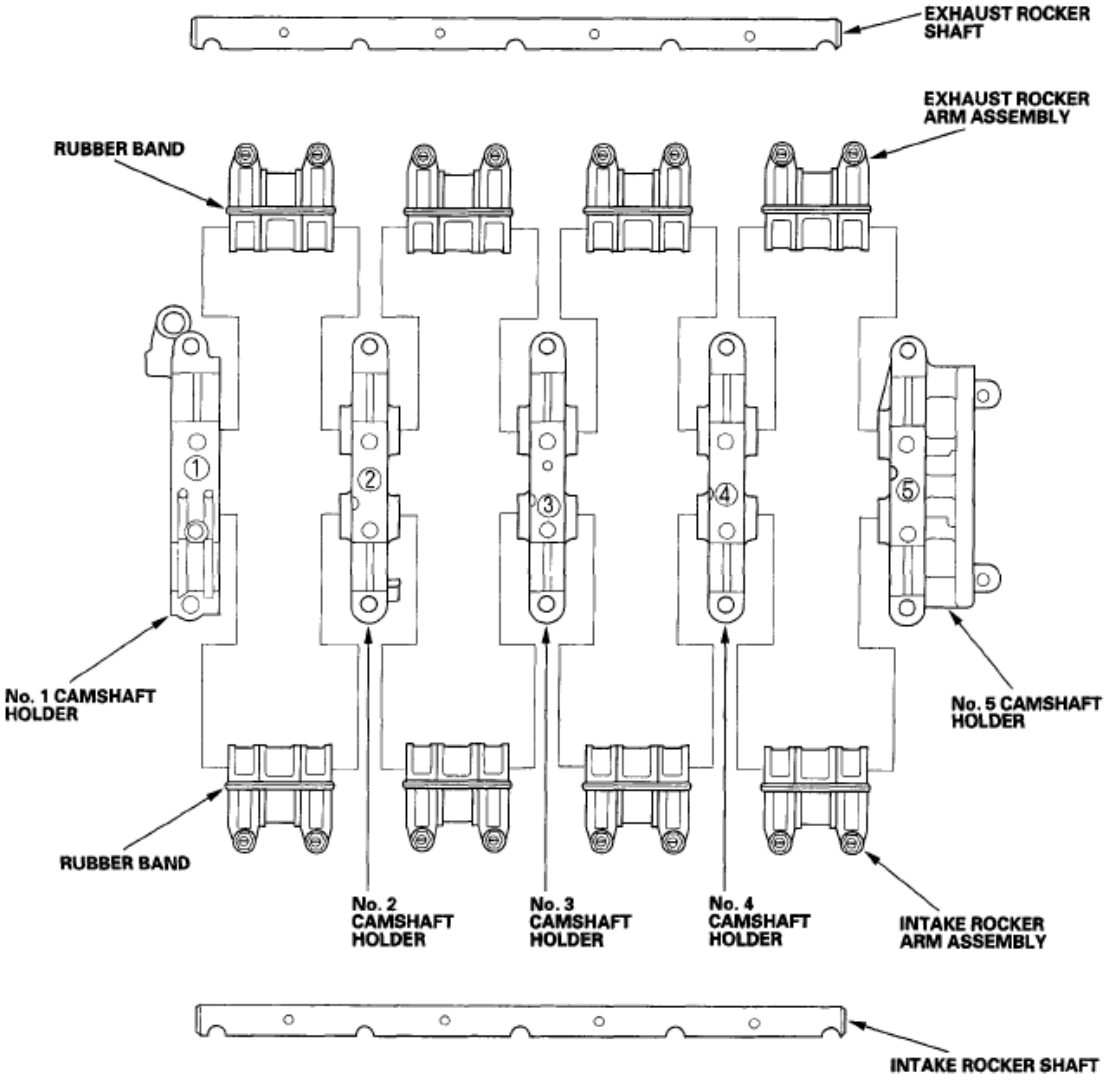


Fig. 235: Exploded View Of Rocker Arm And Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM AND SHAFT INSPECTION

1. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
2. Disassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
3. Measure the diameter of the shaft at the first rocker location.

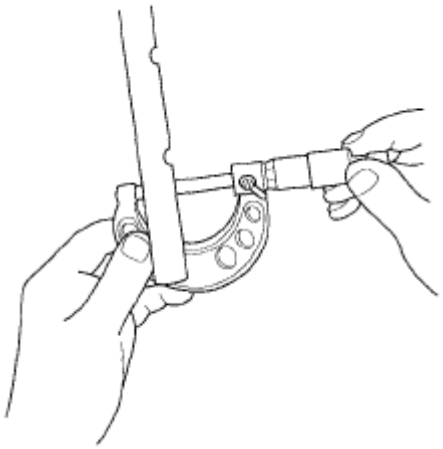


Fig. 236: Measuring Diameter Of Shaft At First Rocker Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Zero the gauge (A) to the shaft diameter.

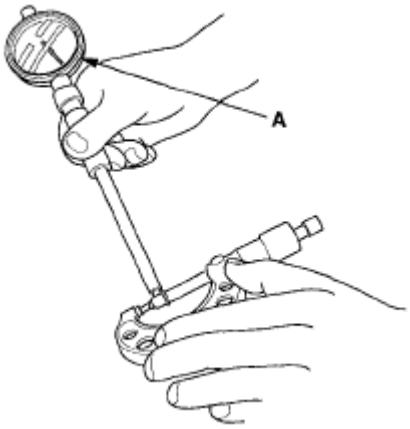


Fig. 237: Checking Shaft Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

   Rocker Arm-to-Shaft Clearance

   Standard (New): 0.025-0.052 mm (0.0010-0.0020 in.)

   Service Limit: 0.08 mm (0.003 in.)

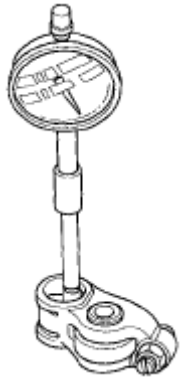


Fig. 238: Measuring Inside Diameter Of Rocker Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Repeat for all rocker arms and both shafts. If the clearance is beyond the service limit, replace the rocker shaft and all out of service limit rocker arms. If any VTEC rocker arm needs replacement, replace the rocker arms (primary, mid, and secondary), as a set.
7. Inspect the rocker arm pistons (A). Push each piston manually.

   If it does not move smoothly, replace the rocker arm set.

NOTE: Apply oil to the pistons when reassembling.

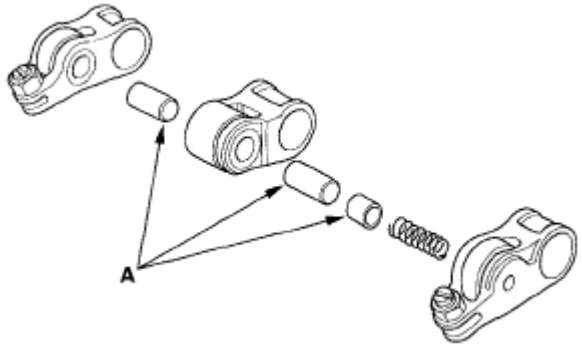


Fig. 239: Identifying Rocker Arm Pistons
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the rocker arm assembly (see **ROCKER ARM ASSEMBLY INSTALLATION**).

CAMSHAFT INSPECTION

NOTE: Do not rotate the camshaft during inspection.

1. Remove the rocker arm assembly (see **ROCKER ARM ASSEMBLY REMOVAL**).
2. Put the rocker shaft holders, camshaft, and camshaft holders on the cylinder head, then tighten the bolts in sequence to the specified torque.

NOTE: If the engine does not have bolt (21), skip it and continue the torque sequence.

Specified Torque

8x1.25 mm

22 N.m (2.2 kgf.m, 16 lbf.ft)

6 x 1.0 mm

12 N.m (1.2 kgf.m, 8.7 lbf.ft)

6 x 1.0 mm Bolts: (21), (22), (23)

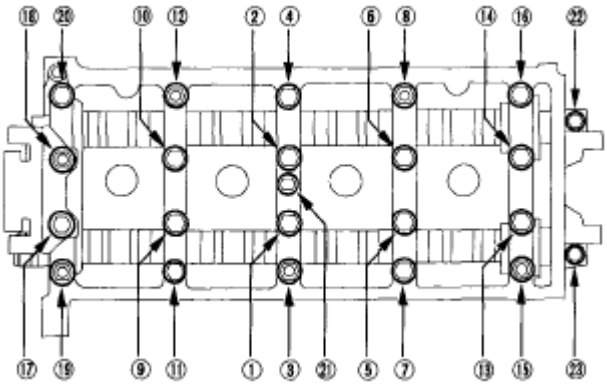


Fig. 240: Identifying Cylinder Head Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Seat the camshaft by pushing it away from the camshaft pulley end of the cylinder head.
4. Zero the dial indicator against the end of the camshaft, then push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the cylinder head and recheck. If it is still beyond the service limit, replace the camshaft.

Camshaft End Play

Standard (New): 0.05-0.20 mm (0.002-0.008 in.)

Service Limit: 0.4 mm (0.02 in.)

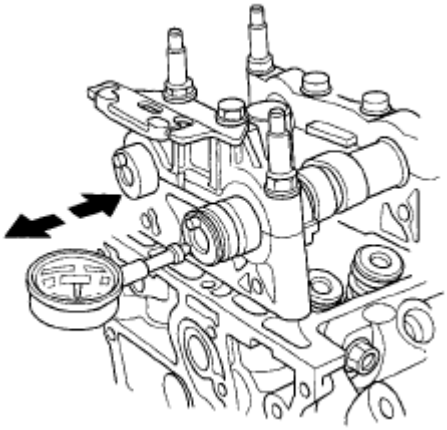


Fig. 241: Measuring Camshaft End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Unscrew the camshaft holder bolts two turns at a time, in a crisscross pattern. Then remove the camshaft holders from the cylinder head.
6. Lift the camshafts out of the cylinder head, wipe them clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
7. Clean the camshaft journal surfaces in the cylinder head, then set the camshafts back in place. Place a plastigage strip across each journal.
8. Install the camshaft holders, then tighten the bolts to the specified torque as shown in step 2.
9. Remove the camshaft holders. Measure the widest portion of plastigage on each journal.
   - If the camshaft-to-holder clearance is within limits, go to step 11.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 10.

Camshaft-to-Holder Oil Clearance

Standard (New):

No. 1 Journal: 0.030-0.069 mm

(0.001-0.003 in.)

No. 2, 3, 4, 5 Journals: 0.060-0.099 mm

(0.002-0.004 in.)

Service Limit: 0.15 mm (0.006 in.)

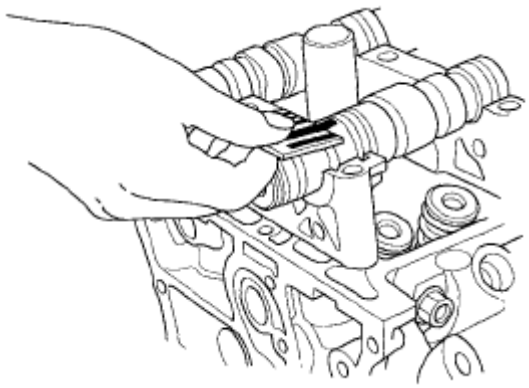


Fig. 242: Checking Camshaft-To-Holder Oil Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check the total runout with the camshaft supported on V-blocks.
    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft and recheck the camshaft-to-

holder oil clearance. If the oil clearance is still beyond the service limit, replace the cylinder head.

Camshaft Total Runout

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)

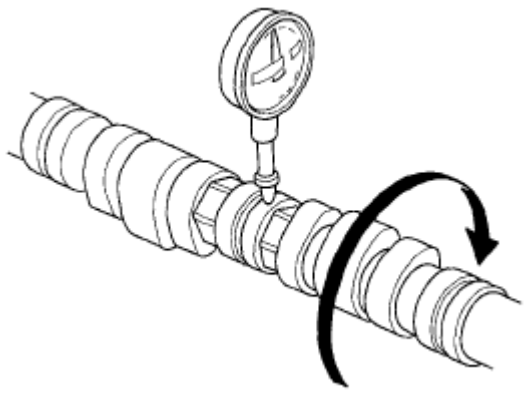


Fig. 243: Measuring Camshaft Total Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Measure cam lobe height.

CAM LOBE HEIGHT STANDARD

	INTAKE	EXHAUST
PRI	32.791 mm (1.2910 in.)	32.772 mm (1.2902 in.)
MID	35.534 mm (1.3990 in.)	34.768 mm (1.3688 in.)
SEC	32.678 mm (1.2865 in.)	32.661 mm (1.2859 in.)

PRI: Primary

C/C: Cam Chain

MID: Mid

SEC: Secondary

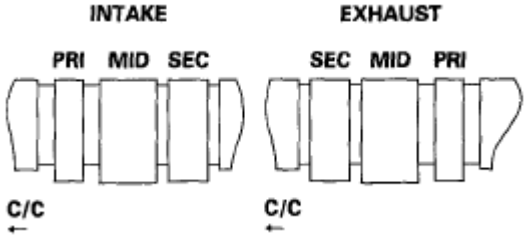


Fig. 244: Measuring Cam Lobe Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE, SPRING, AND VALVE SEAL REMOVAL

Special Tools Required

Valve spring compressor attachment 07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve cotters.

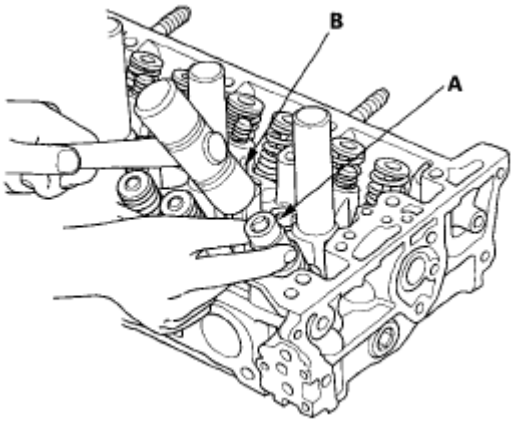


Fig. 245: Tapping Valve Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the valve spring compressor attachment and valve spring compressor. Compress the spring, and remove the valve cotters.

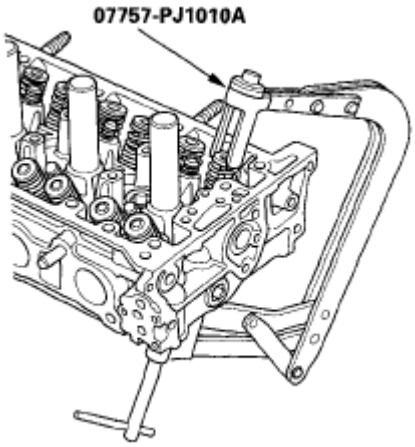


Fig. 246: Compressing Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the valve spring compressor attachment and valve spring compressor, then remove the valve retainer and valve spring.

5. Install the valve guide seal remover.

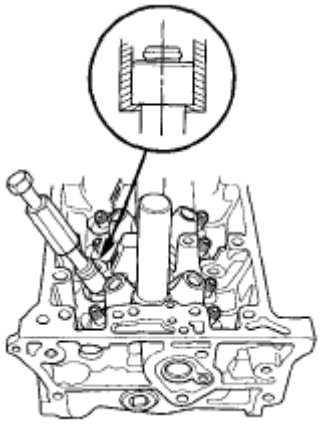


Fig. 247: Identifying Valve Guide Seal Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the valve seal.

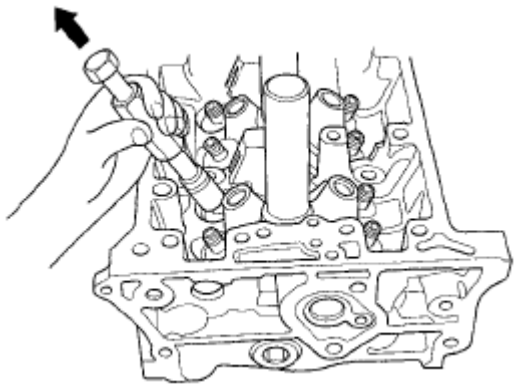


Fig. 248: Identifying Valve Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Measure the valve in these areas.

Intake Valve Dimensions

A Standard (New): 34.85-35.15 mm (1.372-1.384 in.)

B Standard (New): 108.5-109.1 mm (4.272-4.295 in.)

C Standard (New): 5.475-5.485 mm (0.2156-0.2159 in.)

C Service Limit: 5.445 mm (0.214 in.)

Exhaust Valve Dimensions

A Standard (New): 29.90-30.10 mm (1.177-1.185 in.)

B Standard (New): 108.4-109.0 mm (4.268-4.291 in.)

C Standard (New): 5.450-5.460 mm (0.2146-0.2150 in.)

C Service Limit: 5.42 mm (0.213 in.)

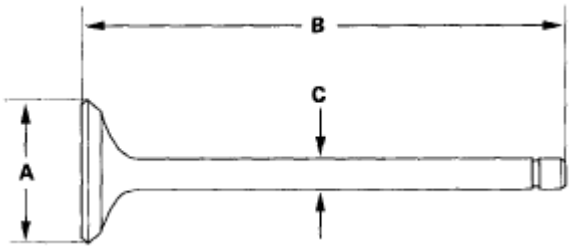


Fig. 249: Identifying Exhaust Valve Dimensions
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE STEM-TO-GUIDE CLEARANCE INSPECTION

1. Remove the valves (see **VALVE, SPRING, AND VALVE SEAL REMOVAL**).
2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance

Standard (New): 0.06-0.11 mm (0.002-0.004 in.)

Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.11-0.16 mm (0.004-0.006 in.)

Service Limit: 0.22 mm (0.009 in.)

Fig. 250: Checking Intake Valve Stem-To-Guide Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

   Intake Valve Stem-to-Guide Clearance

   Standard (New): 0.030-0.055 mm (0.0012-0.0022 in.)

   Service Limit: 0.08 mm (0.003 in.)

   Exhaust Valve Stem-to-Guide Clearance

   Standard (New): 0.055-0.080 mm (0.0022-0.0031 in.)

   Service Limit: 0.11 mm (0.004 in.)

VALVE GUIDE REPLACEMENT

Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

1. Inspect valve stem-to-guide clearance (see **VALVE INSPECTION**).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.

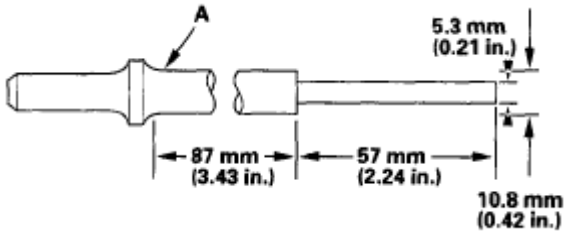


Fig. 251: Identifying Air-Impact Valve Guide Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.

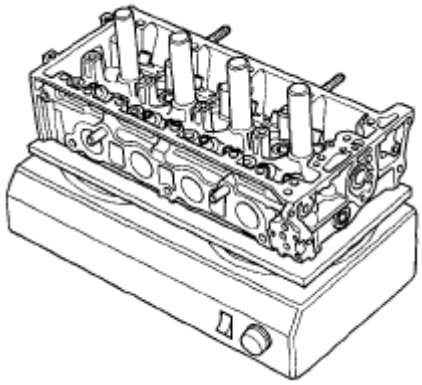


Fig. 252: Heating Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver.
6. Turn the head over, and drive the guide out toward the camshaft side of the head.

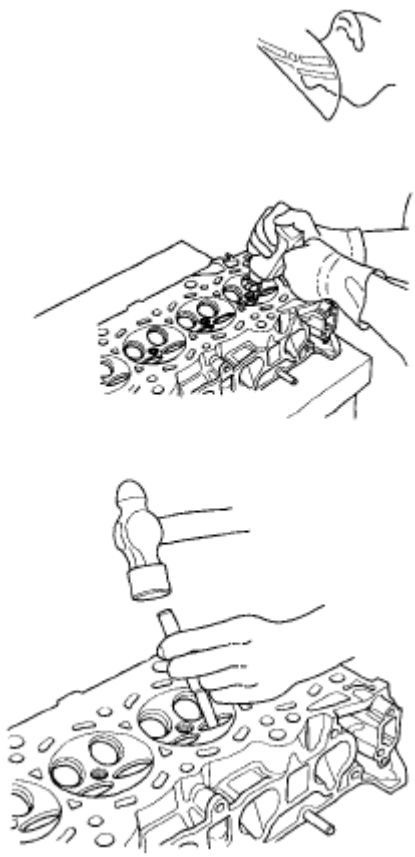


Fig. 253: Tapping Valve Guide
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. If a valve guide won't move, drill it out with a 8 mm (5/16 in.) bit, then try again. Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.
8. Take out the new guide(s) from the freezer, one at a time, as you need them.

9. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide in to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

   Valve Guide Installed Height

   Intake: 15.2-16.2 mm (0.598-0.638 in.)

   Exhaust: 15.5-16.5 mm (0.610-0.650 in.)

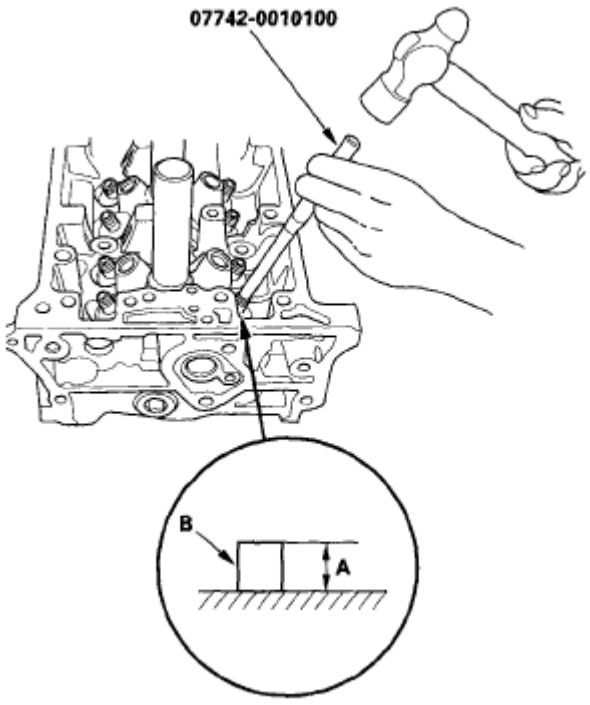


Fig. 254: Identifying Valve Guide Installed Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Coat both reamer and the valve guide with cutting oil.
11. Rotate the reamer clockwise the full length of the valve guide bore.

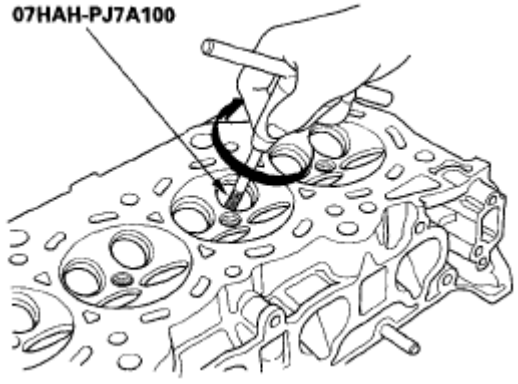


Fig. 255: Rotating Reamer To Full Length Of Valve Guide Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Continue to rotate the reamer clockwise while removing it from the bore.
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.
14. Check the clearances with a valve (see **VALVE INSPECTION**). Verify that a valve slides into the intake and exhaust valve guides without getting stuck.
15. Inspect the valve seating. if necessary, renew the valve seat using a valve seat cutter (see **Valve Seat Reconditioning**).

VALVE SEAT RECONDITIONING

1. Inspect the valve stem-to-guide clearance (see **VALVE INSPECTION**). If the valve guides are worn, replace them (see **VALVE GUIDE REPLACEMENT**) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.

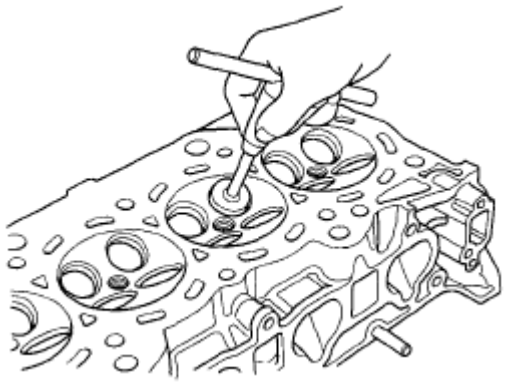


Fig. 256: Cutting Valve Seats Using Valve Seat Cutter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper and lower edges at the angles shown in the illustration. Check the width of the seat and adjust accordingly.

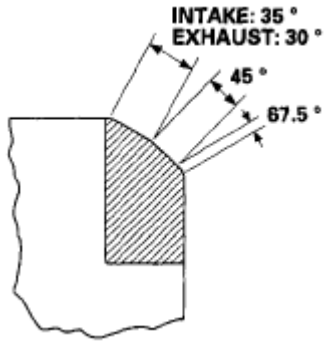


Fig. 257: Identifying Bevel Upper And Lower Edges Angles
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Standard (New): 1.25-1.55 mm (0.049-0.061 in.)

Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect for even valve seating: Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.

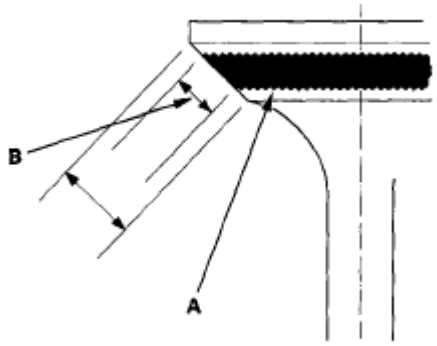


Fig. 258: Identifying Valve Seat Width
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
   - If it is too high (closer to the valve stem), you must make a second cut with the 67.5° cutter to move it down, then one more cut with the 45 ° cutter to restore seat width.
   - If it is too low (close to the valve edge), you must make a second cut with the 35 ° cutter (intake side) or the 30° cutter (exhaust side) to move it up, then make one more cut with the 45° cutter to restore seat width.

NOTE: The final cut should always be made with the 45° cutter.

8. Insert the intake and exhaust valves in the head, and measure valve stem installed height (A).

Intake Valve Stem Installed Height

Standard (New): 44.0-44.5 mm (1.73-1.75 in.)

Service Limit: 44.7 mm (1.76 in.)

Exhaust Valve Stem Installed Height Standard (New): 44.1-44.6 mm (1.74-1.76 in.)

Service Limit: 44.8 mm (1.76 in.)

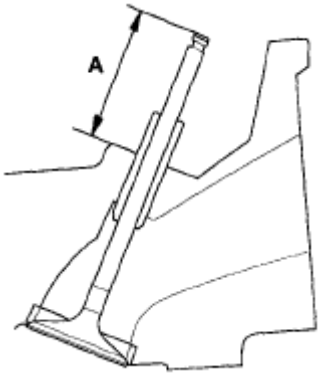


Fig. 259: Identifying Exhaust Valve Stem Installed Height
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If valve stem installed height is beyond the service limit, replace the valve and recheck. If it is still beyond the service limit, replace the cylinder head; the valve seat in the head is too deep.

VALVE, SPRING, AND VALVE SEAL INSTALLATION

Special Tools Required

- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

NOTE: The exhaust valve seal (C) has a black spring (D), and the intake valve seal (E) has a white spring (F). They are not interchangeable.

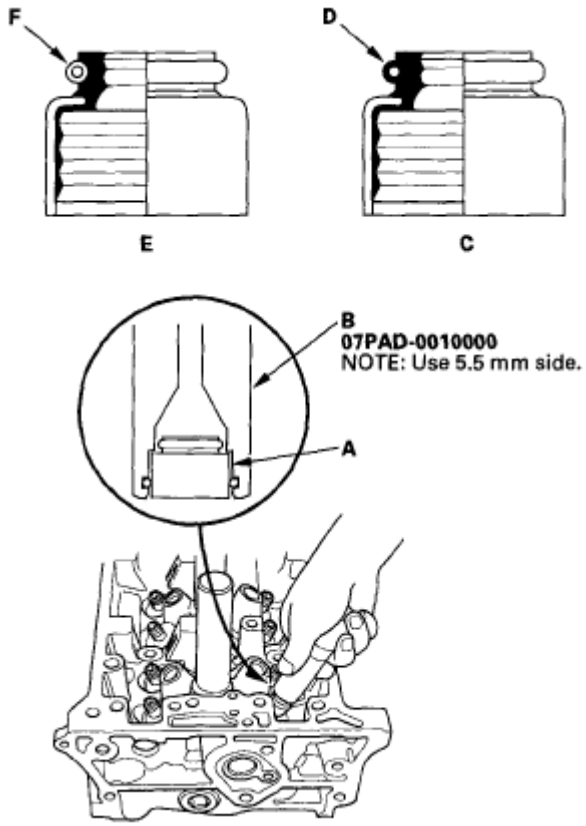


Fig. 260: Identifying Valve Seals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the valve spring and spring retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and valve spring compressor. Compress the spring, and install the valve cotters.

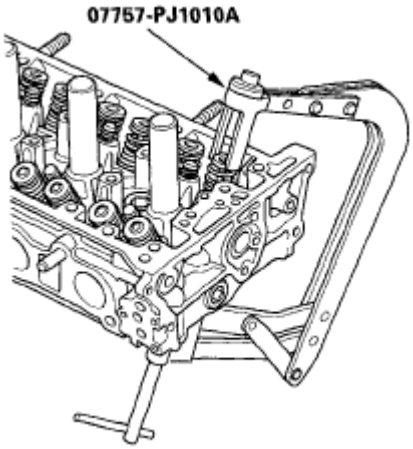


Fig. 261: Compressing Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve spring compressor and valve spring compressor attachment.
8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper

seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.

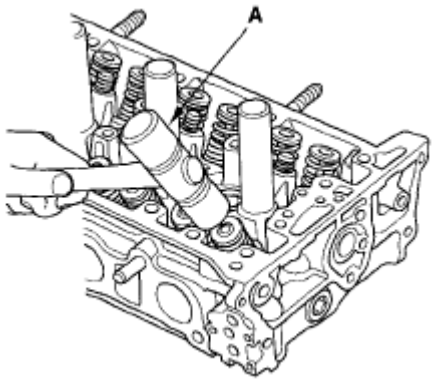


Fig. 262: Tapping Valve Stem
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ROCKER ARM ASSEMBLY INSTALLATION

1. Reassemble the rocker arm assembly (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**).
2. Clean and dry the No. 5 rocker shaft holder mating surface.
3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the No. 5 rocker shaft holder.

NOTE:

- **If you apply liquid gasket, P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residual, then reapply new liquid gasket.**

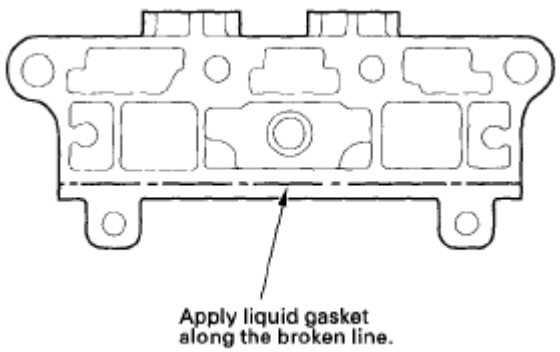


Fig. 263: Identifying Liquid Gasket Applying Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the bolts (A) into the rocker shaft holder, then install the rocker arm assembly (B) on the cylinder head.

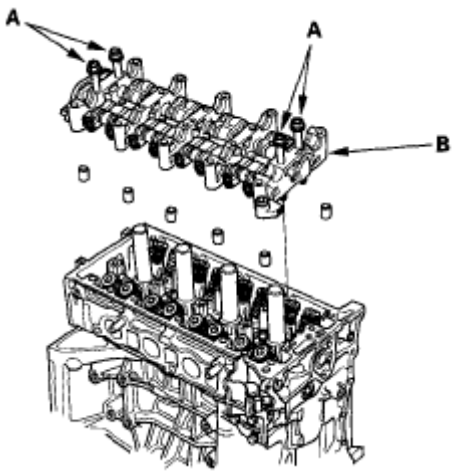


Fig. 264: Identifying Rocker Arm Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the bolts from the rocker shaft holder.
6. Make sure the punch marks on the variable valve timing control (VTC) actuator and exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder.

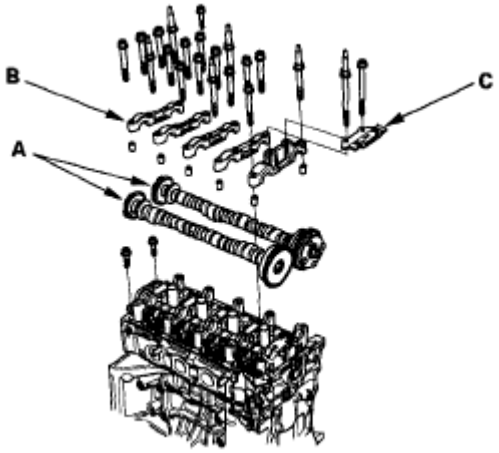


Fig. 265: Identifying Camshafts And Camshaft Holders
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Set the camshaft holders (B) and cam chain guide B (C) in place.
8. Tighten the bolts in sequence to the specified torque.

NOTE: If the engine does not have bolt (21), skip it and continue the torque sequence.

Specified Torque

8 x 1.25 mm

22 N.m (2.2 kgf.m, 16 lbf.ft)

6 x 1.0 mm

12 N.m (1.2 kgf.m, 8.7 lbf.ft)

6 x 1.0 mm Bolts: (21), (22), (23)

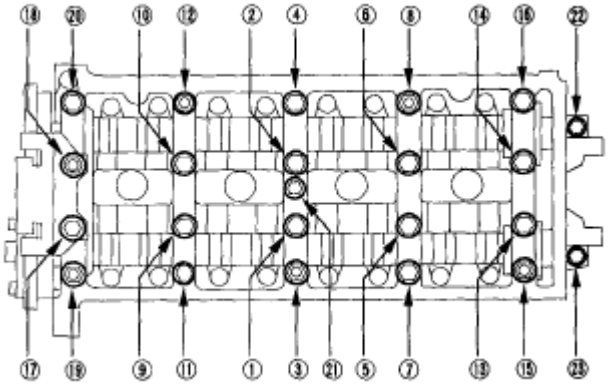


Fig. 266: Identifying Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the cam chain (see **CAM CHAIN INSTALLATION**), and adjust the valve clearance (see **VALVE CLEARANCE ADJUSTMENT**).

CYLINDER HEAD INSTALLATION

1. Install the new coolant separator in the engine block when replacing the engine block.

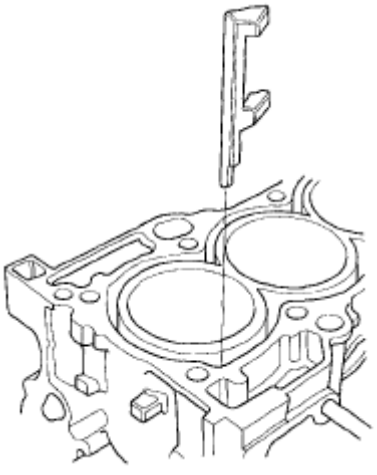


Fig. 267: Identifying Coolant Separator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Clean the cylinder head and engine block surface.
3. Install the new cylinder head gasket (A) and dowel pins (B) on the engine block. Always use a new cylinder head gasket.

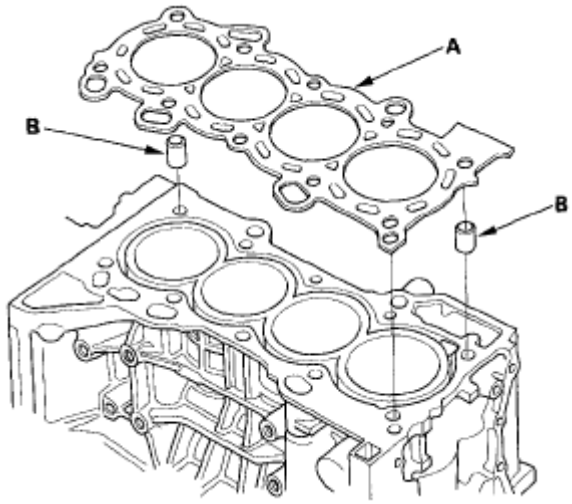


Fig. 268: Identifying Cylinder Head Gasket And Dowel Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.

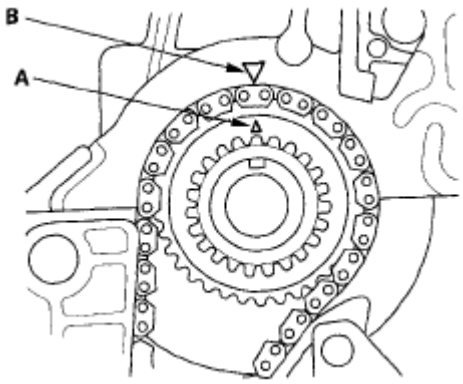


Fig. 269: Aligning TDC Mark On Crankshaft Sprocket With Pointer On Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the cylinder head on the engine block.
6. Measure the diameter of each cylinder head bolt at point A and point B.

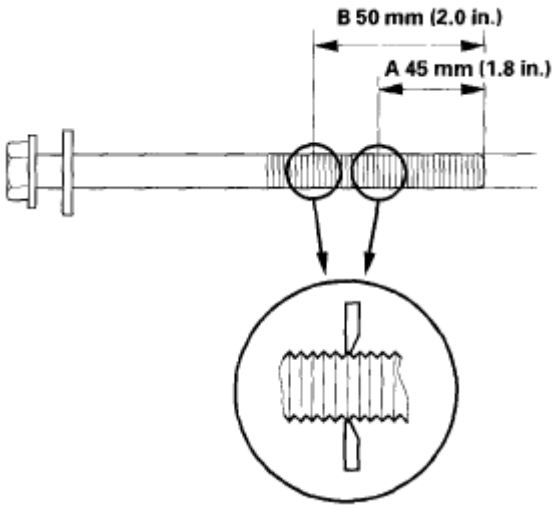


Fig. 270: Measuring Diameter Of Cylinder Head Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.
8. Apply engine oil to the threads and under the bolt heads of all cylinder head bolts.
9. Tighten the cylinder head bolts in sequence to 39 N.m (4.0 kgf.m, 29 lbf.ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retighten it from the first step.

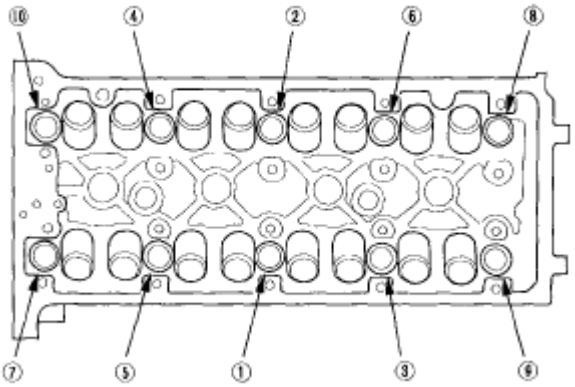


Fig. 271: Identifying Cylinder Head Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. After torquing, tighten all cylinder head bolts in two steps (90° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90°.

NOTE: Remove the cylinder head bolt if you tightened it beyond the specified angle, and go back to step 6 of the procedure. Do not loosen it back to the specified angle.

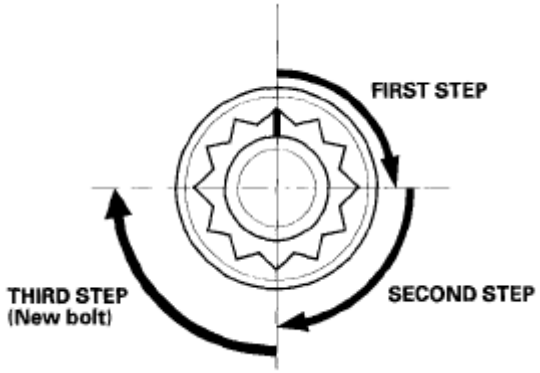


Fig. 272: Identifying Cylinder Head Bolt Tightening Step
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the rocker arm assembly (see **ROCKER ARM ASSEMBLY INSTALLATION**).
12. Install the cam chain (see **CAM CHAIN INSTALLATION**).
13. Connect the engine wire harness connectors, and install the wire harness clamps to the cylinder head.
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor A (Intake) connector
    - Camshaft position (CMP) sensor B (Exhaust) connector
    - Rocker arm oil control solenoid connector
    - Rocker arm oil pressure switch connector
    - EVAP canister purge valve connector
14. Install the bolt securing the connecting pipe.

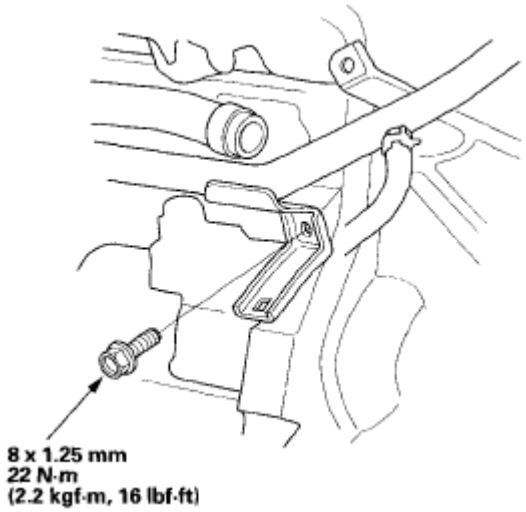


Fig. 273: Identifying Connecting Pipe Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the upper radiator hose (A) and heater hoses (B).

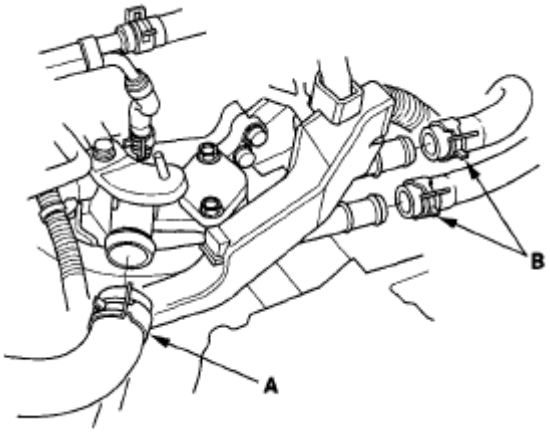


Fig. 274: Identifying Upper Radiator And Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the harness holder bracket (A), then install the harness holder (B).

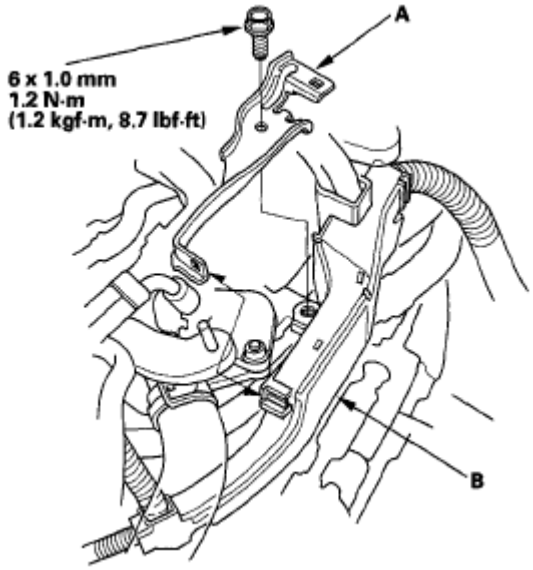


Fig. 275: Identifying Harness Holder Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (A).

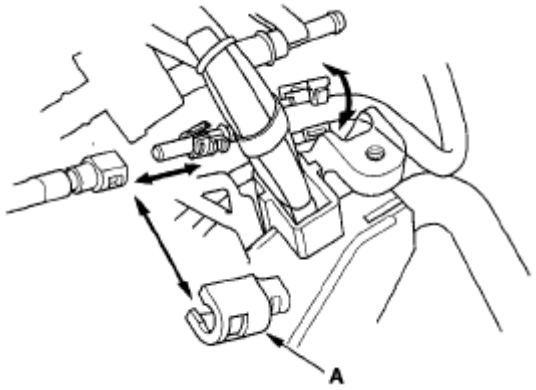


Fig. 276: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

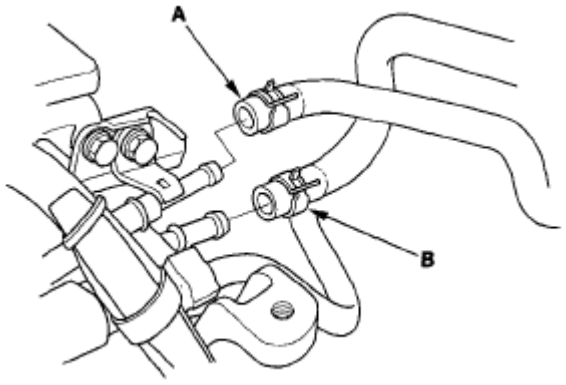


Fig. 277: Identifying Evaporative Emission (EVAP) Canister Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the exhaust manifold (see **EXHAUST MANIFOLD REMOVAL AND INSTALLATION**).
20. Install the intake manifold (see **INSTALLATION**).
21. Install the drive belt (see **DRIVE BELT INSPECTION**).
22. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
23. After installation, check that all tubes, hoses and connectors are installed correctly.
24. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so that the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
25. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on **COOLANT CHECK**).
26. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **HDS CLEAR COMMAND**).
27. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
28. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).

SEALING BOLT INSTALLATION

NOTE: When installing the sealing bolt, always use a new washer.

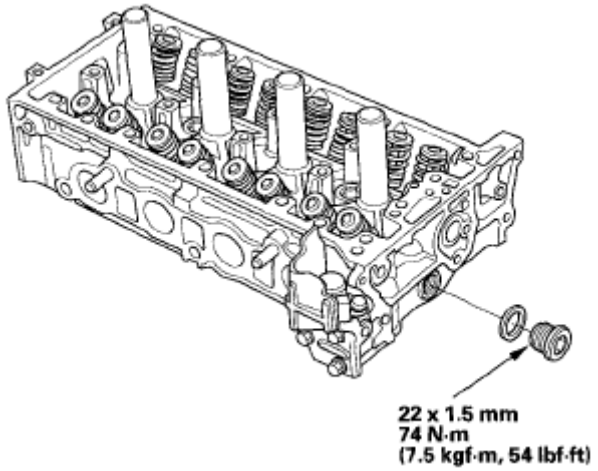


Fig. 278: Identifying Sealing Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-08 ENGINE

Engine Assembly - Civic (Except Hybrid)

ENGINE ASSEMBLY (R18A1)

NOTE: Go to ENGINE ASSEMBLY (GX) (SUPPLEMENT) article for additional information for the GX model.

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAK-SNAA120	Universal Eyelet	1
②	07AAK-SNAA400	1.8 Support Eyelet	1
③	07AAK-SNAA500	1.8 Support Bolt	1

Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE REMOVAL

Special Tools Required

- Universal eyelet 07AAK-SNAA120
- 1.8 support eyelet 07AAK-SNAA400
- 1.8 support bolt 07AAK-SNAA500
- Front subframe adapter VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

* : Available through Honda Tool and Equipment Program, 1-888-424-6857

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the wiring and terminals, unplug the wiring connectors carefully while holding the connector portion.**
- **Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.**

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.

2. Secure the hood in the wide open position (support rod in the lower hole).

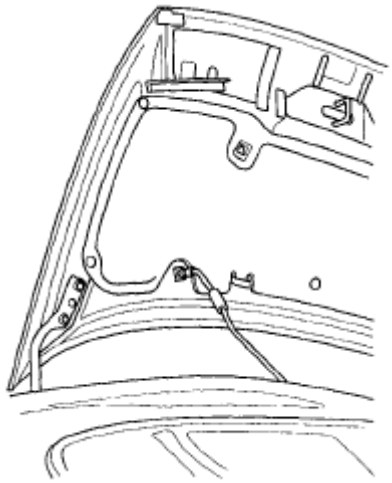


Fig. 2: Identifying Support Rod In Lower Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
4. Disconnect the negative cable from the battery, then disconnect the positive cable.
5. Remove the battery.
6. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
7. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
8. Remove the injector cover.

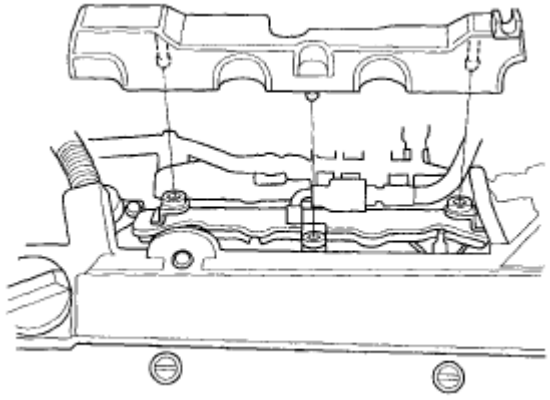


Fig. 3: Identifying Injector Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

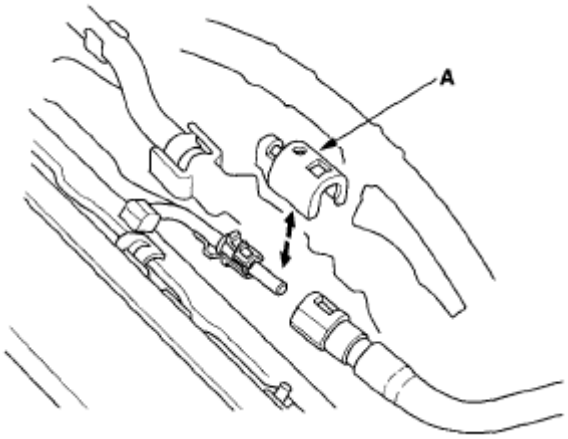


Fig. 4: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the evaporative emission (EVAP) canister hose (A), brake booster vacuum hose (B), and power steering (P/S) hose clamp (C).

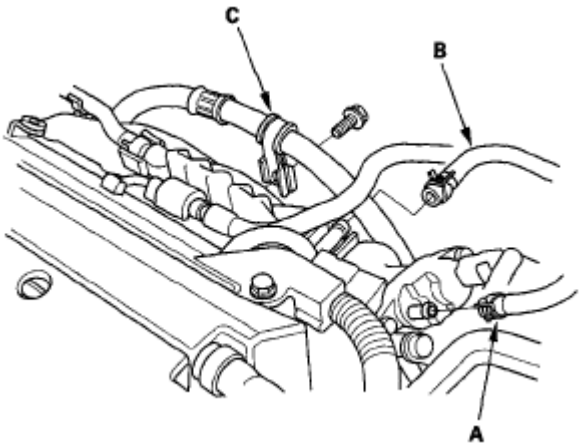


Fig. 5: Identifying Evaporative Emission (EVAP) Canister Hose And Brake Booster Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the battery cables (A) from the under-hood fuse/relay box.

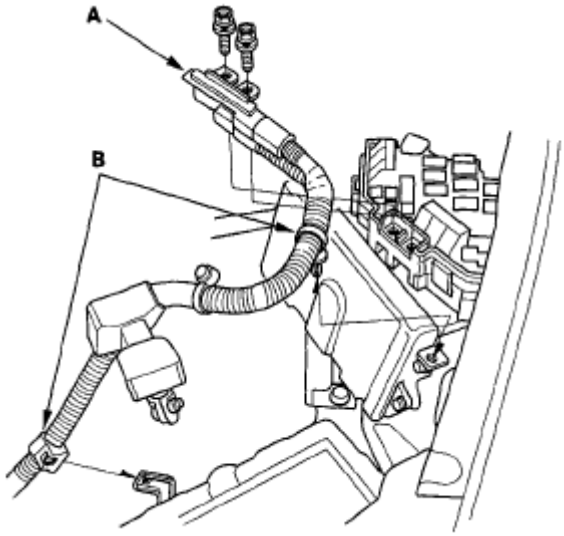


Fig. 6: Identifying Battery Cables And Harness Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the harness clamps (B).
13. Remove the engine control module (ECM)/powertrain control module (PCM) cover (A), then remove the three bolts (B) securing the ECM/PCM.

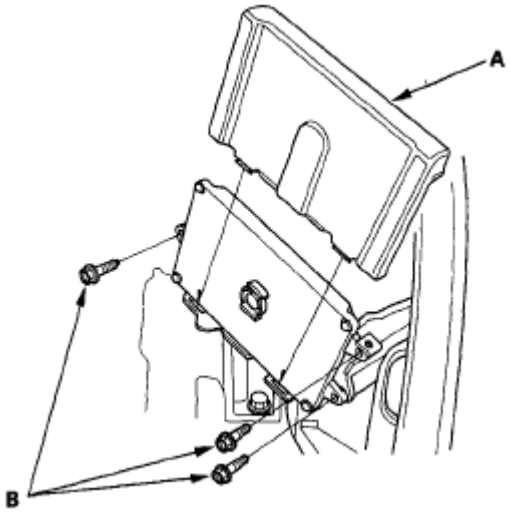


Fig. 7: Identifying Control Module (PCM) Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect the ECM/PCM connectors (A) and the engine wire harness connectors (B).

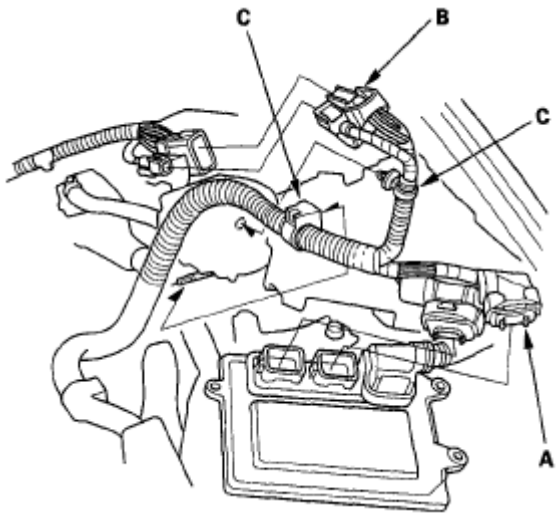


Fig. 8: Identifying ECM/PCM Connectors And Engine Wire Harness Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the harness clamps (C).
16. M/T model: Remove the two bolts (A) securing the harness holder, then remove the harness clamp (B).

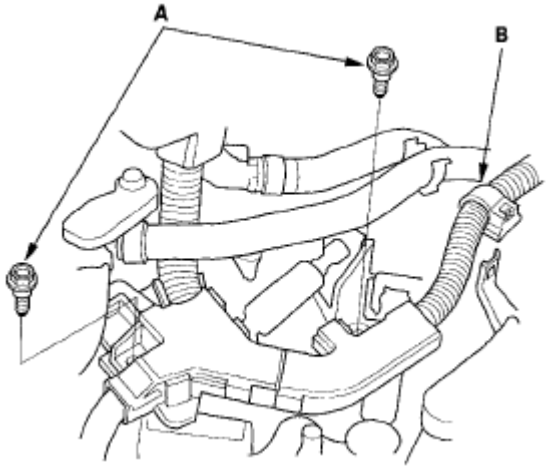


Fig. 9: Identifying Harness Clamp Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. M/T model: Remove the shift cable (see step 9 on **TRANSMISSION REMOVAL**).
18. M/T model: Remove the clutch slave cylinder, and the clutch line bracket mounting bolt (see step 7 on **TRANSMISSION REMOVAL**).
19. Remove the drive belt (see **DRIVE BELT INSPECTION**).
20. Remove the radiator cap.
21. Raise the vehicle on the lift to full height.
22. Remove the front wheels.
23. Remove the splash shield.

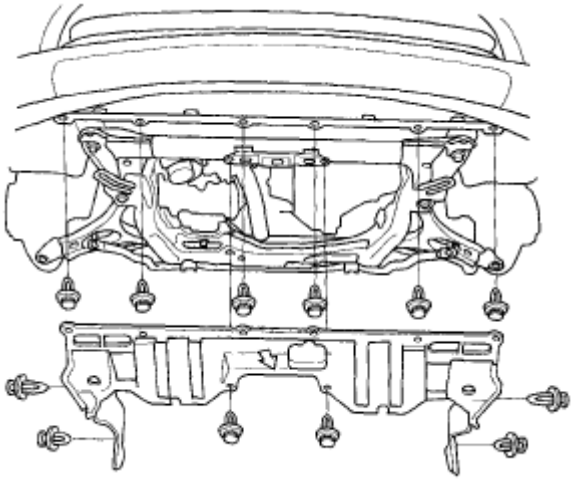


Fig. 10: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Loosen the drain plug in the radiator, and drain the engine coolant (see **COOLANT REPLACEMENT**).
25. Drain the engine oil (see **OIL PRESSURE TEST**).
26. Drain the transmission fluid:
    - Manual transmission (see step 3 on **TRANSMISSION REMOVAL**)
    - Automatic transmission (see step 3 on **ATF REPLACEMENT**)
27. Remove exhaust pipe A.

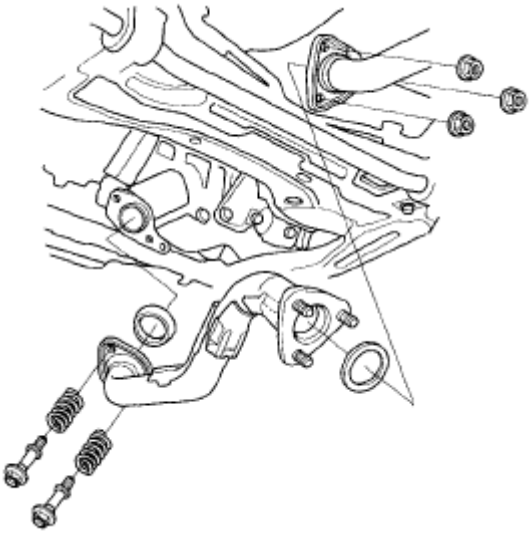


Fig. 11: Identifying Exhaust Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. A/T model: Remove the shift cable (see step 41 on **TRANSMISSION REMOVAL**).
29. Separate the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
30. Separate the knuckles from the lower arms (see step 5 on **DRIVESHAFT REMOVAL**).
31. Remove the driveshafts (see step 8 on **DRIVESHAFT REMOVAL**). Coat all precision-finished

surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

32. Remove the power steering (P/S) pump without disconnecting the P/S hoses from the pump.

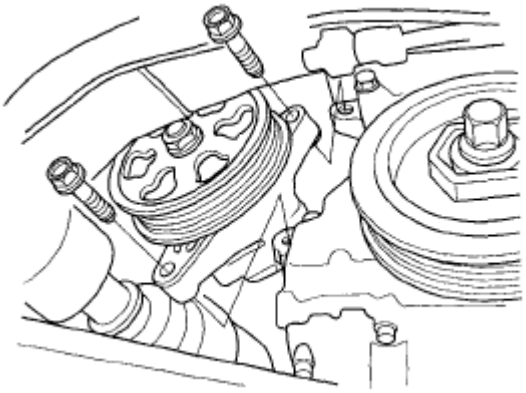


Fig. 12: Identifying Power Steering (P/S) Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Unclamp the power steering fluid line clamp (A) on the front subframe, and remove the P/S line mounting bolts (B).

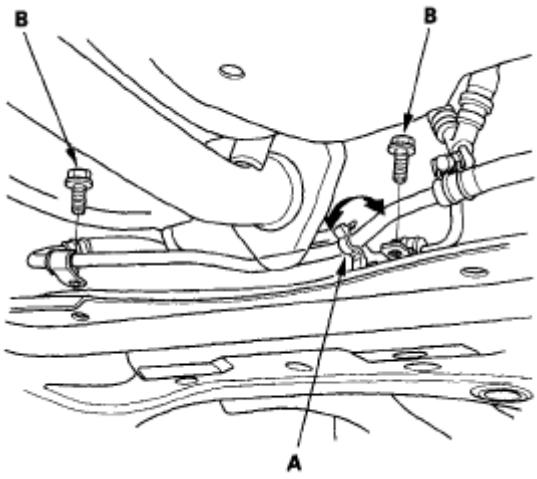


Fig. 13: Identifying P/S Line Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Remove the steering gearbox mounting bolt (A), then remove the steering gearbox stiffener (B).

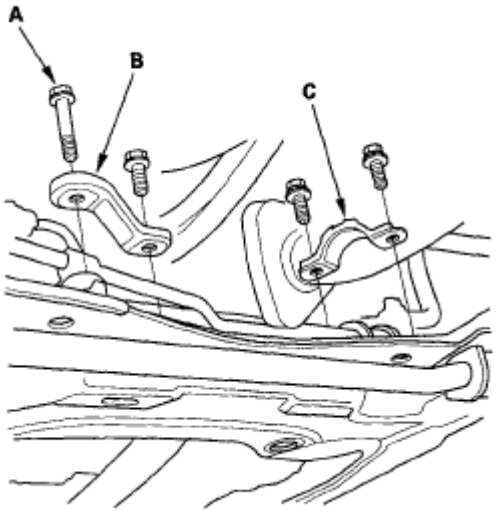


Fig. 14: Identifying Steering Gearbox Stiffener And Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Remove the steering gearbox bracket (C).
36. Remove the steering gearbox mounting bolts (A), then remove the steering gearbox stiffener (B).

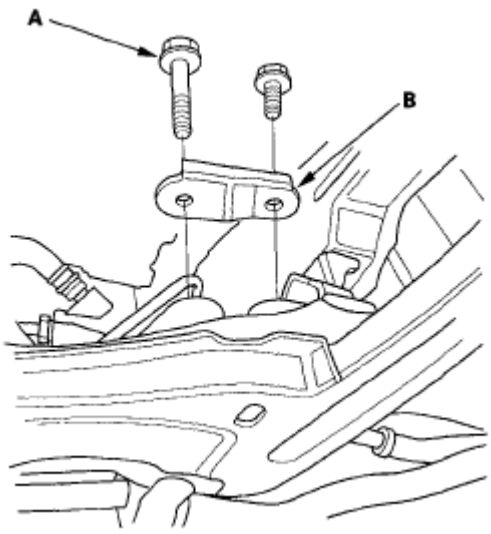


Fig. 15: Identifying Steering Gearbox Stiffener And Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Lower the vehicle on the lift.
38. Remove the radiator (see **RADIATOR AND FAN REPLACEMENT**).
39. Disconnect the A/C compressor clutch connector (A), then remove the harness clamp (B).

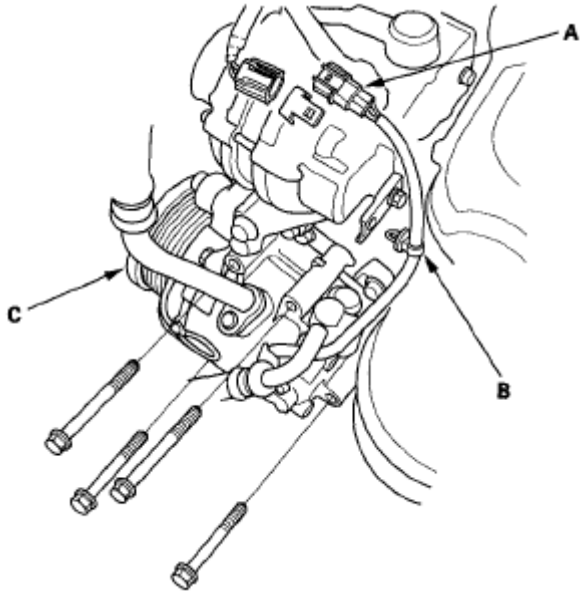


Fig. 16: Identifying A/C Compressor Clutch Connector And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Remove the A/C compressor (C) without disconnecting the A/C hoses.
41. Remove the heater hoses.

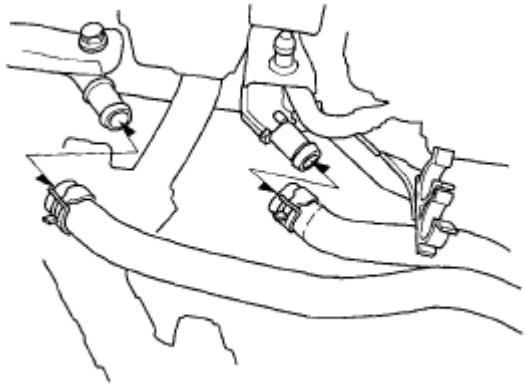


Fig. 17: Identifying Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Remove the air cleaner housing mounting bracket (A), and install support eyelet (B) behind the breather pipe (C) and down to the threaded hole (D) on the cylinder head.

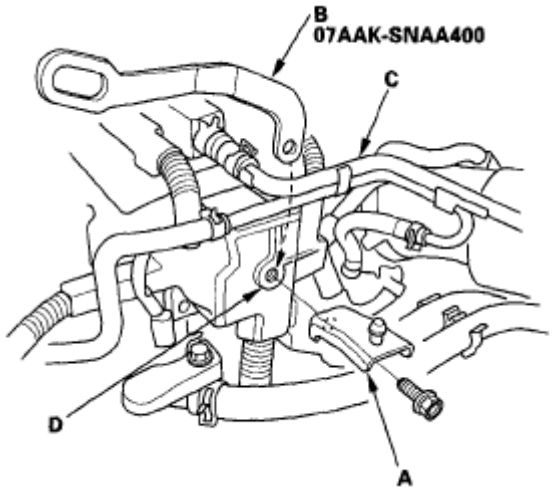


Fig. 18: Identifying Air Cleaner Housing Mounting Bracket And Support Eyelet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Attach the support eyelet (A) to the cylinder head with the support bolt (B). Tighten the bolt by hand.

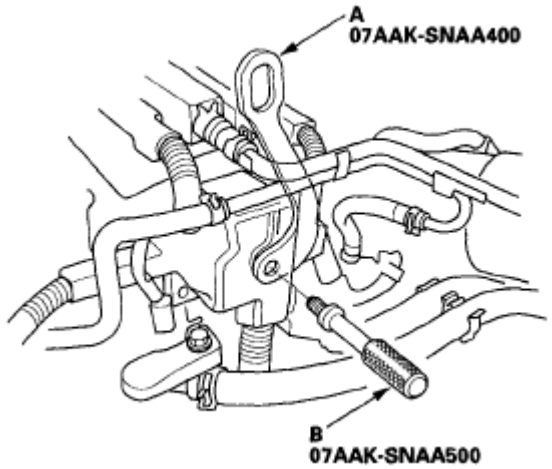


Fig. 19: Identifying Support Eyelet And Support Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

44. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wing nut by hand to lift and support the engine/transmission.

NOTE: Use care when working around the windshield.

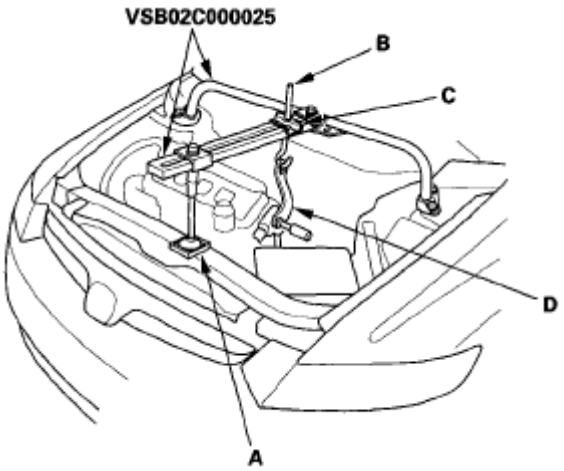


Fig. 20: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Raise the vehicle on the lift to full height.
46. Remove the lower torque rod. M/T

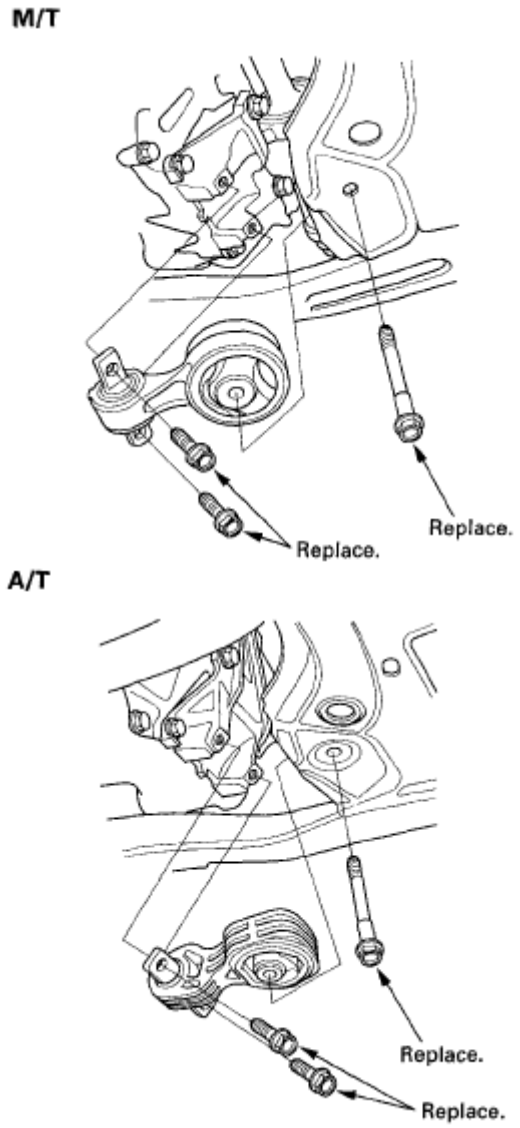


Fig. 21: Identifying Lower Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Note the reference marks (A) on both sides of the front subframe that line up with the body (B).

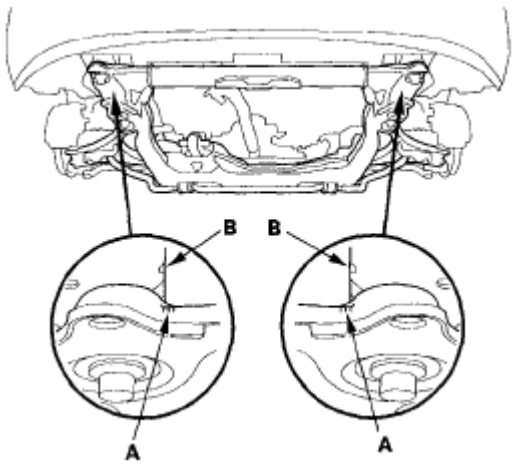


Fig. 22: Identifying Marks On Both Sides Of Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Loosen the front subframe body mount bracket mounting bolts (A) on both sides.

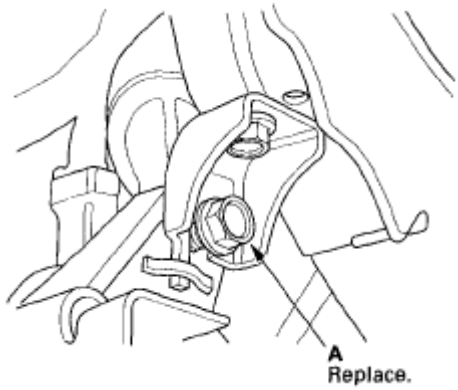


Fig. 23: Identifying Front Subframe Body Bracket Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Attach the front subframe adapter (A) to the front subframe and hang the belt of the front subframe adapter over the front of the subframe, then secure the belt with its stop.

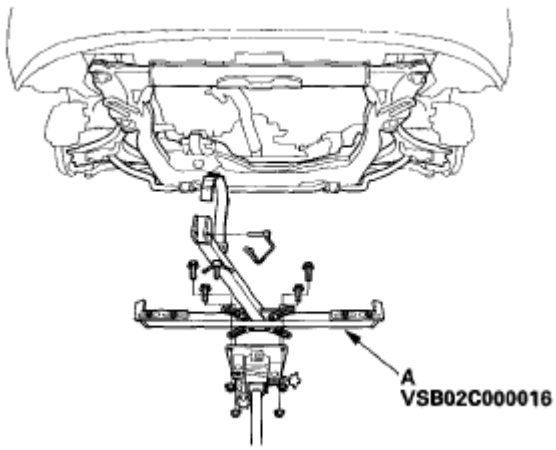


Fig. 24: Identifying Front Subframe Adapter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with bolts securely.
51. Remove the front subframe.

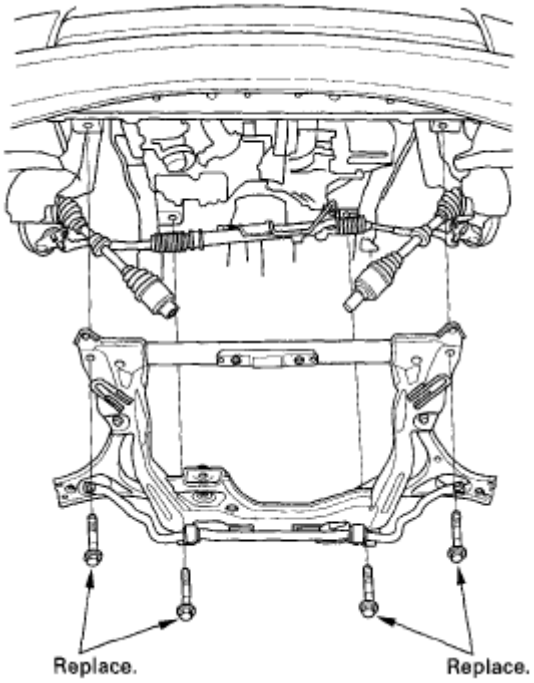


Fig. 25: Identifying Front Subframe Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

52. Lower the vehicle on the lift.
53. Remove the ground cable (A), then install the special tool with a 10 x 1.25 x 20 mm bolt (B).

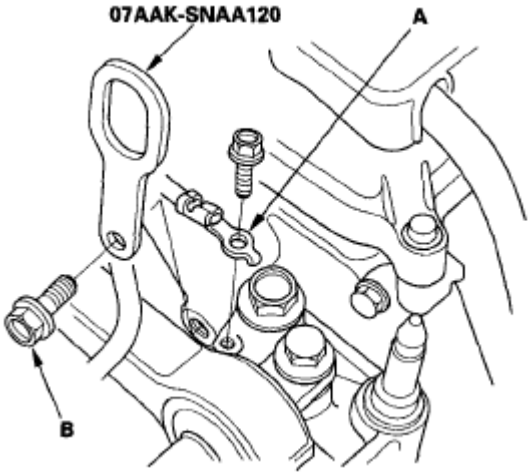


Fig. 26: Identifying Ground Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

54. Attach a chain hoist (A) to the special tool (B) and transmission hook (C). Lift up on the engine/transmission until it's securely supported by the chain hoist, and remove the engine support hanger from the engine and vehicle.

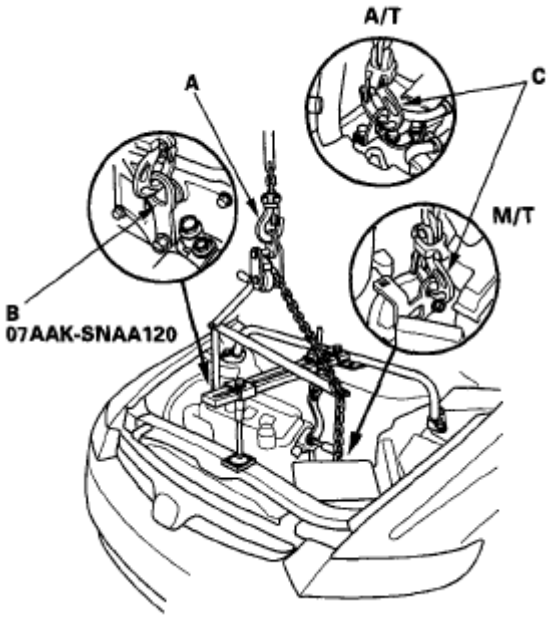


Fig. 27: Lifting Up On Engine/Transmission
Courtesy of AMERICAN HONDA MOTOR CO., INC.

55. Remove the side engine mount bracket mounting bolt and nut.

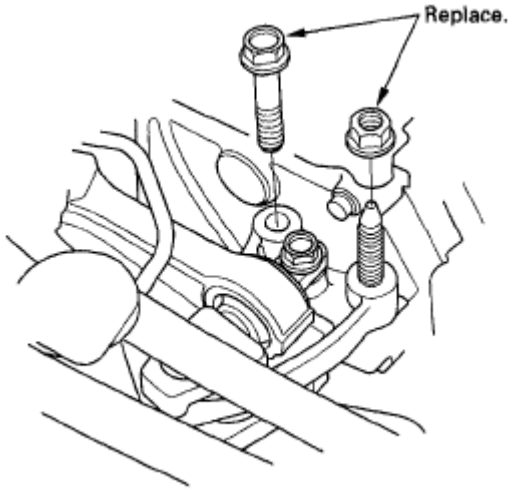


Fig. 28: Identifying Engine Mount Bracket Mounting Bolt And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

56. Remove the transmission mounting bolt and nuts (A).

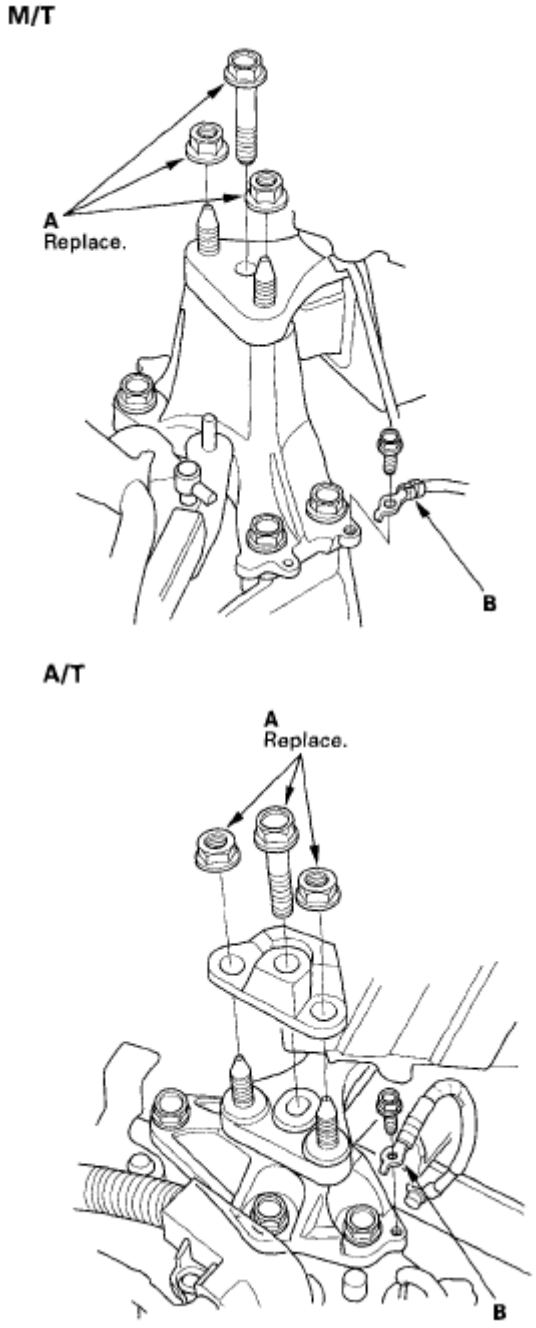


Fig. 29: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

57. Remove the ground cable (B).
58. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.
59. Slowly lower the engine/transmission about 150 mm (6 in.). Check once again that all hoses and electrical wiring are disconnected and free from the engine/transmission, then lower it all the way.
60. Disconnect the chain hoist from the engine/transmission.
61. Raise the vehicle all the way, and remove the engine/transmission from under the vehicle.

ENGINE INSTALLATION

Special Tools Required

- Universal eyelet 07AAK-SNAA120
- 1.8 support eyelet 07AAK-SNAA400
- 1.8 support bolt 07AAK-SNAA500
- Front subframe adapter VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

* : Available through Honda Tool and Equipment Program, 1-888-424-6857

1. Install the accessory brackets and tighten their bolts to the specified torques.

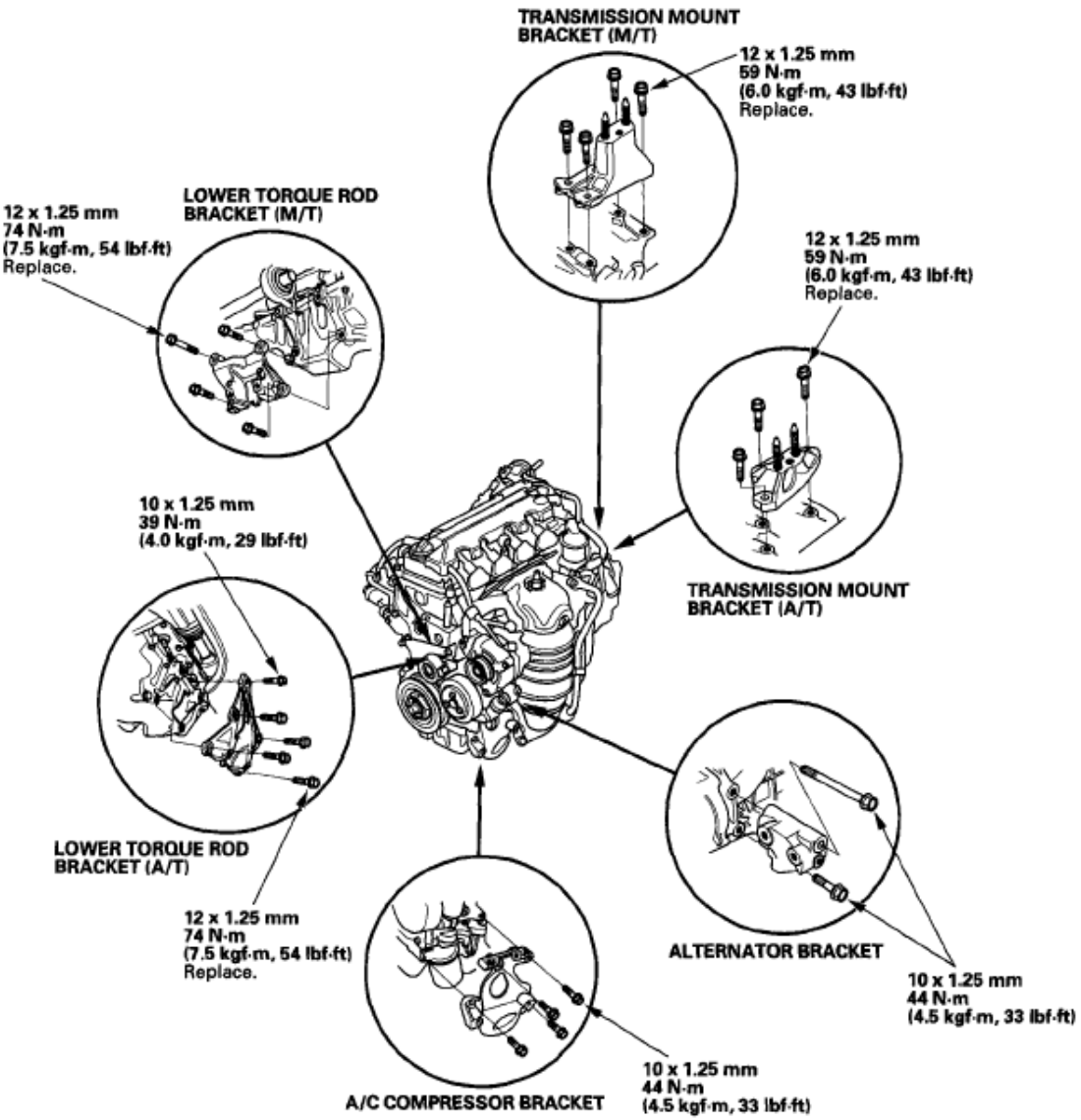


Fig. 30: Identifying Engine Components Location (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Position the engine/transmission under the vehicle. Be sure that they are properly aligned. Carefully

lower the vehicle until the engine and transmission are properly positioned in the engine compartment, Make sure the vehicle is not resting on any part of the engine or transmission. Lift and support the engine with a chain hoist and carefully raise the engine/transmission into place.

NOTE: Reinstall the mounting bolts/support nuts in the sequence given in the following steps. Failure to follow this sequence may cause excessive noise and vibration, and reduce engine mount life.

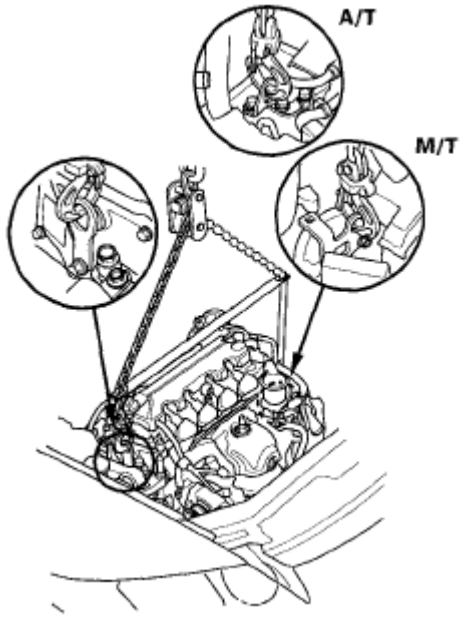


Fig. 31: Lifting Engine With Chain Hoist
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install support eyelet (A) behind the breather pipe (B) and down to the thread hole (C) on the cylinder head.

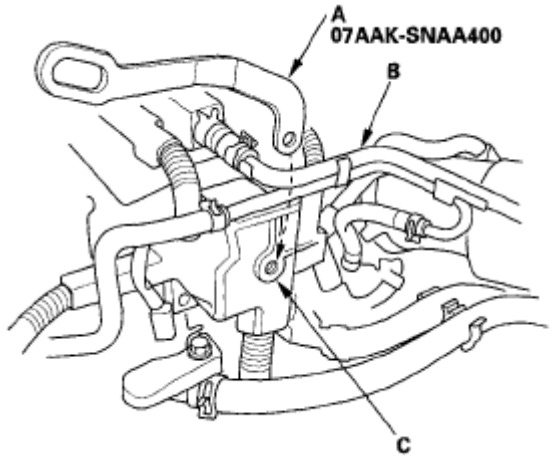


Fig. 32: Identifying Support Eyelet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Attach the support eyelet (A) to the cylinder head with the support bolt (B). Tighten the bolt by hand.

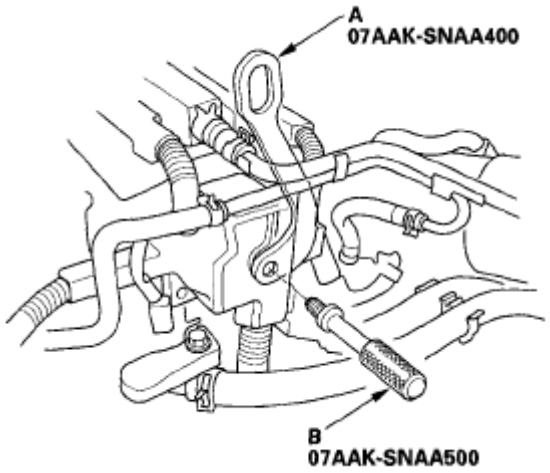


Fig. 33: Identifying Support Eyelet To Cylinder Head With Support Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wing nut by hand to lift and support the engine/transmission.

NOTE: Use care when working around the windshield.

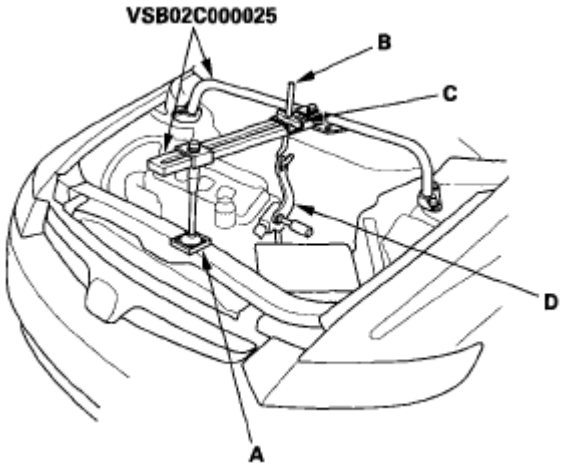


Fig. 34: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Loosen the upper torque rod mounting bolt (A).

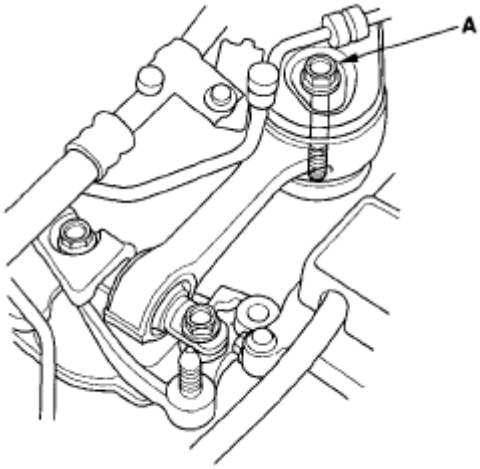


Fig. 35: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Tighten the new side engine mount bracket mounting bolt and nut.

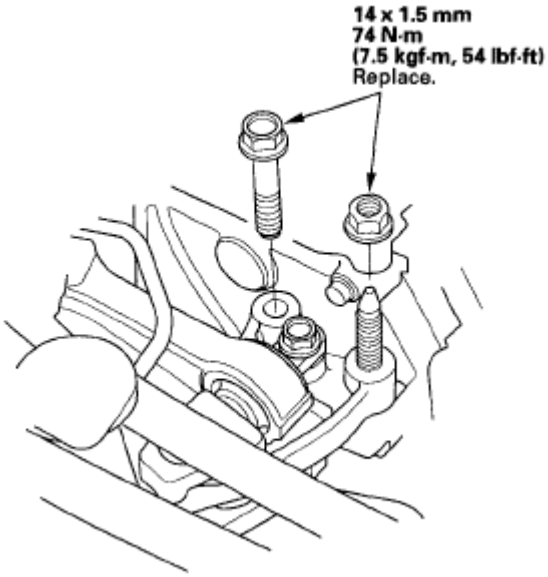


Fig. 36: Identifying Engine Mount Bracket Mounting Bolt And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Tighten the new transmission mounting bolt and nuts (A).

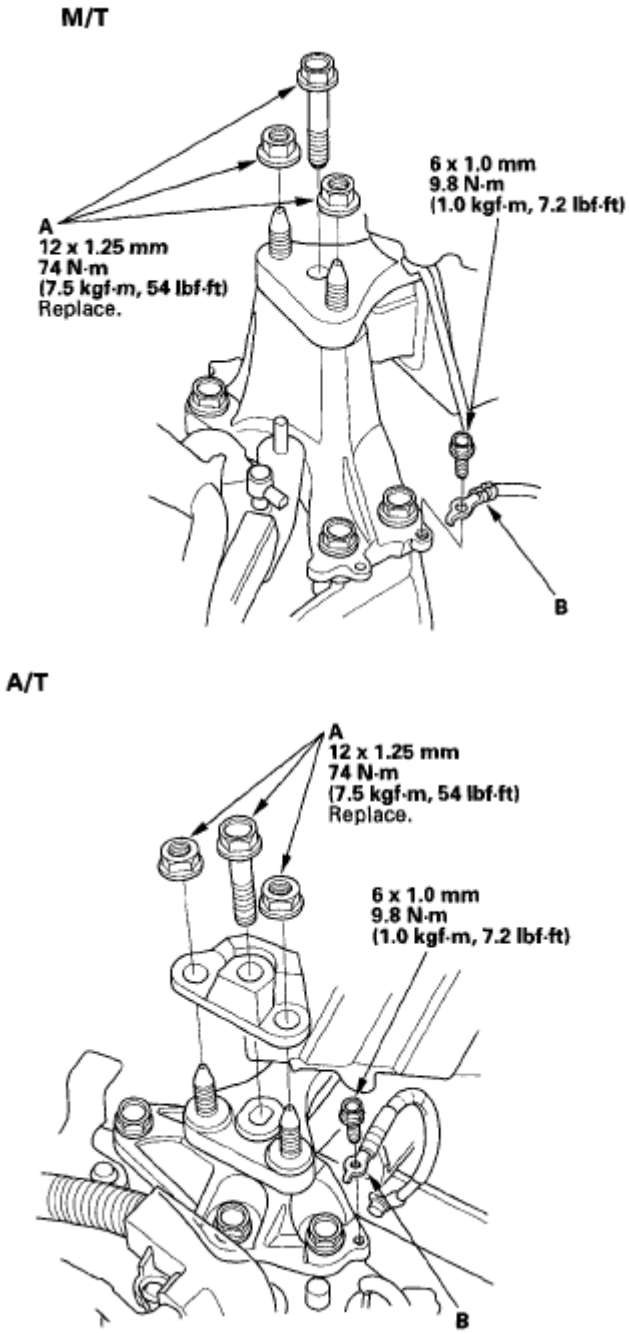


Fig. 37: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the ground cable (B).
10. Remove the chain hoist, then raise the vehicle on the hoist to full height.
11. Using the front subframe adapter (A) and a jack, raise the front subframe up to body.

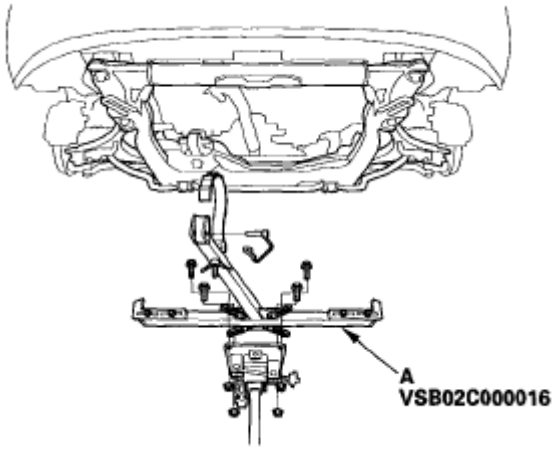


Fig. 38: Identifying Front Subframe Adapter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Loosely install the new front subframe mounting bolts.

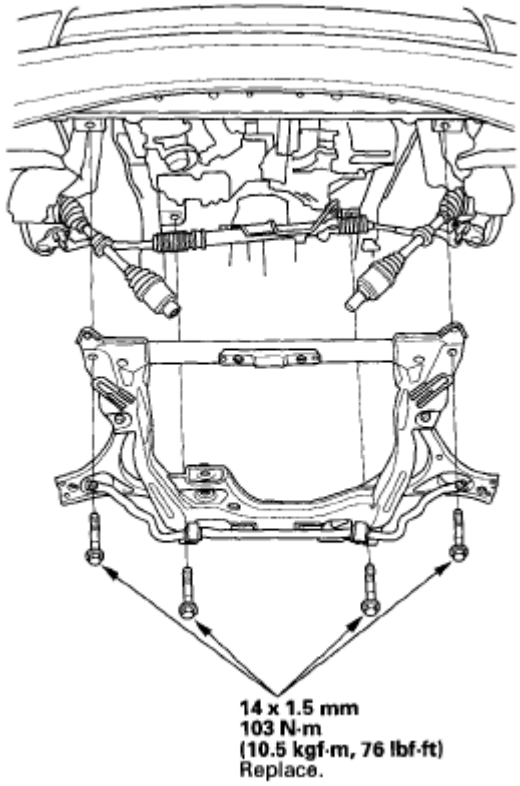


Fig. 39: Identifying Front Subframe Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the subframe mounting bolts to the specified torque.

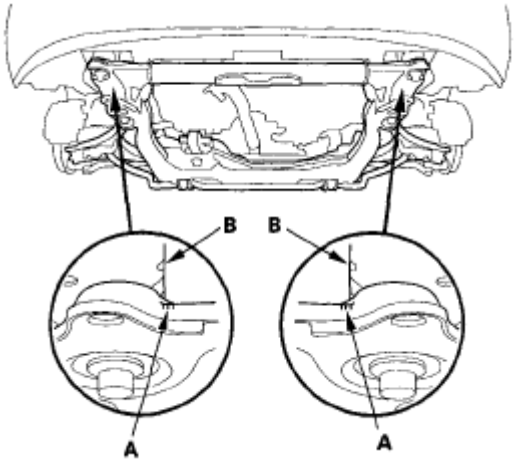


Fig. 40: Identifying Subframe Mark On Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the jack and front subframe adapter.
15. Tighten the new front subframe body mount bracket mounting bolts on both sides.

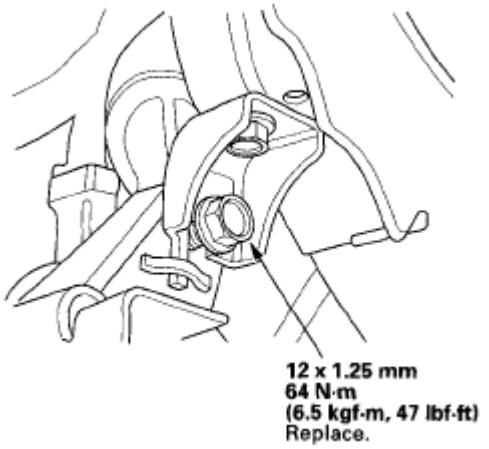
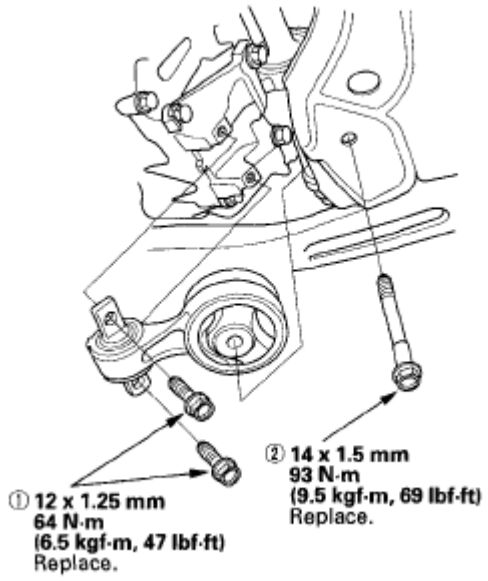


Fig. 41: Identifying Subframe Body Mount Bracket Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.

M/T



A/T

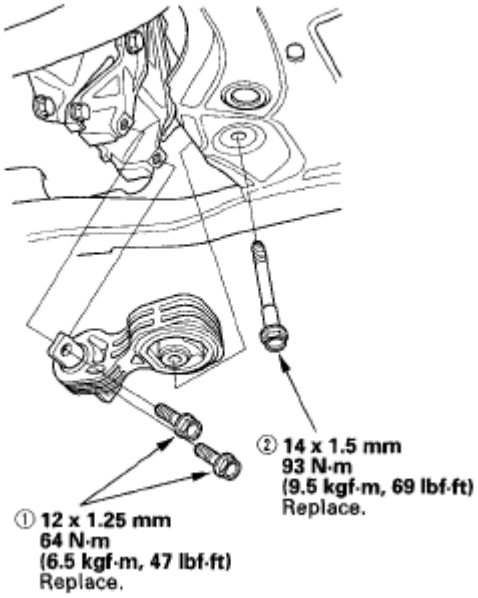


Fig. 42: Identifying Tightening Sequence For Lower Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Lower the vehicle on the lift, and remove the engine hanger, support eyelet, and bolt.
18. Tighten the upper torque rod mounting bolt.

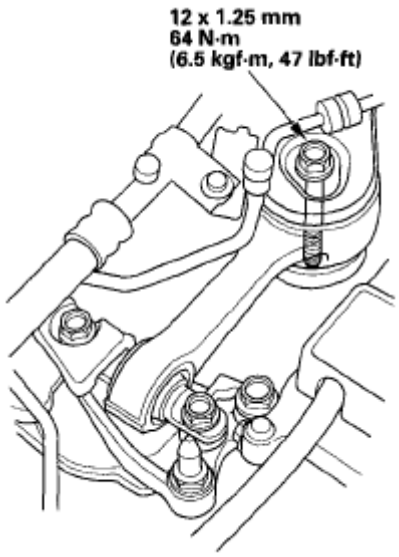


Fig. 43: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the special tool and bolt (A), then install the ground cable (B).

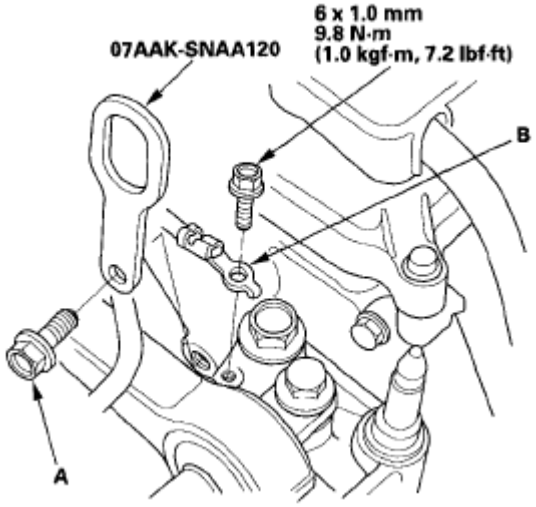


Fig. 44: Identifying Special Tool (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Raise the vehicle on the lift to full height.
21. Install the steering gearbox stiffener (A), then tighten the steering gearbox mounting bolt and stiffener bolt.

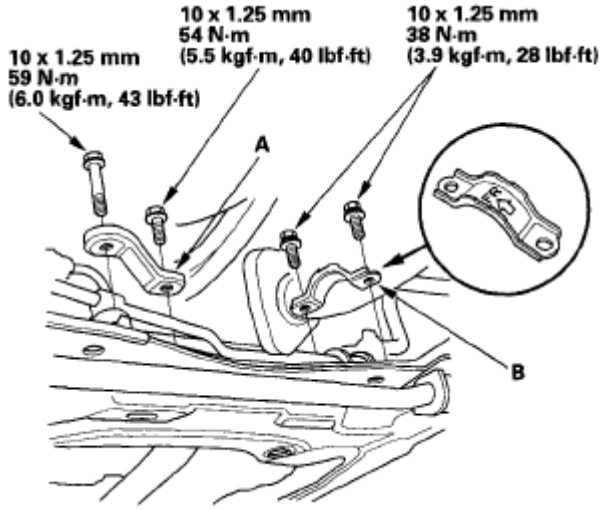


Fig. 45: Identifying Steering Gearbox Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Position the "FR" mark to the front of the vehicle, then install the steering gearbox bracket (B).
23. Install the steering gearbox stiffener (A), then tighten the steering gearbox mounting bolt and stiffener bolt.

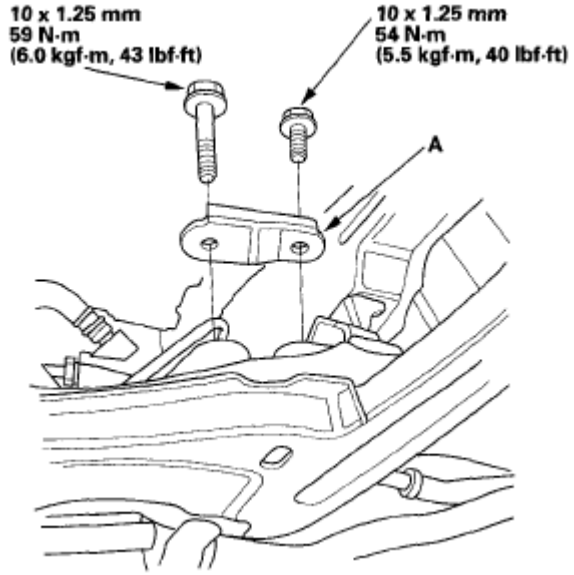


Fig. 46: Identifying Steering Gearbox Mounting And Stiffener Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the power steering (P/S) line on the clamp (A), then install the P/S line brackets (B) on the subframe.

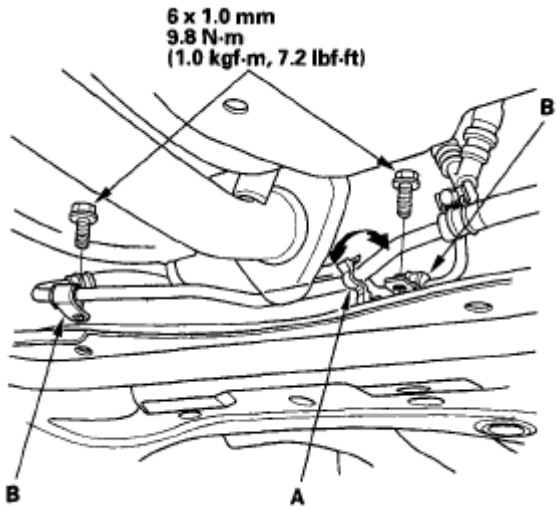


Fig. 47: Identifying P/S Line Brackets (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the P/S pump.

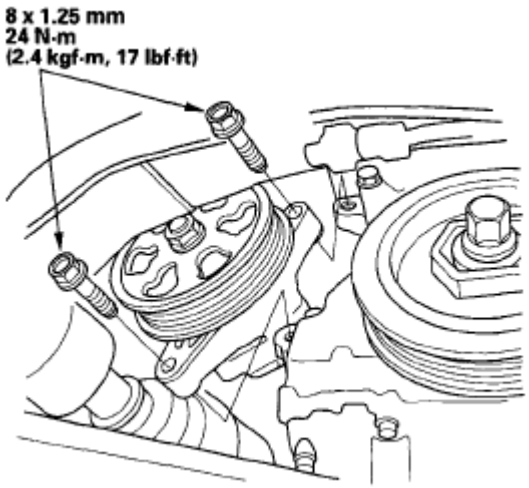


Fig. 48: Identifying P/S Pump Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. A/T model: Install the shift cable (see step 15 on **TRANSMISSION INSTALLATION**).
27. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring "clicks" into place in the differential and intermediate shaft.
28. Connect the lower arms to the knuckles (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
29. Connect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
30. Install exhaust pipe A. Use new gaskets (B) and new self-locking nuts (C).

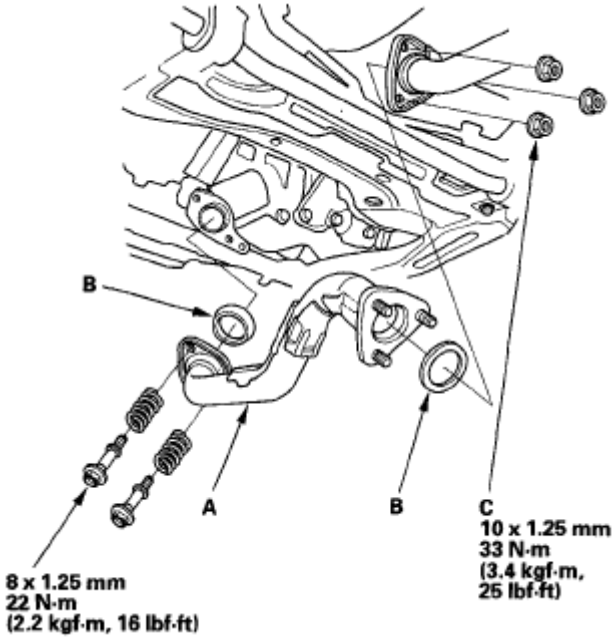


Fig. 49: Identifying Exhaust Pipe And Self-Locking Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Install the splash shield

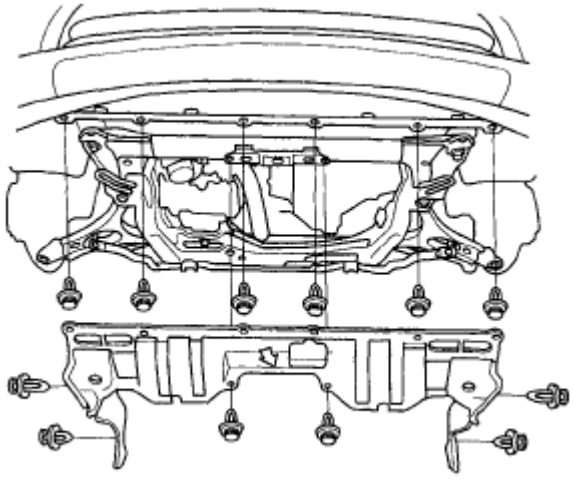


Fig. 50: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Lower the vehicle on the lift.
33. Install the heater hoses.

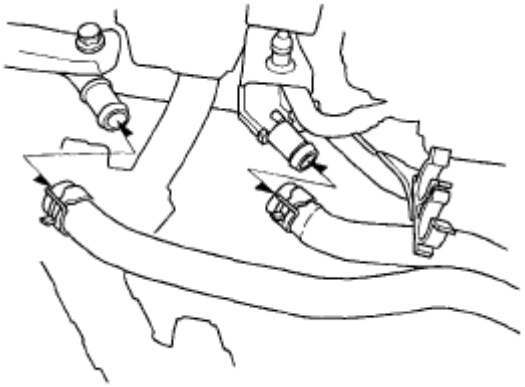


Fig. 51: Identifying Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Install the A/C compressor (A).

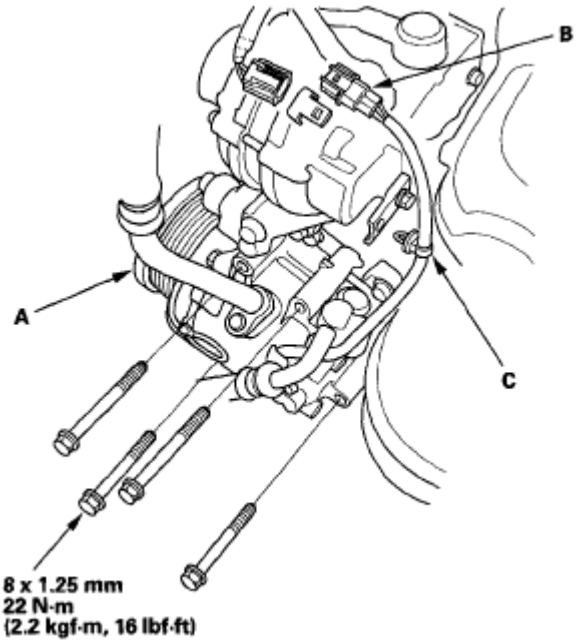


Fig. 52: Identifying A/C Compressor Clutch Connector (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Connect the A/C compressor clutch connector (B), then install the harness clamp (C).
36. Install the drive belt (see **DRIVE BELT REMOVAL/INSTALLATION**).
37. Remove the bulkhead, then install the radiator (see **RADIATOR AND FAN REPLACEMENT**).
38. M/T model: Install the clutch slave cylinder and clutch line bracket mounting bolt (see step 33 on **TRANSMISSION INSTALLATION**).
39. M/T model: Install the shift cable (see step 31 on **TRANSMISSION INSTALLATION**).
40. M/T model: Install the harness holder (A) and harness clamp (B).

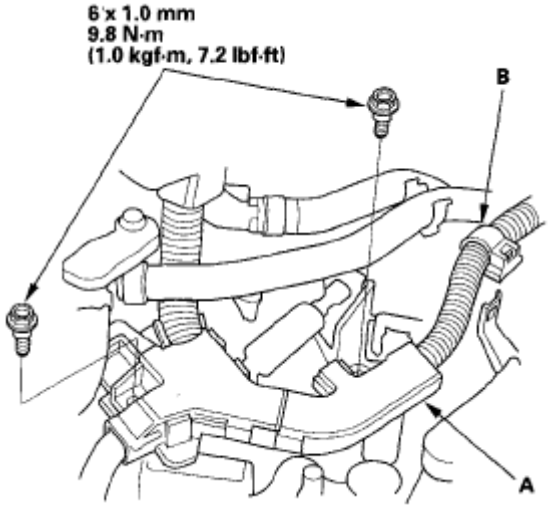


Fig. 53: Identifying Harness Holder And Harness Clamp (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Connect the engine control module (ECM)/powertrain control module (PCM) connectors (A) and engine wire harness connectors (B).

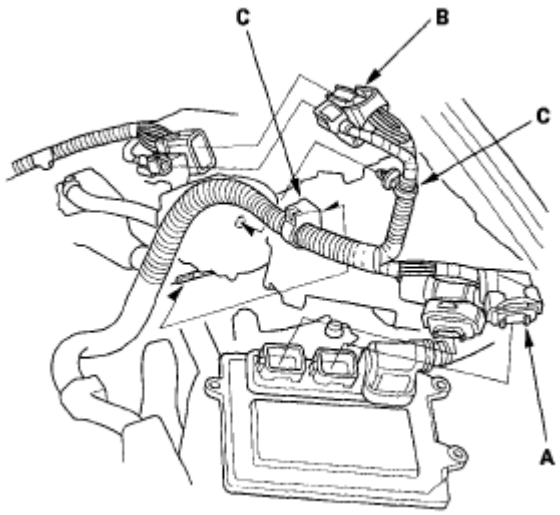


Fig. 54: Identifying Powertrain Control Module (PCM) Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the harness clamps (C).
43. Install the ECM/PCM (A), then install the ECM/PCM cover (B).

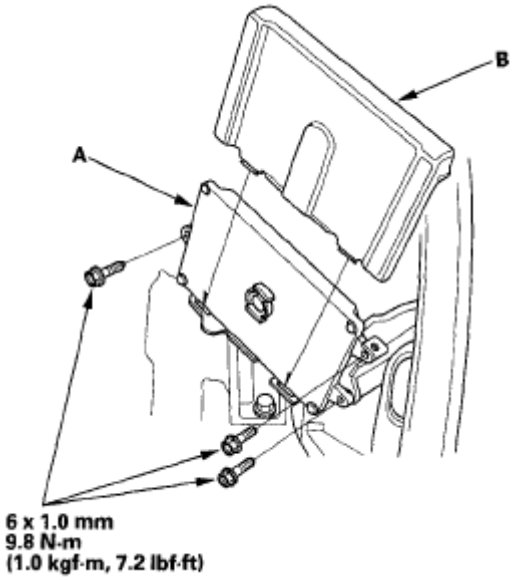


Fig. 55: Identifying ECM/PCM Cover And Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

44. Install the battery cables (A) to the under-hood fuse/relay box.

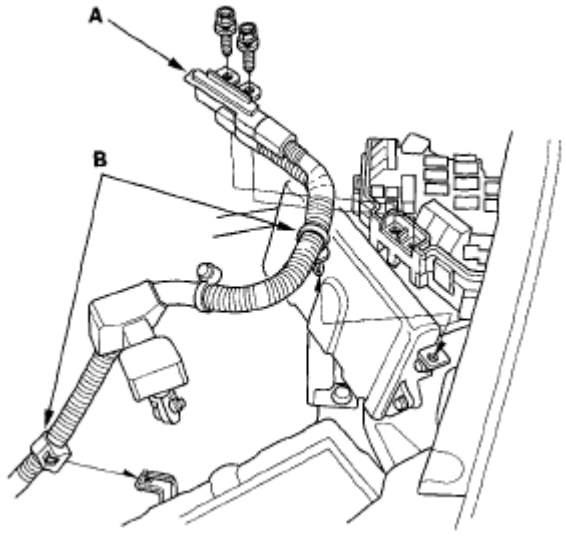


Fig. 56: Identifying Battery Cables And Harness Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Install the harness clamps (B).
46. Install the evaporative emission (EVAP) canister hose (A), the brake booster vacuum hose (B), and the power steering (P/S) hose clamp (C).

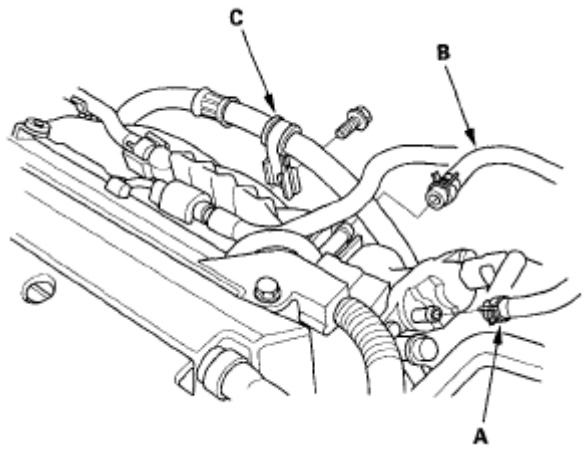


Fig. 57: Identifying Brake Booster Vacuum Hose And Power Steering (P/S) Hose Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (A).

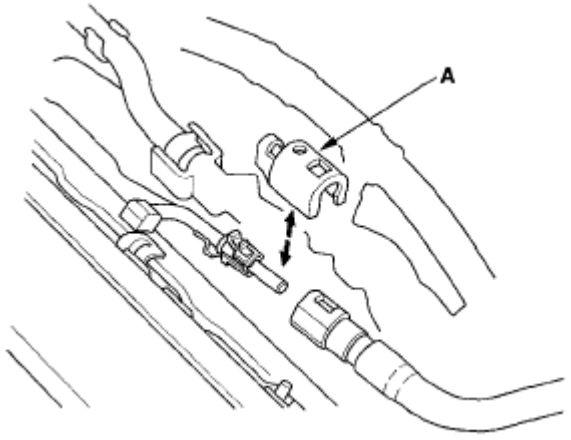


Fig. 58: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Install the injector cover.

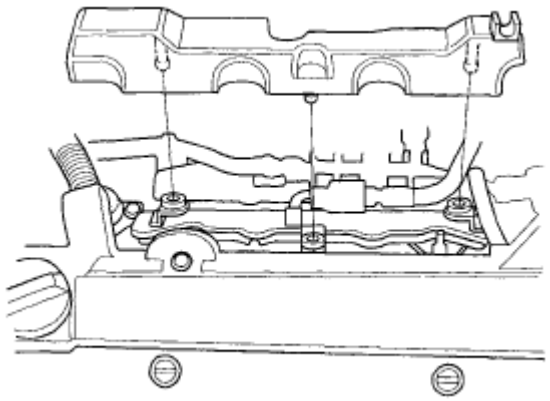


Fig. 59: Identifying Injector Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Install the under-cowl panel and cowl cover (see **FRONT GRILLE COVER REPLACEMENT**).
50. Install the air cleaner housing mounting bracket (A) on the cylinder head.

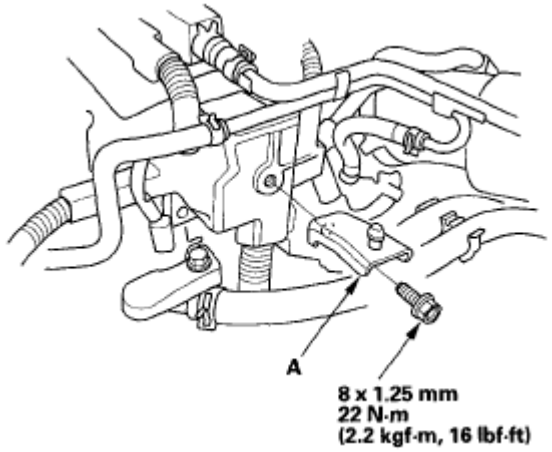


Fig. 60: Identifying Air Cleaner Housing Mounting Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

51. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
52. Install the front wheels.
53. Install the battery. Clean the battery posts and cable terminals, then assemble them, and apply grease to prevent corrosion.
54. Inspect for fuel leaks: Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
55. A/T model: Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
56. M/T model: Check that the transmission shifts into gear smoothly.
57. Refill the engine with engine oil (see step 4 on **ENGINE OIL REPLACEMENT**).
58. Refill the transmission with fluid:
    - Manual transmission (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**)
    - Automatic transmission (see step 5 on **ATF REPLACEMENT**)
59. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on **COOLANT REPLACEMENT**).
60. Do the ECM/PCM reset procedure (see **ECM/PCM RESET**).
61. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **ECM/PCM RESET**).
62. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
63. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).
64. Check the wheel alignment (see **WHEEL ALIGNMENT**).
65. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.

66. Set the clock (on vehicles without navigation).

SIDE ENGINE MOUNT REPLACEMENT

1. Support the engine with a jack and a wood block under the oil pan.
2. Remove the bolt (A) securing the A/C line, then remove the upper torque rod (B).

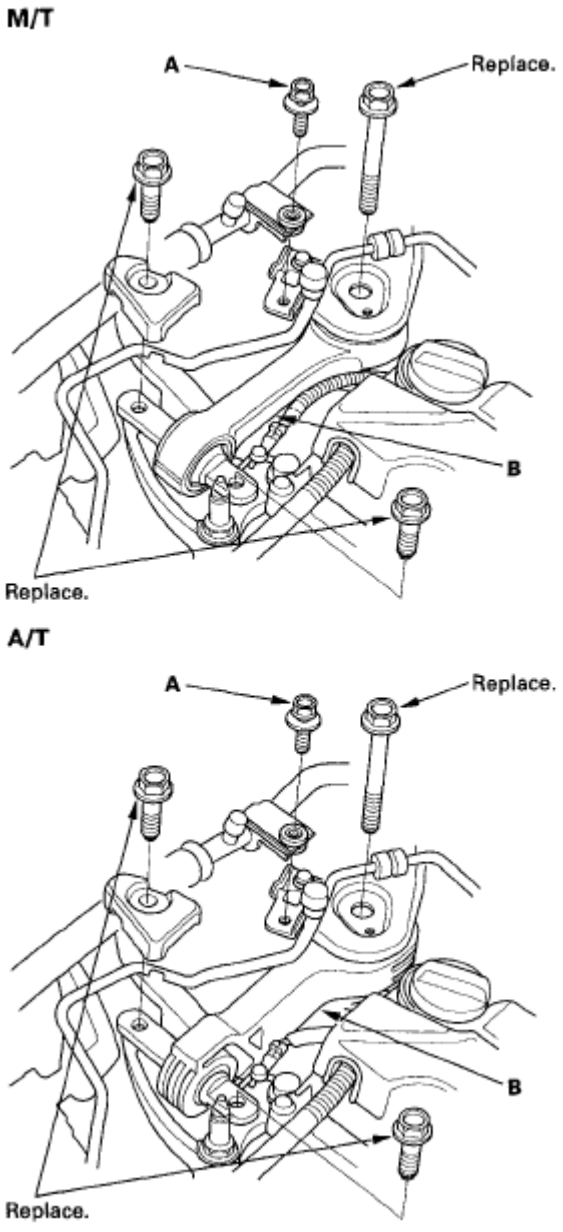


Fig. 61: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground cable (A), then remove the side engine mount bracket (B).

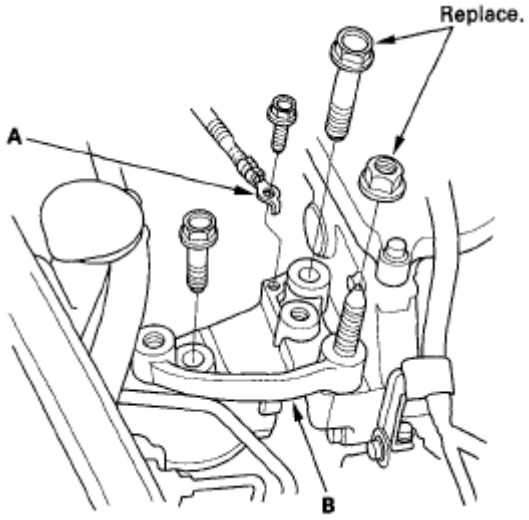


Fig. 62: Identifying Ground Cable And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the side engine mount stiffener (A), then remove the side engine mount (B).

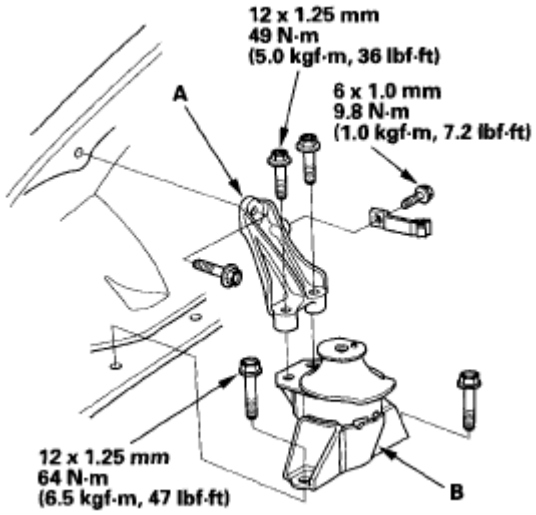


Fig. 63: Identifying Side Engine Mount Stiffener And Side Engine Mount (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the side engine mount, then install the side engine mount stiffener.
6. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B). Loosely tighten the bolt (C).

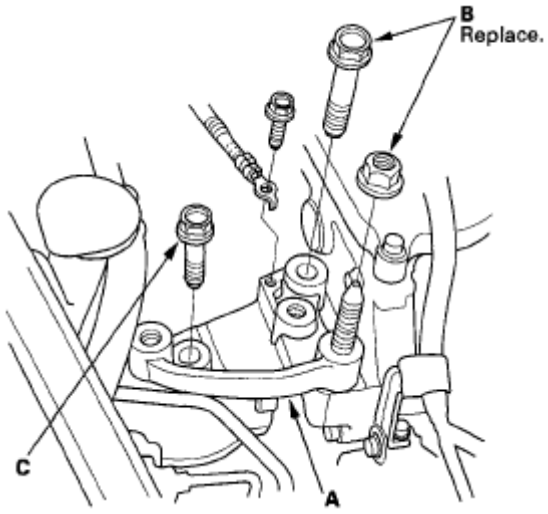
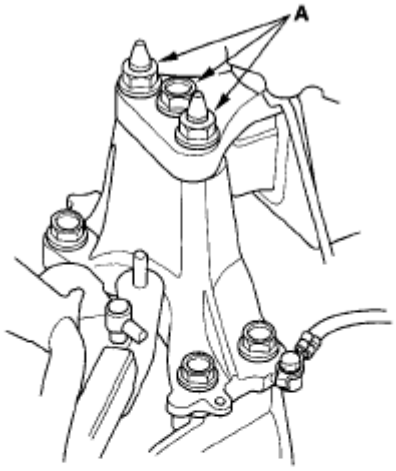


Fig. 64: Identifying Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the ground cable.
8. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
9. Loosen the transmission mounting bolt and nuts (A).

M/T



A/T

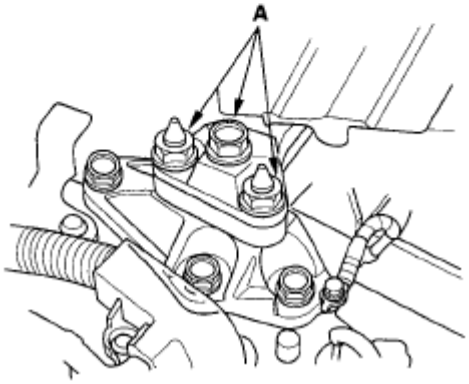


Fig. 65: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Raise the vehicle on the lift to full height.
11. Loosen the lower torque rod mounting bolt (A).

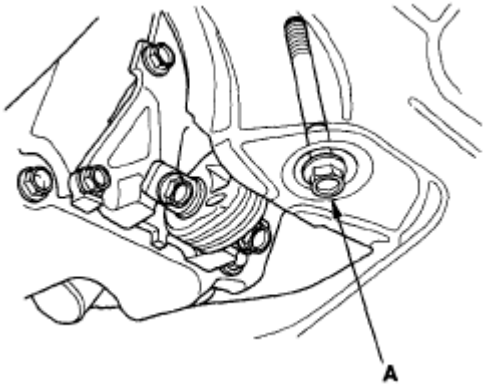


Fig. 66: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Lower the vehicle on the lift.
13. Tighten the side engine mount mounting bolts and nut.

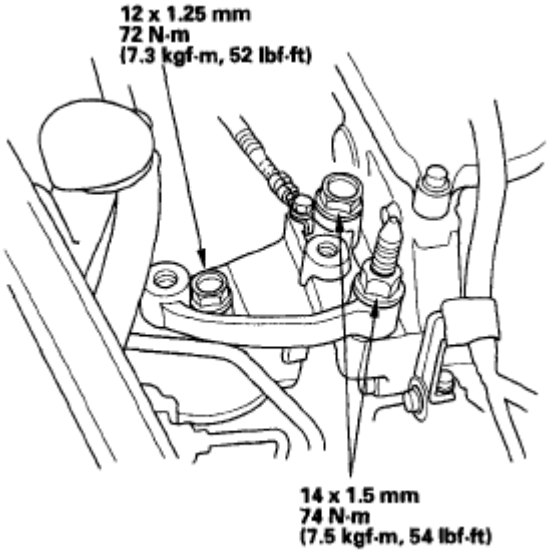
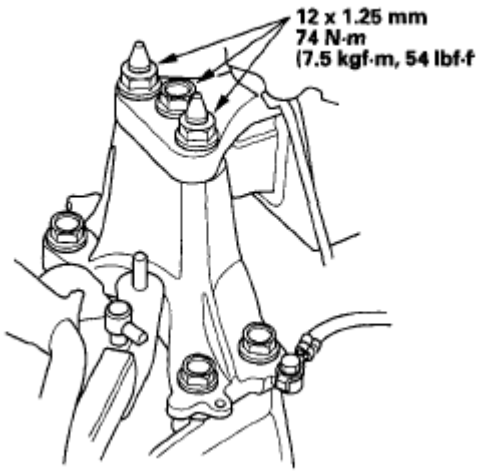


Fig. 67: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Tighten the transmission mounting bolt and nuts.

M/T



A/T

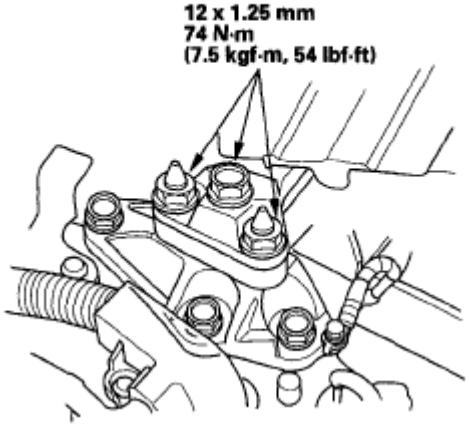


Fig. 68: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Raise the vehicle on the lift to full height.
16. Tighten the lower torque rod mounting bolt.

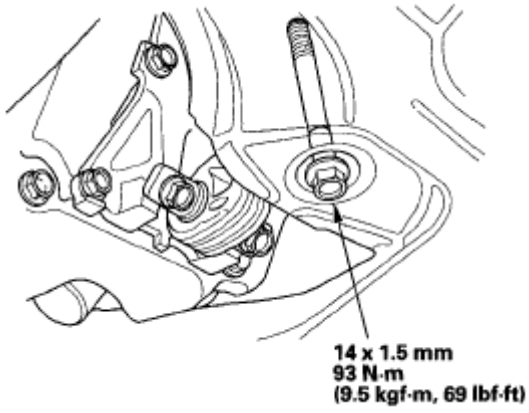


Fig. 69: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Lower the vehicle on the lift.
18. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
19. Install the upper torque rod (A), then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

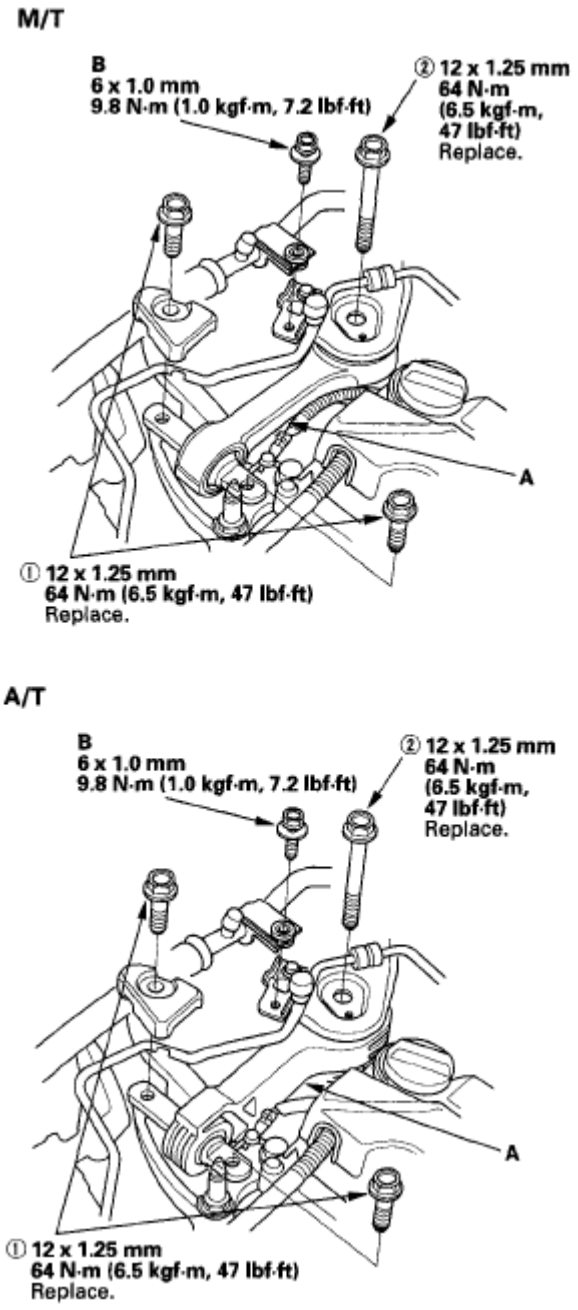


Fig. 70: Identifying Tightening Sequence For Upper Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the bolt (B) securing the A/C line.

TRANSMISSION MOUNT REPLACEMENT

1. Loosen the upper torque rod mounting bolt (A).

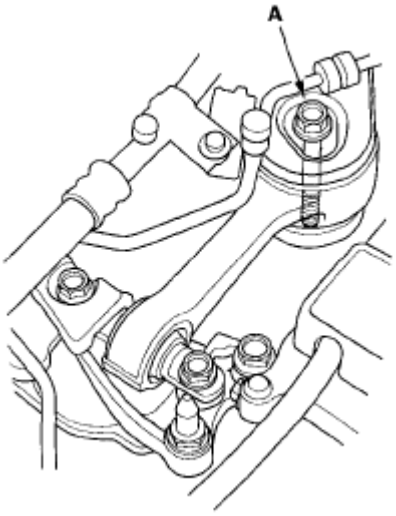


Fig. 71: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the engine control module (ECM)/ powertrain control module (PCM) cover, then remove the three bolts securing the ECM/PCM.
4. Remove the ECM/PCM bracket.
5. Remove the under-hood fuse/relay box from the bracket.
6. Support the transmission with a jack and a wood block under the transmission.
7. Remove the transmission mount stiffener (A), then remove the transmission mount (B).

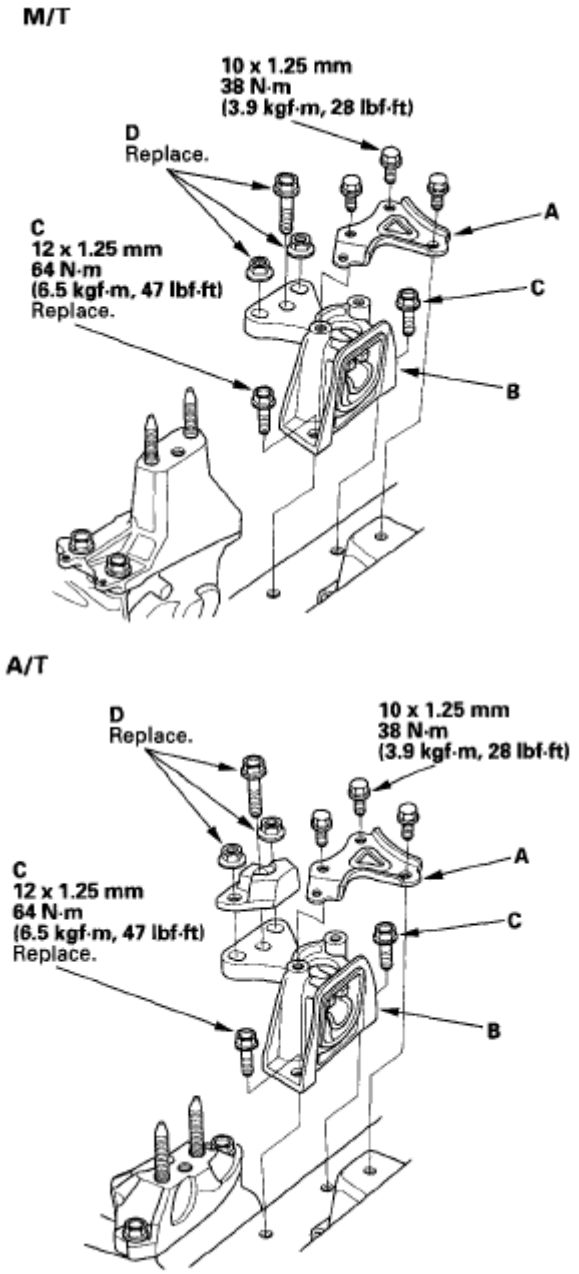


Fig. 72: Identifying Transmission Mount Stiffener And Transmission Mount (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the transmission mount with the new mounting bolts (C), then install the transmission mount stiffener.
9. Loosely tighten the new bolt and nuts (D).
10. Raise the vehicle on the lift to full height.
11. Loosen the lower torque rod mounting bolt (A).

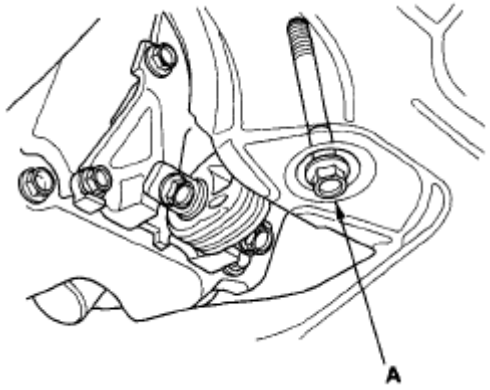


Fig. 73: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Lower the vehicle on the lift.
13. Tighten the transmission mounting bolt and nuts.

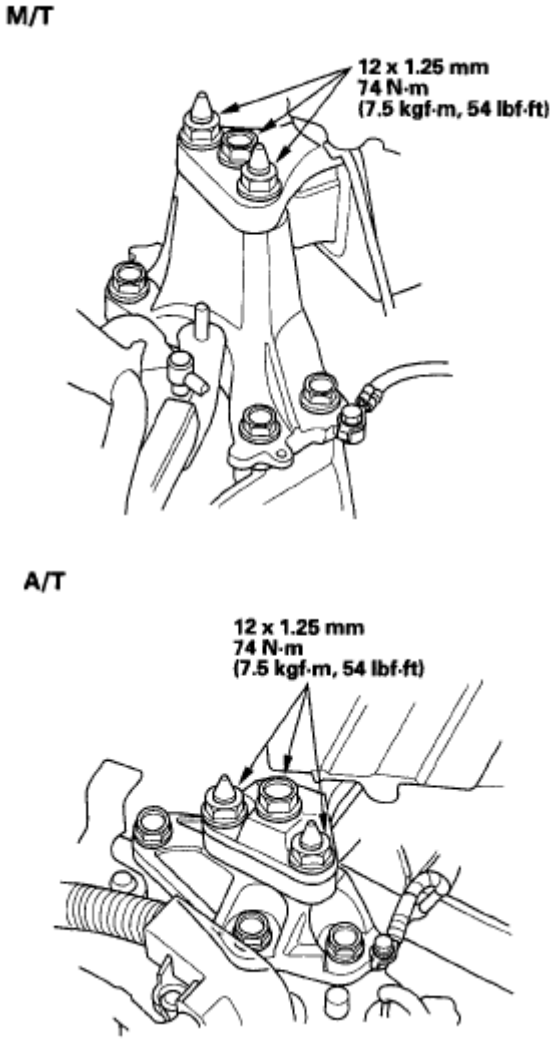


Fig. 74: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Raise the vehicle on the lift to full height.
15. Tighten the lower torque rod mounting bolt.

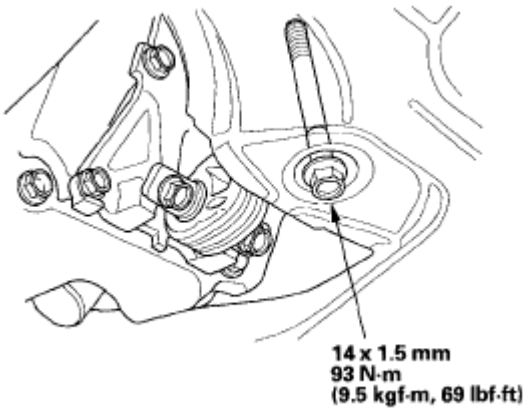


Fig. 75: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Lower the vehicle on the lift.
17. Tighten the upper torque rod mounting bolt.

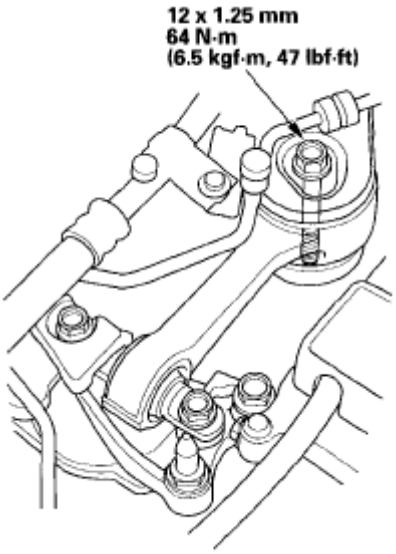


Fig. 76: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the under-hood fuse/relay box to the bracket.
19. Install the ECM/PCM bracket.
20. Install the ECM/PCM, then install the ECM/PCM cover.
21. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).

LOWER TORQUE ROD REPLACEMENT

1. Loosen the upper torque rod mounting bolt (A).

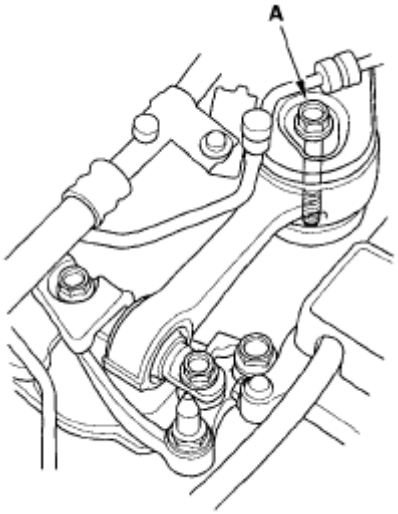
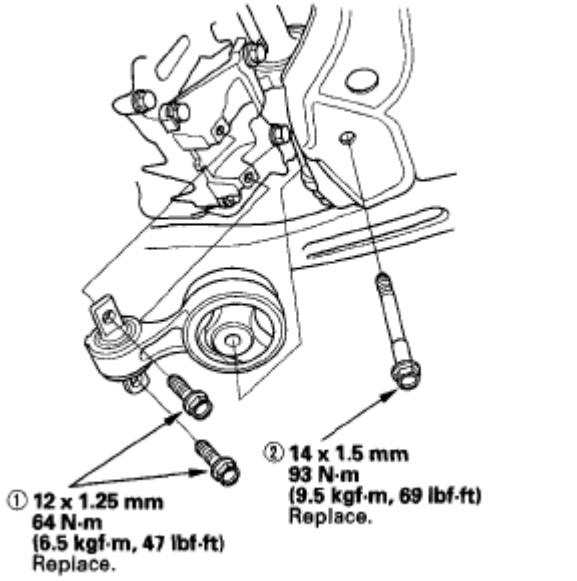


Fig. 77: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Raise the vehicle on the lift to full height.
3. Remove the lower torque rod. M/T

M/T



A/T

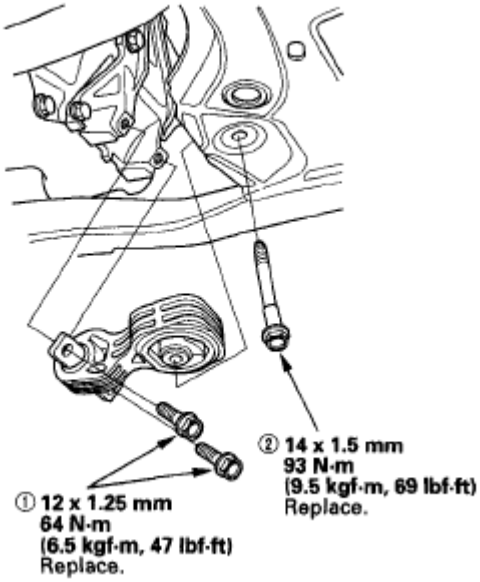


Fig. 78: Identifying Lower Torque Rod (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.
5. Lower the vehicle on the lift.
6. Tighten the upper torque rod mounting bolt.

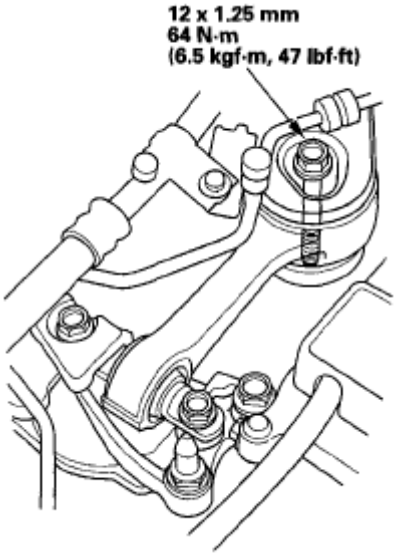


Fig. 79: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

UPPER TORQUE ROD REPLACEMENT

1. Remove the bolt (A) securing the A/C line, then remove the upper torque rod (B).

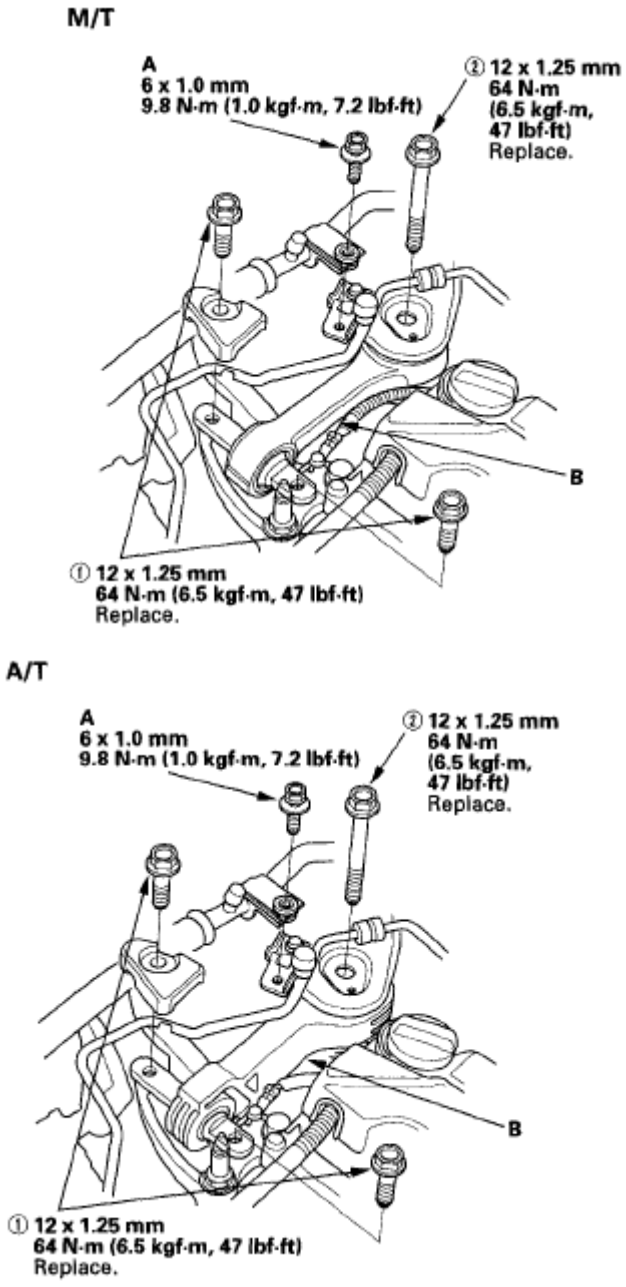


Fig. 80: Identifying Upper Torque Rod (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the upper torque rod, then tighten the new bolts in the numbered sequence shown.

SIDE ENGINE MOUNT BRACKET REPLACEMENT

1. Support the engine with a jack and a wood block under the oil pan.
2. Remove the bolt (A) securing the A/C line, then remove the upper torque rod (B).

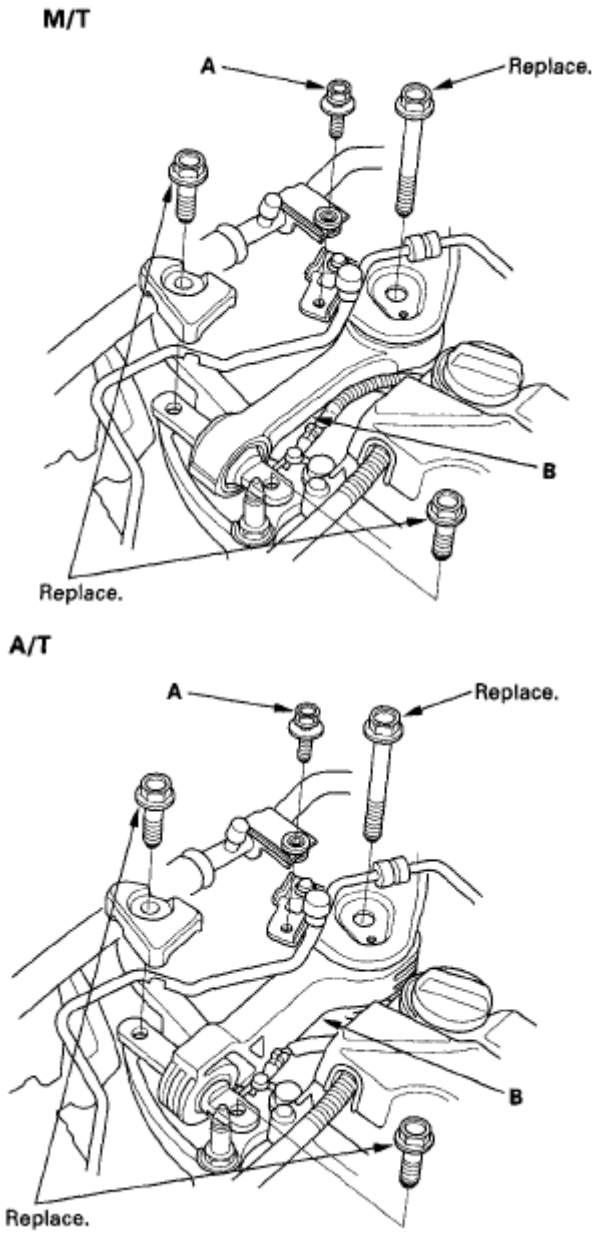


Fig. 81: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground cable (A), then remove the side engine mount bracket (B).

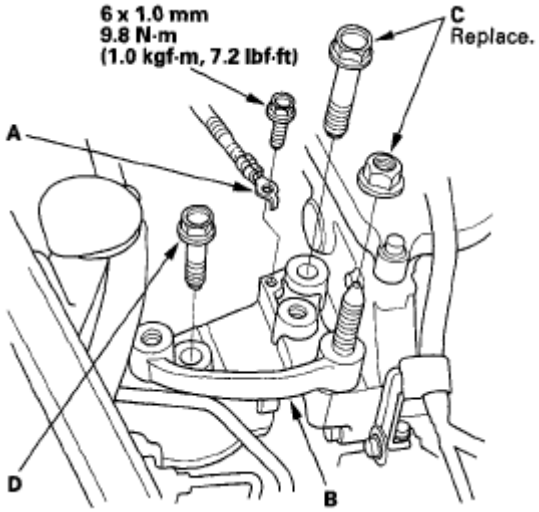
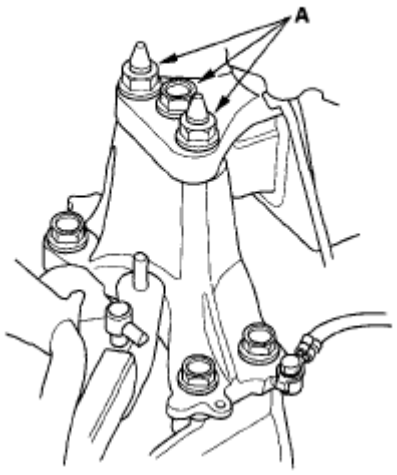


Fig. 82: Identifying Side Engine Mount Bracket And Ground Cable (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the side engine mount bracket, then loosely tighten the new bolt and nut (C), and loosely tighten the bolt (D).
5. Install the ground cable.
6. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
7. Loosen the transmission mounting bolt and nuts (A).

M/T



A/T

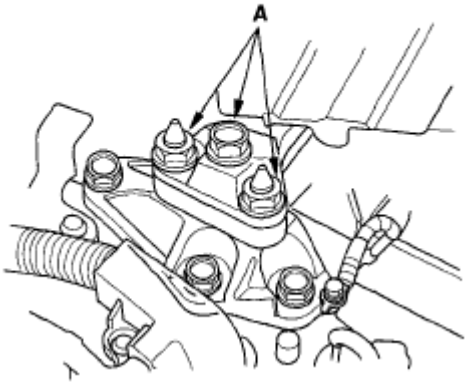


Fig. 83: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Raise the vehicle on the lift to full height.
9. Loosen the lower torque rod mounting bolt (A).

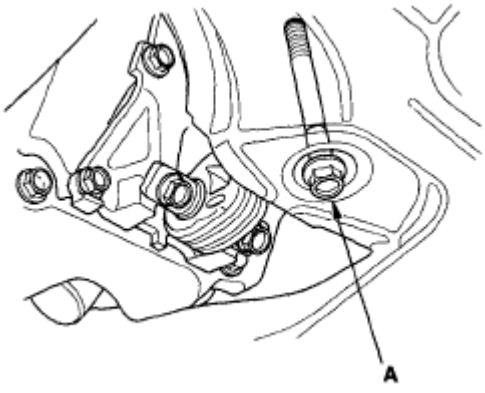


Fig. 84: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Lower the vehicle on the lift.

11. Tighten the side engine mount mounting bolts and nut.

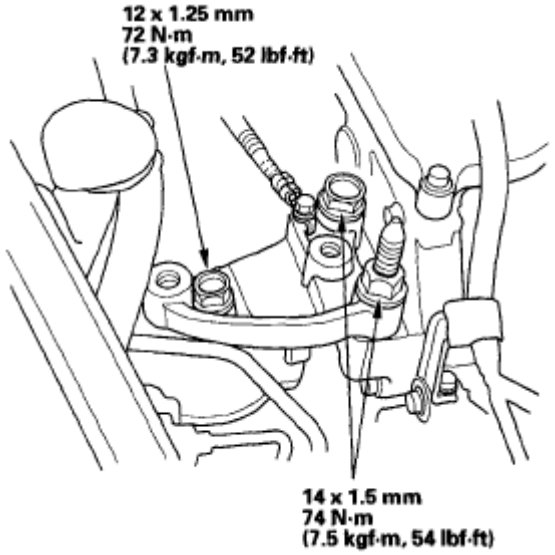


Fig. 85: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Tighten the transmission mounting bolt and nuts.

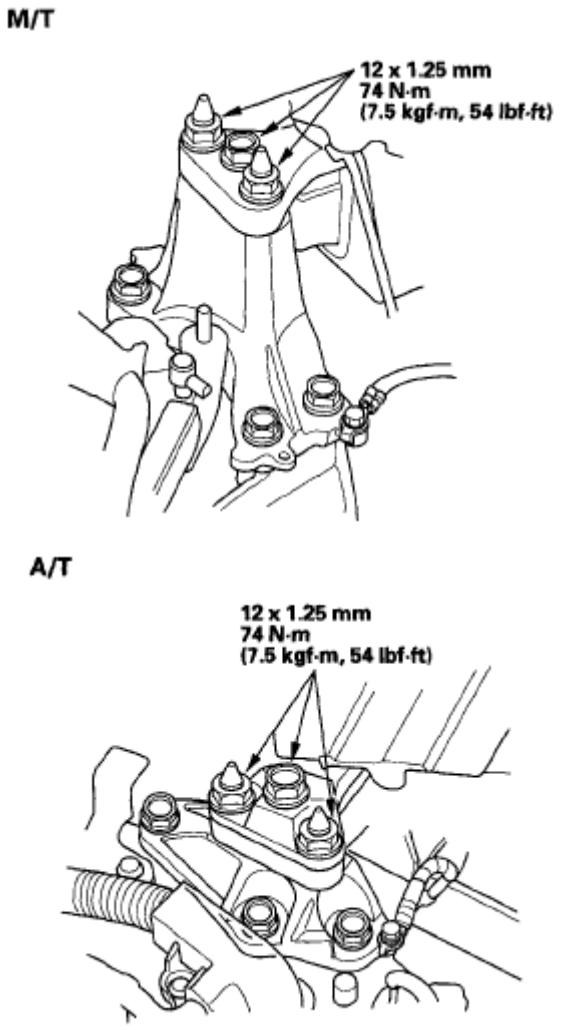


Fig. 86: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Raise the vehicle on the lift to full height.
14. Tighten the lower torque rod mounting bolt.

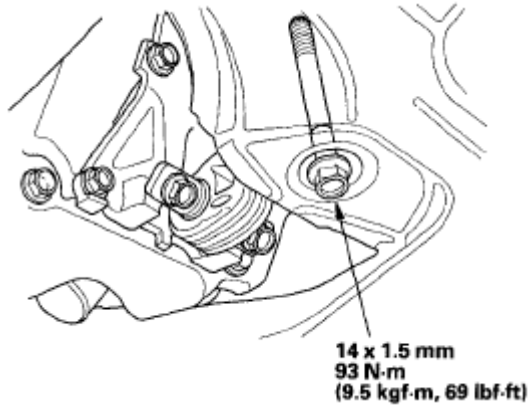


Fig. 87: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Lower the vehicle on the lift.
16. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
17. Install the upper torque rod (A), then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

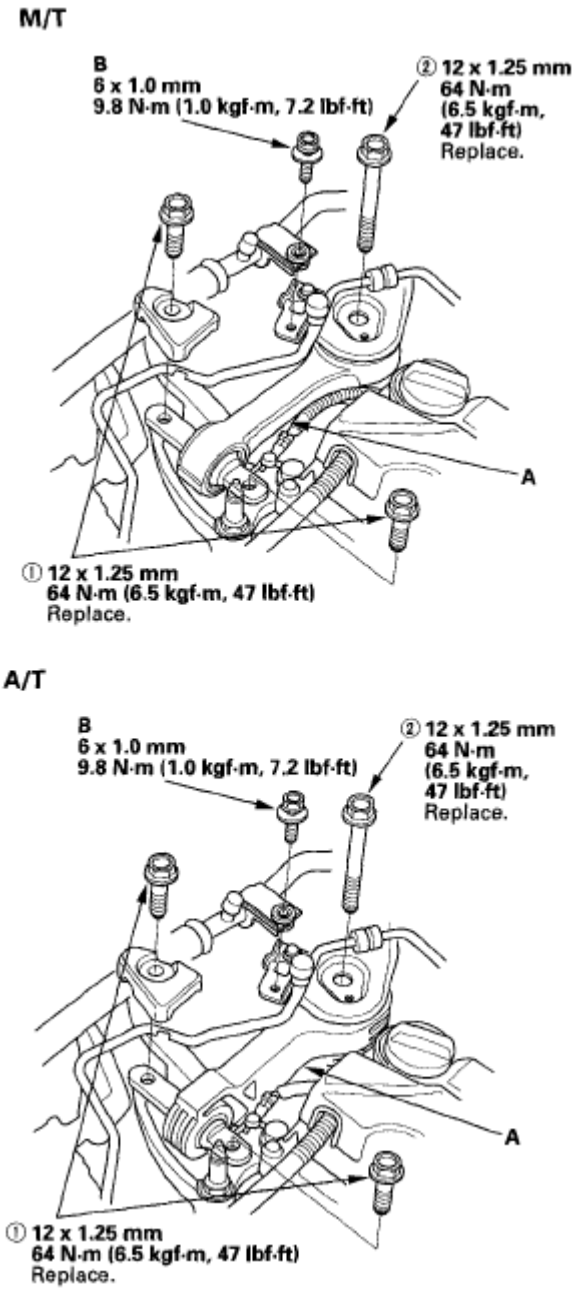


Fig. 88: Identifying Tightening Sequence For Upper Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the bolt (B) securing the A/C line.

ENGINE ASSEMBLY (K20Z3)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAK-SNAA120	Engine Hanger Plate	1

①

Fig. 89: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE REMOVAL

Special Tools Required

- Engine hanger plate 07AAK-SNAA120
- Engine hanger adapter VSB02C000015 *
- Front subframe adapter VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

* : Available through Honda Tool and Equipment Program, 1-888-424-6857

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **To avoid damaging the wiring and terminals, unplug the wiring connectors carefully while holding the connector portion.**
- **Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.**

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Secure the hood in the wide open position (support rod in the lower hole).

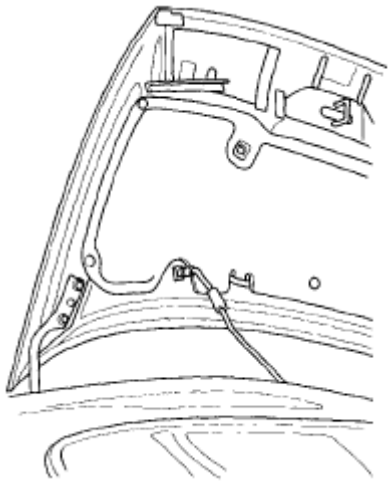


Fig. 90: Identifying Support Rod In Lower Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
4. Disconnect the negative cable from the battery first, then disconnect the positive cable.
5. Remove the battery.
6. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
7. Remove the under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
8. Disconnect the connector (A), and remove the harness clamp (B), then remove the resonator (C).

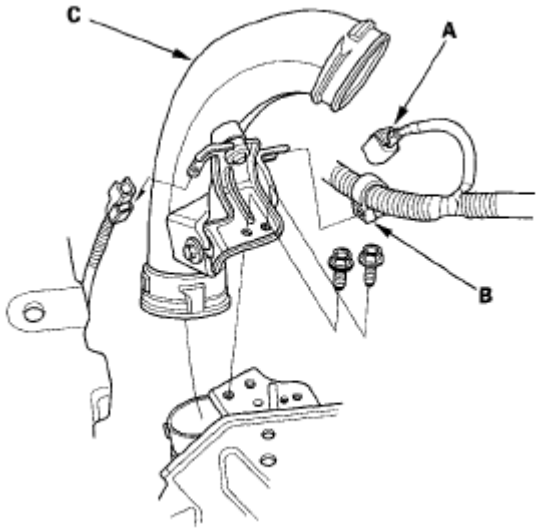


Fig. 91: Identifying Connector And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the battery cables (A) from the under-hood fuse/relay box.

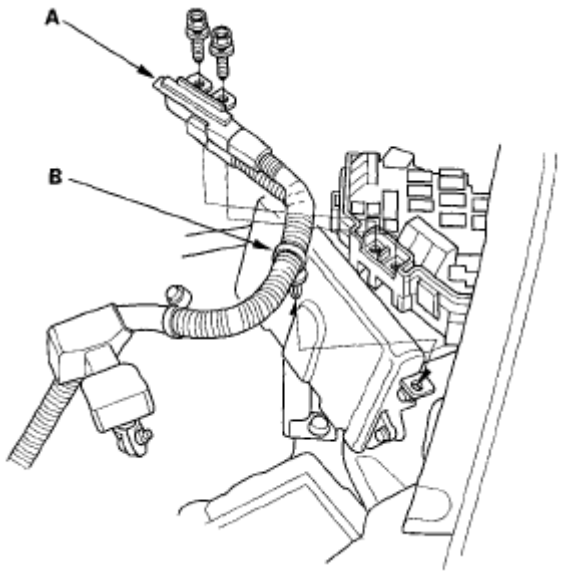


Fig. 92: Identifying Battery Cables And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the harness clamp (B).
11. Remove the engine control module (ECM) cover (A), then remove the three bolts (B) securing the ECM.

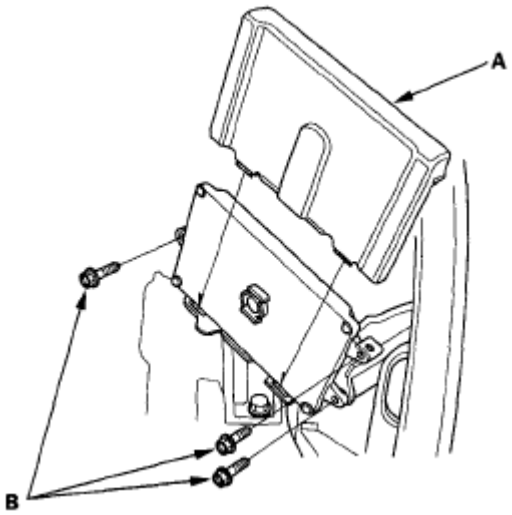


Fig. 93: Identifying Engine Control Module (ECM) Cover And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Disconnect the ECM connectors (A) and the engine wire harness connector (B).

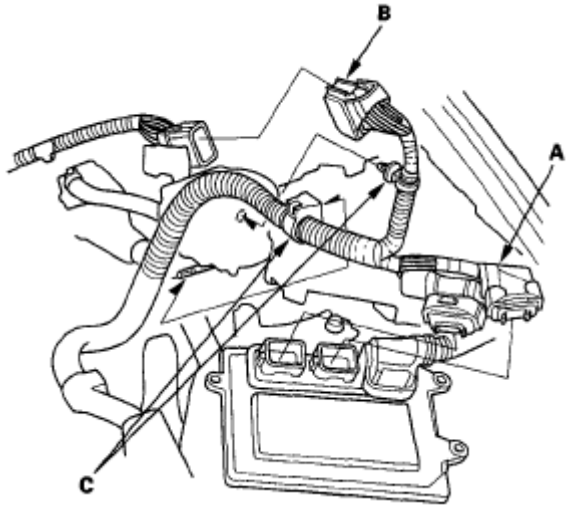


Fig. 94: Identifying ECM Connectors And Engine Wire Harness Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the harness clamps (C).
14. Remove the engine cover.

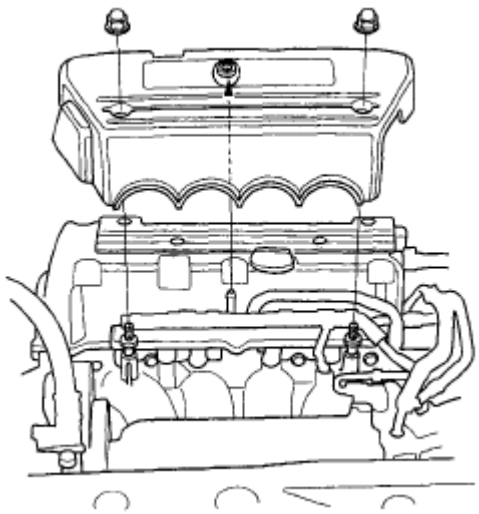


Fig. 95: Identifying Engine Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

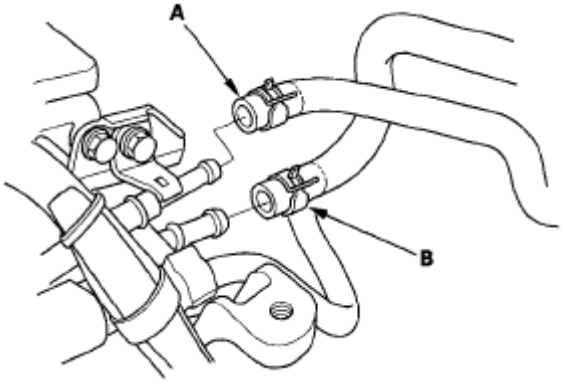


Fig. 96: Identifying Evaporative Emission (EVAP) Canister Hose And Brake Booster Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING REMOVAL**).

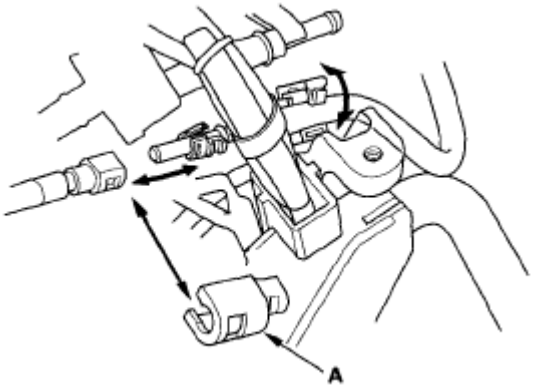


Fig. 97: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the shift cable (see step 9 on **TRANSMISSION REMOVAL**).
18. Remove the clutch slave cylinder, and clutch line bracket mounting bolt (see step 7 on **TRANSMISSION REMOVAL**).
19. Remove the air cleaner housing bracket.

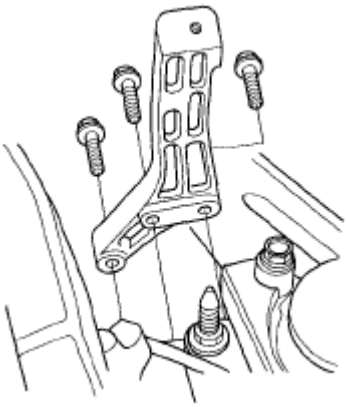


Fig. 98: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the drive belt (see **DRIVE BELT INSPECTION**).
21. Remove the radiator cap.
22. Raise the vehicle on the lift to full height.
23. Remove the front wheels.
24. Remove the splash shield.

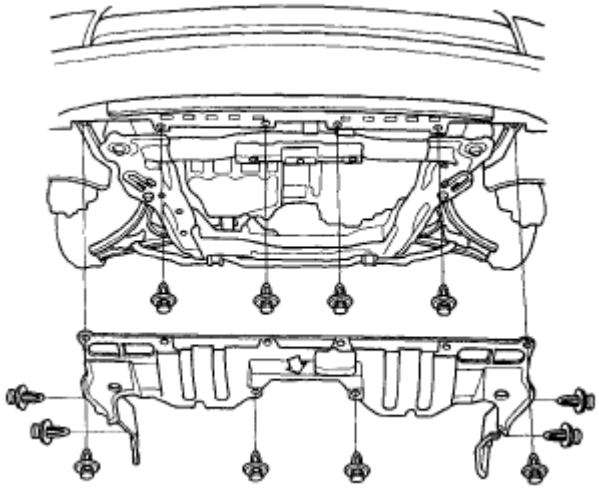


Fig. 99: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Loosen the drain plug in the radiator, and drain the engine coolant (see **COOLANT CHECK**).
26. Drain the engine oil (see **OIL PRESSURE TEST**).
27. Drain the transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
28. Disconnect the air fuel ratio (A/F) sensor connector (A).

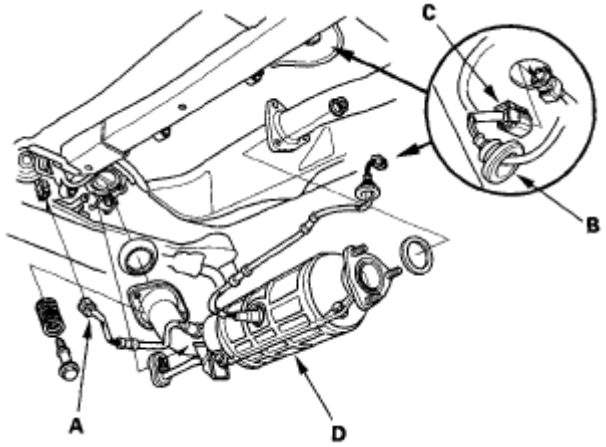


Fig. 100: Identifying (Secondary HO2S) Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Remove the grommet (B), then disconnect the secondary heated oxygen sensor (secondary HO2S) connector (C).
30. Remove the three way catalytic converter (TWO (D).
31. Separate the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
32. Separate the knuckles from the lower arms (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
33. Remove the driveshafts (see step 8 on **DRIVESHAFT REMOVAL**). Coat all precision-finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.
34. Remove the steering gearbox bracket (A).

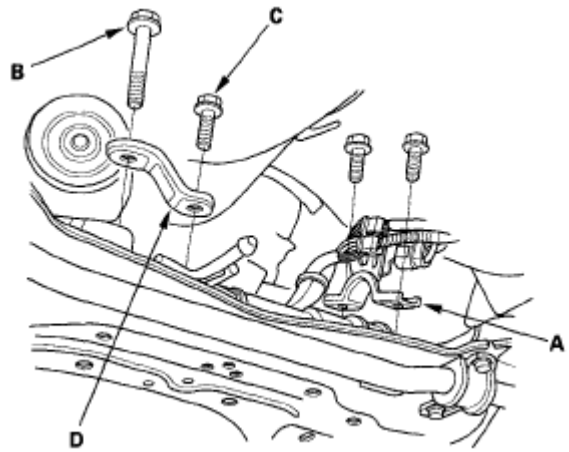


Fig. 101: Identifying Steering Gearbox Bracket And Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Remove the steering gearbox mounting bolt (B), stiffener mounting bolt (C), and stiffener (D).
36. Remove the steering gearbox mounting bolt (A), stiffener mounting bolt (B), and stiffener (C).

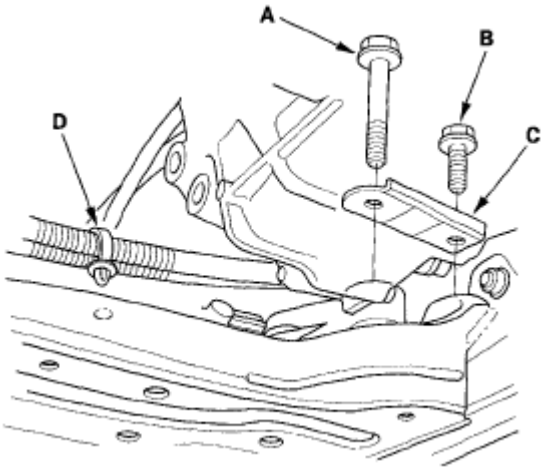


Fig. 102: Identifying Stiffener Mounting Bolt And Stiffener
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Remove the harness clamp (D) from the subframe.
38. Disconnect the A/C compressor clutch connector (A), then remove the A/C compressor (B) without

disconnecting the A/C hoses.

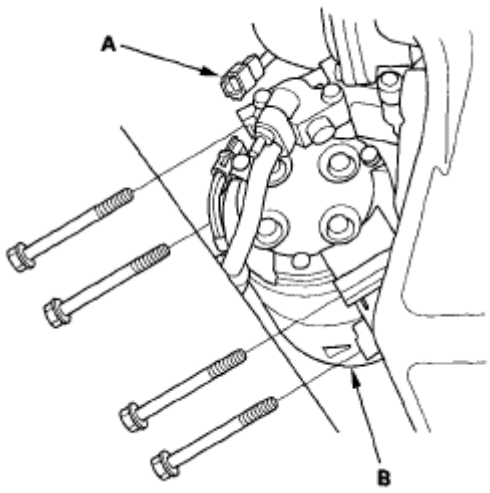


Fig. 103: Identifying A/C Compressor Clutch Connector And A/C Compressor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Lower the vehicle on the lift.
40. Remove the radiator (see **RADIATOR AND FAN REPLACEMENT**).
41. Remove the heater hoses.

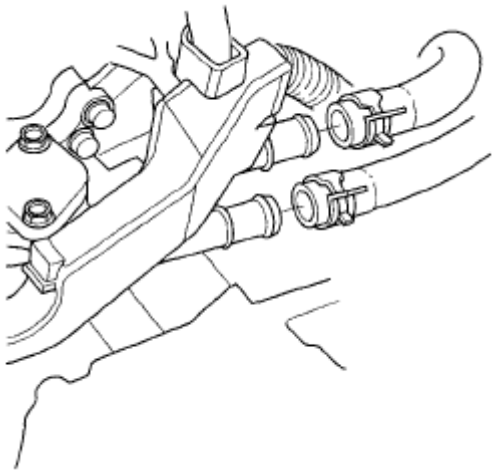


Fig. 104: Identifying Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the bulkhead, and tighten the mounting bolts to 9.8 N.m (1.0 kgf.m, 7.2 lbf.ft).
43. Attach the special tool to the threaded hole in the cylinder head.

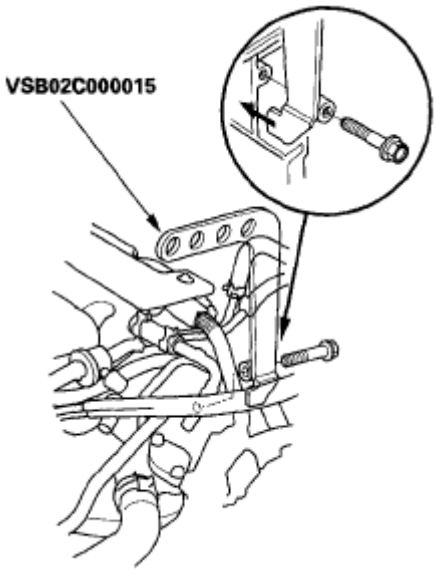


Fig. 105: Identifying Special Tool To Threaded Hole In Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

44. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission.

NOTE: Be careful when working around the windshield.

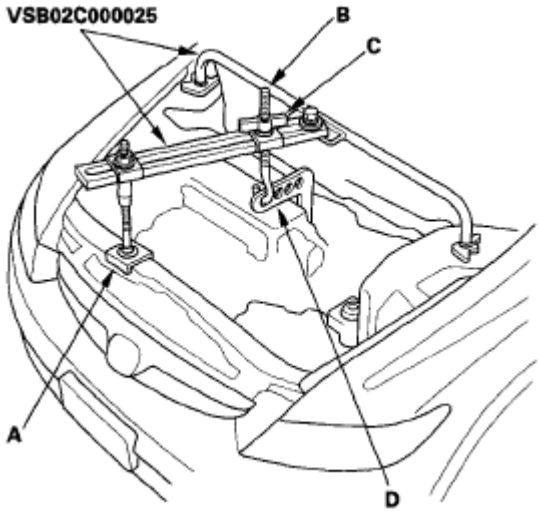


Fig. 106: Identifying Engine Support Hanger
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Raise the vehicle on the lift to full height.
46. Remove the lower torque rod.

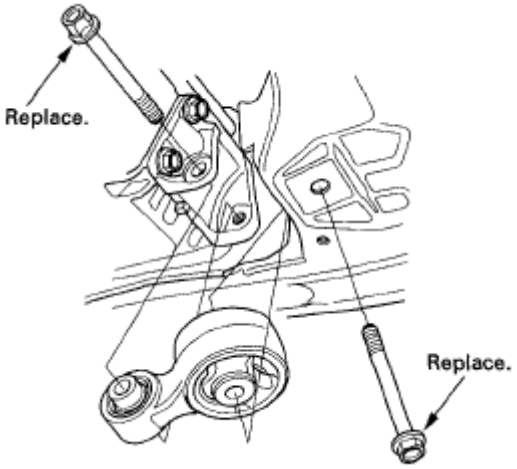


Fig. 107: Identifying Lower Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Remove lower radiator hose from the clamp (A), then remove the front mount mounting bolt (B).

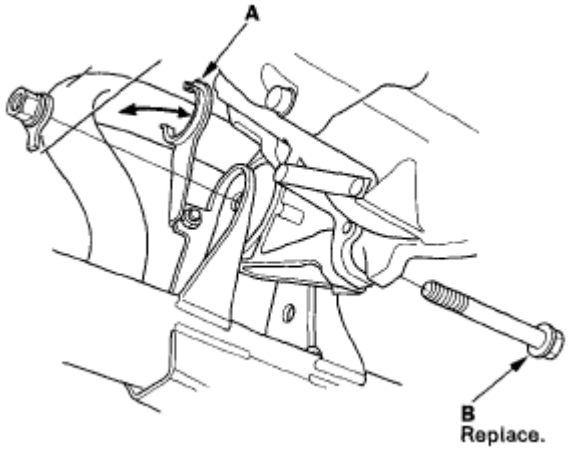


Fig. 108: Identifying Lower Radiator Hose Clamp And Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Note the reference marks (A) on both sides of the front subframe that line up with the body (B).

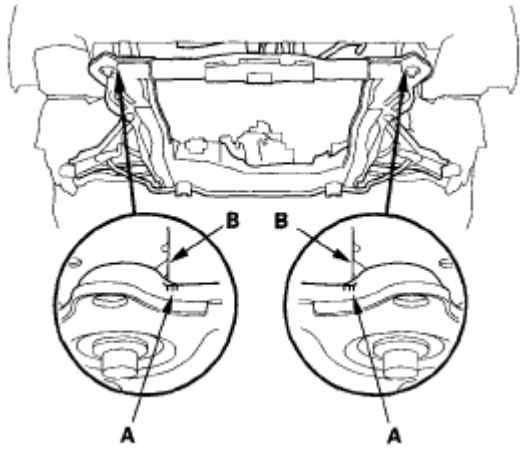


Fig. 109: Identifying Marks On Both Sides Of Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Loosen the front subframe body mount bracket mounting bolts (A) on both side.

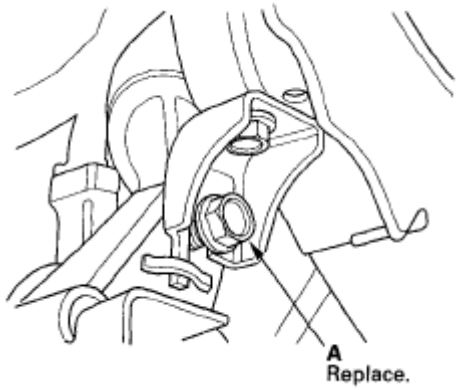


Fig. 110: Identifying Front Subframe Body Mount Bracket Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Attach the front subframe adapter (A) to the front subframe and hang the belt of the front subframe adapter over the front of the front subframe, then secure the belt with its stop.

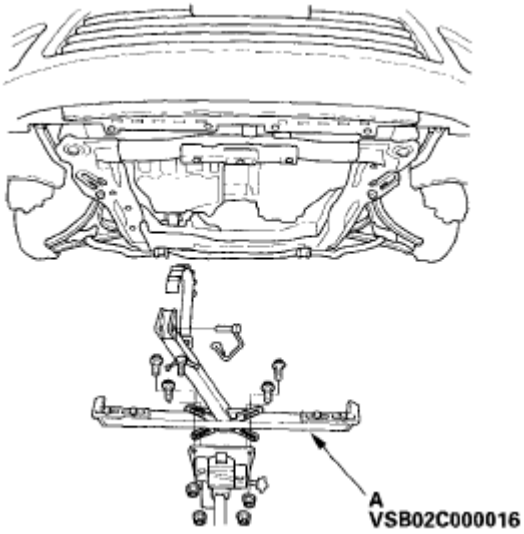


Fig. 111: Identifying Front Subframe Adapter (Special Tools)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

51. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with bolts securely.
52. Remove the front subframe.

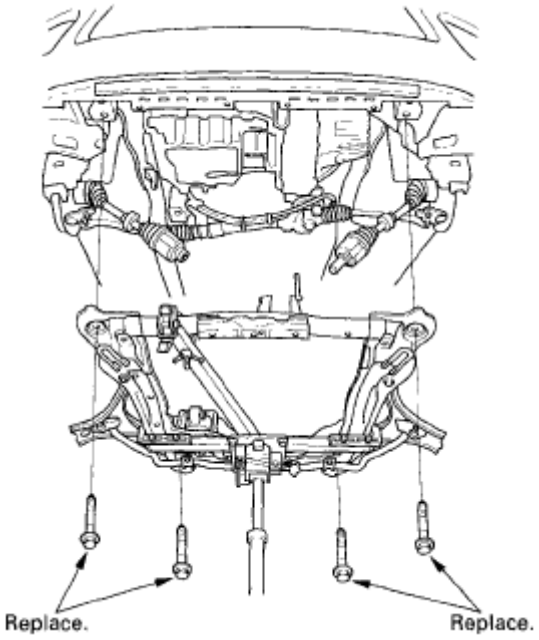


Fig. 112: Identifying Front Subframe And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

53. Lower the vehicle on the lift.
54. Remove the idler pulley base (see step 2 on **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
55. Install the special tool.

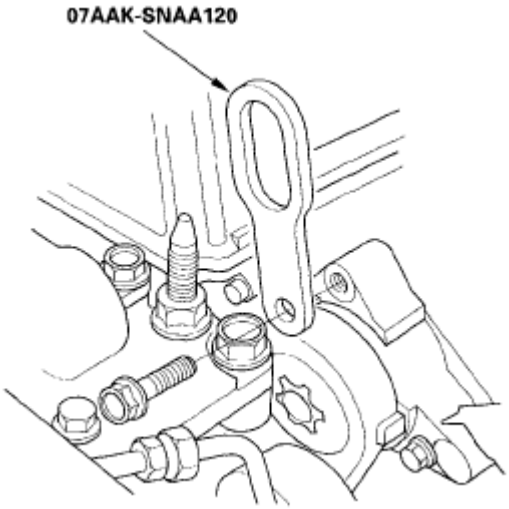


Fig. 113: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

56. Attach a chain hoist (A) to the special tool (B), and the transmission hook (C). Lift up on the engine/transmission until it's securely supported by the chain hoist, and remove the engine hanger.

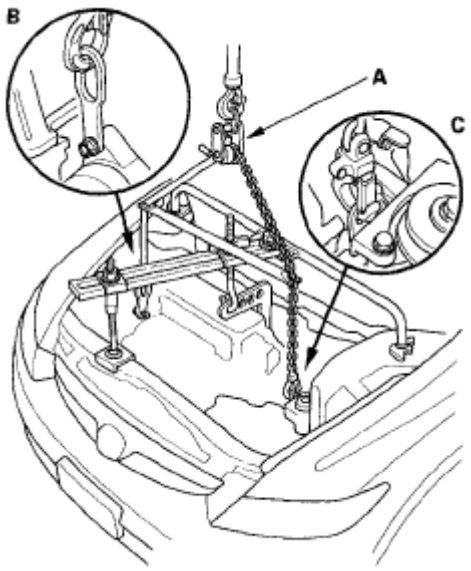


Fig. 114: Lifting Up On Engine/ Transmission
Courtesy of AMERICAN HONDA MOTOR CO., INC.

57. Remove the side engine mount bracket mounting bolt and nut.

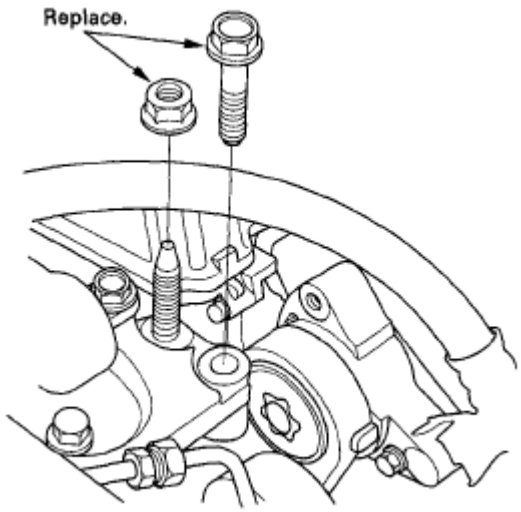


Fig. 115: Identifying Side Engine Mount Bracket Mounting Bolt And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

58. Remove the transmission mount bracket mounting bolt and nuts.

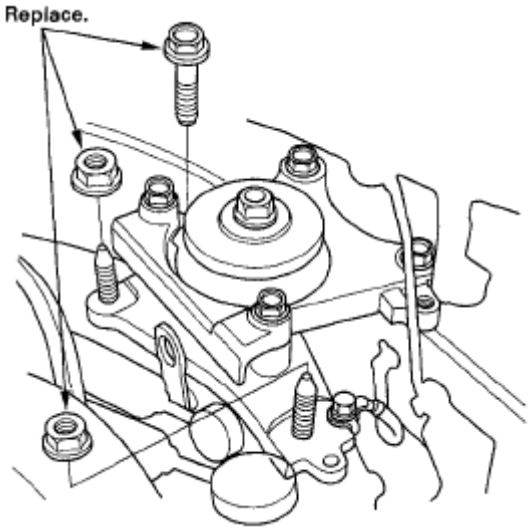


Fig. 116: Identifying Transmission Mount Bracket Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

59. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.
60. Slowly lower the engine/transmission about 150 mm (6 in.). Check once again that all hoses and electrical wiring are disconnected and free from the engine/transmission, then lower it all the way.
61. Disconnect the chain hoist from the engine/transmission.
62. Raise the vehicle all the way on the hoist, and remove the engine/transmission from under the vehicle.

ENGINE INSTALLATION

Special Tools Required

- Engine hanger plate 07AAK-SNAA120
- Engine hanger adapter VSB02C000015 *
- Front subframe adapter VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

* : Available through Honda Tool and Equipment Program, 1-888-424-6857

1. Install the accessory brackets and tighten their bolts to the specified torques.

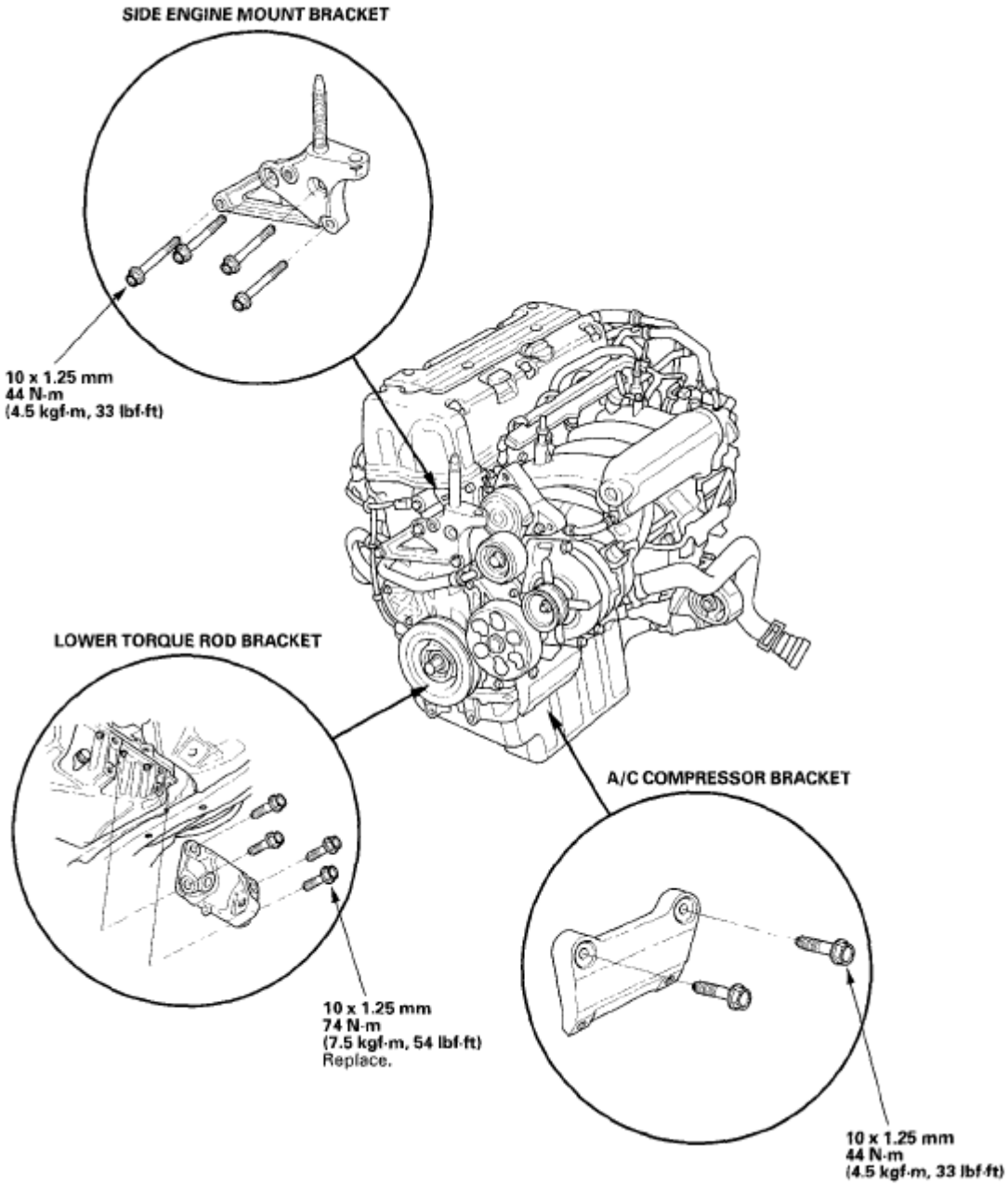


Fig. 117: Identifying Engine Brackets (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Raise the vehicle on the hoist, and position the engine/transmission under the vehicle. Lower the vehicle, and attach the special tool and chain hoist to the engine, then lift the engine into position in the vehicle.

NOTE: Reinstall the mounting bolts/support nuts in the sequence given in the following steps. Failure to follow this sequence may cause excessive noise and vibration, and reduce engine mount life.

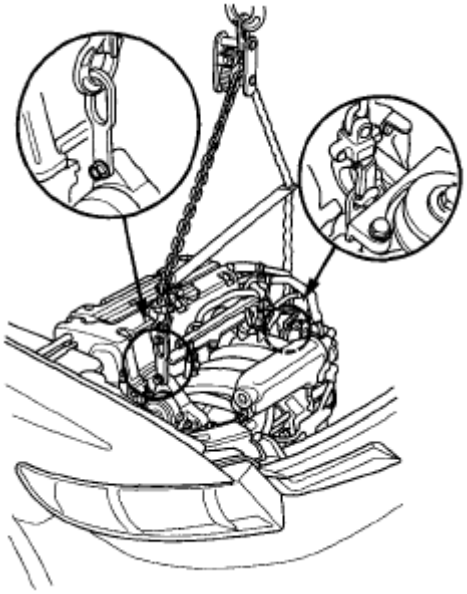


Fig. 118: Identifying Mounting Bolts/Support Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Attach the special tool to the threaded hole in the cylinder head.

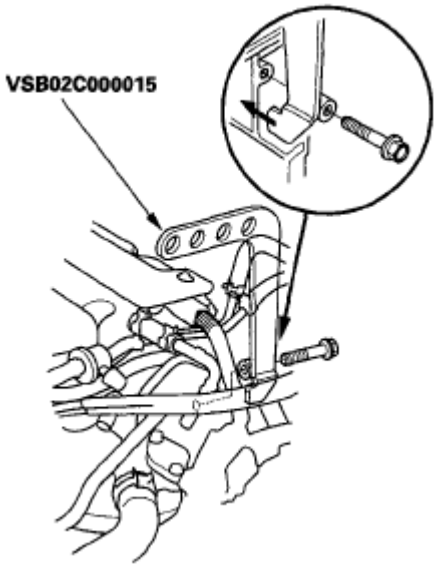


Fig. 119: Identifying Special Tool To Threaded Hole In Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission.

NOTE: Be careful when working around the windshield.

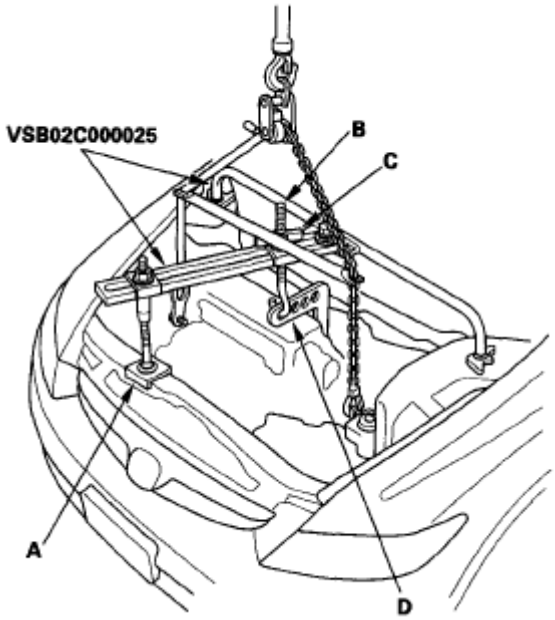


Fig. 120: Identifying Engine Hanger Adapter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Loosen the upper torque rod mounting bolt (A).

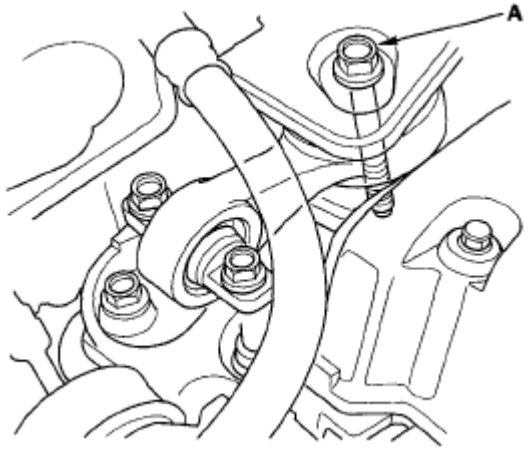


Fig. 121: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Tighten the new side engine mount bracket mounting bolt and nut.

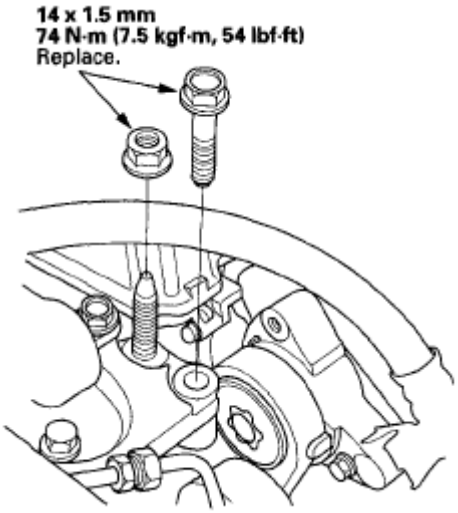


Fig. 122: Identifying Side Engine Mount Bracket Mounting Bolt And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Tighten the new transmission mounting bolt and nuts.

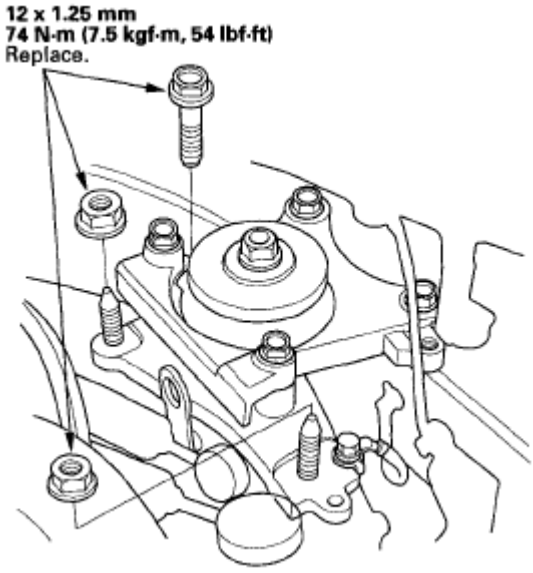


Fig. 123: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the chain hoist.
9. Remove the special tool.

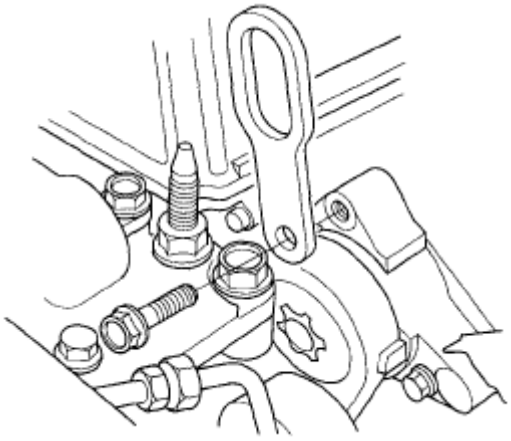


Fig. 124: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Raise the vehicle on the lift.
11. 11 Set the front subframe adapter (A) to the front subframe and hang the belt of the front subframe adapter over the front of the subframe, then secure the belt with its stop.

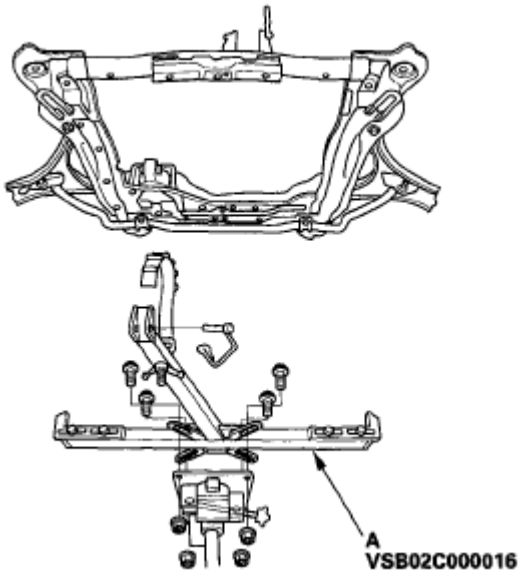


Fig. 125: Identifying Front Subframe Adapter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Line up the slots in the arms with the bolt holes on the corner of the jack base, and tighten the bolts, then lift the front subframe up to the body.
13. Loosely install the new front subframe mounting bolts.

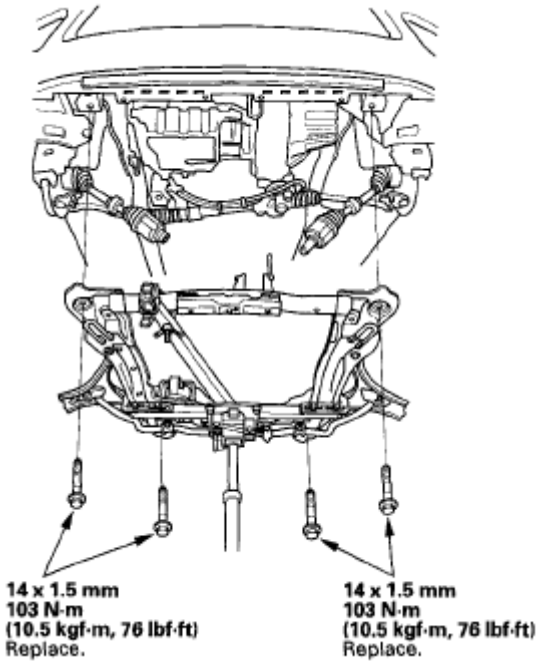


Fig. 126: Identifying Front Subframe Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the bolts on the front subframe to the specified torque.

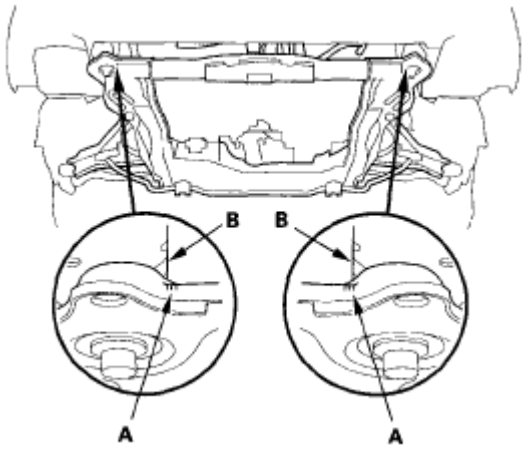


Fig. 127: Identifying Front Subframe Reference Marks To Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the jack and front subframe adapter.
16. Tighten the new front subframe body mount bracket mounting bolts on both side.

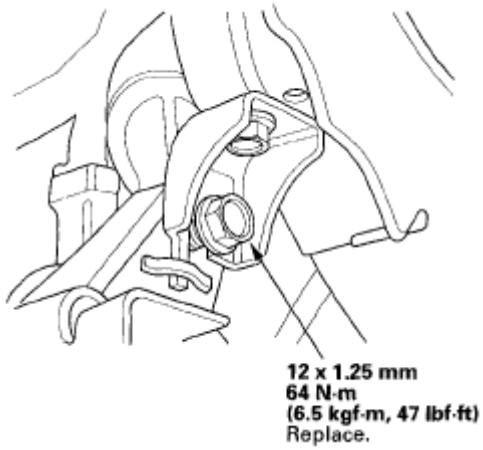


Fig. 128: Identifying Front Subframe Body Mount Bracket Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.

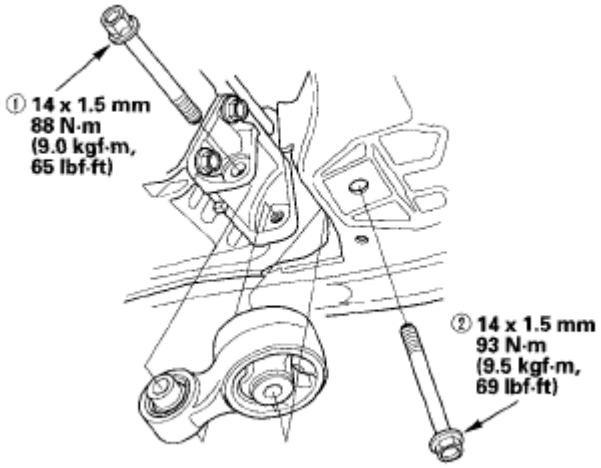


Fig. 129: Identifying Tightening Sequence For Lower Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Loosely tighten the new front mount mounting bolt (A), then install the lower radiator hose to the clamp (B).

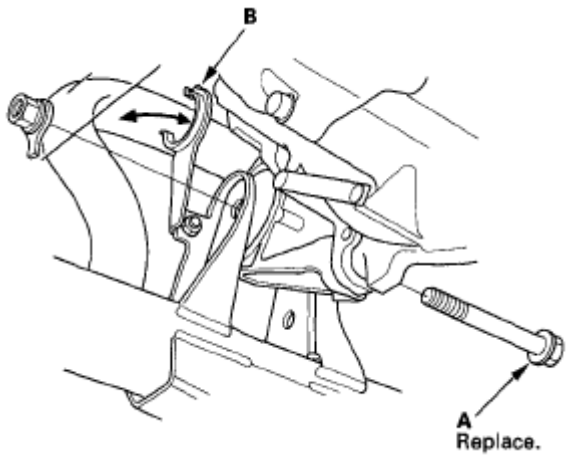


Fig. 130: Identifying Front Mount Mounting Bolt And Lower Radiator Hose Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Lower the vehicle on the lift.
20. Remove the special tools from the engine and vehicle.
21. Tighten the upper torque rod mounting bolt.

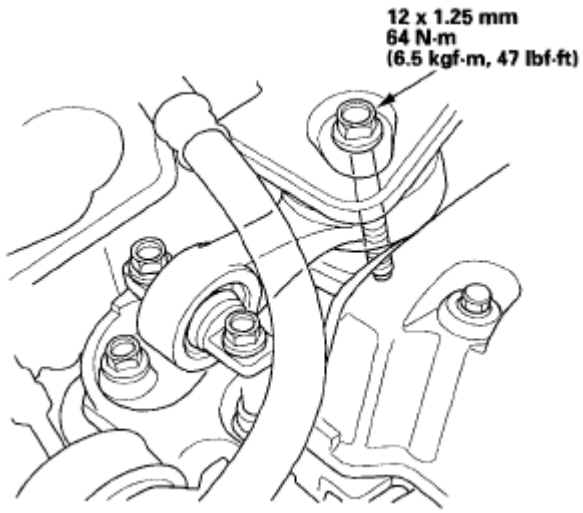


Fig. 131: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Raise the vehicle on the lift to full height.
23. Tighten the front mount mounting bolt.

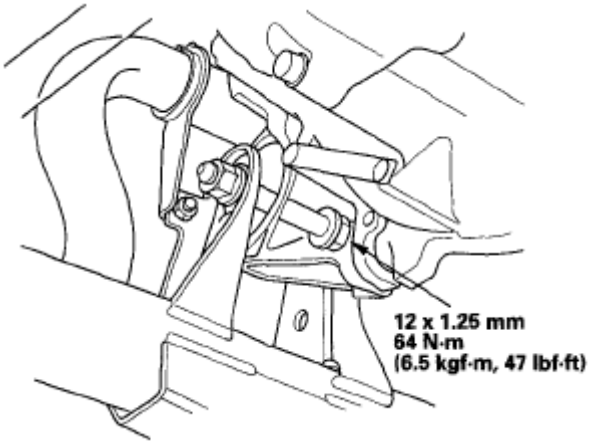


Fig. 132: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the A/C compressor (A), then connect the A/C compressor clutch connector (B).

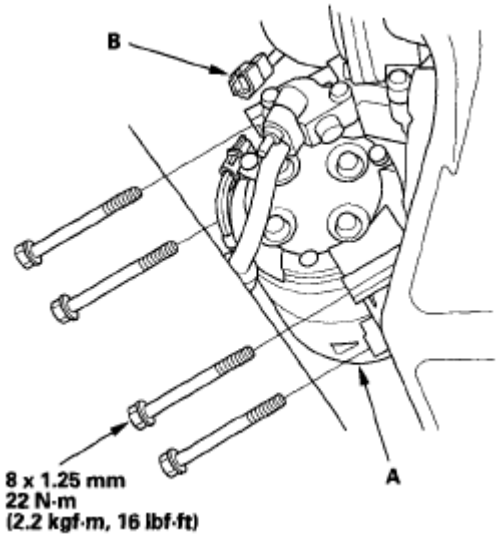


Fig. 133: Identifying A/C Compressor And Clutch Connector (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the stiffener (A), then tighten the steering gearbox mounting bolt (B) and stiffener mounting bolt(C).

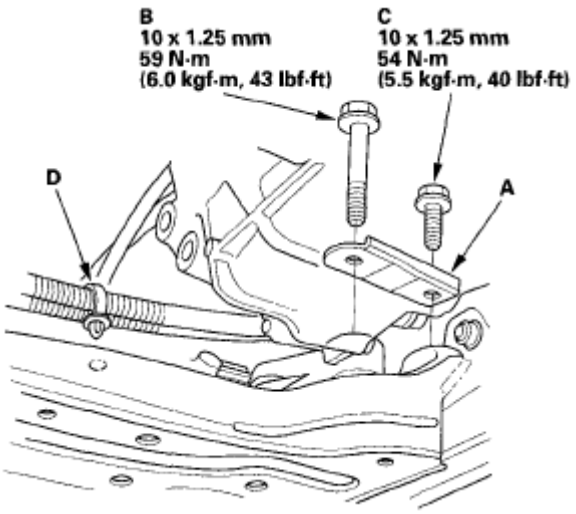


Fig. 134: Identifying Steering Gearbox Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the harness clamp (D) to the subframe.
27. Install the steering gearbox bracket (A).

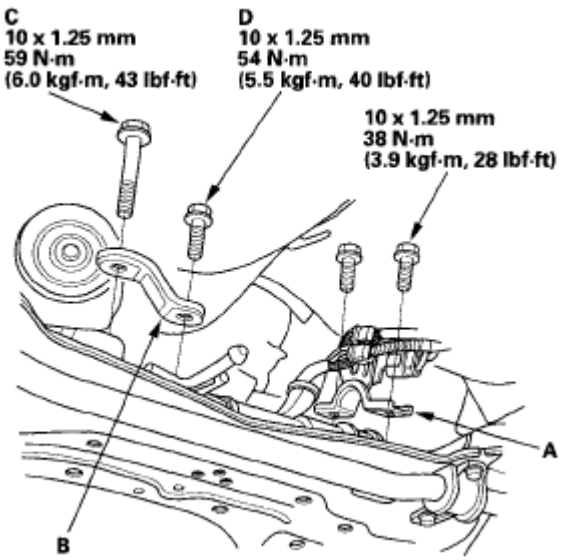


Fig. 135: Identifying Steering Gearbox Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Install the stiffener (B), then tighten the steering gearbox mounting bolt (C) and stiffener mounting bolt(D).
29. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring "clicks" into place in the differential and intermediate shaft.
30. Connect the lower arms to the knuckles (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
31. Connect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
32. Install the three way catalytic converter (TWC) (A). Use new gaskets (B) and new self-locking nuts (C).

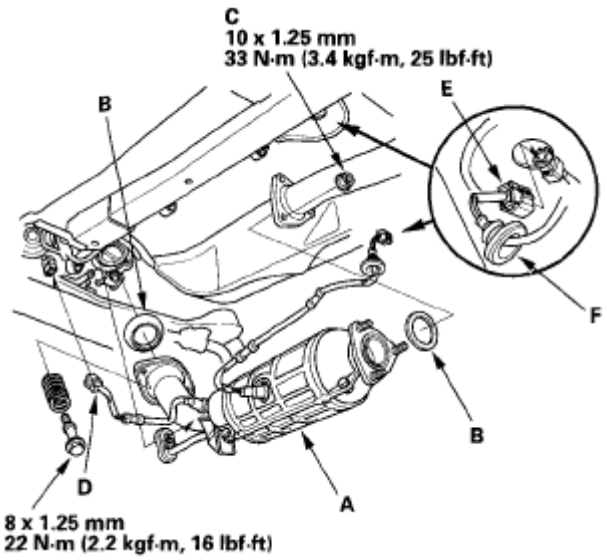


Fig. 136: Identifying (Secondary HO2S) Connector (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Connect the air fuel ratio (A/F) sensor connector (D).
34. Connect the secondary heated oxygen sensor (secondary HO2S) connector (E), then install the grommet (F).
35. Install the splash shield.

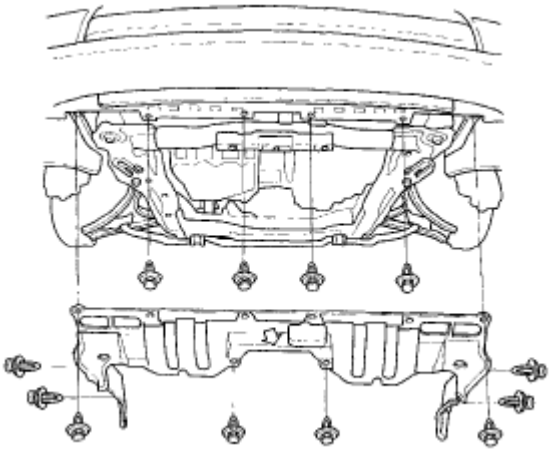


Fig. 137: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Lower the vehicle on the lift.
37. Install the heater hoses.

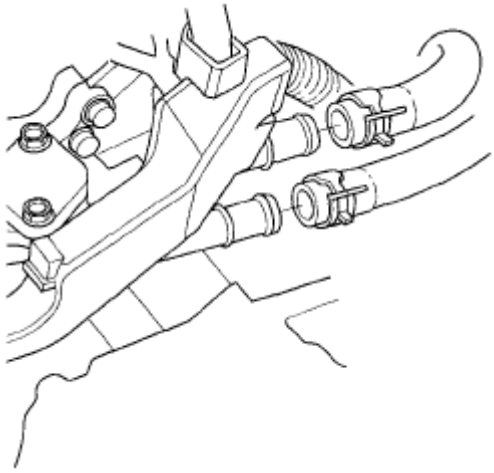


Fig. 138: Identifying Heater Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Install the radiator (see **RADIATOR AND FAN REPLACEMENT**).
39. Install the idler pulley base (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
40. Install the drive belt (see **DRIVE BELT INSPECTION**).
41. Install the air cleaner housing bracket.

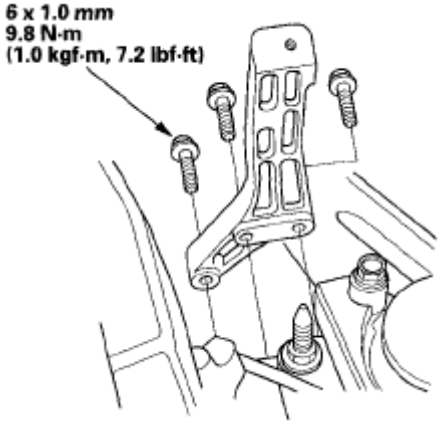


Fig. 139: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the shift cable (see step 34 on **TRANSMISSION INSTALLATION**).
43. Install the clutch slave cylinder, and clutch line bracket mounting bolt (see step 37 on **TRANSMISSION INSTALLATION**).
44. Connect the fuel feed hose (see **FUEL LINE/QUICK-CONNECT FITTING INSTALLATION**), then install the quick-connect fitting cover (A).

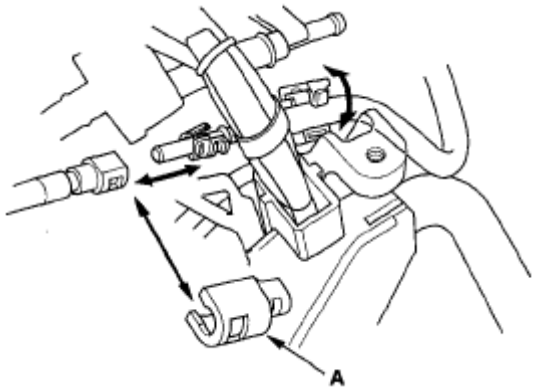


Fig. 140: Identifying Quick-Connect Fitting Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Install the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).

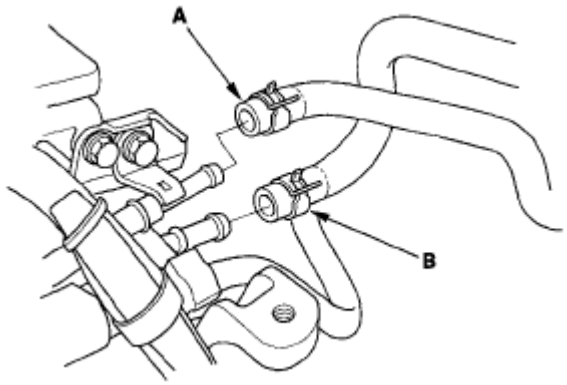


Fig. 141: Identifying Evaporative Emission (EVAP) Canister Hose And Brake Booster Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. Install the engine cover.

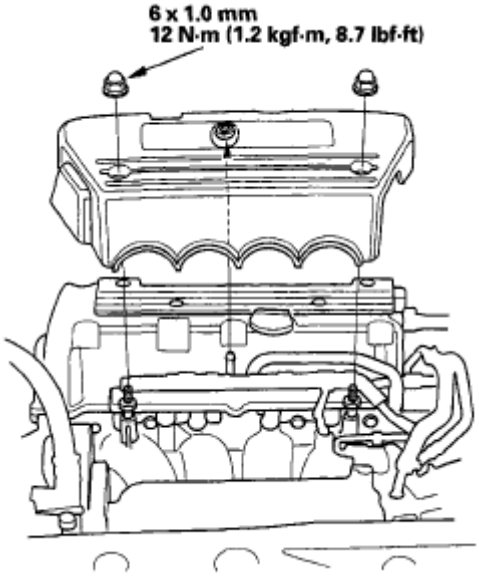


Fig. 142: Identifying Engine Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Connect the engine control module (ECM) connectors (A) and engine wire harness connector (B).

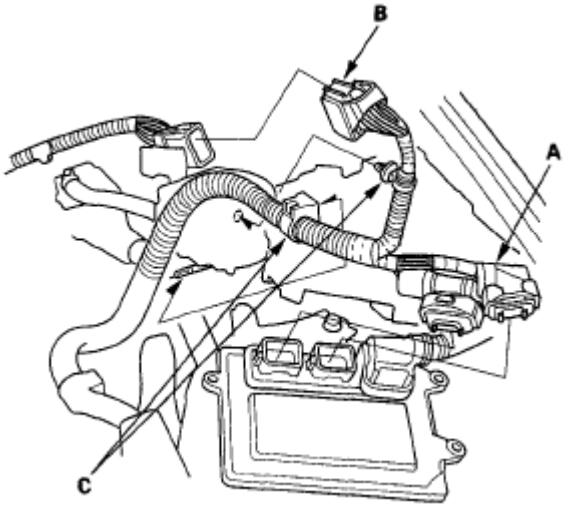


Fig. 143: Identifying Engine Control Module (ECM) Connectors And Engine Wire Harness Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Install the harness clamps (C).
49. Install the ECM (A), then install the ECM cover (B).

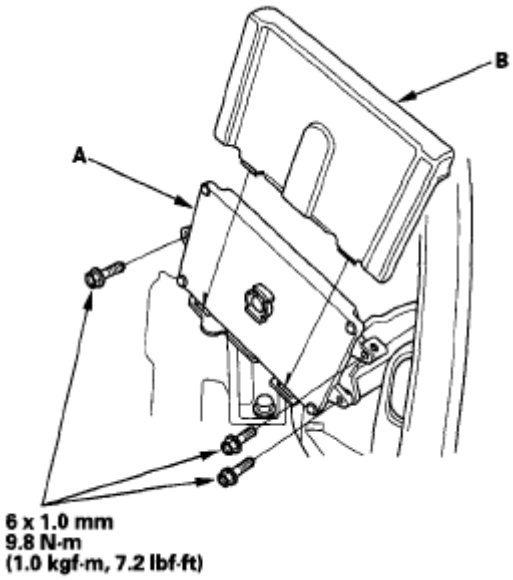


Fig. 144: Identifying ECM Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Install the battery cables (A) to the under-hood fuse/relay box.

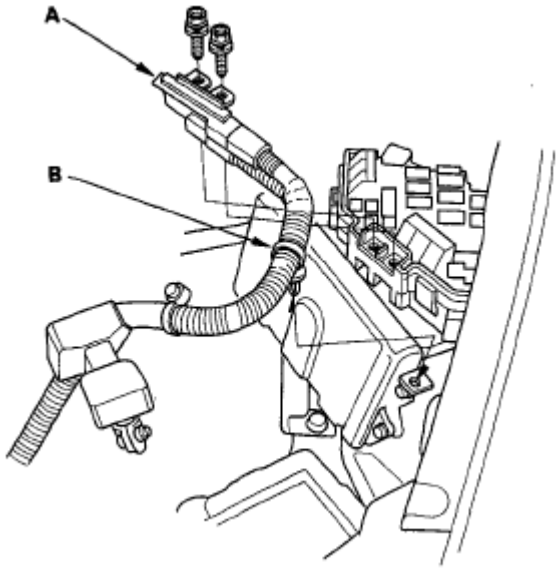


Fig. 145: Identifying Battery Cables And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

51. Install the harness clamp (B).
52. Install the resonator (A) A

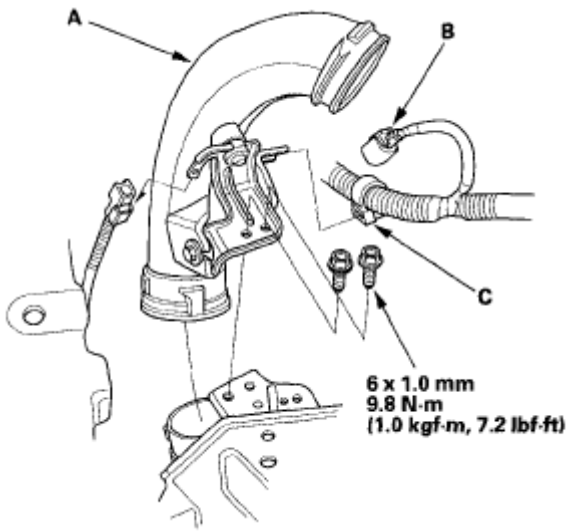


Fig. 146: Identifying Resonator And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

53. Connect the connector (B), and install the harness clamp (C).
54. Install the under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
55. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
56. Install the front wheels.
57. Install the battery. Clean the battery posts and cable terminals, then assemble them, and apply grease to prevent corrosion.
58. Check that the transmission shifts into gear smoothly.
59. Inspect for fuel leaks: Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
60. Refill the engine with engine oil (see step 4 on **ENGINE OIL REPLACEMENT**).
61. Refill the transmission with fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
62. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 6 on **COOLANT CHECK**).
63. Do the ECM reset procedure (see **HDS CLEAR COMMAND**).
64. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see **HDS CLEAR COMMAND**).
65. Inspect the idle speed (see **IDLE SPEED INSPECTION**).
66. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).
67. Check the wheel alignment (see **WHEEL ALIGNMENT**).
68. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
69. Set the clock (on vehicles without navigation).

SIDE ENGINE MOUNT REPLACEMENT

1. Support the engine with a jack and wood block under the oil pan.

2. Remove the upper torque rod.

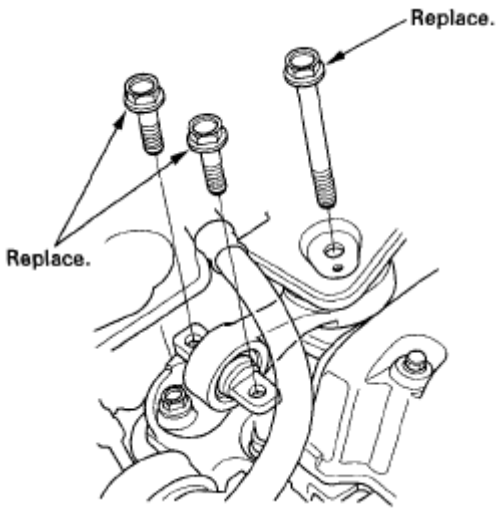


Fig. 147: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground cable (A), then remove the side engine mount bracket (B).

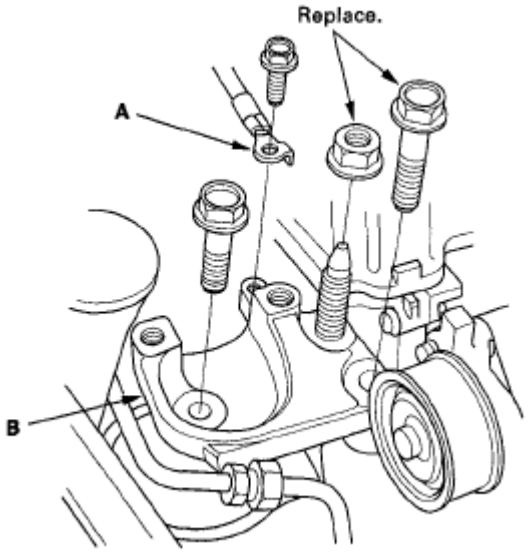


Fig. 148: Identifying Ground Cable And Side Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the side engine mount stiffener (A), then remove the side engine mount (B).

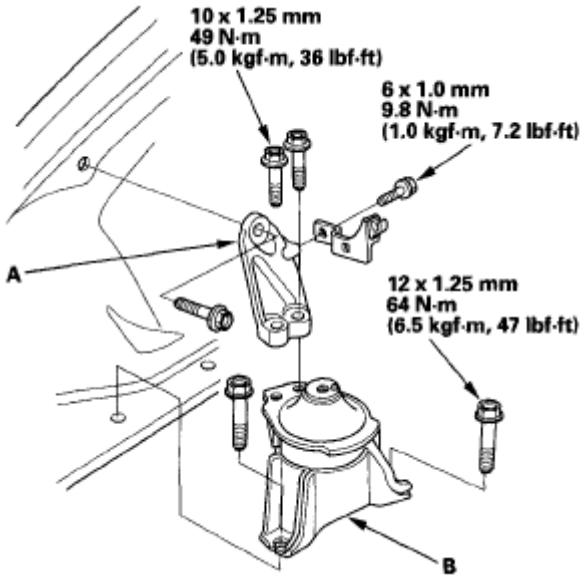


Fig. 149: Identifying Side Engine Mount (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the side engine mount, then install the side engine mount stiffener.
6. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B), and loosely tighten the bolt (C).

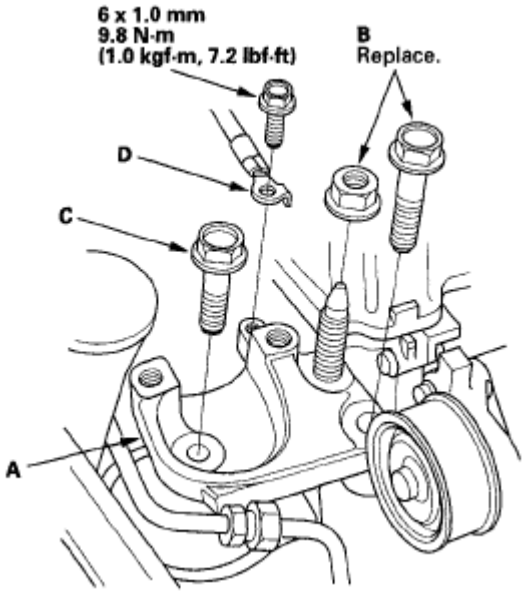


Fig. 150: Identifying Side Engine Mount Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the ground cable (D).
8. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
9. Loosen the transmission mounting bolt and nuts (A).

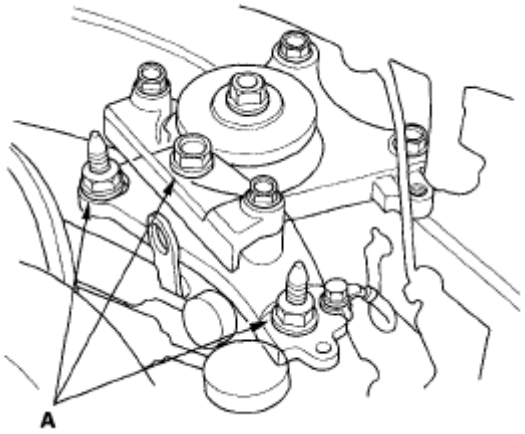


Fig. 151: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Raise the vehicle on the lift to full height.
11. Remove the splash shield.
12. Loosen the lower torque rod mounting bolt (A).

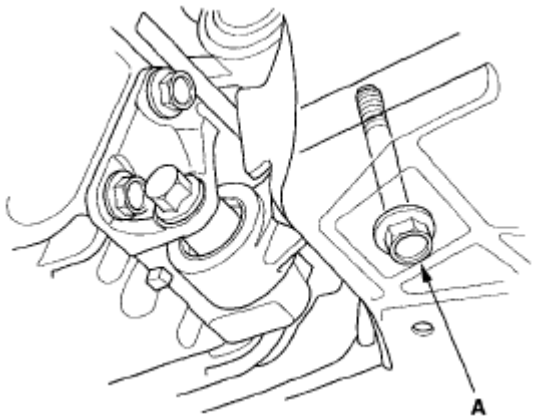


Fig. 152: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Loosen the front mount mounting bolt (A).

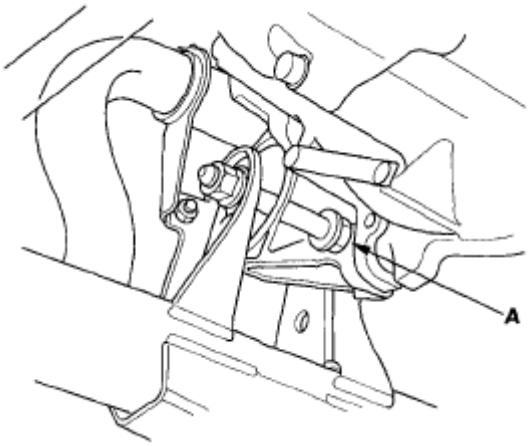


Fig. 153: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Lower the vehicle on the lift.
15. Tighten the side engine mount mounting bolts and nut.

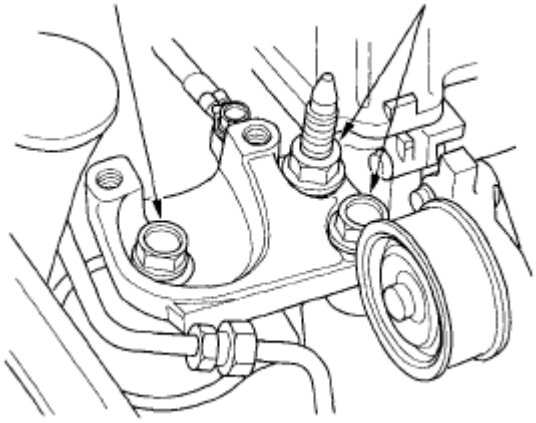


Fig. 154: Identifying Side Engine Mount Mounting Bolts And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Tighten the transmission mounting bolt and nuts.

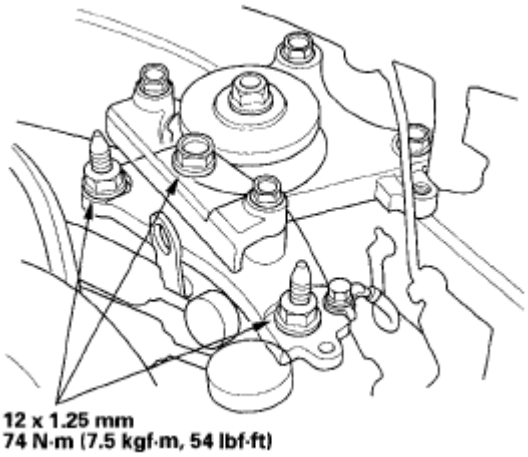


Fig. 155: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Raise the vehicle on the lift to full height.
18. Tighten the lower torque rod mounting bolt.

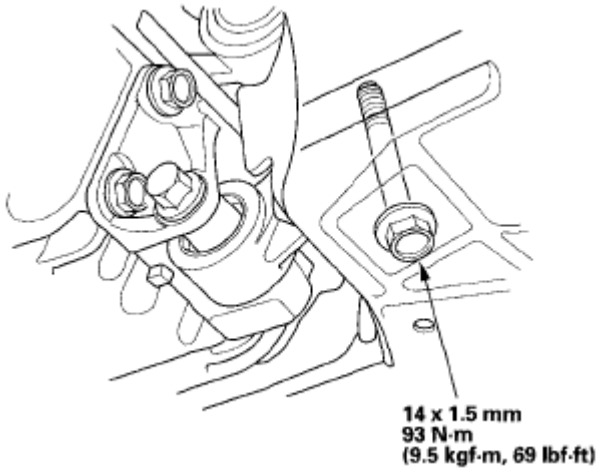


Fig. 156: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Lower the vehicle on the lift.
20. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
21. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

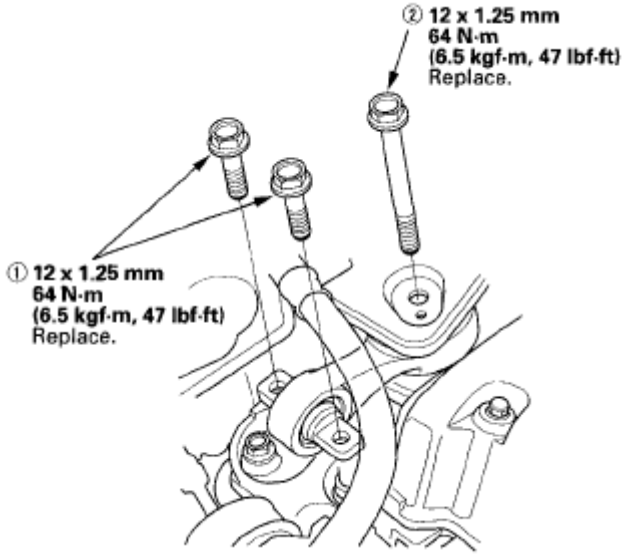


Fig. 157: Identifying Tightening Sequence For Upper Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt.

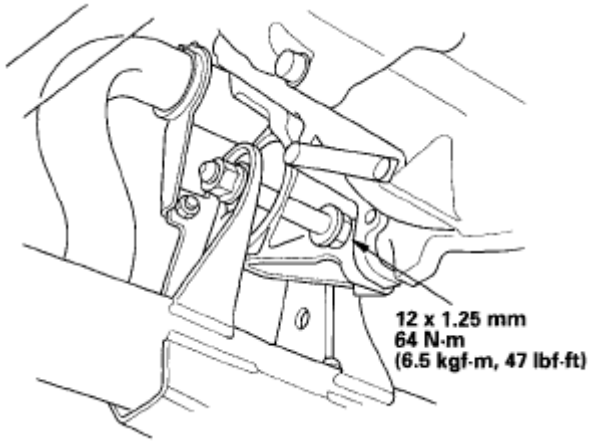


Fig. 158: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the splash shield.

TRANSMISSION MOUNT REPLACEMENT

1. Loosen the upper torque rod mounting bolt (A).

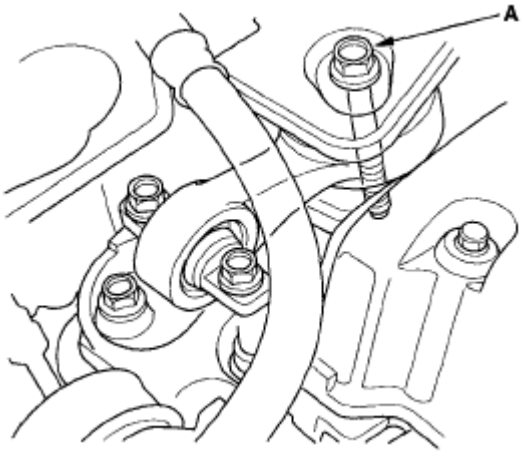


Fig. 159: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
3. Remove the engine control module (ECM) cover, then remove the three bolts securing the ECM.
4. Remove the ECM bracket.
5. Remove the under hood fuse/relay box from the bracket.
6. Support the transmission with a jack and wood block under the transmission.
7. Remove the transmission mount (A).

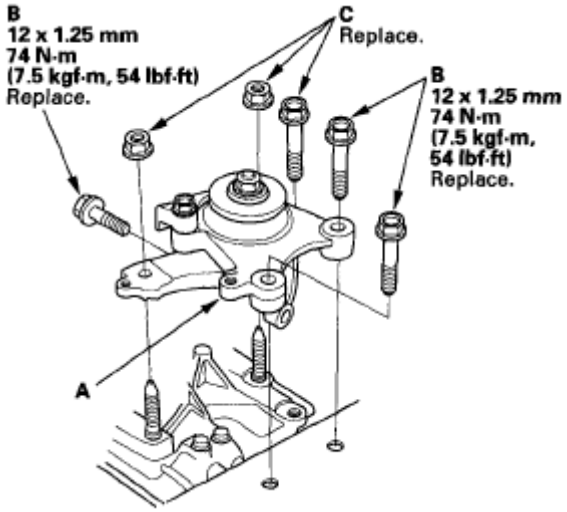


Fig. 160: Identifying Transmission Mount (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the transmission mount with the new mounting bolts (B).
9. Loosely tighten the new bolt and nuts (C).
10. Raise the vehicle on the lift to full height.
11. Remove the splash shield.
12. Loosen the lower torque rod mounting bolt (A).

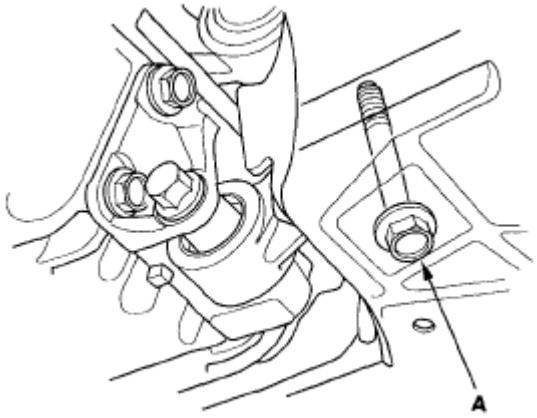


Fig. 161: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Loosen the front mount mounting bolt (A).

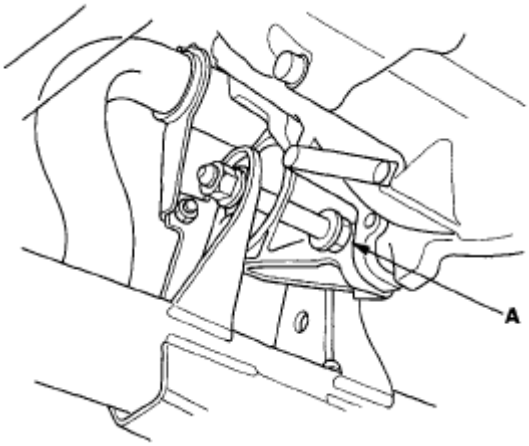


Fig. 162: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Lower the vehicle on the lift.
15. Tighten the transmission mounting bolt and nuts.

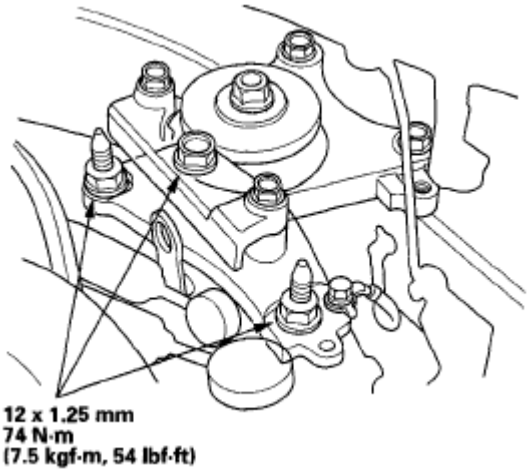


Fig. 163: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Raise the vehicle on the lift to full height.
17. Tighten the lower torque rod mounting bolt.

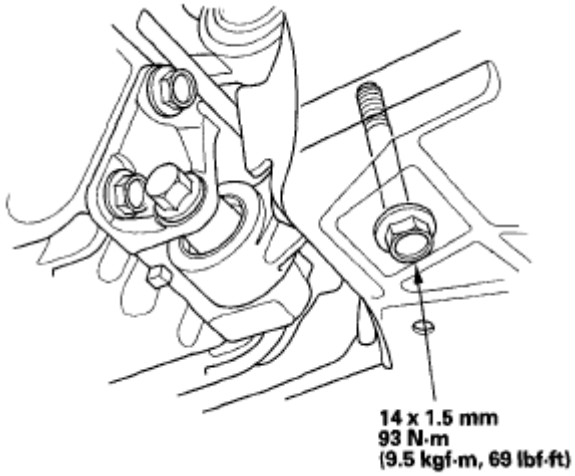


Fig. 164: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Lower the vehicle on the lift.
19. Tighten the upper torque rod mounting bolt.

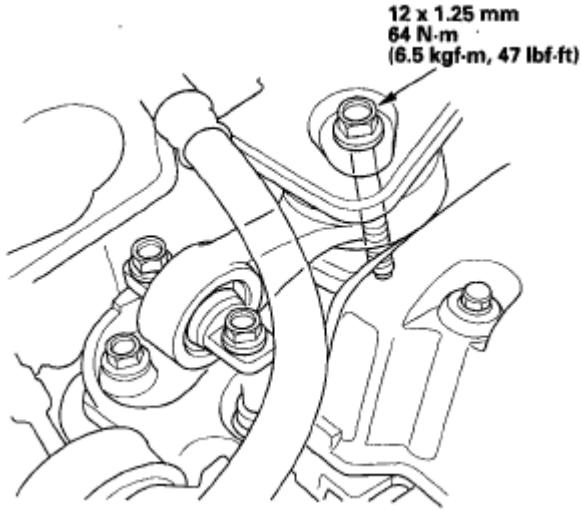


Fig. 165: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the under-hood fuse/relay box to the bracket.
21. Install the ECM bracket.
22. Install the ECM, then install the ECM cover.
23. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
24. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt.

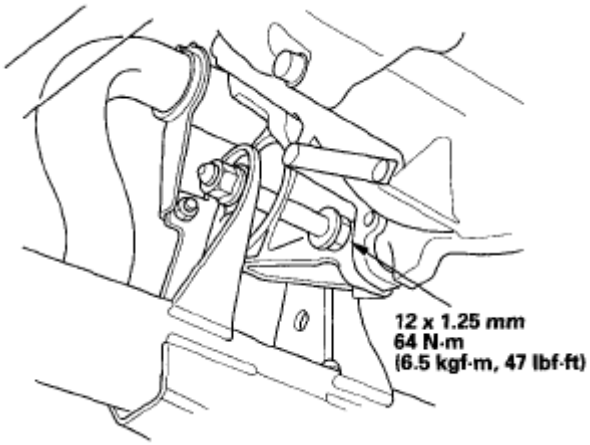


Fig. 166: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the splash shield.

LOWER TORQUE ROD REPLACEMENT

1. Loosen the upper torque rod mounting bolt (A).

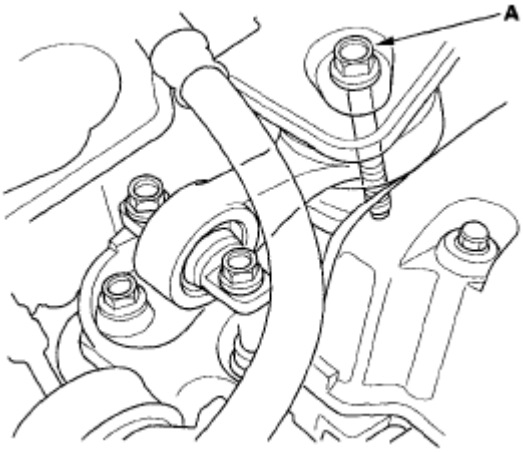


Fig. 167: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Raise the vehicle on the lift to full height.
3. Remove the splash shield.
4. Loosen the front mount mounting bolt (A).

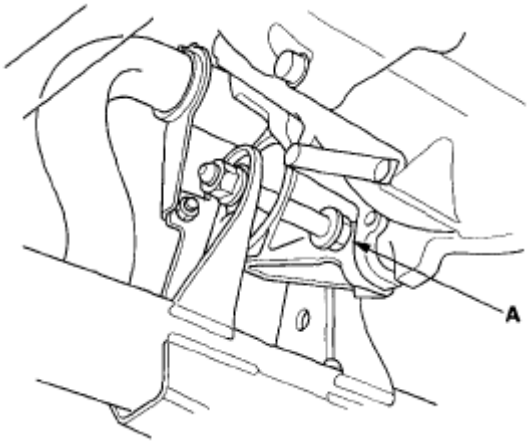


Fig. 168: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the lower torque rod (A).

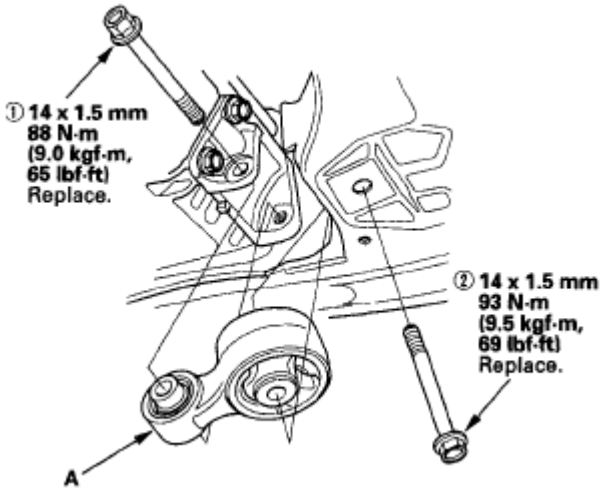


Fig. 169: Identifying Lower Torque Rod (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.
7. Lower the vehicle on the lift.
8. Tighten the upper torque rod mounting bolt.

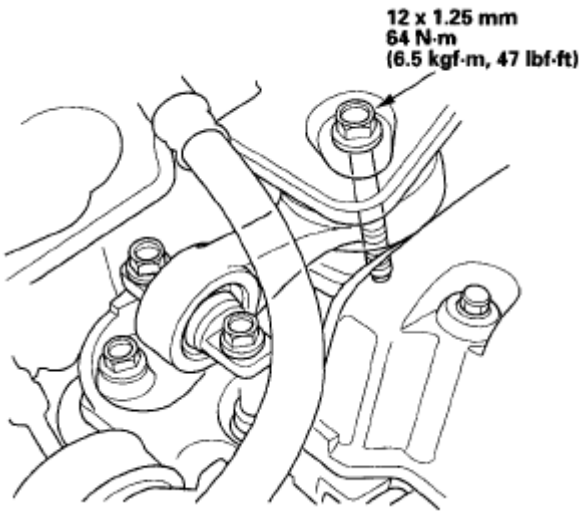


Fig. 170: Identifying Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt.

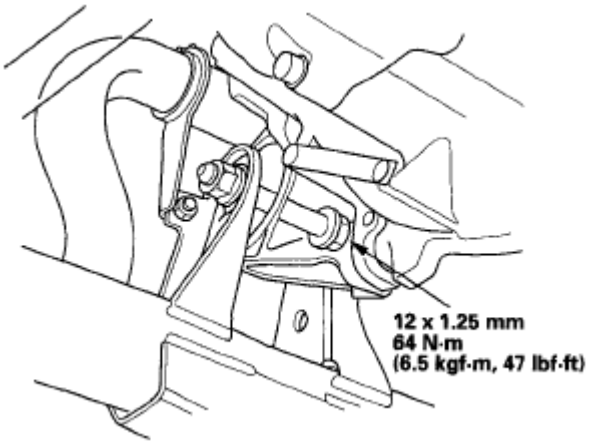


Fig. 171: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the splash shield.

UPPER TORQUE ROD REPLACEMENT

1. Raise the vehicle on the lift to full height.
2. Remove the splash shield.
3. Loosen the front mount mounting bolt (A).

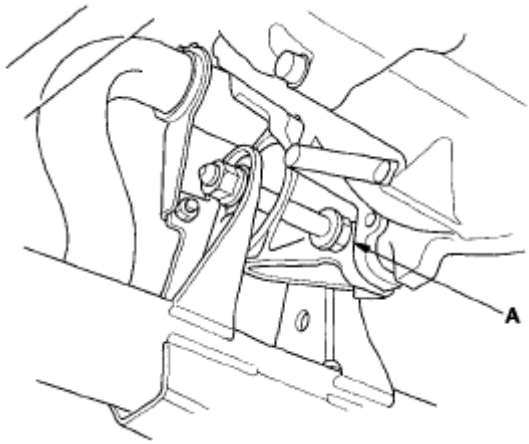


Fig. 172: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the upper torque rod (A).

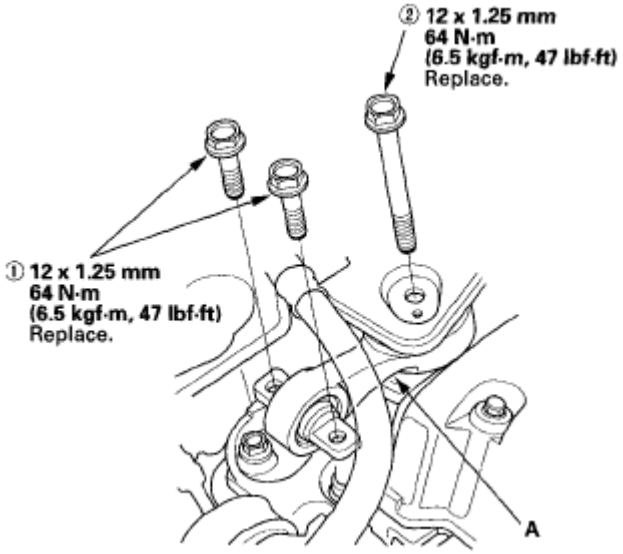


Fig. 173: Identifying Upper Torque Rod (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the upper torque rod, then tighten the new bolts in the numbered sequence shown.
6. Raise the hoist to full height, and tighten the front mount mounting bolt.

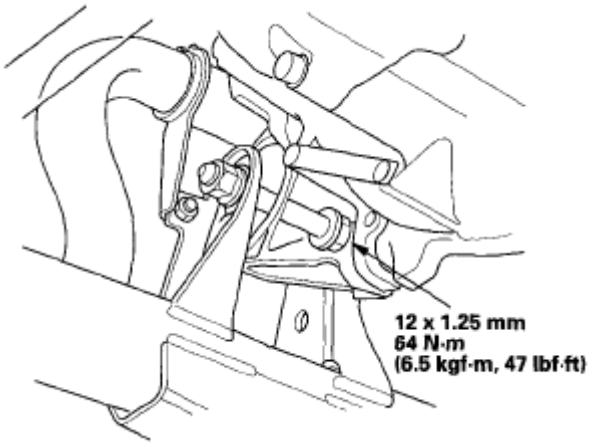


Fig. 174: Identifying Front Mount Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the splash shield.

SIDE ENGINE MOUNT BRACKET REPLACEMENT

1. Support the engine with a jack and wood block under the oil pan.
2. Remove the upper torque rod.

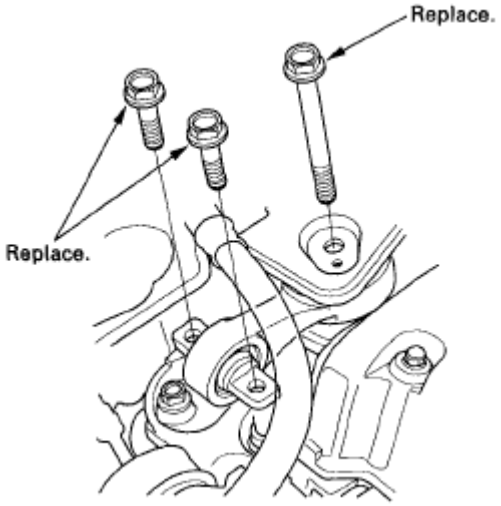


Fig. 175: Identifying Upper Torque Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ground cable (A), then remove the side engine mount bracket (B).

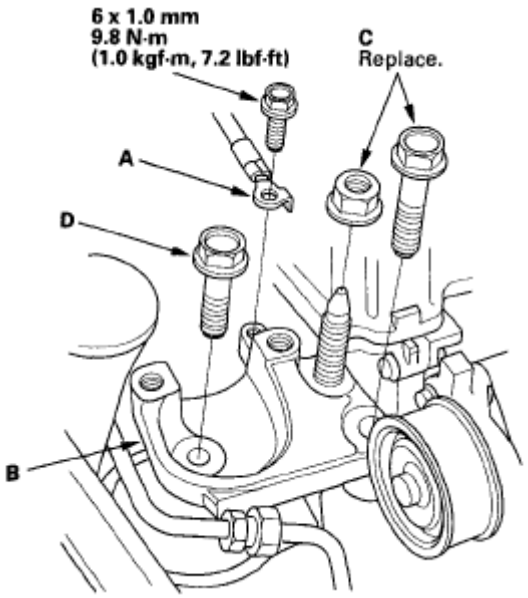


Fig. 176: Identifying Ground Cable (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the side engine mount bracket, then loosely tighten the new bolt and nut (C), and loosely tighten the bolt (D).
5. Install the ground cable.
6. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
7. Loosen the transmission mounting bolt and nuts (A).

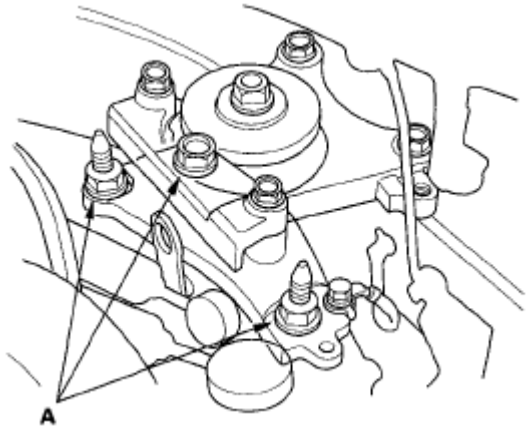


Fig. 177: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Raise the vehicle on the lift to full height.
9. Remove the splash shield.
10. Loosen the lower torque rod mounting bolt (A).

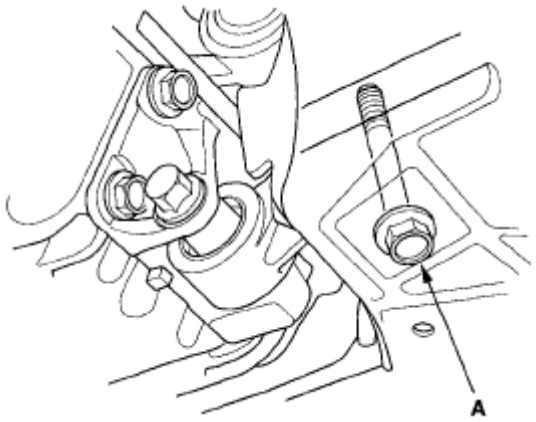


Fig. 178: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Loosen the front mount mounting bolt (A).

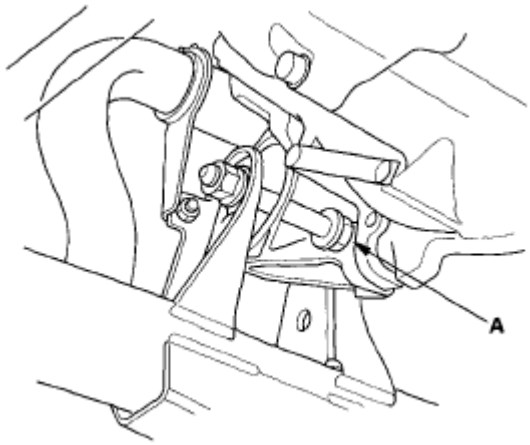


Fig. 179: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Lower the vehicle on the lift.
13. Tighten the side engine mount mounting bolts and nut.

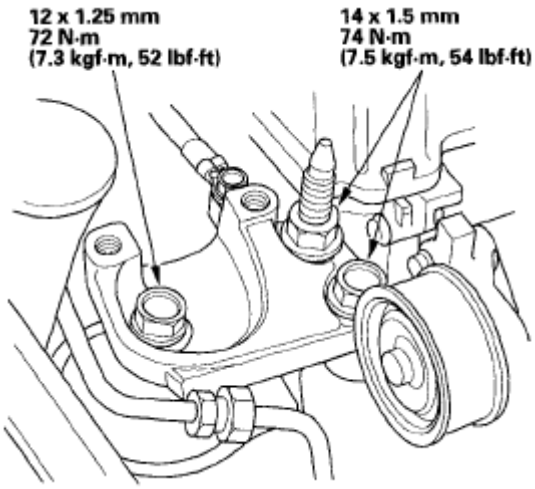


Fig. 180: Identifying Side Engine Mount Mounting Bolts And Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Tighten the transmission mounting bolt and nuts.

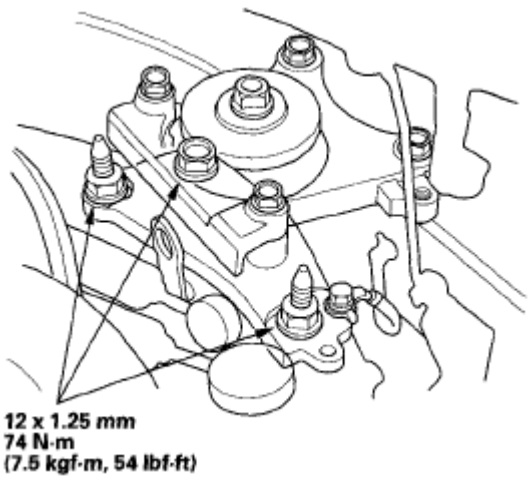


Fig. 181: Identifying Transmission Mounting Bolt And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Raise the vehicle on the lift to full height.
16. Tighten the lower torque rod mounting bolt.

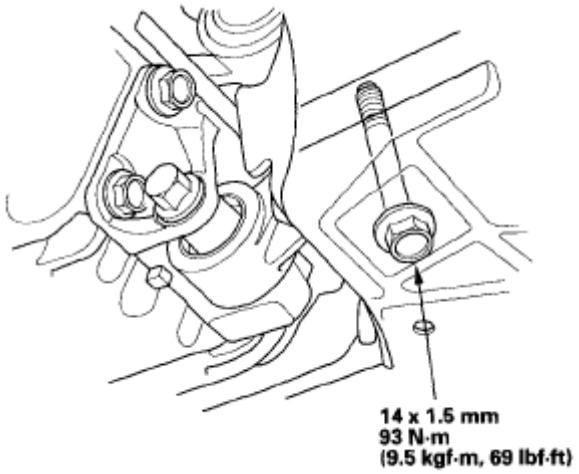


Fig. 182: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Lower the vehicle on the lift.
18. Install the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
19. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

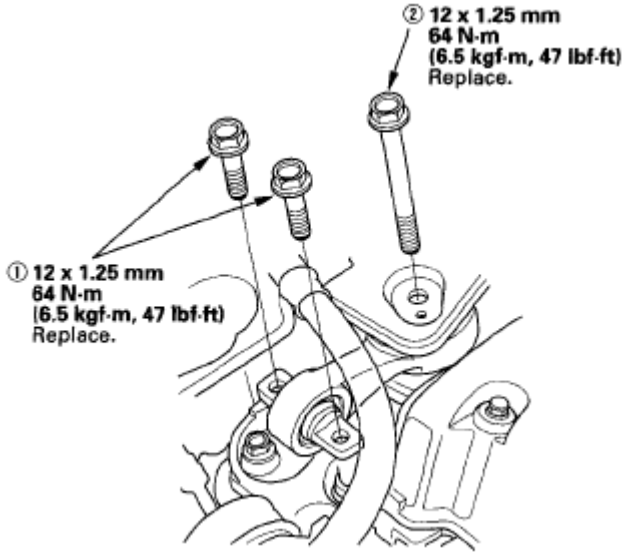


Fig. 183: Identifying Tightening Sequence For Upper Torque Rod Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Raise the vehicle on the lift to full height, and tighten the front mount mounting bolt.

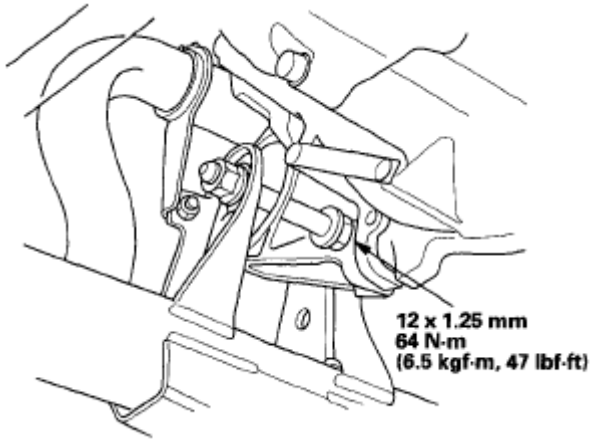


Fig. 184: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the splash shield.

FRONT ENGINE MOUNT REPLACEMENT

1. Raise the lift to full height.
2. Remove the splash shield.
3. Remove the front mount (A).

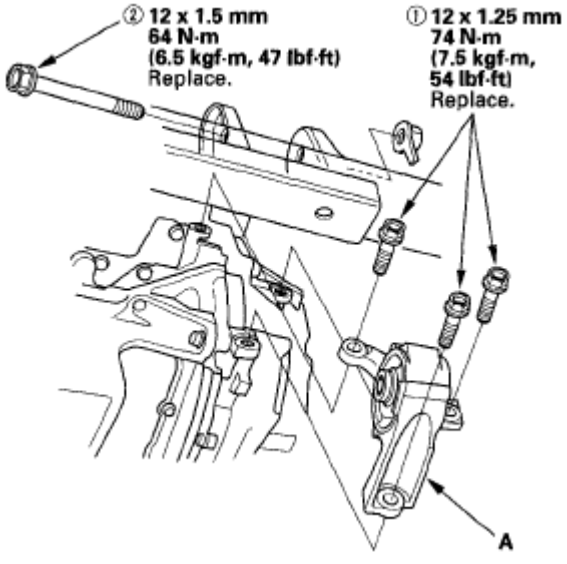


Fig. 185: Identifying Front Mount (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the front mount, then tighten the new front mount mounting bolts in the numbered sequence shown.
5. Install the splash shield.

2006-08 ENGINE

Engine Block - Civic (Except Hybrid)

ENGINE BLOCK (R18A1)

NOTE: Refer to the ENGINE BLOCK (GX) (SUPPLEMENT) article for additional information for the GX model.

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07LAD-PT3010A	Oil Seal Driver	1
②	07ZAD-PNAA100	Oil Seal Driver Attachment 96	1
③	07746-0010700	Attachment, 24 x 26 mm	1
④	07749-0010000	Driver	1

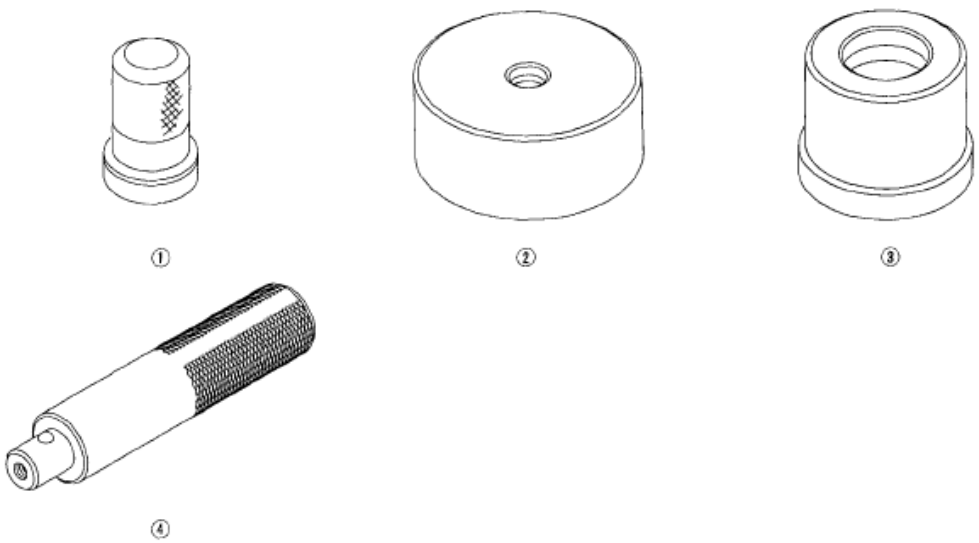


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

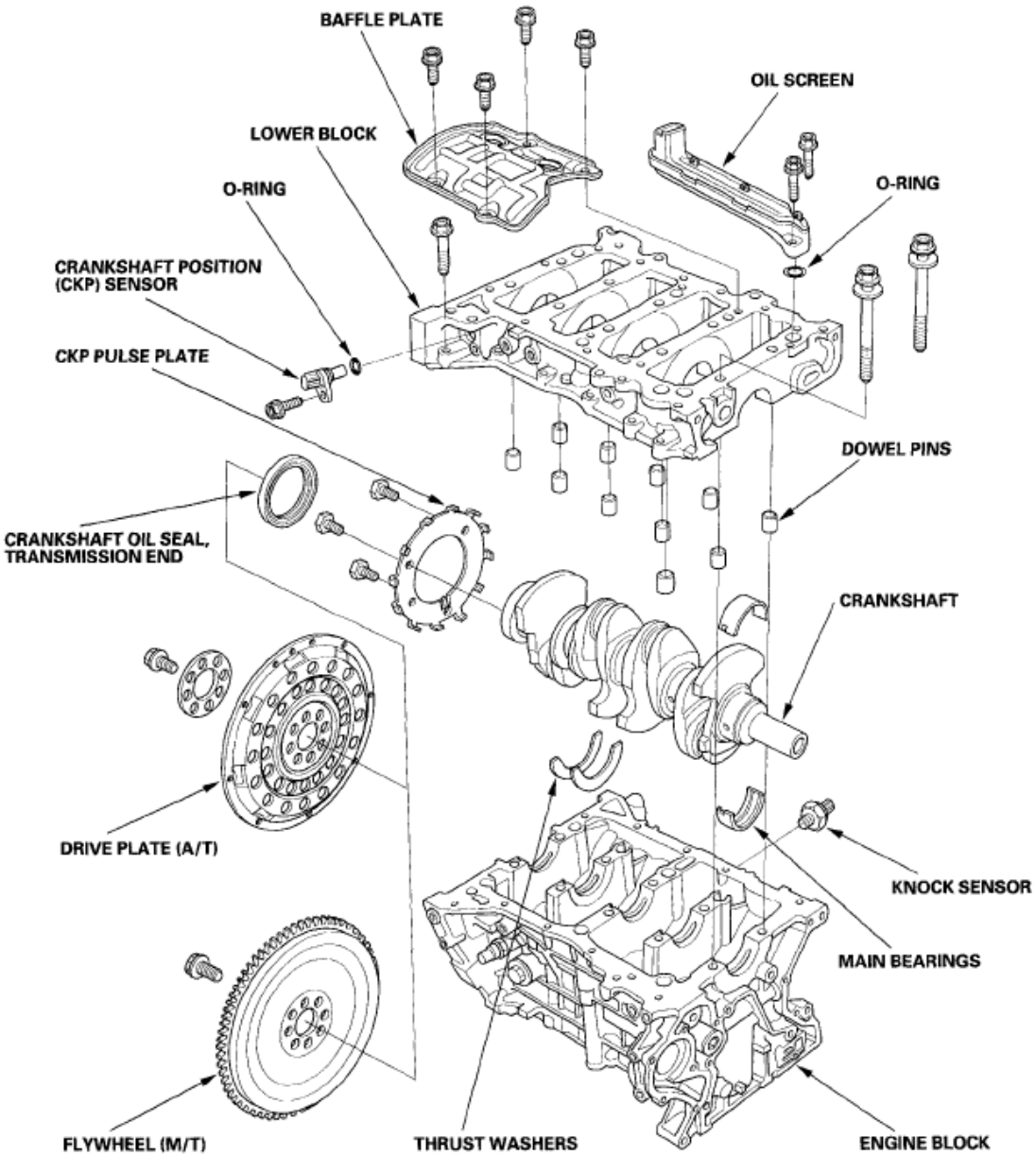


Fig. 2: Identifying Engine Block, Flywheel And Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

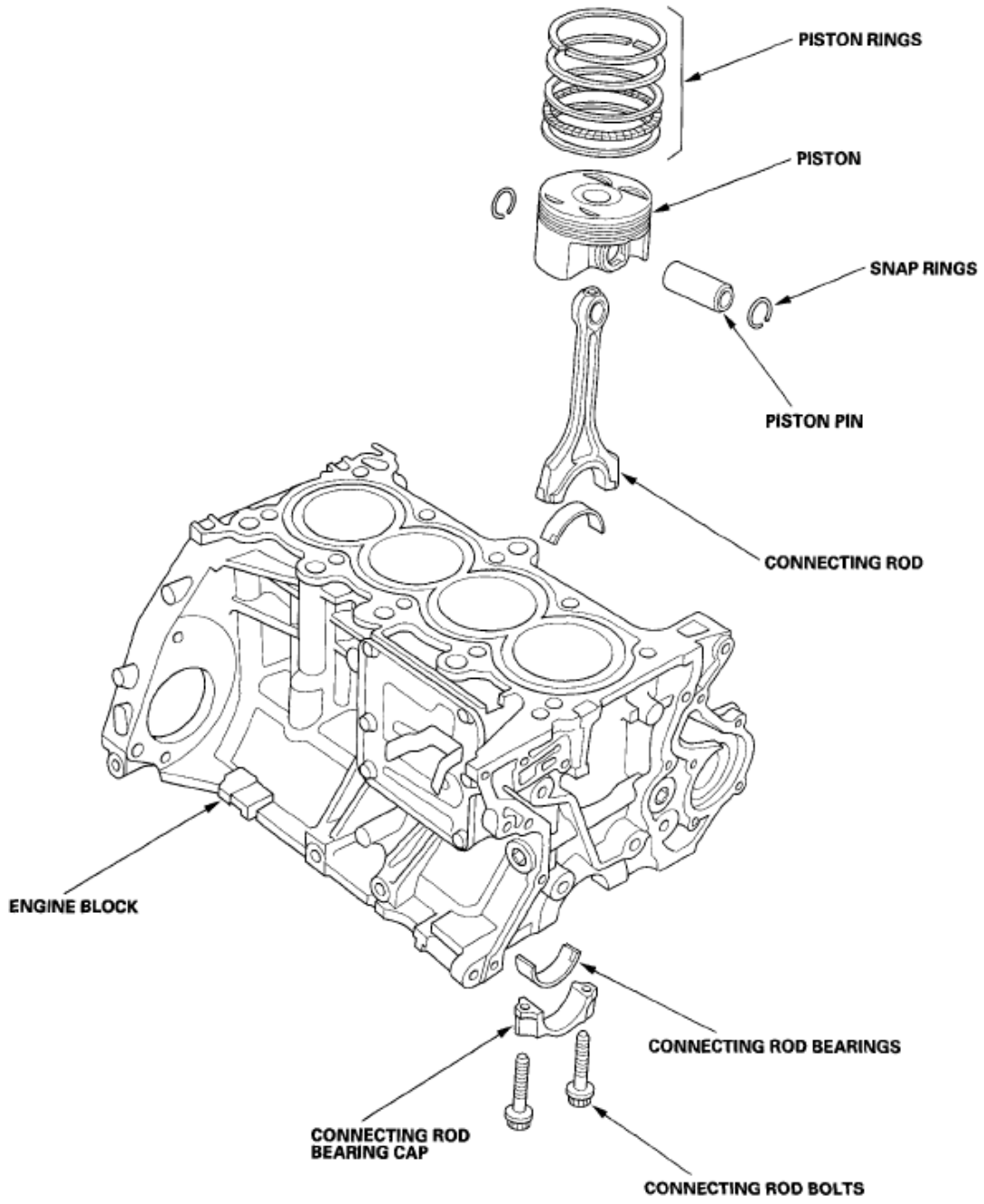


Fig. 3: Identifying Engine Block , Piston And Connecting Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD AND CRANKSHAFT END PLAY INSPECTION

1. Remove the oil pan (see **OIL PAN REMOVAL**).
2. Remove the oil screen and baffle plate (see step 8).
3. Measure the connecting rod end play with a feeler gauge between the connecting rod and crankshaft.

   Connecting Rod End Play

   Standard (New): 0.15-0.35 mm (0.006-0.014 in.)

Service Limit: 0.45 mm (0.018 in.)

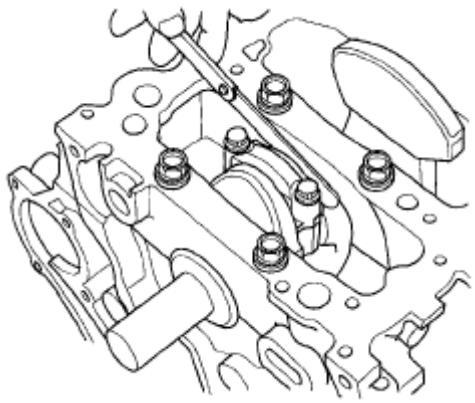


Fig. 4: Measuring Connecting Rod End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the connecting rod end play is beyond the service limit, install a new connecting rod, and recheck. If it is still beyond the service limit; replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).
5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

   Crankshaft End Play

   Standard (New): 0.10-0.35 mm (0.004-0.014 in.)

   Service Limit: 0.45 mm (0.018 in.)

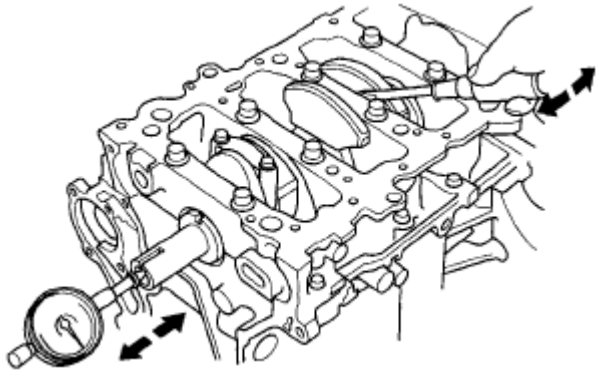


Fig. 5: Pushing Crankshaft Firmly Away From Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the end play is beyond the service limit, replace the thrust washers and recheck, if it is still beyond the service limit, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).

CRANKSHAFT MAIN BEARING REPLACEMENT

Main Bearing Clearance Inspection

1. To check the main bearing-to-journal oil clearance, remove the lower block and bearing halves (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean each main journal and bearing half with a clean shop towel.
3. Place one strip of plastigage across each main journal.
4. Reinstall the bearings and lower block, then torque the bolts to 25 N-m (2.5 kgf-m, 18 lbf-ft) + 57 degrees in the proper sequence (see step 19).

NOTE: Do not rotate the crankshaft during inspection.

5. Remove the lower block and bearings again, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance

   Standard (New): 0.018 - 0.034 mm (0.0007 - 0.0013 in.)

   Service Limit: 0.045 mm (0.0018 in.)

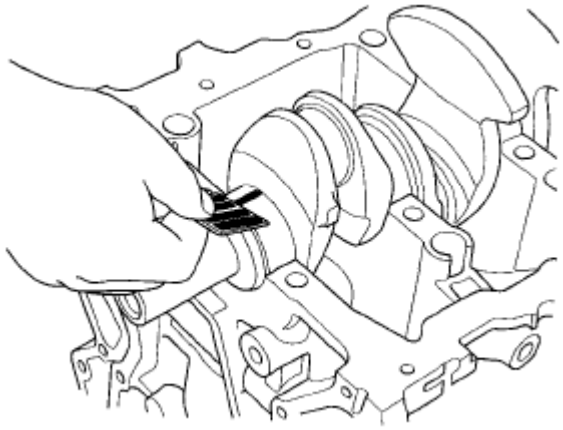


Fig. 6: Measuring Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft, and start over.

Main Bearing Selection

Crankshaft Bore Code Location

1. Numbers, letters or bars have been stamped on the either side of the block end as a code for the size of each of the five main journal bores. Write down the crank bore codes.

   If you can't read the codes because of accumulated dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

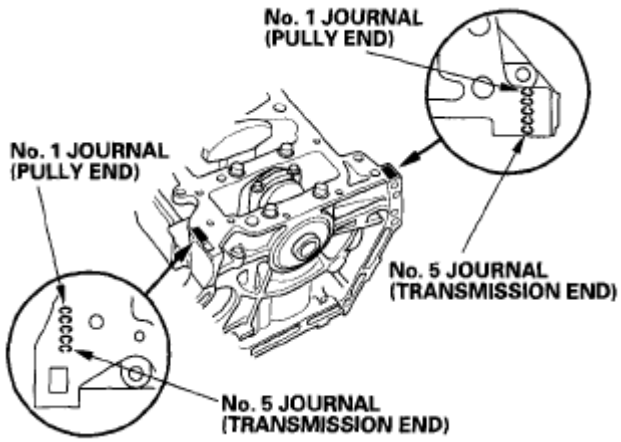


Fig. 7: Identifying Crankshaft Bore Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Journal Code Location

2. The main journal codes are stamped on the crankshaft.

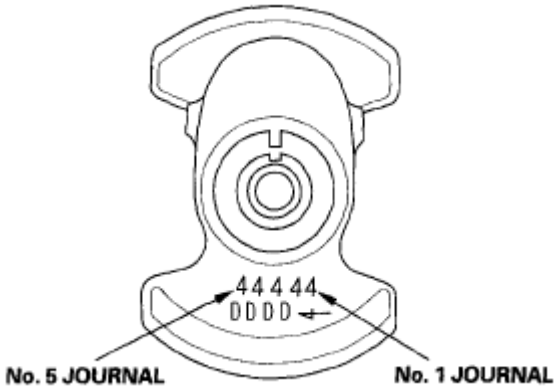


Fig. 8: Identifying Main Journal Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Use the crank bore codes and crank journal codes to select the appropriate replacement bearings from the following table.

NOTE:

- **Color code is on the edge of the bearing.**
- **When using bearing halves of different colors, it does not matter which color is used in the top or bottom.**

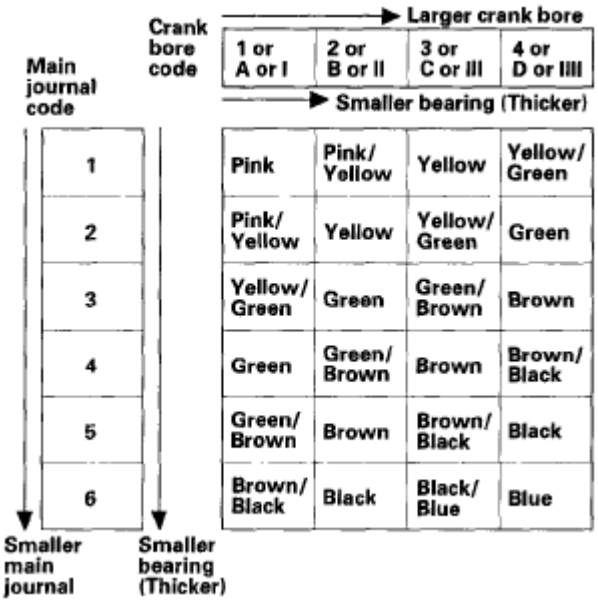


Fig. 9: Identifying Crank Bore Codes And Crank Journal Codes Reference
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD BEARING REPLACEMENT

Rod Bearing Clearance Inspection

1. Remove the oil pan (see **OIL PAN REMOVAL**).
2. Remove the oil screen and baffle plate (see step 8).
3. Remove the connecting rod cap and bearing half.
4. Clean the crankshaft rod journal and bearing half with a clean shop towel.
5. Place plastigage across the rod journal.
6. Reinstall the bearing half and cap, and torque the bolts to 20 N.m (2.0 kgf.m, 14 lbf.ft) + 90 degrees using a commercially available torque angle gauge.

NOTE: Do not rotate the crankshaft during inspection.

7. Remove the rod cap and bearing half, and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance

Standard (New): 0.024-0.042 mm (0.0009-0.0017 in.)

Service Limit: 0.055 mm (0.0022 in.)

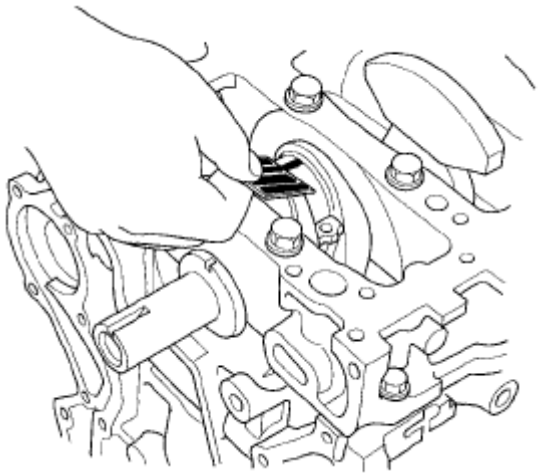


Fig. 10: Measuring Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, install a new, complete bearing with the same color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
9. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearing, replace the crankshaft, and start over.

Rod Bearing Selection

1. Inspect each connecting rod for cracks and heat damage.

   Connecting Rod Big End Bore Code Locations

2. Each rod has a tolerance range from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments, depending on the size of its big end bore. It is then stamped with a number or bar (1, 2, 3 or 4/I, II, III, or MM) indicating the range. You may find any combination of numbers and bars in any engine. (Half the number or bar is stamped on the bearing cap, the other half is on the rod.)

   If you can't read the code because of an accumulation of oil and varnish, do not scrub it with a wire brush or scraper. Clean it only with solvent or detergent.

   Normal Bore Size: 48.0 mm (1.89 in.)

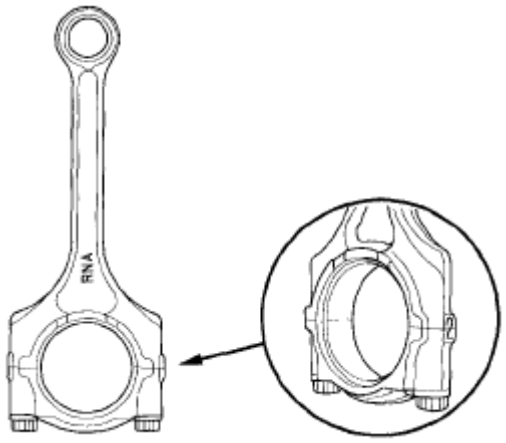


Fig. 11: Identifying Connecting Rod Big End Bore Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connecting Rod Journal Code Location

3. The connecting rod journal codes are stamped on the crankshaft.

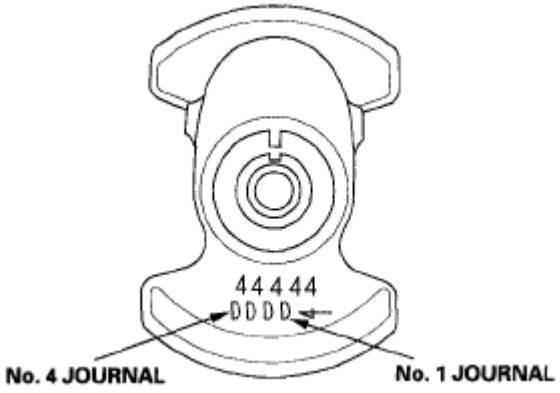


Fig. 12: Identifying Connecting Rod Journal Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Use the big end bore codes and rod journal codes to select the appropriate replacement bearings from the following table.

NOTE:

- **Color code is on the edge of the bearing.**
- **When using bearing halves of different colors, it does not matter which color is used in the top or bottom.**

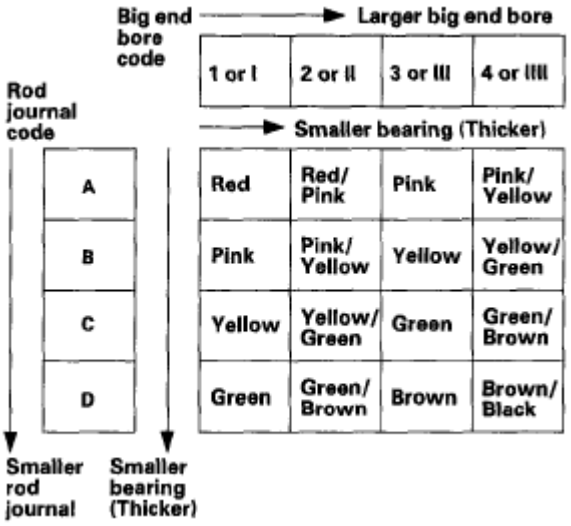
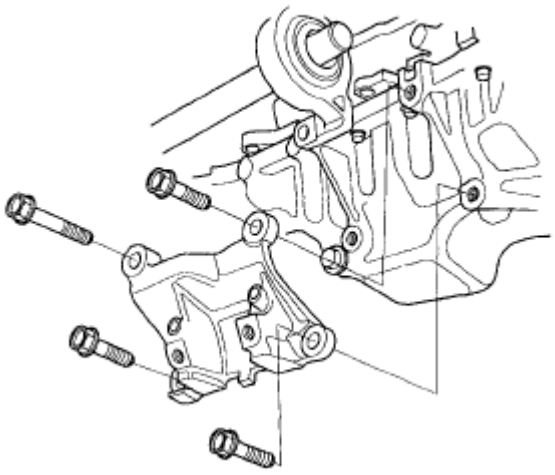


Fig. 13: Identifying Big End Bore Codes And Rod Journal Codes Reference
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PAN REMOVAL

1. If the engine is already out of the vehicle, go to step 12.
2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Remove the A/C condenser fan shroud (see **A/C COMPRESSOR REPLACEMENT**).
4. Disconnect the A/C compressor clutch connector, then remove the harness clamp. Remove the A/C compressor without disconnecting the A/C hoses (see step 39 on **ENGINE REMOVAL**).
5. Raise the vehicle on the hoist to full height.
6. Remove the splash shield (see step 23 on **ENGINE REMOVAL**).
7. Drain the engine oil (see **ENGINE OIL REPLACEMENT**).
8. Remove exhaust pipe A (see step 27 on **ENGINE REMOVAL**).
9. Support the oil pan with a jack.
10. Remove the lower torque rod (see step 46 on **ENGINE REMOVAL**).
11. Remove the jack.
12. Remove the lower torque rod bracket.

M/T



A/T

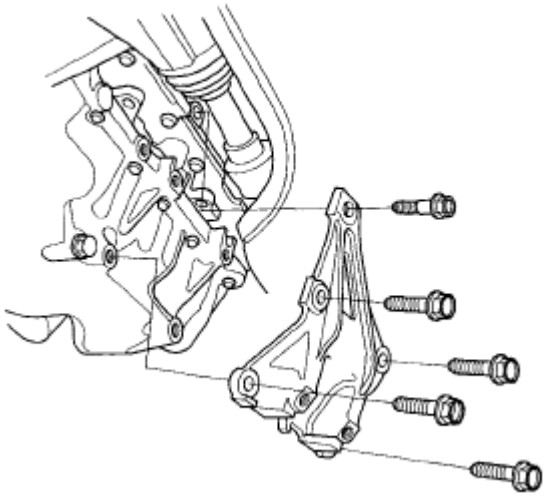


Fig. 14: Identifying Lower Torque Rod Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the A/C compressor bracket.

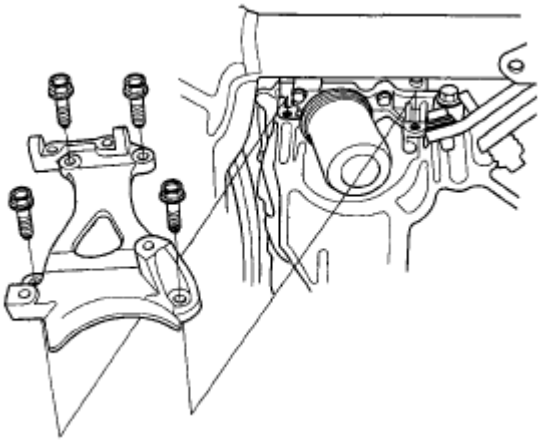


Fig. 15: Identifying A/C Compressor Bracket

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. A/T model: Remove the shift cable cover.

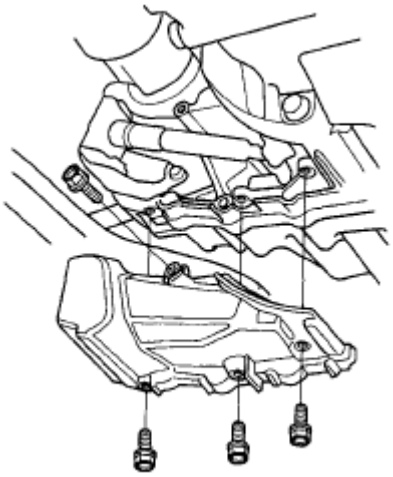


Fig. 16: Identifying Shift Cable Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the clutch cover/torque converter cover (A), and remove the two bolts securing the transmission.

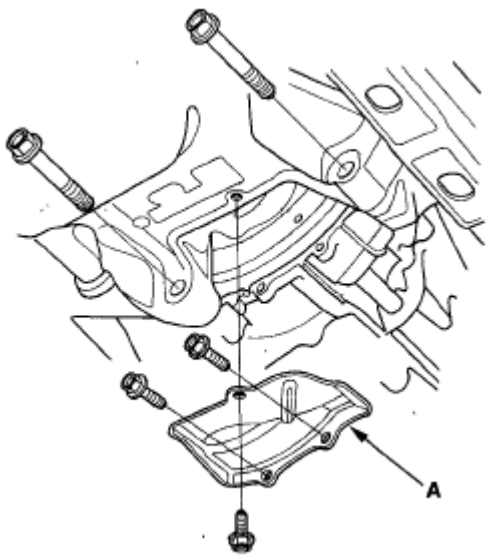


Fig. 17: Identifying Clutch Cover/Torque Converter Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the bolts securing the oil pan.
17. Using a flat blade screwdriver, separate the oil pan from the block in the places shown.

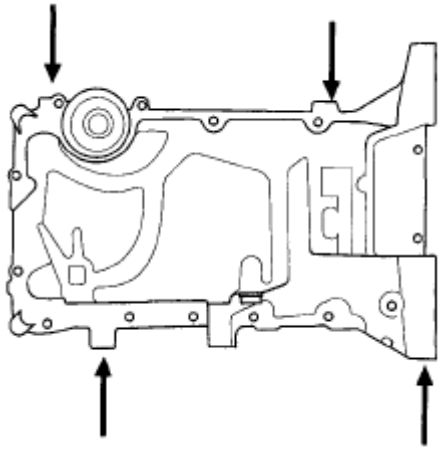


Fig. 18: Identifying Oil Pan From Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Remove the oil pan.

CRANKSHAFT AND PISTON REMOVAL

1. Remove the engine assembly (see **ENGINE REMOVAL**).
2. Remove the transmission:
   - Manual transmission (see **TRANSMISSION REMOVAL**)
   - Automatic transmission (see **TRANSMISSION REMOVAL**)
3. M/T model: Remove the pressure plate, clutch disc and flywheel (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
4. A/T model: Remove the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
5. Remove the oil pan (see **OIL PAN REMOVAL**).
6. Remove the oil pump (see **REMOVAL**).
7. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
8. Remove the oil screen (A) and baffle plate (B).

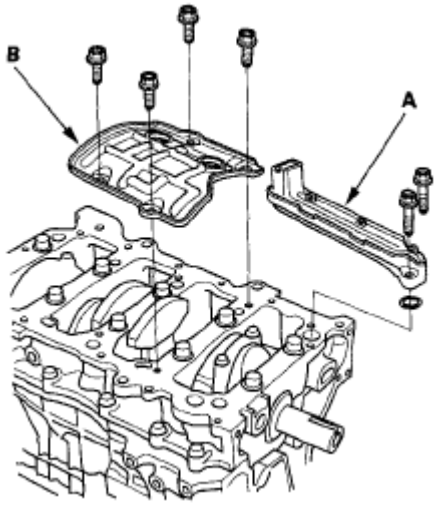


Fig. 19: Identifying Oil Screen And Baffle Plate

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the 8 mm bolts.

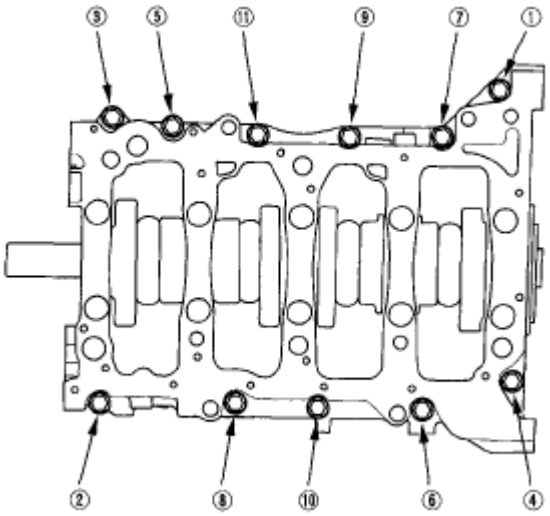


Fig. 20: Identifying Baffle Plate And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the bearing cap bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

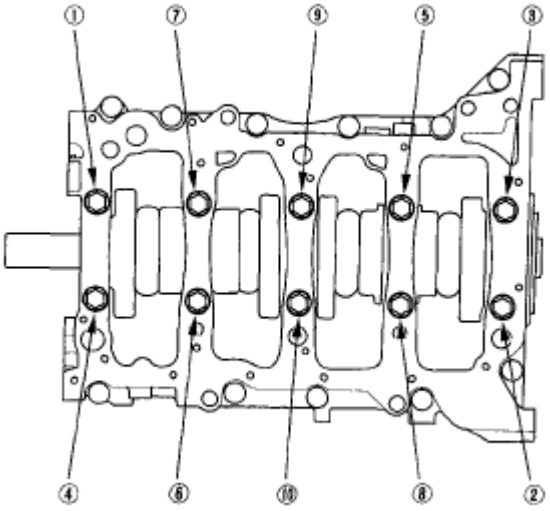


Fig. 21: Identifying Bearing Cap Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Using a flat blade screwdriver, separate the lower block from the engine block in the places shown.

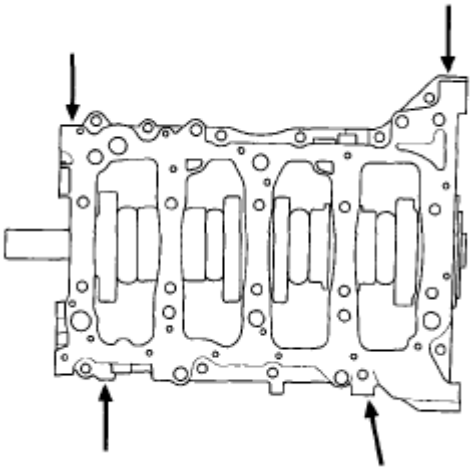


Fig. 22: Identifying Lower Block From Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the lower block and bearings. Keep all the bearings in order.
13. Remove the rod caps/bearings. Keep all caps/bearings in order.
14. Lift the crankshaft (A) out of the engine. Be careful not to damage the journals and the crankshaft position (CKP) pulse plate (B).

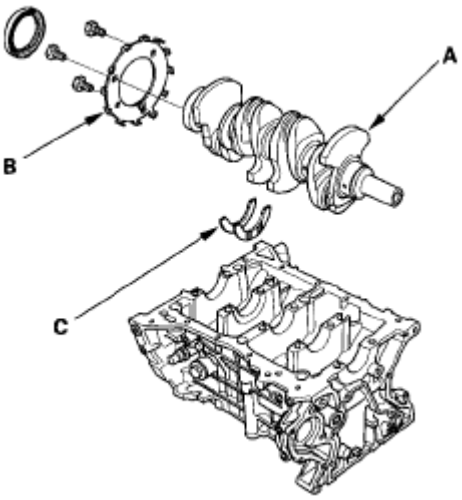


Fig. 23: Identifying Crankshaft Position (CKP) Pulse Plate And Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the CKP pulse plate (B).
16. Remove the thrust washers (C).
17. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
18. If you can feel a ridge of metal or hard carbon around the top of each cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the pistons as they are pushed out.

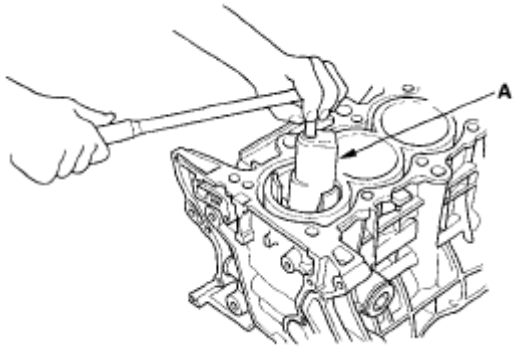


Fig. 24: Removing Upper Bearing Halves From Connecting Rods
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Use the wooden handle of a hammer (A) to drive out the piston/connecting rod assembly (B). Take care not to damage the oil jets or cylinder with the connecting rod.

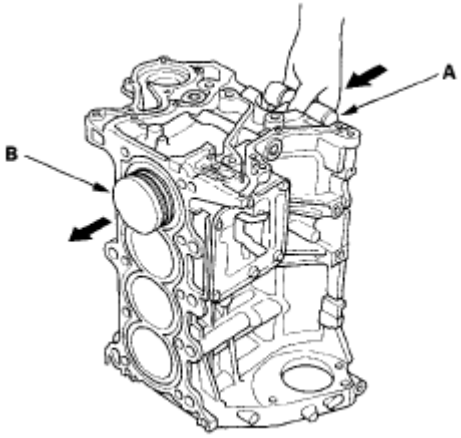


Fig. 25: Driving Out Piston/Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Reinstall the lower block and the bearings on the engine in the proper order.
21. Reinstall the connecting rod bearings and caps after removing each piston/connecting rod assembly.
22. Mark each piston/connecting rod assembly with its cylinder number to make sure they are reused in the original order.

NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod bore size.

CRANKSHAFT INSPECTION

Out-of-Round and Taper

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Clean the keyway and the threads.
4. Measure the out-of-round at the middle of each rod and main journal in two places. The difference

between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)

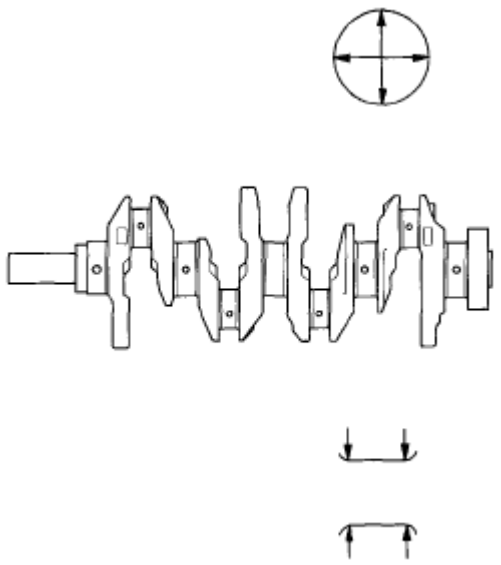


Fig. 26: Identifying Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

   Journal Taper

   Standard (New): 0.005 mm (0.0002 in.) max.

   Service Limit: 0.010 mm (0.0004 in.)

   Straightness

6. Place the engine block on the surface plate.
7. Clean and install the bearings on the No. 1 and No. 5 journals of the engine block.
8. Lower the crankshaft into the block.
9. Measure the runout on all of the main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

   Crankshaft Total Runout

   Standard (New): 0.03 mm (0.0012 in.) max.

   Service Limit: 0.04 mm (0.0016 in.)

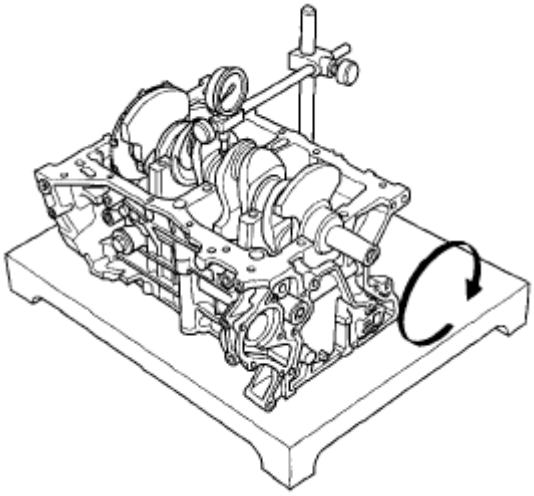


Fig. 27: Measuring Runout On Of Main Journals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BLOCK AND PISTON INSPECTION

1. Remove the crankshaft and pistons (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Check the piston for distortion or cracks.
3. Measure the piston diameter at a point 14 mm (0.55 in.) from the bottom of the skirt.

Piston Diameter

Standard (New): 80.980-80.990 mm (3.1881-3.1886 in.)

Service Limit: 80.93 mm (3.186 in.)

Oversize Piston Diameter

0.25: 81.230-81.240 mm (3.1980-3.1984 in.)

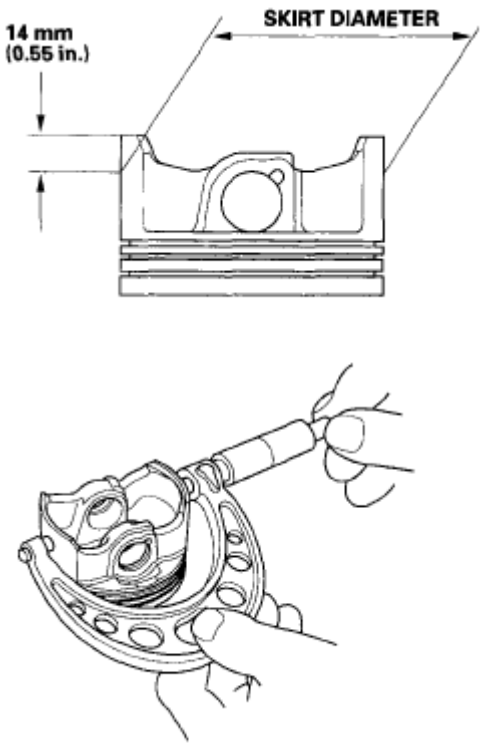


Fig. 28: Measuring Piston Diameter Point From Bottom Of Skirt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the wear and taper Y at three levels inside each cylinder as shown. If the measurements in any cylinder are beyond the Oversize Bore Service Limit, replace the engine block. If the engine block is being rebored, refer to step 7 after reboring.

   Cylinder Bore Size

   Standard (New): 81.000-81.015 mm (3.1890-3.1896 in.)

   Service Limit: 81.070 mm (3.1917 in.)

   Oversize Bore

   0.25: 81.250-81.265 mm (3.1988-3.1994 in.)

   Reboring limit: 0.25 mm (0.01 in.) max.

   Bore Taper

   Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

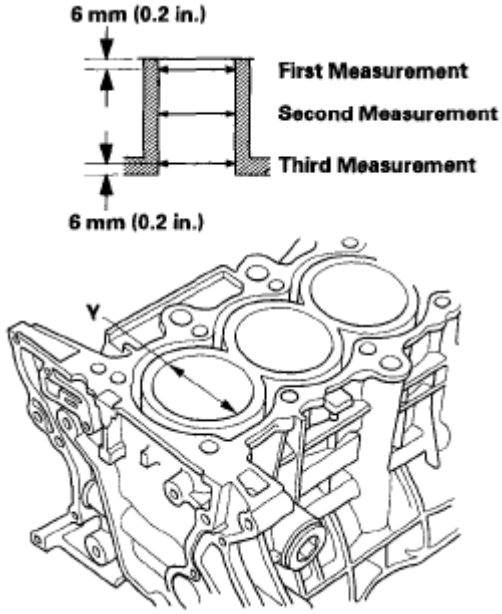


Fig. 29: Identifying Wear And Taper At Three Levels Inside Each Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Scored or scratched cylinder bores must be honed.
6. Check the top of the engine block for warpage. Measure along the edges, and across the center as shown.

Engine Block Warpage

Standard (New): 0.07 mm (0.003 in.) max.

Service Limit: 0.10 mm (0.004 in.)

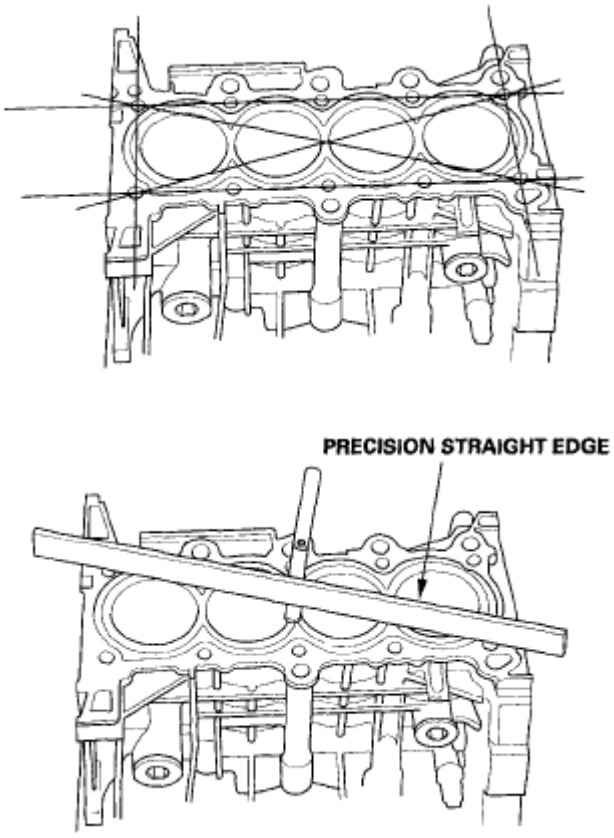


Fig. 30: Identifying Top Of Engine Block For Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Calculate the difference between the cylinder bore diameter and the piston diameter. If the clearance is near, or exceeds the service limit, inspect the piston and engine block for excessive wear.

   Piston-to-Cylinder Bore Clearance

   Standard (New): 0.010-0.035 mm (0.0004-0.0014 in.)

   Service Limit: 0.05 mm (0.002 in.)

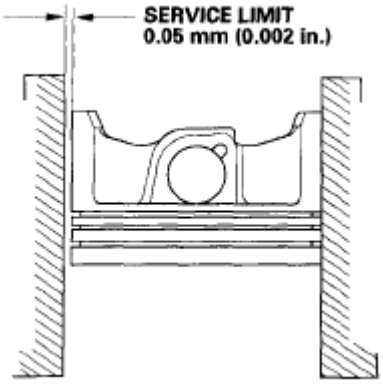


Fig. 31: Identifying Calculate Difference Between Cylinder Bore Diameter And Piston Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER BORE HONING

Only a scored or scratched cylinder bore must be honed.

1. Measure the cylinder bores (see **BLOCK AND PISTON INSPECTION**). If the engine block is to be reused, hone the cylinders, and remeasure the bores.
2. Remove and replace the oil jets (see **OIL JET REPLACEMENT**).
3. Hone the cylinder bores with honing oil and a fine (400 grit) stone.

   Honing Pattern: Within 30-60 degree cross-hatch pattern (A)

   NOTE: Use only a rigid hone with 400 grit or finer stone such as Sunnen, Ammco, or equivalent. Do not use stones that are worn or broken.

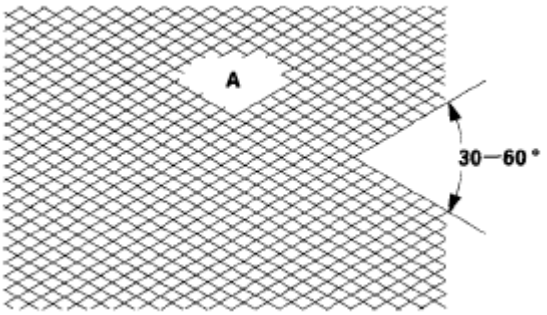


Fig. 32: Identifying Honing Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
5. If scoring or scratches are still present in the cylinder bores after honing the engine block to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail, and does not run the full length of the bore.
6. Install the new oil jets (see **OIL JET REPLACEMENT**).

PISTON, PIN, AND CONNECTING ROD REPLACEMENT

Disassembly

1. Remove the piston from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Apply new engine oil to the piston pin snap rings (A), and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

   NOTE: Take care not to damage the ring grooves.

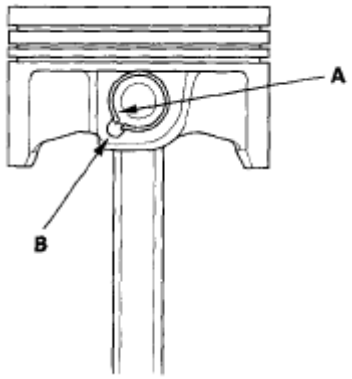


Fig. 33: Identifying Piston Pin Snap Rings And Piston Pin Bores
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove both snap rings (A). Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.

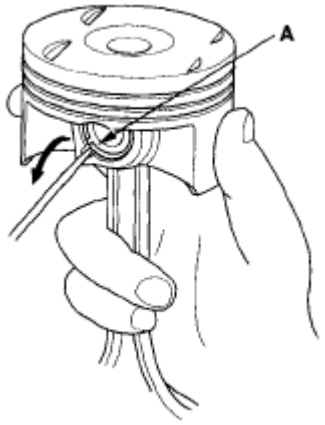


Fig. 34: Removing Both Snap Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Heat the piston and connecting rod assembly to about 158°F (70°C), then remove the piston pin.

Fig. 35: Heating Piston And Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Inspection

NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

   Piston Pin Diameter

   Standard (New): 19.960-19.964 mm (0.7858-0.7860 in.)

   Service Limit: 19.960 mm (0.7858 in.)

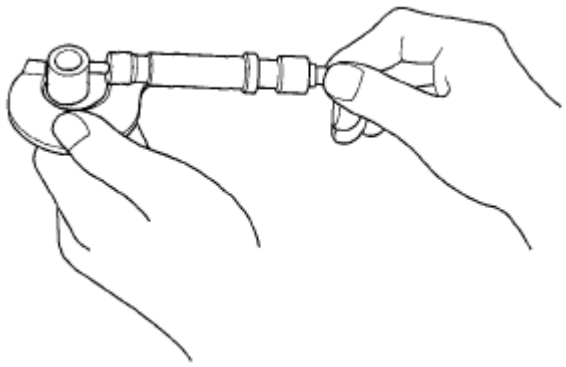


Fig. 36: Measuring Diameter Of Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Zero the dial indicator to the piston pin diameter.

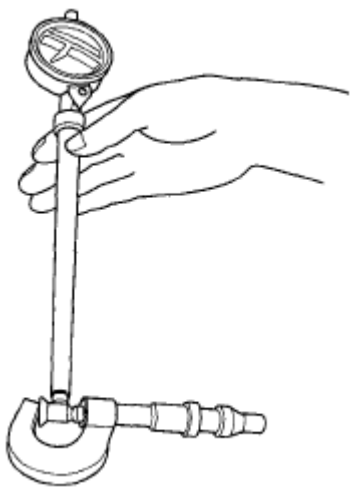


Fig. 37: Identifying Piston Pin Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check the difference between the piston pin diameter and piston pin hole diameter in the piston.

   Piston Pin-to-Piston Clearance

Standard (New): -0.004 to +0.003 mm (-0.00016 to +0.00012 in.)

Service Limit: 0.006 mm (0.0002 in.)

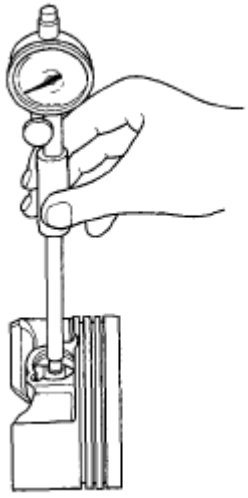


Fig. 38: Checking Difference Between Piston Pin Diameter And Piston Pin Hole Diameter In Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the piston pin-to-connecting rod clearance.

   Piston Pin-to-Connecting Rod Clearance

   Standard (New): 0.005-0.015 mm (0.0002-0.0006 in.)

   Service Limit: 0.02 mm (0.0008 in.)

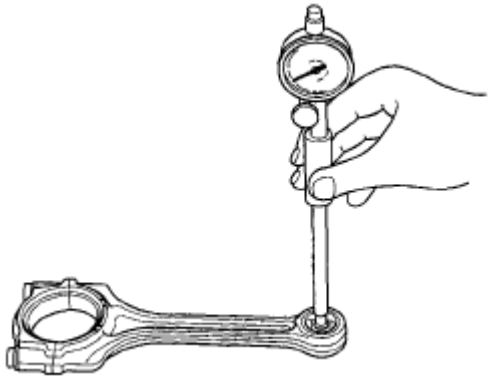


Fig. 39: Measuring Piston Pin-To-Connecting Rod Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

1. Install one piston pin snap ring (A).

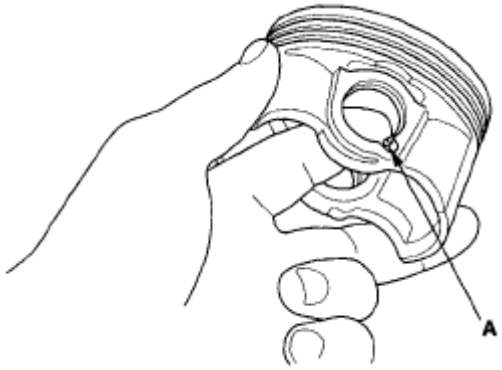


Fig. 40: Installing Piston Pin Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Coat the piston pin bore, the bore in the connecting rod, and the piston pin with new engine oil.
3. Heat the piston to about 158°F (70°C).

Fig. 41: Heating Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Assemble the piston (A) and connecting rod (B) with the mark (C) and the embossed mark (D) on the same side. Install the piston pin (E).

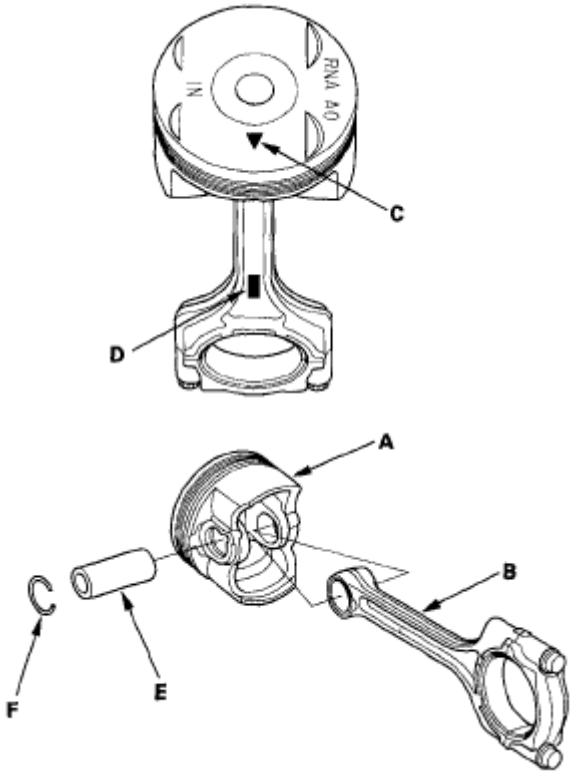


Fig. 42: Identifying Piston And Connecting Rod With Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the remaining snap ring (F).
6. Turn the snap rings until the end gaps are positioned at the bottom of the piston.

PISTON RING REPLACEMENT

1. Remove the piston from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Using a ring expander (A), remove the old piston rings (B).

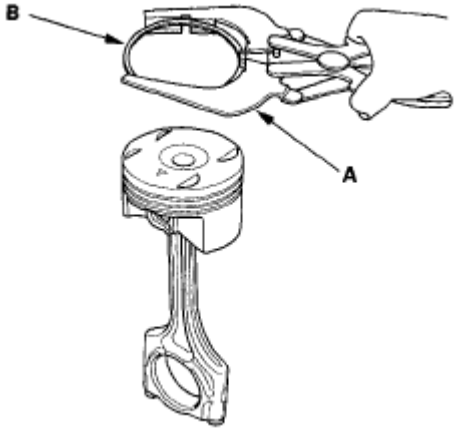


Fig. 43: Removing Old Piston Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade

to fit the piston grooves.

The top and 2nd ring grooves are 1.2 mm (0.05 in.) wide. The oil ring groove is 2.0 mm (0.08 in.) wide. File down a blade if necessary. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tools.

NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston that has its rings removed, push a new ring (A) into the cylinder bore 15-20 mm (0.6-0.8 in.) from the bottom.

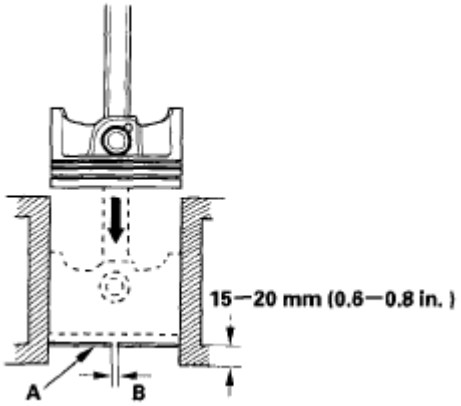


Fig. 44: Pushing Ring Into Cylinder Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the piston ring end-gap (B) with a feeler gauge:
   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see **BLOCK AND PISTON INSPECTION**). If the bore is beyond the service limit, the engine block must be rebored.

Piston Ring End-Gap

Top Ring:

Standard (New): 0.20-0.35 mm (0.008-0.014 in.)

Service Limit: 0.60 mm (0.024 in.)

Second Ring:

Standard (New): 0.40-0.55 mm (0.016-0.022 in.)

Service Limit: 0.70 mm (0.028 in.)

Oil Ring:

Standard (New): 0.20-0.70 mm (0.008-0.028 in.)

Service Limit: 0.80 mm (0.031 in.)

6. Install the top ring and the second ring as shown. The top ring (A) has a 1T, 1A, or 1R mark, and the second ring (B) has a 2T, 2A, or 2R mark. The manufacturing marks (C) must be facing upward.

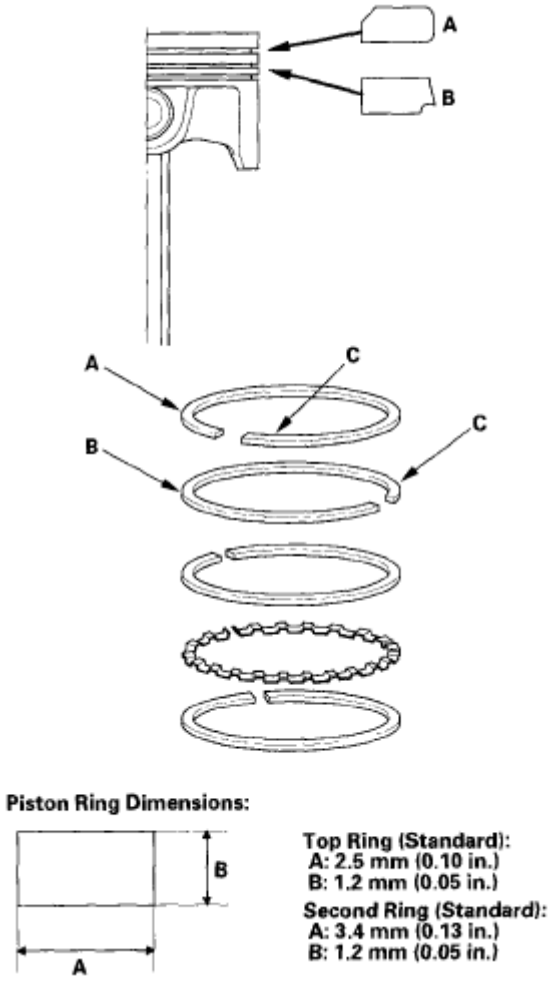


Fig. 45: Identifying Top Ring And Second Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Rotate the rings in their grooves to make sure they do not bind.
8. Position the ring end gaps as shown:

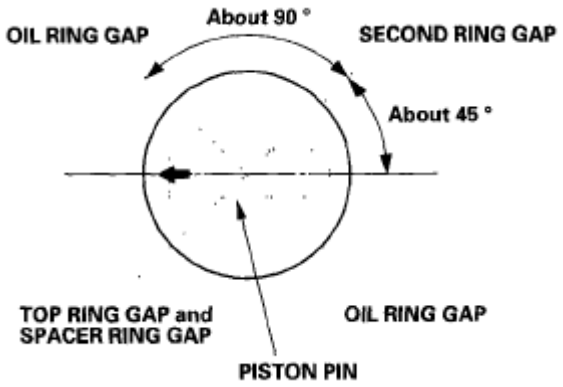


Fig. 46: Positioning Ring End Gaps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. After installing a new set of rings, measure the ring-to-groove clearances:

   Top Ring Clearance

   Standard (New): 0.045-0.070 mm (0.0018-0.0028 in.)

   Service Limit: 0.13 mm (0.005 in.)

   Second Ring Clearance

   Standard (New): 0.035-0.060 mm (0.0014-0.0024 in.)

   Service Limit: 0.13 mm (0.005 in.)

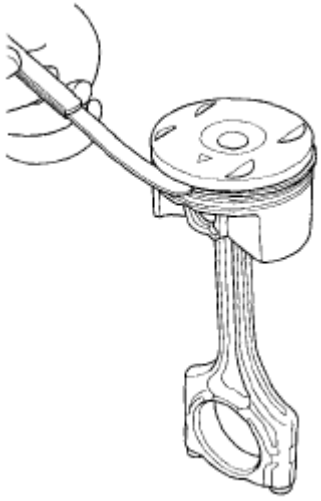


Fig. 47: Measuring Ring-To-Groove Clearances
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PISTON INSTALLATION

If the Crankshaft is Already Installed

1. Set the crankshaft to bottom dead center (BDC) for each cylinder as its piston is installed.
2. Remove the connecting rod caps, then install the ring compressor. Check that the bearing is securely in place.
3. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.
4. Position the mark (A) to face the cam chain side of the engine.

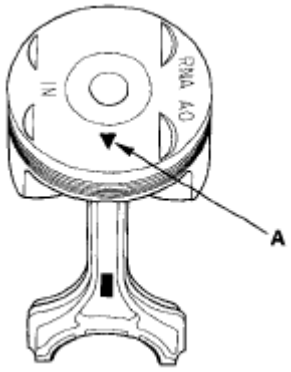


Fig. 48: Identifying Mark To Face Cam Chain Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.

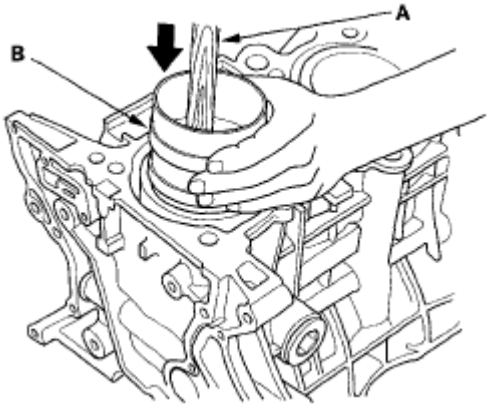


Fig. 49: Positioning Piston In Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
7. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
8. Inspect the connecting rod bolts (see **CONNECTING ROD BOLT INSPECTION**).
9. Apply new engine oil to the bolt threads, then install the rod caps with bearings. Torque the bolts to 20 N.m (2.0 kgf.m, 14 lbf.ft).
10. Tighten the connecting rod bolts an additional 90 °.

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

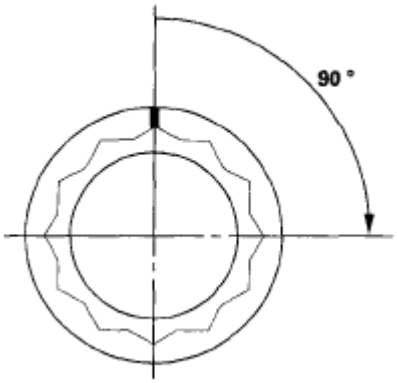


Fig. 50: Identifying Connecting Rod Bolt Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the Crankshaft is Not Installed

1. Remove the connecting rod caps, then install the ring compressor, and check that the bearing is securely in place.
2. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.
3. Position the mark (A) to face the cam chain side of the engine.

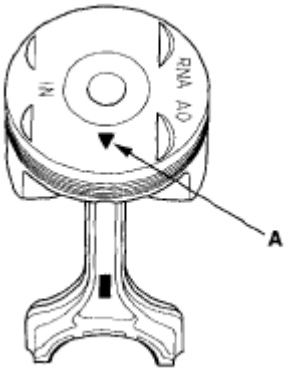


Fig. 51: Identifying Mark To Face Cam Chain Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.

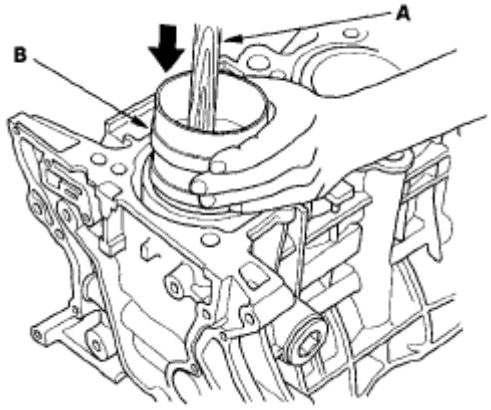


Fig. 52: Positioning Piston In Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Position all pistons at top dead center (TDC).

CONNECTING ROD BOLT INSPECTION

1. Measure the diameter of each connecting rod bolt at point A and point B.

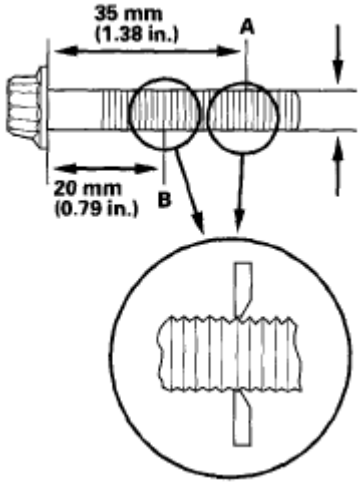


Fig. 53: Identifying Diameter Of Each Connecting Rod Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Calculate the difference in diameter between point A and point B.

   Point A-Point B = Difference in Diameter

   Difference in Diameter:

   Specification: 0-0.1 mm (0-0.004 in.)

3. If the difference in diameter is out of specification, replace the connecting rod bolt.

CRANKSHAFT INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Attachment, 24 x 26 mm 07746-0010700
- Oil seal driver attachment 96 07ZAD-PNAA100

1. With a manual transmission, install the crankshaft end bushing when replacing the crankshaft. Using the special tools, drive in the crankshaft end bushing until the special tools bottom against the crankshaft.

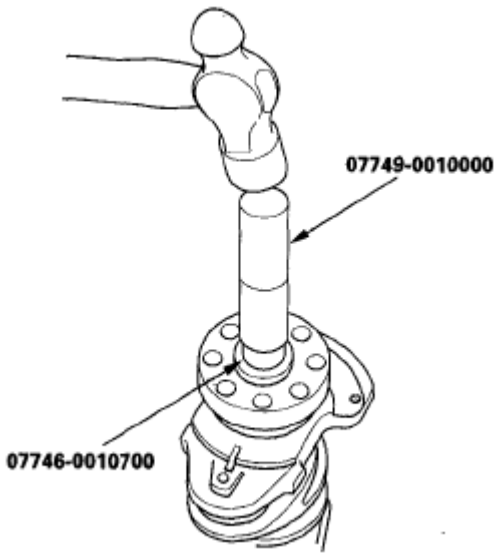


Fig. 54: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
3. Check the main bearing clearance with plastigage (see **CRANKSHAFT MAIN BEARING REPLACEMENT**).
4. Install the bearing halves in the engine block and connecting rods.
5. Apply a coat of new engine oil to the main bearings and rod bearings.
6. Install the crankshaft position (CKP) pulse plate (A) to the crankshaft (B).

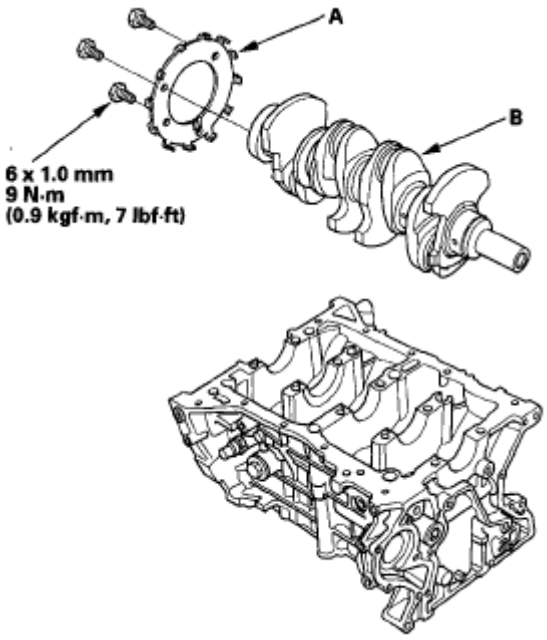


Fig. 55: Identifying Crankshaft Position (CKP) Pulse Plate To Crankshaft (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Hold the crankshaft so that rod journal No. 2 and rod journal No. 3 are straight up, and lower the crankshaft into the engine block.
8. Apply new engine oil to the thrust washer surfaces. Install the thrust washers (A) in the No. 4 journal of the engine block.

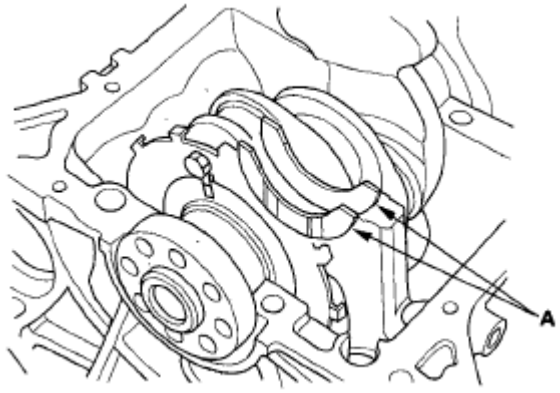


Fig. 56: Identifying Thrust Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the connecting rod bolts (see **CONNECTING ROD BOLT INSPECTION**).
10. Seat the rod journals into connecting rod No. 1 and connecting rod No. 4. Line up the mark (A) on the connecting rod and cap, then install the caps and bolts finger-tight.

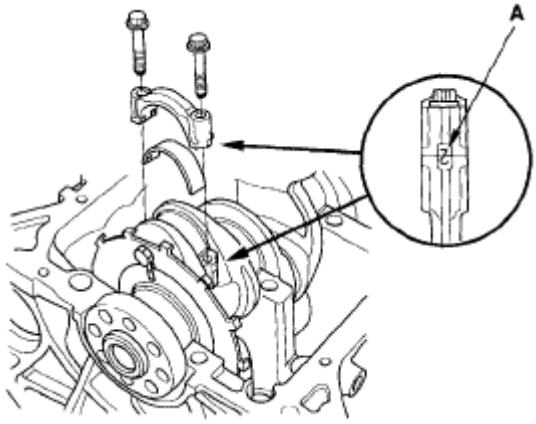


Fig. 57: Identifying Mark On Connecting Rod And Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Rotate the crankshaft clockwise, and seat the journals into connecting rod No. 2 and connecting rod No. 3. Line up the mark on the connecting rod and cap, then install the caps and bolts finger-tight.
12. Tighten the connecting rod bolts to 20 N.m (2.0 kgf.m, 14 lbf.ft).
13. Tighten the connecting rod bolts an additional 90 °.

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 9 of the procedure. Do not loosen it back to the specified angle.

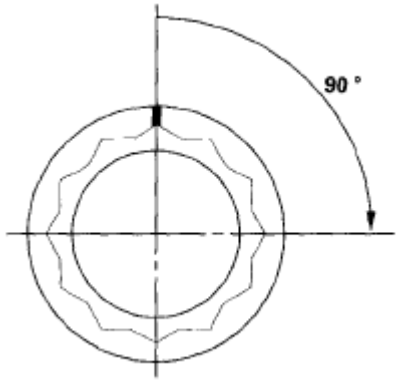


Fig. 58: Identifying Connecting Rod Bolt Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove any old liquid gasket from the lower block mating surfaces, bolts, and bolt holes.
15. Clean, and dry the lower block mating surfaces.
16. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the lower block.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

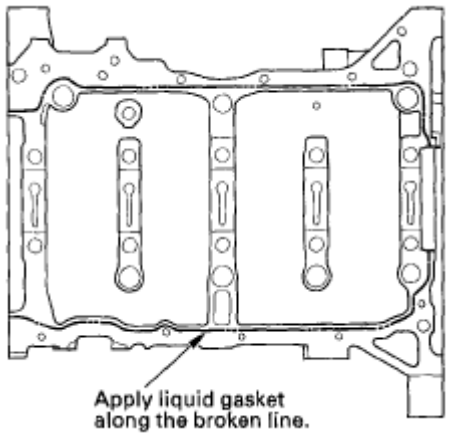


Fig. 59: Identifying Lower Block Mating Surfaces
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Put the lower block on the engine block.

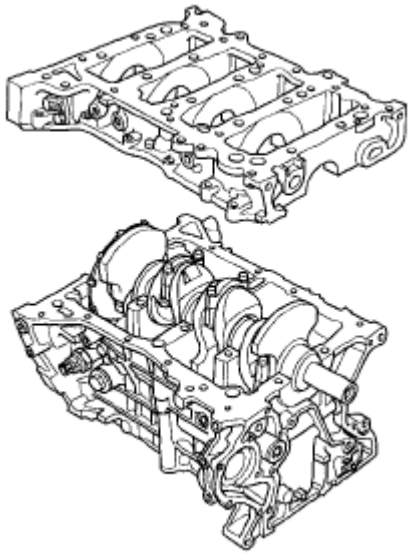


Fig. 60: Identifying Lower Block On Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Apply new engine oil to the threads and flange of the bearing cap bolts.
19. Tighten the bearing cap bolts, in sequence, to 25 N.m (2.5 kgf.m, 18 lbf.ft).

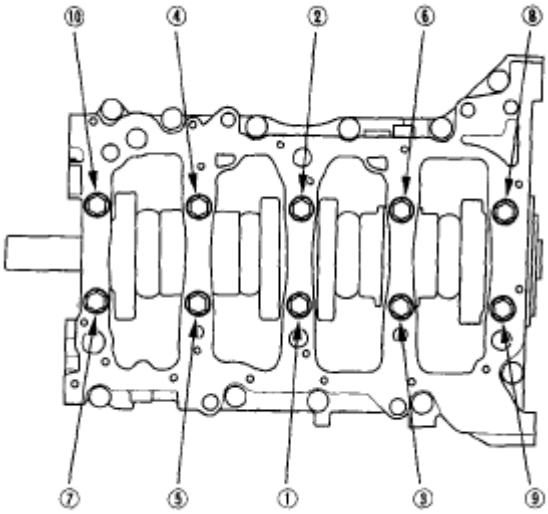


Fig. 61: Identifying Bearing Cap Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Tighten the bearing cap bolts an additional 57 degrees.

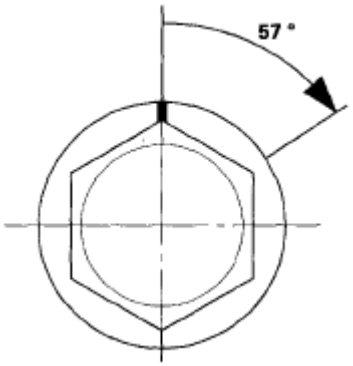


Fig. 62: Identifying Bearing Cap Bolts Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Tighten the 8 mm bolts, in sequence, to 24 N.m (2.4 kgf.m, 17 lbf-ft).

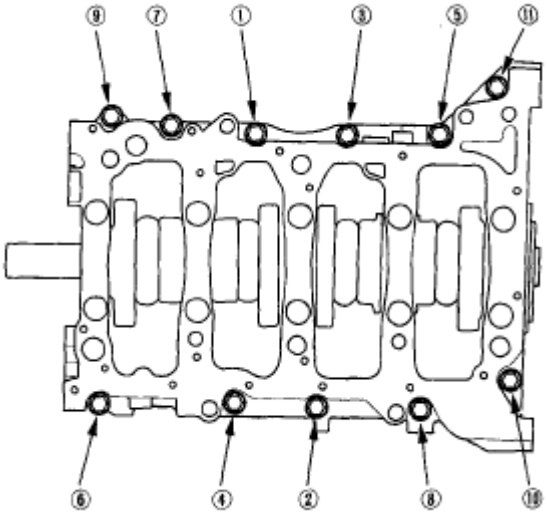


Fig. 63: Identifying Bearing Cap Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Use the special tools to drive a new oil seal squarely into the engine block to the specified installed height.

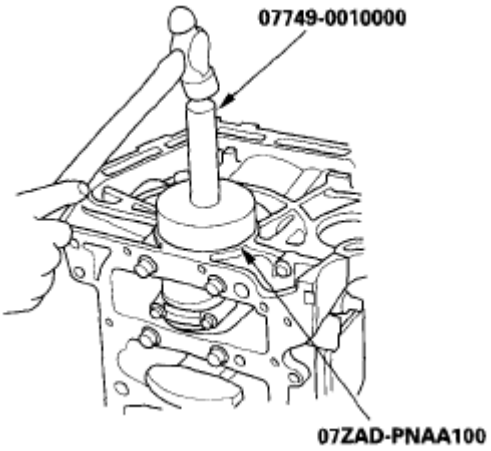


Fig. 64: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Measure the distance between the engine block (A) and oil seal (B).

Oil Seal Installed Height: 0.2-1.2 mm (0.001-0.047 in.)

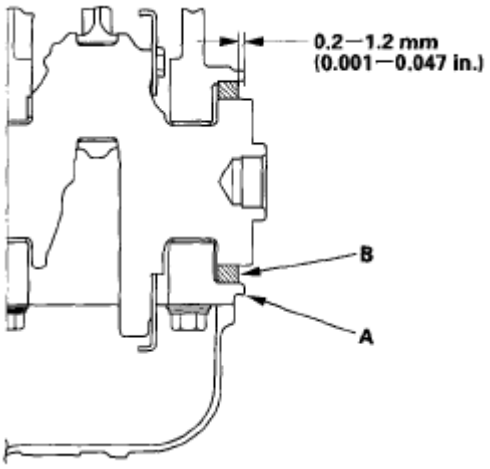


Fig. 65: Identifying Distance Between Engine Block And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the baffle plate (A), then install the oil screen (B) with a new O-ring (C).

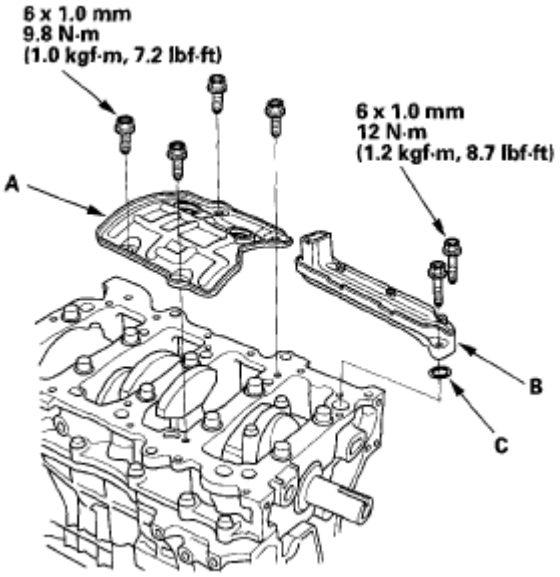


Fig. 66: Identifying Baffle Plate Oil Screen
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the oil pump (see **INSTALLATION**).
26. Install the oil pan (see **OIL PAN INSTALLATION**).
27. Install the cylinder head (see **CYLINDER HEAD INSTALLATION**).
28. M/T model: Install the flywheel, clutch disc and pressure plate (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
29. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
30. Install the transmission:
    - Manual transmission (see **TRANSMISSION INSTALLATION**)
    - Automatic transmission (see **TRANSMISSION INSTALLATION**)
31. Install the engine assembly (see **ENGINE INSTALLATION**).

NOTE: Whenever any crankshaft or connecting rod bearing is replaced, it is necessary after reassembly to run the engine at idle speed until it reaches normal operating temperature, then continue running it for about 15 minutes.

OIL PAN INSTALLATION

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean, and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-00004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pan.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

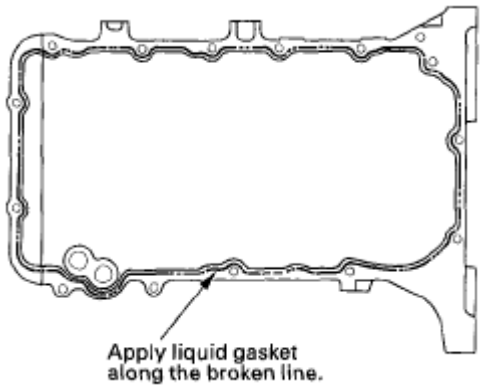


Fig. 67: Identifying Oil Pan Mating Surfaces
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the dowel pins (A), then install the oil pan (B) with new O-rings (C).

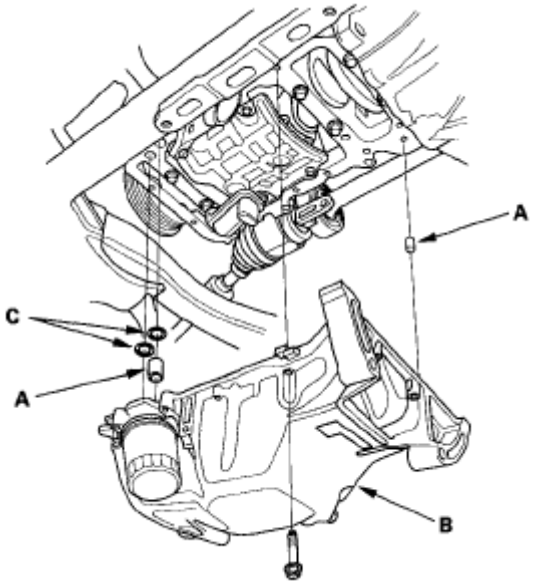


Fig. 68: Identifying Dowel Pins, Oil Pan And O-Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 18 N.m (1.8 kgf.m, 13 lbf.ft). Wipe off the excess liquid gasket on the each side of crankshaft pulley and flywheel/drive plate.

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the oil pan.**

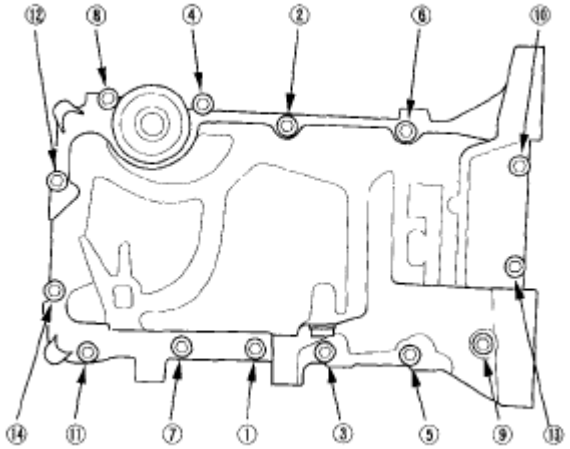


Fig. 69: Identifying Oil Pan Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the clutch cover/torque converter cover (A), and install the two bolts securing the transmission.

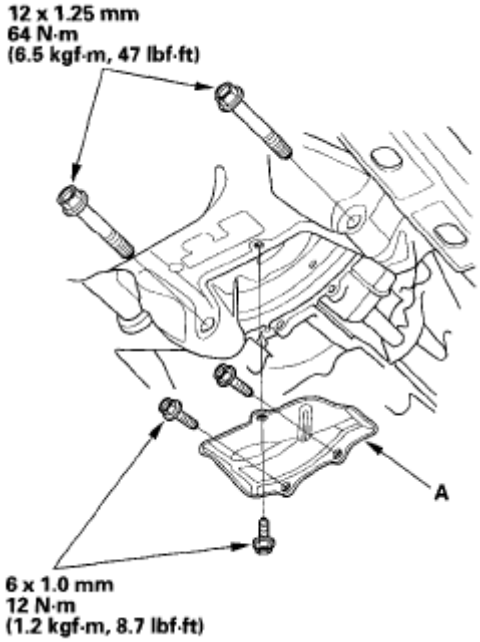


Fig. 70: Identifying Torque Converter Cover And Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. A/T model: Install the shift cable cover.

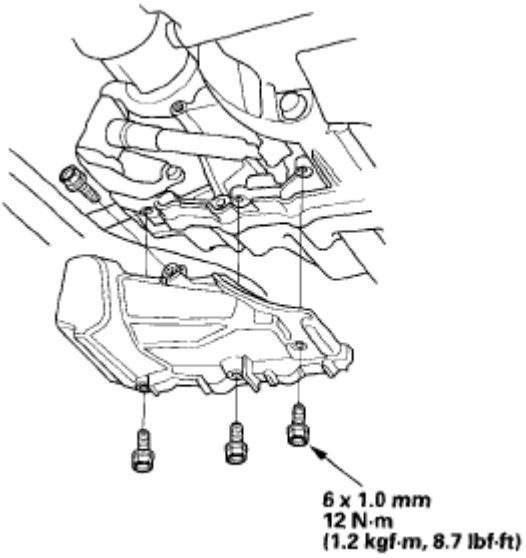


Fig. 71: Identifying Shift Cable Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the A/C compressor bracket.

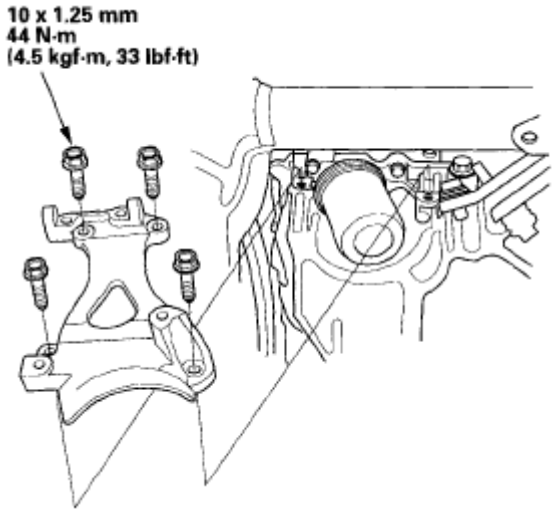


Fig. 72: Identifying A/C Compressor Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the lower torque rod bracket. M/T

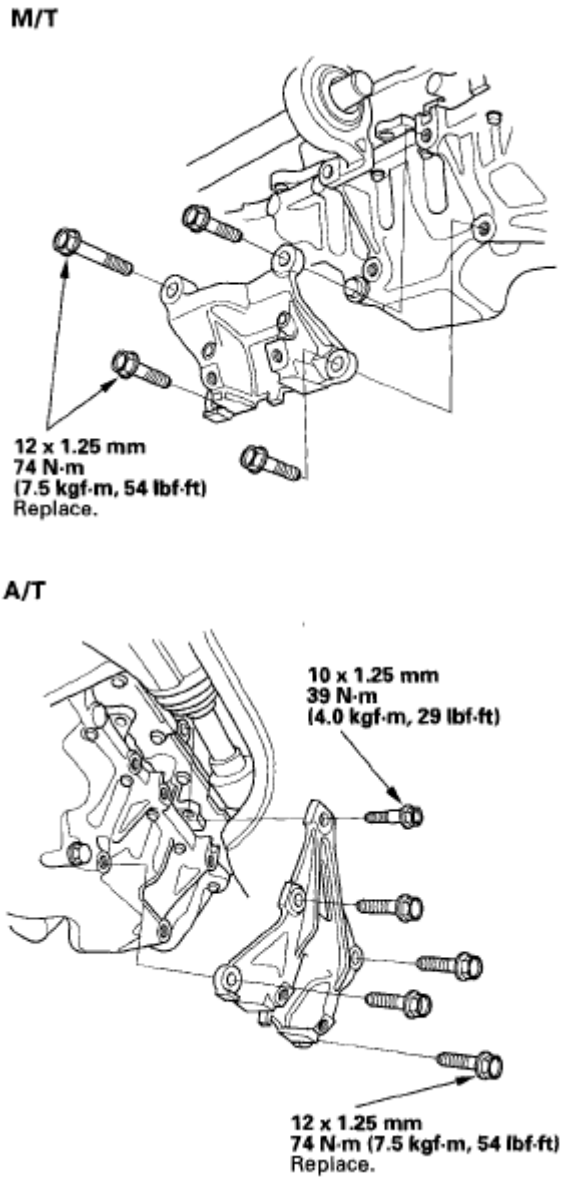


Fig. 73: Identifying Lower Torque Rod Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. If the engine is still in the vehicle, do the following steps.
11. Lower the vehicle on the lift.
12. Loosen the upper torque rod mounting bolt (see step 6 on **ENGINE INSTALLATION**).
13. Raise the vehicle on the lift to full height.
14. Install the lower torque rod (see step 16 on **ENGINE INSTALLATION**).
15. Lower the vehicle on the lift.
16. Tighten the upper torque rod mounting bolt (see step 18 on **ENGINE INSTALLATION**).
17. Raise the vehicle on the lift to full height.
18. Install exhaust pipe A (see step 30 on **ENGINE INSTALLATION**).
19. Lower the vehicle on the lift.
20. Install the A/C compressor. Install the harness clamp, then connect the A/C compressor clutch

connector (see step 34 on **ENGINE INSTALLATION**).

21. Install the A/C condenser fan shroud (see step 5 on **A/C CONDENSER REPLACEMENT**).
22. Install the drive belt (see **DRIVE BELT INSPECTION**).
23. Refill the engine with engine oil (see step 4 on **ENGINE OIL REPLACEMENT**).
24. Install the splash shield (see step 31 on **ENGINE INSTALLATION**).

PULLEY END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

Oil seal driver 07LAD-PT3010A

1. Remove the crankshaft pulley (see **CRANKSHAFT PULLEY REMOVAL AND INSTALLATION**).
2. Remove the pulley end crankshaft oil seal.
3. Clean, and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the seal driver, drive in the crankshaft oil seal until the driver bottoms against the oil pump. When the seal is in place, clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.

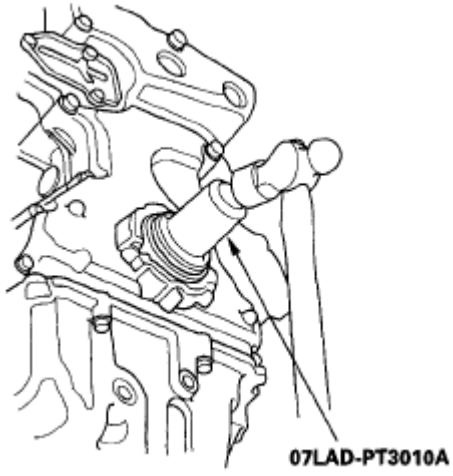


Fig. 74: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the crankshaft pulley (see **INSTALLATION**).

TRANSMISSION END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 96 07ZAD-PNAA100

1. Remove the transmission:

- Manual transmission (see **TRANSMISSION REMOVAL**)
- Automatic transmission (see **TRANSMISSION REMOVAL**)

2. M/T model: Remove the pressure plate, clutch disc and flywheel (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
3. A/T model: Remove the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
4. Remove the transmission end crankshaft oil seal.
5. Clean, and dry the crankshaft oil seal housing.
6. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
7. Use the special tools to drive a new oil seal squarely into the engine block to the specified installed height.

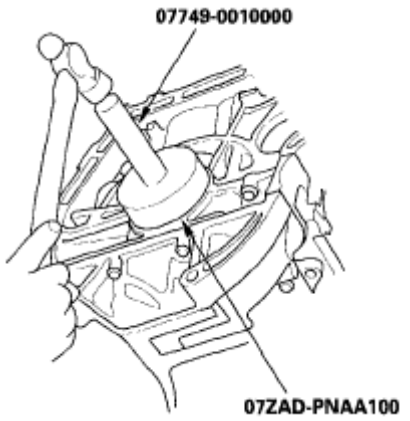


Fig. 75: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the distance between the engine block (A) and oil seal (B).

   Oil Seal Installed Height: 0.2-1.2 mm (0.001-0.047 in.)

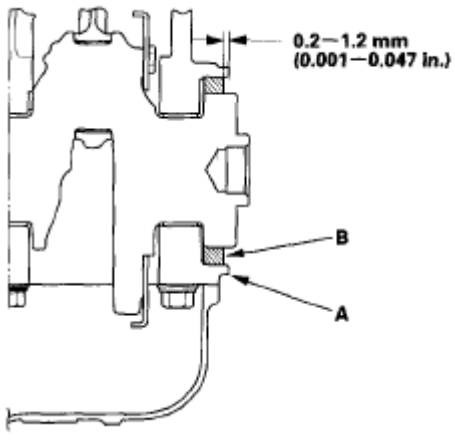


Fig. 76: Identifying Distance Between Engine Block And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. M/T model: Install the flywheel , clutch disc and pressure plate (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).

10. A/T model: Install the drive plate (see **DRIVE PLATE REMOVAL AND INSTALLATION**).
11. Install the transmission:
    - Manual transmission (see **TRANSMISSION INSTALLATION**)
    - Automatic transmission (see **TRANSMISSION INSTALLATION**)

DRAIN BOLT/SEALING BOLT INSTALLATION

NOTE: When installing the drain bolt and/or sealing bolt, always use a new washer.

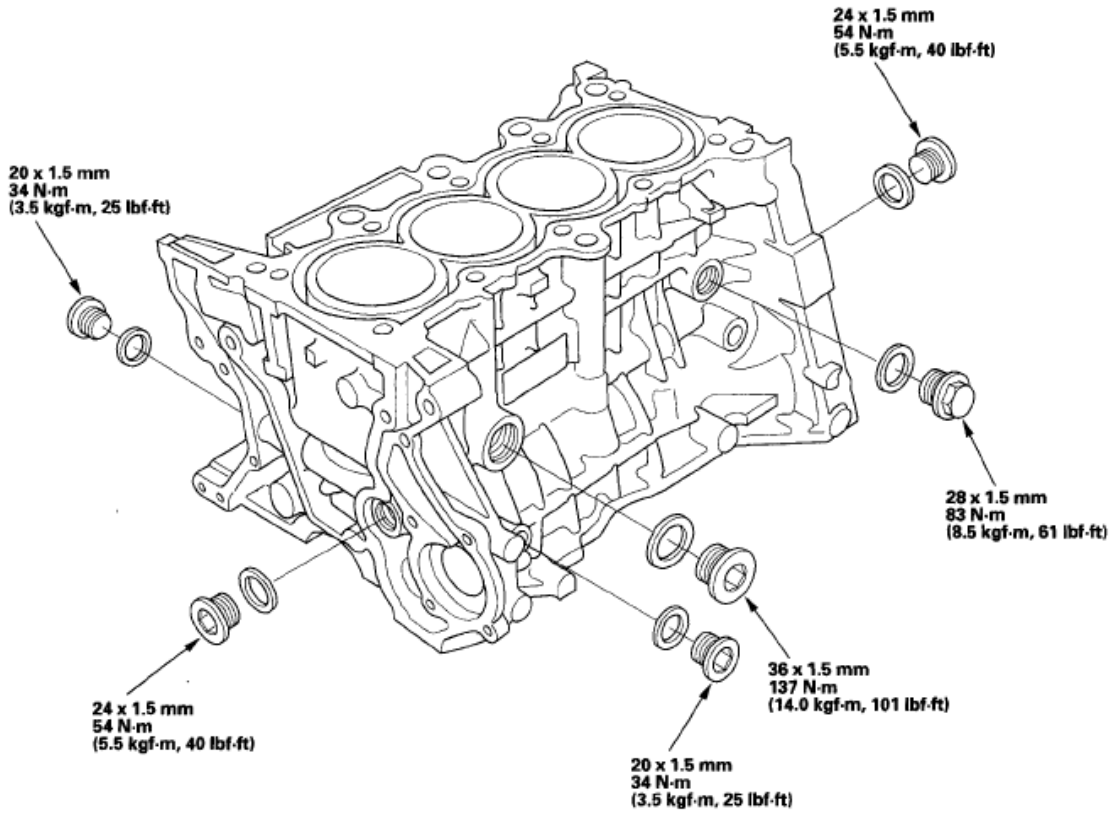


Fig. 77: Identifying Drain Bolt/Sealing Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ENGINE BLOCK (K20Z3)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07ZAD-PNAA100	Oil Seal Driver Attachment 96	1
②	07746-0010700	Attachment, 24 x 26 mm	1
③	07749-0010000	Driver	1

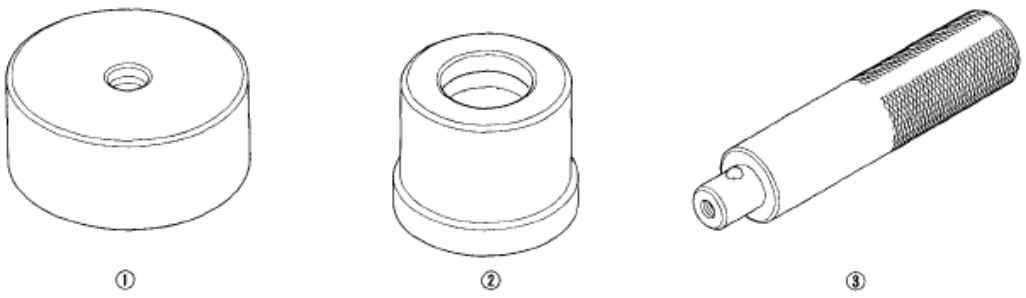


Fig. 78: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

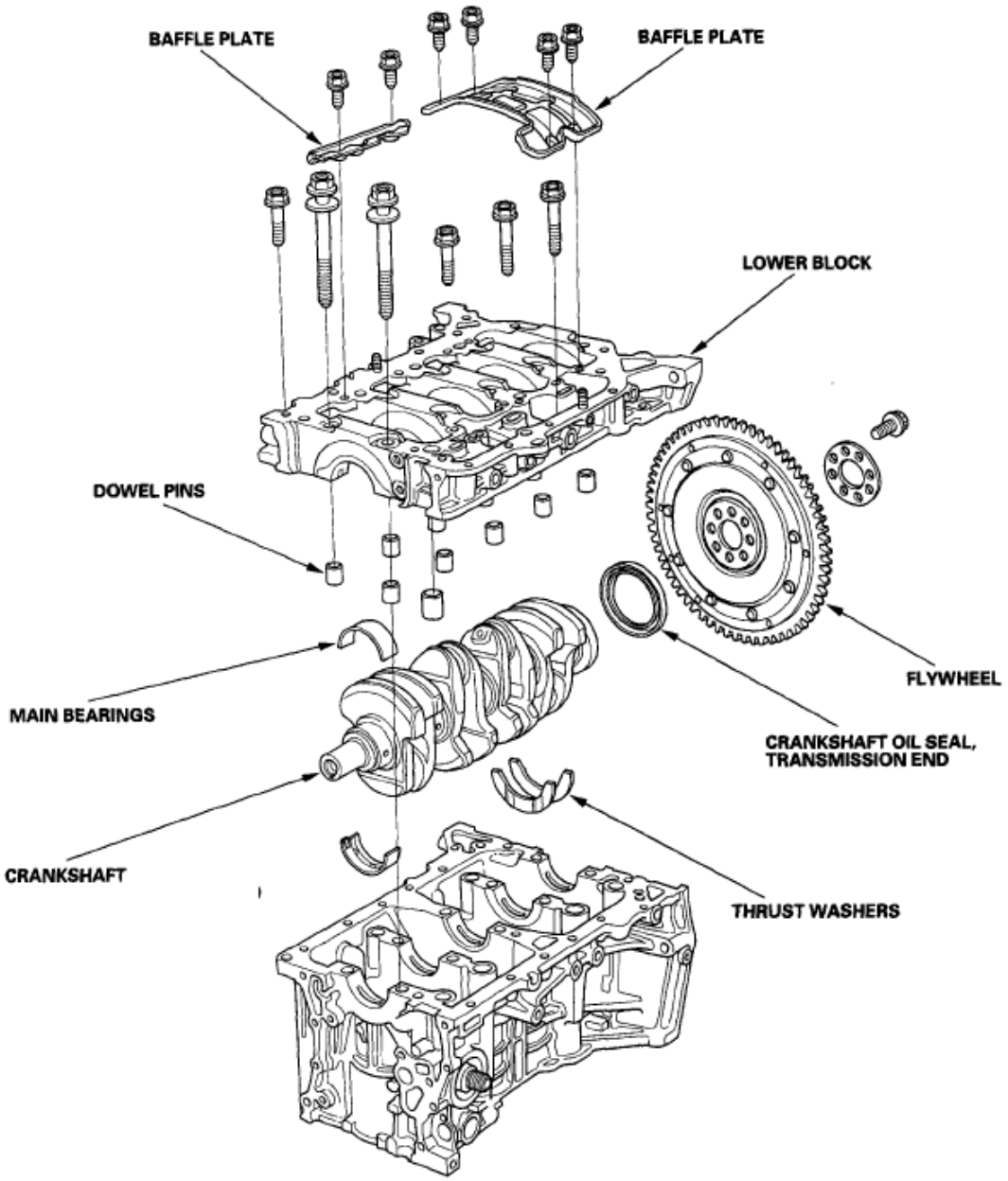


Fig. 79: Identifying Flywheel, Lower Block And Crankshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

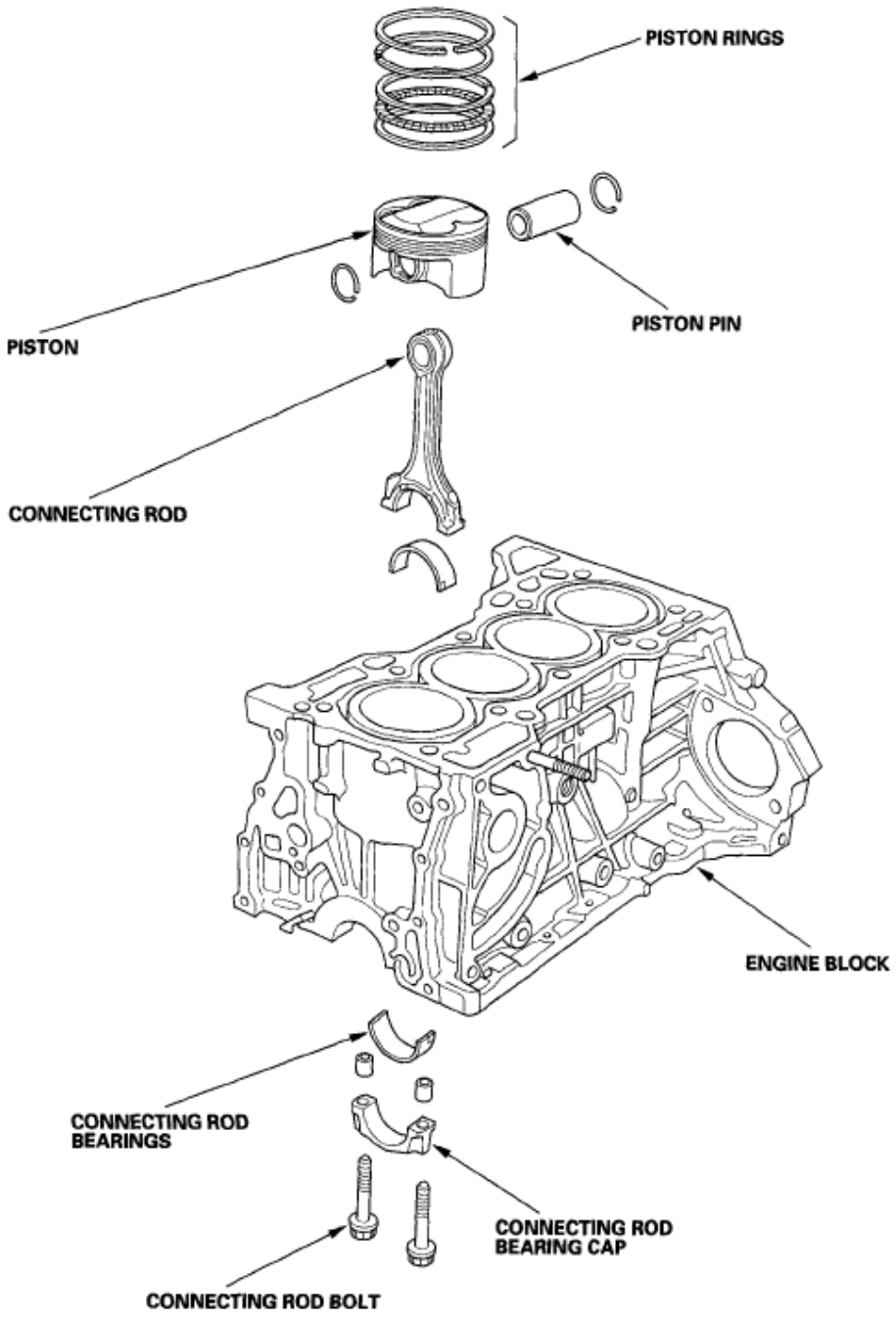


Fig. 80: Identifying Engine Block, Piston And Connecting Rod
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD AND CRANKSHAFT END PLAY INSPECTION

1. Remove the oil pump (see **OIL PUMP REMOVAL**).
2. Remove the baffle plates (see step 7).
3. Measure the connecting rod end play with a feeler gauge between the connecting rod and crankshaft.

Connecting Rod End Play

Standard (New): 0.15-0.30 mm (0.006-0.012 in.)

Service Limit: 0.40 mm (0.016 in.)

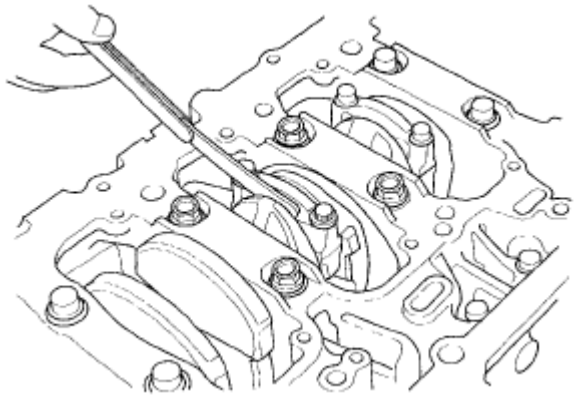


Fig. 81: Measuring Connecting Rod End Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the connecting rod end play is beyond service limit, install a new connecting rod, and recheck. If it is still beyond service limit; replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).
5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

Crankshaft End Play

Standard (New): 0.10-0.35 mm (0.004-0.014 in.)

Service Limit: 0.45 mm (0.018 in.)

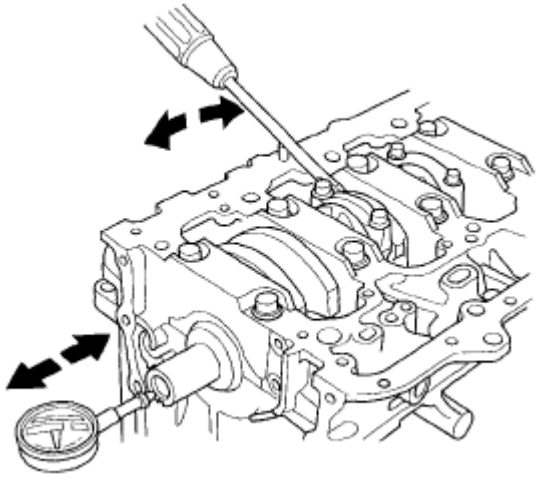


Fig. 82: Identifying Crankshaft Firmly Away From Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the end play is beyond service limit, replace the thrust washers and recheck, if it is still beyond

service limit, replace the crankshaft (see **CRANKSHAFT AND PISTON REMOVAL**).

CRANKSHAFT MAIN BEARING REPLACEMENT

Main Bearing Clearance Inspection

1. To check main bearing-to-journal oil clearance, remove the lower block and bearing halves (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean each main journal and bearing half with a clean shop towel.
3. Place one strip of plastigage across each main journal.
4. Reinstall the bearings and lower block, then torque the bolts to 29 N.m (3.0 kgf.m, 22 lbf.ft) + 56 ° in the proper sequence (see step 19).

NOTE: Do not rotate the crankshaft during inspection.

5. Remove the lower block and bearings again, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance

   No. 1, 2, 4, 5 Journals:

   Standard (New): 0.017 - 0.041 mm (0.0007 - 0.0016 in.)

   Service Limit: 0.050 mm (0.0020 in.) No. 3 Journal:

   Standard (New): 0.025 - 0.049 mm (0.0010 - 0.0019 in.)

   Service Limit: 0.055 mm (0.0022 in.)

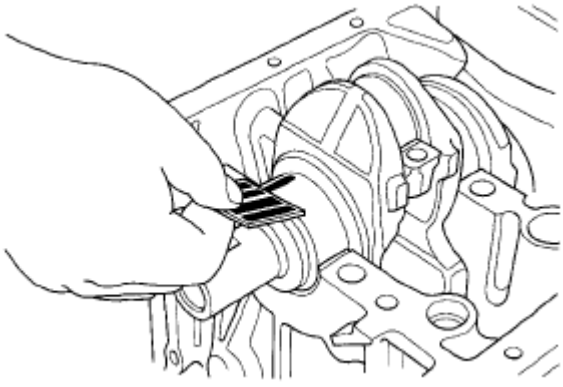


Fig. 83: Identifying Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

Main Bearing Selection

Crankshaft Bore Code Location

1. Numbers, letters or bars have been stamped on the end of the block as a code for the size of each of the five main journal bores. Write down the crank bore codes.

   If you can't read the codes because of accumulated dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

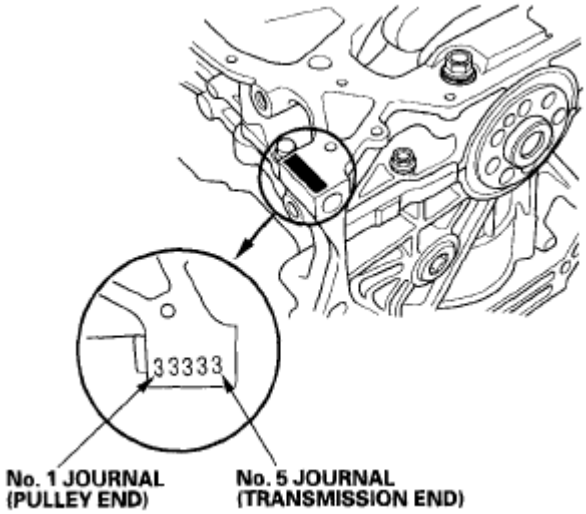


Fig. 84: Identifying Crankshaft Bore Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Journal Code Location

2. The main journal codes are stamped on the crankshaft in either location.

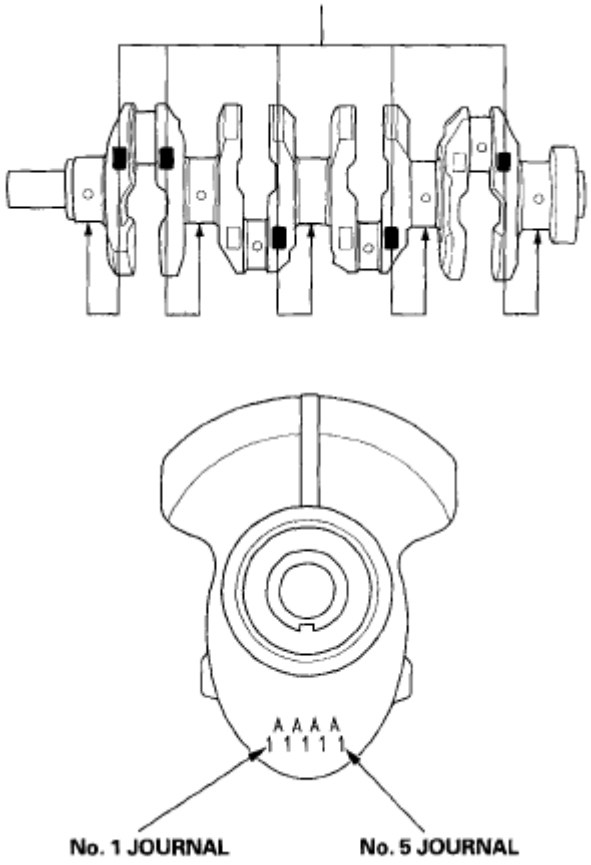


Fig. 85: Identifying Main Journal Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Use the crank bore codes and crank journal codes to select the appropriate replacement bearings from the following table.

NOTE:

- **The color code is on the edge of the bearing.**
- **When using bearing halves of different colors, it does not matter which color is used in the top or bottom.**

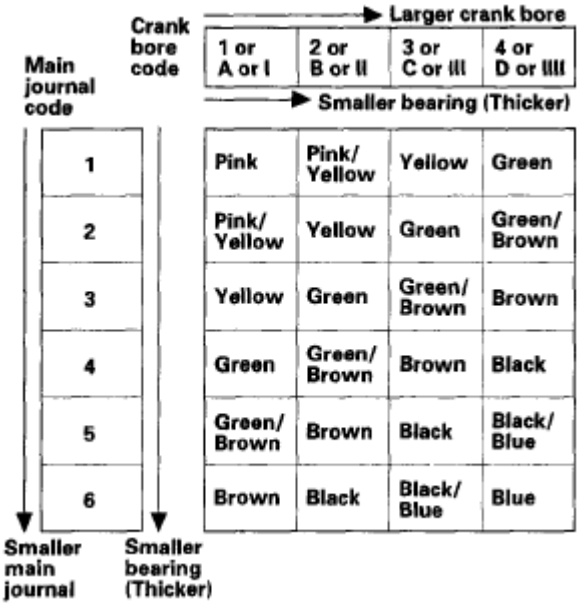


Fig. 86: Identifying Crank Bore Codes And Crank Journal Codes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONNECTING ROD BEARING REPLACEMENT

Rod Bearing Clearance Inspection

1. Remove the oil pump (see **OIL PUMP REMOVAL**).
2. Remove the baffle plates (see step 7).
3. Remove the connecting rod cap and bearing half.
4. Clean the crankshaft rod journal and bearing half with a clean shop towel.
5. Place plastigage across the rod journal.
6. Reinstall the bearing half and cap, and torque the bolts to 29 N.m (3.0 kgf.m, 22 lbf.ft) + 90 °

NOTE: Do not rotate the crankshaft during inspection.

7. Remove the rod cap and bearing half, and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance

Standard (New): 0.032-0.066 mm (0.0013-0.0026 in.)

Service Limit: 0.077 mm (0.0030 in.)

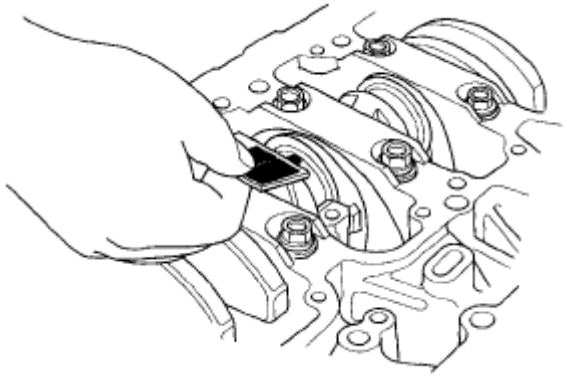


Fig. 87: Identifying Widest Part Of Plastigage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, install a new, complete bearing with the same color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
9. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearing, replace the crankshaft and start over.

Rod Bearing Selection

1. Inspect each connecting rod for cracks and heat damage.

   Connecting Rod Big End Bore Code Locations

2. Each rod has a tolerance range from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments, depending on the size of its big end bore. It's then stamped with a number or bar (1,2,3, or 4/I, II, III, or Mil) indicating the range. You may find any combination of numbers and bars in any engine. (Half the number or bar is stamped on the bearing cap, the other half is on the rod.)

   If you can't read the code because of an accumulation of oil and varnish, do not scrub it with a wire brush or scraper. Clean it only with solvent or detergent.

   Normal Bore Size: 51.0 mm (2.01 in.)

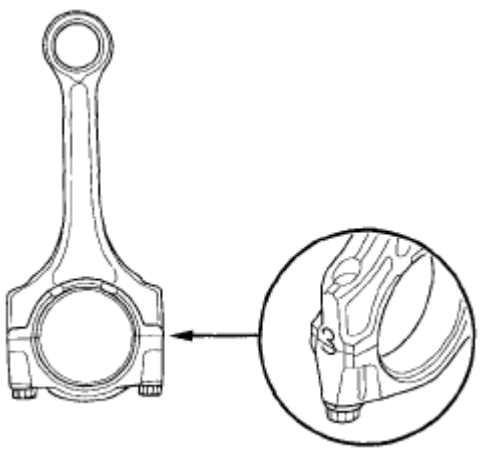


Fig. 88: Identifying Connecting Rod Big End Bore Code Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Connecting Rod Journal Code Location

3. The connecting rod journal codes are stamped on the crankshaft in either location.

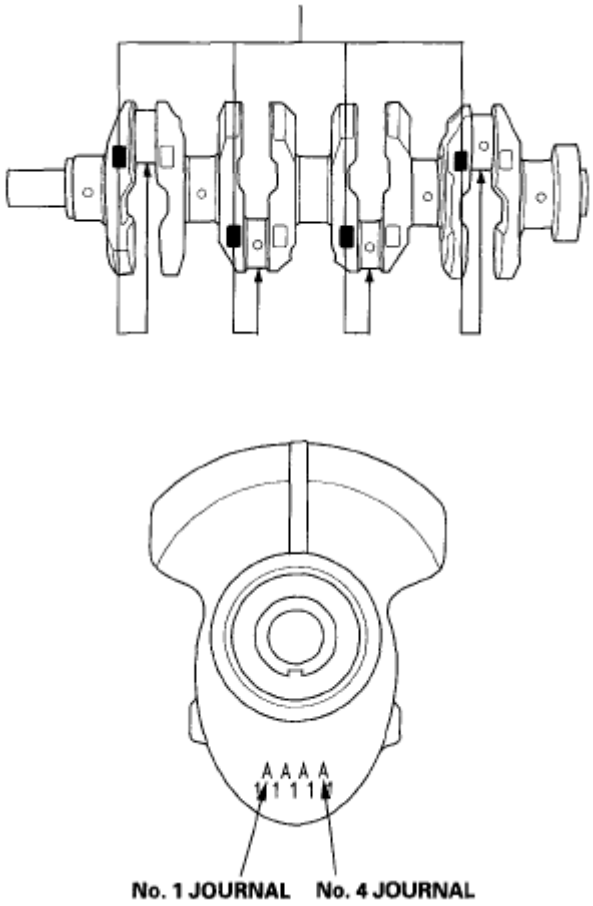


Fig. 89: Identifying Connecting Rod Journal Code Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Use the big end bore codes and rod journal codes to select appropriate replacement bearings from the following table.

NOTE:

- **The color code is on the edge of the bearing.**
- **When using bearing halves of different colors, it does not matter which color is used in the top or bottom.**

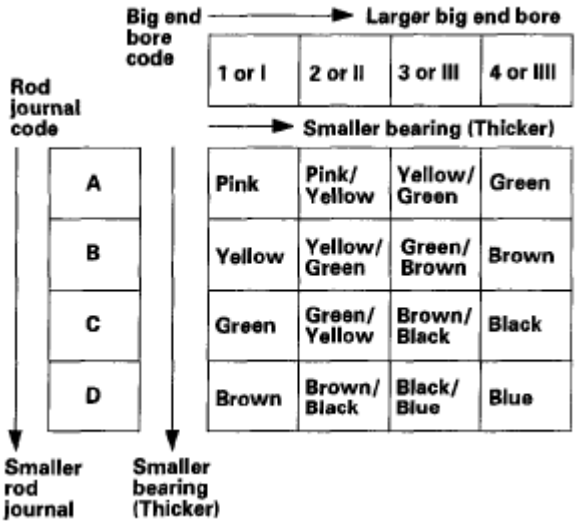


Fig. 90: Identifying Big End Bore Codes And Rod Journal Codes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PAN REMOVAL

- Engine hanger adapter VSB02C000015
- Engine support hanger, A and Reds AAR-T1256
- 2006 Civic engine hanger VSB02C000025
- Front Subframe adapter VSB02C000016

These special tools are available through Honda Tool and Equipment Program, 888-424-6857

1. If the engine is out of the vehicle, go to step 16.
2. Raise the vehicle on the lift.
3. Drain the engine oil (see **OIL PRESSURE TEST**).
4. Remove the front wheels.
5. Remove the splash shield (see step 24 on **ENGINE REMOVAL**).
6. Separate the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
7. Separate the knuckles from the lower arms (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
8. Remove the steering gearbox bracket. Remove the steering gearbox mounting bolt, stiffener mounting bolt, and stiffener (see step 34 on **ENGINE REMOVAL**).
9. Remove the steering gearbox mounting bolt, stiffener mounting bolt, and stiffener. Remove the harness clamp from the front subframe (see step 36 on **ENGINE REMOVAL**).
10. Attach the engine hanger adapter (VSB02C000015) to the treated hole in the cylinder head (see step 42**ENGINE REMOVAL**).
11. Install the front leg assembly, the hook, and the wing nut to an A and Reds engine support hanger (AAR-T1256) on to the 2006 civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet. Tighten the wing nut by hand to lift and support the engine/transmission (see step 43 **ENGINE REMOVAL**).
12. Remove the lower torque rod (See step 45**ENGINE REMOVAL**).

13. Remove the frotn mount mounting bolt (see step 46**ENGINE REMOVAL**).
14. Mark the appropriate reference line at both sides of the front subfraem that line up with the edges on the body (see step 47**ENGINE REMOVAL**).
15. Loosen the mid-stiffener mounting bolts on both sides (see step 48**ENGINE REMOVAL**).
16. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt of the front subframe adapter over the front of the subframe. Secure the belt with its stop, then tighten the wing nut (See step 49 **ENGINE REMOVAL**).

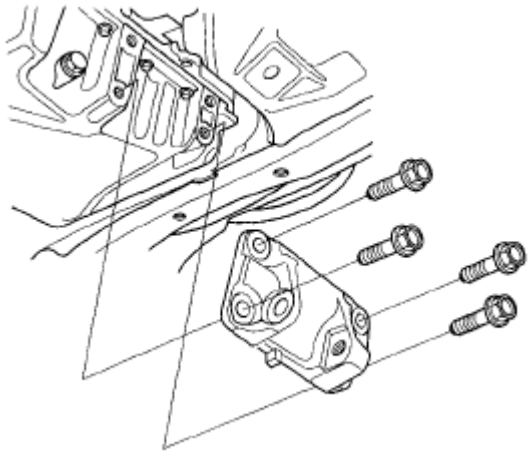


Fig. 91: Identifying Lower Torque Rod Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the front subframe (see step 51 **ENGINE REMOVAL**).
18. Remove the lower torque rod bracket.
19. Remove the clutch cover (A) and the transmission moutning bolts (B).

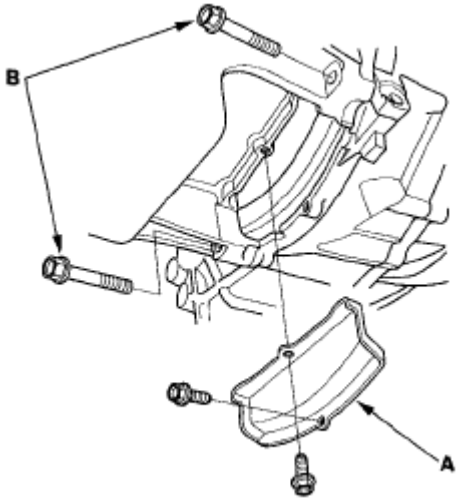


Fig. 92: Identifying Clutch Cover And Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the bolts securing the oil pan.
21. Using a flat blade screwdriver, seperate the oil pan from the lower block in the places shown.

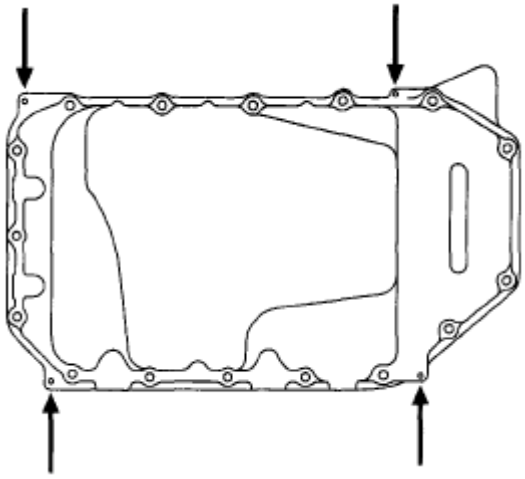


Fig. 93: Identifying Oil Pan From Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the oil pan.

CRANKSHAFT AND PISTON REMOVAL

1. Remove the engine assembly (see **ENGINE REMOVAL**).
2. Remove the transmission (see **TRANSMISSION REMOVAL**).
3. Remove the pressure plate , clutch disc and flywheel (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
4. Remove the oil pan (see **OIL PAN REMOVAL**).
5. Remove the oil pump (see **OIL PUMP REMOVAL**).
6. Remove the cylinder head (see **CYLINDER HEAD REMOVAL**).
7. Remove the baffle plates.

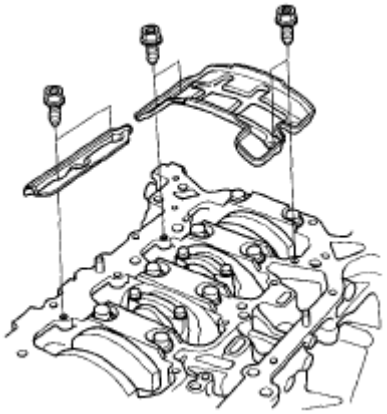


Fig. 94: Identifying Baffle Plates
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the 8 mm bolts in sequence.

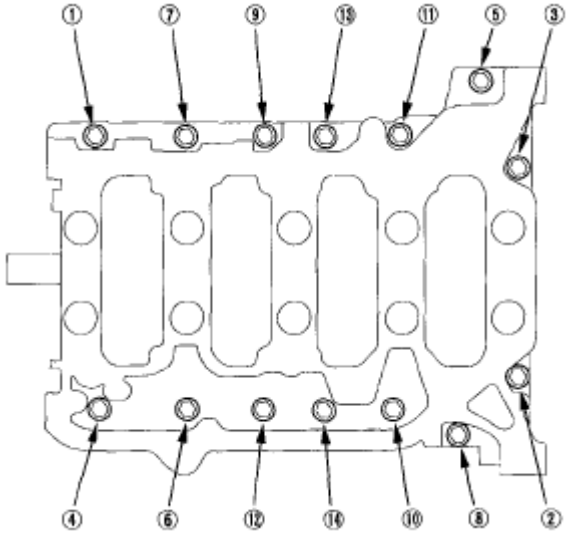


Fig. 95: Identifying Bolts In Sequence Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the bearing cap bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

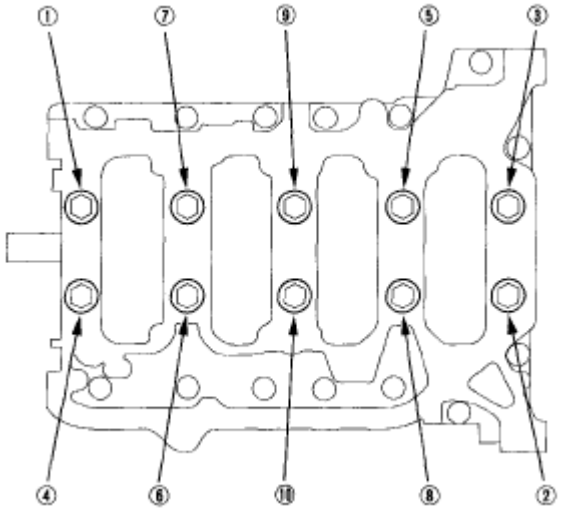


Fig. 96: Identifying Bearing Cap Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the lower block and bearings. Keep all the bearings in order.

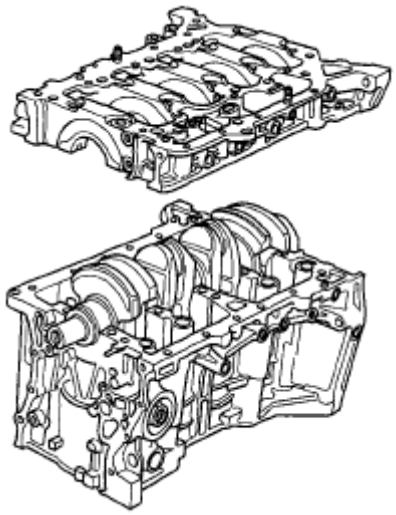


Fig. 97: Identifying Lower Block And Bearings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the rod caps/bearings. Keep all caps/bearings in order.
12. Lift the crankshaft out of the engine. Being careful not to damage the journals.

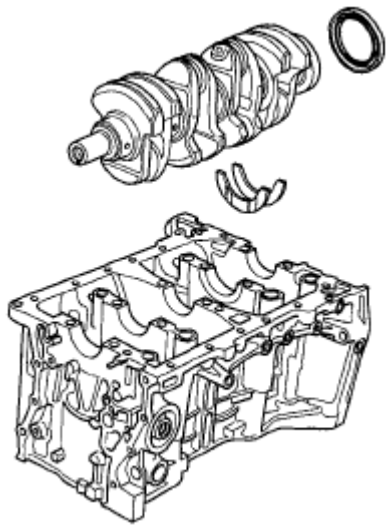


Fig. 98: Identifying Crankshaft Out Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
14. If you can feel a ridge of metal or hard carbon around the top of each cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the pistons as they are pushed out.

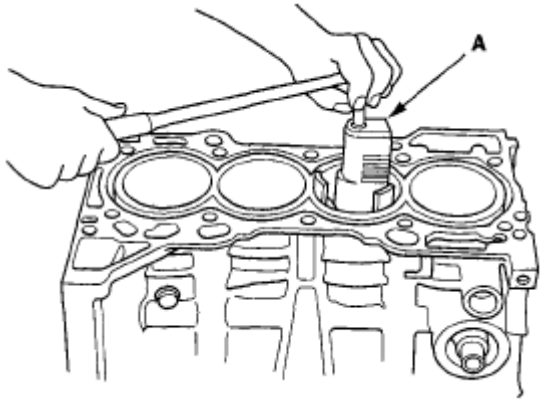


Fig. 99: Identifying Hard Carbon Around Top Of Each Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Use the wooden handle of a hammer (A) to drive out the piston/connecting rod assembly (B).

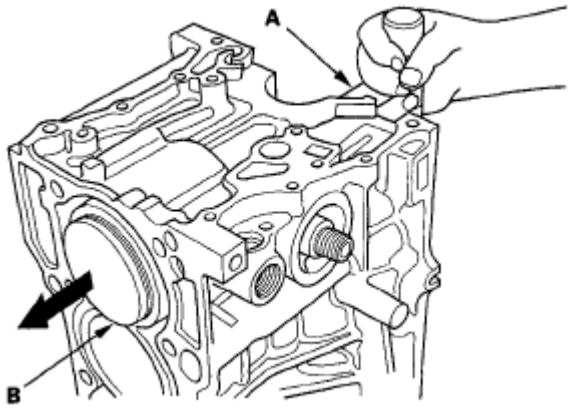


Fig. 100: Driving Out Piston/Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Reinstall the lower block and bearings on the engine in the proper order.
17. Reinstall the connecting rod bearings and caps after removing each piston/connecting rod assembly.
18. Mark each piston/connecting rod assembly with its cylinder number to make sure they are reused in the original order.

NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod bore size.

CRANKSHAFT INSPECTION

Out-of-Round and Taper

1. Remove the crankshaft from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Clean the keyway and threads.
4. Measure the out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)

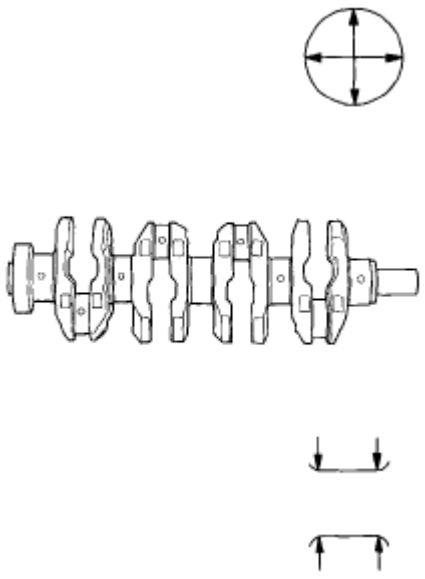


Fig. 101: Identifying Crankshaft Journal Out-Of-Round
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)

Straightness

6. Place the engine block on the surface plate.
7. Clean and install the bearings on the No. 1 and No. 5 journals of the engine block.
8. Measure runout on all main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Runout

Standard (New): 0.03 mm (0.0012 in.) max.

Service Limit: 0.04 mm (0.0016 in.)

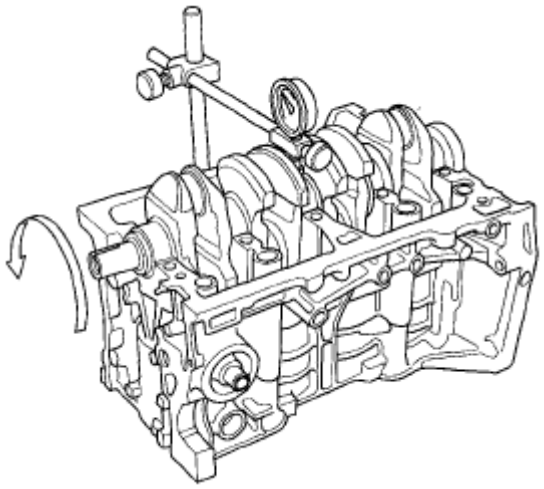


Fig. 102: Measuring Runout On Main Journals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BLOCK AND PISTON INSPECTION

1. Remove the crankshaft and pistons (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Check the piston for distortion or cracks.
3. Measure the piston diameter at a point 11 mm (0.4 in.) from the bottom of the skirt. There are two standard-size pistons (No Letter or A, and B). The letter is stamped on the top of the piston. Letters are also stamped on the block as cylinder bore sizes.

   Piston Diameter

   Standard (New):

   No Letter (or A): B: 85.980-85.990 mm (3.3850-3.3854 in.)

   B: 85.970-85.980 mm (3.3846-3.3850 in.)

   Service Limit:

   No Letter (or A): 85.930 mm (3.3831 in.) 85.920 mm (3.3827 in.)

   Oversize Piston Diameter

   0.25: 86.230-86.240 mm (3.3949-3.3953 in.)

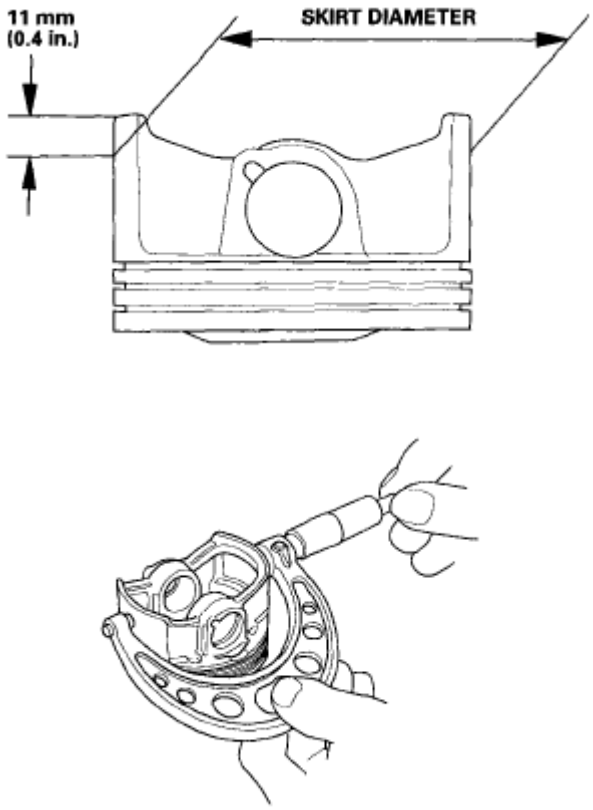


Fig. 103: Measuring Piston Diameter Point From Bottom Of Skirt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the wear and taper in direction X and Y at three levels in each cylinder as shown. If the measurements in any cylinder are beyond the Oversize Bore Service Limit, replace the engine block. If the engine block is being rebored, refer to step 7 after reboring.

   Cylinder Bore Size

   Standard (New):

   A or I: 86.010-86.020 mm (3.3862-3.3866 in.)

   B or II: 86.000-86.010 mm (3.3858-3.3862 in.)

   Service Limit: 86.070 mm (3.3886 in.

   Oversize

   0.25: 86.250-86.260 mm (3.3957-3.3961 in.)

   Reboring Limit: 0.25 mm (0.01 in.) max.

   Bore Taper

   Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

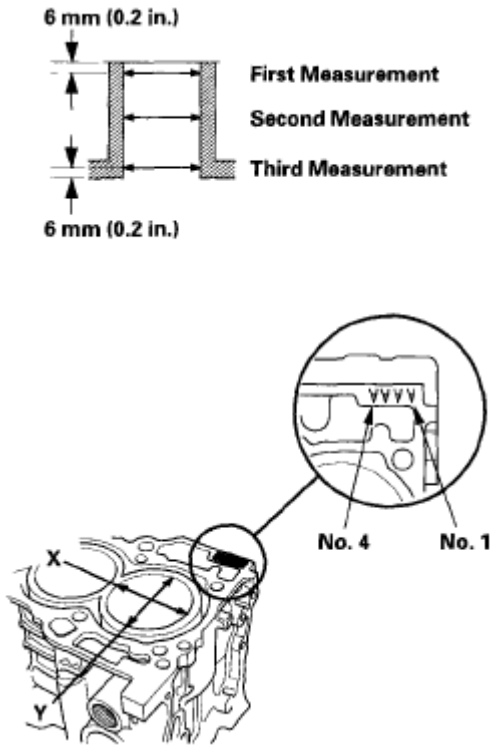


Fig. 104: Identifying Wear And Taper Direction X And Y Three Levels In Each Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Scored or scratched cylinder bores must be honed.
6. Check the top of the engine block for warpage. Measure along the edges, and across the center as shown.

Engine Block Warpage

Standard (New): 0.07 mm (0.003 in.) max.

Service Limit: 0.10 mm (0.004 in.)

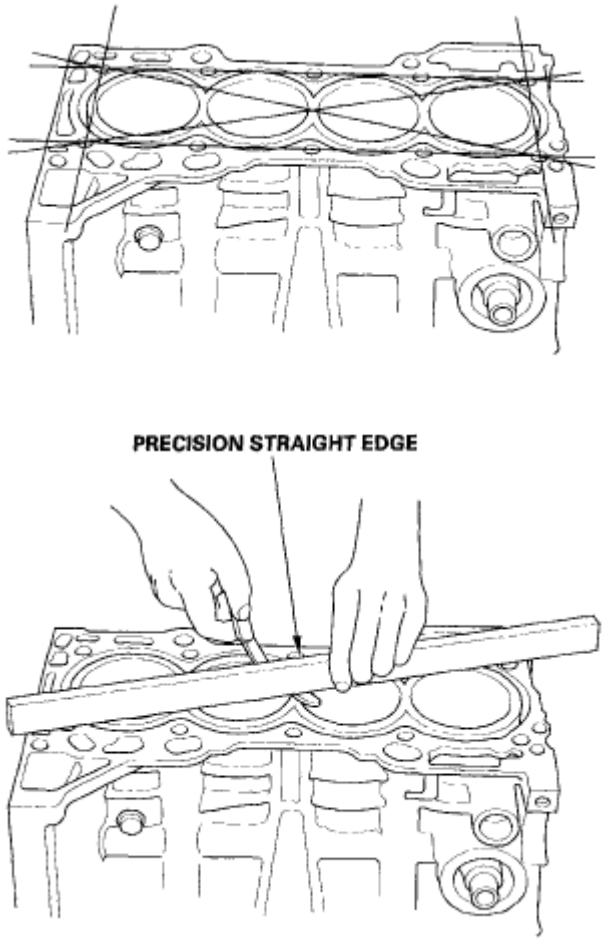


Fig. 105: Identifying Top Of Engine Block For Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Calculate the difference between the cylinder bore diameter and the piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder bore for excessive wear.

   Piston-to-Cylinder Bore Clearance

   Standard (New): 0.020-0.040 mm (0.0008-0.0016 in.)

   Service Limit: 0.05 mm (0.002 in.)

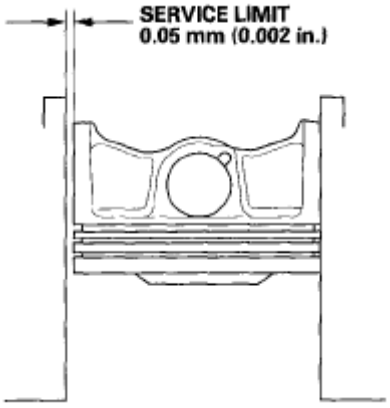


Fig. 106: Identifying Difference Between Cylinder Bore Diameter And Piston Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CYLINDER BORE HONING

Only a scored or scratched cylinder bore must be honed.

1. Measure the cylinder bores (see **BLOCK AND PISTON INSPECTION**). If the engine block is to be reused, hone the cylinders, and remeasure the bores.
2. Remove the oil jets.
3. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree cross-hatch pattern (A). Use only a rigid hone with 400 grit or finer stone such as Sunnen, Ammco, or equivalent. Do not use stones that are worn or broken.

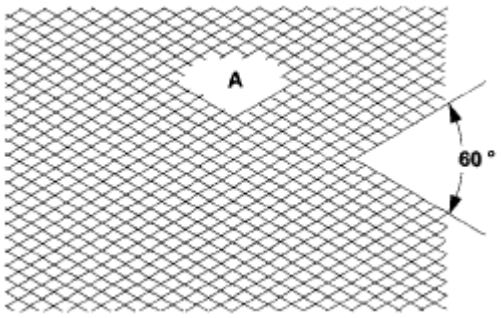


Fig. 107: Identifying Cross-Hatch Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
5. If scoring or scratches are still present in the cylinder bores after honing the engine block to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail, and does not run the full length of the bore.
6. Install the oil jets.

PISTON, PIN, AND CONNECTING ROD REPLACEMENT

Disassembly

1. Remove the piston from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Apply new engine oil to the piston pin snap rings (A), and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

NOTE: Take care not to damage the ring grooves.

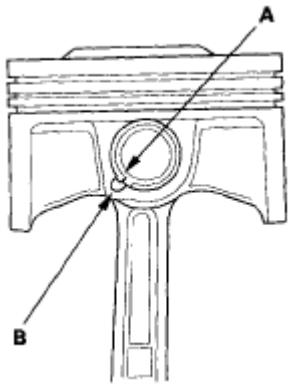


Fig. 108: Identifying Piston Pin Snap Rings And Piston Pin Bores
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove both snap rings (A). Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.

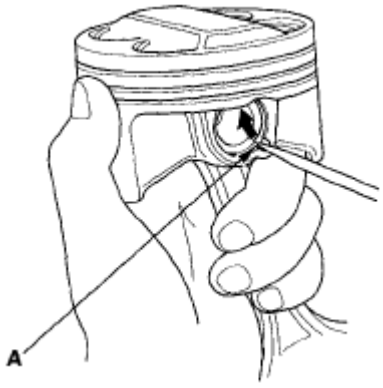


Fig. 109: Identifying Snap Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Heat the piston and connecting rod assembly to about 158°F (70°C), then remove the piston pin.

Fig. 110: Heating Piston And Connecting Rod Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Inspection

NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

   Piston Pin Diameter

   Standard (New): 21.961-21.965 mm (0.8646-0.8648 in.)

   Service Limit: 21.953 mm (0.8643 in.)

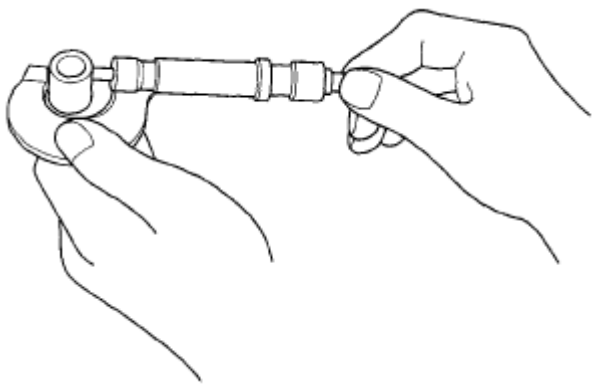


Fig. 111: Measuring Diameter Of Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Zero the dial indicator to the piston pin diameter.

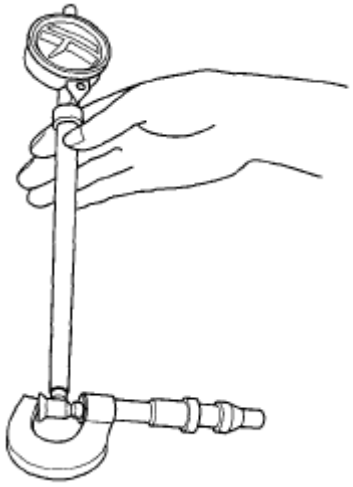


Fig. 112: Seating Dial Indicator To Piston Pin Diameter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check the difference between the piston pin diameter and piston pin hole diameter in the piston.

   Piston Pin-to-Piston Clearance

   Standard (New): -0.005 to +0.002 mm (-0.00020 to +0.00008 in.)

   Service Limit: 0.005 mm (0.0002 in.)

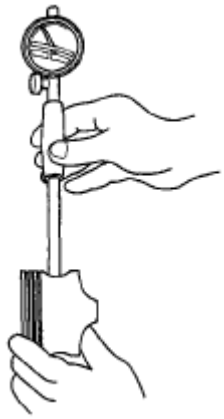


Fig. 113: Checking Difference Between Piston Pin Diameter And Piston Pin Hole Diameter In Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the piston pin-to-connecting rod clearance.

   Piston Pin-to-Connecting Rod Clearance

   Standard (New): 0.005-0.015 mm (0.0002-0.0006 in.)

   Service Limit: 0.02 mm (0.0008 in.)

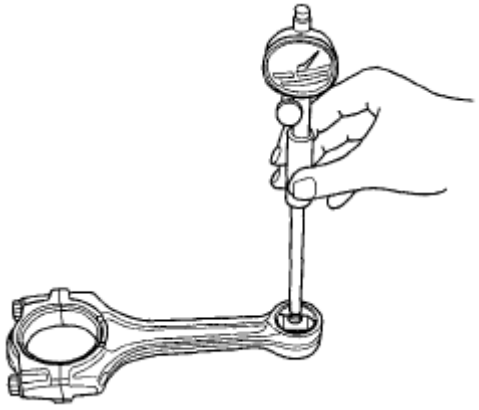


Fig. 114: Measuring Piston Pin-To-Connecting Rod Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Reassembly

1. Install a piston pin snap ring (A).

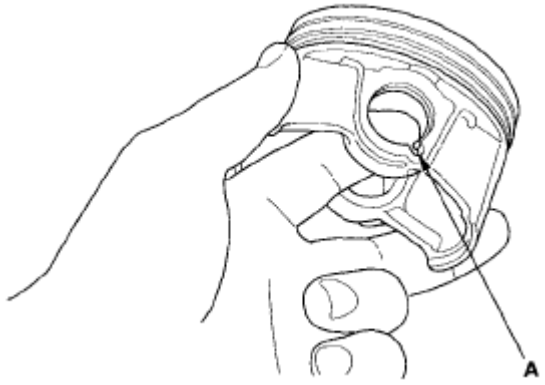


Fig. 115: Identifying Piston Pin Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.
3. Heat the piston to about 158°F (70°C).

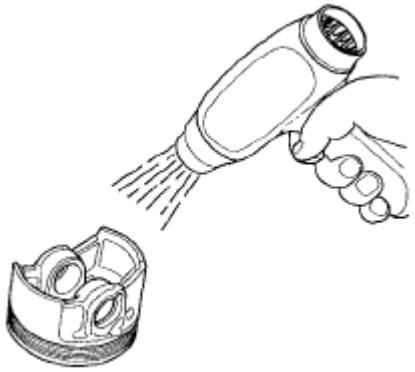


Fig. 116: Heating Piston

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Assemble the piston (A) and connecting rod (B) with the arrow (C) and the embossed mark (D) on the same side. Install the piston pin (E).

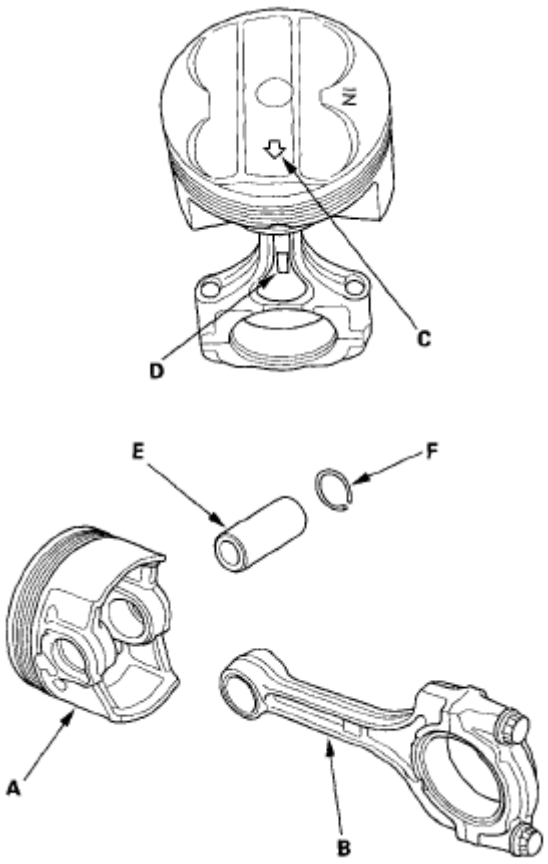


Fig. 117: Identifying Piston , Connecting Rod And Piston Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the remaining snap ring (F).
6. Turn the snap rings in the ring grooves until the end gaps are positioned at the bottom of the piston.

PISTON RING REPLACEMENT

1. Remove the piston from the engine block (see **CRANKSHAFT AND PISTON REMOVAL**).
2. Using a ring expander (A), remove the old piston rings (B).

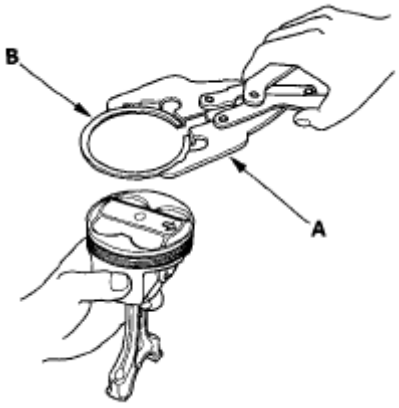


Fig. 118: Removing Piston Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade to fit the piston grooves.

   The top and 2nd ring grooves are 1.2 mm (0.05 in.) wide. The oil ring groove is 2.0 mm (0.08 in.) wide. File down a blade if necessary.

   Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tools.

   NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston that has its rings removed, push a new ring (A) into the cylinder bore 15-20 mm (0.6-0.8 in.) from the bottom.

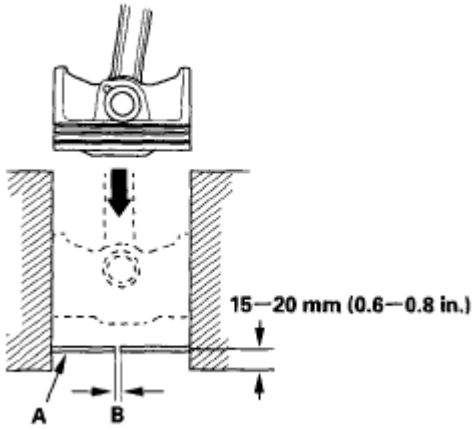


Fig. 119: Pushing Ring Into Cylinder Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the piston ring end-gap (B) with a feeler gauge:
   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see **BLOCK AND PISTON INSPECTION**). If the bore is beyond the service limit, the engine block must

be rebored.

Piston Ring End-Gap

Top Ring:

Standard (New): 0.20-0.35 mm (0.008-0.014 in.)

Service Limit: 0.60 mm (0.024 in.)

Second Ring:

Standard (New): 0.50-0.65 mm (0.020-0.026 in.)

Service Limit: 0.75 mm (0.030 in.)

Oil Ring:

Standard (New): 0.20-0.70 mm (0.008-0.028 in.)

Service Limit: 0.80 mm (0.031 in.)

6. Install the top ring and the second ring as shown. The top ring (A) has a 1R mark and the second ring (B) has a 2R mark. The manufacturing marks (C) must be facing upward.

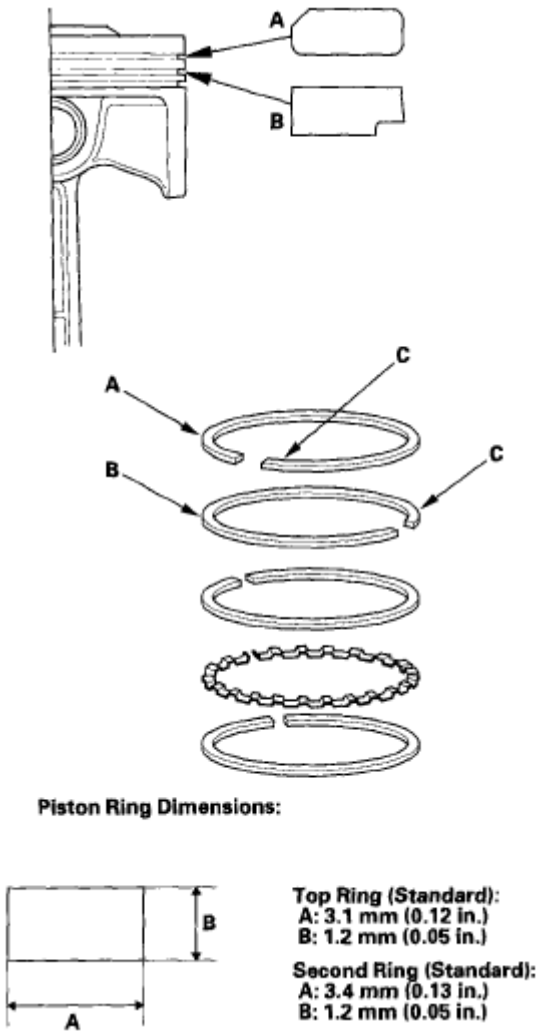


Fig. 120: Identifying Top Ring And Second Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Rotate the rings in their grooves to make sure they do not bind.
8. Position the ring end gaps as shown: About 90°

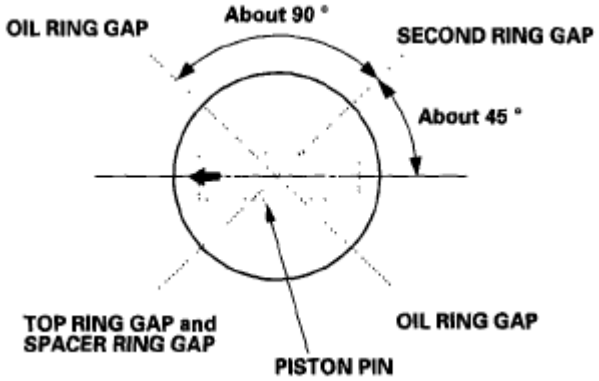


Fig. 121: Identifying Ring End Gaps Turning Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. After installing a new set of rings, measure the ring-to-groove clearances.

   Top Ring Clearance

   Standard (New): 0.045-0.070 mm (0.0018-0.0028 in.)

   Service Limit: 0.13 mm (0.005 in.)

   Second Ring Clearance

   Standard (New): 0.040-0.065 mm (0.0016-0.0026 in.)

   Service Limit: 0.13 mm (0.005 in.)

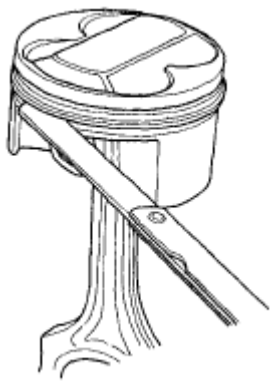


Fig. 122: Identifying Ring-To-Groove Clearances
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PISTON INSTALLATION

If the Crankshaft is Already Installed

1. Set the crankshaft to bottom dead center (BDC) for each cylinder as its piston is installed.
2. Remove the connecting rod caps, then install the ring compressor. Check that the bearing is securely in place.
3. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.
4. Position the mark (A) to face the cam chain side of the engine.

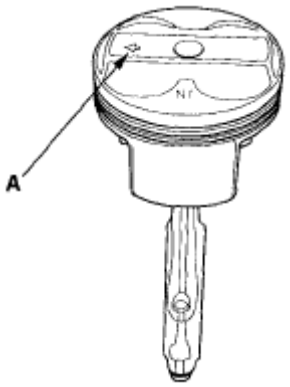


Fig. 123: Identifying Mark To Face Cam Chain Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.

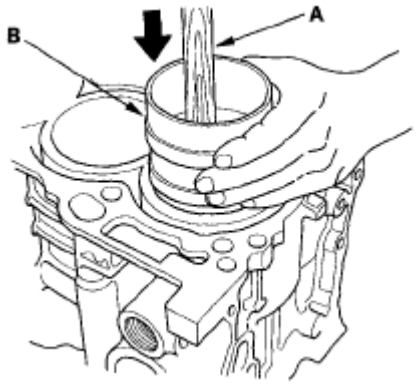


Fig. 124: Pushing Down On Ring Compressor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
7. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
8. Inspect the connecting rod bolts (see **CONNECTING ROD BOLT INSPECTION**).
9. Install the rod caps with bearings. Torque the bolts to 29 N.m (3.0 kgf.m, 22 lbf.ft).
10. Tighten the connecting rod bolts an additional 90 °.

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

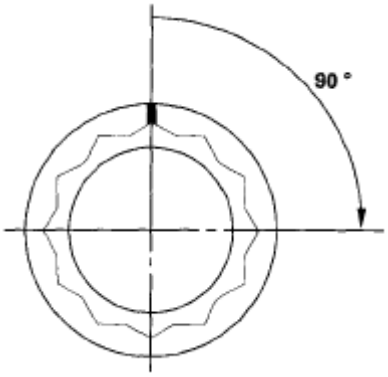


Fig. 125: Identifying Connecting Rod Bolt Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the Crankshaft is Not Installed

1. Remove the connecting rod caps, then install the ring compressor, and check that the bearing is securely in place.
2. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.
3. Position the mark (A) to face the cam chain side of the engine.

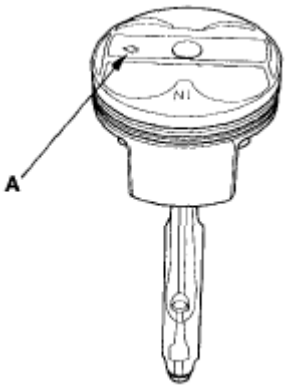


Fig. 126: Identifying Mark To Face Cam Chain Side Of Engine
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.

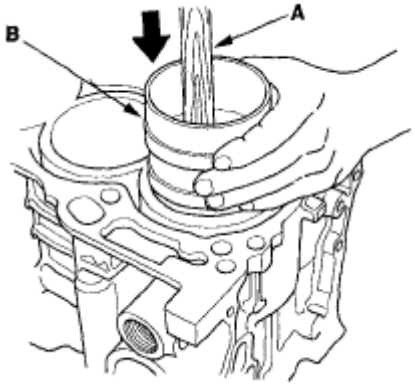


Fig. 127: Pushing Down On Ring Compressor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Position all pistons at top dead center (TDC).

CONNECTING ROD BOLT INSPECTION

1. Measure the diameter of each connecting rod bolt at point A and point B.

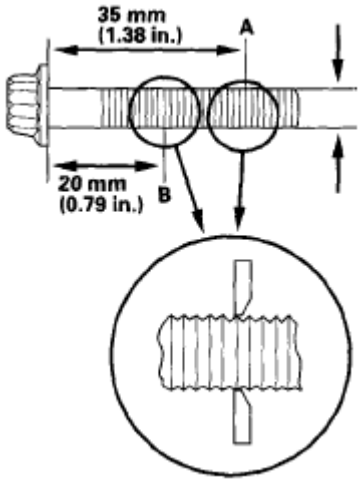


Fig. 128: Identifying Diameter Of Connecting Rod Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Calculate the difference in diameter between point A and point B.

   Point A-Point B = Difference in Diameter

   Difference in Diameter

   Specification: 0-0.1 mm (0-0.004 in.)

3. If the difference in diameter is out of specification, replace the connecting rod bolt.

CRANKSHAFT INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Attachment, 24 x 26 mm 07746-0010700
- Oil seal driver attachment, 96 mm 07ZAD-PNAA100

1. Install the crankshaft end bushing when replacing the crankshaft.

   Using the special tools, drive in the crankshaft end bushing until the special tools bottom against the crankshaft.

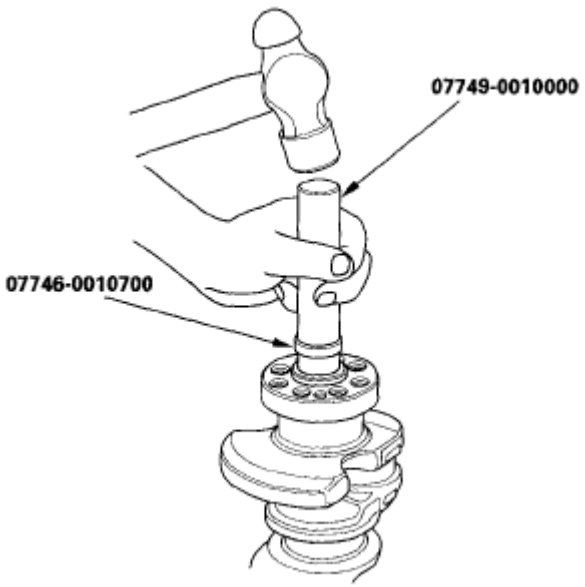


Fig. 129: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the connecting rod bearing clearance with plastigage (see **CONNECTING ROD BEARING REPLACEMENT**).
3. Check the main bearing clearance with plastigage (see **CRANKSHAFT MAIN BEARING REPLACEMENT**).
4. Install the bearing halves in the engine block and connecting rods.
5. Apply a coat of new engine oil to the main bearings and rod bearings.
6. Hold the crankshaft so that rod journal No. 2 and rod journal No. 3 are straight up, and lower the crankshaft into the engine block.
7. Apply new engine oil to the thrust washer surfaces. Install the thrust washers (A) in the No. 4 journal of the engine block.

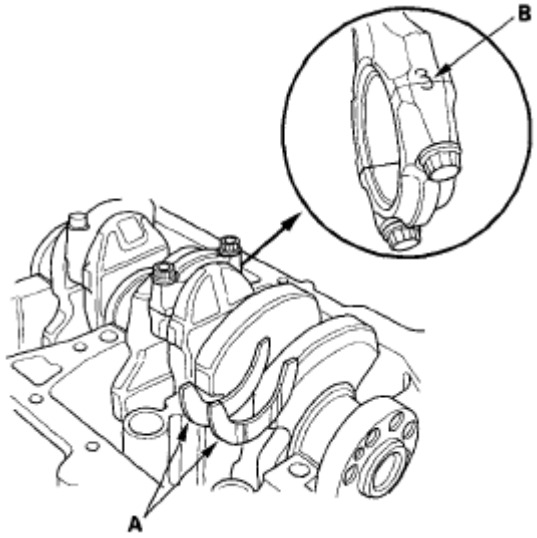


Fig. 130: Identifying Thrust Washers In Engine Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Inspect the connecting rod bolts (see **CONNECTING ROD BOLT INSPECTION**).
9. Apply engine oil to the threads of the connecting rod bolts.
10. Seat the rod journals into connecting rod No. 1 and connecting rod No. 4. Line up the mark (B) on the connecting rod and cap, then install the caps and bolts finger-tight.
11. Rotate the crankshaft clockwise, and seat the journals into connecting rod No. 2 and connecting rod No. 3. Line up the mark on the connecting rod and cap, then install the caps and bolts finger-tight.
12. Tighten the connecting rod bolts to 29 N.m (3.0 kgf.m, 22 lbf.ft).
13. Tighten the connecting rod bolts an additional 90 °.

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

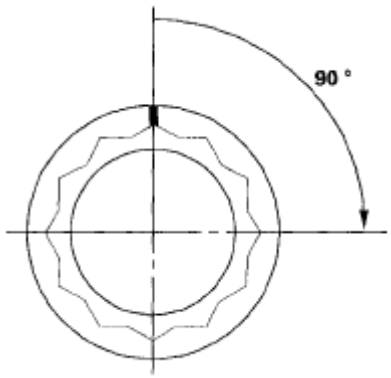


Fig. 131: Identifying Connecting Rod Bolt Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove all of the old liquid gasket from the lower block mating surfaces, bolts, and bolt holes.
15. Clean, and dry the lower block mating surfaces.

16. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the lower block.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

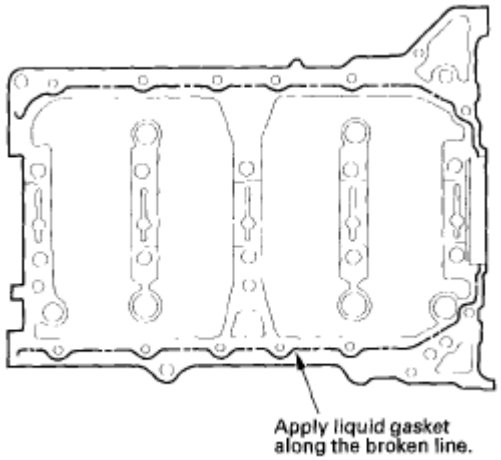


Fig. 132: Identifying Lower Block
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Put the lower block on the engine block.
18. Apply new engine oil to the threads of the bearing cap bolts.
19. Tighten the bearing cap bolts, in sequence, to 29 N.m (3.0 kgf.m, 22 lbf.ft).

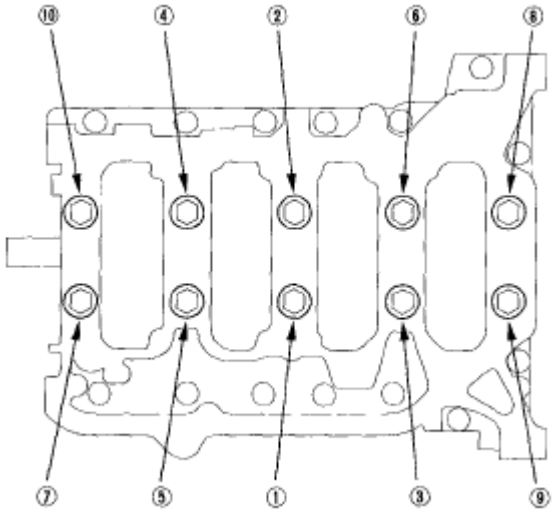


Fig. 133: Identifying Bearing Cap Bolts Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Tighten the bearing cap bolts an additional 56 °.

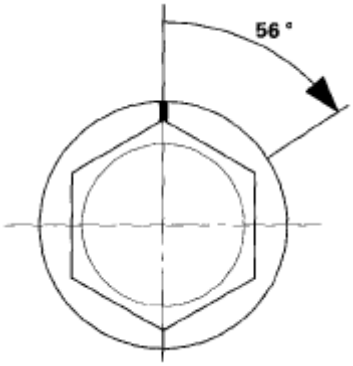


Fig. 134: Identifying Bearing Cap Bolts Tightening Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Tighten the 8 mm bolts, in sequence, to 22 N.m (2.2 kgf.m, 16 lbf-ft).

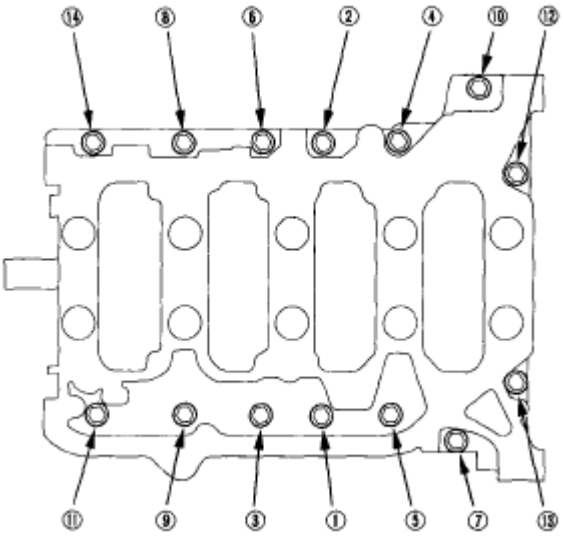


Fig. 135: Identifying Crank Shaft Bolt Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Apply a light coat of new engine oil around the crankshaft oil seal.

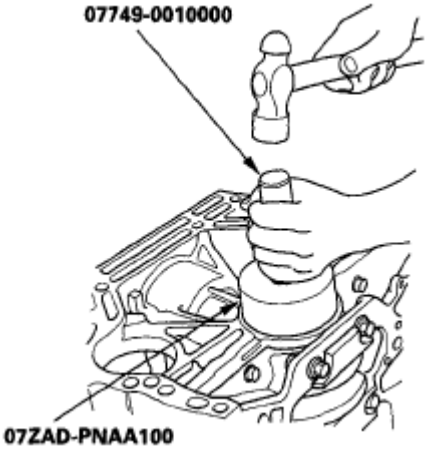


Fig. 136: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Apply a light coat of new engine oil to the crankshaft and the lip of the crankshaft oil seal.

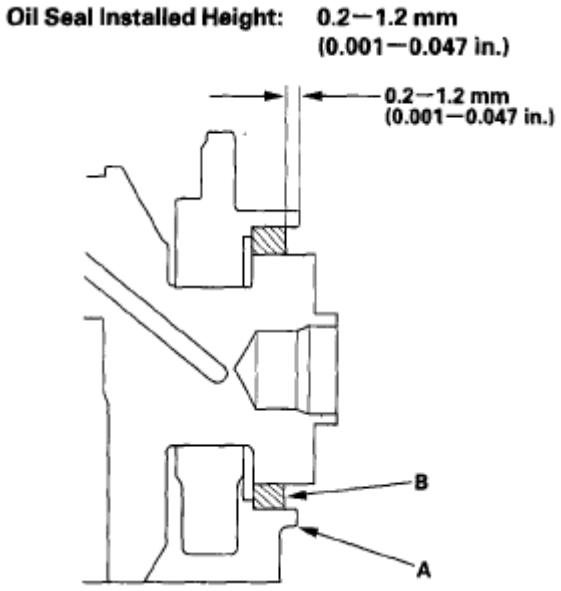


Fig. 137: Identifying Distance Between Engine Block And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Use the driver handle and the oil seal driver attachment 96 to drive a new oil seal squarely into the engine block to the specified installed height.

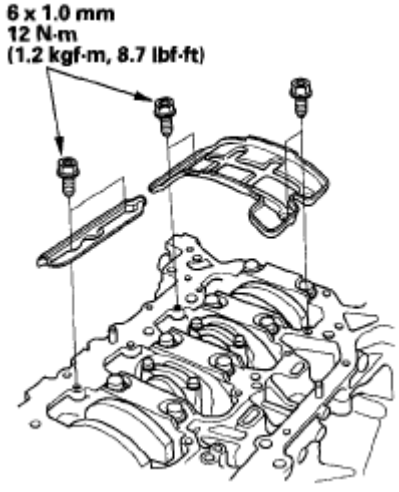


Fig. 138: Identifying Baffle Plates (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Measure the distance between the eingine block (A) and the crankshaft oil seal (B).
26. Install the baffle plates.
27. Install the oil pump (see **OIL PUMP INSTALLATION**).
28. Install the oil pan (see **OIL PAN INSTALLATION**).

29. Install the cylinder head (see **CYLINDER HEAD INSTALLATION**).
30. Install the flywheel , clutch disc and pressure plate (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**).
31. Install the transmission (see **TRANSMISSION INSTALLATION**).
32. Install the engine assembly (see **ENGINE INSTALLATION**).

NOTE: Whenever any crankshaft or connecting rod bearing is replaced, it is necessary after reassembly to run the engine at idle speed until it reaches normal operating temperature, then continue to running it for about 15 minutes.

OIL PAN INSTALLATION

- Front subframe adapter VSB02C000016
- Engien support hanger, A and Reds AAR-T1256
- Engine hanger adapter VSB02C000015

These special tools are available through Honda Tool and Equipment Program, 888-424-6857

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean, and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002,08718-0003, or 08718-0009, evenly to the lower engine block mating surface and to the inside edge of the bolt holes.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

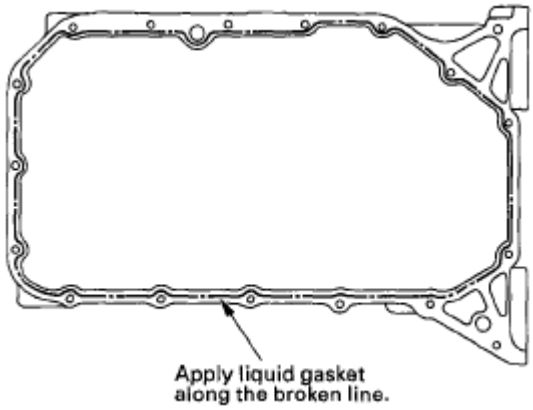


Fig. 139: Identifying Lower Engine Block Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the oil pan.
5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 12 N.m (1.2 kgf.m, 8.7 lbf.ft). Wipe off the excess liquid gasket on the each side of crankshaft pulley and

flywheel.

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with oil.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the oil pan.**

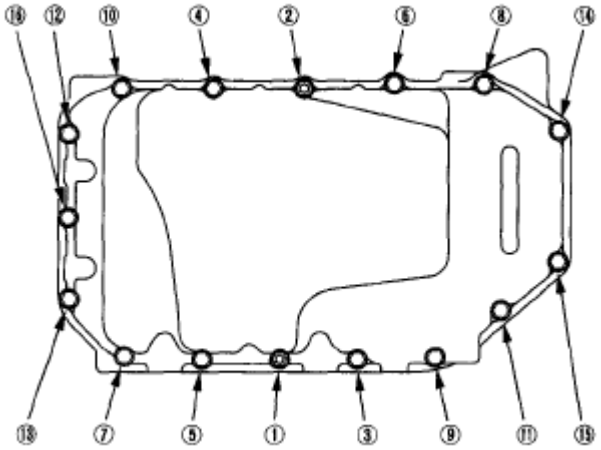


Fig. 140: Identifying Oil Pan Bolt Tightening Sequence
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the transmission mounting bolts (A) and clutch cover (B).

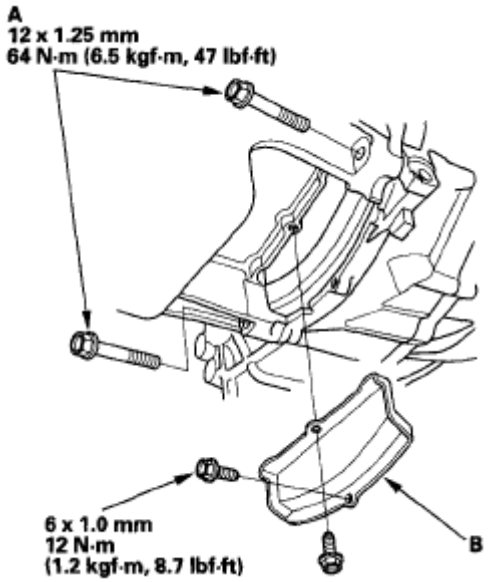


Fig. 141: Identifying Transmission Mounting Bolts And Clutch Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the lower torque rod bracket.

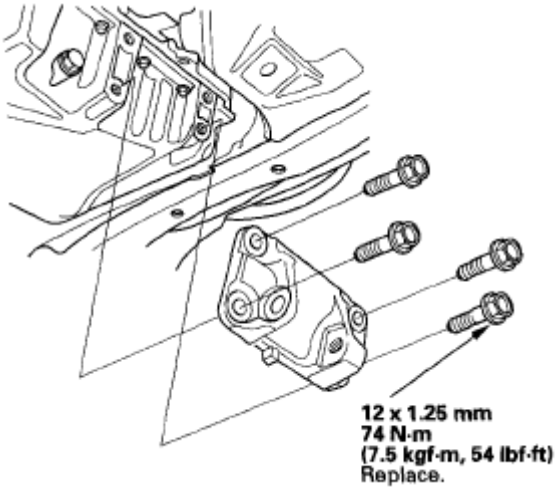


Fig. 142: Identifying Lower Torque Rod Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If the engine still in the vehicle, do the following steps.
9. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt of the front subframe adapter over the front of the subframe. Secure the belt with its stop, then tighten the wing nut (See step 11**ENGINE INSTALLATION**).
10. Line up the slots in the front subframe adapter arms with the bolt holes on the corner of the jack base, tnen securely attach them with four bolts, then lift the front subframe up to the body.
11. Loosely install the new front subframe mounting bolts (see step 13 **ENGINE INSTALLATION**).
12. Align all reference marks on the front subframe with the body, then tighten the bolts on the front subframe to the specified torque (see step 14 on **ENGINE INSTALLATION**).
13. Remove the jack and front subframe adapter.
14. Tighten the new front subframe mid-stiffener mounting bolts on both side (see step 16 on **ENGINE INSTALLATION**).
15. Lower the vehicle on the lift.
16. Loosen the upper torque rod mounting bolt (see step 5 on **ENGINE INSTALLATION**).
17. Raise the vehicle on the lift.
18. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown (see step 17 on **ENGINE INSTALLATION**).
19. Loosely tighten the new front mount mounting bolt (see step 18 on **ENGINE INSTALLATION**).
20. Lower the vehicle on the lift.
21. Remove the engine support hanger A and Reds (AAR-T1256), the 2006 Civic engine hanger (VSB02C000025) and the engine hanger adapter (VSB02C000015).
22. Tighten the upper torque rod mounting bolt (See step 21**ENGINE INSTALLATION**).
23. Raise the vehicle on the lift.
24. Tighten the front mount mounting bolt (see step 23 on **ENGINE INSTALLATION**).
25. Install the stiffener, then tighten the steering gearbox mounting bolt and stiffener mounting bolt. Install the harness clamp from the front subframe (see step 25 on **ENGINE INSTALLATION**).
26. Install the steering gearbox bracket. Install the stiffener, then tighten the steering gearbox mounting bolt and stiffener mounting bolt (see step 27 on **ENGINE INSTALLATION**).

27. Connect the lower arms to the knuckles (see step 5 on **LOWER ARM REMOVAL/INSTALLATION**).
28. Connect the stabilizer links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
29. Install the front wheels.
30. Install the splash shield (see step 35 on **ENGINE INSTALLATION**).
31. Refill the engine with the recommended engine oil.

TRANSMISSION END CRANKSHAFT OIL SEAL INSTALLATION - IN CAR

Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 96 07ZAD-PNAA100

1. Remove the transmission (see **TRANSMISSION REMOVAL**).
2. Remove the pressure plate , clutch disc and flywheel (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
3. Clean, and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Apply a light coat of new engine oil to the crankshaft and to the lip of the crankshaft oil seal.
6. Use the driver and the oil seal driver attachment 96 to drive a new oil seal squarely into the engine block to the specified installed height.

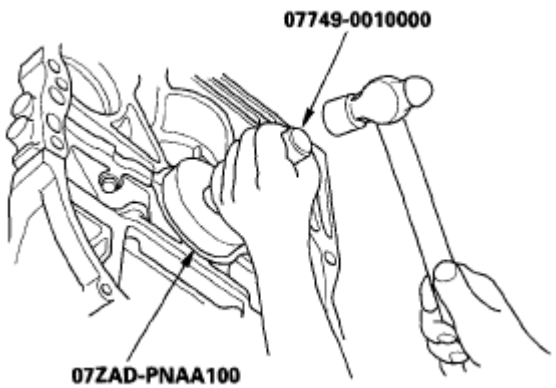


Fig. 143: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure the distance between the engine block (A) and oil seal (B).

   Oil Seal Installed Height: 0.2-1.2 mm (0.001-0.047 in.)

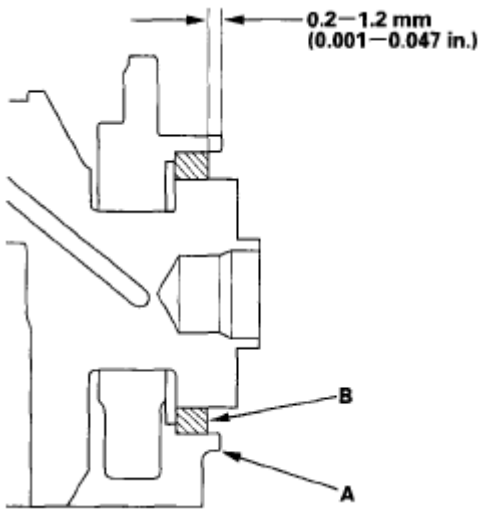


Fig. 144: Identifying Distance Between Engine Block And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the flywheel, clutch disc , and pressure plate (see **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**).
9. Install the transmission (see **TRANSMISSION INSTALLATION**).

SEALING BOLT AND JOINT PIPE INSTALLATION

NOTE:

- **When installing the sealing bolt, always use a new washer.**
- **When installing the joint pipe, always use a new O-ring.**

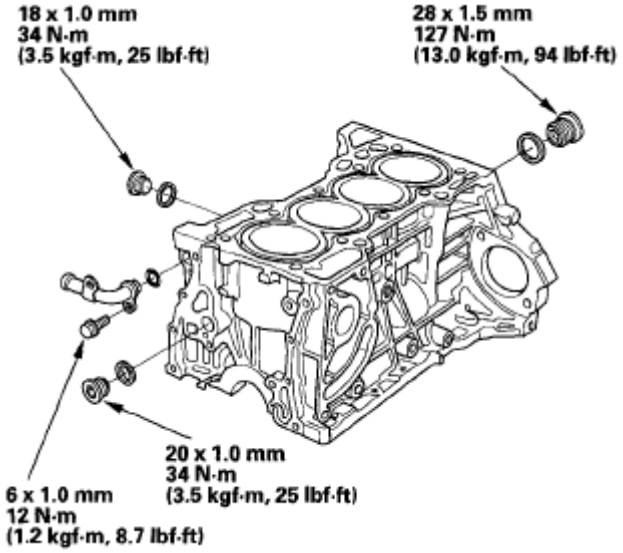


Fig. 145: Identifying Sealing Bolt And Joint Pipe (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2007 ENGINE PERFORMANCE

Emission Applications - Honda Civic

EMISSION APPLICATIONS

CIVIC, CIVIC HYBRID & CIVIC Si

Engine & Fuel System	(1) Emission Control Systems & Devices
2007	
1.3L (81") 4-Cyl. SFI Except AT-PZEV & SULEV	**PCV, EVAP, TWC, FR, NOxATWC, EGR, SPK, AFS, HO2S, THO2S (S3), CEC, (2) MIL,** EVAP-BPSV, EVAP-CPCSV, EVAP-CVSV, EVAP-EV, EVAP-ORVR, EVAP-TWV, EVAP-VC, EVAP-VCF, FTPS, ORVR-FTVCV, ORVR-FTVRV, SPK-CC
1.3L (81") 4-Cyl. SFI AT-PZEV & SULEV	**PCV, EVAP, TWC, FR, EGR, SPK, AFS, HO2S, CEC, (2) MIL,** EVAP-CPCSV, EVAP-CVSV, EVAP-ORVR, EVAP-VC, EVAP-VCF, FTPS, ORVR-FTVCV, ORVR-FTVRV, SPK-CC
1.7L (102") 4-Cyl. SFI	**PCV, EVAP, TWC, FR, SPK, AFS, HO2S, CEC, (2) MIL,** EVAP-BPSV, EVAP-CPCSV, EVAP-CVSV, EVAP-EV, EVAP-ORVR, EVAP-TWV, EVAP-VC, EVAP-VCF, FTPS, ORVR-FTVCV, ORVR-FTVRV, SPK-CC
2.0L (122") 4-Cyl. SFI	**PCV, EVAP, TWC, FR, SPK, AFS, HO2S, CEC, (2) MIL,** EVAP-BPSV, EVAP-CPCSV, EVAP-CVSV, EVAP-EV, EVAP-ORVR, EVAP-TWV, EVAP-VC, EVAP-VCF, ORVR-FTVCV, ORVR-FTVRV, FTPS, SPK-CC

(1) For quick reference, major emission control systems and devices are listed in bold type; components and other related devices are listed in light type.

(2) Computer controlled.

ABBREVIATIONS

AFS

Air Fuel Ratio Sensor

CEC

Computerized Engine Controls

EGR

Exhaust Gas Recirculation

EVAP

Fuel Evaporative System

EVAP-BPSV

EVAP By-Pass Solenoid Valve

EVAP-CPCSV

EVAP Canister Purge Control Solenoid Valve

EVAP-CVSV

EVAP Canister Vent Shut Valve

EVAP-EV

EVAP Evap Valve

EVAP-TWV

EVAP Two-Way Valve

EVAP-VC

EVAP Vapor Canister

EVAP-VCF

EVAP Vapor Canister Filter

FR

Fuel Pipe Restrictor

FTPS

Fuel Tank Pressure Sensor

HO2S

Heated Oxygen Sensor

MIL

Malfunction Indicator Light

NOxATWC

NOx Adsorptive Three-Way Catalyst

ORVR

On-Board Refueling Vapor Recovery

ORVR-FTVCV

ORVR Fuel Tank Vapor Control Valve

ORVR-FTVRV

ORVR Fuel Tank Vapor Recirculation Valve

PCV

Positive Crankcase Ventilation

SPK

Spark Controls

SPK-CC

SPK Computer Controlled

THO2S (S3)

Third Heated Oxygen Sensor

TWC

Three-Way Catalyst

2006-08 ENGINE PERFORMANCE

Electronic Throttle Control System (K20Z3) - Civic (ALL Except Si)

COMPONENT LOCATION INDEX

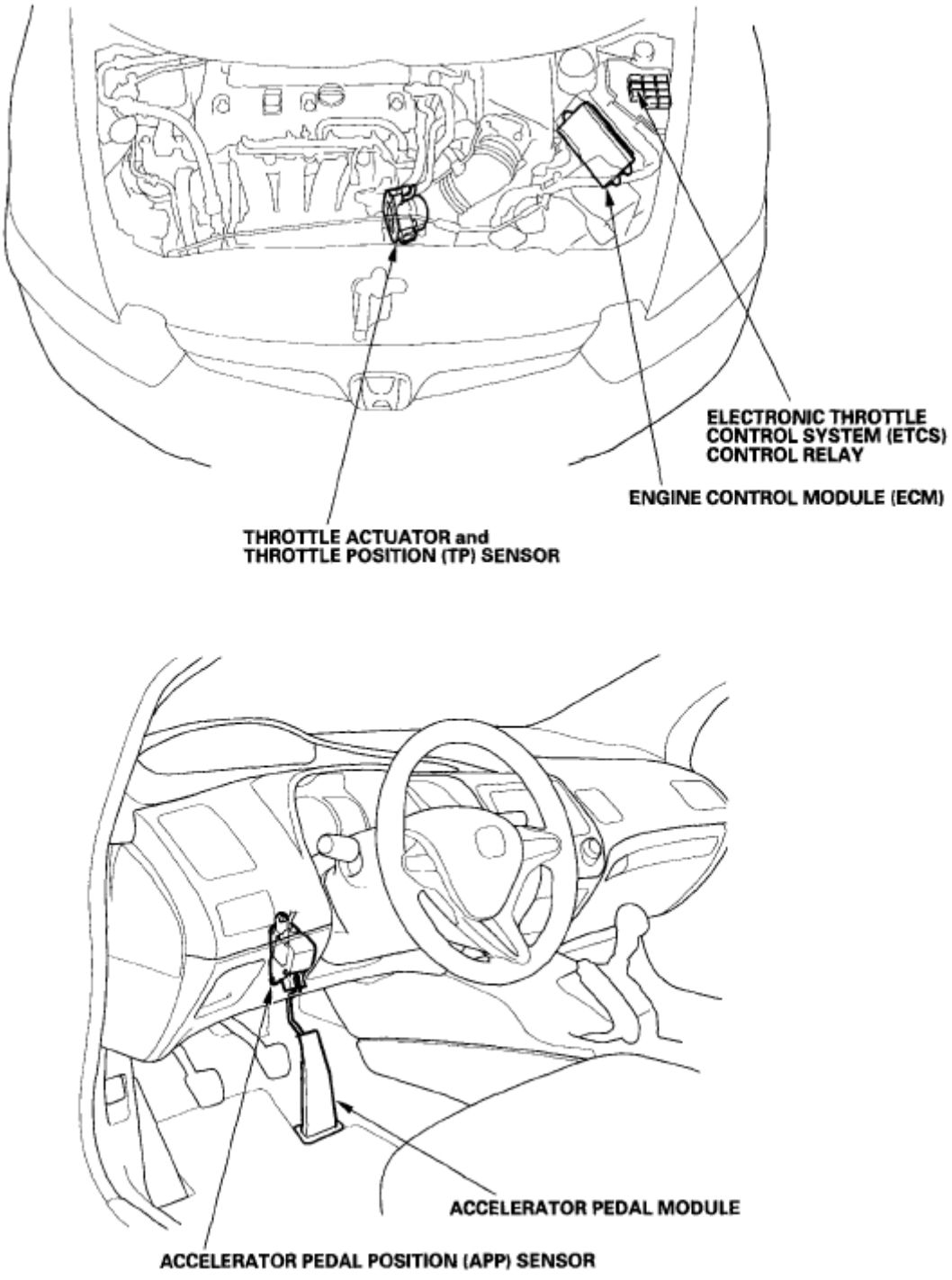


Fig. 1: Identifying Electronic Throttle Control System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

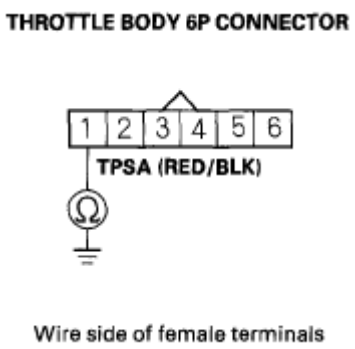


Fig. 2: Checking Continuity Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM (C20), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

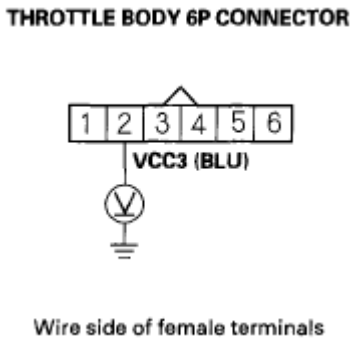


Fig. 3: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM connector terminal C12 and throttle body 6P connector terminal No. 2.

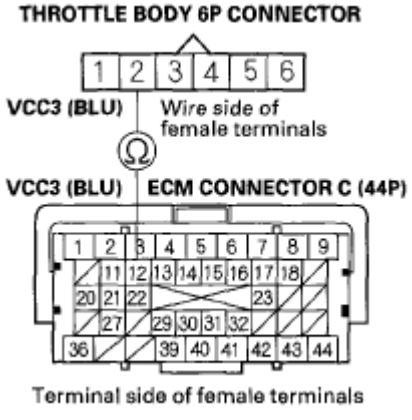


Fig. 4: Checking Continuity Between ECM Terminal C12 And Throttle Body 6P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

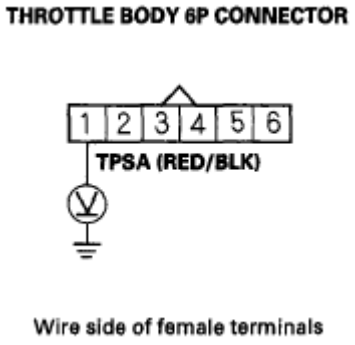


Fig. 5: Measuring Voltage Between Throttle Body 6P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminal C20 and throttle body 6P connector terminal No. 1.

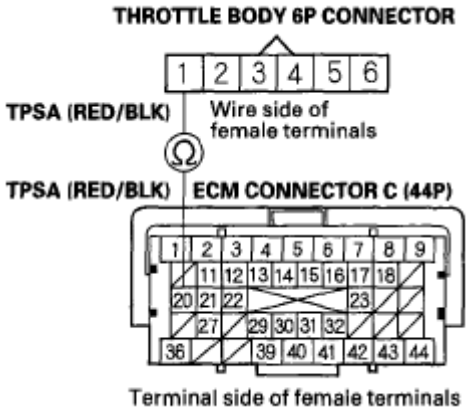


Fig. 6: Checking Continuity Between ECM Terminal C20 And Throttle Body 6P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C20), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Check for continuity between ECM connector terminal C39 and throttle body 6P connector terminal No. 4.

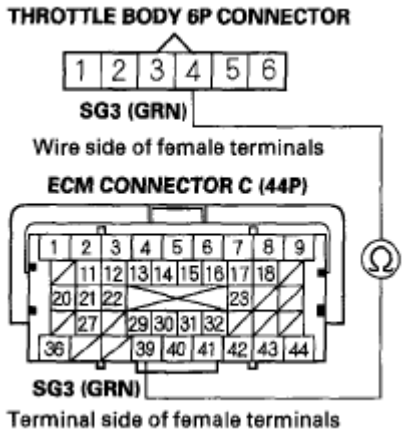


Fig. 7: Checking Continuity Between ECM Terminal C39 And Throttle Body 6P Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals

at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

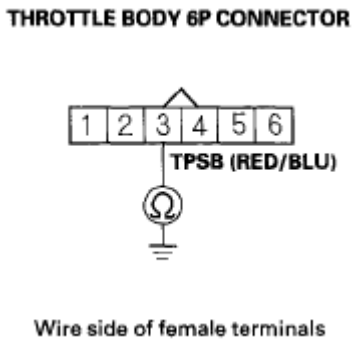


Fig. 8: Checking Continuity Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there continuity?

   YES - Repair short in the wire between the throttle body and the ECM (C21), then go to step 18.

   NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

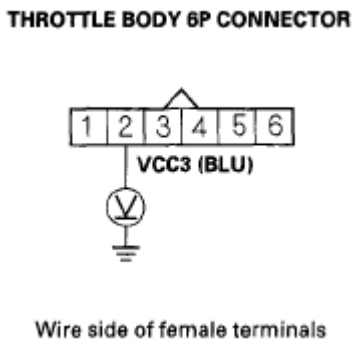


Fig. 9: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body

Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM connector terminal C12 and throttle body 6P connector terminal No. 2.

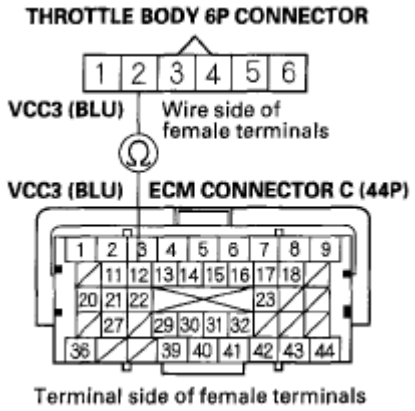


Fig. 10: Checking Continuity Between ECM Terminal C12 And Throttle Body 6P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0223-.TP SENSOR B CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

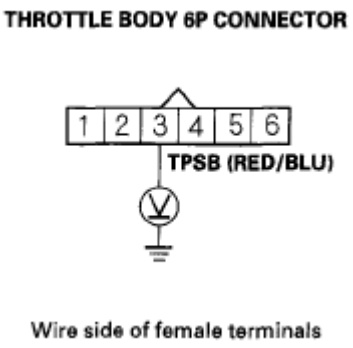


Fig. 11: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminal C21 and throttle body 6P connector terminal No. 3.

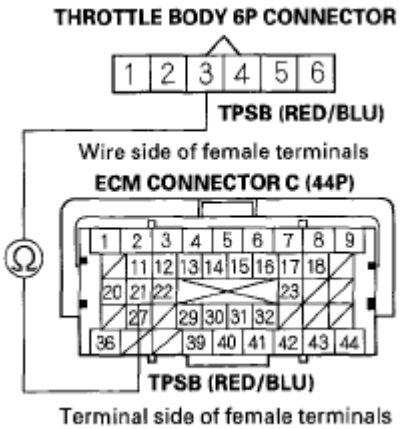


Fig. 12: Checking Continuity Between ECM Terminal C21 And Throttle Body 6P Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C21), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Check for continuity between ECM connector terminal C39 and throttle body 6P connector terminal No. 4.

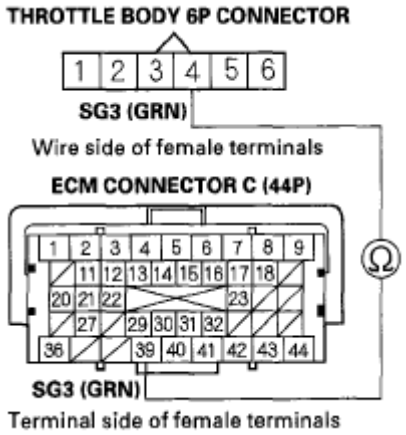


Fig. 13: Checking Continuity Between ECM Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0223 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES - Check for poor connections or loose terminals at TP sensor Band the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the RELAY circuit OK?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM.

    NO - Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

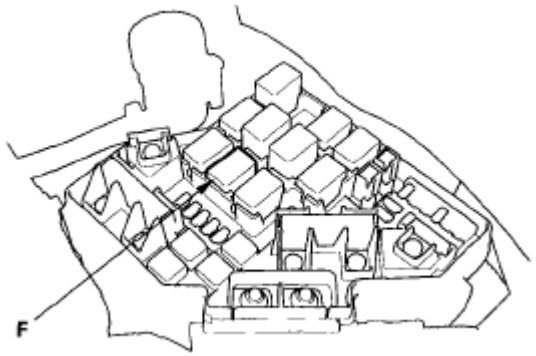


Fig. 14: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 6.

   NO - Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Check for continuity between ECM connector terminal A20 and body ground.

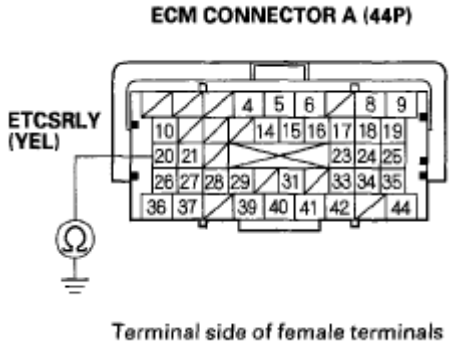


Fig. 15: Checking Continuity Between ECM Connector Terminal A20 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there continuity?

   YES - Repair short in the wire between the ECM (A20) and the ETCS control relay, then go to step 13.

   NO - Go to step 9.

9. Disconnect ECM connector C (44P).
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM connector terminal C1 and body ground.

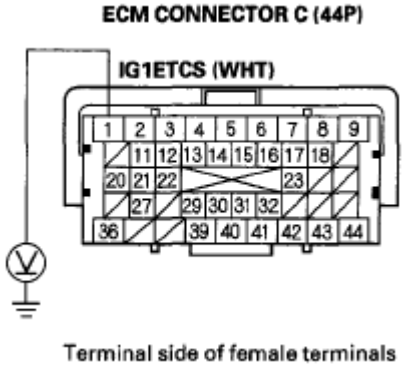


Fig. 16: Measuring Voltage Between ECM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM (C1) and the ETCS control relay, then go to step 12.

NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES - Go to step 4.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM.

4. Turn the ignition switch OFF.
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 6.

   NO - Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

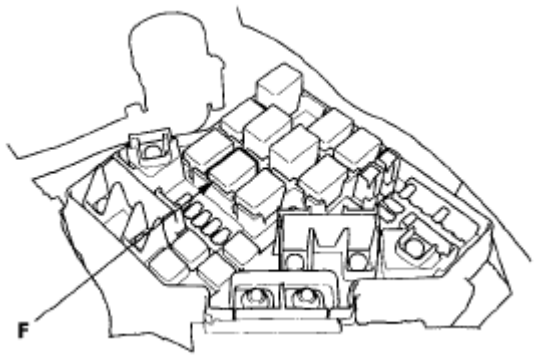


Fig. 17: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 8.

   NO - Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

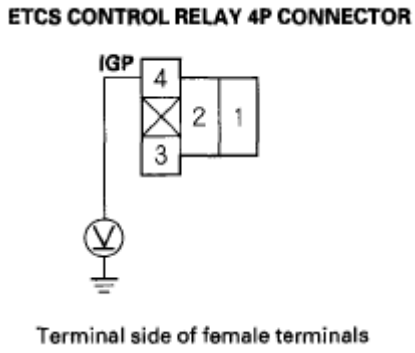


Fig. 18: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

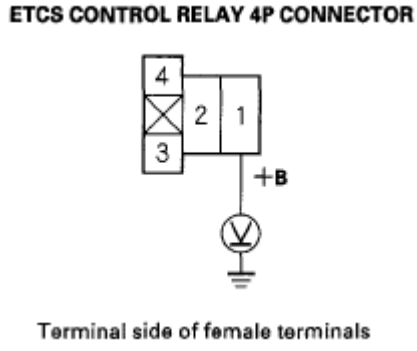


Fig. 19: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 11.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM connector terminal C1.

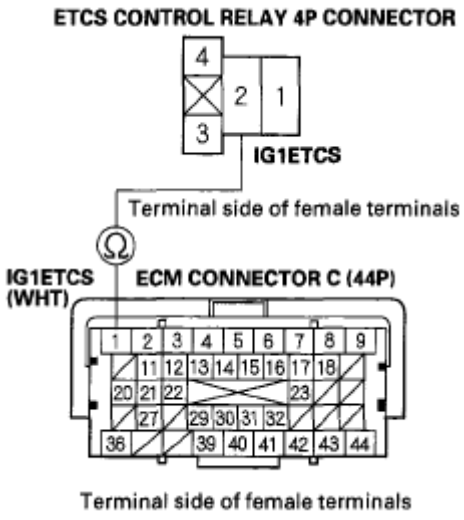


Fig. 20: Checking Continuity Between ETCS Control Relay 4P Terminal No 2 And ECM Terminal C1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM (CD and the ETCS control relay, then go to step 23.

15. Disconnect ECM connector A (44P).
16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM connector terminal A20.

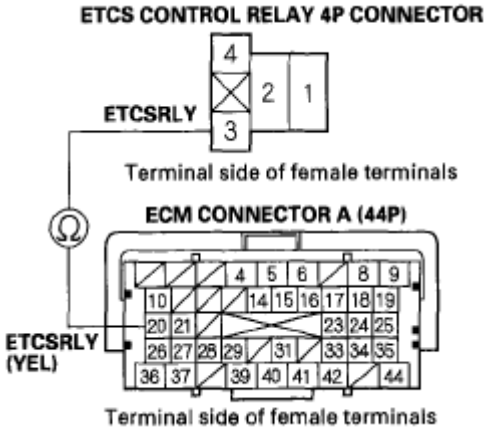


Fig. 21: Checking Continuity Between ETCS Control Relay 4P Terminal No. 3 And ECM Terminal A20
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM (A20) and the ETCS control relay, then go to step 23.

17. Remove the ETCS control relay (F) from the understood fuse/relay box.

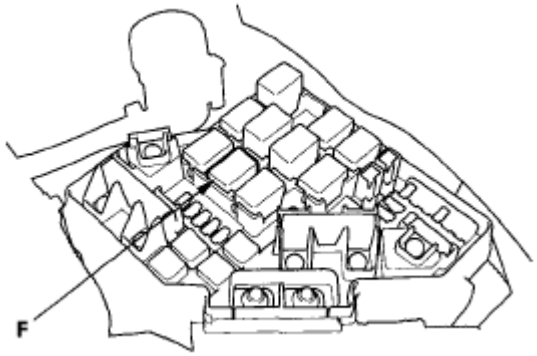


Fig. 22: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Jump the SCS line with the HDS.
19. Disconnect ECM connector C (44P).
20. Check for continuity between ECM connector terminal C1 and body ground.

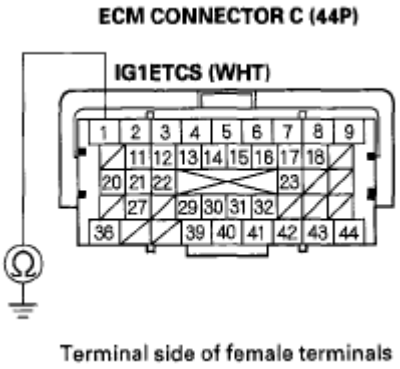


Fig. 23: Checking Continuity Between ECM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C1) and the ETCS control relay, then go to step 23.

NO - Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

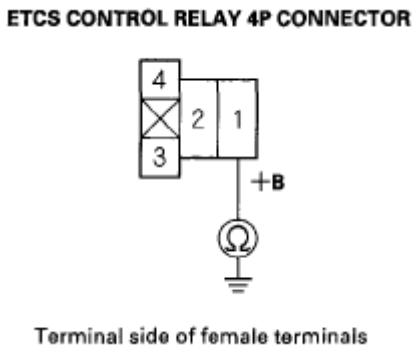


Fig. 24: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

NO - Go to step 28.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM with the HDS.
26. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the

original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1683 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve closed as shown.

Fig. 25: Pushing Throttle Valve To Close Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1684 indicated?

   YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve open as shown.

Fig. 26: Pushing Throttle Valve To Open Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - APP SENSOR
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

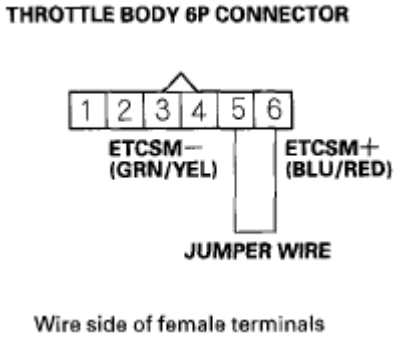


Fig. 27: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check for continuity between ECM connector terminals C3 and C4.

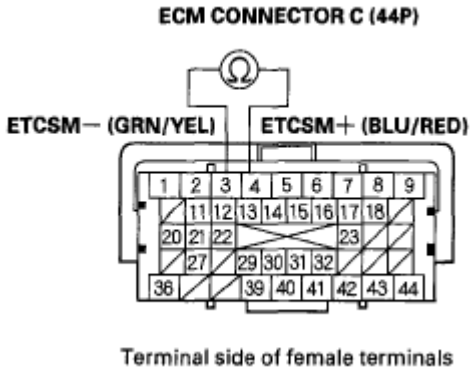


Fig. 28: Checking Continuity Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM (C3, C4), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM with the HDS.

24. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 29. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Jump the SCS line with the HDS.
2. Disconnect ECM connector C (44P).
3. Measure resistance between ECM connector terminals C3 and C4.

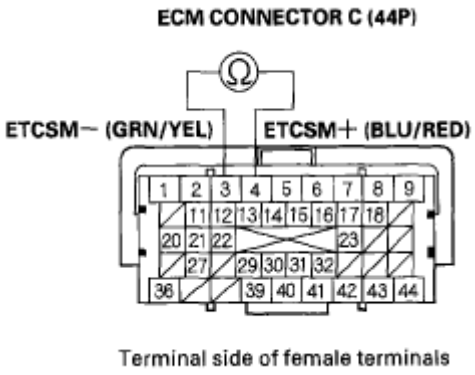


Fig. 29: Measuring Resistance Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 4.

NO - Go to step 15.

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

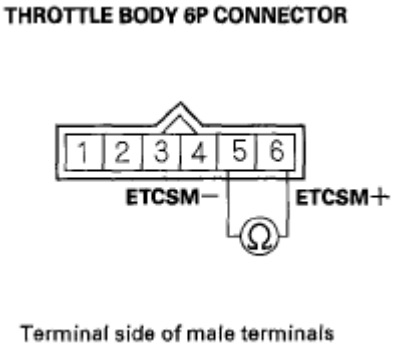


Fig. 30: Measuring Resistance Between Throttle Body 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms, or less?

YES - Go to step 6.

NO - Repair short in the wires between the ECM C3 (ETCSM-line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

15. Reconnect all connectors.
16. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 17. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM.

3. Turn the ignition switch OFF.

4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

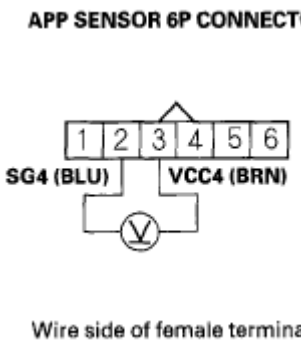


Fig. 31: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

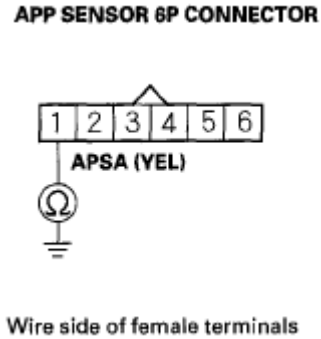


Fig. 32: Checking Continuity Between APP Sensor 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A17) and APP sensor A, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

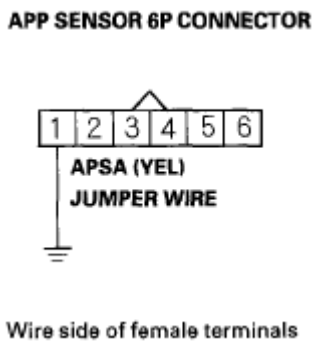


Fig. 33: Connecting APP Sensor 6P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal A17 and body ground.

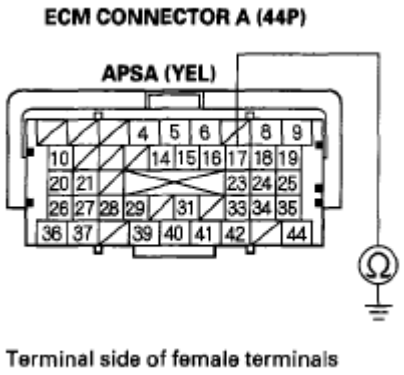


Fig. 34: Checking Continuity Between ECM Connector Terminal A17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM (A17) and APP sensor A, then go to step 24.

13. Reconnect ECM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

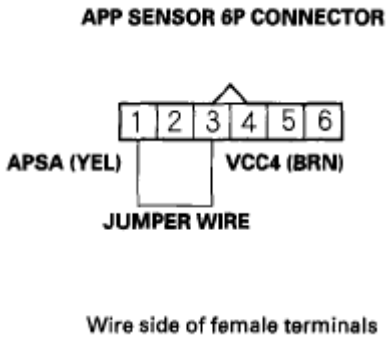


Fig. 35: Connecting APP Sensor 6P Connector Terminals No. 1 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR A in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES - Go to step 29.

    NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

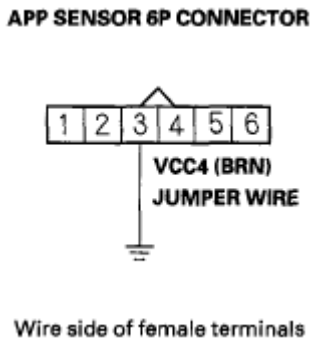


Fig. 36: Connecting APP Sensor 6P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM connector terminal A25 and body ground.

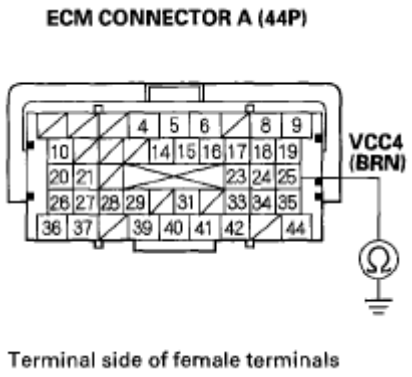


Fig. 37: Checking Continuity Between ECM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM (A25) and APP sensor A, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

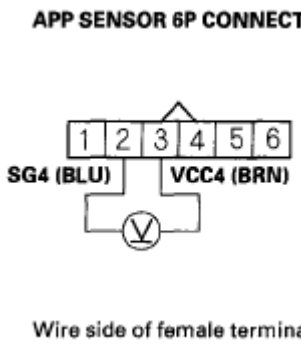


Fig. 38: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

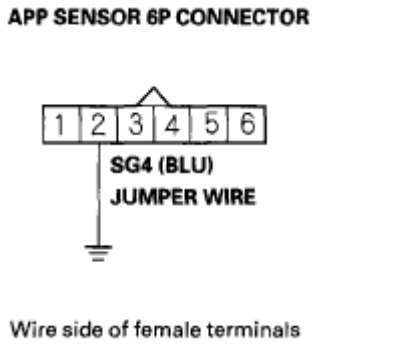


Fig. 39: Connecting APP Sensor 6P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM connector terminal A35 and body ground.

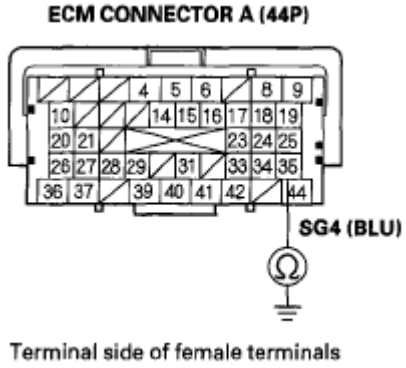


Fig. 40: Checking Continuity Between ECM Connector Terminal A35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (A35) and APP sensor A, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2123 indicated?

YES - Check for poor connections or loose terminals at APP sensor A and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

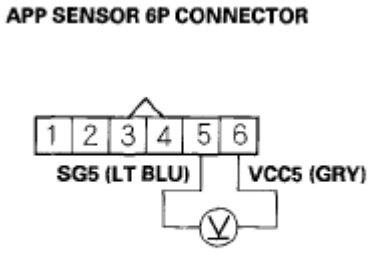


Fig. 41: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

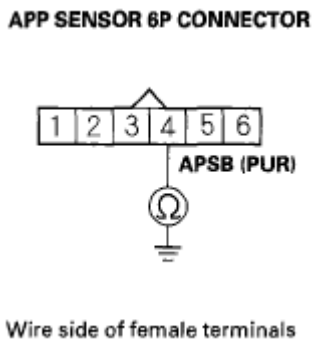


Fig. 42: Checking Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A18) and APP sensor B, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

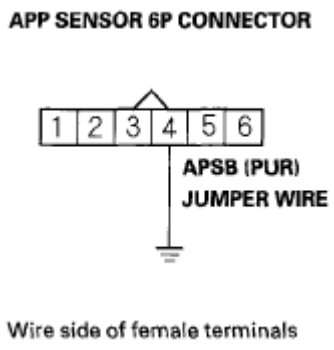


Fig. 43: Connecting APP Sensor 6P Connector Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal A18 and body ground.

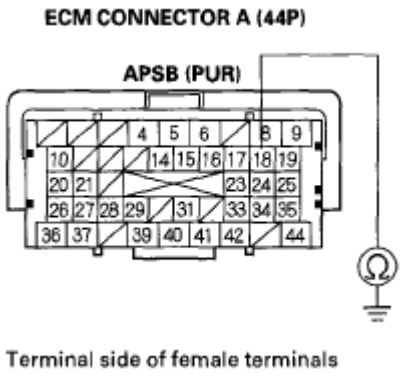


Fig. 44: Checking Continuity Between ECM Connector Terminal A18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM (A18) and APP sensor B, then go to step 24.

13. Reconnect ECM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

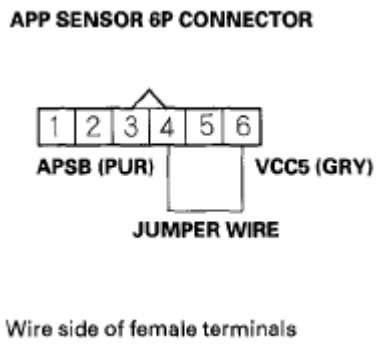


Fig. 45: Connecting APP Sensor 6P Connector Terminals No. 4 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR B in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES - Go to step 29.

NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.

19. Disconnect ECM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

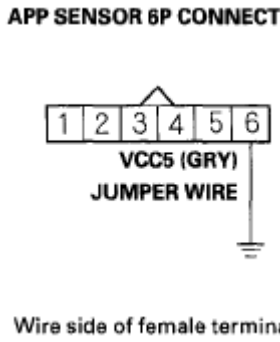


Fig. 46: Connecting APP Sensor 6P Connector Terminal No. 6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM connector terminal A24 and body ground.

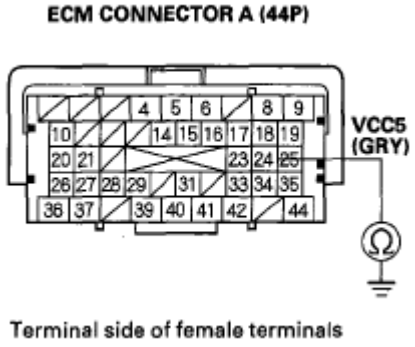


Fig. 47: Checking Continuity Between ECM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM (A24) and APP sensor B, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES - Check for poor connections or loose terminals at APP sensor B and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES - Check for poor connections or loose terminals at APP sensor B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

Is there about 4.9 V or more?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor Band the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

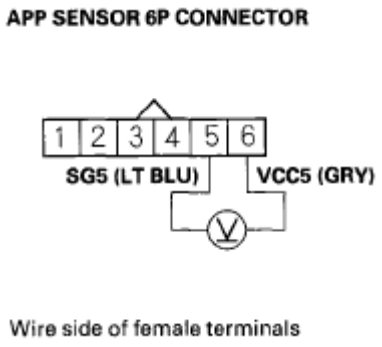


Fig. 48: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

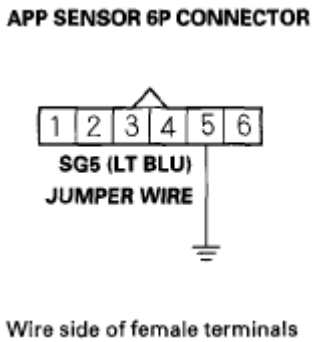


Fig. 49: Connecting APP Sensor 6P Connector Terminal No. 5 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM connector terminal A34 and body ground.

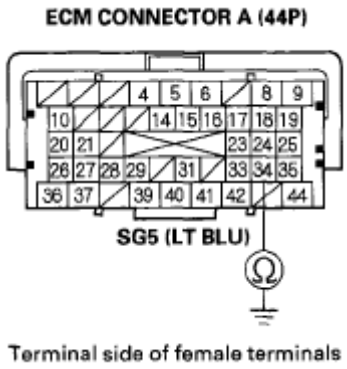


Fig. 50: Checking Continuity Between ECM Connector Terminal A34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (A34) and APP sensor B, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the

original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2135 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

   Does the valve temporarily move to its fully closed position?

   YES - Go to step 15.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminals C20 and C21.

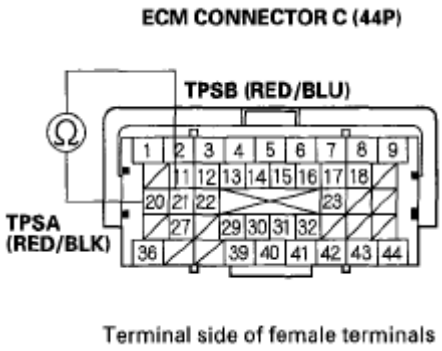


Fig. 51: Checking Continuity Between ECM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Go to step 22.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between ECM connector terminals C20 and C21.

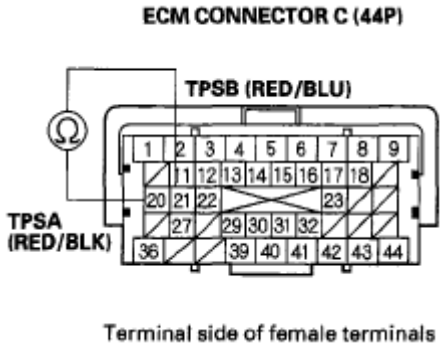


Fig. 52: Checking Continuity Between ECM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between the ECM C20 (TPSA line) and the C21 (TPSB line), then go to step 17.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the ECM with the HDS.
20. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM.

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

    Are they the same voltage?

    YES - Go to step 6.

NO - Go to step 12.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect ECM connector A (44P).
9. Check for continuity between ECM connector terminals A17 and A18.

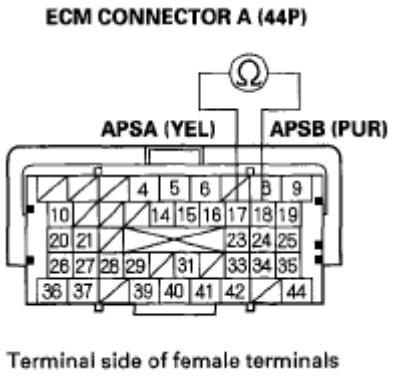


Fig. 53: Checking Continuity Between ECM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM connector terminals A17 and A18.

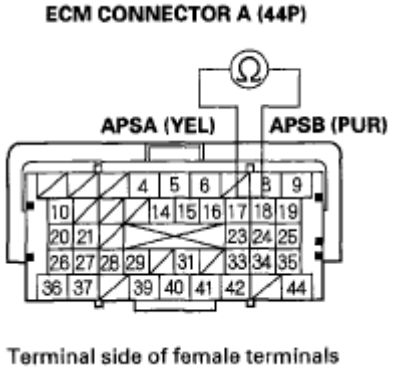


Fig. 54: Checking Continuity Between ECM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between ECM connector terminals A17 (APSA line) and A18 (APSB line), then go to step 14.

NO - Go to step 13.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Turn the ignition switch OFF.
19. Turn the ignition switch ON (II).
20. Press the accelerator pedal to the floor.
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at the APP sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II).
26. Press the accelerator pedal to the floor.
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

6. Turn the ignition switch OFF.
7. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while performing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES - Go to step 11.

    NO - Go to step 12.

11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 21 and recheck.

    NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM connector C (44P).

16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

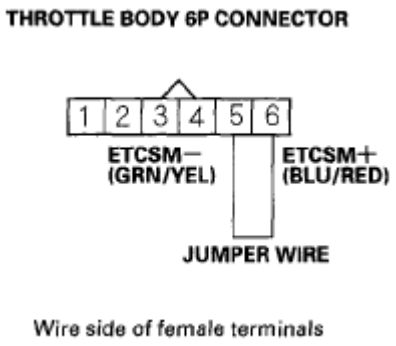


Fig. 55: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between ECM connector terminals C3 and C4.

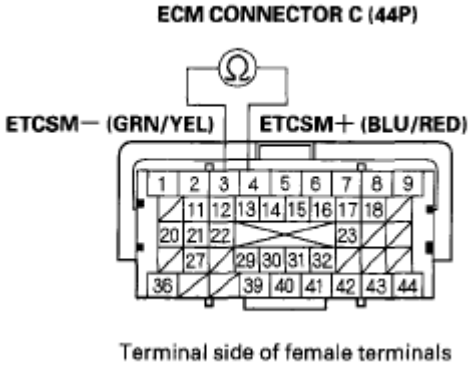


Fig. 56: Checking Continuity Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM (C3, C4), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

APP SENSOR SIGNAL INSPECTION

NOTE:

- **This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.**
- **Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.**
- **Press the accelerator pedal several times, to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION).**

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

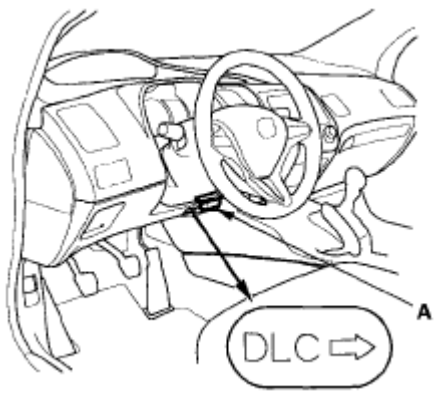


Fig. 57: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 5.
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**), then go to step 1.

ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION

REMOVAL

1. Disconnect the accelerator pedal module connector (A), then remove the nuts (B).

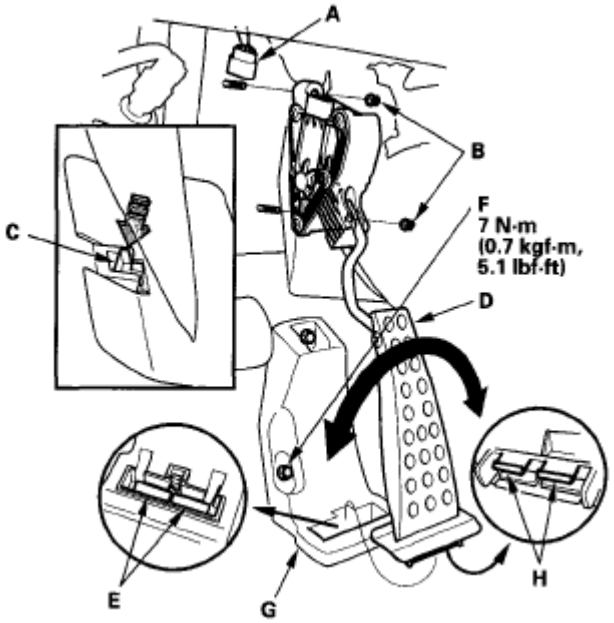


Fig. 58: Disconnecting Accelerator Pedal Module Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Push the tab (C).
3. Pry the accelerator pedal module to right and left, and remove the accelerator pedal module (D).

NOTE:

- **The APP sensor is not available separately.**

  Do not disassemble the accelerator pedal module.

- **If the tab or tab receivers (E) are damaged, pull back the carpet, remove the nut (F), and replace the pedal stop (G).**
- **If the tabs (H) of the accelerator pedal module are damaged, replace the accelerator pedal module.**

INSTALLATION

1. Install the accelerator pedal module.

   NOTE: Make sure the tab (A) is secure.

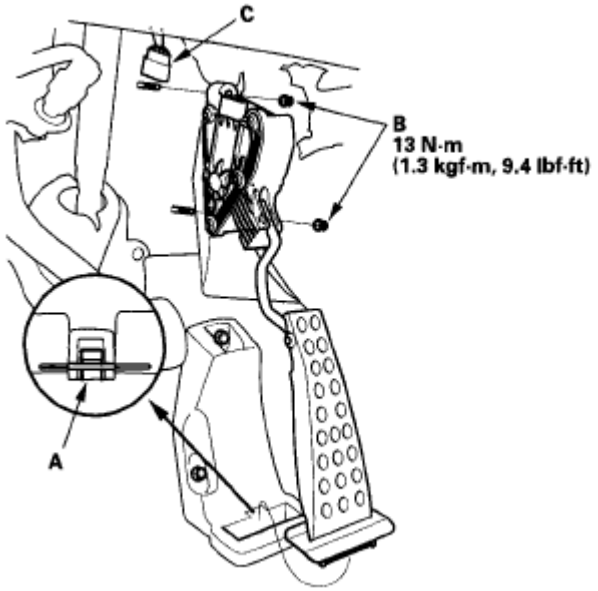


Fig. 59: Installing Accelerator Pedal Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the nuts (B), then connect the accelerator pedal module connector (C).

   NOTE: Make sure that the accelerator pedal module is secure.

2006-08 ENGINE PERFORMANCE

Electronic Throttle Control System (R18A1) - Civic (Except Hybrid & Si)

COMPONENT LOCATION INDEX

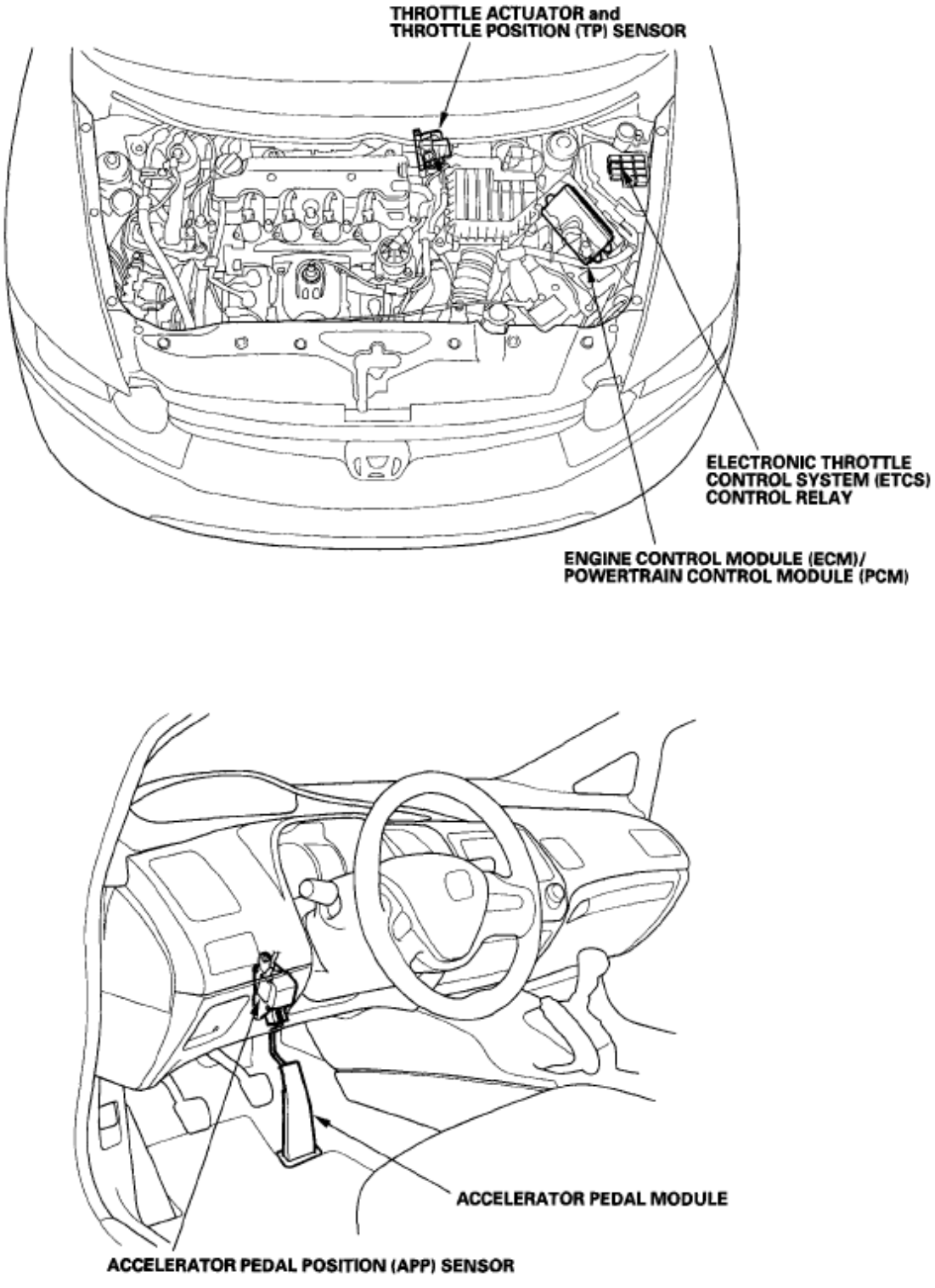


Fig. 1: Identifying Electronic Throttle Control System Component Location

Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

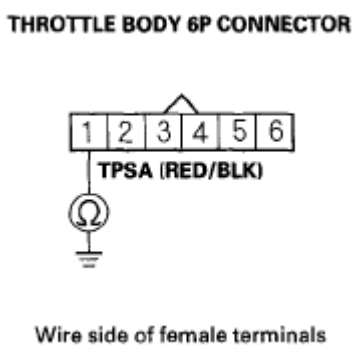


Fig. 2: Checking Continuity Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM/PCM (C20), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

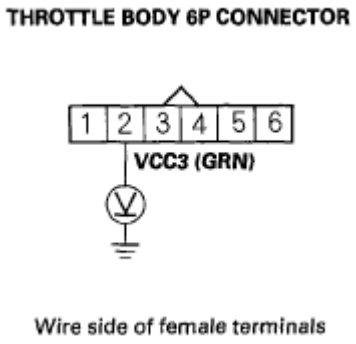


Fig. 3: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 23.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.

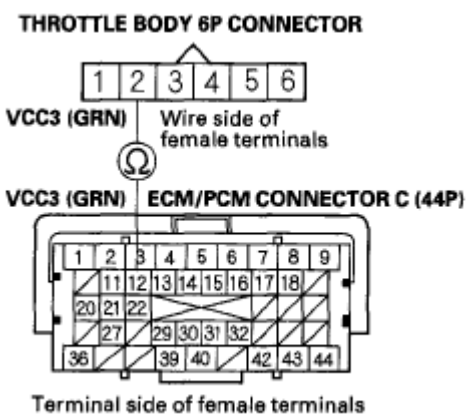


Fig. 4: Checking Continuity Between ECM/PCM Connector Terminals C12 And Throttle Body

6P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

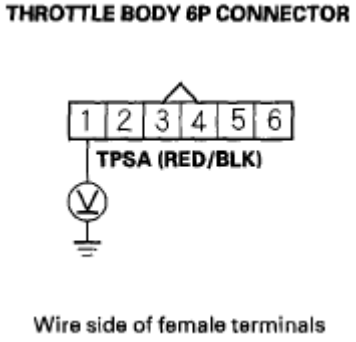


Fig. 5: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there about 5 V?

   YES - Go to step 18.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminal C20 and throttle body 6P connector terminal No. 1.

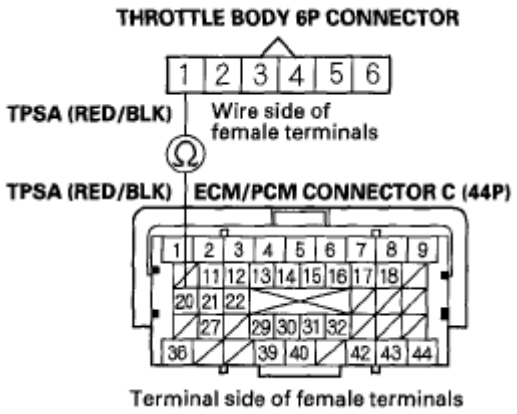


Fig. 6: Checking Continuity Between ECM/PCM Connector Terminal And Throttle Body 6P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C20), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.

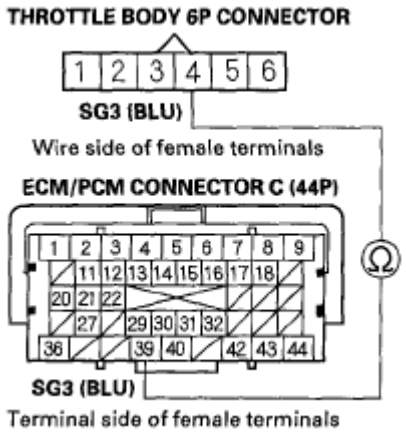


Fig. 7: Checking Continuity Between ECM/PCM Connector Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals

at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

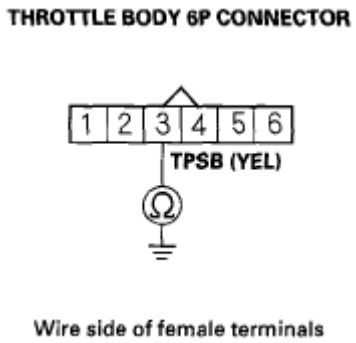


Fig. 8: Checking Continuity Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM/PCM (C21), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

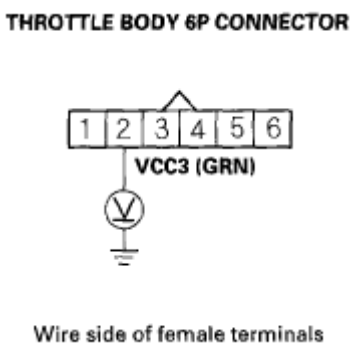


Fig. 9: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.

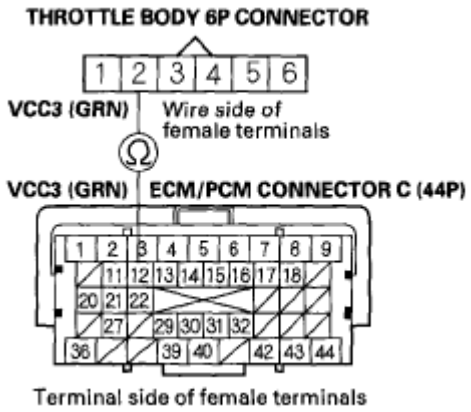


Fig. 10: Checking Continuity Between ECM/PCM Connector Terminal C12 And Throttle Body 6P Connector No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0223: TP SENSOR B CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

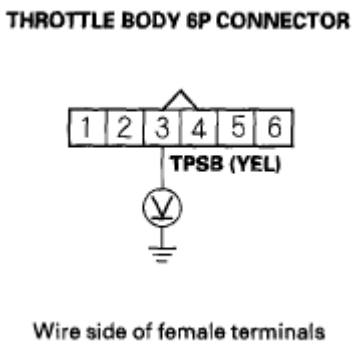


Fig. 11: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminal C21 and throttle body 6P connector terminal No. 3.

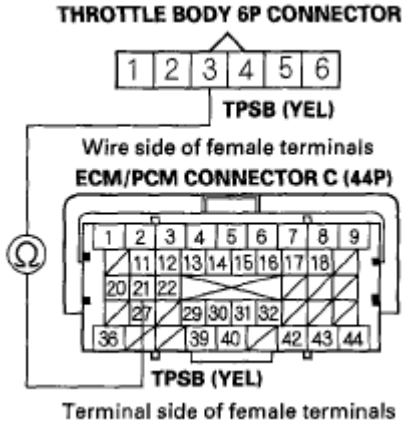


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal C21 And Throttle Body 6P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C21), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.

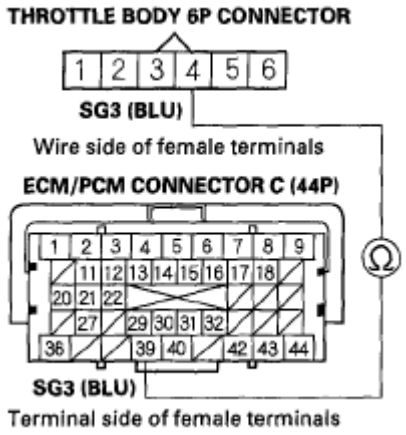


Fig. 13: Checking Continuity Between ECM/PCM Connector Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DIG P0223 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES - Check for poor connections or loose terminals at TP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the RELAY circuit OK?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM.

    NO - Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

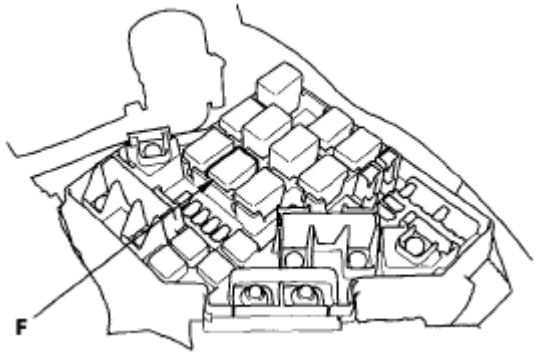


Fig. 14: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 6.

   NO - Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Check for continuity between ECM/PCM connector terminal A20 and body ground.

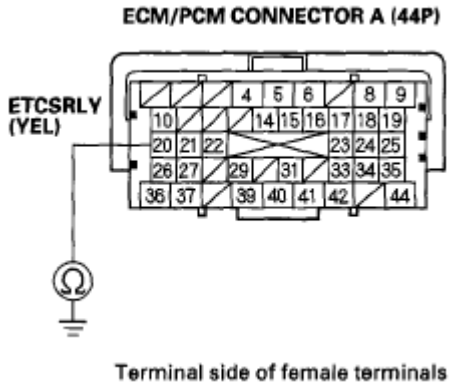


Fig. 15: Checking Continuity Between ECM/PCM Connector Terminal A20 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 13.

NO - Go to step 9.

9. Disconnect ECM/PCM connector C (44P).
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal C1 and body ground.

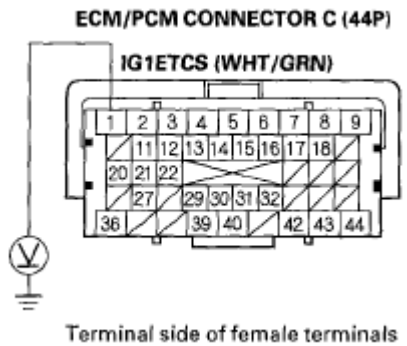


Fig. 16: Measuring Voltage Between ECM/PCM Connector Terminal C1 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 12.

NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1659 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM.

4. Turn the ignition switch OFF.
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 6.

   NO - Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

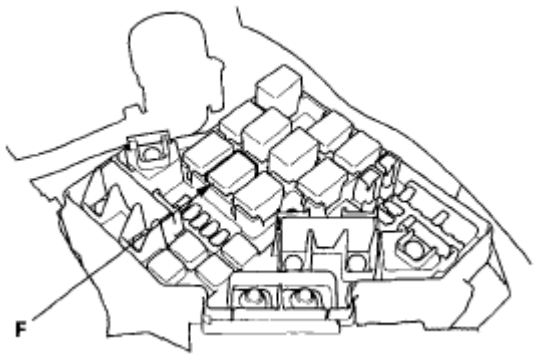


Fig. 17: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 8.

   NO - Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

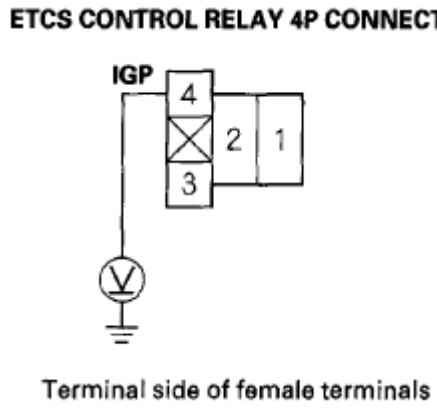


Fig. 18: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

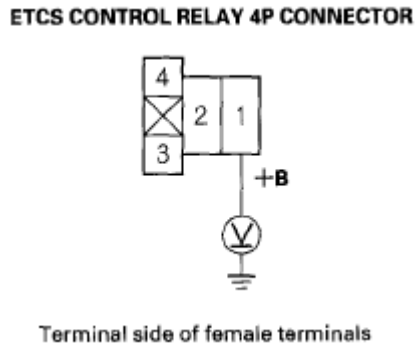


Fig. 19: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 11.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM/PCM connector terminal C1.

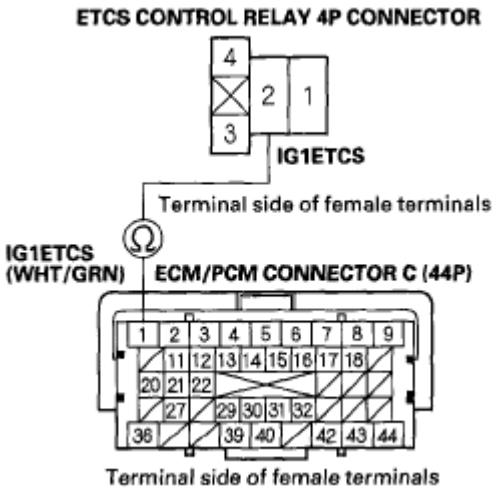


Fig. 20: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 2 And ECM/PCM Connector Terminal C1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 23.

15. Disconnect ECM/PCM connector A (44P).
16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM/PCM connector terminal A20.

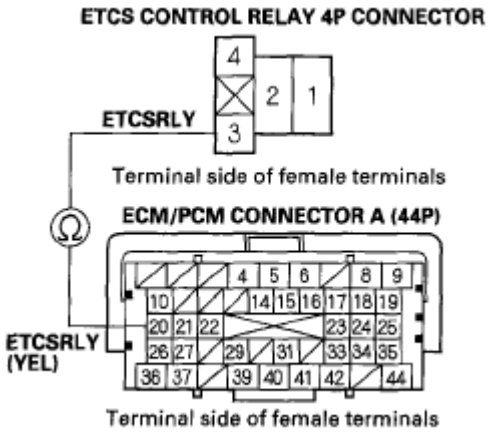


Fig. 21: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 3 And ECM/PCM Connector Terminal A20
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 23.

17. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

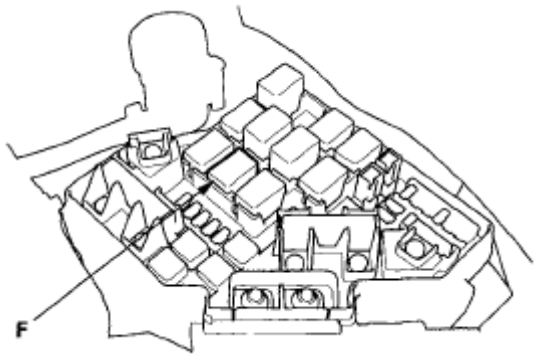


Fig. 22: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector C (44P).
20. Check for continuity between ECM/PCM connector terminal C1 and body ground.

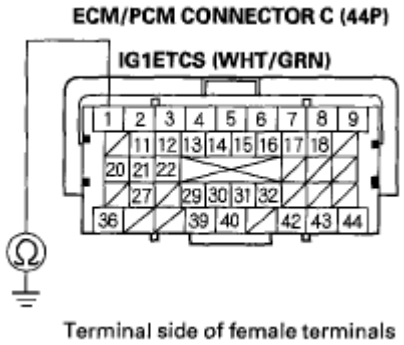


Fig. 23: Checking Continuity Between ECM/PCM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 23.

NO - Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

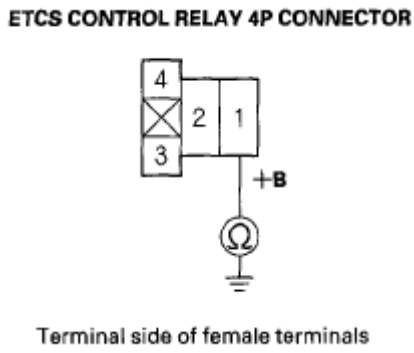


Fig. 24: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

NO - Go to step 28.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted,

replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1683 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve closed as shown.

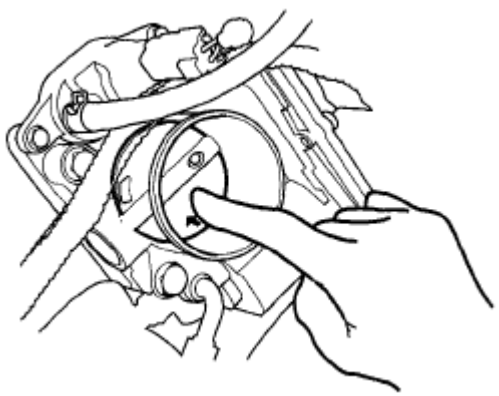


Fig. 25: Pushing Throttle Valve Closed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES - If the throttle body was cleaned, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), and recheck.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1684 indicated?

YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve open as shown.

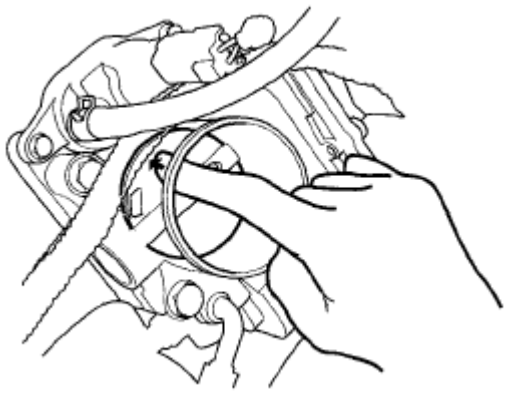


Fig. 26: Pushing Throttle Valve Open
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

Does the throttle valve return?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1684 indicated?

YES - If the throttle body was cleaned, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), and recheck.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the

indicated DTCs troubleshooting.

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - APP SENSOR
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY CLEANING**).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

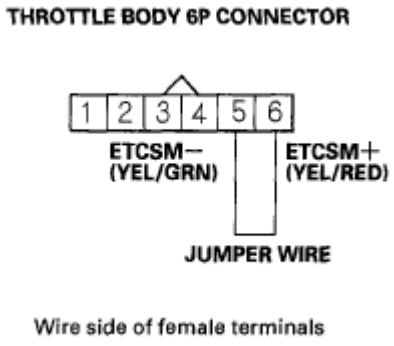


Fig. 27: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check for continuity between ECM/PCM connector terminals C3 and C4.

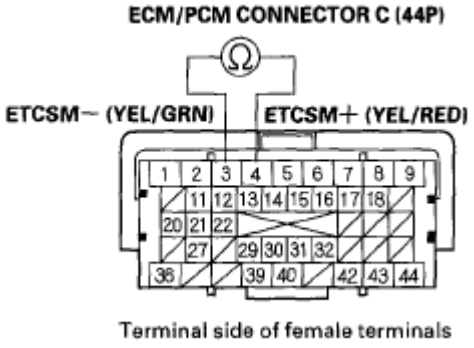


Fig. 28: Checking Continuity Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated ?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 28. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Jump the SCS line with the HDS.
2. Disconnect ECM/PCM connector C (44P).
3. Measure resistance between ECM/PCM connector terminals C3 and C4.

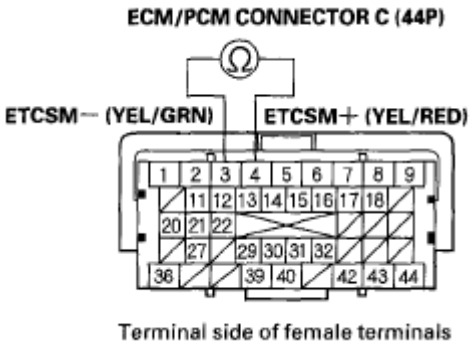


Fig. 29: Measuring Resistance Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 4.

NO - Go to step 15.

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

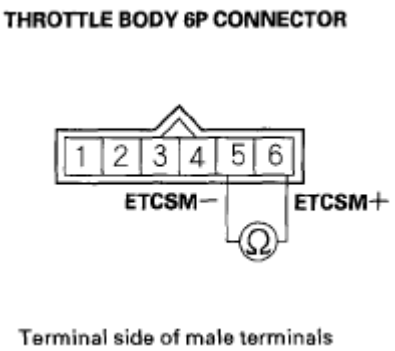


Fig. 30: Measuring Resistance Between Body 6P Connector Terminals No. 5 And 6 With Throttle Fully Closed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 6.

NO - Repair short in the wires between ECM/PCM connector terminals C3 (ETCSM-line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.

10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

15. Reconnect all connectors.
16. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

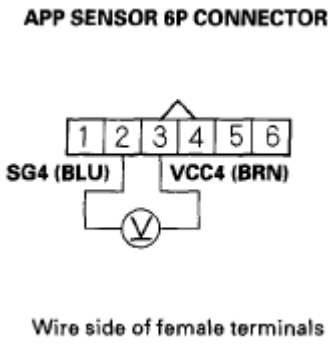


Fig. 31: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

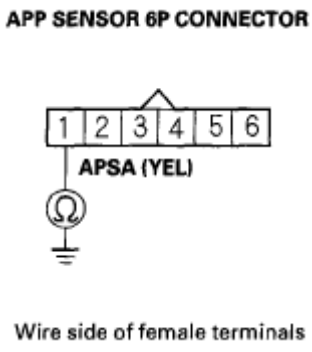


Fig. 32: Checking Continuity Between APP Sensor 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A17) and APP sensor A, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

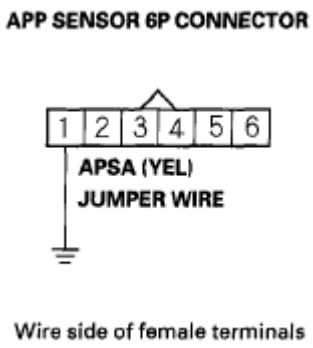


Fig. 33: Connecting APP Sensor 6P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A17 and body ground.

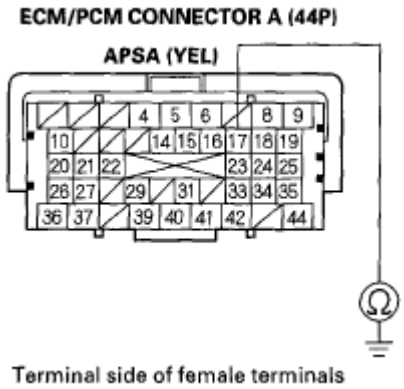


Fig. 34: Checking Continuity Between ECM/PCM Connector Terminal A17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (A17) and APP sensor A, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

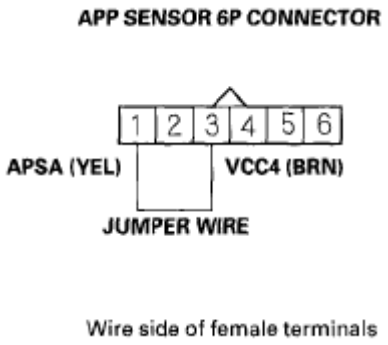


Fig. 35: Connecting APP Sensor 6P Connector Terminals No. 1 And No. 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR A in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES - Go to step 29.

    NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

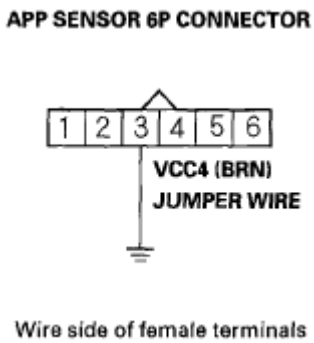


Fig. 36: Connecting APP Sensor 6P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM/PCM connector terminal A25 and body ground.

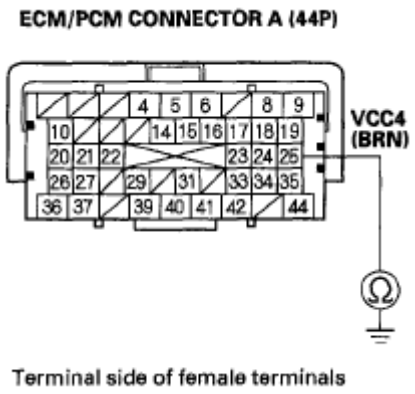


Fig. 37: Checking Continuity Between ECM/PCM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM/PCM (A25) and APP sensor A, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

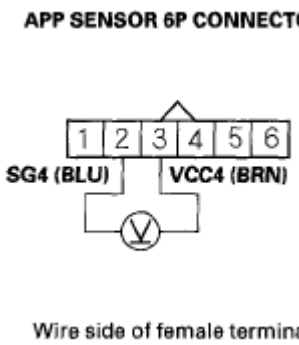


Fig. 38: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

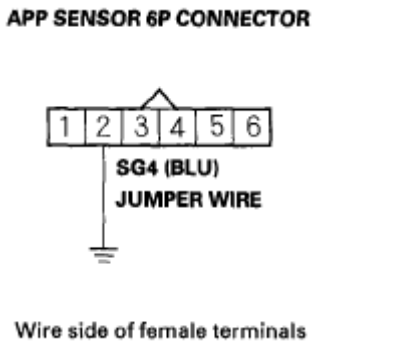


Fig. 39: Connecting APP Sensor 6P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM/PCM connector terminal A35 and body ground.

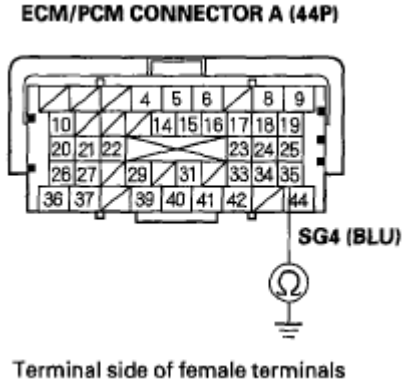


Fig. 40: Checking Continuity Between ECM/PCM Connector Terminal A35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM/PCM (A35) and APP sensor A, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2123 indicated?

YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to

step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

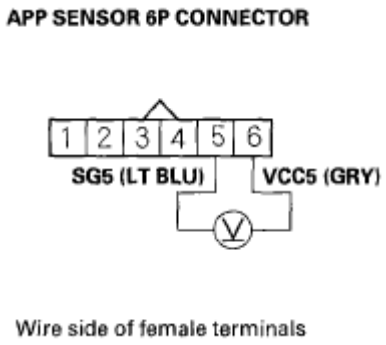


Fig. 41: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

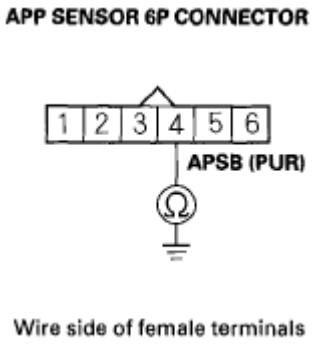


Fig. 42: Checking Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A18) and APP sensor B, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

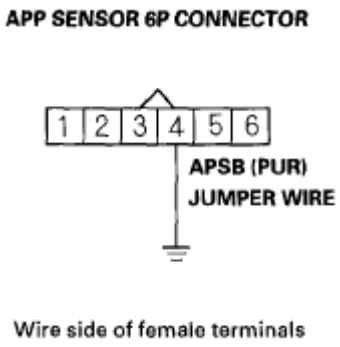


Fig. 43: Connecting APP Sensor 6P Connector Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A18 and body ground.

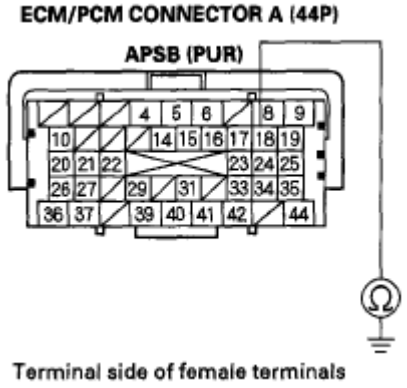


Fig. 44: Checking Continuity Between ECM/PCM Connector Terminal A18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (A18) and APP sensor B, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

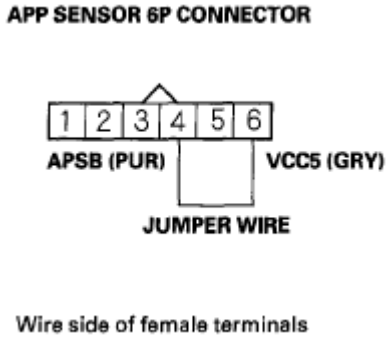


Fig. 45: Connecting APP Sensor 6P Connector Terminals No. 4 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR B in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES - Go to step 29.

    NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

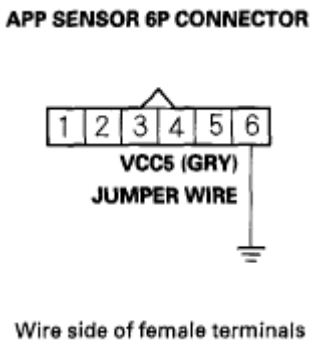


Fig. 46: Connecting APP Sensor 6P Connector Terminal No. 6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM/PCM connector terminal A24 and body ground.

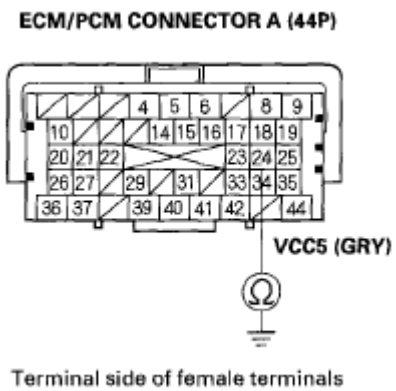


Fig. 47: Checking Continuity Between ECM/PCM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM/PCM (A24) and APP sensor B, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals APP sensor B and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

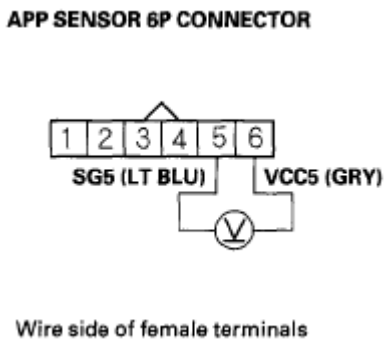


Fig. 48: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

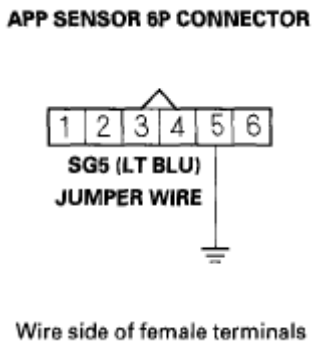


Fig. 49: Connecting APP Sensor 6P Connector Terminal No. 5 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM/PCM connector terminal A34 and body ground.

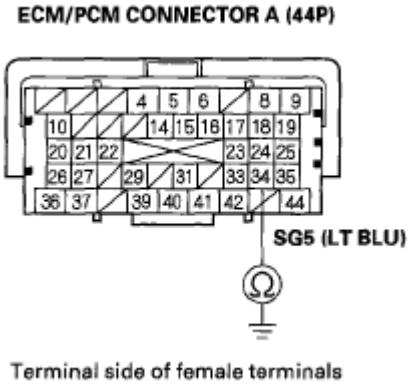


Fig. 50: Checking Continuity Between ECM/PCM Connector Terminal A34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM/PCM (A34) and APP sensor B, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE**

ECM/PCM), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

Does the valve temporarily move to its fully closed position?

YES - Go to step 15.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminals C20 and C21.

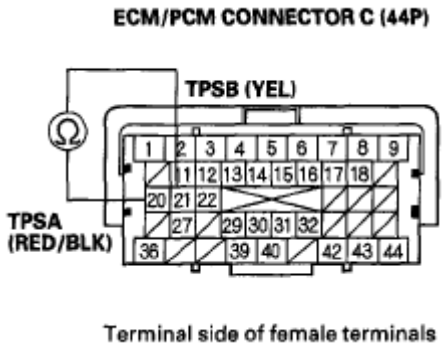


Fig. 51: Checking Continuity Between ECM/PCM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Go to step 22.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between ECM/PCM connector terminals C20 and C21.

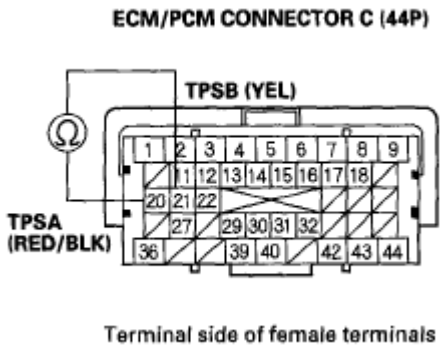


Fig. 52: Checking Continuity Between ECM/PCM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM C20 (TPSA line) and the C21 (TPSB line), then go to step 17.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM.

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

    Are they the same voltage?

    YES - Go to step 6.

NO - Go to step 12.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Check for continuity between ECM/PCM connector terminals A17 and A18.

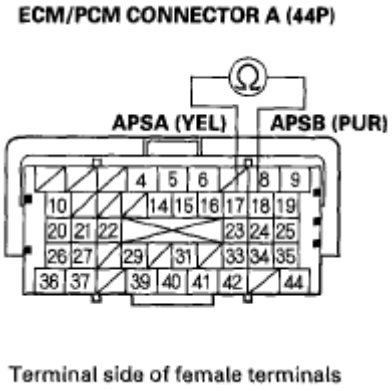


Fig. 53: Checking Continuity Between ECM/PCM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM/PCM connector terminals A17 and A18.

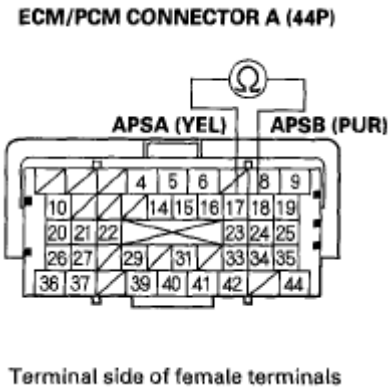


Fig. 54: Checking Continuity Between ECM/PCM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM/PCM connector terminals A17 (APSA line) and A18 (APSB line), then go to step 14.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Turn the ignition switch OFF.
19. Turn the ignition switch ON (II).
20. Press the accelerator pedal to the floor.
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II).
26. Press the accelerator pedal to the floor.
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 24. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while performing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES - Go to step 11.

    NO - Go to step 12.

11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 21.

    NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

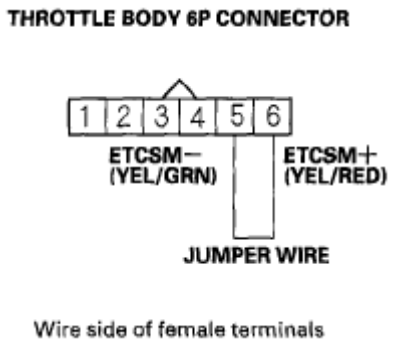


Fig. 55: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between ECM/PCM connector terminals C3 and C4.

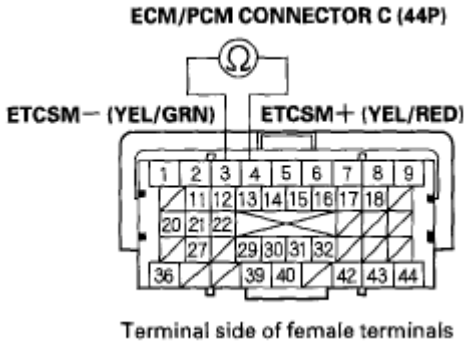


Fig. 56: Checking Continuity Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then

clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Turn the ignition switch to LOCK (0).
30. Turn the ignition switch to ON (11), and wait 10 seconds.
31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

APP SENSOR SIGNAL INSPECTION

NOTE:

- **This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.**
- **Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.**
- **Press the accelerator pedal several times to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION).**

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

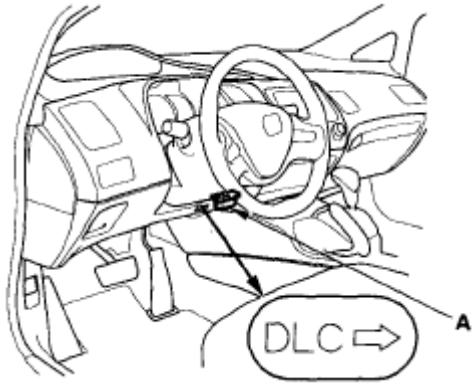


Fig. 57: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 5.
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**), then go to step 1.

ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION

'06-08 models

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).

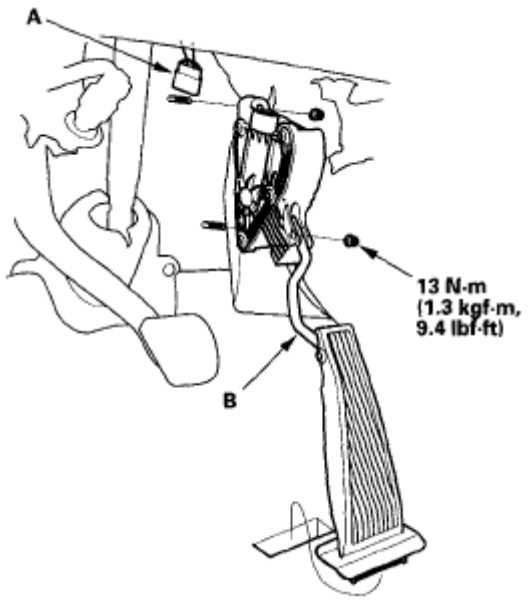


Fig. 58: Disconnecting Accelerator Pedal Module Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the accelerator pedal module (B).

NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

3. Install the parts in the reverse order of removal.

'09 model

1. Disconnect the APP sensor 6P connector (A).

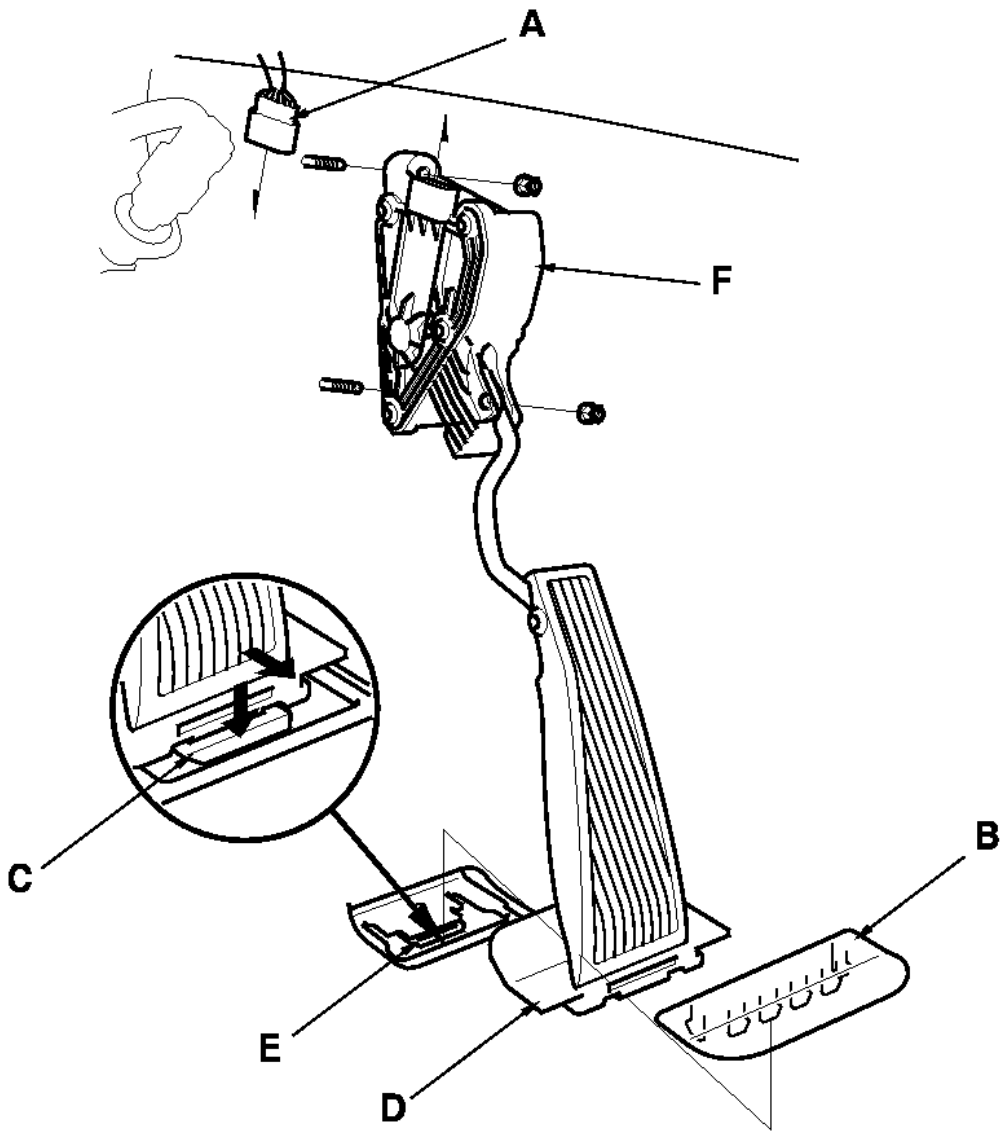


Fig. 59: Disconnecting Accelerator Pedal Module Connector
Courtesy of TOYOTA

2. Remove the clip (B).

NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).
4. Remove the accelerator pedal module (F).

NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

5. Set the accelerator pedal pad (A) to the pedal stop (B).

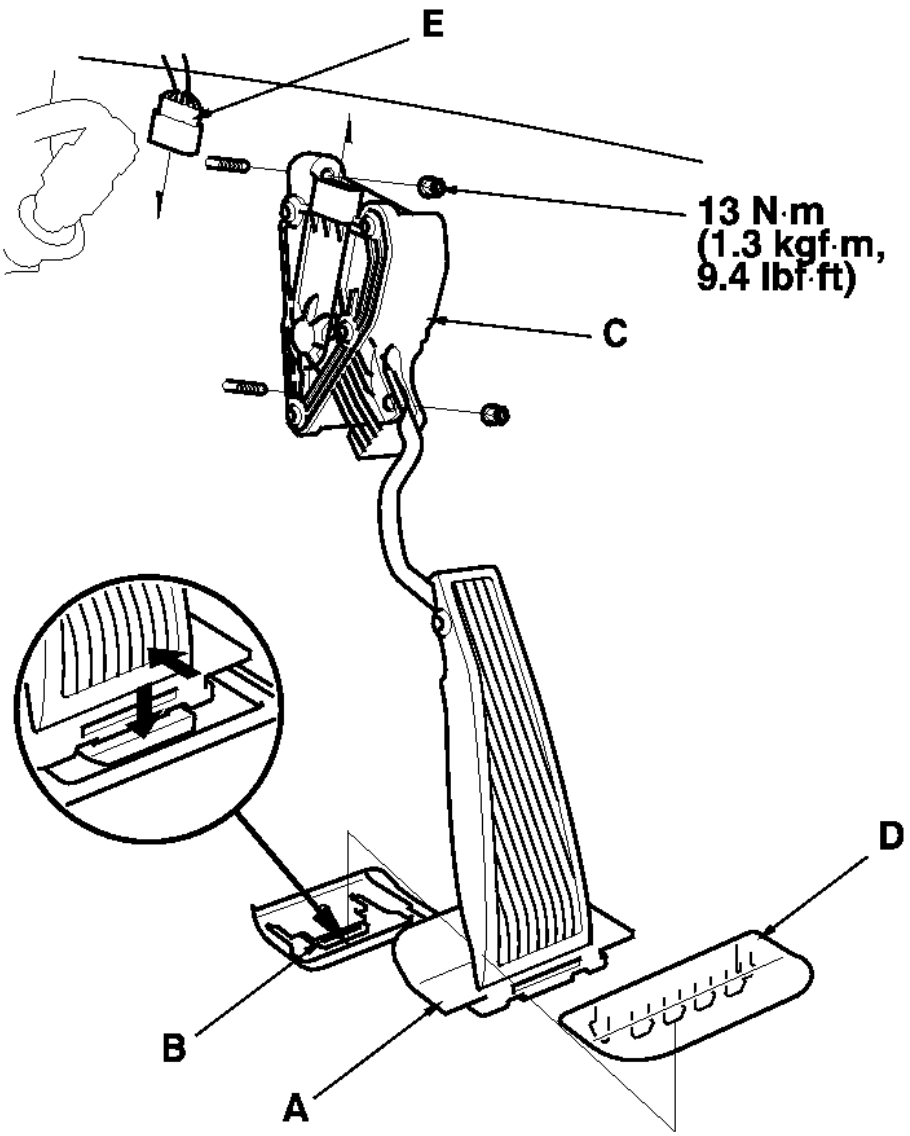


Fig. 60: Disconnecting Accelerator Pedal Module Connector
Courtesy of TOYOTA

6. Install the accelerator pedal module (C) with a new clip (D).
7. Reconnect the APP sensor 6P connector (E).

2006-08 ENGINE PERFORMANCE

Intake Air System (K20Z3) - Civic (All Except Si)

THROTTLE BODY TEST

CARBON ACCUMULATION CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

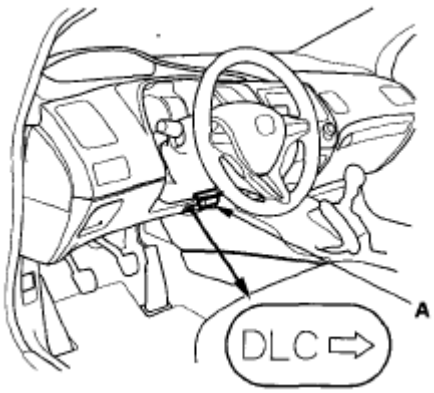


Fig. 1: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 deg. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE POSITION LEARNING CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC)

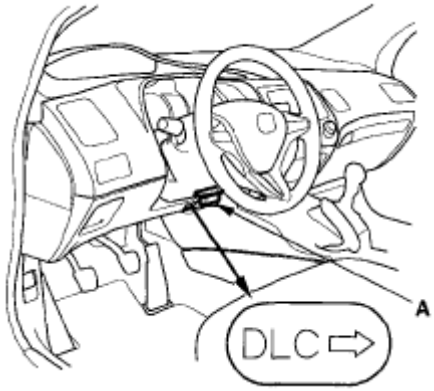


Fig. 2: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:

- **Remove the throttle body to clean it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).**
- **Do not spray throttle plate and induction cleaner directly on the throttle body.**
- **Use Honda genuine throttle plate and induction cleaner.**

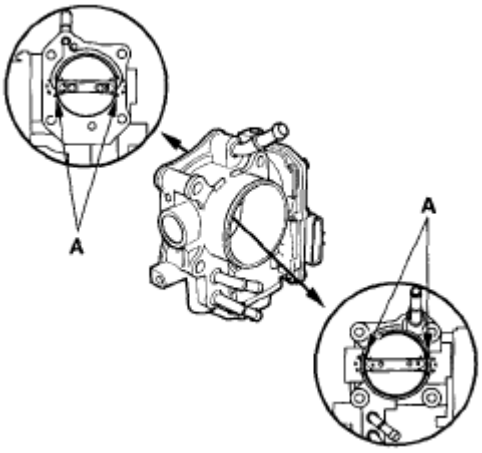


Fig. 3: Identifying Throttle Shaft Bearing Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
5. Reset the ECM with the HDS (see **HDS CLEAR COMMAND**).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

INTAKE AIR BYPASS CONTROL THERMAL VALVE TEST

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

1. Start the engine, and let it idle.

NOTE: Engine coolant temperature must be below 149°F (65°C).

2. Remove the intake manifold cover .
3. Remove the vacuum hose (A) from the air intake duct, and connect a vacuum pump/gauge, 0-30 in.Hg, to the hose.

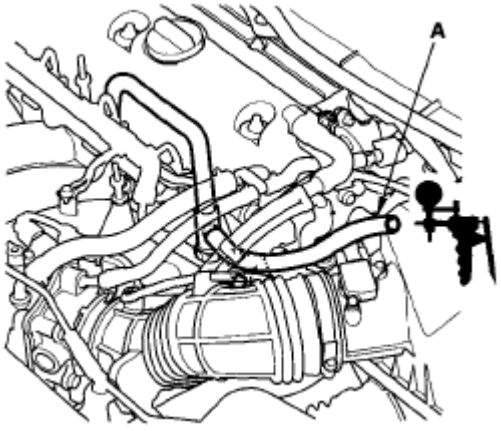


Fig. 4: Identifying Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Raise and lower the engine speed, and make sure the vacuum gauge reading changes as the engine speed changes.

   If the vacuum reading does not change, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see **INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT**).
5. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
6. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   If the vacuum reading changes, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see **INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT**).

AIR CLEANER REMOVAL/INSTALLATION

1. Disconnect the MAF sensor/IAT sensor connector (A).

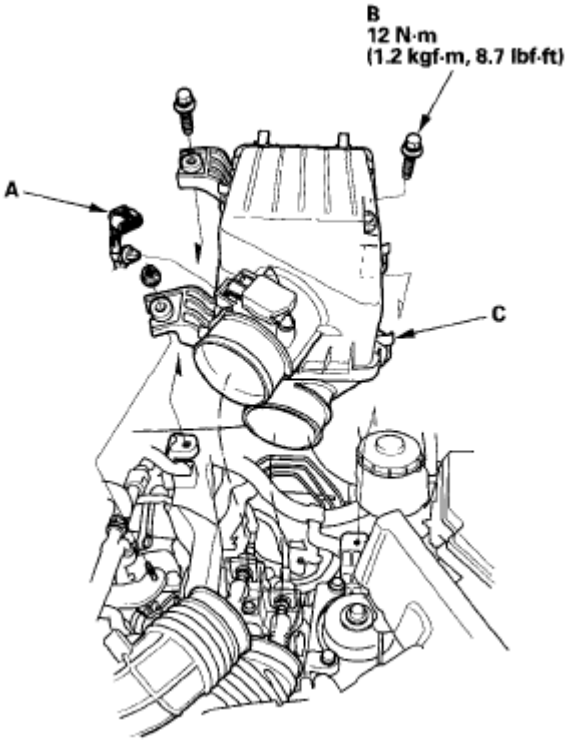


Fig. 5: Identifying MAF Sensor/IAT Sensor Connector And Air Cleaner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the bolts (B), then remove the air cleaner (C).
3. Install the parts in the reverse order of removal.

AIR CLEANER ELEMENT INSPECTION/REPLACEMENT

1. Open the air cleaner housing cover (A).

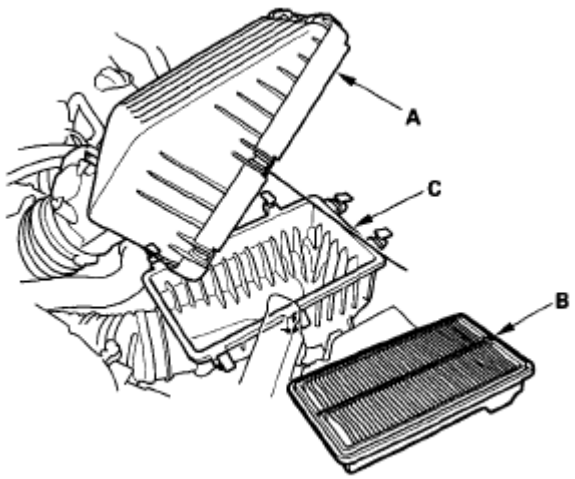


Fig. 6: Identifying Air Cleaner Housing Cover, Air Cleaner Element And Air Cleaner Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

NOTE: Do not use compressed air to clean the air cleaner element.

4. Install the parts in the reverse order of removal. Clean and remove any debris from inside the air cleaner housing.
5. If the maintenance minder required to replace the air cleaner element, reset the maintenance minder (see **MAINTENANCE MINDER**).
   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner element replacement, reset the maintenance minder. (see**MAINTENANCE MINDER**).
   - If you replaced the air cleaner element, reset the ECM with the HDS, and do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

INTAKE AIR RESONATOR REMOVAL/INSTALLATION

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
3. Remove the bolt (A), and pipe (B).

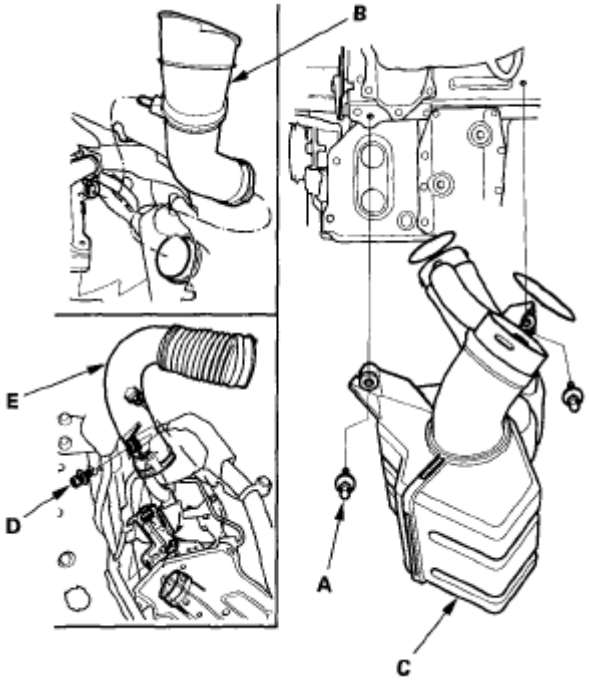


Fig. 7: Identifying Pipe, Duct And Resonator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the resonator (C).
5. Remove the battery.
6. Remove the bolt (D), and duct (E).
7. Install the parts in the reverse order of removal.
8. Reinstall the battery, and do these items:
   - Enter the anti-theft code for the audio system and the navigation system (if equipped).
   - Set the clock (if needed).

THROTTLE BODY REMOVAL/INSTALLATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 5.

1. Connect the HDS to the DLC while the engine is stopped.
2. USA, Canada models: Select the INSPECTION MENU on the HDS.
3. USA, Canada models: Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch OFF.
5. Remove the air intake duct (A).

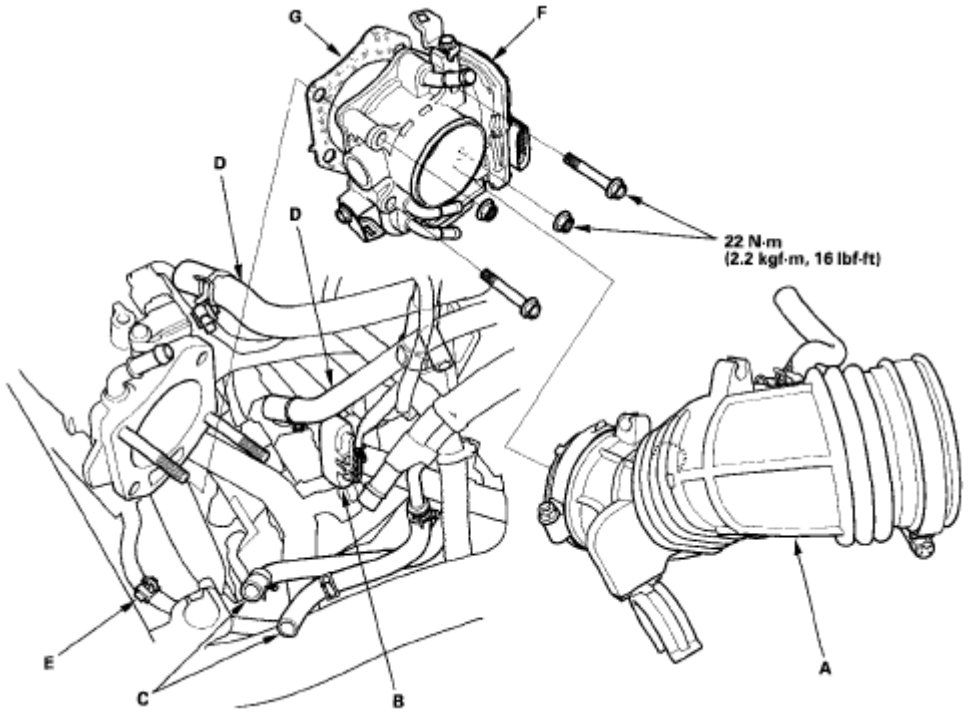


Fig. 8: Identifying Air Intake Duct, Throttle Body And Water Bypass/Vacuum Hoses (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hoses (D) and the clamp (E).
9. Remove the throttle body (F).
10. Install the parts in the reverse order of removal with a new gasket (G), then do this:
    - Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
    - Refill the radiator with engine coolant (see **COOLANT CHECK**).

THROTTLE BODY DISASSEMBLY/REASSEMBLY

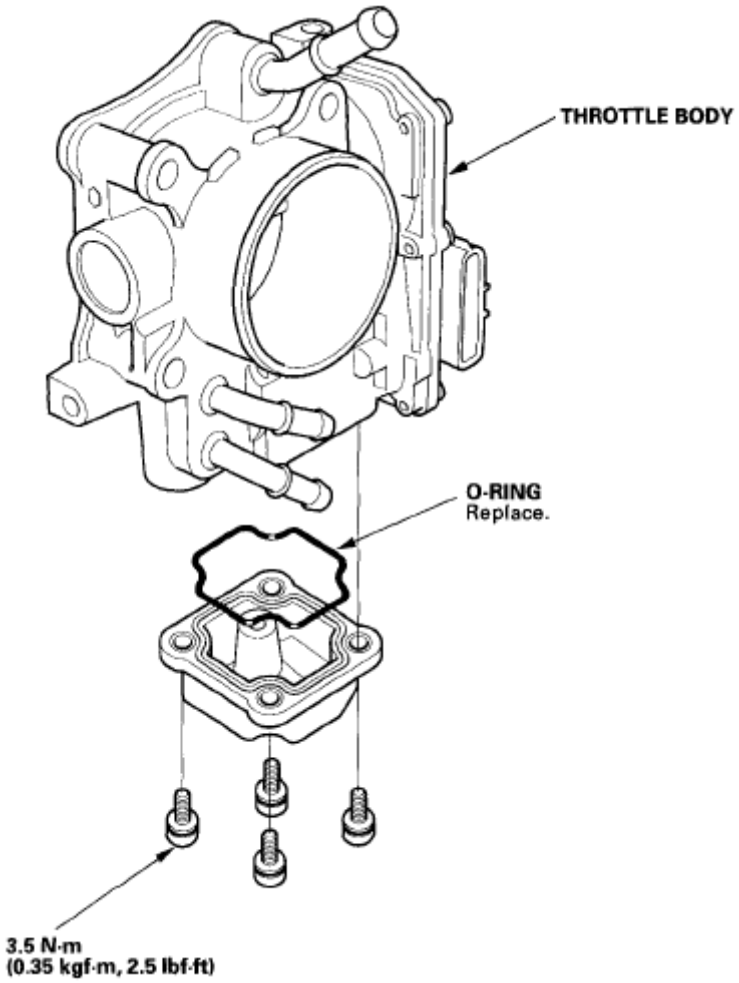


Fig. 9: Identifying Throttle Body And O-Ring (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT

1. Remove the engine cover .
2. Remove the air intake duct (A).

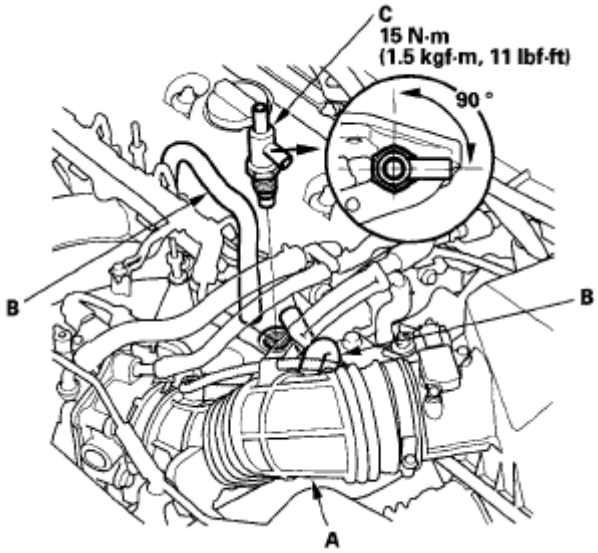


Fig. 10: Identifying Air Intake Duct And Intake Air Bypass Control Thermal Valve (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the hoses (B).
4. Remove the intake air bypass control thermal valve (C).
5. Install the parts in the reverse order of removal.

NOTE:

- **Position the valve angle as shown.**
- **Make sure the center of the clamp (D) and its lever end (E) are within the ranges shown.**

2006-08 ENGINE PERFORMANCE

Intake Air System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: **Refer to the INTAKE AIR SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.**

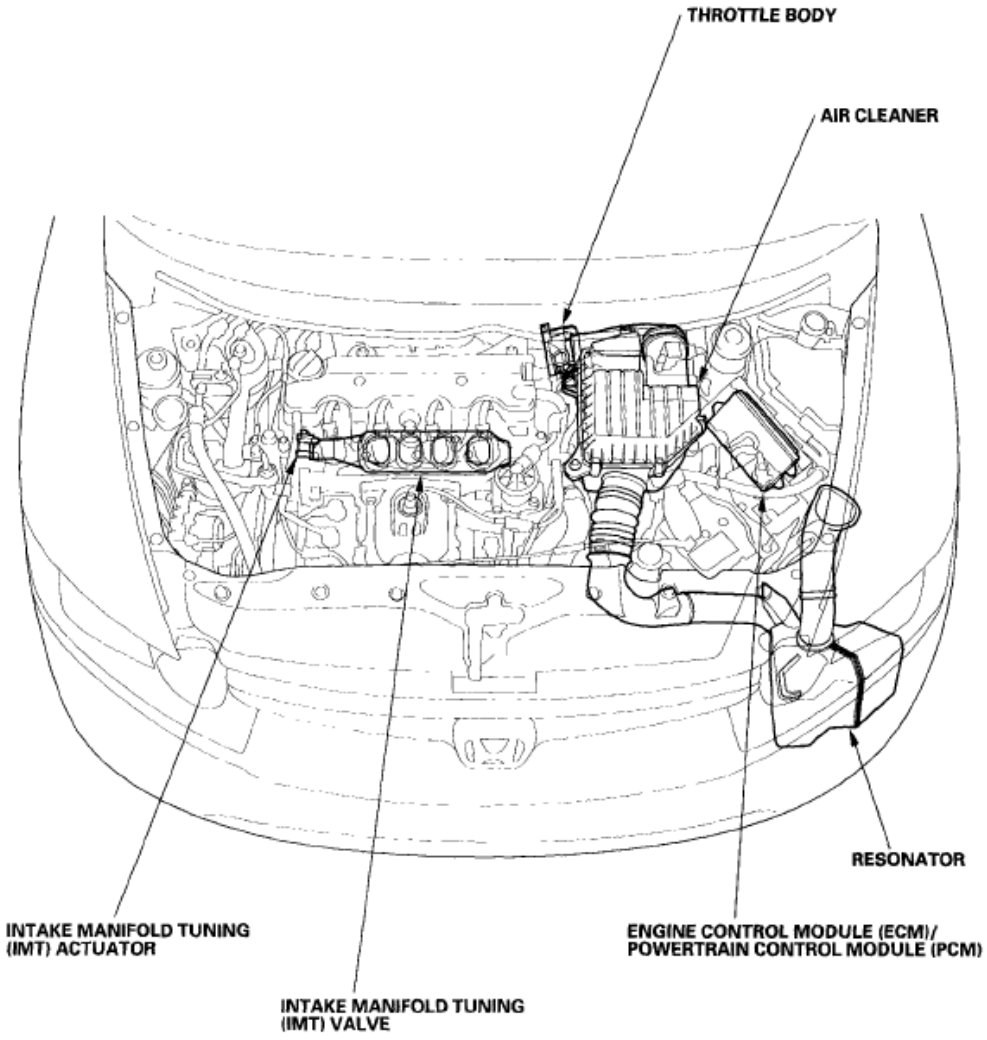


Fig. 1: Locating Intake Air System Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P1077: IMT VALVE STUCK IN HIGH RPM POSITION

NOTE: **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

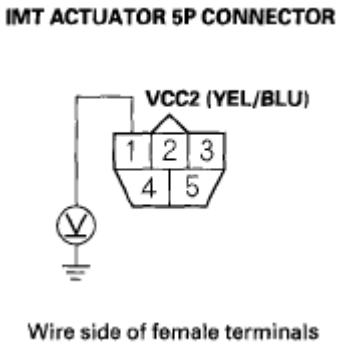


Fig. 2: Measuring Voltage Between IMT Actuator 5P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there about 5 V?

   YES - Go to step 12.

   NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (44P).
11. Check for continuity between IMT actuator 5P connector terminal No. 1 and ECM/PCM connector terminal B18.

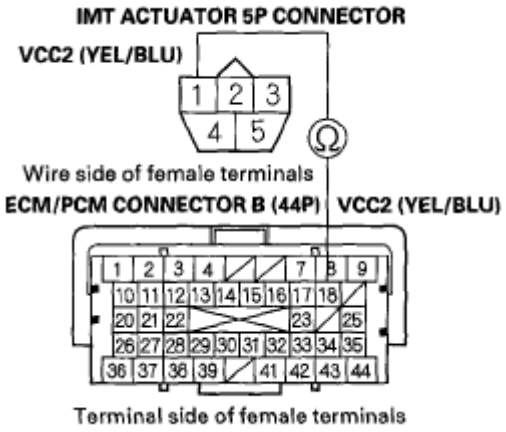


Fig. 3: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 1 And ECM/PCM Terminal B18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 36.

NO - Repair open in the wire between the ECM/PCM (B18) and the IMT actuator, then go to step 30.

12. Measure voltage between IMT actuator 5P connector terminal No. 3 and body ground.

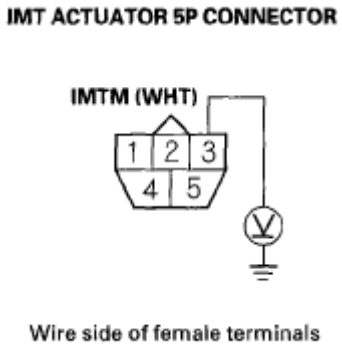


Fig. 4: Measuring Voltage Between IMT Actuator 5P Connector Terminal No 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 17.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector B (44P).
16. Check for continuity between IMT actuator 5P connector terminal No. 3 and ECM/PCM connector

terminal B39.

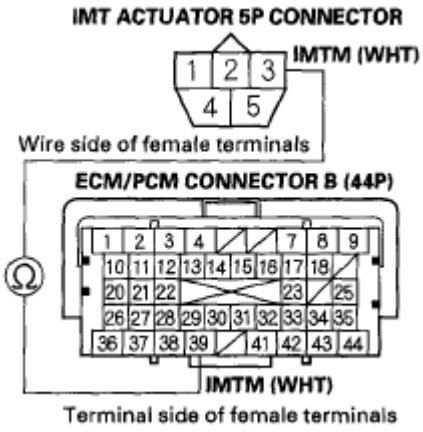


Fig. 5: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 3 And ECM/PCM Terminal B39
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 36.

NO - Repair open in the wire between the ECM/PCM (B39) and the IMT actuator, then go to step 30.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (44P).
20. Check for continuity between IMT actuator 5P connector terminal No. 2 and ECM/PCM connector terminal B33.

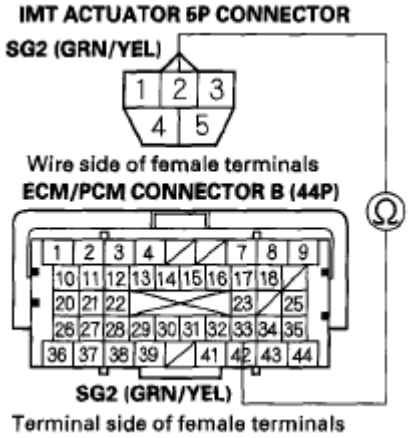


Fig. 6: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 2 And ECM/PCM Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the ECM/PCM (B33) and the IMT actuator, then go to step 30.

21. Check for continuity between ECM/PCM connector terminal B37 and body ground.

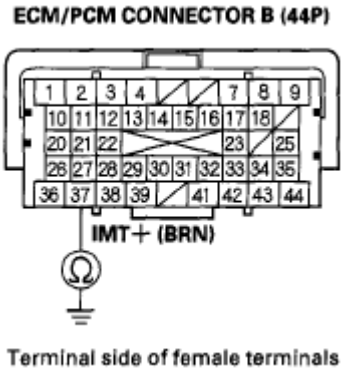


Fig. 7: Checking Continuity Between ECM/PCM Connector Terminal B37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 30.

NO - Go to step 22.

22. Check for continuity between ECM/PCM connector terminal B38 and body ground.

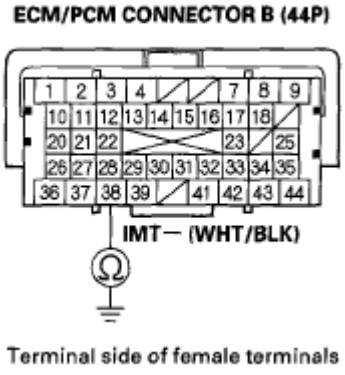


Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 30.

NO - Go to step 23.

23. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal B37.

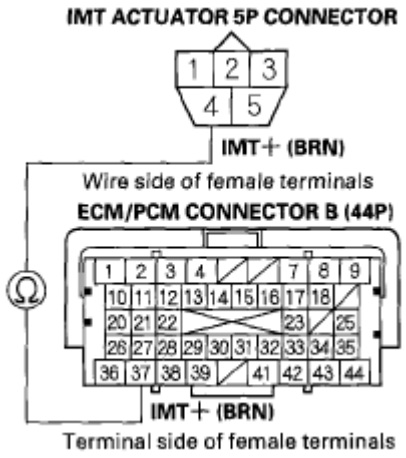


Fig. 9: Checking Continuity Between IMT Actuator 5P Connector Terminal No 4 And ECM/PCM Terminal B37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 30.

24. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal B38.

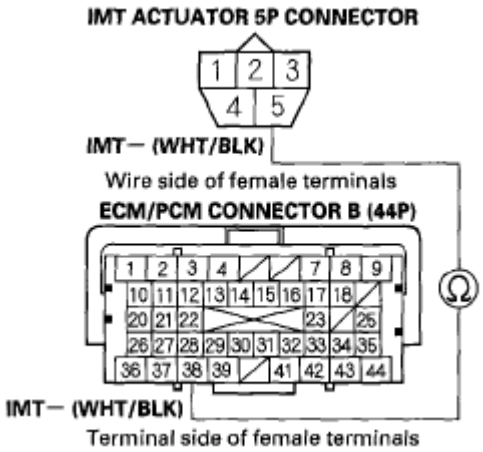


Fig. 10: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 5 And ECM/PCM Terminal B38
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 30.

25. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
26. Move the IMT valve by hand.

    Does it move smoothly?

    YES - Go to step 27.

    NO - Replace the IMT valve (see **IMT VALVE REPLACEMENT**), then go to step 30.

27. Substitute a known-good IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
28. Turn the ignition switch ON (II).
29. Do the IMT TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Replace the original IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**), then go to step 30.

    NO - Go to step 36.

30. Reconnect all connectors.
31. Turn the ignition switch ON (II).
32. Reset the ECM/PCM with the HDS.
33. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1077 indicated?

    YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

    NO - Go to step 35.

35. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

36. Reconnect all connectors.
37. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or

substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).

38. Start the engine, and let it idle.
39. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1077 indicated?

    YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 38. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 40.

40. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 39, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 38. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1078: IMT VALVE STUCK IN LOW RPM POSITION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

YES - Go to step 12.

NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (44P).
11. Check for continuity between ECM/PCM connector terminal B39 and body ground.

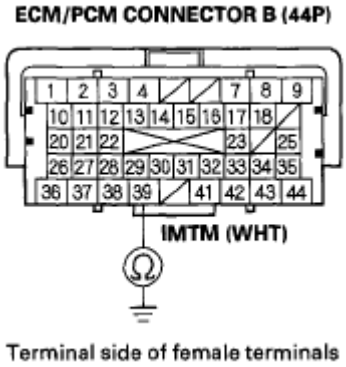


Fig. 11: Checking Continuity Between ECM/PCM Connector Terminal B39 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B39) and the IMT actuator, then go to step 21.

NO - Go to step 28.

12. Check for continuity between ECM/PCM connector terminal B37 and body ground.

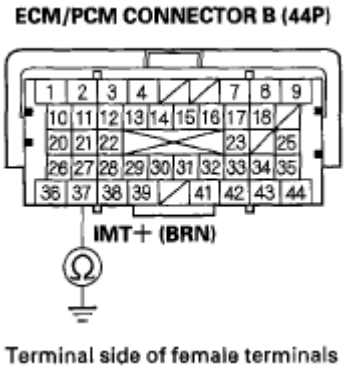


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal B37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 21.

NO - Go to step 13.

13. Check for continuity between ECM/PCM connector terminal B38 and body ground.

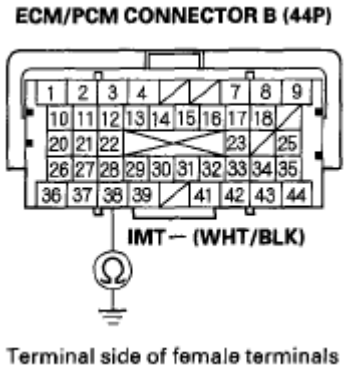


Fig. 13: Checking Continuity Between ECM/PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 21.

NO - Go to step 14.

14. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal B37.

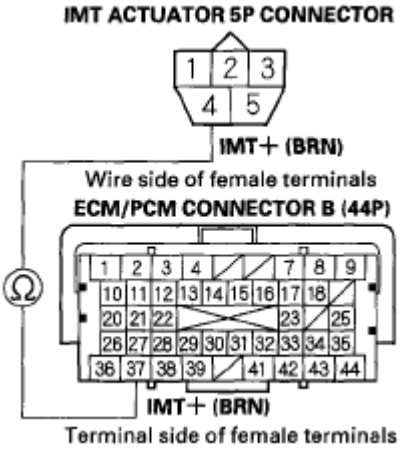


Fig. 14: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 4 And ECM/PCM Terminal B37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 21.

15. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal B38.

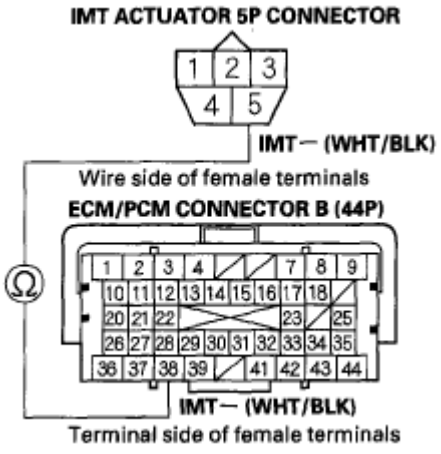


Fig. 15: Checking Continuity Between IMT Actuator 5P Connector Terminal No 5 And ECM/PCM Terminal B38
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 21.

16. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
17. Move the IMT valve by hand.

Does it move smoothly?

YES - Go to step 18.

NO - Replace the IMT valve (see **IMT VALVE REPLACEMENT**), then go to step 21.

18. Substitute a known-good IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
19. Turn the ignition switch ON (II).
20. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Replace the original IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**), then go to step 21.

NO - Go to step 29.

21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.

24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Do the IMT TEST in the INSPECTION MENU with the HDS.
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1078 indicated?

    YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

    NO - Go to step 27.

27. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Do the IMT TEST in the INSPECTION MENU with the HDS.
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1078 indicated?

    YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 32.

32. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 30.

THROTTLE BODY TEST

CARBON ACCUMULATION CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

Fig. 16: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 3 deg. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE POSITION LEARNING CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

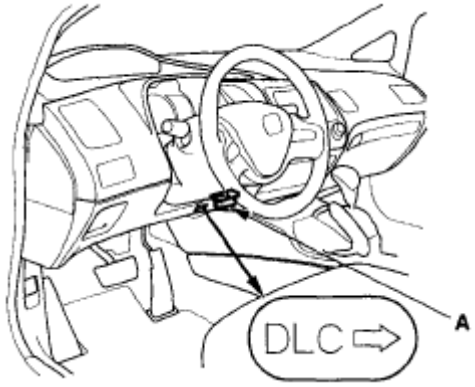


Fig. 17: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:

- **Remove the throttle body to clean it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).**
- **Do not spray throttle plate and induction cleaner directly on the throttle body.**
- **Use Honda genuine throttle plate and induction cleaner.**

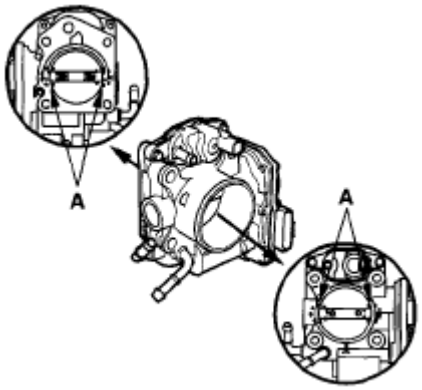


Fig. 18: Cleaning Off Carbon From Throttle Valve And Inside Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
5. Reset the ECM/PCM with the HDS (see **ECM/PCM RESET**).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

AIR CLEANER REMOVAL/INSTALLATION

1. Disconnect the MAF sensor/IAT sensor connector (A).

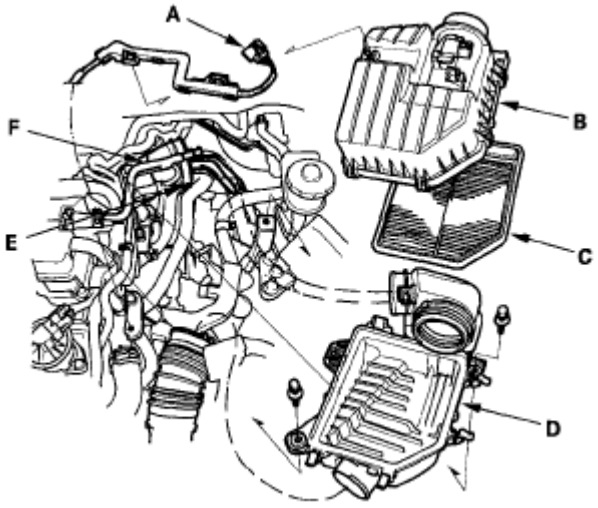


Fig. 19: Disconnecting MAF Sensor/IAT Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner housing cover (B).
3. Remove the air cleaner element (C) from the air cleaner housing (D).
4. Loosen the bolt (E), and the pipe (F).
5. Remove the air cleaner housing.
6. Install the parts in the reverse order of removal.

AIR CLEANER ELEMENT INSPECTION/REPLACEMENT

1. Open the air cleaner housing cover (A).

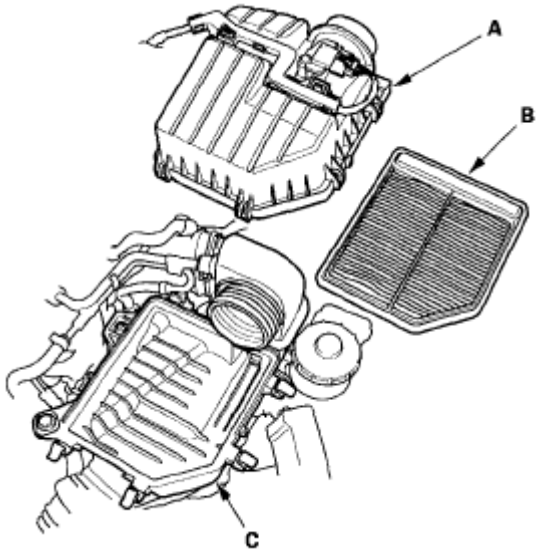


Fig. 20: Opening Air Cleaner Housing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

NOTE: Do not use compressed air to clean the air cleaner element.

4. Install the parts in the reverse order of removal.
5. Install the parts in the reverse order of removal.
   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner element replacement, reset the maintenance minder.
   - If the idle speed fluctuates, do the idle speed inspection.

RESONATOR REMOVAL/INSTALLATION

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Remove the bolts (A), and the intake air ducts (B).

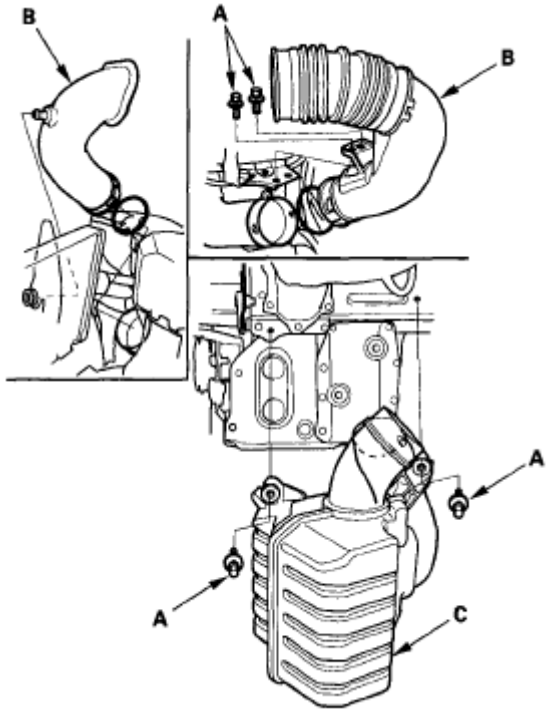


Fig. 21: Removing Intake Air Ducts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the resonator (C).
4. Install the parts in the reverse order of removal.

IMT ACTUATOR REMOVAL/INSTALLATION

1. Remove the intake manifold (see **REMOVAL**).
2. Remove the bolts (A) and the IMT actuator (B).

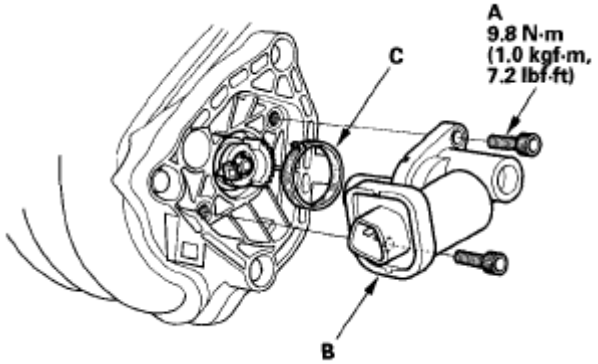


Fig. 22: Removing IMT Actuator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the parts in the reverse order of removal with a new O-ring (C).

IMT VALVE REPLACEMENT

1. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
2. Remove the IMT cover (A).

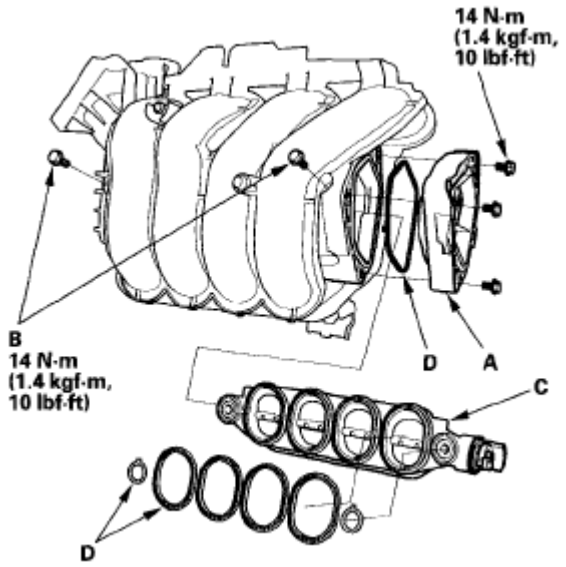


Fig. 23: Removing IMT Cover (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts (B) and the IMT valve (C).
4. Install the parts in the reverse order of removal with new O-rings (D).

THROTTLE BODY REMOVAL/INSTALLATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. USA, Canada models: Select the INSPECTION MENU on the HDS.
3. USA, Canada models: Do the TP POSITION CHECK in the ETCS TEST.
4. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
5. Remove the air cleaner (see **THROTTLE BODY CLEANING**).
6. Disconnect the throttle body connector (A) and the EVAP purge control solenoid valve connector (B).

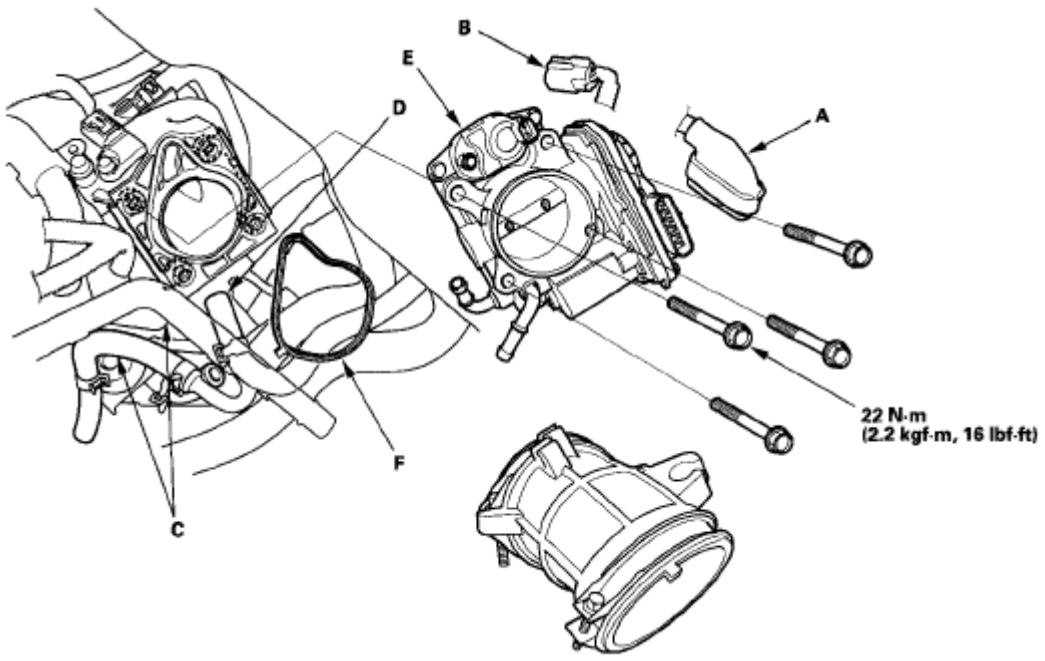


Fig. 24: Disconnecting Throttle Body Connector And EVAP Purge Control Solenoid Valve Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the throttle body connector (B) and the EVAP purge control solenoid valve connector (C).
8. Disconnect and plug the water bypass hoses (C).
9. Disconnect the vacuum hose (D).
10. Remove the throttle body (E).
11. Install the parts in the reverse order of removal with a new gasket (F).

NOTE:

- **Do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE) after replacing throttle body.**
- **Refill the radiator with engine coolant (see COOLANT REPLACEMENT).**

THROTTLE BODY DISASSEMBLY/REASSEMBLY

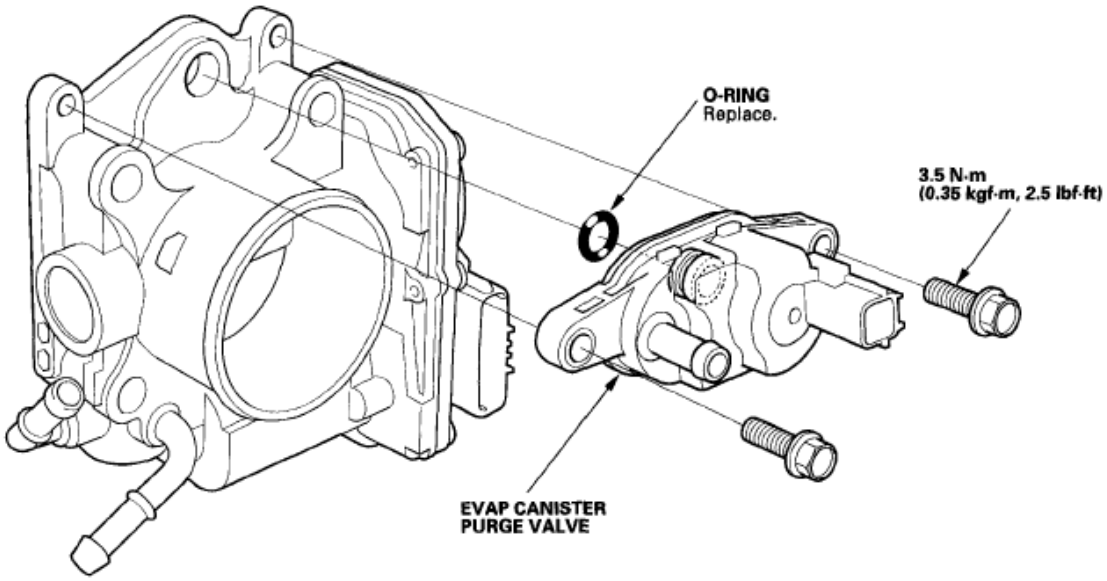


Fig. 25: Disassembly/Reassembly Of Throttle Body (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ENGINE PERFORMANCE

PCV System (K20Z3) - Civic

COMPONENT LOCATION INDEX

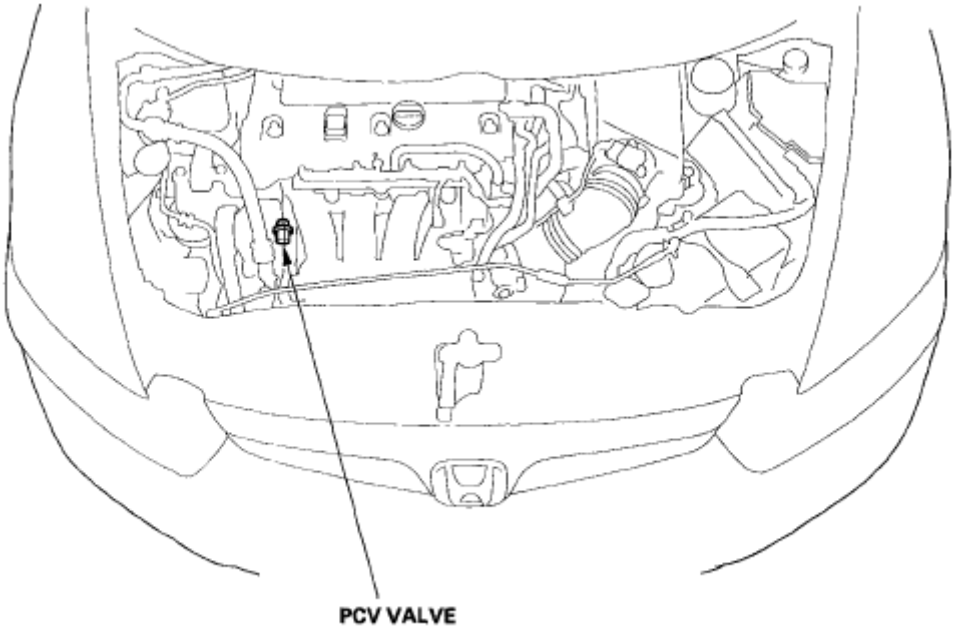


Fig. 1: Identifying PCV System Component Location (K20Z3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE INSPECTION

1. Check the PCV valve (A), hoses (B) and connections for leaks or restrictions.

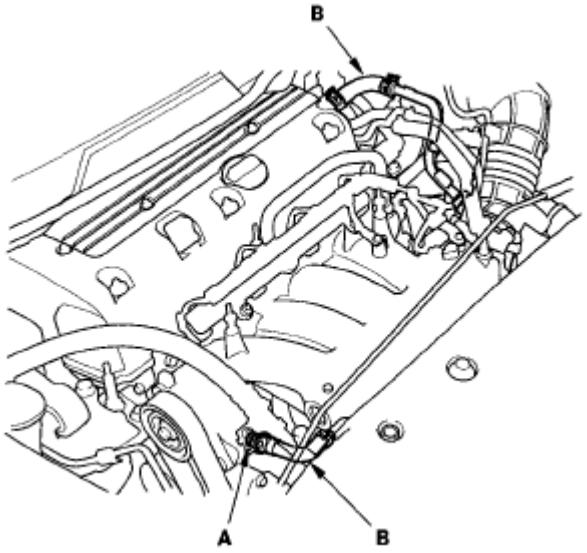


Fig. 2: Identifying PCV Valve And Hoses

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.

   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.

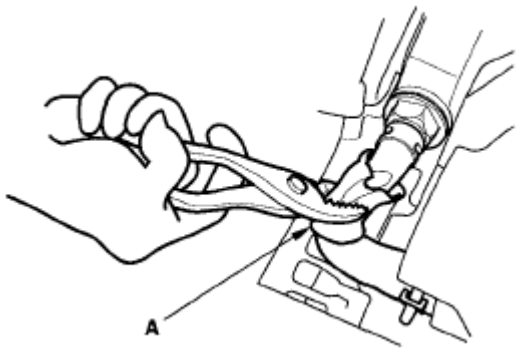


Fig. 3: Pinching Intake Manifold
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE REPLACEMENT

1. Disconnect the PCV hose.
2. Remove the PCV valve (A).

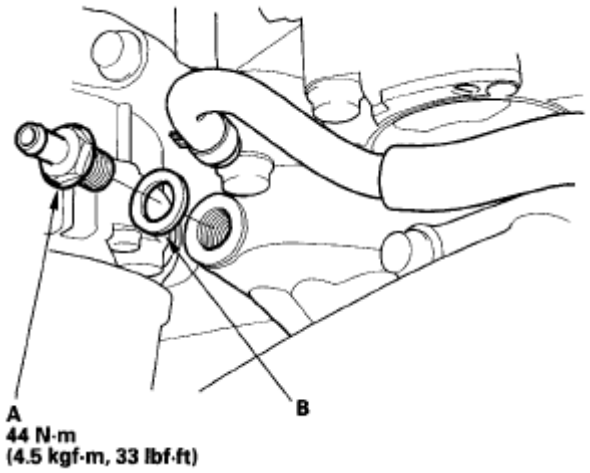


Fig. 4: Identifying PCV Valve And Washer (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the parts in the reverse order of removal with a new washer (B).

2006-09 ENGINE PERFORMANCE

PCV System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

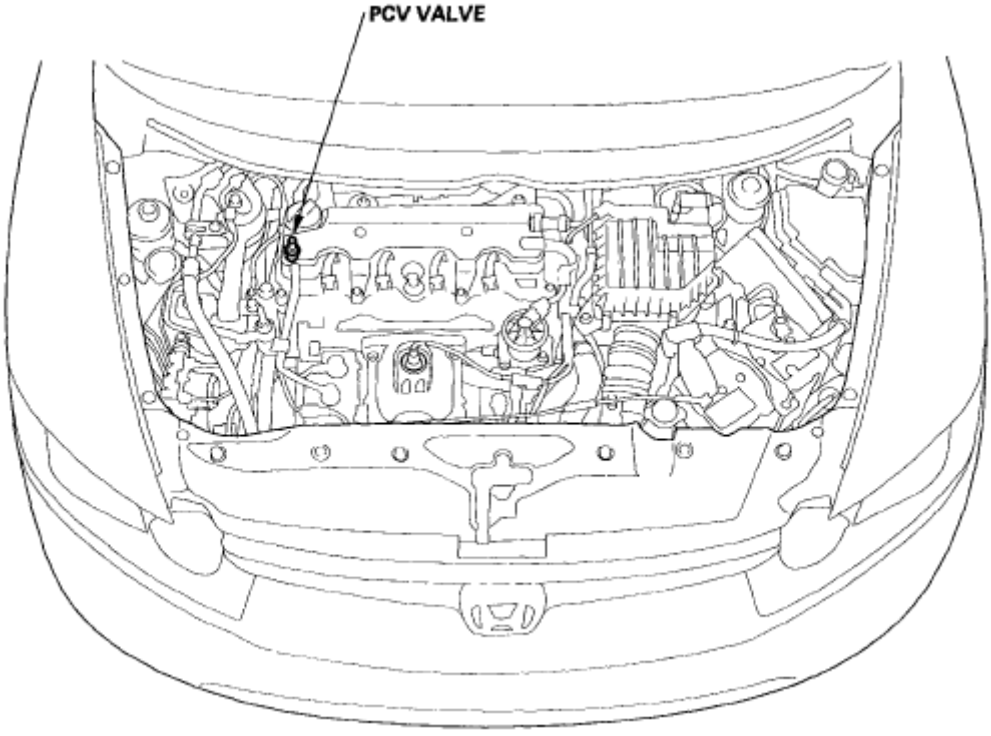


Fig. 1: Identifying PCV Valve Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE INSPECTION

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.

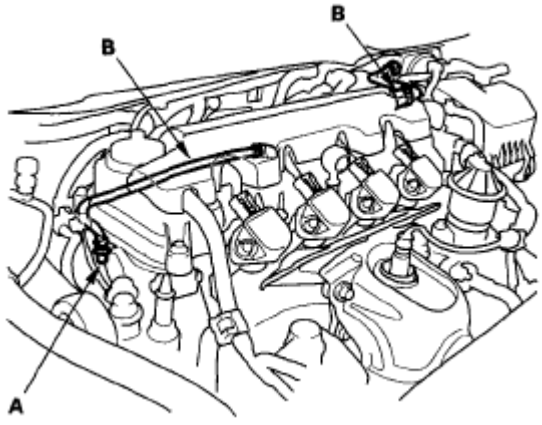


Fig. 2: Identifying PCV Valve, Hoses And Connections
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.

   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.

Fig. 3: Pinching Hose Using Pliers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE REPLACEMENT

1. Remove the harness holder (A).

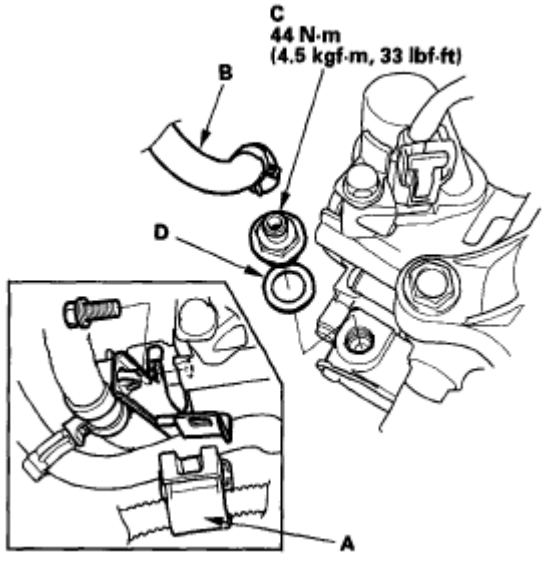


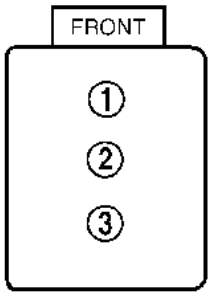
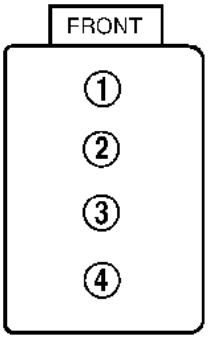
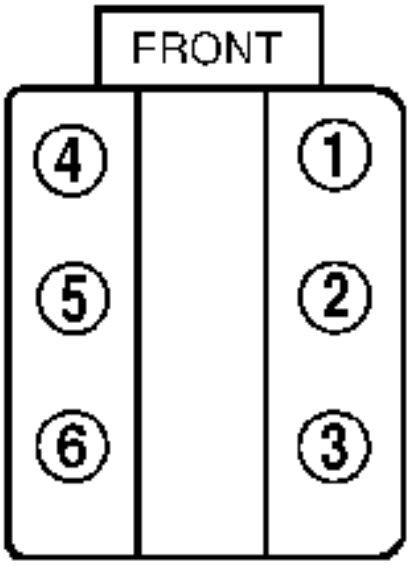
Fig. 4: Identifying Harness Holder, PCV Hose, PCV Valve And Washer (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

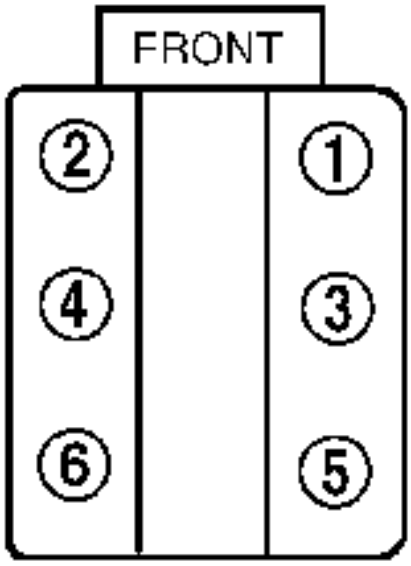
2. Disconnect the PCV hose (B).
3. Remove the PCV valve (C).
4. Install the parts in the reverse order of removal with a new washer (D).

ENGINE PERFORMANCE

Firing Order & Cylinder Identification - Honda - All Models

FIRING ORDER & CYLINDER IDENTIFICATION

Engine Configuation	Firing Order	Cylinder Identification
In-Line 3	1-3-2	 G00016199
In-Line 4	1-3-4-2	 G00016200
V6		
3.0L & 3.5L	1-4-2-5-3-6	 G00016204

3.2L	1-2-3-4-5-6	 G00016203

2007 ENGINE PERFORMANCE

Advanced Diagnostics - Civic

DTC P0010 (56): ADVANCED DIAGNOSTICS (K20Z3)

DTC P0010: VARIABLE VALVE TIMING CONTROL (VTC) OIL CONTROL SOLENOID VALVE MALFUNCTION (K20Z3)

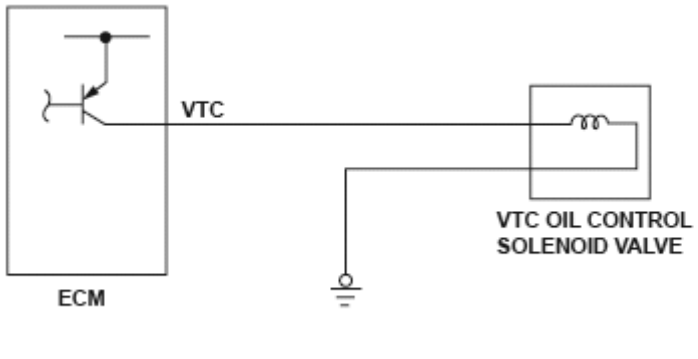


Fig. 1: Variable Valve Timing Control (VTC) Oil Control Solenoid Valve - Circuit Diagram

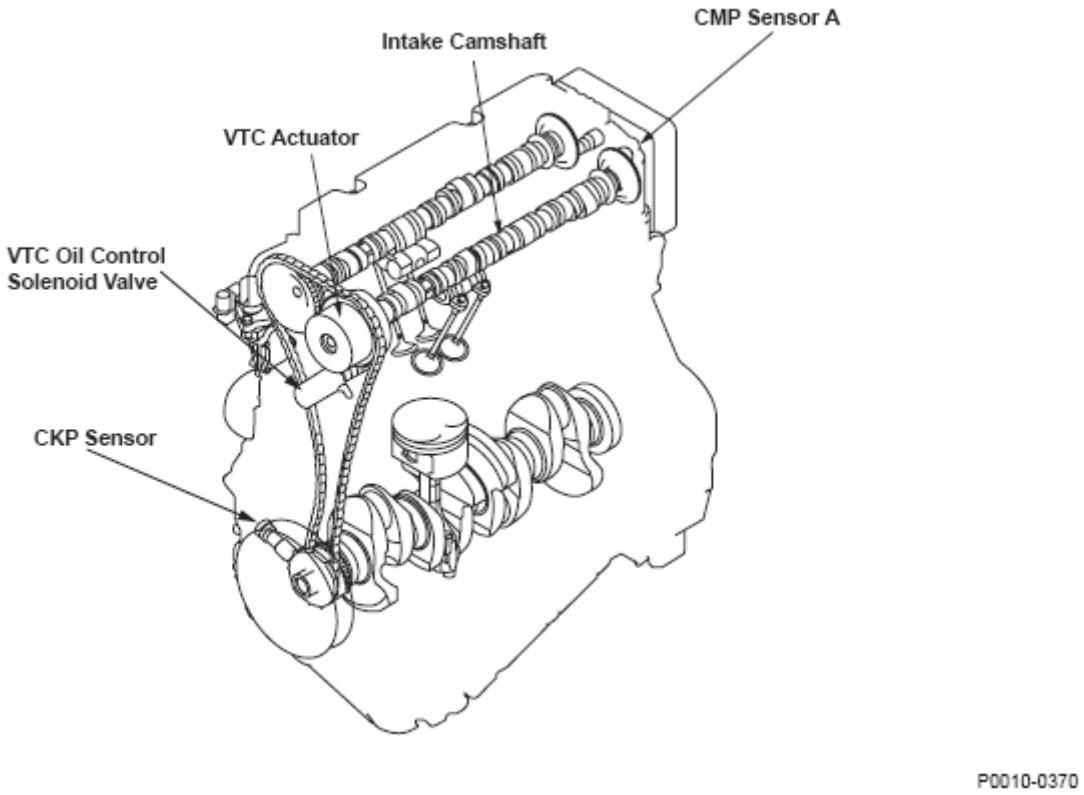


Fig. 2: Identifying Oil Control Solenoid Valve And CKP Sensor

General Description (K20Z3)

The variable valve timing control (VTC) consists of the VTC actuator, the VTC oil control solenoid valve, sensors, and the engine control module (ECM). The ECM controls the VTC oil control solenoid valve by

duty cycle and supplies hydraulic pressure to the advance chamber or the retard chamber in the actuator so the valve timing is optimized depending on the driving conditions (engine load, engine speed, and vehicle speed). If the current when compared to the output duty cycle is out of a set value, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running

Malfunction Threshold (K20Z3)

One of these conditions must be met.

- Output duty is 40 % or more and the VTC current is 200 mA or less for at least 5 seconds.
- Output duty is 5 % or less and the VTC current is 800 mA or more for at least 5 seconds.

Driving Pattern (K20Z3)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed between 25 - 75 mph (40 - 120 km/h) for at least 5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3)

Conditions for illuminating the MIL (K20Z3)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0011 (56): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0011: VARIABLE VALVE TIMING CONTROL (VTC) SYSTEM MALFUNCTION (K20Z3)

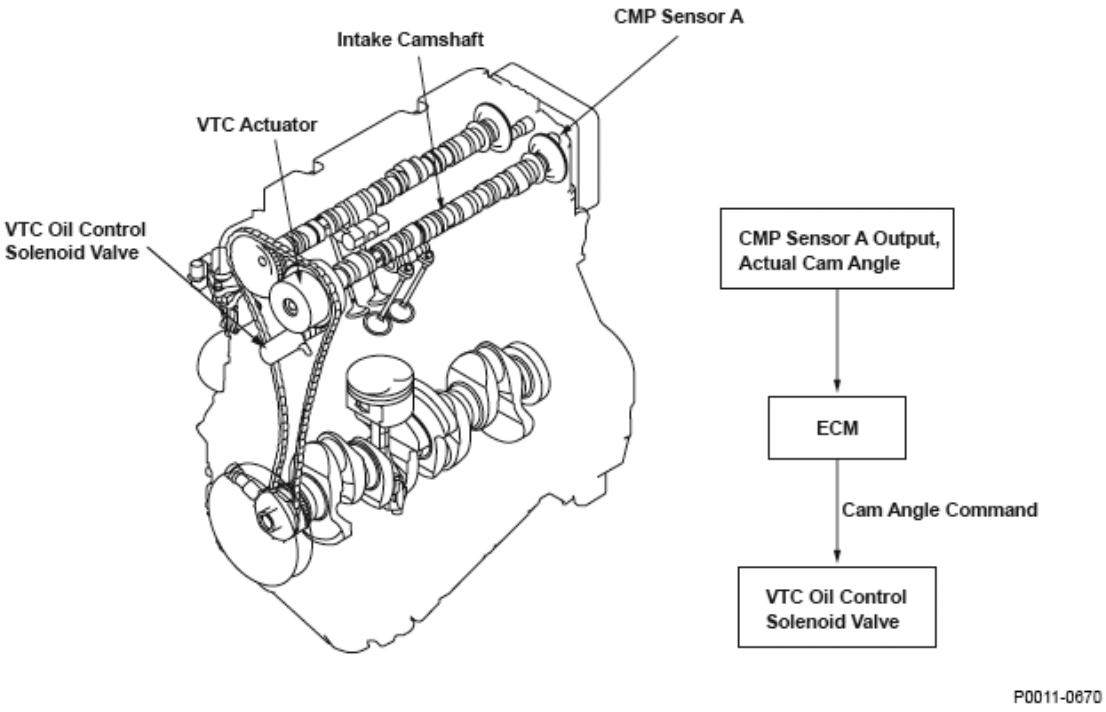


Fig. 3: Identifying Oil Control Solenoid Valve And CKP Sensor

General Description (K20Z3 Engine)

The variable valve timing control (VTC) system controls the timing of the intake camshaft. It uses hydraulic pressure to operate the VTC actuator so the valve timing is optimized depending on driving conditions. The engine control module (ECM) monitors the phase control command and the actual timing of the camshaft by using camshaft position (CMP) sensor A. If the phase difference between them is excessive for a certain time period, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	15 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	10 seconds	-
23°F (-5°C)(1)	158°F (70°C)	

Engine coolant temperature	-13°F (-25°C)(1)	185°F (85°C)	-
Engine speed	203°F (95°C)(2)	800 rpm	-
	227°F (107°C)(2)	1,600 rpm	
Elapsed TDC revolutions	25°F (-4°C)(1)	Per 0 revolutions	-
	-13°F (-25°C)(1)	Per 23,500 revolutions	
Battery voltage		10.5 V	-
No active DTCs		P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2646, P2647, P2648, P2649	
(1) Depending on initial engine coolant temperature. (2) Depending on engine coolant temperature.			

Malfunction Threshold (K20Z3 Engine)

The timing difference between the timing control command and the actual timing of the camshaft is 20.0 ° or more for at least 15 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the VTC TEST in the INSPECTION MENU of the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed between 25 - 75 mph (40 - 120 km/h) for at least 15 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0101 (50): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0101: MASS AIRFLOW (MAF) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (K20Z3)

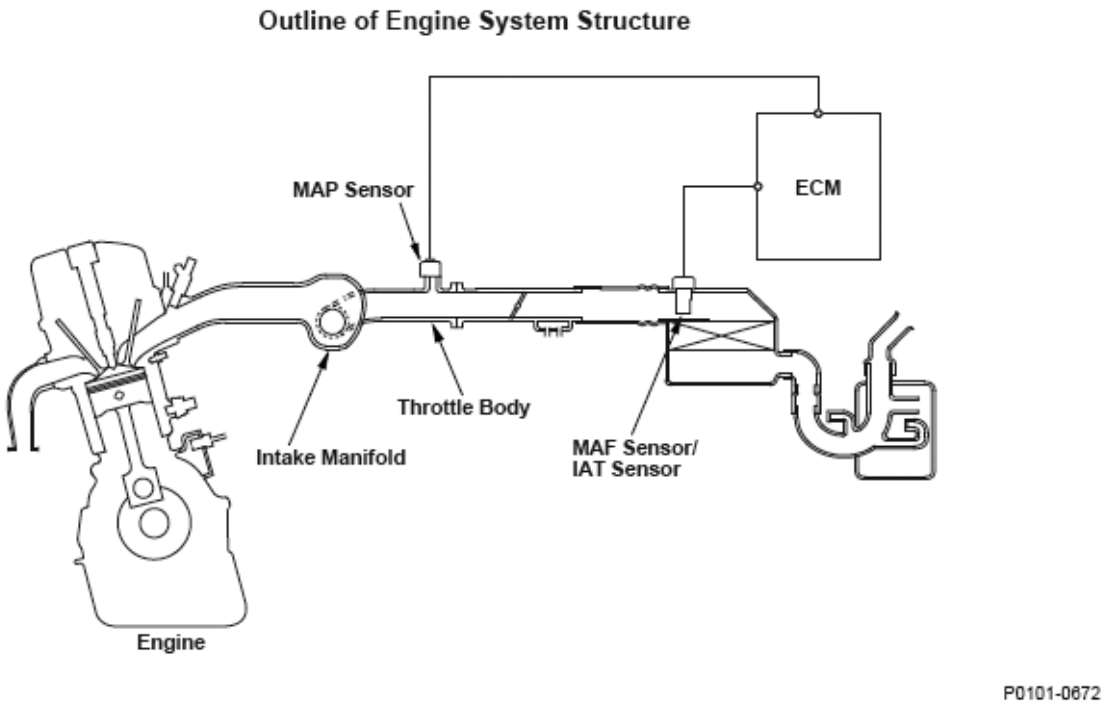


Fig. 4: Mass Airflow (MAF) Sensor - System Diagram

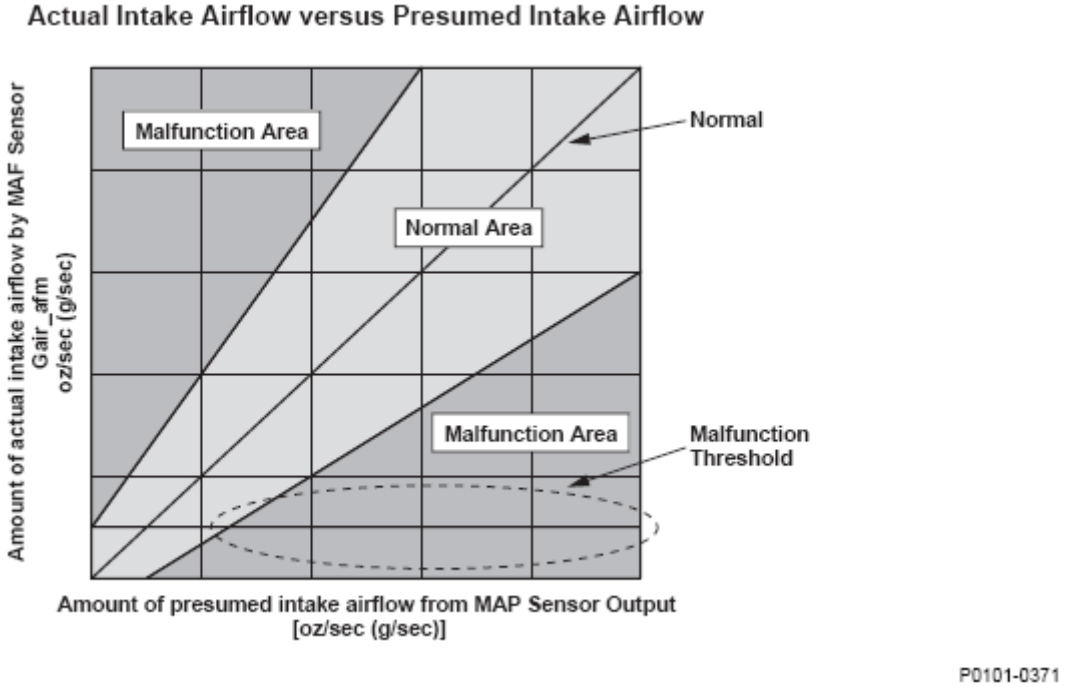


Fig. 5: Actual Intake Airflow Versus Presumed Intake Airflow Graph

General Description (K20Z3 Engine)

The mass airflow (MAF) sensor directly measures the amount of intake airflow into the engine, and the engine control module (ECM) controls the fuel injection based on the measured value. The manifold absolute pressure (MAP) sensor measures the intake manifold pressure and the ECM calculates the amount of intake airflow from the MAP sensor output and the engine revolutions.

The ECM compares the MAF sensor output (amount of intake airflow) and the amount of intake airflow calculated from MAP sensor output. If their difference is too large (in the malfunction area), the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	3 seconds	-
Engine coolant temperature	156°F (69°C)	-
Engine speed	650 rpm	7,700 rpm
No active DTCs	P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P0506, P0507, P1128, P1129, P2646, P2647, P2648, P2649	

Malfunction Threshold (K20Z3 Engine)

The difference between the amount of intake air measured by the MAF sensor and the amount of intake air calculated from the MAP sensor output is out of the normal area for at least 5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 5 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0101 (50): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0101: MASS AIRFLOW (MAF) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1)

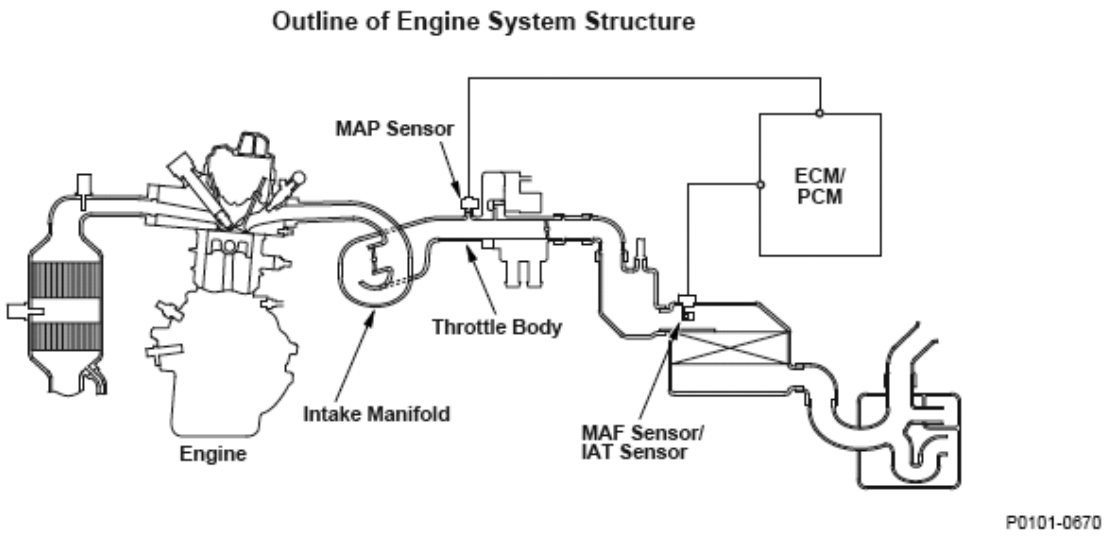


Fig. 6: Mass Airflow (MAF) Sensor - System Diagram

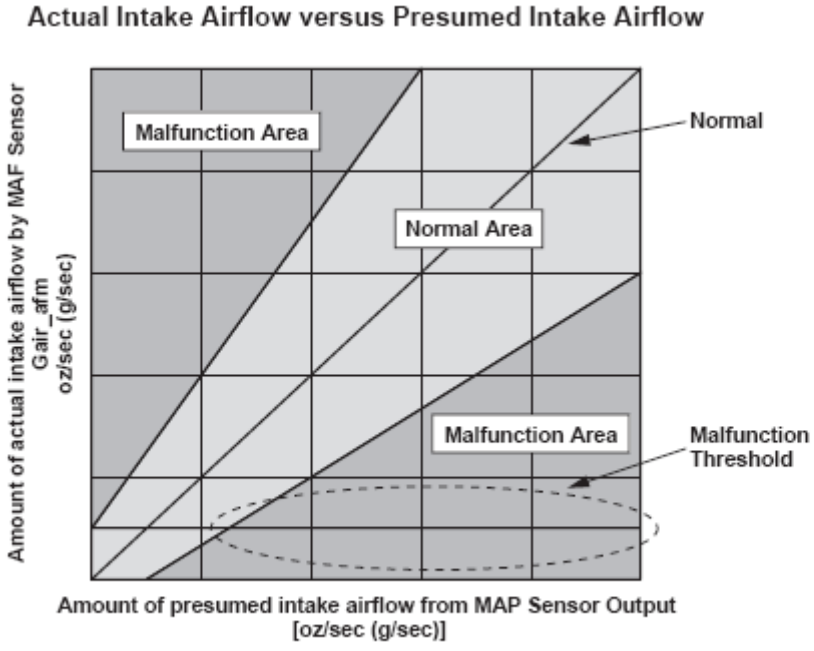


Fig. 7: Actual Intake Airflow Versus Presumed Intake Airflow Graph

General Description (R18A1 Engine)

The mass airflow (MAF) sensor directly measures the amount of intake airflow into the engine, and the engine control module (ECM)/powertrain control module (PCM) controls the fuel injection based on the measured value. The manifold absolute pressure (MAP) sensor measures the intake manifold pressure and the ECM/PCM calculates the amount of intake airflow from the MAP sensor output and the engine revolutions.

The ECM/PCM compares the MAF sensor output (amount of intake airflow) and the amount of intake airflow calculated from MAP sensor output. If their difference is too large (in the malfunction area), the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	3 seconds	-
Engine coolant temperature	156°F (69°C)	-
Engine speed	470 rpm	5,400 rpm
No active DTCs	P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401, P0404, P0443, P0496, P0497, P0506, P0507, P1077, P1078, P1128, P1129, P2413, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A1 Engine)

The difference between the amount of intake air measured by the MAF sensor and the amount of intake air calculated from the MAP sensor output is out of the normal area for at least 5 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0101 (50): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0101: MASS AIR FLOW (MAF) SENSOR RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

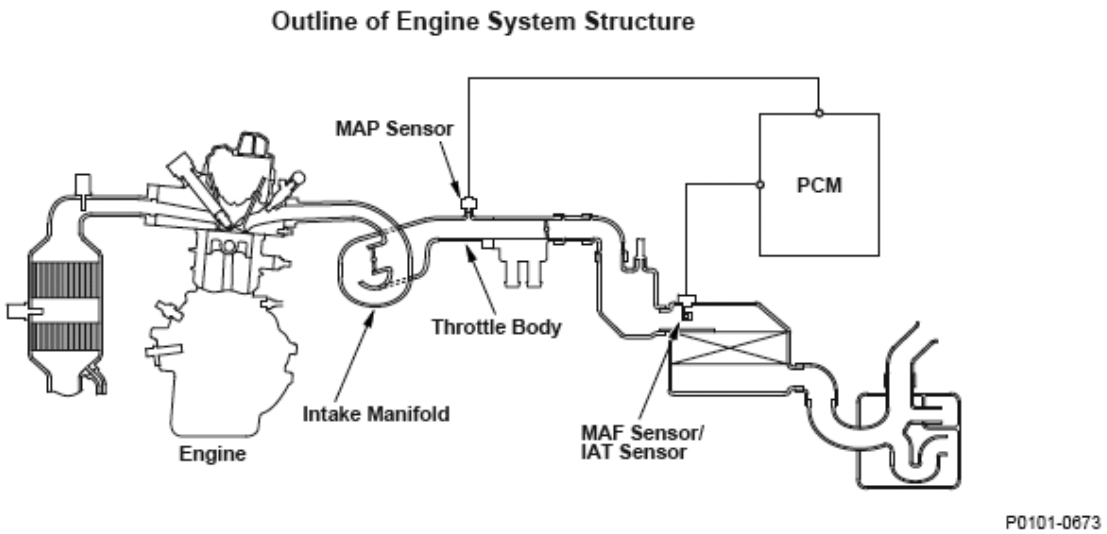


Fig. 8: Mass Air Flow (MAF) Sensor - System Diagram

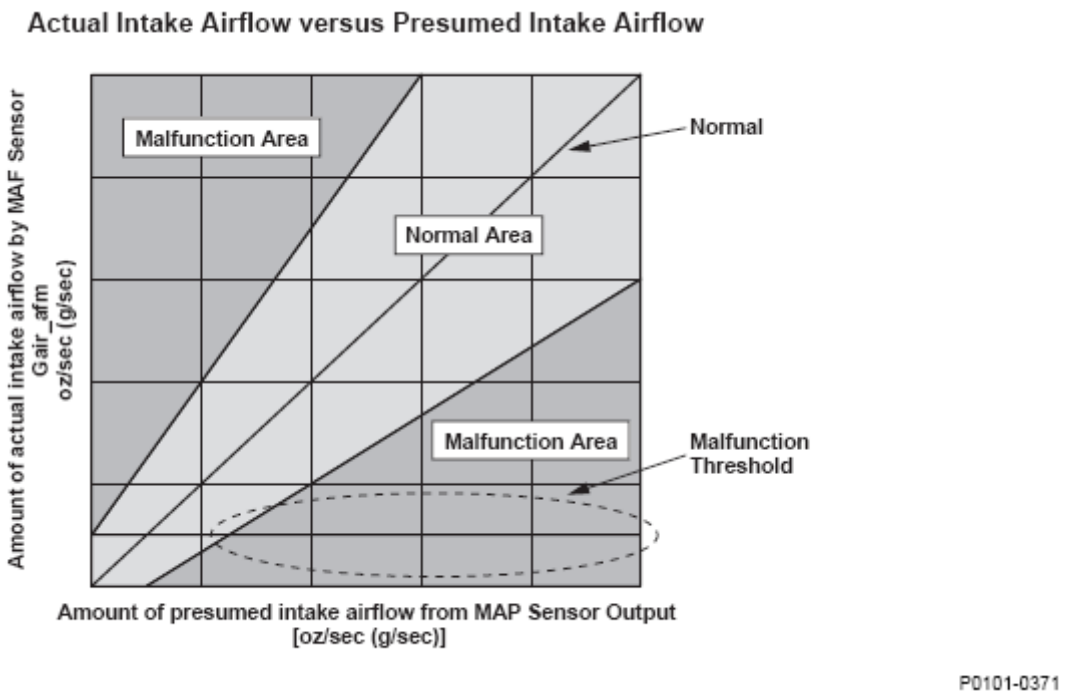


Fig. 9: Actual Intake Airflow Versus Presumed Intake Airflow Graph

General Description (R18A4 Engine)

The mass airflow (MAF) sensor directly measures the amount of intake airflow into the engine, and the powertrain control module (PCM) controls the fuel injection based on the measured value. The manifold absolute pressure (MAP) sensor measures the intake manifold pressure and the PCM calculates the amount of intake airflow from the MAP sensor output and the engine revolutions.

The PCM compares the MAF sensor output (amount of intake airflow) and the amount of intake airflow calculated from MAP sensor output. If their difference is too large (in the malfunction area), the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	3 seconds	-
Engine coolant temperature	156°F (69°C)	-

Engine speed	470 rpm	4,900 rpm
No active DTCs	P0102, P0103, P0106, P0107, P0108, P0112, P0113, P0117, P0118, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0506, P0507, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

The difference between the amount of intake air measured by the MAF sensor and the amount of intake air calculated from the MAP sensor output is out of the normal area for at least 5 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0102 (50): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0102: MASS AIR FLOW (MAF) SENSOR CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

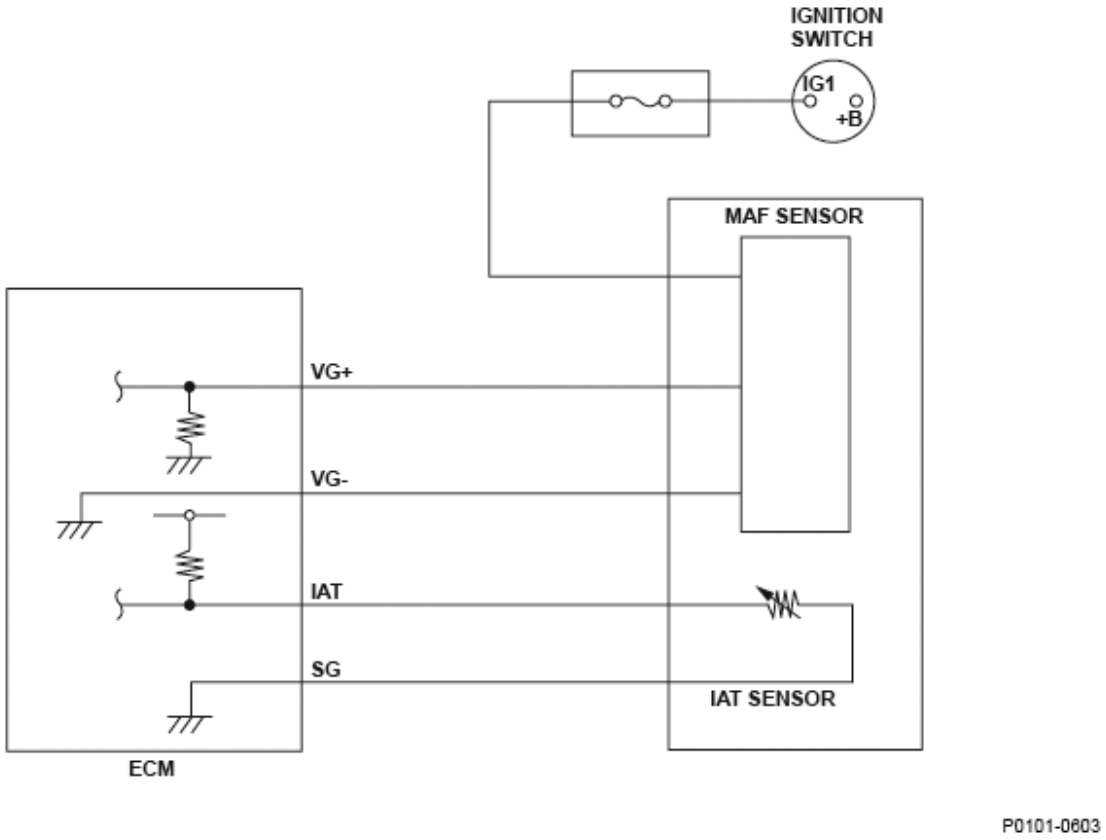


Fig. 10: Mass Air Flow (MAF) Sensor - Circuit Diagram

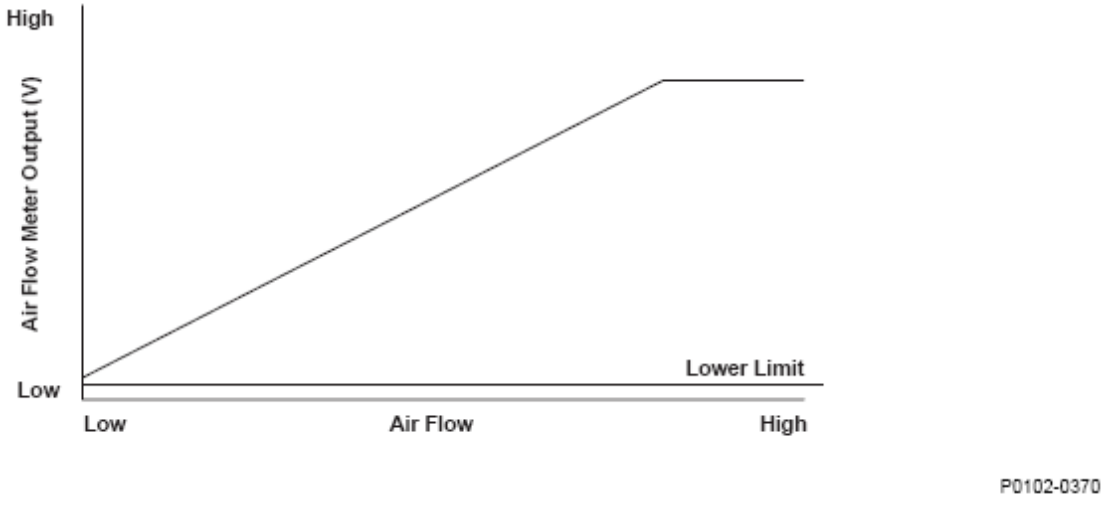


Fig. 11: Mass Air Flow Meter Output Voltage Graph

General Description (K20Z3 Engine)

The mass air flow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake air flow. The MAF sensor is a hot wire air flow meter. The air flow cools the electrically heated wire that is mounted in the air passage. The engine control module (ECM) determines the amount of intake air flow by detecting the current that is required to keep the hot wire at a constant temperature. The lower limit of the MAF sensor output is specified. If the output is below that limit, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0103

Malfunction Threshold (K20Z3 Engine)

The MAF sensor output voltage is 0.1 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0102 (50): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0102: MASS AIR FLOW (MAF) SENSOR CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

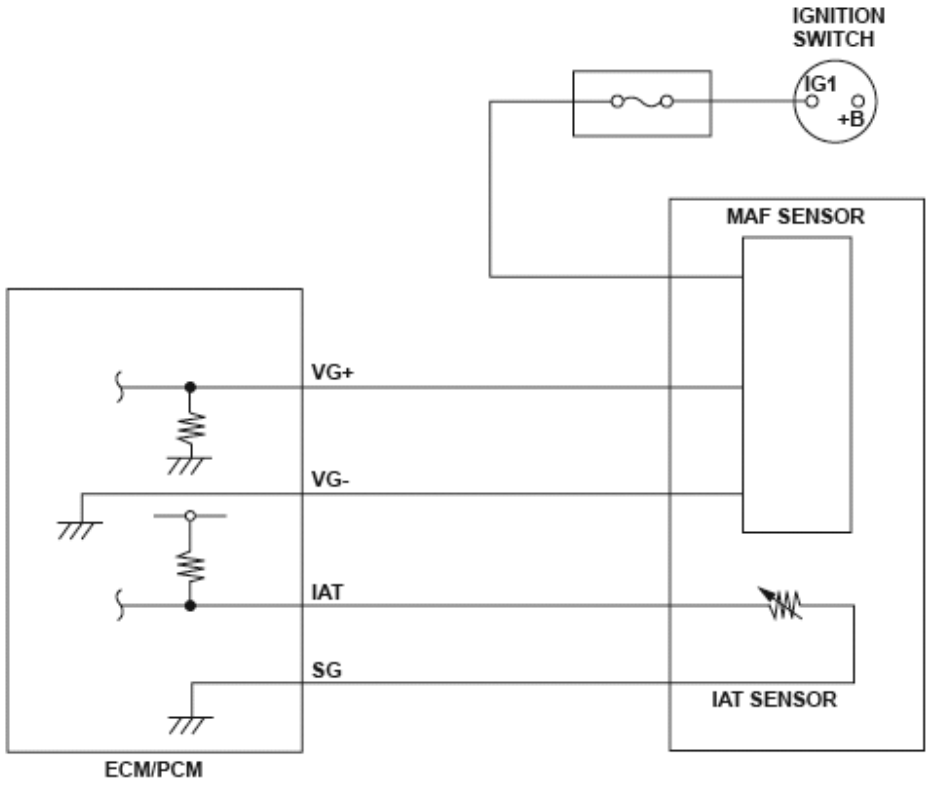


Fig. 12: Mass Air Flow (MAF) Sensor - Circuit Diagram

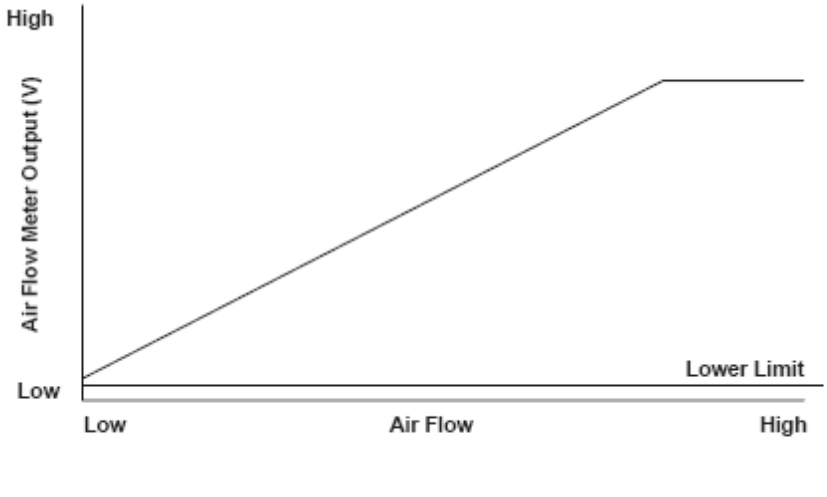


Fig. 13: Mass Air Flow Meter Output Voltage Graph

General Description (R18A1 Engine)

The mass air flow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake air flow. The MAF sensor is a hot wire air flow meter. The air flow cools the electrically heated wire that is mounted in the air passage. The engine control module (ECM)/powertrain control module (PCM) determines the amount of intake air flow by detecting the current that is required to keep the hot wire at a constant temperature. The lower limit of the MAF sensor output is specified. If the output is below that limit, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0103

Malfunction Threshold (R18A1 Engine)

The MAF sensor output voltage is 0.1 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0102 (50): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0102: MASS AIR FLOW (MAF) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

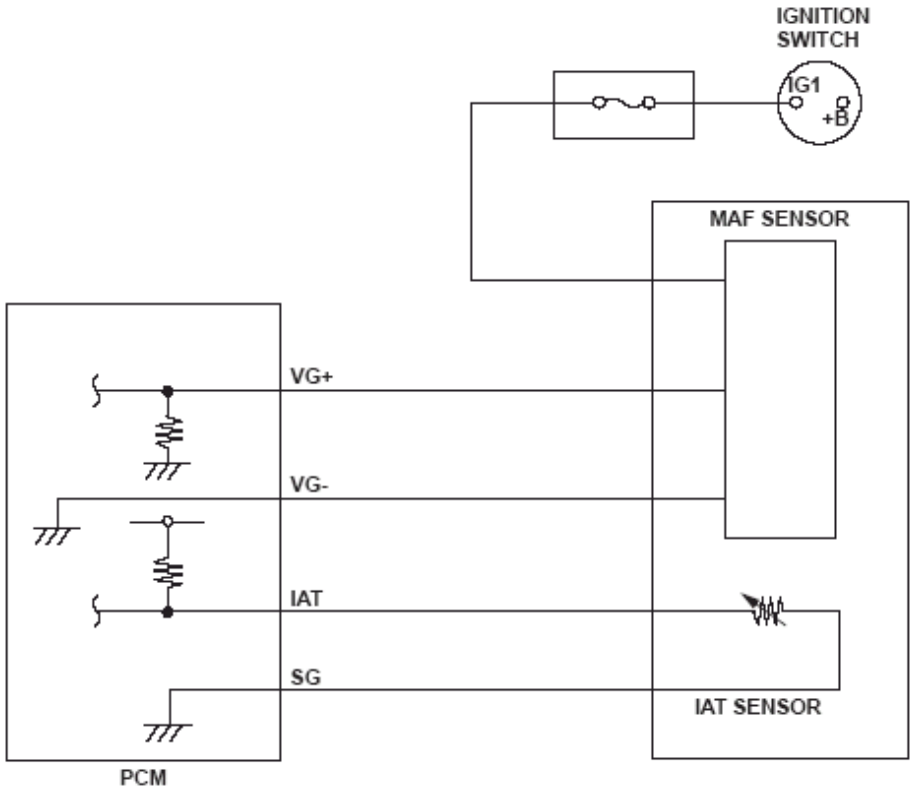


Fig. 14: Mass Air Flow Sensor - Circuit Diagram

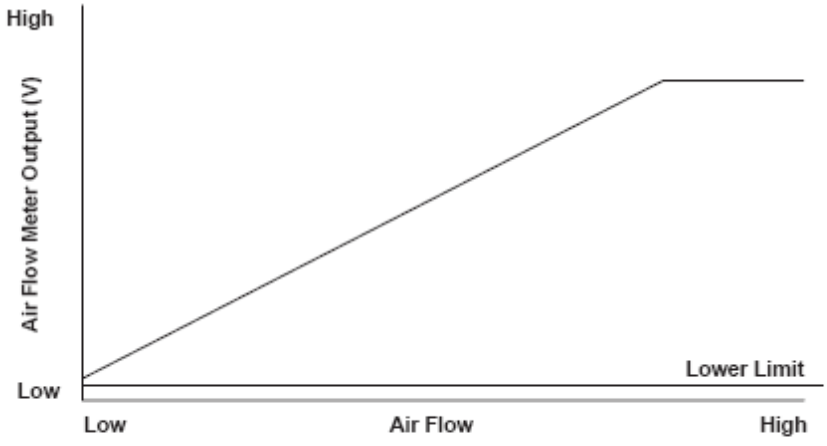


Fig. 15: Mass Air Flow Meter Output Voltage Graph

General Description (R18A4 Engine)

The mass airflow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake airflow. The MAF sensor is a hot wire airflow meter. The airflow cools the electrically heated wire that is mounted in the air passage. The powertrain control module (PCM) determines the amount of intake airflow by detecting the current that is required to keep the hot wire at a constant temperature. The lower limit of the MAF sensor output is specified. If the output is below that limit, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0103

Malfunction Threshold (R18A4 Engine)

The MAF sensor output voltage is 0.1 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0103 (50): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0103: MASS AIR FLOW (MAF) SENSOR CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

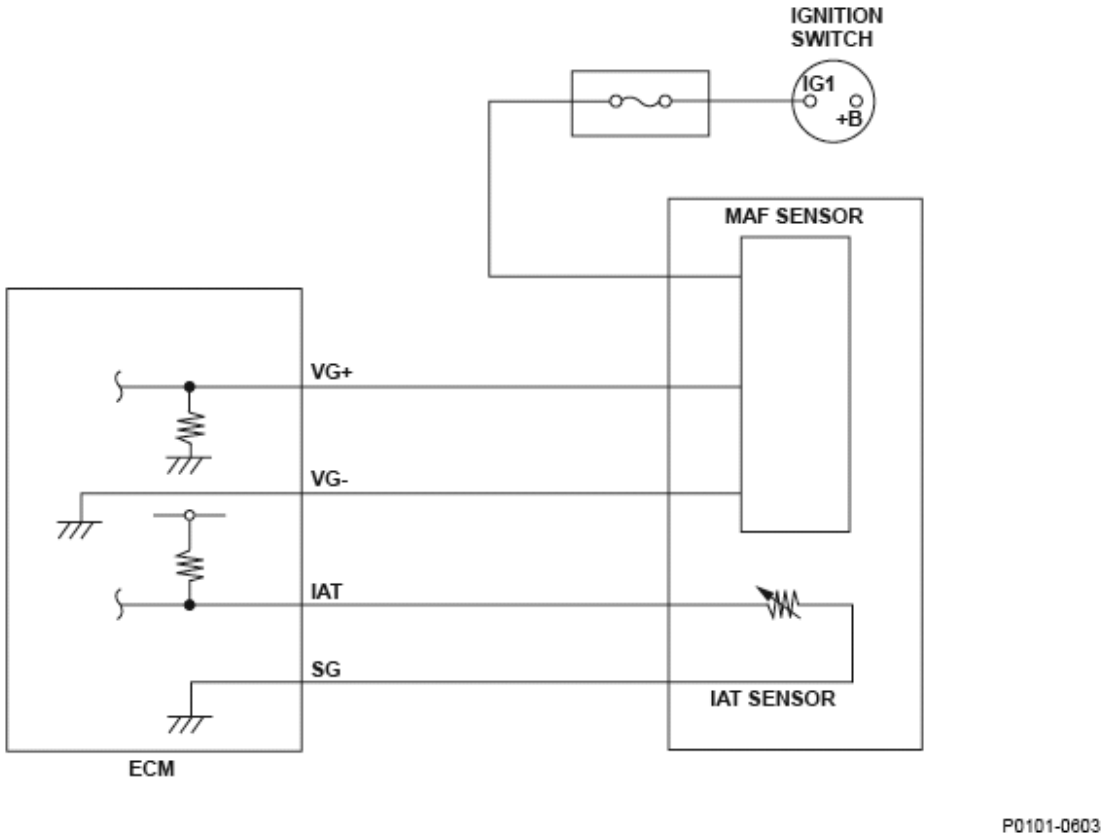


Fig. 16: Mass Air Flow (MAF) Sensor - Circuit Diagram

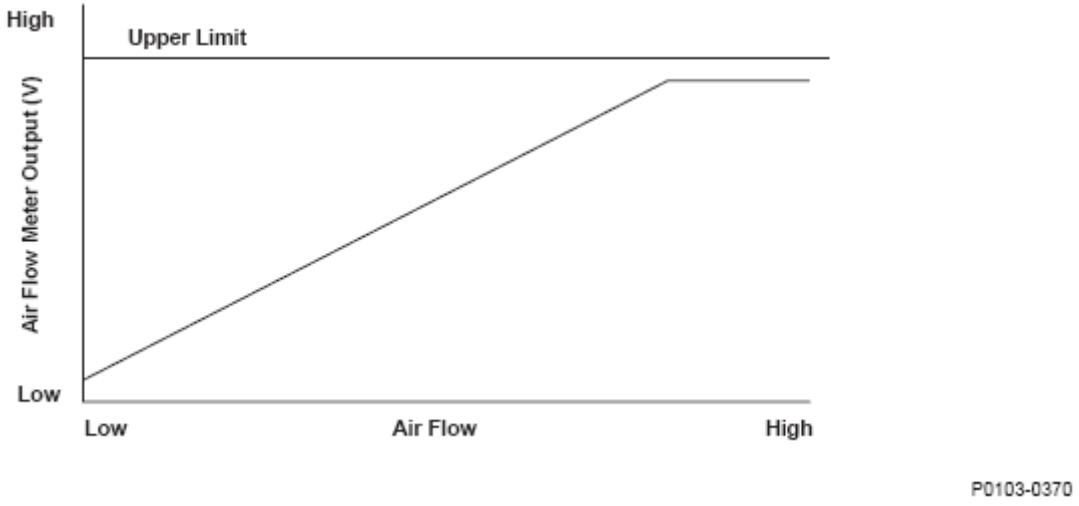


Fig. 17: Mass Air Flow Meter Output Voltage Graph

General Description (K20Z3 Engine)

The mass air flow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake air flow. The MAF sensor is a hot wire air flow meter. The air flow cools the electrically heated wire that is mounted in the air passage. The engine control module (ECM) determines the amount of intake air flow by detecting the current that is required to keep the hot wire at a constant temperature. The upper limit of the MAF sensor output is specified. If the output is above that limit, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0102

Malfunction Threshold (K20Z3 Engine)

The MAF sensor output voltage is 4.89 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0103 (50): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0103: MASS AIR FLOW (MAF) SENSOR CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

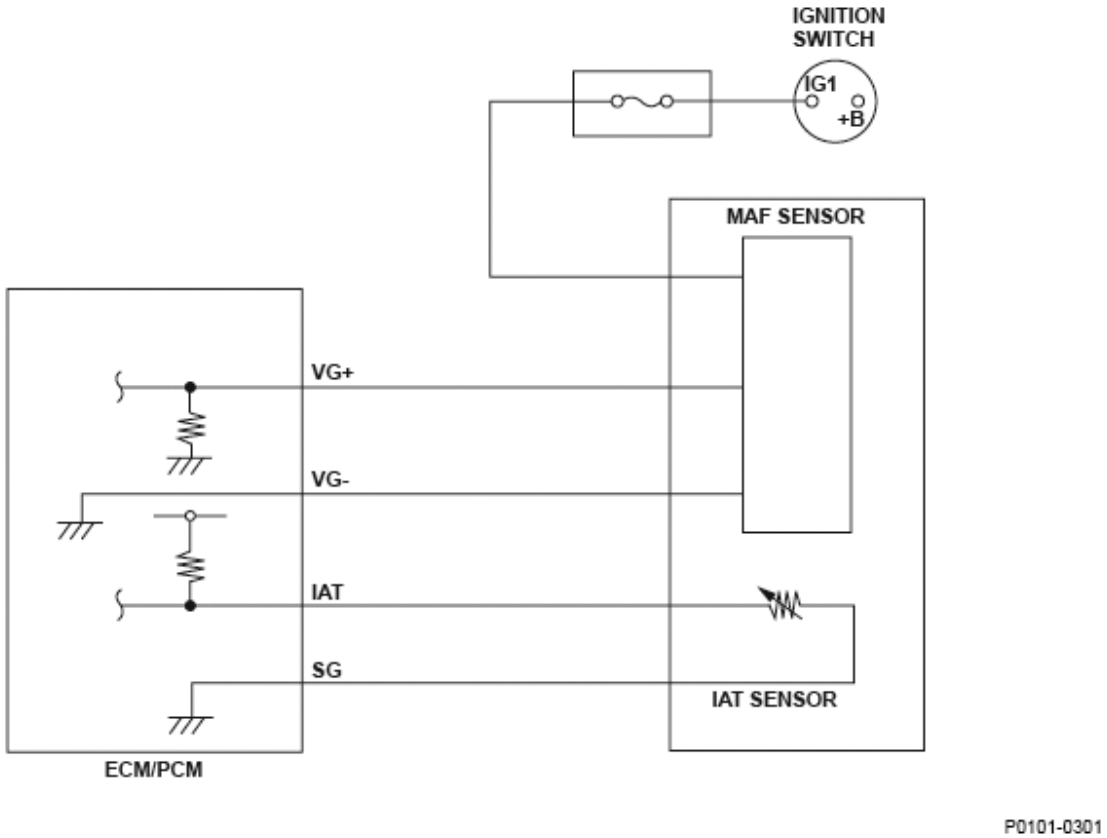


Fig. 18: Mass Air Flow (MAF) Sensor - Circuit Diagram

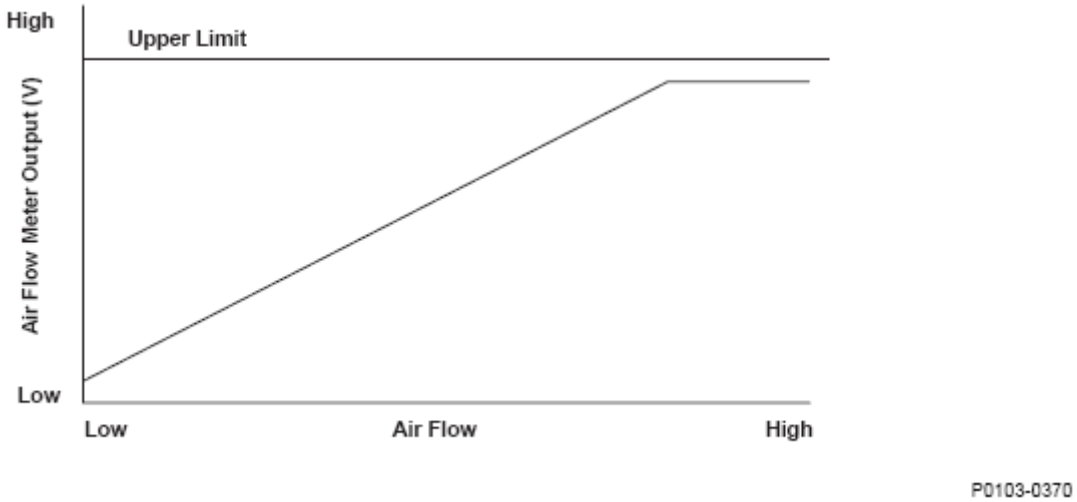


Fig. 19: Mass Air Flow Meter Output Voltage Graph

General Description (R18A1 Engine)

The mass air flow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake air flow. The MAF sensor is a hot wire air flow meter. The air flow cools the electrically heated wire that is mounted in the air passage. The engine control module (ECM)/powertrain control module (PCM) determines the amount of intake air flow by detecting the current that is required to keep the hot wire at a constant temperature. The upper limit of the MAF sensor output is specified. If the output is above that limit, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0102

Malfunction Threshold (R18A1 Engine)

The MAF sensor output voltage is 4.89 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0103 (50): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0103: MASS AIR FLOW (MAF) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

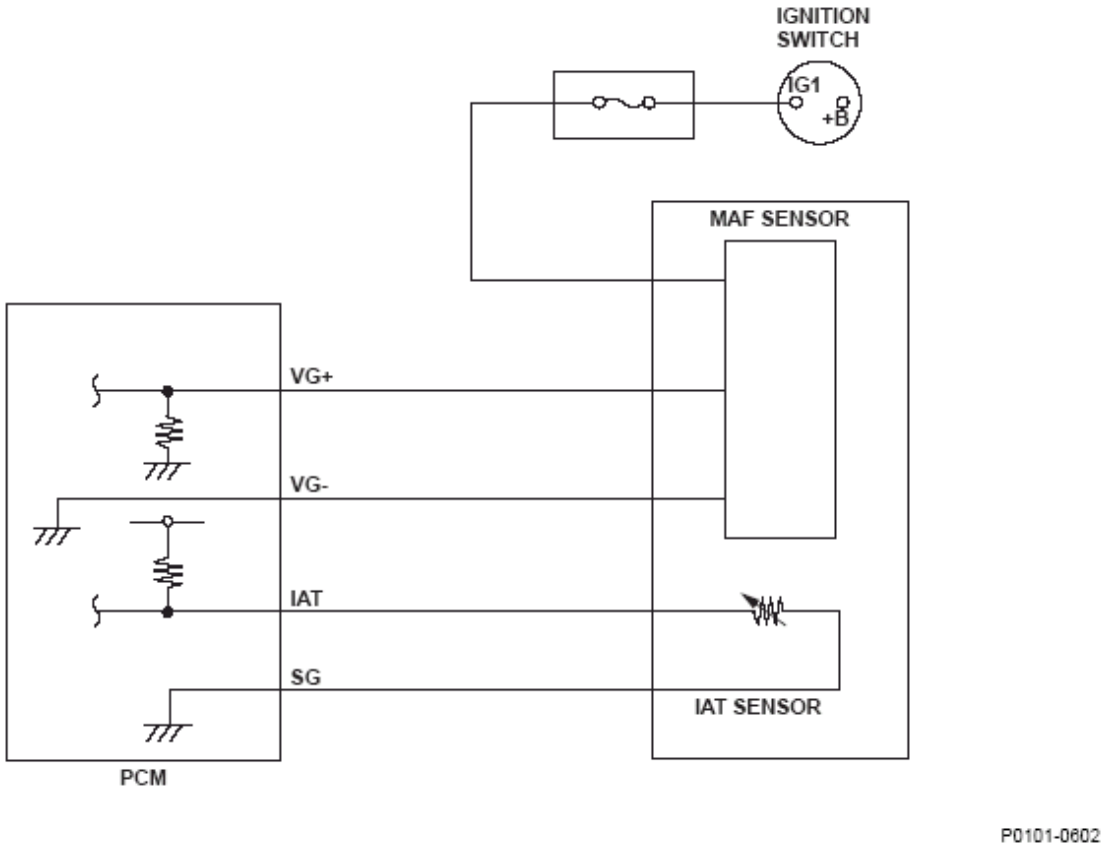


Fig. 20: Mass Air Flow Sensor - Circuit Diagram

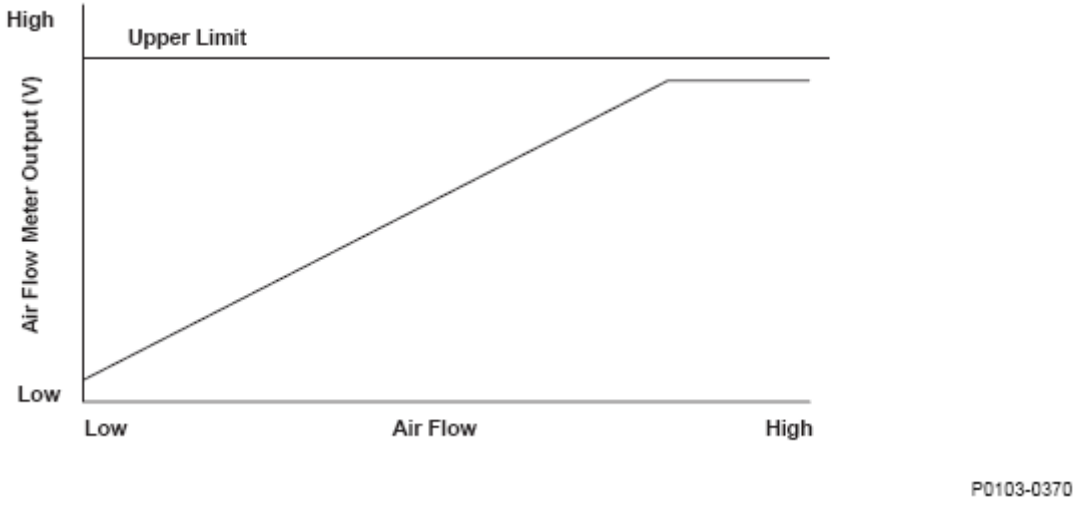


Fig. 21: Mass Air Flow Meter Output Voltage Graph

General Description (R18A4 Engine)

The mass airflow (MAF) sensor is attached to the intake air passage, and it measures the amount of intake airflow. The MAF sensor is a hot wire airflow meter. The airflow cools the electrically heated wire that is mounted in the air passage. The powertrain control module (PCM) determines the amount of intake airflow by detecting the current that is required to keep the hot wire at a constant temperature. The upper limit of the MAF sensor output is specified. If the output is above that limit, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0102

Malfunction Threshold (R18A4 Engine)

The MAF sensor output voltage is 4.89 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0107 (12): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0107: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT LOW VOLTAGE INPUT (R18A1 ENGINE)

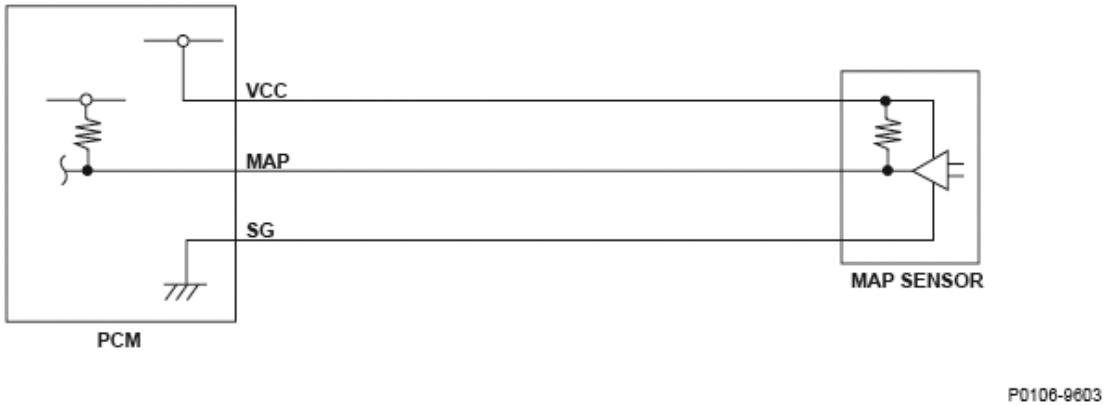


Fig. 22: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

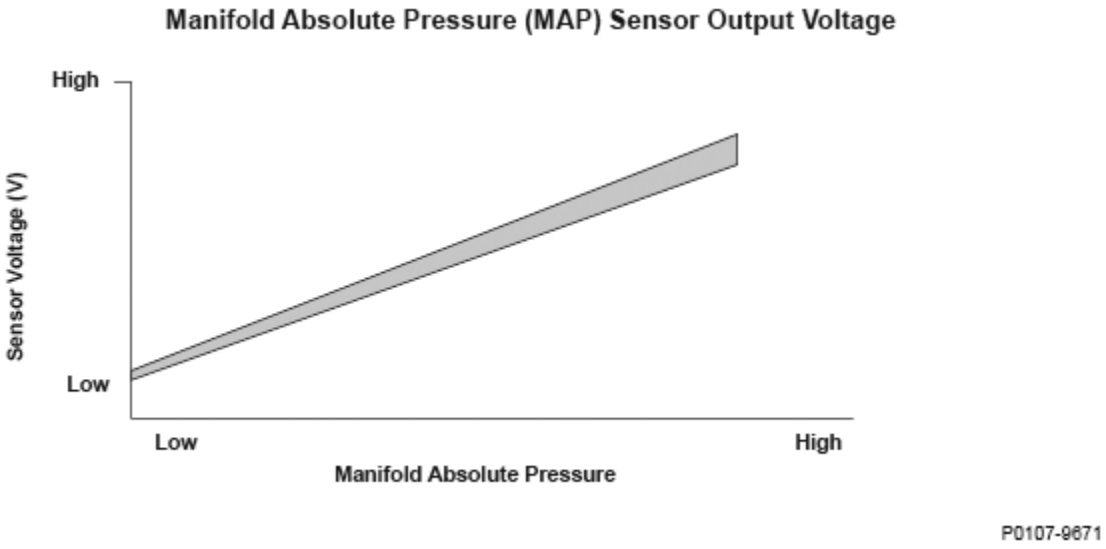


Fig. 23: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

If a signal voltage from the MAP sensor is a set value or less, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0108

Malfunction Threshold (R18A1 Engine)

The MAP sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0107 (12): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0107: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT LOW VOLTAGE INPUT (R18A4 ENGINE)

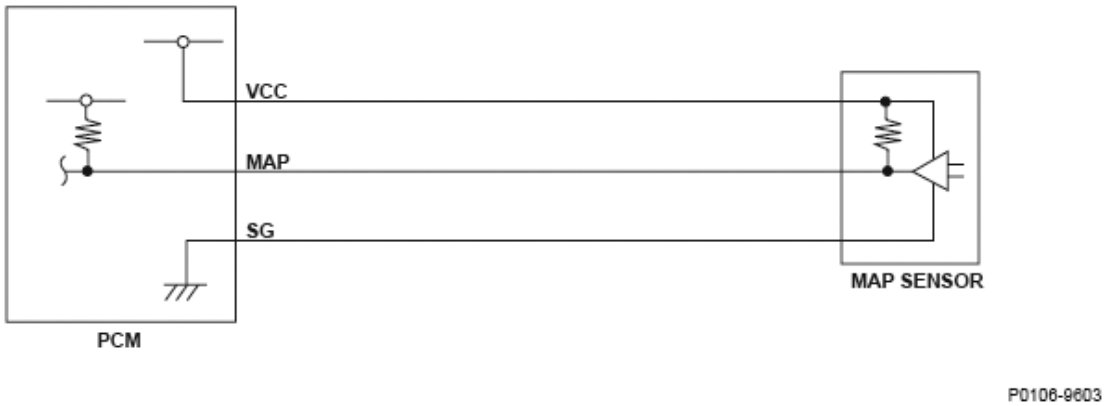


Fig. 24: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

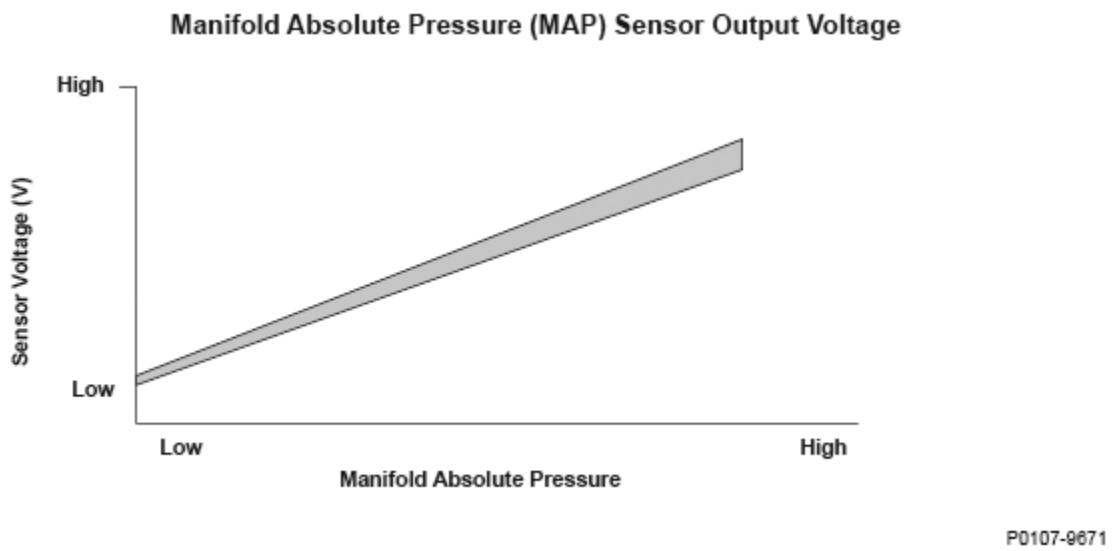


Fig. 25: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

If a signal voltage from the MAP sensor is a set value or less, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0108

Malfunction Threshold (R18A4 Engine)

The MAP sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0107 (3) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0107: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

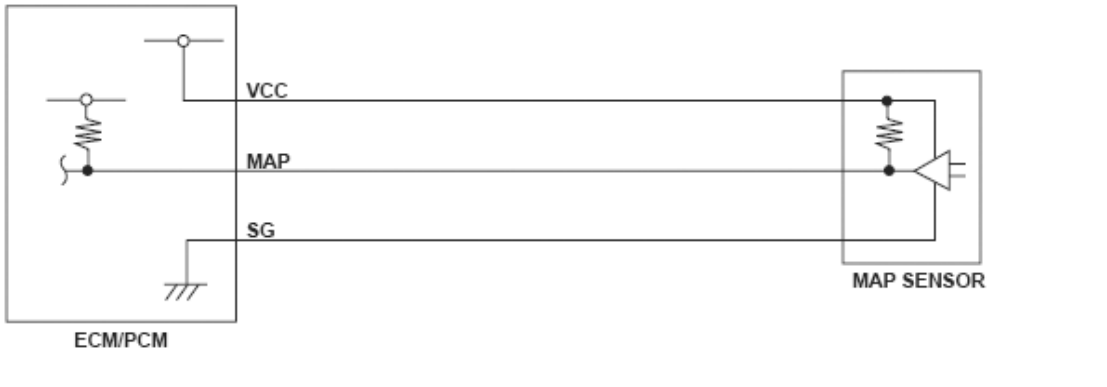


Fig. 26: Manifold Absolute Pressure (MAP) Sensor Voltage Circuit Diagram

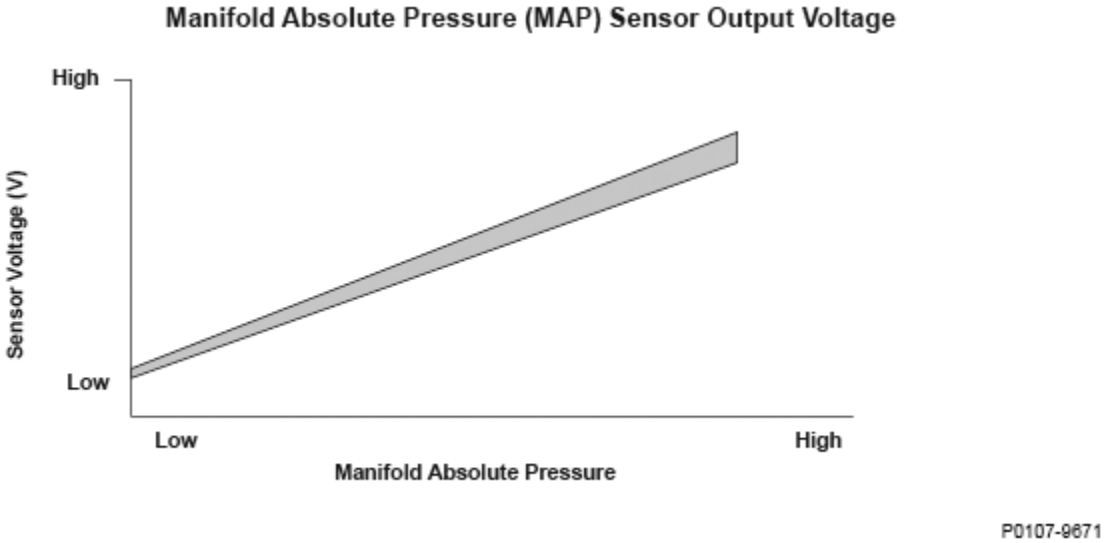


Fig. 27: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed)

and high signal voltage at low-vacuum (throttle valve wide open).

If a signal voltage from the MAP sensor is a set value or less, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0108

Malfunction Threshold (R18A1 Engine)

The MAP sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0107 (3) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0107: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

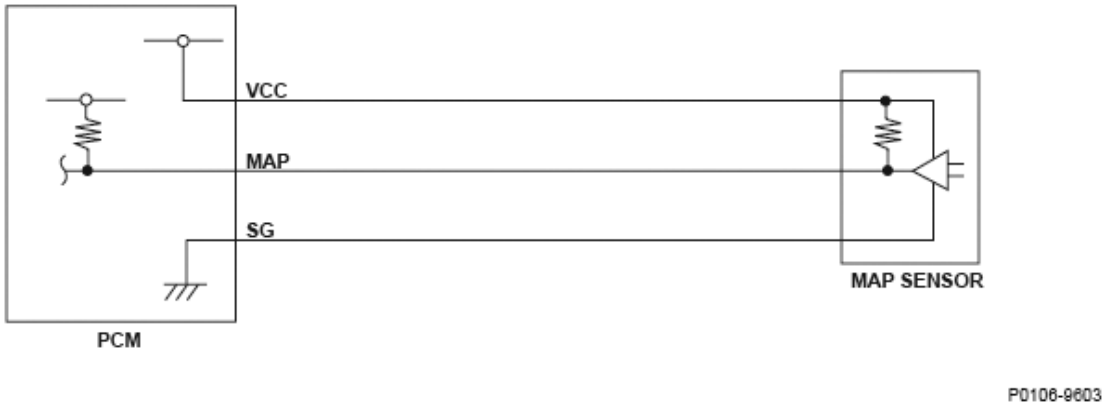


Fig. 28: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

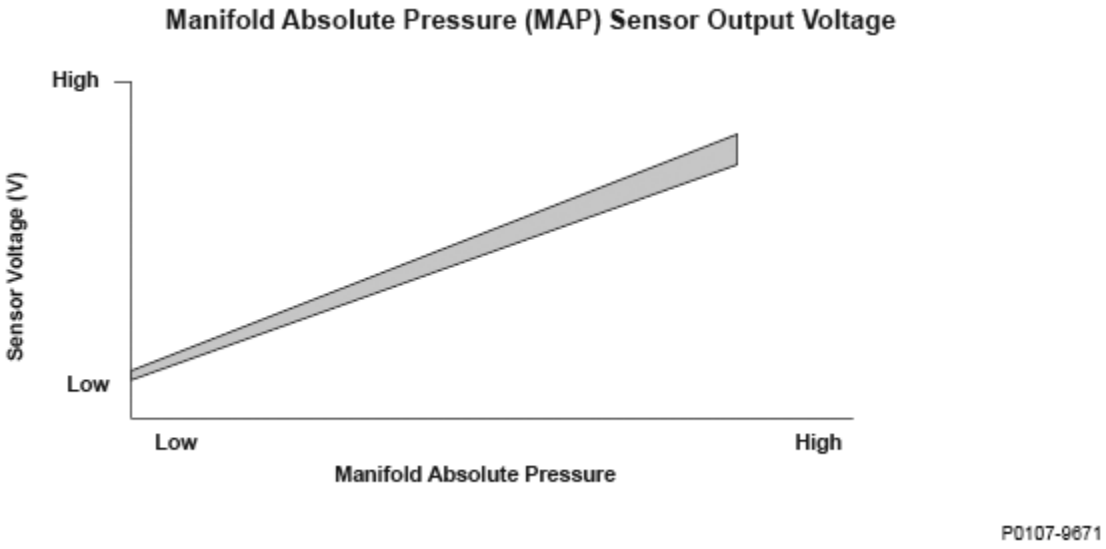


Fig. 29: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

If a signal voltage from the MAP sensor is a set value or less, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0108

Malfunction Threshold (R18A4 Engine)

The MAP sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0107 (3): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0107: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

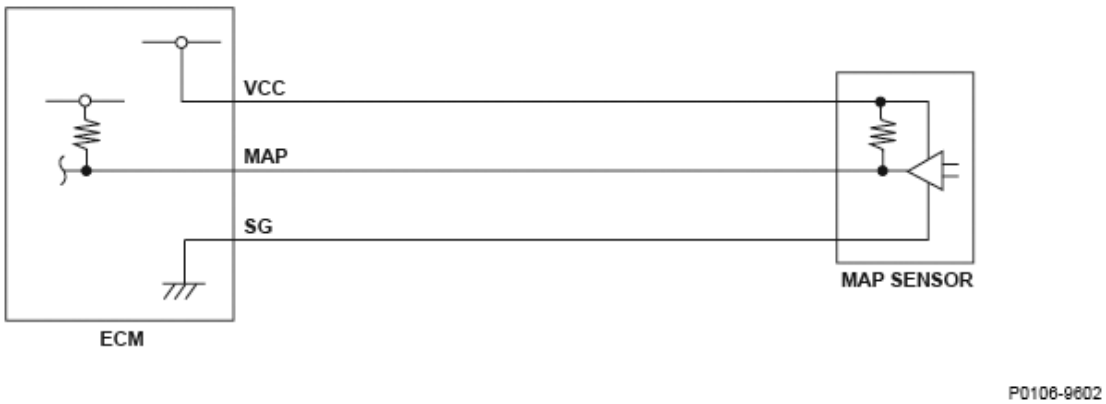


Fig. 30: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage - Wiring Diagram

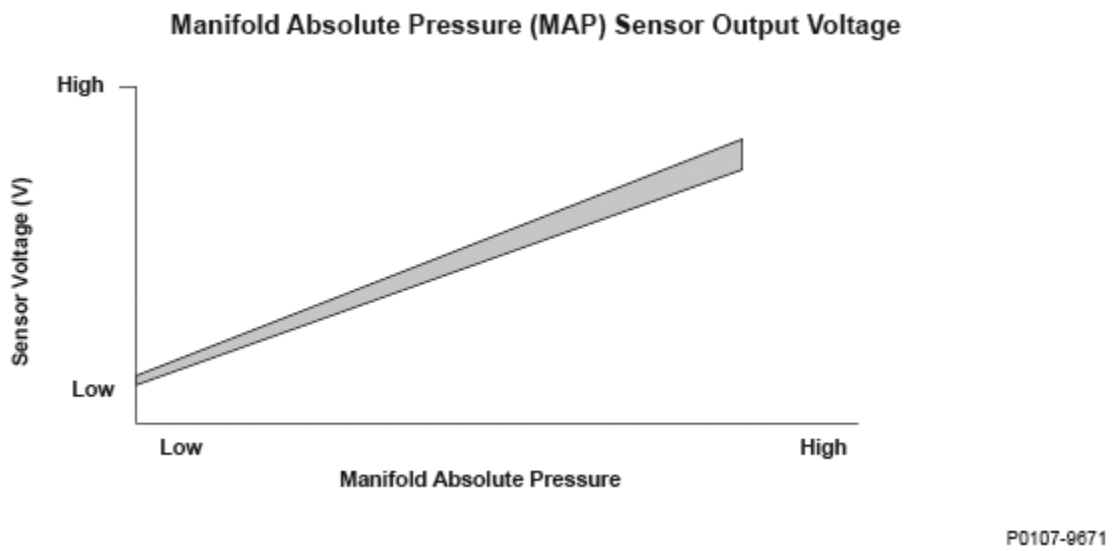


Fig. 31: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

If a signal voltage from the MAP sensor is a set value or less, the engine control module (ECM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0108

Malfunction Threshold (K20Z3 Engine)

The MAP sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0108 (12): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0108: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT HIGH VOLTAGE INPUT (R18A1 ENGINE)

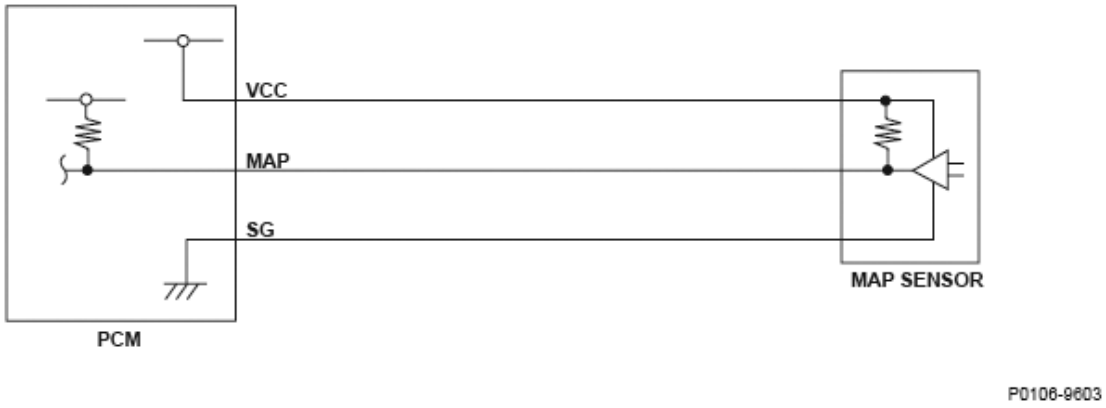


Fig. 32: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

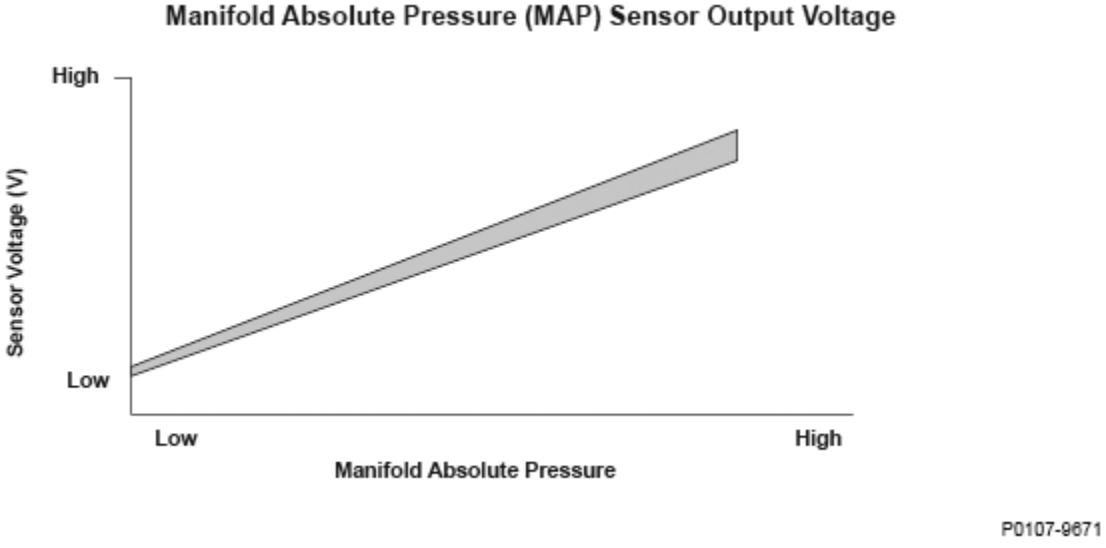


Fig. 33: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it

into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open). If a signal voltage from the MAP sensor is a set value or more, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0107

Malfunction Threshold (R18A1 Engine)

The MAP sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0108 (12): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0108: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT HIGH VOLTAGE INPUT (R18A4 ENGINE)

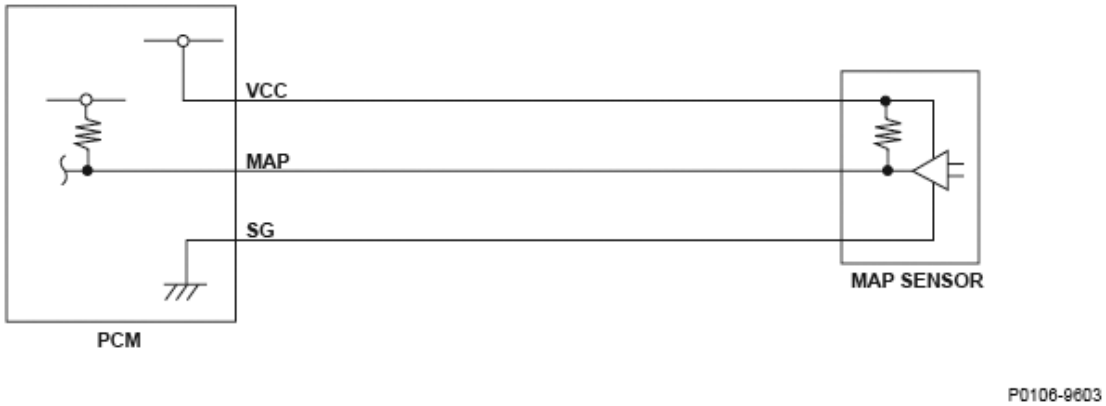


Fig. 34: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

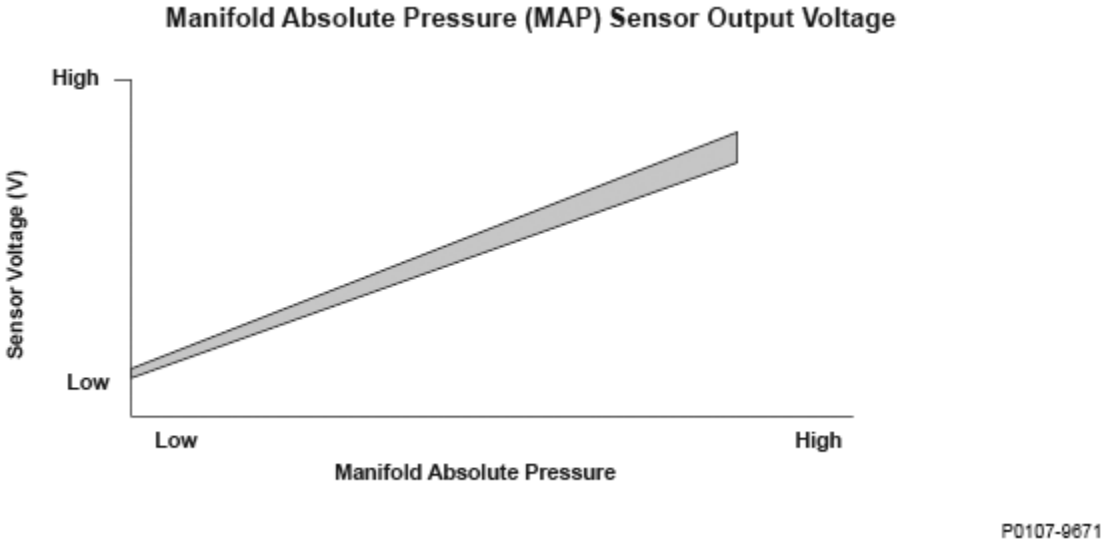


Fig. 35: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open). If a signal voltage from the MAP sensor is a set value or more, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0107

Malfunction Threshold (R18A4 Engine)

The MAP sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0108 (3) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0108: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

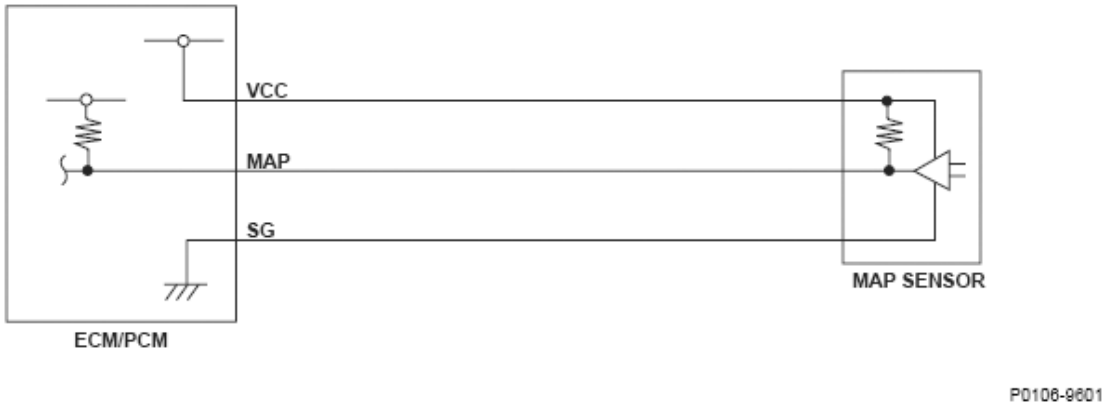


Fig. 36: Manifold Absolute Pressure (MAP) Sensor Voltage Circuit Diagram

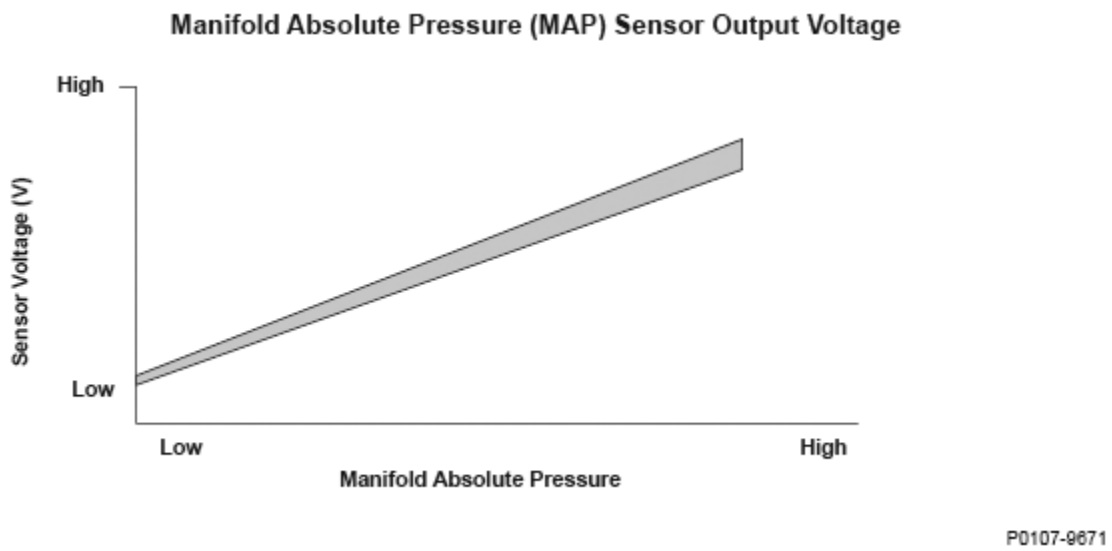


Fig. 37: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open). If a signal voltage from the MAP sensor is a set value or more, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0107

Malfunction Threshold (R18A1 Engine)

The MAP sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0108 (3) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0108: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

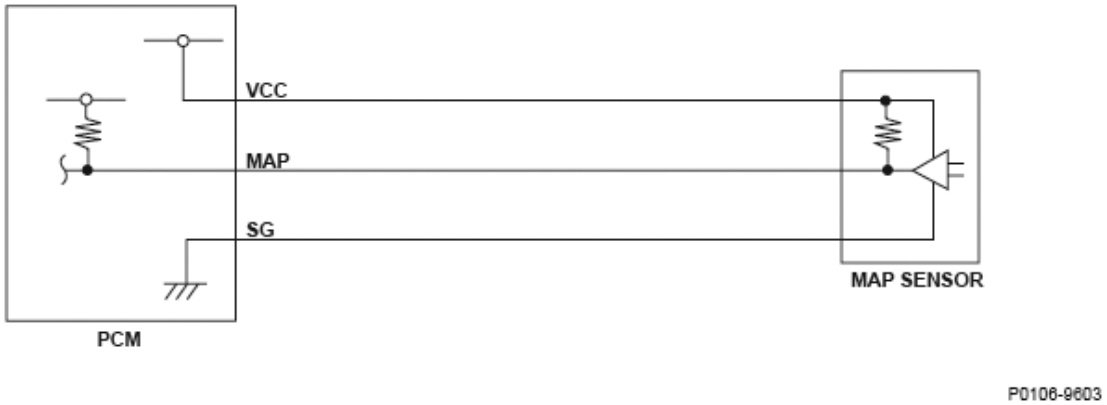


Fig. 38: Manifold Absolute Pressure (MAP) Sensor Circuit Diagram

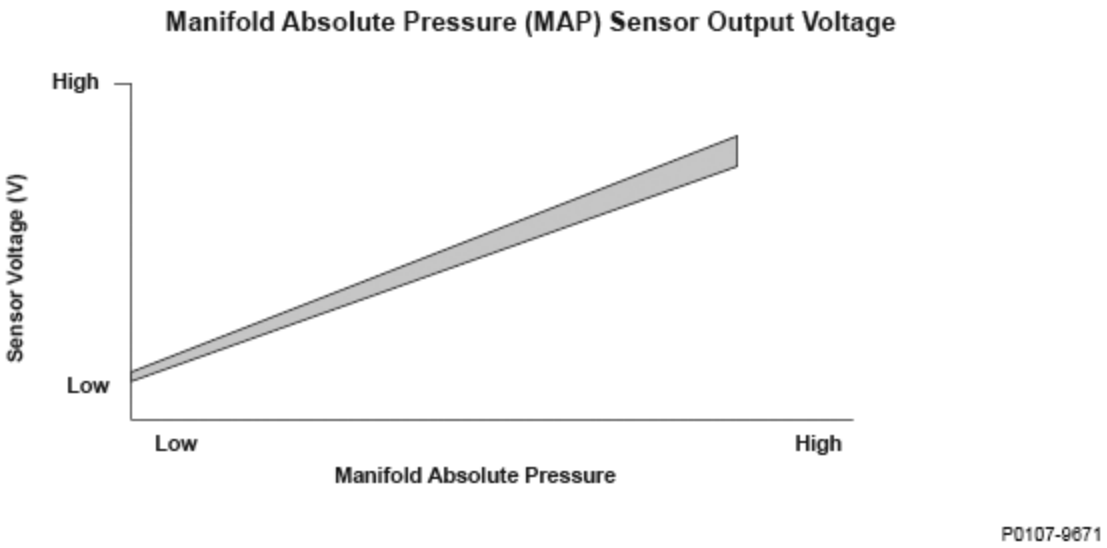


Fig. 39: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open). If a signal voltage from the MAP sensor is a set value or more, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0107

Malfunction Threshold (R18A4 Engine)

The MAP sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0108 (3): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0108: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

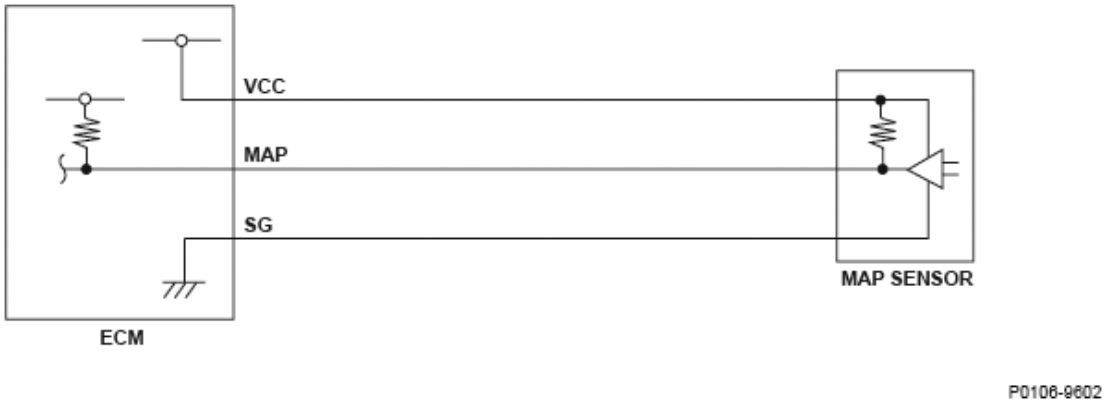


Fig. 40: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage - Wiring Diagram

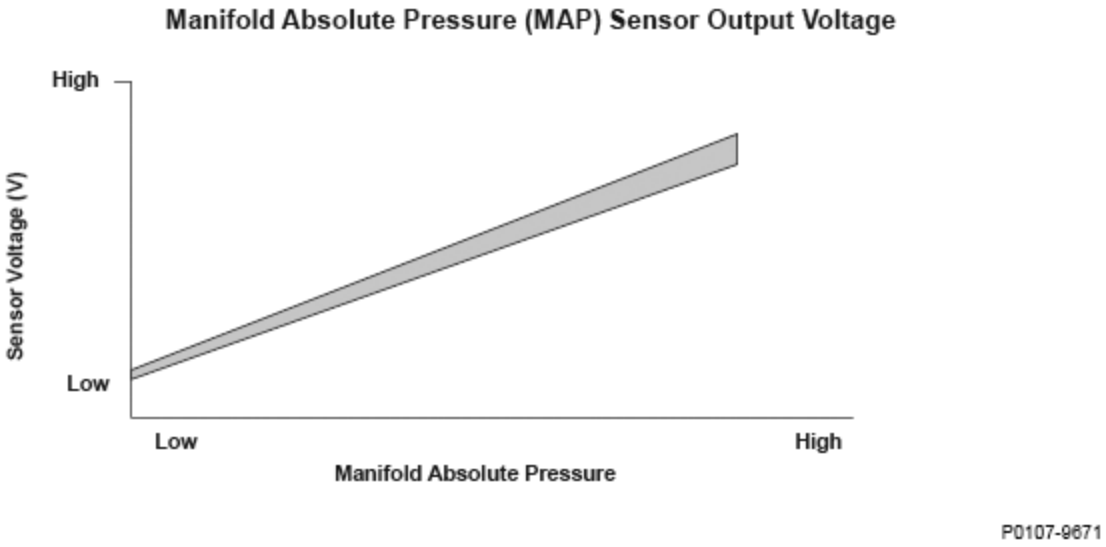


Fig. 41: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open). If a signal voltage from the MAP sensor is a set value or more, the engine control module (ECM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0107

Malfunction Threshold (K20Z3 Engine)

The MAP sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0111 (10): ADVANCED DIAGNOSTICS (M/T)

DTC P0111: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (M/T)

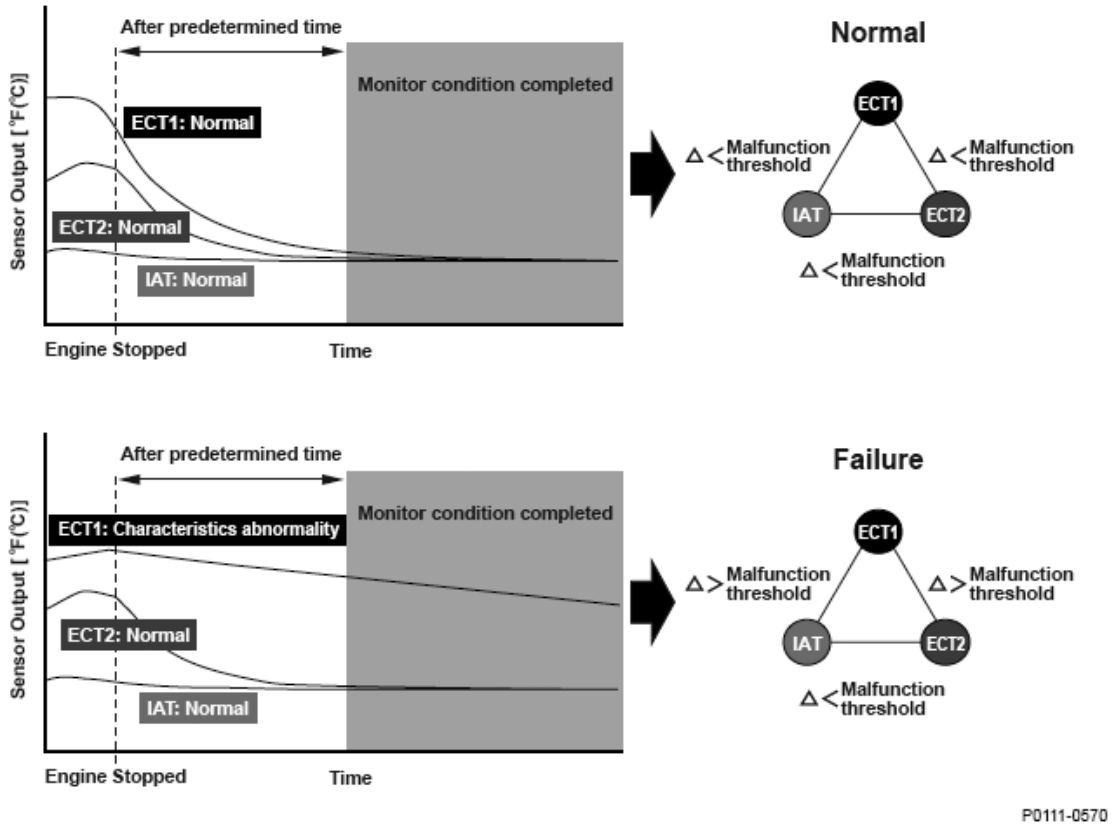


Fig. 42: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (M/T)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2183, P2184, P2185, P2610	

Malfunction Threshold (M/T)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)*1 , 59°F (33°C)*2 or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)*1 , 36°F (20°C)*2 or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)*1 , 66°F (37°C)*2 or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (M/T)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs. The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0111 (10): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0111: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

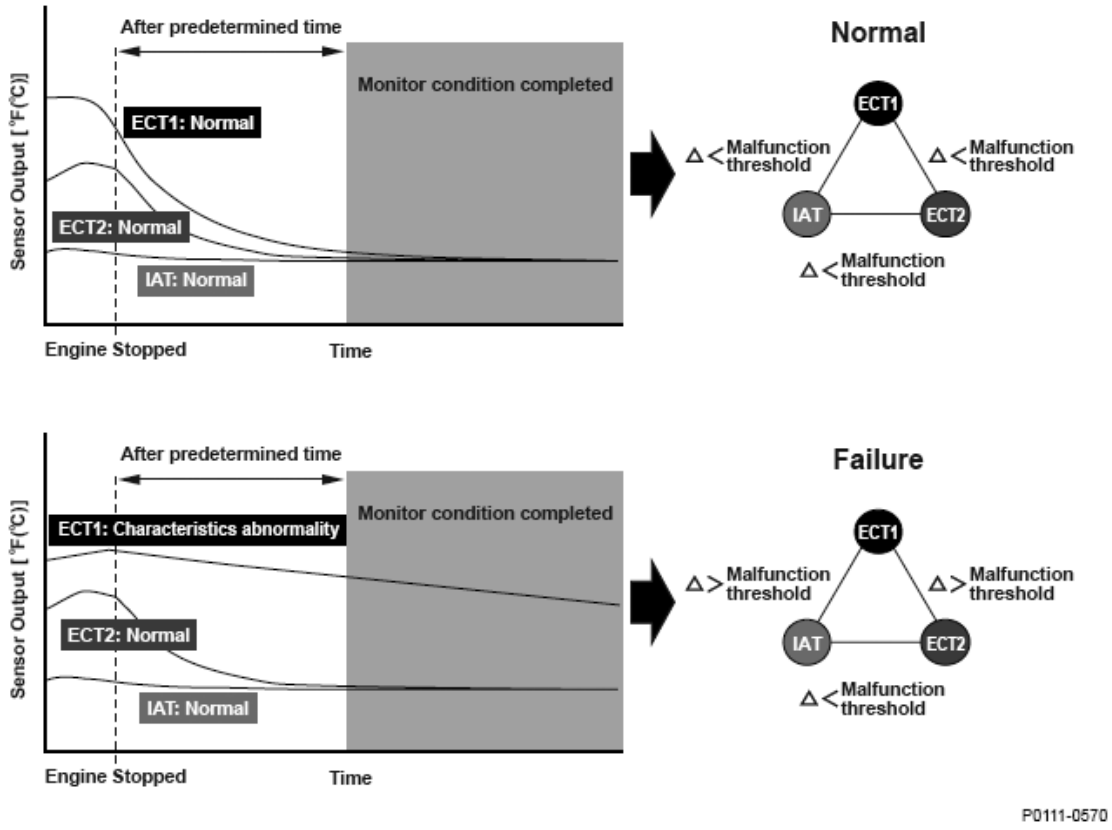


Fig. 43: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A1 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A1 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)*1 , 59°F (33°C)*2 or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)*1 , 36°F (20°C)*2 or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)*1 , 66°F (37°C)*2 or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (R18A1 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0111 (10): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0111: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

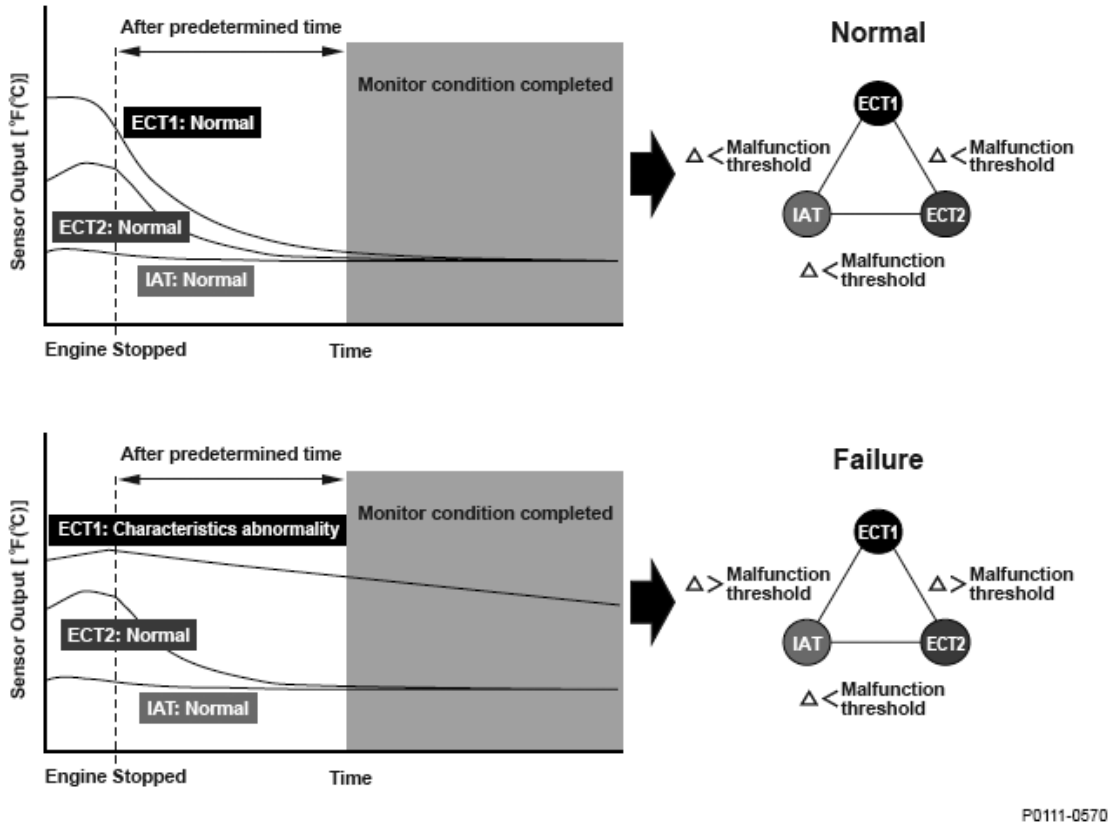


Fig. 44: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A4 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A4 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C) or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C) or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C) or more.

Driving Pattern (R18A4 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0112 (10): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0112: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

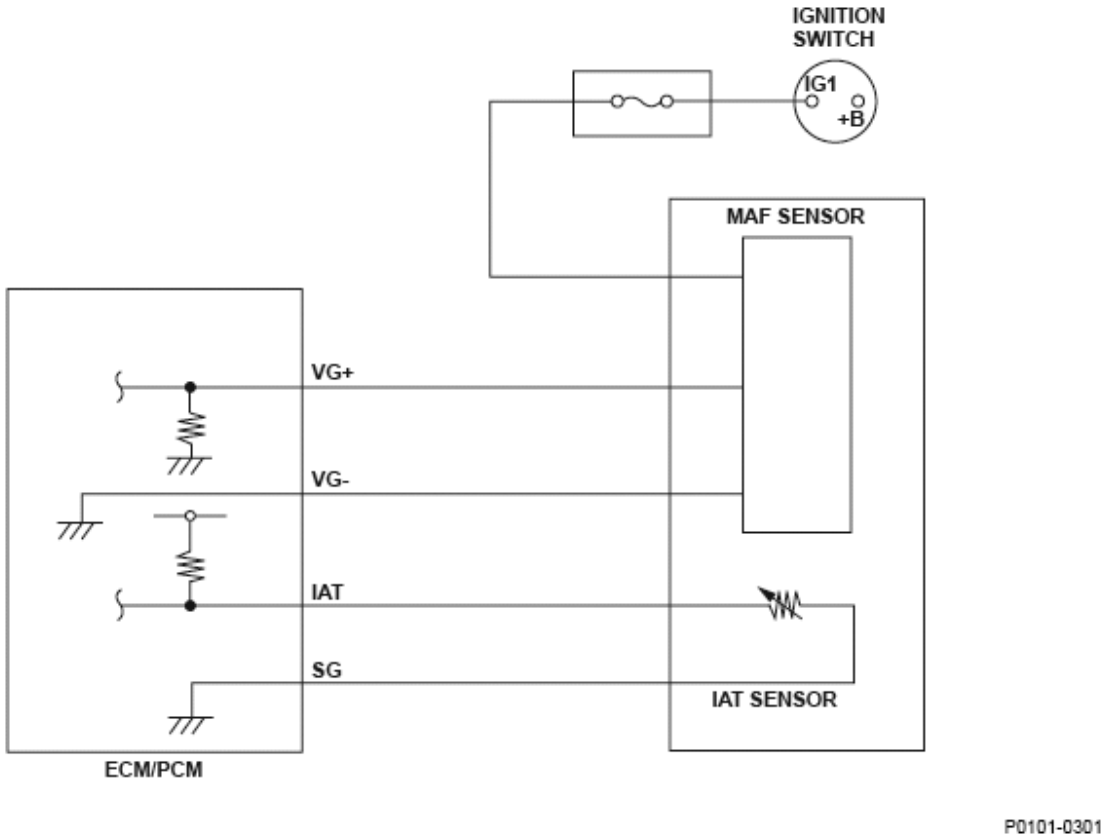


Fig. 45: Mass Air Flow (MAF) Sensor - Circuit Diagram

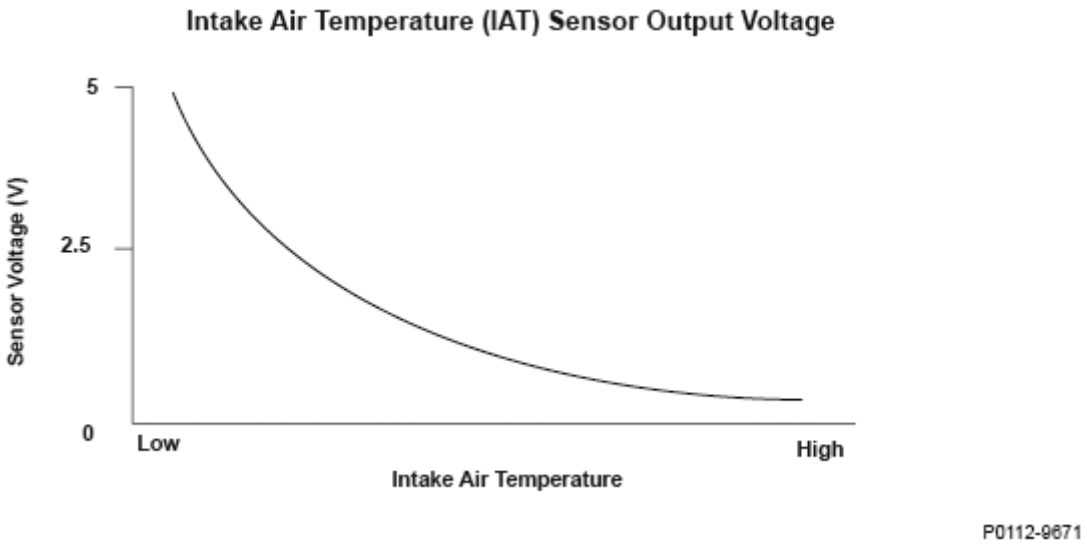


Fig. 46: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance

increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively low, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0113

Malfunction Threshold (K20Z3 Engine)

The IAT sensor output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0112 (10): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0112: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

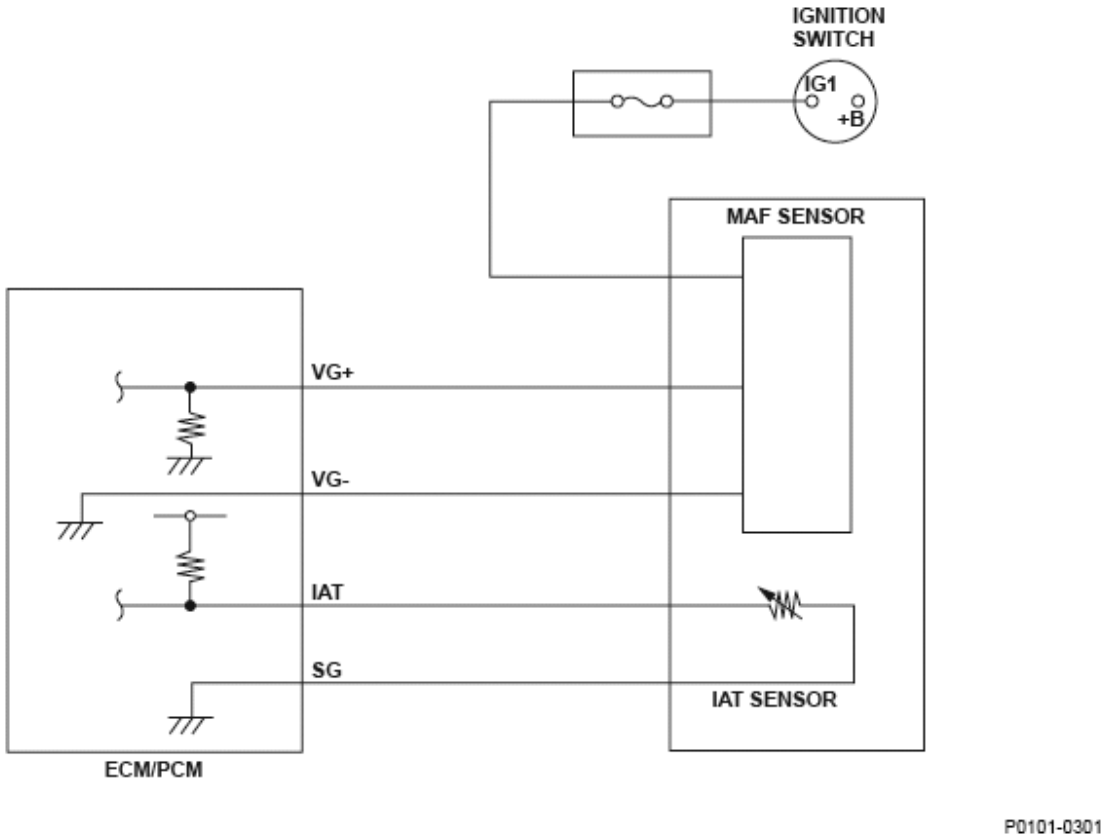


Fig. 47: Mass Air Flow (MAF) Sensor - Circuit Diagram

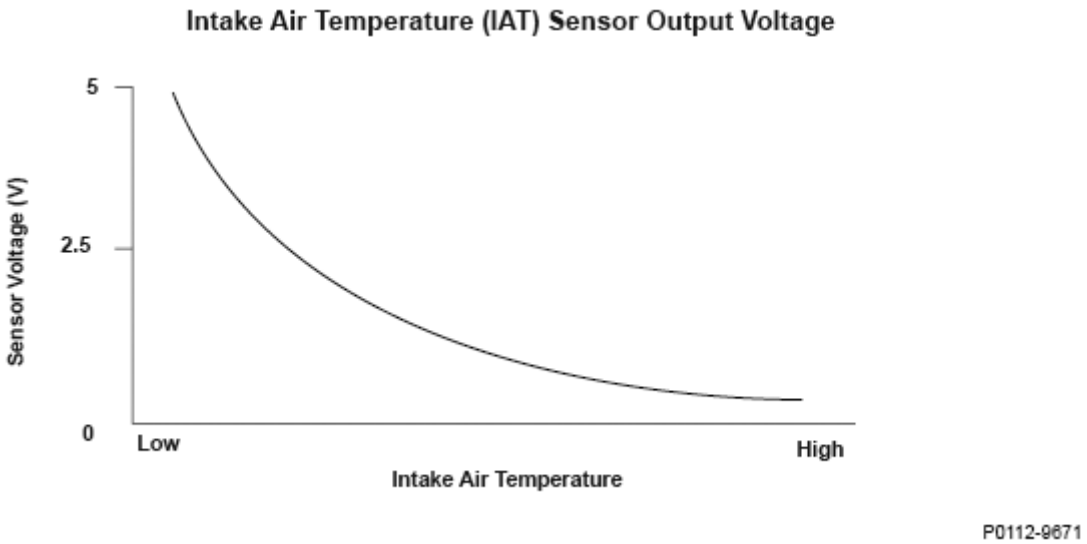


Fig. 48: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance

increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively low, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0113

Malfunction Threshold (R18A1 Engine)

The IAT sensor output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0112 (10): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0112: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

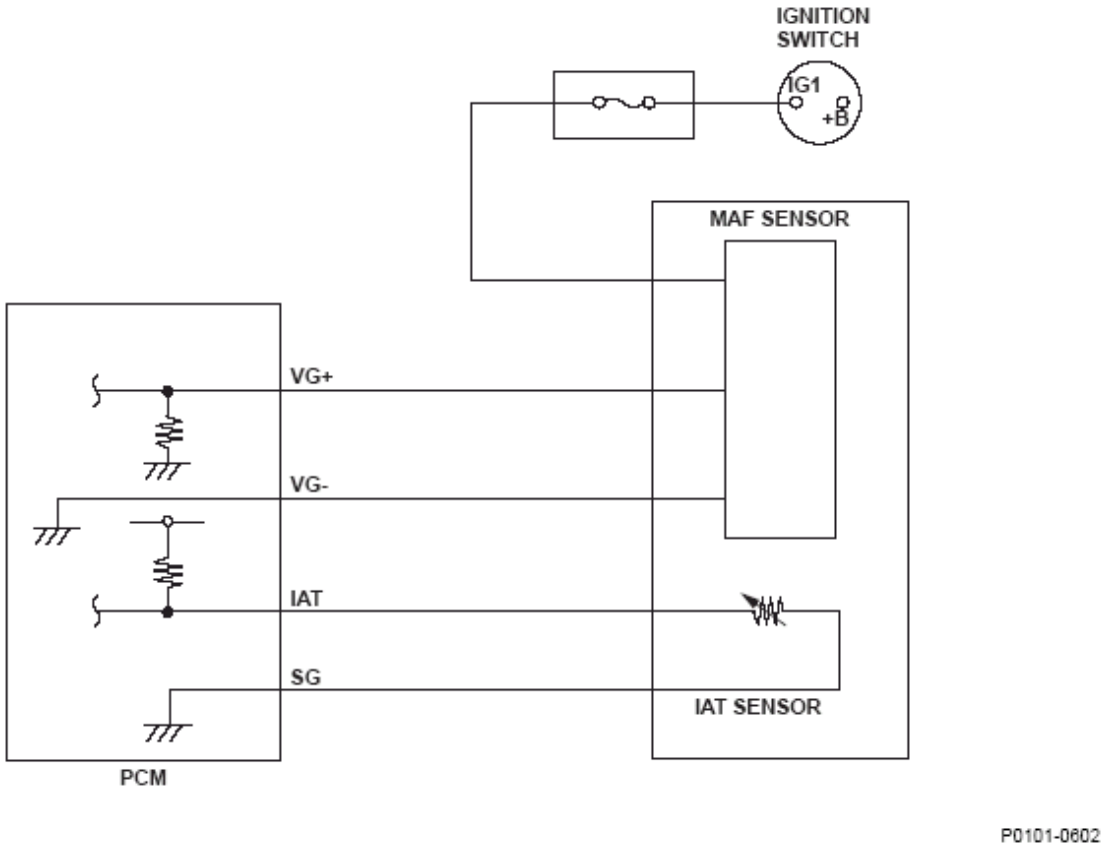


Fig. 49: Mass Air Flow Sensor - Circuit Diagram

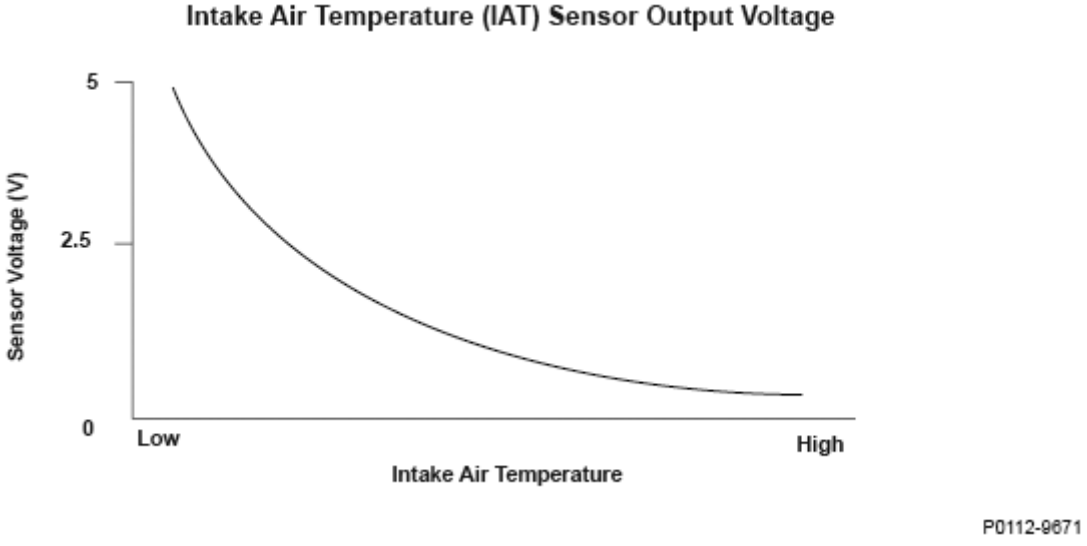


Fig. 50: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively low, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0113

Malfunction Threshold (R18A4 Engine)

The IAT sensor output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0113 (10): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0113: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

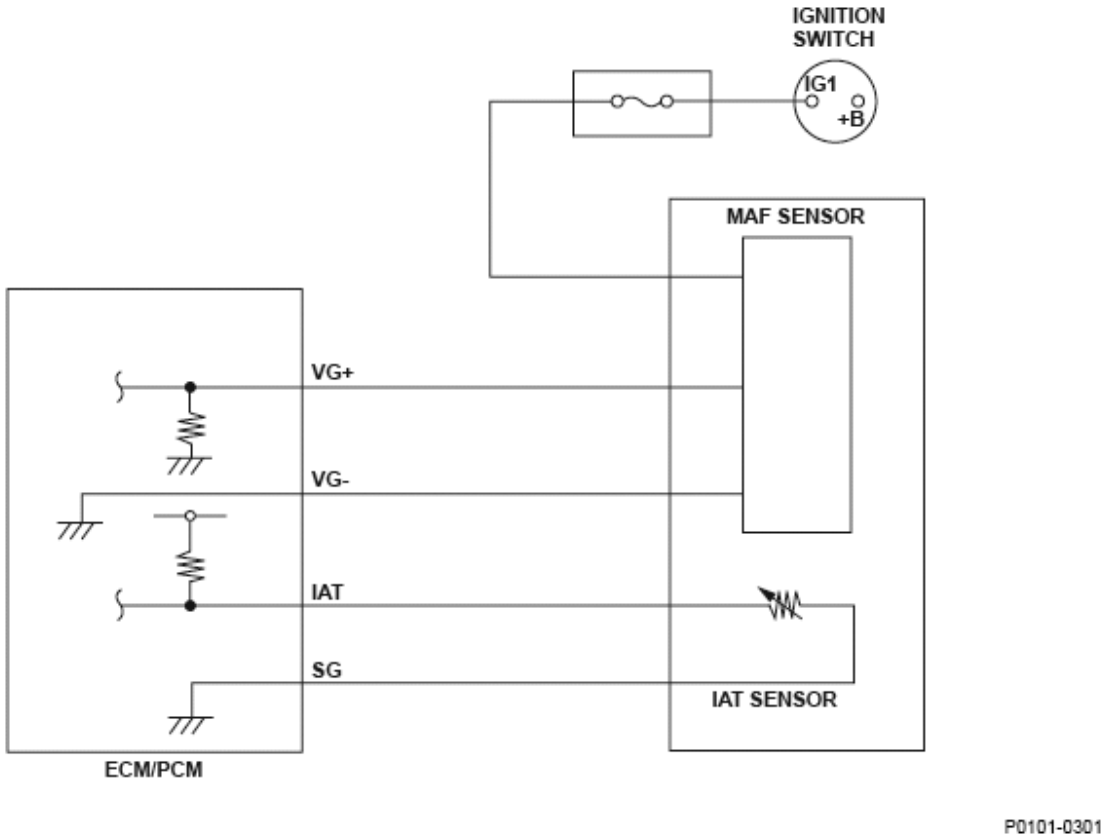


Fig. 51: Mass Air Flow (MAF) Sensor - Circuit Diagram

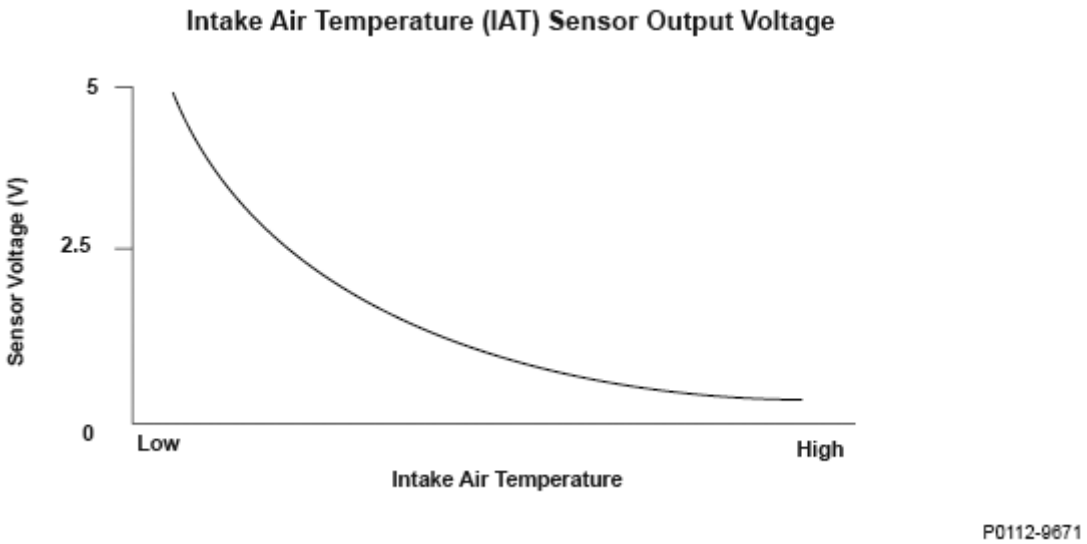


Fig. 52: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance

increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively high, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0112

Malfunction Threshold (K20Z3 Engine)

The IAT sensor output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0113 (10): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0113: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

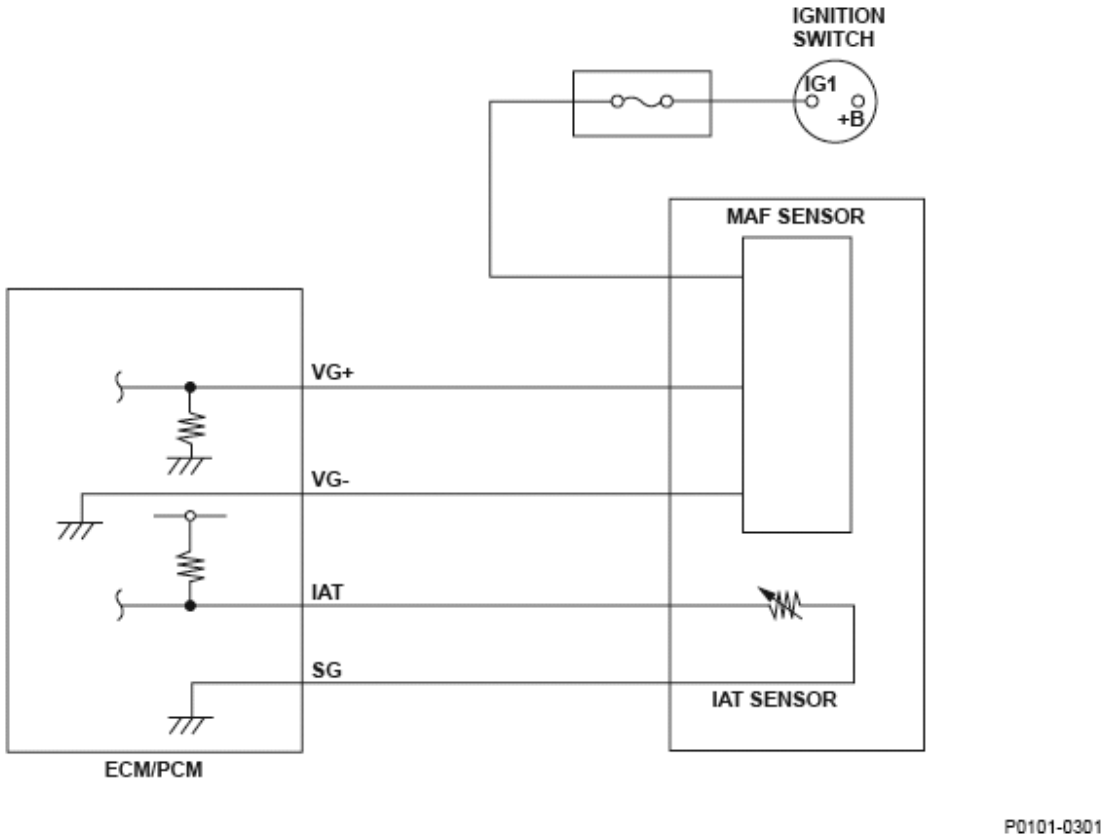


Fig. 53: Mass Air Flow (MAF) Sensor - Circuit Diagram

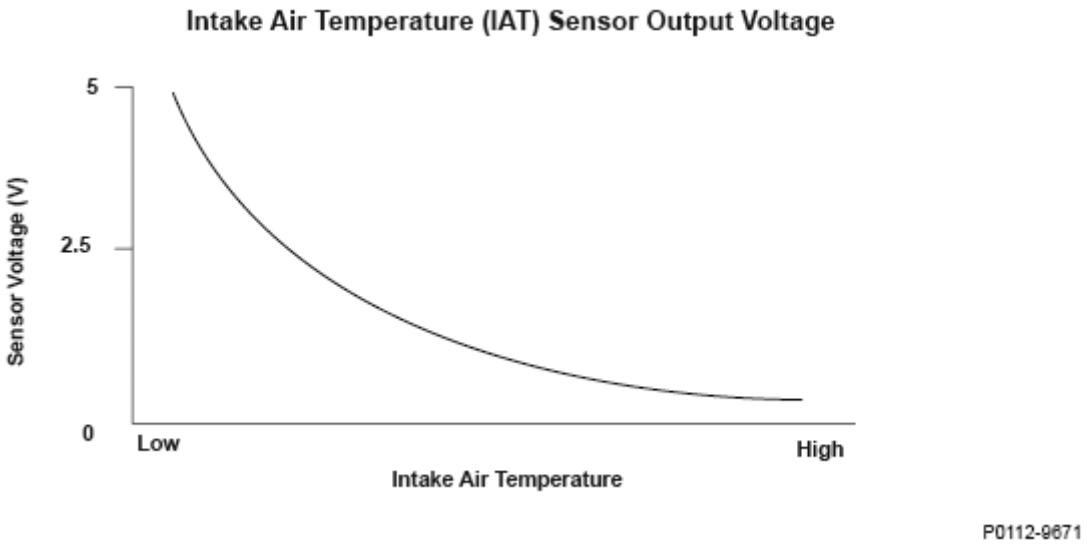


Fig. 54: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance

increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively high, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active	DTCs P0112

Malfunction Threshold (R18A1 Engine)

The IAT sensor output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0113 (10): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0113: INTAKE AIR TEMPERATURE (IAT) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

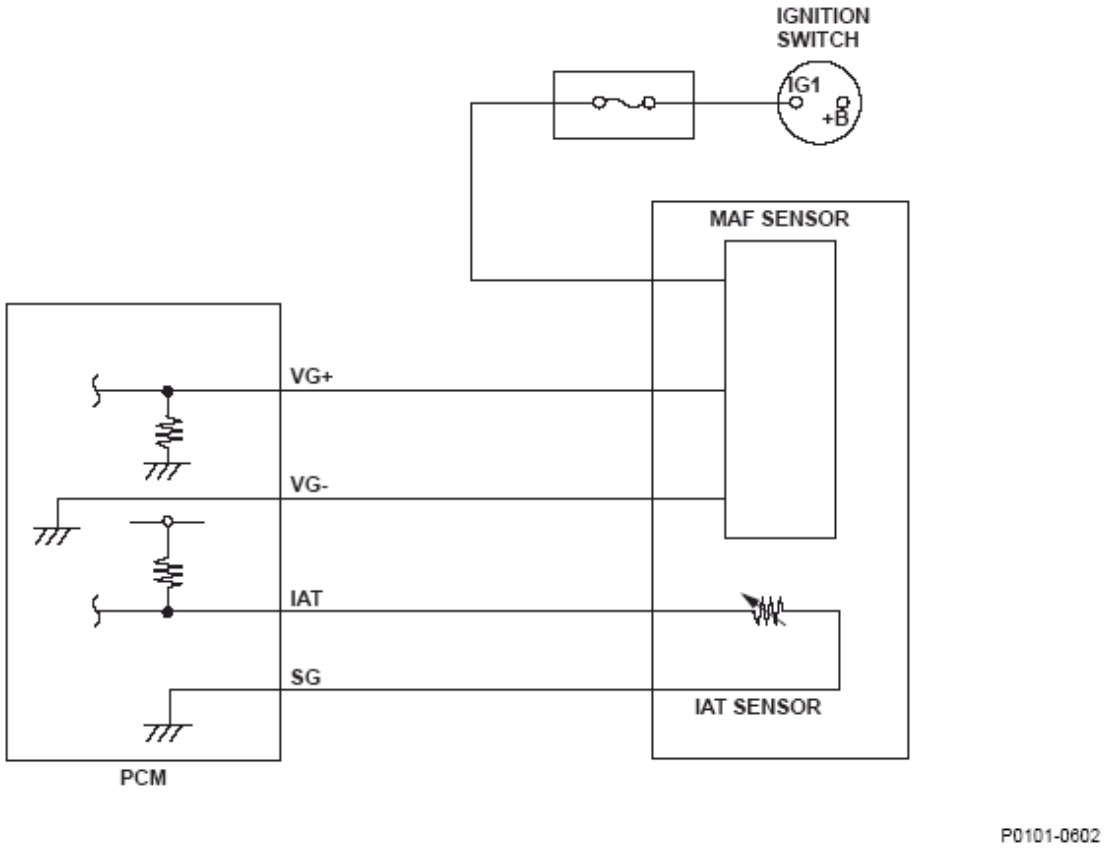


Fig. 55: Mass Air Flow Sensor - Circuit Diagram

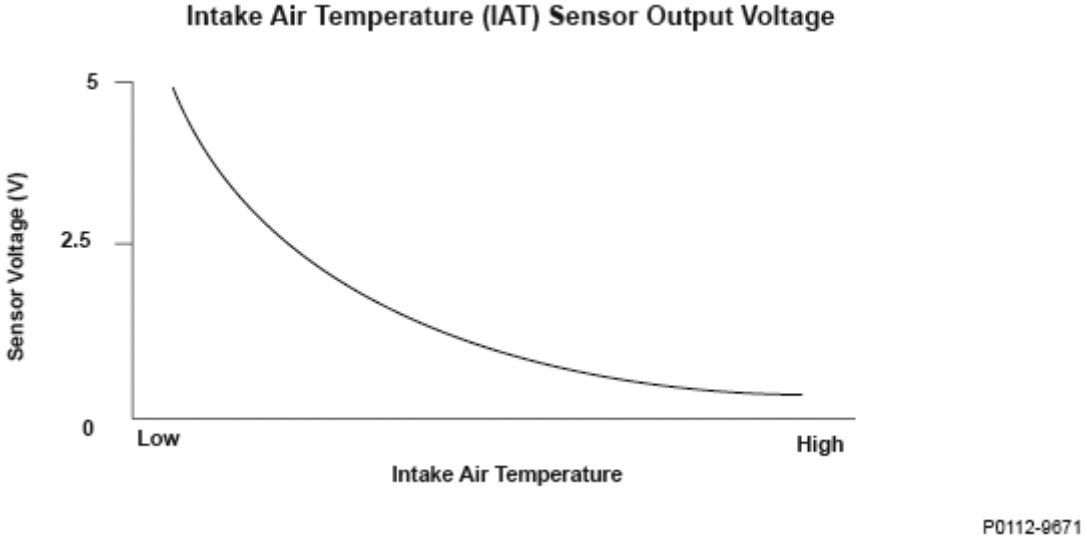


Fig. 56: Intake Air Temperature (IAT) Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The intake air temperature (IAT) sensor is a thermistor that detects intake air temperature, and it is used for A/F feedback control to compensate for the atmospheric density fluctuations that accompany changes in intake air temperature.

The IAT sensor resistance varies depending on temperature. The output voltage and the sensor resistance increase as the intake air temperature decreases. Conversely, the output voltage and the sensor resistance decrease as the intake air temperature increases. If the IAT sensor output voltage is excessively high, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0112

Malfunction Threshold (R18A4 Engine)

The IAT sensor output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0116 (86): ADVANCED DIAGNOSTICS (M/T)

DTC P0116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM (M/T)

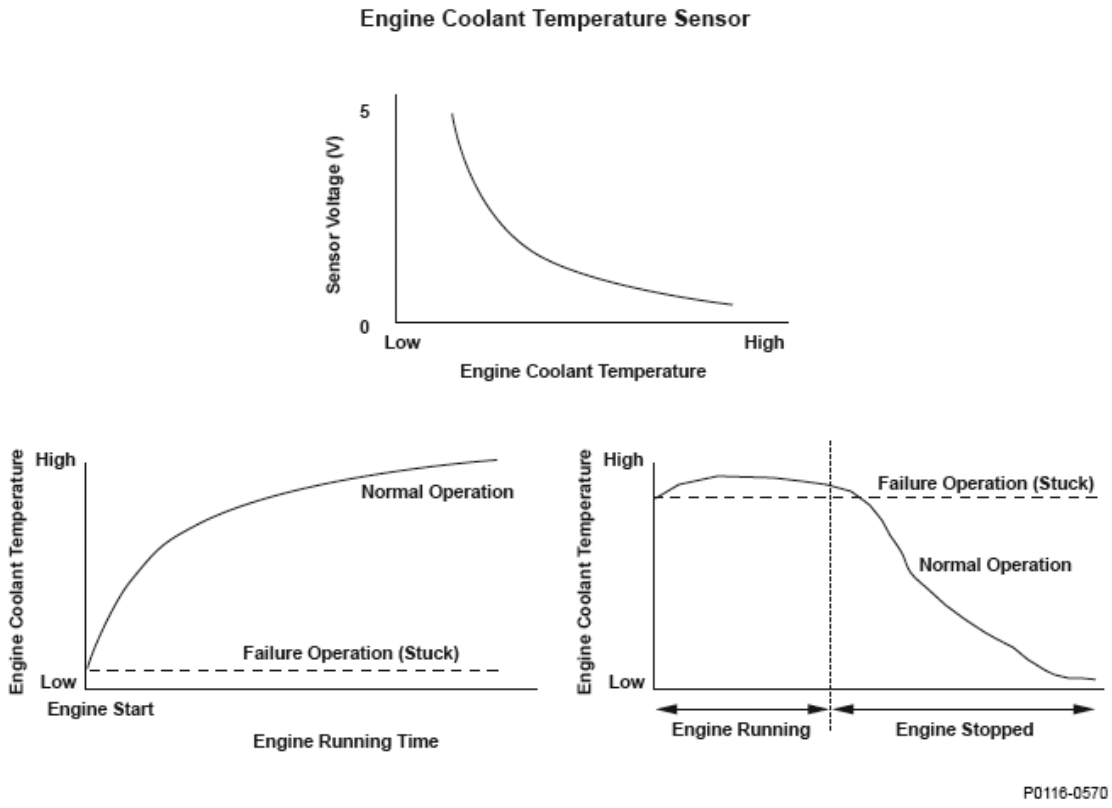


Fig. 57: Engine Coolant Temperature (ECT) Sensor 1 Circuit Range / Performance Problem - Graph

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, ECT sensor 1 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage.

If the ECT sensor 1 output voltage after driving a set time after starting the engine does not reach a set temperature, or when the difference between the ECT sensor 1 output voltage when driving and the output voltage of the ECT sensor 1 after the engine is stopped a set time does not change a certain amount, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 minutes or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Elapsed time after starting the engine	10 seconds	-
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P0506, P0507, P0522, P0523, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2413(1), P2610, P2646, P2647, P2648, P2649	
Others	With a completely cooled engine (one that has been off for at least 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 10 seconds, then started and run again for at least 10 seconds.	
	With a partially cooled engine (one that has been off for less than 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 150(2), 210(1) minutes, then started and run again for at least 10 seconds.	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (M/T)

Malfunction determination 1:

With a completely cooled engine (one that has been off for at least 6 hours):

When the change in coolant temperature after 10 minutes or more of running time is 50°F (10°C) or less, a malfunction is detected.

Malfunction determination 2:

With a partially cooled engine (one that has been off for less than 6 hours):

When the difference between the coolant temperature after 10 minutes or more of running time minus the coolant temperature after the engine has been off for 150*2 , 210*1 minutes and then run for 10 seconds is 50°F (10°C) or less, a malfunction is detected.

Driving Pattern (M/T)

- With a completely cooled engine (one that has been off for at least 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 10 seconds, then restart the engine and let it idle for at least 10 seconds.

- With a partially cooled engine (one that has been off for less than 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 150*2, 210*1 minutes, then restart the engine and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0116 (86): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

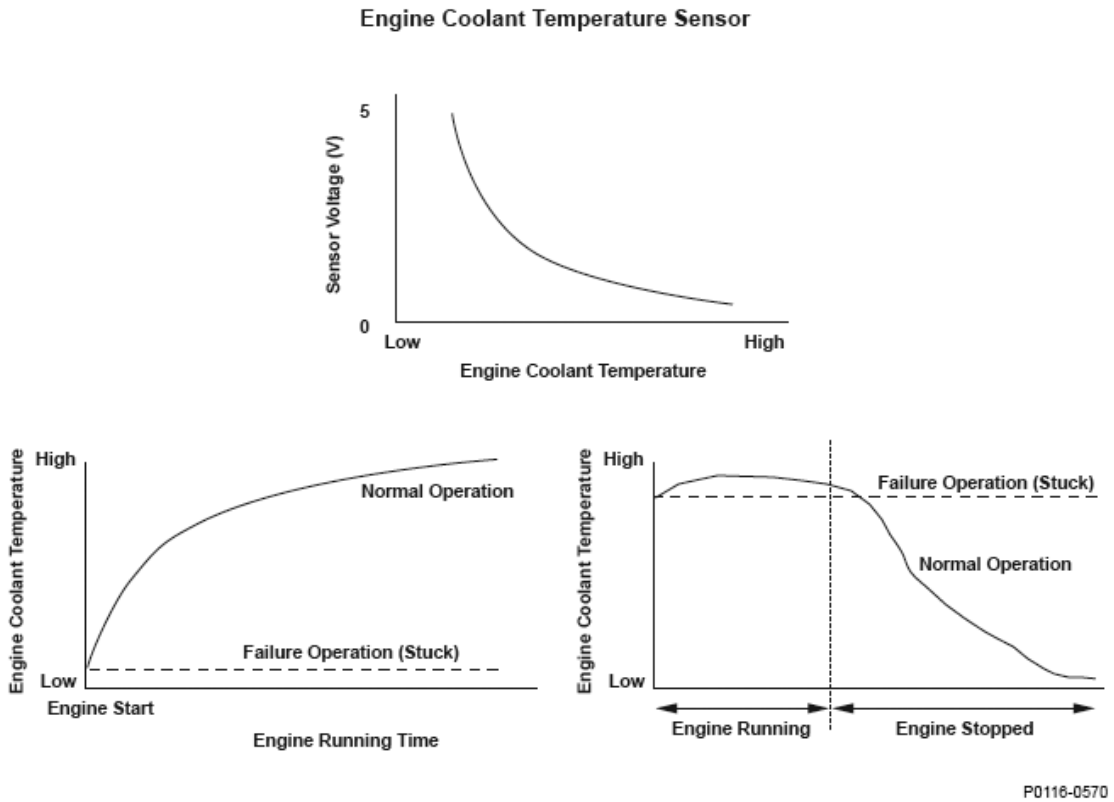


Fig. 58: Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem - Graph

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, ECT sensor 1 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant

warms, ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage.

If the ECT sensor 1 output voltage after driving a set time after starting the engine does not reach a set temperature, or when the difference between the ECT sensor 1 output voltage when driving and the output voltage of the ECT sensor 1 after the engine is stopped a set time does not change a certain amount, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 minutes or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	10 seconds	-
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P0506, P0507, P0522, P0523, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2413(1), P2610, P2646, P2647, P2648, P2649	
Others	With a completely cooled engine (one that has been off for at least 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 10 seconds, then started and run again for at least 10 seconds.	
	With a partially cooled engine (one that has been off for less than 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 150(2), 210(1) minutes, then started and run again for at least 10 seconds.	

(1) R18A1 engine

(2) K20Z3 engine

Malfunction Threshold (R18A1 Engine)

Malfunction determination 1:

With a completely cooled engine (one that has been off for at least 6 hours):

When the change in coolant temperature after 10 minutes or more of running time is 50°F (10°C) or less, a malfunction is detected.

Malfunction determination 2:

With a partially cooled engine (one that has been off for less than 6 hours):

When the difference between the coolant temperature after 10 minutes or more of running time minus the coolant temperature after the engine has been off for 150*2 , 210*1 minutes and then run for 10 seconds is 50°F (10°C) or less, a malfunction is detected.

Driving Pattern (R18A1 Engine)

- With a completely cooled engine (one that has been off for at least 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 10 seconds, then restart the engine and let it idle for at least 10 seconds.

- With a partially cooled engine (one that has been off for less than 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 150*2, 210*1 minutes, then restart the engine and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0116 (86): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

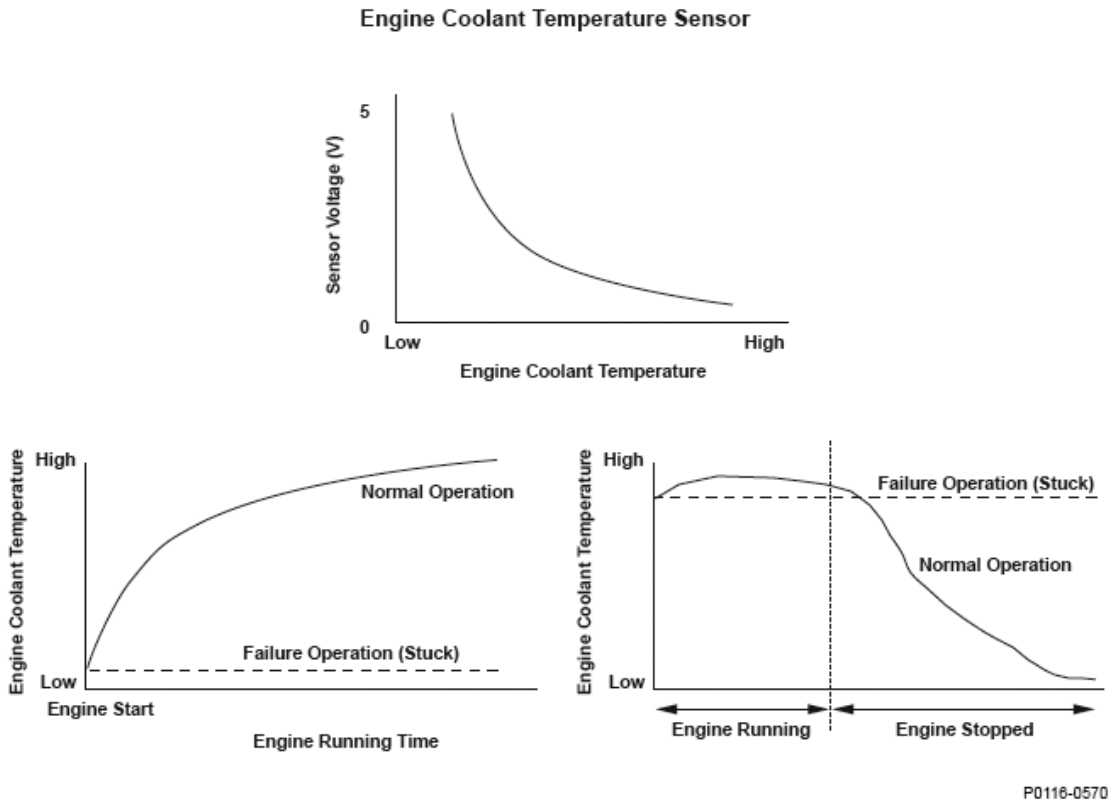


Fig. 59: Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem - Graph

General Description (R18A4 Engine)

The powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, ECT sensor 1 resistance increases, and the PCM detects a high signal voltage. As the engine coolant warms, ECT sensor 1 resistance decreases, and the PCM detects a low signal voltage. If the ECT output voltage after driving a set time after starting the engine does not reach a set temperature, or when the difference between the ECT output voltage when driving and the output voltage of the ECT after the engine is stopped a set time does not change a certain amount, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 minutes or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting	10 seconds	-

the engine		
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0522, P0523, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2610, P2646, P2647, P2648, P2649	
Others	With a completely cooled engine (one that has been off for at least 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 10 seconds, then started and run again for at least 10 seconds.	
	With a partially cooled engine (one that has been off for less than 6 hours): Judgment is made after the engine has been run for at least 10 minutes, turned off for at least 210 minutes, then started and run again for at least 10 seconds.	

Malfunction Threshold (R18A4 Engine)

Malfunction determination 1:

With a completely cooled engine (one that has been off for at least 6 hours):

When the change in coolant temperature after 10 minutes or more of running time is 50°F (10°C) or less, a malfunction is detected.

Malfunction determination 2:

With a partially cooled engine (one that has been off for less than 6 hours):

When the difference between the coolant temperature after 10 minutes or more of running time minus the coolant temperature after the engine has been off for 210 minutes and then run for 10 seconds is 50°F (10° C) or less, a malfunction is detected.

Driving Pattern (R18A4 Engine)

- With a completely cooled engine (one that has been off for at least 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 10 seconds, then restart the engine and let it idle for at least 10 seconds.

- With a partially cooled engine (one that has been off for less than 6 hours).

1. Start the engine, and let it idle for at least 10 minutes.
2. Turn off the ignition for 210 minutes, then restart the engine and let it idle for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0117 (6): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0117: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

Fig. 60: Engine Coolant Temperature Sensor 1 Circuit Low Voltage - Circuit Diagram

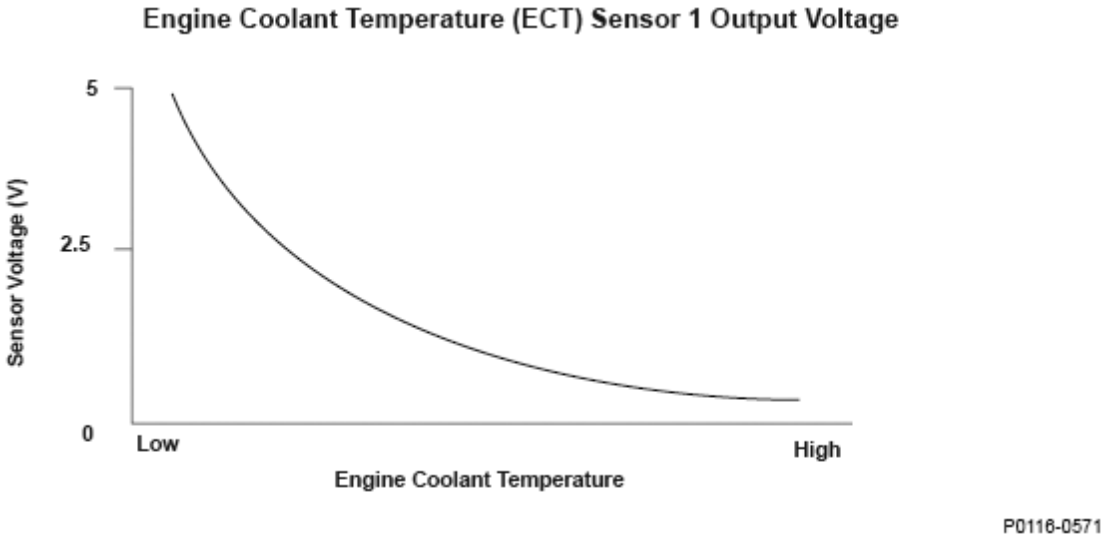


Fig. 61: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (K20Z3 Engine)

The engine coolant temperature (ECT) sensor 1 is used for the air/fuel ratio feedback control, the ignition timing control, the idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine coolant temperature.

As the engine coolant cools, the ECT sensor 1 resistance increases, and the engine control module (ECM)/powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage. If the ECT sensor 1

output voltage is less than a set value when the engine coolant temperature is high, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0118

Malfunction Threshold (K20Z3 Engine)

The output voltage from the ECT sensor 1 is 0.08 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0117 (6): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0117: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

Fig. 62: Engine Coolant Temperature Sensor 1 Circuit Low Voltage - Circuit Diagram

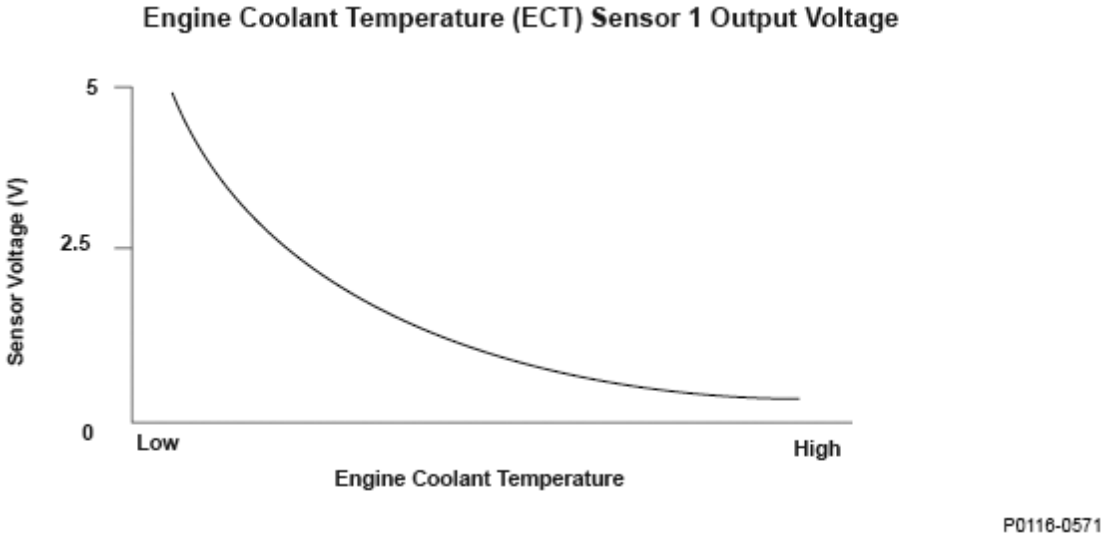


Fig. 63: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (R18A1 Engine)

The engine coolant temperature (ECT) sensor 1 is used for the air/fuel ratio feedback control, the ignition timing control, the idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine coolant temperature. As the engine coolant cools, the ECT sensor 1 resistance increases, and the engine control module (ECM)/powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage. If the ECT sensor 1 output voltage is less than a set value when the engine coolant temperature is high, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0118

Malfunction Threshold (R18A1 Engine)

The output voltage from the ECT sensor 1 is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0117 (6): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0117: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

Fig. 64: Engine Coolant Temperature (ECT) Sensor Circuit Diagram

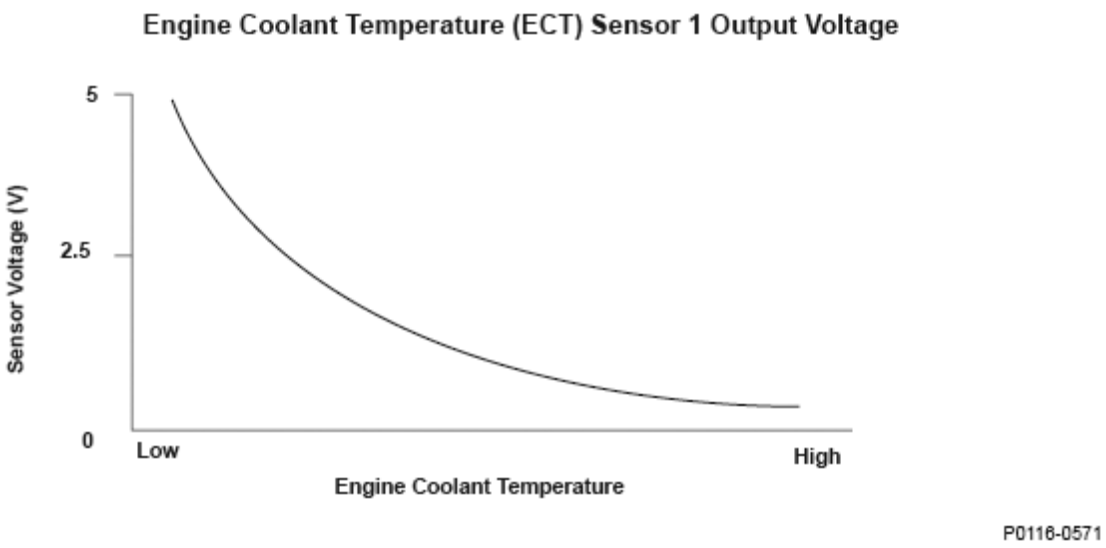


Fig. 65: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (R18A4 Engine)

The engine coolant temperature (ECT) sensor 1 is used for the air/fuel ratio feedback control, ignition timing control, idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine coolant temperature. As the engine coolant cools, the ECT sensor 1 resistance increases, and the powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the PCM detects a low signal voltage. If the ECT sensor 1 output voltage is less than a set value when the engine coolant temperature is high, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0118

Malfunction Threshold (R18A4 Engine)

The ECT sensor 1 output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0118 (6): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0118: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

Fig. 66: Engine Coolant Temperature Sensor 1 Circuit Low Voltage - Circuit Diagram

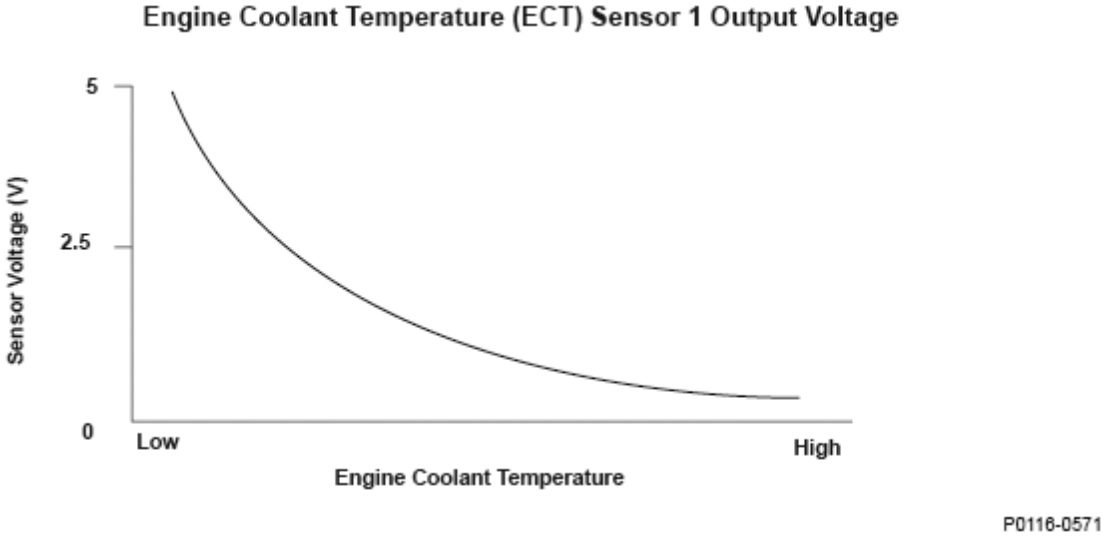


Fig. 67: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (K20Z3 Engine)

The engine coolant temperature (ECT) sensor 1 is used for air/fuel ratio feedback control, ignition timing control, idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine

coolant temperature. As the engine coolant cools, the ECT sensor 1 resistance increases, and the engine control module (ECM)/powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage. If the ECT sensor 1 output voltage is more than a set value when the engine coolant temperature is low, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0117

Malfunction Threshold (K20Z3 Engine)

The output voltage from the ECT sensor 1 is 4.92 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0118 (6): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0118: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

Fig. 68: Engine Coolant Temperature Sensor 1 Circuit Low Voltage - Circuit Diagram

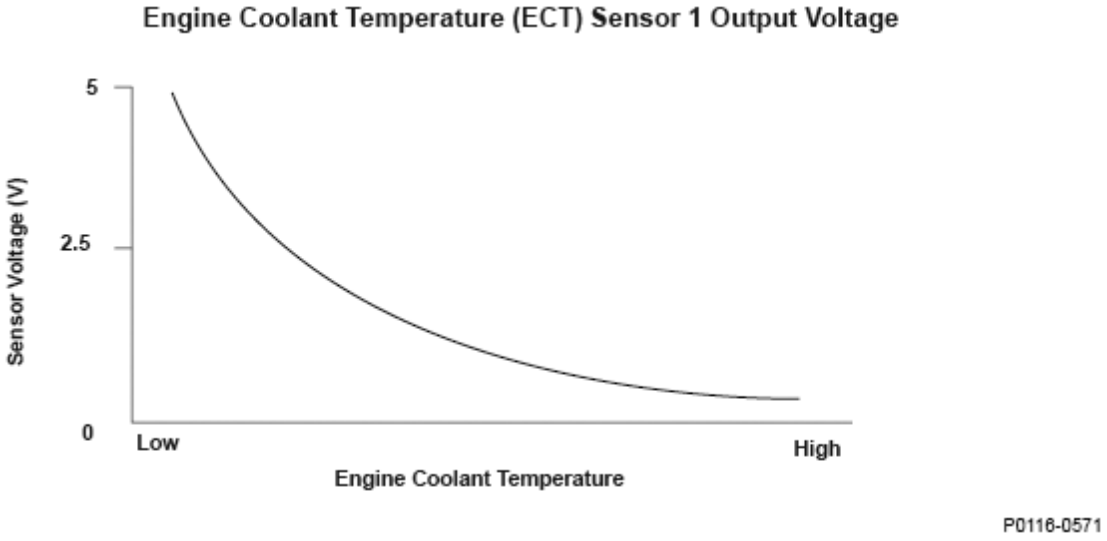


Fig. 69: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (R18A1 Engine)

The engine coolant temperature (ECT) sensor 1 is used for air/fuel ratio feedback control, ignition timing control, idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine coolant temperature. As the engine coolant cools, the ECT sensor 1 resistance increases, and the engine control module (ECM)/powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage. If the ECT sensor 1 output voltage is more than a set value when the engine coolant temperature is low, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0117

Malfunction Threshold (R18A1 Engine)

The output voltage from the ECT sensor 1 is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0118 (6): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0118: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

Fig. 70: Engine Coolant Temperature (ECT) Sensor Circuit Diagram

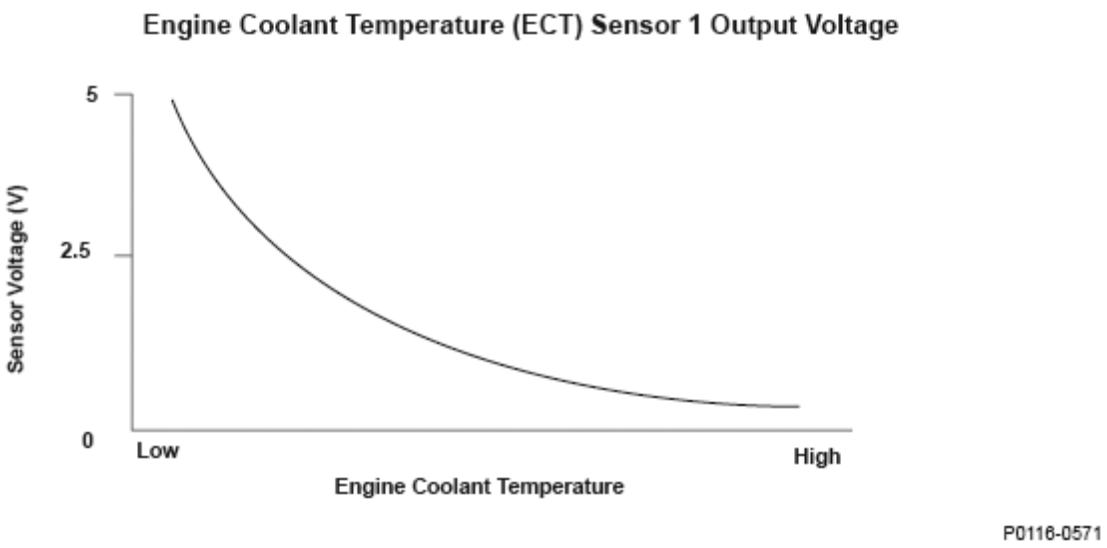


Fig. 71: Engine Coolant Temperature (ECT) Sensor 1 Output Voltage - Graph

General Description (R18A4 Engine)

The engine coolant temperature (ECT) sensor 1 is used for air/fuel ratio feedback control, ignition timing control, idle speed control, and other functions. The ECT sensor 1 resistance varies depending on the engine coolant temperature. As the engine coolant cools, the ECT sensor 1 resistance increases, and the powertrain control module (PCM) detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the PCM detects a low signal voltage. If the ECT sensor 1 output voltage is a set value or more when the engine coolant temperature is low, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active	DTCs P0117

Malfunction Threshold (R18A4 Engine)

The ECT sensor 1 output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0122 (7): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0122: THROTTLE POSITION (TP) SENSOR A CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

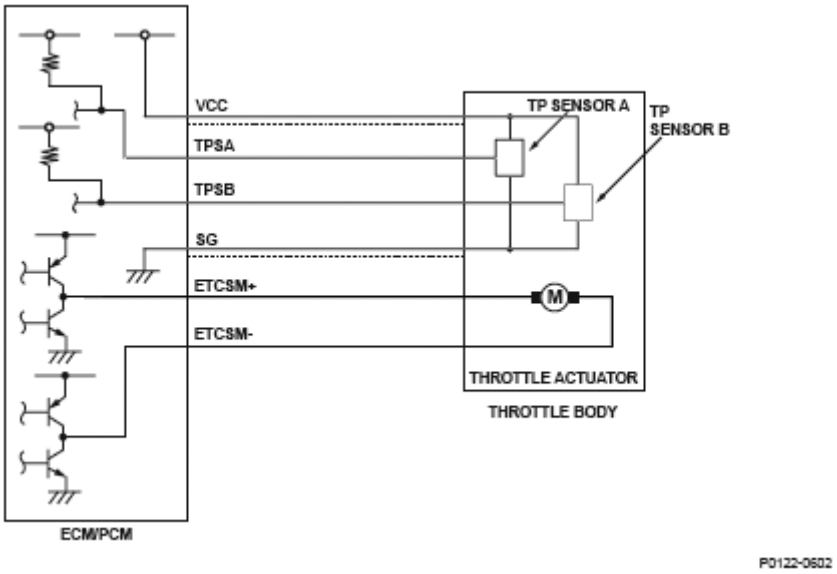


Fig. 72: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor A is less than a fixed value for a set time, the ECM/PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0123, P2101, P2118, P2135, P2176

Malfunction Threshold (K20Z3 Engine)

The TP sensor A output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0122 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0122: THROTTLE POSITION (TP) SENSOR A CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

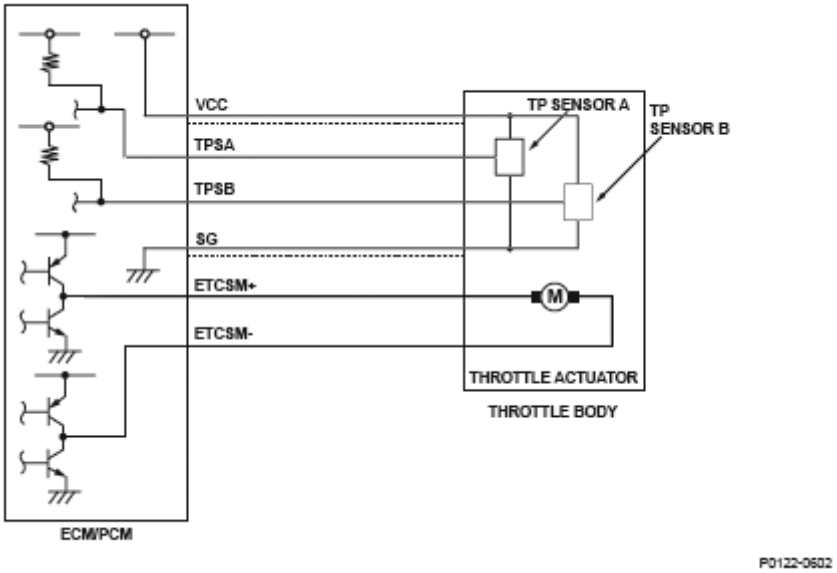


Fig. 73: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor A is less than a fixed value for a set time, the ECM/PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0123, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A1 Engine)

The TP sensor A output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs. The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0122 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0122: THROTTLE POSITION (TP) SENSOR A CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

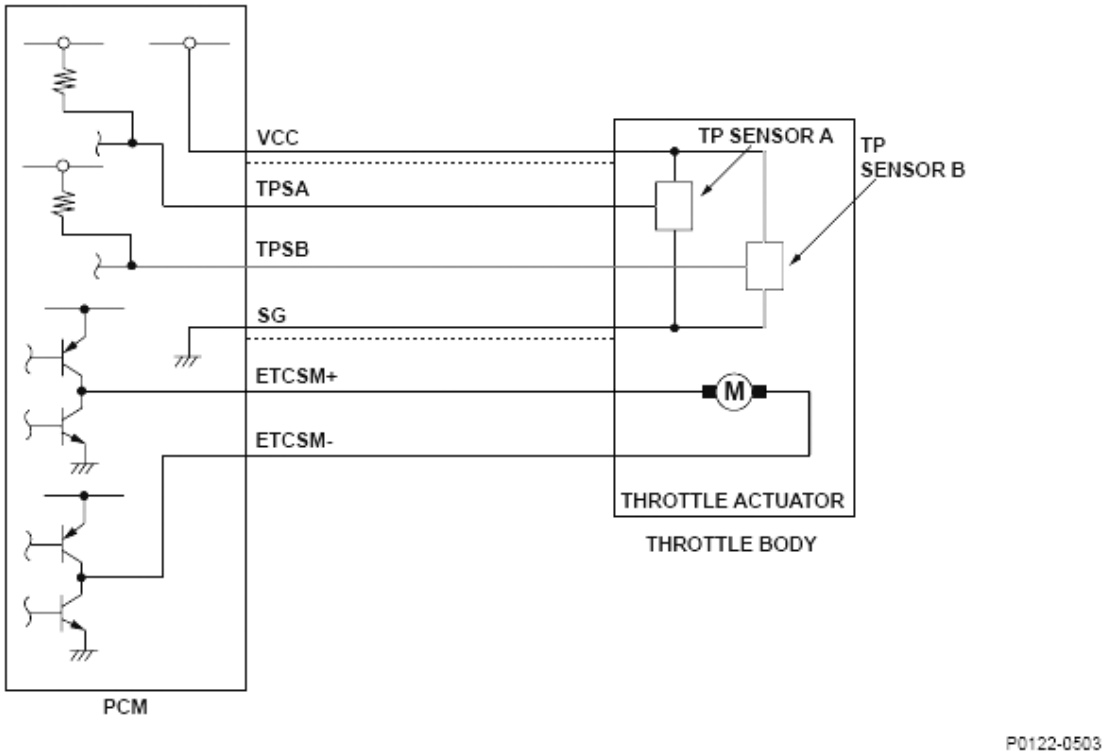


Fig. 74: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the PCM for target position feedback control.

If the signal from TP sensor A is less than a fixed value for a set time, the PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0123, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A4 Engine)

The TP sensor A output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0123 (7): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0123: THROTTLE POSITION (TP) SENSOR A CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

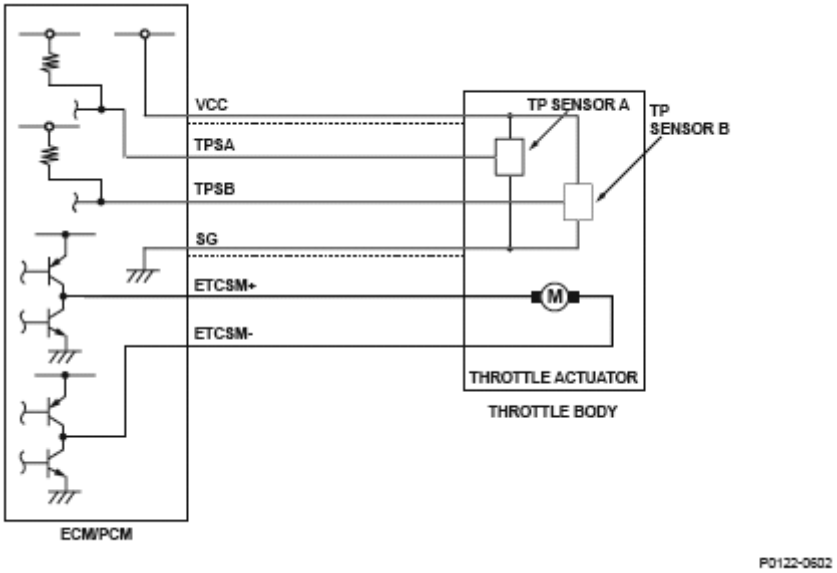


Fig. 75: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor A is more than a fixed value for a set time, the ECM/PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0122, P2101, P2118, P2135, P2176

Malfunction Threshold (K20Z3 Engine)

The TP sensor A output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0123 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0123: THROTTLE POSITION (TP) SENSOR A CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

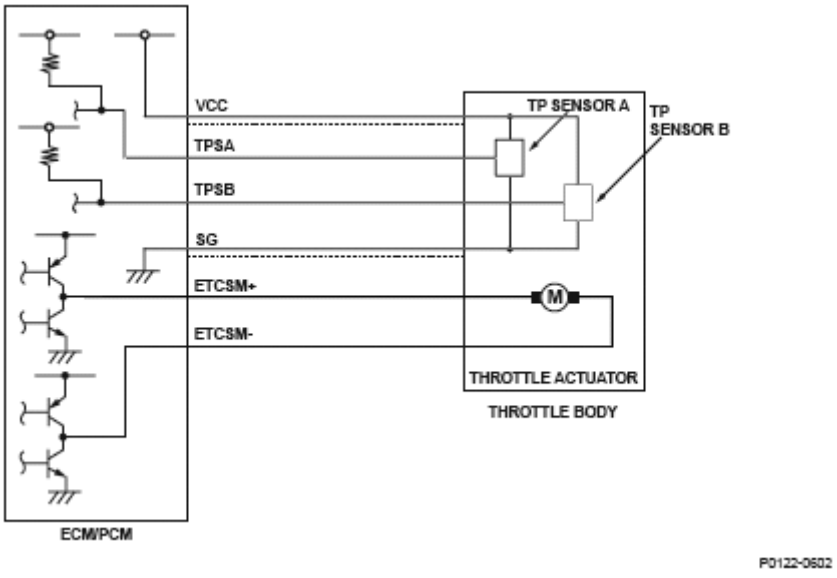


Fig. 76: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor A is more than a fixed value for a set time, the ECM/PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0122, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A1 Engine)

The TP sensor A output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0123 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0123: THROTTLE POSITION (TP) SENSOR A CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

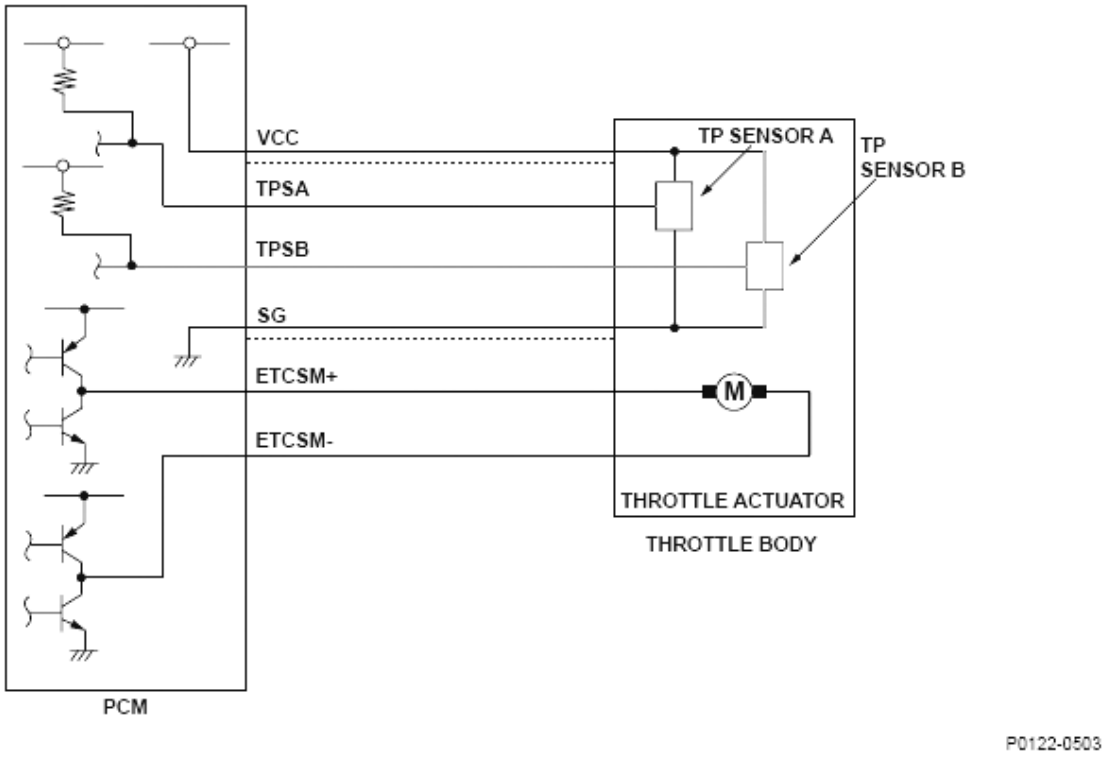


Fig. 77: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

Throttle position (TP) sensor A is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor A is transmitted to the PCM for target position feedback control.

If the signal from TP sensor A is more than a fixed value for a set time, the PCM detects a TP sensor A malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0122, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A4 Engine)

The TP sensor A output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0125 (86): ADVANCED DIAGNOSTICS (M/T)

DTC P0125: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 MALFUNCTION/SLOW RESPONSE (M/T)

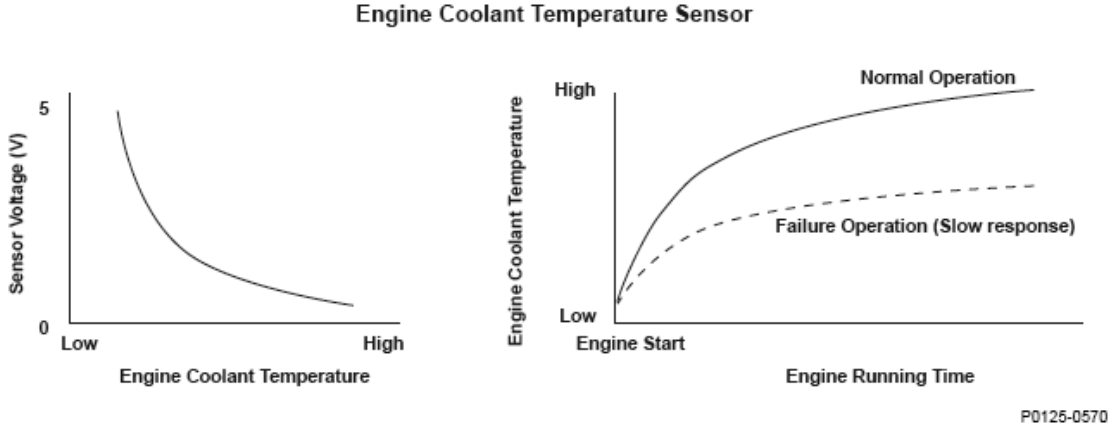


Fig. 78: Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response - Graph

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, the ECT sensor 1 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage.

If the ECT sensor 1 output voltage does not reach a specified temperature at which closed-loop control for stoichiometric air/fuel ratio starts within a set time, depending on the initial coolant temperature after starting the engine, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 minutes or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Initial engine coolant temperature	-	0°F (-18°C)(2)
		10°F (-12°C)(1)
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0506, P0507, P0522, P0523, P1077(1), P1078(1), P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (M/T)

The engine running time before the engine coolant temperature reaches 98 °F (36 °C), based on the initial engine coolant temperatures, is as follows.

MALFUNCTION THRESHOLD

Initial engine coolant temperature	-54°F (-48°C)*2	-35°F (-37°C)*2	0°F (-18°C)*2
	-43°F (-42°C)*1	-24°F (-31°C)*1	10°F (-12°C)*1
Engine running time	300 seconds or more		60 seconds or more

Driving Pattern (M/T)

1. Start the engine at an engine coolant temperature as specified under Enable Conditions.
2. Let the engine idle for at least 20 minutes.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0125 (86): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0125: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 MALFUNCTION/SLOW RESPONSE (R18A1 ENGINE)

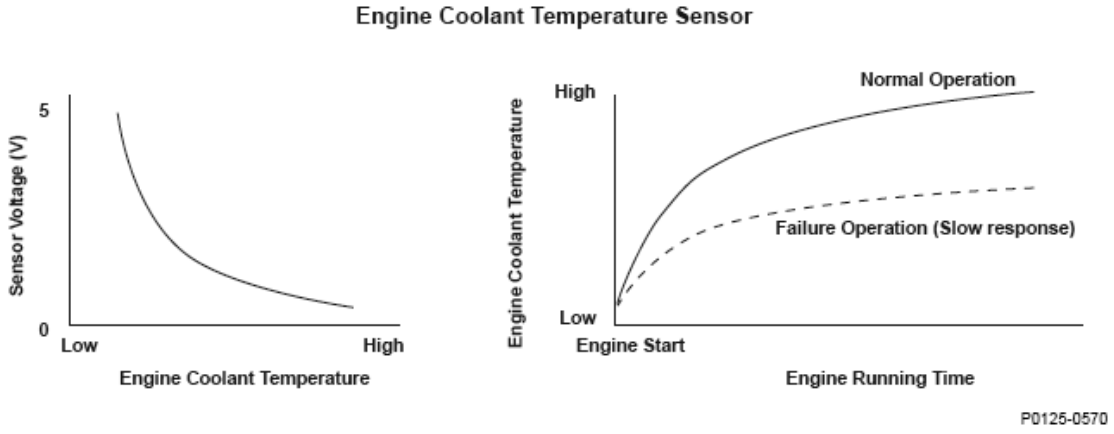


Fig. 79: Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response - Graph

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, the ECT sensor 1 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the ECM/PCM detects a low signal voltage.

If the ECT sensor 1 output voltage does not reach a specified temperature at which closed-loop control for stoichiometric air/fuel ratio starts within a set time, depending on the initial coolant temperature after starting the engine, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None

Duration	20 minutes or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Initial engine coolant temperature	-	0°F (-18°C)(2)
		10°F (-12°C)(1)
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0506, P0507, P0522, P0523, P1077(1), P1078(1), P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

The engine running time before the engine coolant temperature reaches 98°F (36°C), based on the initial engine coolant temperatures, is as follows.

MALFUNCTION THRESHOLD

Initial engine coolant temperature	-54°F (-48°C)*2	-35°F (-37°C)*2	0°F (-18°C)*2
	-43°F (-42°C)*1	-24°F (-31°C)*1	10°F (-12°C)*1
Engine running time	300 seconds or more		60 seconds or more

Driving Pattern (R18A1 Engine)

1. Start the engine at an engine coolant temperature as specified under Enable Conditions.
2. Let the engine idle for at least 20 minutes.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0125 (86): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0125: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 MALFUNCTION/SLOW RESPONSE (R18A4 ENGINE)

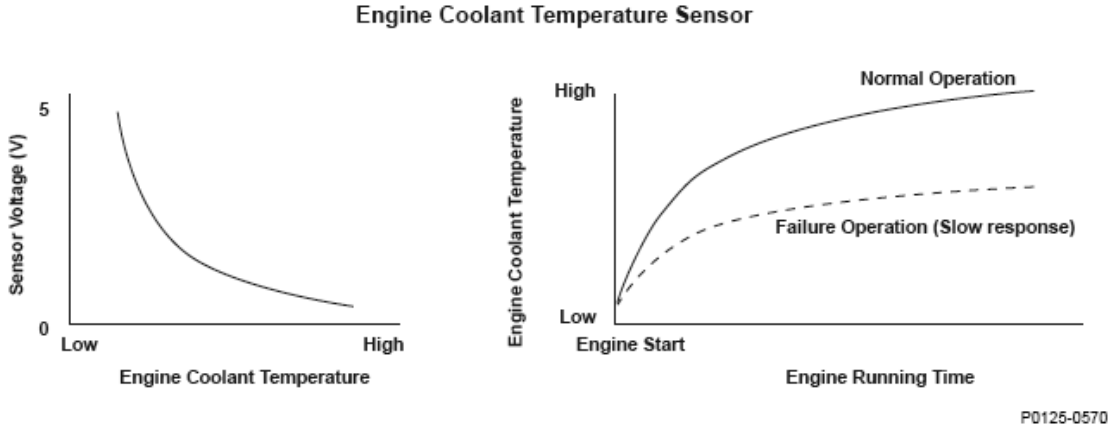


Fig. 80: Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response - Graph

General Description (R18A4 Engine)

The powertrain control module (PCM) supplies voltage to the engine coolant temperature (ECT) signal circuit (about 5 V) through a pull-up resistor. As the engine coolant cools, the ECT sensor 1 resistance increases, and the PCM detects a high signal voltage. As the engine coolant warms, the ECT sensor 1 resistance decreases, and the PCM detects a low signal voltage.

If the ECT sensor 1 output voltage does not reach a specified temperature at which closed-loop control for stoichiometric air/fuel ratio starts within a set time, depending on the initial coolant temperature after starting the engine, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 minutes or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Initial engine coolant temperature	-	10°F (-12°C)
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0506, P0507, P0522, P0523, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2646, P2647	

Malfunction Threshold (R18A4 Engine)

The engine running time before the engine coolant temperature reaches -34°F (-36°C), based on the initial engine coolant temperatures, is as follows.

MALFUNCTION THRESHOLD

Initial engine coolant temperature	-44°F (-42°C)	-25°F (-31°C)	10°F (-12°C)
Engine running time	300 seconds or more		60 seconds or more

Driving Pattern (R18A4 Engine)

1. Start the engine at an engine coolant temperature as specified under Enable Conditions.
2. Let the engine idle for at least 20 minutes.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0128 (87): ADVANCED DIAGNOSTICS (M/T)

DTC P0128: COOLING SYSTEM MALFUNCTION (M/T)

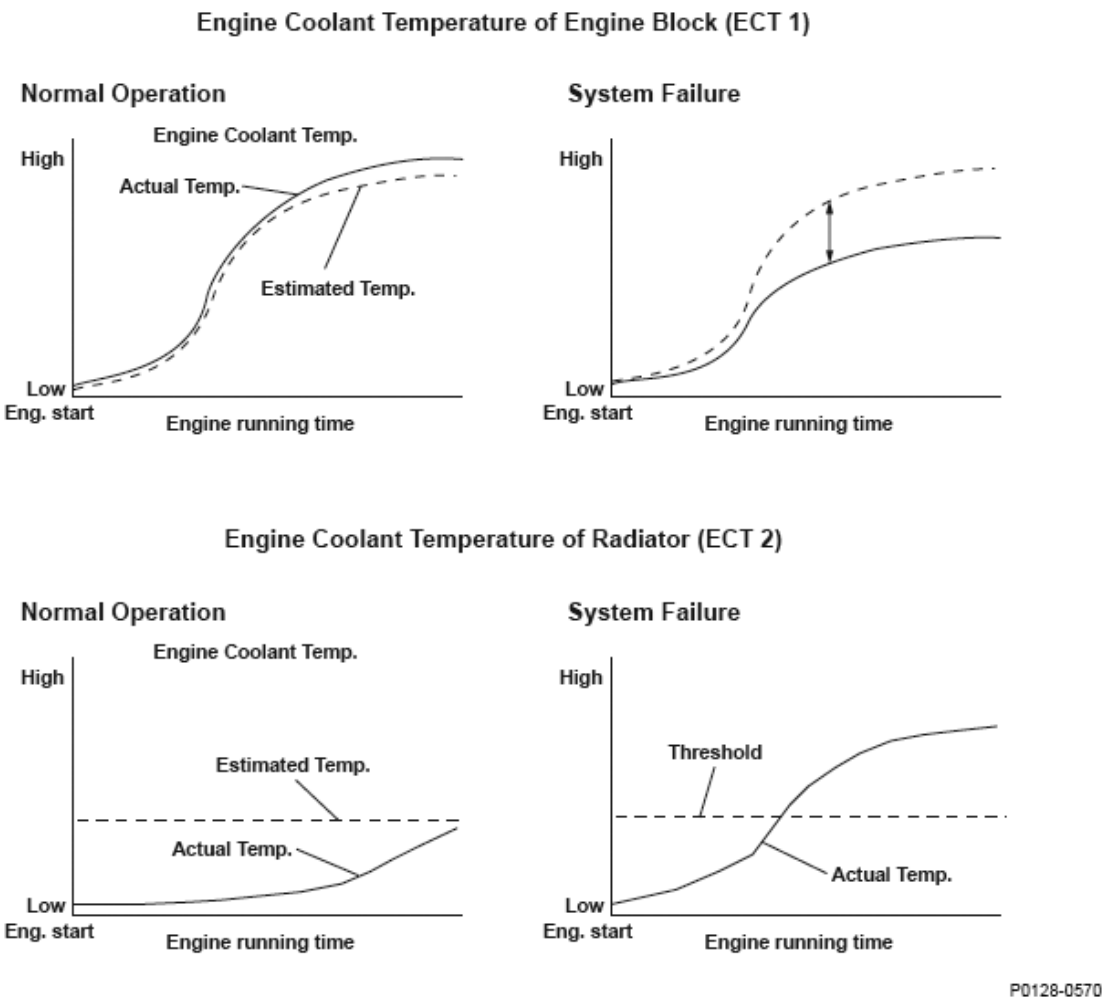


Fig. 81: Cooling System Malfunction - Graph

General Description (M/T)

The thermostat is closed when the engine coolant temperature is low, and it stops the circulation of engine coolant to speed engine warm up. When the engine coolant temperature increases, the thermostat opens and circulates engine coolant to control its temperature. When the engine coolant temperature decreases, the opening area of the thermostat is reduced to regulate the engine coolant temperature. If the thermostat sticks open, engine warm up is delayed, and exhaust emissions are adversely affected. The engine control module (ECM)/powertrain control module (PCM) measures the rise in the coolant temperature after the engine starts at the engine block and at the radiator, and it estimates the characteristics of the engine coolant temperature by calculations based on those two temperatures and the driving conditions. When ECT 2 immediately increases from the starting value, it is defined as the thermostat stuck open. When ECT 2 does not increase to the specified value, it is defined as a thermostat malfunction.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	Depending on driving conditions
DTC Type	Two drive cycles, MIL ON

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
Initial engine coolant temperature (ECT 1)	20°F (-6°C)	123°F (50°C)
Initial engine coolant temperature (ECT 2)	20°F (-6°C)	-
Initial intake air temperature	20°F (-6°C)	-
The difference between initial intake air temperature and current intake air temperature	-	3°F (2°C)(1)
		7°F (4°C)(2)
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0134, P0135, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400(3), P0401(3), P0404(3), P0443, P0496, P0497, P0506, P0507, P1077(3), P1078(3), P1116, P1128, P1129, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2183, P2184, P2185, P2195, P2227, P2228, P2229, P2238, P2252, P2413(3), P2610, P2646, P2647, P2648, P2649	

(1) Intake air temperature decrease judgement when there is no driving record of 25 mph (40 km/h) in this drive cycle.

(2) Intake air temperature decrease judgement when there is a driving record of 25 mph (40 km/h) in this drive cycle.

(3) R18A1 engine

Malfunction Threshold (M/T)

Malfunction determination 1:

If the difference between the current measured coolant temperature at the radiator (ECT 2) and the initial coolant temperature at the radiator (ECT 2) is at least 41°F (5°C)*2 , 46°F (8°C)*3 when the calculated coolant temperature at the engine (ECT 1) reaches 164°F (74°C), a malfunction is detected (thermostat stuck open); or if the coolant temperature at the radiator (ECT 2) only reaches 72°F (22°C), a malfunction is detected (thermostat malfunction).

Malfunction determination 2:

When the calculated engine coolant temperature (ECT 1) reaches 158°F (70°C) before the measured engine coolant temperature (ECT 1) reaches 158°F (70°C), a malfunction is detected.

*2: A/T model

*3: M/T model

Driving Pattern (M/T)

1. Start the engine under the conditions specified under Enable Conditions.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 10 minutes.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0128 (87): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0128: COOLING SYSTEM MALFUNCTION (R18A1 ENGINE)

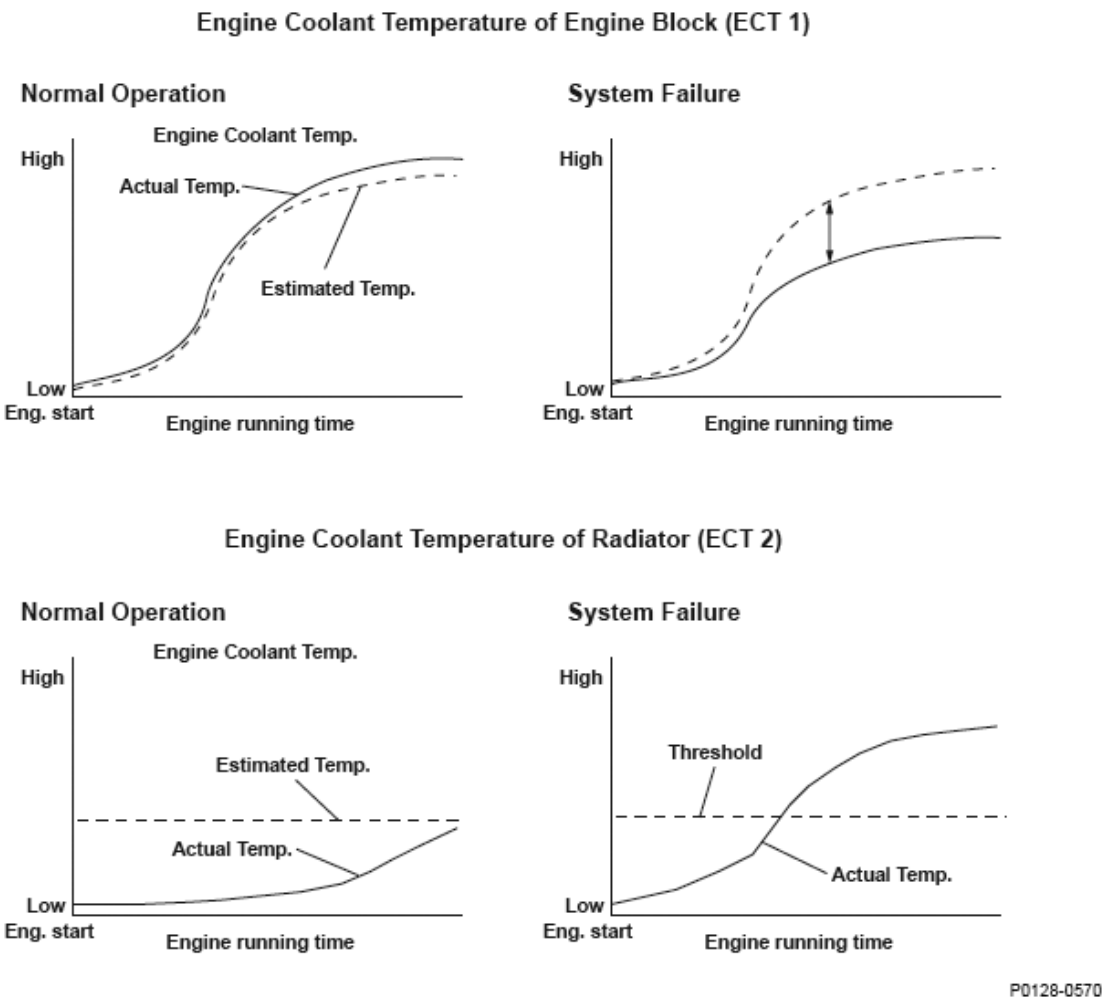


Fig. 82: Cooling System Malfunction - Graph

General Description (R18A1 Engine)

The thermostat is closed when the engine coolant temperature is low, and it stops the circulation of engine coolant to speed engine warm up. When the engine coolant temperature increases, the thermostat opens and circulates engine coolant to control its temperature. When the engine coolant temperature decreases, the opening area of the thermostat is reduced to regulate the engine coolant temperature. If the thermostat sticks open, engine warm up is delayed, and exhaust emissions are adversely affected. The engine control module (ECM)/powertrain control module (PCM) measures the rise in the coolant temperature after the engine starts at the engine block and at the radiator, and it estimates the characteristics of the engine coolant temperature by calculations based on those two temperatures and the driving conditions. When ECT 2 immediately increases from the starting value, it is defined as the thermostat stuck open. When ECT 2 does not increase to the specified value, it is defined as a thermostat malfunction.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution Once	per driving cycle
Sequence	None
Duration	Depending on driving conditions
DTC Type	Two drive cycles, MIL ON

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
Initial engine coolant temperature (ECT 1)	20°F (-6°C)	123°F (50°C)
Initial engine coolant temperature (ECT 2)	20°F (-6°C)	-
Initial intake air temperature	20°F (-6°C)	-
The difference between initial intake air temperature and current intake air temperature	-	3°F (2°C)(1)
		7°F (4°C)(2)
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0134, P0135, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400(3), P0401(3), P0404(3), P0443, P0496, P0497, P0506, P0507, P1077(3), P1078(3), P1116, P1128, P1129, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2183, P2184, P2185, P2195, P2227, P2228, P2229, P2238, P2252, P2413(3), P2610, P2646, P2647, P2648, P2649	

(1) Intake air temperature decrease judgement when there is no driving record of 25 mph (40 km/h) in this drive cycle.

(2) Intake air temperature decrease judgement when there is a driving record of 25 mph (40 km/h) in this drive cycle.

(3) R18A1 engine

Malfunction Threshold (R18A1 Engine)

Malfunction determination 1:

If the difference between the current measured coolant temperature at the radiator (ECT 2) and the initial coolant temperature at the radiator (ECT 2) is at least 41°F (5°C)*2 , 46°F (8°C)*3 when the calculated coolant temperature at the engine (ECT 1) reaches 164°F (74°C), a malfunction is detected (thermostat stuck open); or if the coolant temperature at the radiator (ECT 2) only reaches 72°F (22°C), a malfunction is detected (thermostat malfunction).

Malfunction determination 2:

When the calculated engine coolant temperature (ECT 1) reaches 158°F (70°C) before the measured engine coolant temperature (ECT 1) reaches 158°F (70°C), a malfunction is detected.

*2: A/T model

*3: M/T model

Driving Pattern (R18A1 Engine)

1. Start the engine under the conditions specified under Enable Conditions.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 10 minutes.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0128 (87): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0128: COOLING SYSTEM MALFUNCTION (R18A4 ENGINE)

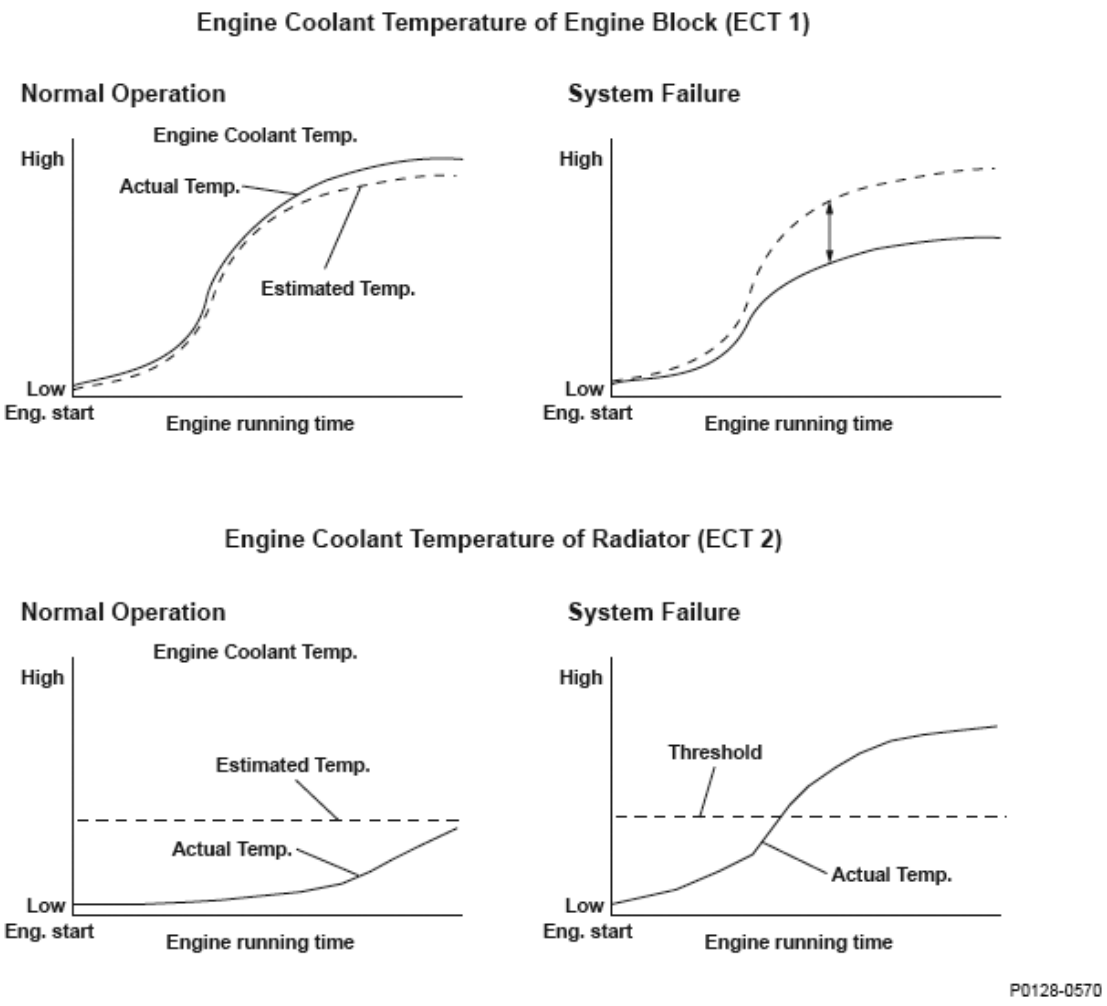


Fig. 83: Cooling System Malfunction - Graph

General Description (R18A4 Engine)

The thermostat is closed when the engine coolant temperature is low, and it stops the circulation of engine coolant to speed engine warm up. When the engine coolant temperature increases, the thermostat opens and circulates engine coolant to control its temperature. When the engine coolant temperature decreases, the opening area of the thermostat is reduced to regulate the engine coolant temperature. If the thermostat sticks open, engine warm up is delayed, and exhaust emissions are adversely affected. The powertrain control module (PCM) measures the rise in the coolant temperature after the engine starts at the engine block and at the radiator, and it estimates the characteristics of the engine coolant temperature by calculations based on those two temperatures and the driving conditions. When ECT 2 immediately increases from the starting value, it is defined as the thermostat stuck open. When ECT 2 does not increase to the specified value, it is defined as a thermostat malfunction.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	Depending on driving conditions
DTC Type	Two drive cycles, MIL ON

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
Initial engine coolant temperature (ECT 1)	20°F (-6°C)	123°F (50°C)
Initial engine coolant temperature (ECT 2)	20°F (-6°C)	-
Initial intake air temperature	20°F (-6°C)	-
The difference between initial intake air temperature and current intake air temperature	-	3°F (2°C)(1)
		7°F (4°C)(2)
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0134, P0135, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0506, P0507, P1077, P1078, P1109, P1116, P1128, P1129, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2183, P2184, P2185, P2195, P2227, P2228, P2229, P2238, P2252, P2610, P2646, P2647, P2648, P2649	

(1) Intake air temperature decrease judgement when there is no driving record of 25 mph (40 km/h) in this drive cycle.

(2) Intake air temperature decrease judgement when there is a driving record of 25 mph (40 km/h) in this drive cycle.

Malfunction Threshold (R18A4 Engine)

Malfunction determination 1:

If the difference between the current measured coolant temperature at the radiator (ECT 2) and the initial coolant temperature at the radiator (ECT 2) is at least 44°F (7°C) when the calculated coolant temperature at the engine (ECT 1) reaches 163°F (73°C), a malfunction is detected (thermostat stuck open); or if the coolant temperature at the radiator (ECT 2) only reaches 71°F (22°C), a malfunction is detected (thermostat malfunction).

Malfunction determination 2:

When the calculated engine coolant temperature (ECT 1) reaches 158°F (70°C) before the measured engine coolant temperature (ECT 1) reaches 158°F (70°C), a malfunction is detected.

Driving Pattern (R18A4 Engine)

1. Start the engine under the conditions specified under Enable Conditions.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 10 minutes.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0133 (61): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0133: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE (K20Z3)

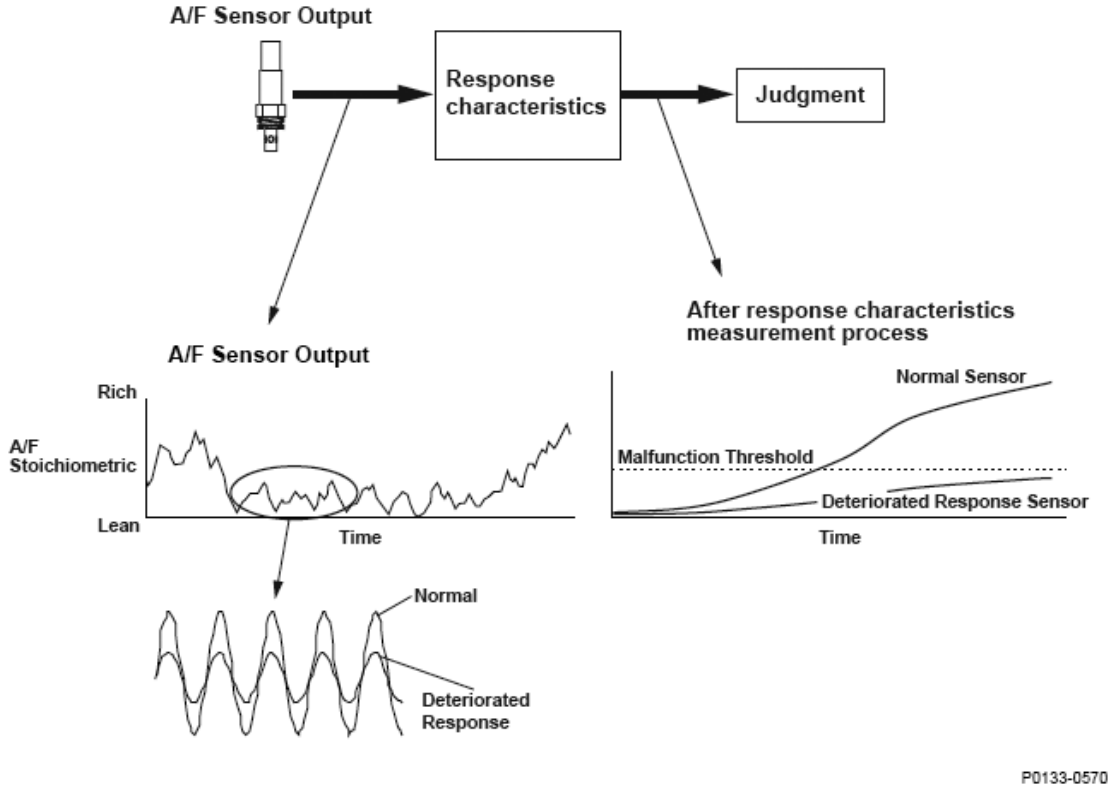


Fig. 84: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Slow Response - Graph

General Description (K20Z3 Engine)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The engine control module (ECM) computes the air/fuel ratio from the A/F sensor output voltage and uses fuel feedback control to improve exhaust emissions. The ECM measures the response characteristics against the A/F sensor output, and if the average inversion cycle time is less than the specified value, it detects a deteriorated response and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	8 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed		1,500 rpm	3,300 rpm
MAP value	1,500 rpm	54 kPa (15.8 in.Hg, 400 mmHg)	79 kPa (23.6 in.Hg, 600 mmHg)
	3,000 rpm	27 kPa (7.9 in.Hg, 200 mmHg)	
Vehicle speed		33 mph (52 km/h)	-
Fuel trim		0.69	1.47
Fuel feedback		Closed loop at stoichiometric	
Monitoring priority		P0456, P0457, P0497	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other		Without excessive load change	

Malfunction Threshold (K20Z3 Engine)

The average of up to 37 periods of the A/F sensor inversion cycle is at least 8 seconds.

Driving Pattern (K20Z3 Engine)

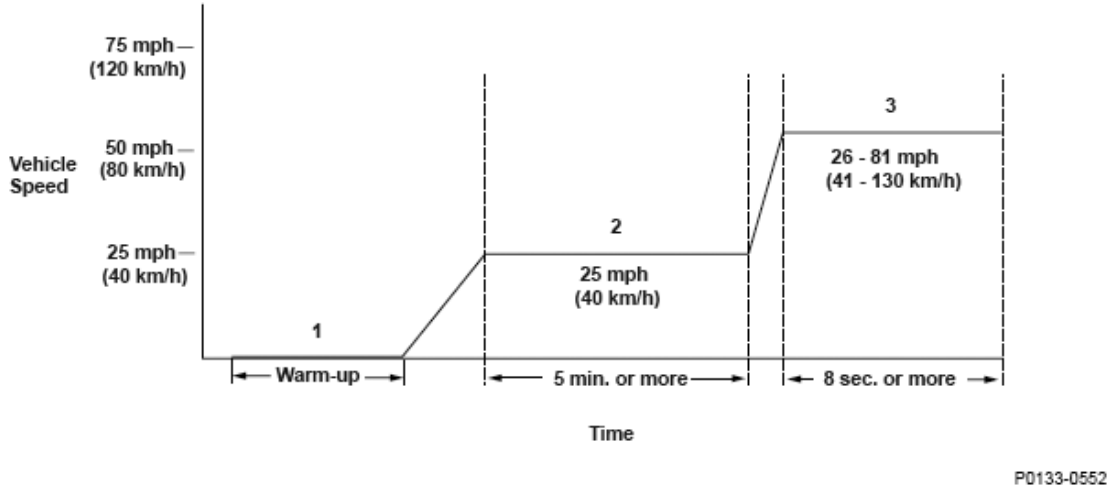


Fig. 85: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed up to 25 mph (40 km/h), for at least 5 minutes.
3. Then, drive immediately at a steady speed between 26 - 81 mph (41 - 130 km/h) for at least 8 seconds.

- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0133 (61): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0133: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE (R18A1)

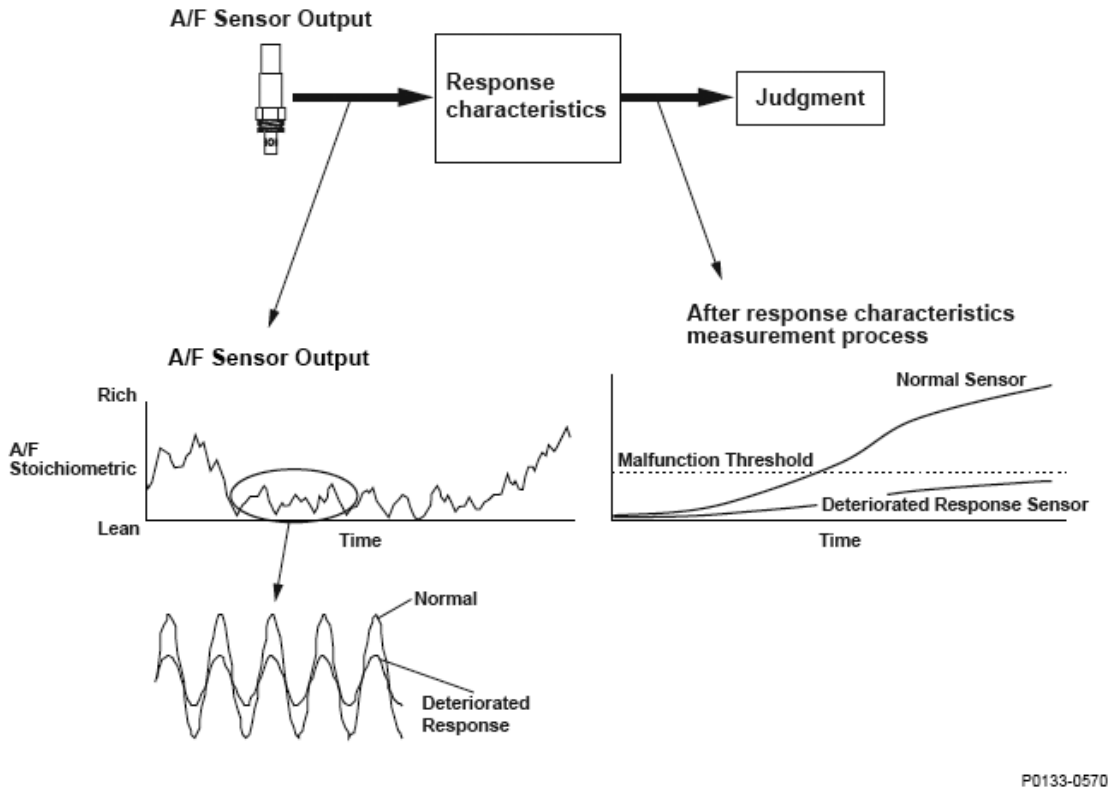


Fig. 86: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Slow Response - Graph

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The engine control module (ECM)/powertrain control module (PCM) computes the air/fuel ratio from the A/F sensor output voltage and uses fuel feedback control to improve exhaust emissions. The ECM/PCM measures the response characteristics against the A/F sensor output, and if the average inversion cycle time is less than the specified value, it detects a deteriorated response and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,400 rpm	3,300 rpm

MAP value	1,400 rpm	47 kPa (13.8 in.Hg, 350 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)(1) 93 kPa (27.5 in.Hg, 700 mmHg)(2)
		67 kPa (19.7 in.Hg, 500 mmHg)(2)	
	3,000 rpm	34 kPa (9.9 in.Hg, 250 mmHg)(1)	
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		33 mph (52 km/h)	-
Fuel trim		0.73	1.47
Fuel feedback		Closed loop at stoichiometric	
Monitoring priority		P0456, P0457, P0497	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2413, P2646, P2647, P2648, P2649, P2A00	
Other		Without excessive load change	
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF			

Malfunction Threshold (R18A1 Engine)

The average of up to 37 periods of the A/F sensor inversion cycle is at least 7 seconds.

Driving Pattern (R18A1 Engine)

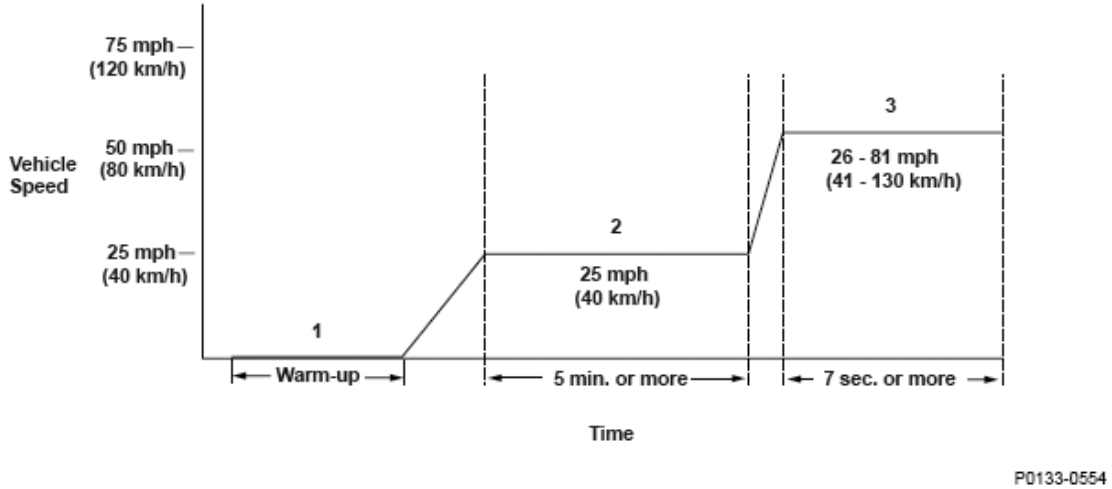


Fig. 87: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the

radiator fan comes on.
2. Drive the vehicle at a steady speed up to 25 mph (40 km/h), for at least 5 minutes.
3. Then, drive immediately at a steady speed between 26 - 81 mph (41 - 130 km/h) for at least 7 seconds.

- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0133 (61): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0133: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) RESPONSE MALFUNCTION/ SLOW RESPONSE (R18A4 ENGINE)

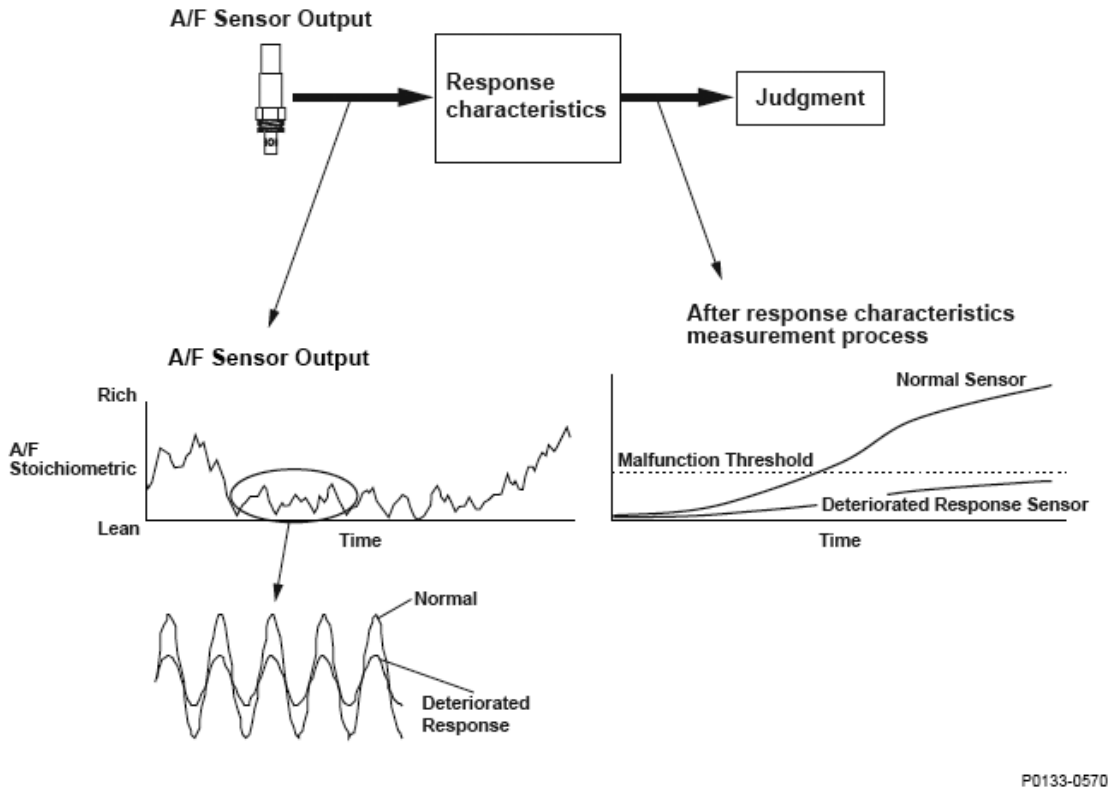


Fig. 88: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Slow Response - Graph

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The powertrain control module (PCM) computes the air/fuel ratio from the A/F sensor output voltage and uses fuel feedback control to improve exhaust emissions. The PCM measures the response characteristics against the A/F sensor output, and if the average inversion cycle time is less than the specified value, it detects a deteriorated response and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	4.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,500 rpm	3,300 rpm

MAP value	1,500 rpm	47 kPa (13.8 in.Hg, 350 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)(1) 93 kPa (27.5 in.Hg, 700 mmHg)(2)
		67 kPa (19.7 in.Hg, 500 mmHg)(2)	
	3,000 rpm	34 kPa (9.9 in.Hg, 250 mmHg)(1)	
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		33 mph (52 km/h)	-
Fuel trim		0.73	1.47
Fuel feedback		Closed loop at stoichiometric	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other		Without excessive load change	

(1) Rocker arm oil control solenoid: ON

(2) Rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A4 Engine)

The average of 26 periods or less of the A/F sensor inversion cycle is at least 4.5 seconds.

Driving Pattern (R18A4 Engine)

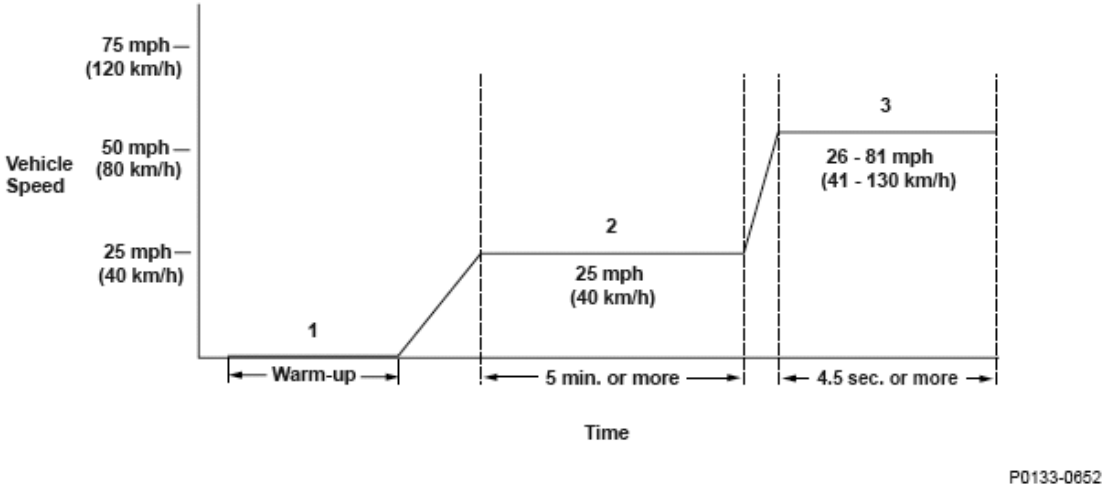


Fig. 89: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.

2. Drive the vehicle at a steady speed up to 25 mph (40 km/h), for at least 5 minutes.
3. Then, drive immediately at a steady speed between 26 - 81 mph (41 - 130 km/h) for at least 4.5 seconds.

- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0134 (41): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0134: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION (K20Z3 ENGINE)

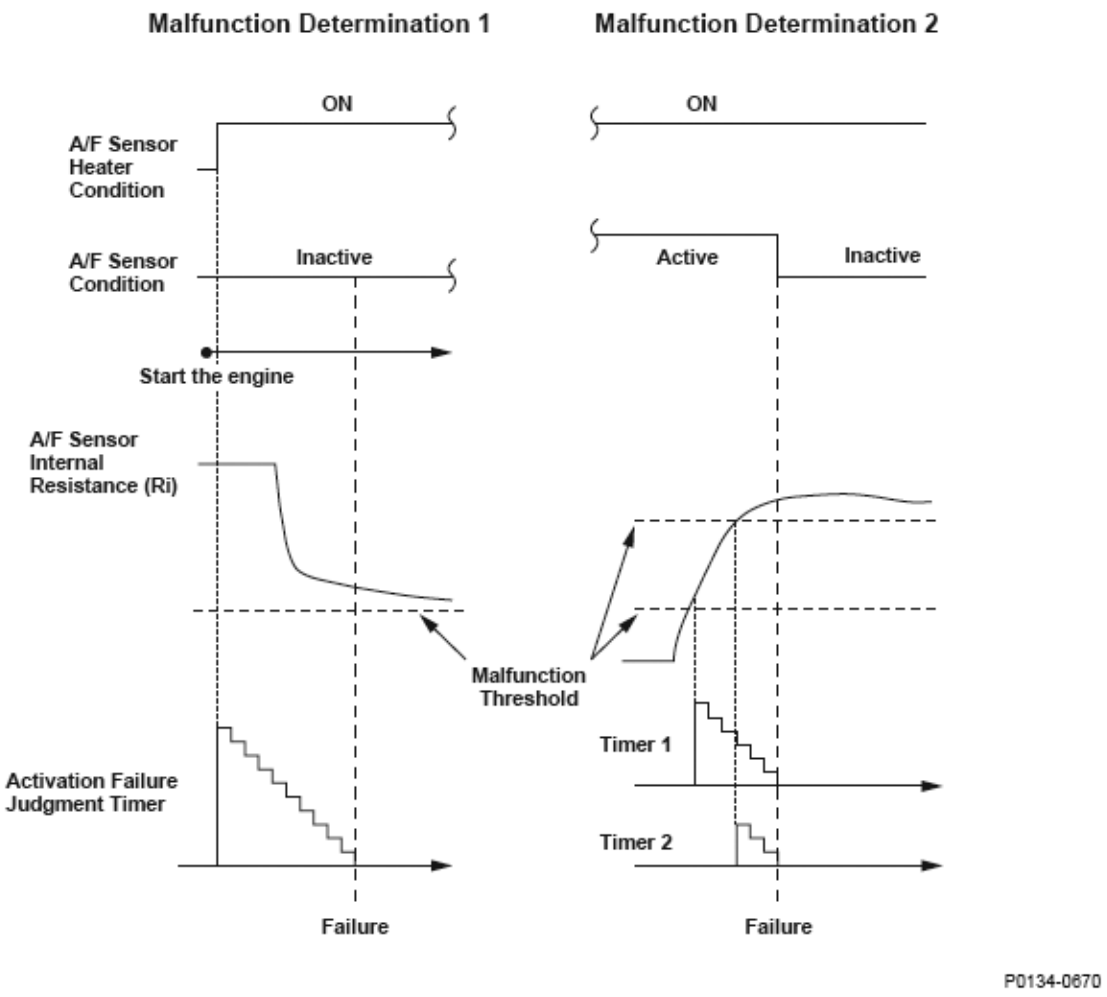


Fig. 90: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction

General Description (K20Z3 Engine)

The air/fuel ratio (A/F) sensor is activated by warming the element with a heater to maintain it at a steady high temperature for accurate air/fuel (A/F) ratio calculation. The A/F sensor does not become active when the element is not properly heated due to a heater malfunction, and the exhaust emissions deteriorate. The engine control module (ECM)/powertrain control module (PCM) monitors the A/F sensor condition by monitoring the A/F sensor internal resistance.

1. When the A/F sensor does not activate in a set time after the A/F sensor heater is turned on (with high A/F sensor internal resistance), a malfunction of the A/F sensor heater is detected, and a DTC is stored.
2. The A/F sensor heater cycles ON and OFF within a set time. The heater's state is detected by monitoring the internal resistance of the A/F sensor. If the resistance remains high when the heater is ON, a malfunction in the A/F sensor heater is detected, and a DTC is stored.

Because the degree of effect on engine control differs according to the A/F sensor internal resistance, there are two malfunction detection threshold levels. When either one is reached, a malfunction is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	40 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0135, P1157, P1172, P2195, P2238, P2252	

Malfunction Threshold (K20Z3 Engine)

Malfunction determination 1

The A/F sensor internal resistance value is 70 ohms or more for at least 40 seconds right after the engine starts.

Malfunction determination 2

- The A/F sensor internal resistance value is 70 ohms or more for at least 15 seconds.
- The A/F sensor internal resistance value is 90 ohms or more for at least 1 second.

Driving Pattern (K20Z3 Engine)

Start the engine, then let it idle for at least 2 minutes.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0134 (41): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0134: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION (R18A1 ENGINE)

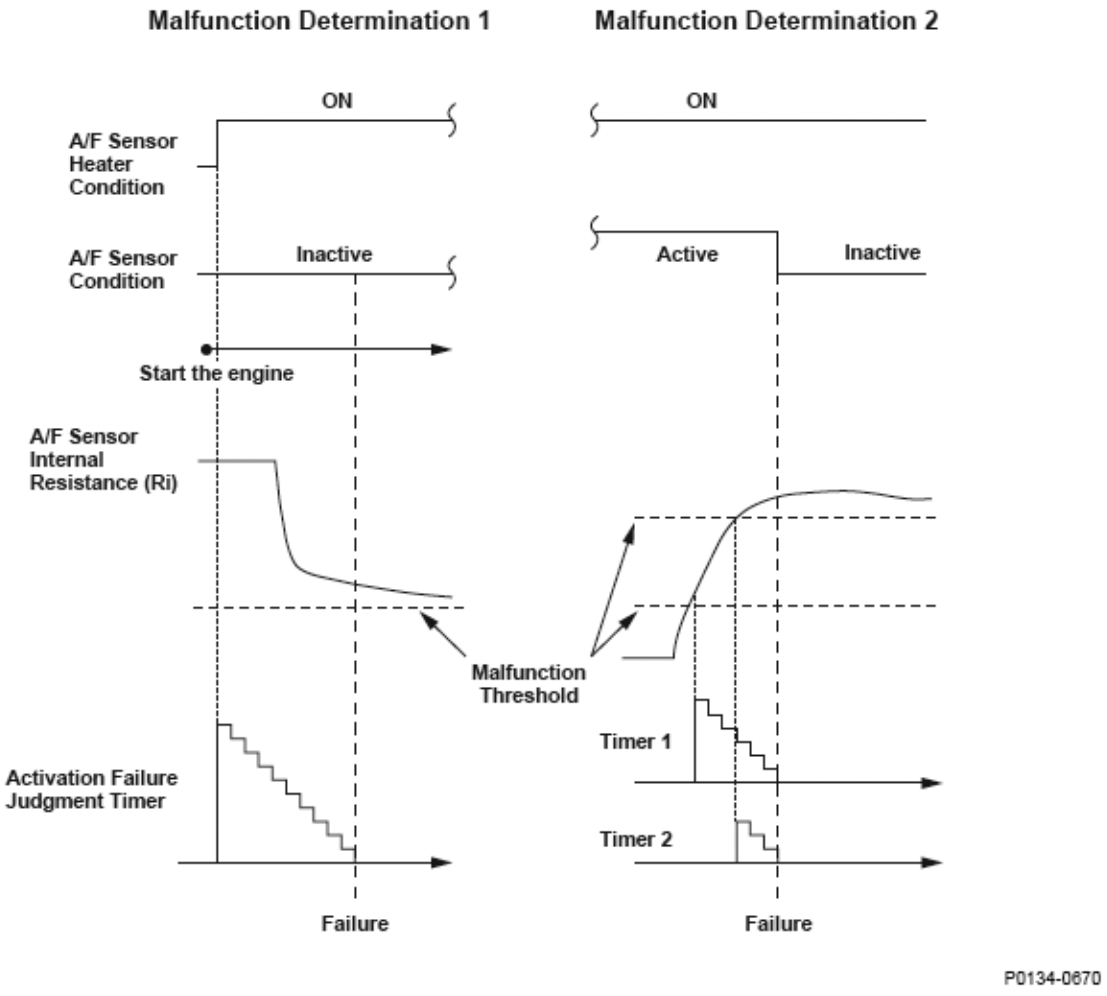


Fig. 91: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor is activated by warming the element with a heater to maintain it at a steady high temperature for accurate air/fuel (A/F) ratio calculation. The A/F sensor does not become active when the element is not properly heated due to a heater malfunction, and the exhaust emissions deteriorate. The engine control module (ECM)/powertrain control module (PCM) monitors the A/F sensor condition by monitoring the A/F sensor internal resistance.

1. When the A/F sensor does not activate in a set time after the A/F sensor heater is turned on (with high A/F sensor internal resistance), a malfunction of the A/F sensor heater is detected, and a DTC is stored.
2. The A/F sensor heater cycles ON and OFF within a set time. The heater's state is detected by monitoring the internal resistance of the A/F sensor. If the resistance remains high when the heater is ON, a malfunction in the A/F sensor heater is detected, and a DTC is stored.

   Because the degree of effect on engine control differs according to the A/F sensor internal resistance, there are two malfunction detection threshold levels. When either one is reached, a malfunction is

detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	40 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0135, P1157, P1172, P2195, P2238, P2252	

Malfunction Threshold (R18A1 Engine)

Malfunction determination 1

The A/F sensor internal resistance value is 70 ohms or more for at least 40 seconds right after the engine starts.

Malfunction determination 2

- The A/F sensor internal resistance value is 70 ohms or more for at least 15 seconds.
- The A/F sensor internal resistance value is 90 ohms or more for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, then let it idle for at least 2 minutes.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool

Clear command or by disconnecting the battery.

DTC P0134 (41): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0134: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION (R18A4 ENGINE)

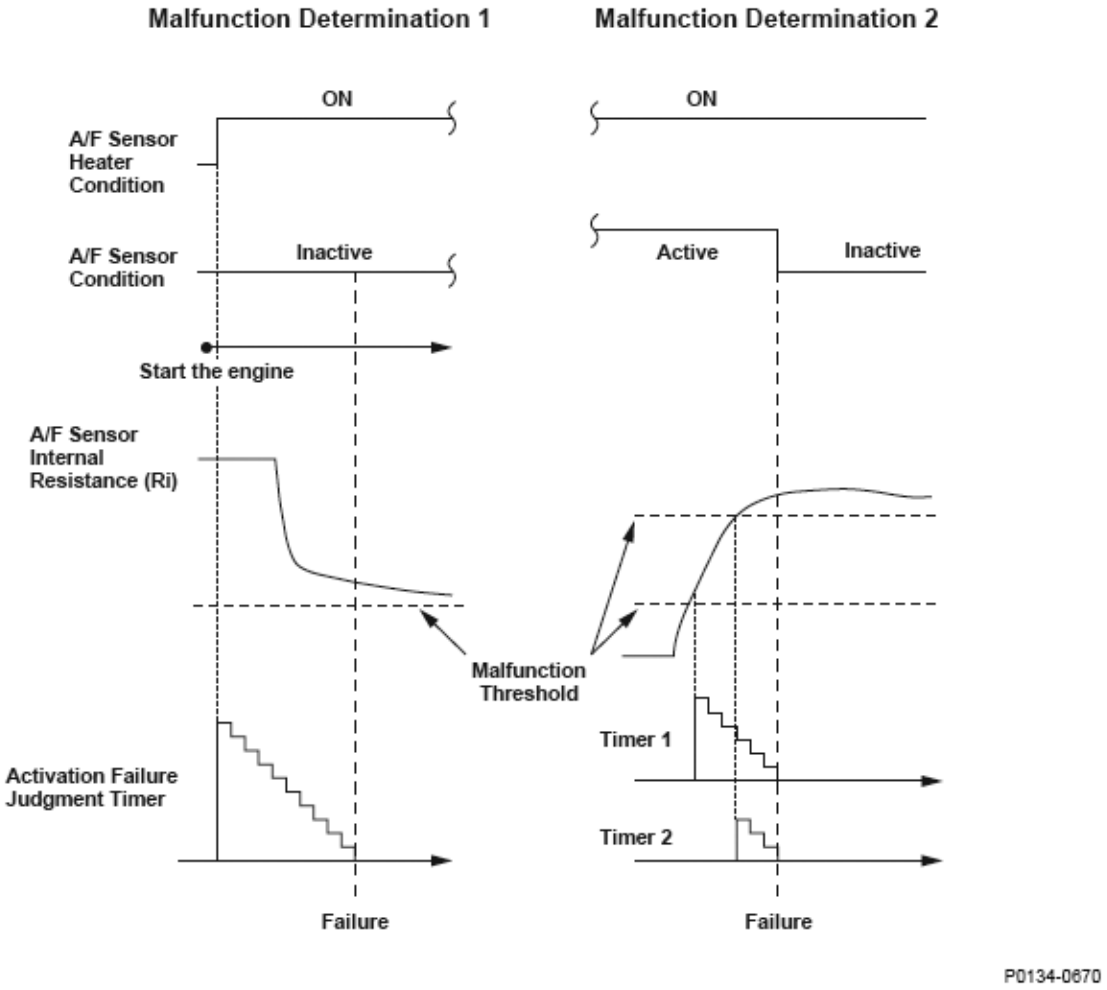


Fig. 92: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor is activated by warming the element with a heater to maintain it at a steady high temperature for accurate air/fuel (A/F) ratio calculation. The A/F sensor does not become active when the element is not properly heated due to a heater malfunction, and the exhaust emissions deteriorate. The powertrain control module (PCM) monitors the A/F sensor condition by monitoring the A/F sensor internal resistance.

1. When the A/F sensor does not activate in a set time after the A/F sensor heater is turned on (with high A/F sensor internal resistance), a malfunction of the A/F sensor heater is detected, and a DTC is stored.
2. The A/F sensor heater cycles ON and OFF within a set time. The heater's state is detected by monitoring the internal resistance of the A/F sensor. If the resistance remains high when the heater is

ON, a malfunction in the A/F sensor heater is detected, and a DTC is stored.

Because the degree of effect on engine control differs according to the A/F sensor internal resistance, there are two malfunction detection threshold levels. When either one is reached, a malfunction is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	40 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Fuel feedback	Other than during fuel cut-off operation	
No active DTCs	P0135, P1157, P1172, P2195, P2238, P2252	

Malfunction Threshold (R18A4 Engine)

Malfunction determination 1

The A/F sensor internal resistance value is 70 ohms or more for at least 40 seconds right after the engine starts.

Malfunction determination 2

- The A/F sensor internal resistance value is 70 ohms or more for at least 15 seconds.
- The A/F sensor internal resistance value is 90 ohms or more for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, then let it idle for at least 1 minute.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0135 (41): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0135: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION (K20Z3 ENGINE)

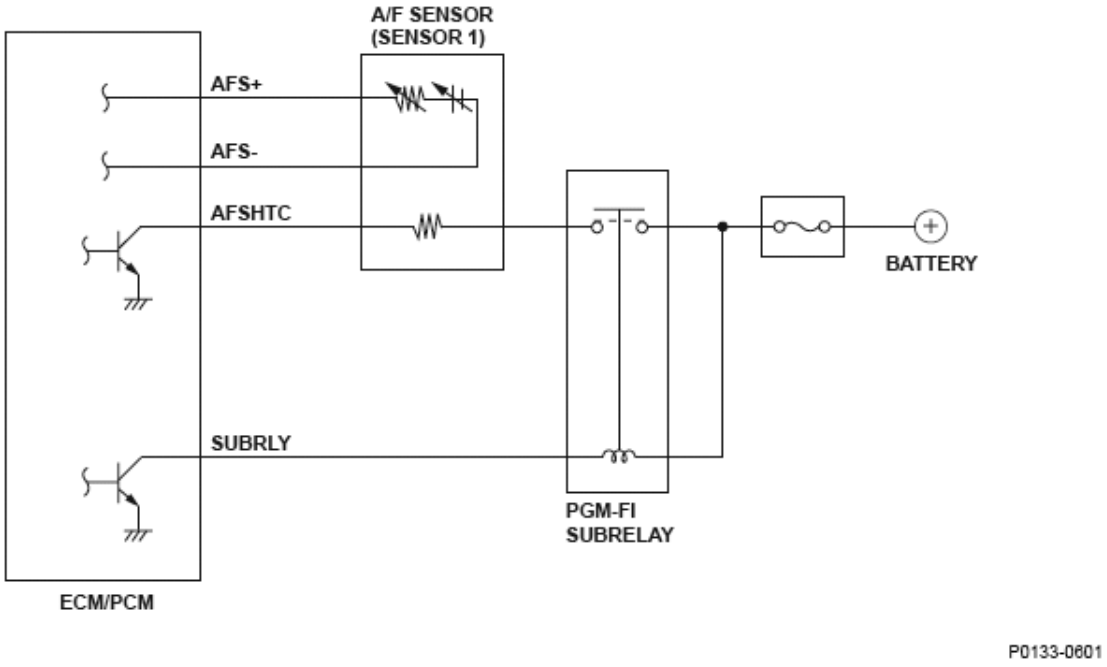


Fig. 93: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

A heater for the sensor element is embedded in the air/fuel ratio (A/F) sensor (sensor 1), and it is controlled by the engine control module (ECM)/powertrain control module (PCM). It is activated and heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the A/F sensor (sensor 1) heater current is not a set value, or the heater is overheated, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more(1), 0.6 second or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

(1) Case 1

(2) Case 2

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68°F (20°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P1157, P2195, P2238, P2252	

Malfunction Threshold (K20Z3 Engine)

Case 1

The heater current is 0.8 A or less for at least 4 seconds while the heater is activated, and the heater current is 0.8 A or more for at least 4 seconds while the heater is not activated.

Case 2

The heater current is 15.2 A or more for at least 0.6 second.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0135 (41): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0135: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION (R18A1 ENGINE)

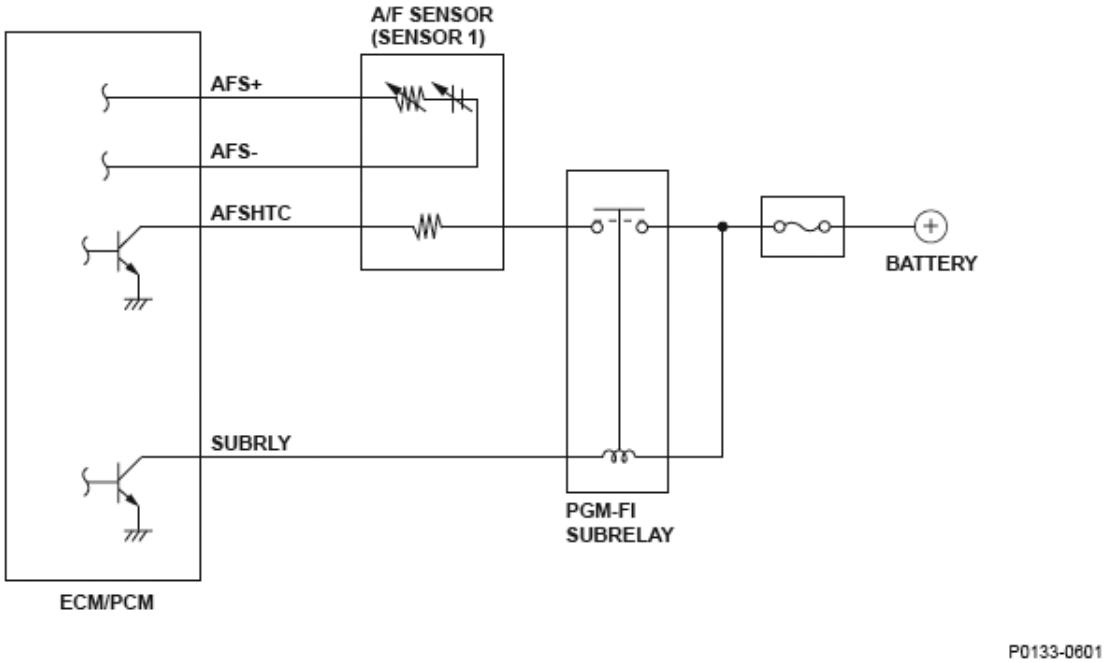


Fig. 94: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (R18A1 Engine)

A heater for the sensor element is embedded in the air/fuel ratio (A/F) sensor (sensor 1), and it is controlled by the engine control module (ECM)/powertrain control module (PCM). It is activated and heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the A/F sensor (sensor 1) heater current is not a set value, or the heater is overheated, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more(1), 0.6 second or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) Case 1 (2) Case 2	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68°F (20°C)	-
State of the engine	Running	

No active DTCs	P0117, P0118, P0134, P1157, P2195, P2238, P2252

Malfunction Threshold (R18A1 Engine)

Case 1

The heater current is 0.8 A or less for at least 4 seconds while the heater is activated, and the heater current is 0.8 A or more for at least 4 seconds while the heater is not activated.

Case 2

The heater current is 15.2 A or more for at least 0.6 second.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0135 (41): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0135: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION (R18A4 ENGINE)

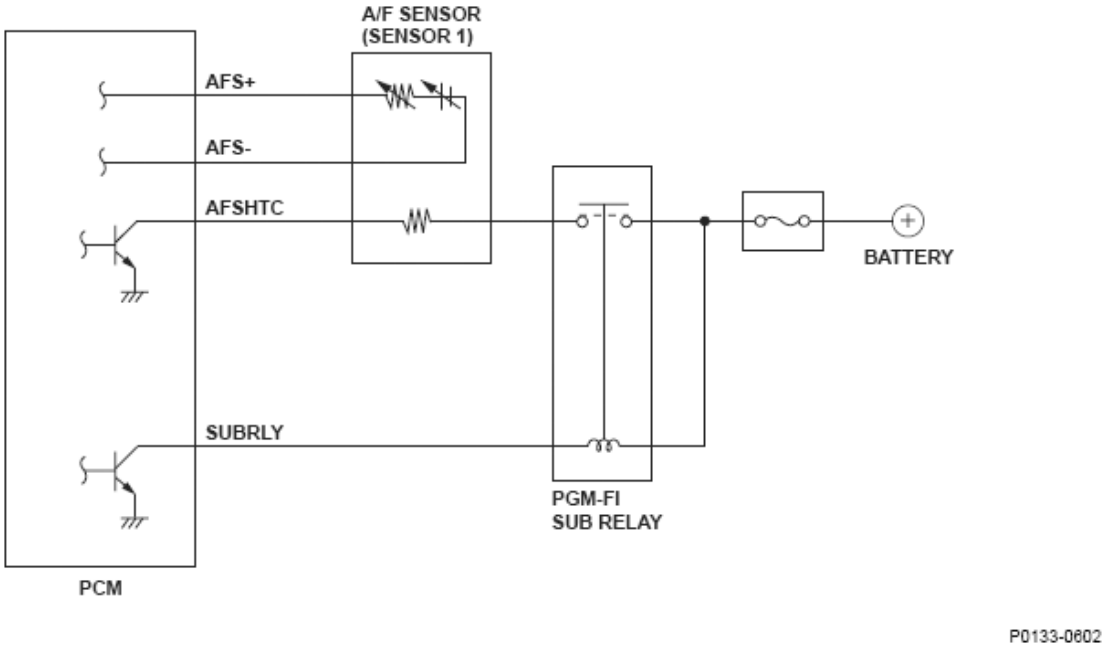


Fig. 95: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Diagram

General Description (R18A4 Engine)

A heater for the sensor element is embedded in the air/fuel ratio (A/F) sensor (sensor 1), and it is controlled by the powertrain control module (PCM). It is activated and heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the A/F sensor (sensor 1) heater current is not a set value, or the heater is overheated, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more(1), 0.6 seconds or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) Case 1 (2) Case 2	

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68°F (20°C)	-
State of the engine	Running	

No active DTCs	P0117, P0118, P0134, P1157, P2195, P2238, P2252

Malfunction Threshold (R18A4 Engine)

Case 1

The heater current is 0.8 A or less for at least 4 seconds while the heater is activated, and the heater current is 0.8 A or more for at least 4 seconds while the heater is not activated.

Case 2

The heater current is 15.2 A or more for at least 0.6 seconds.

Driving Pattern (R18A4 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0137 (63): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0137: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT LOW VOLTAGE (K20Z3)

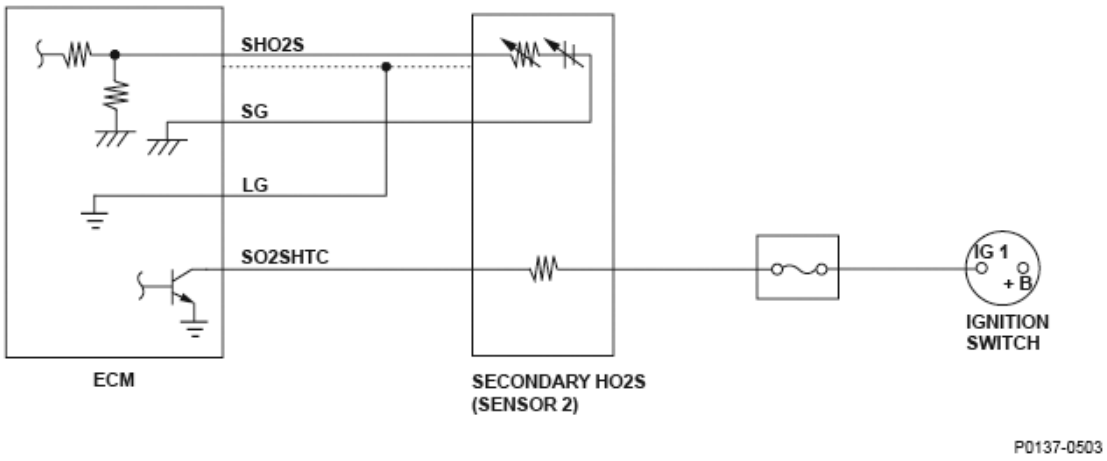


Fig. 96: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Low Voltage - Circuit Diagram

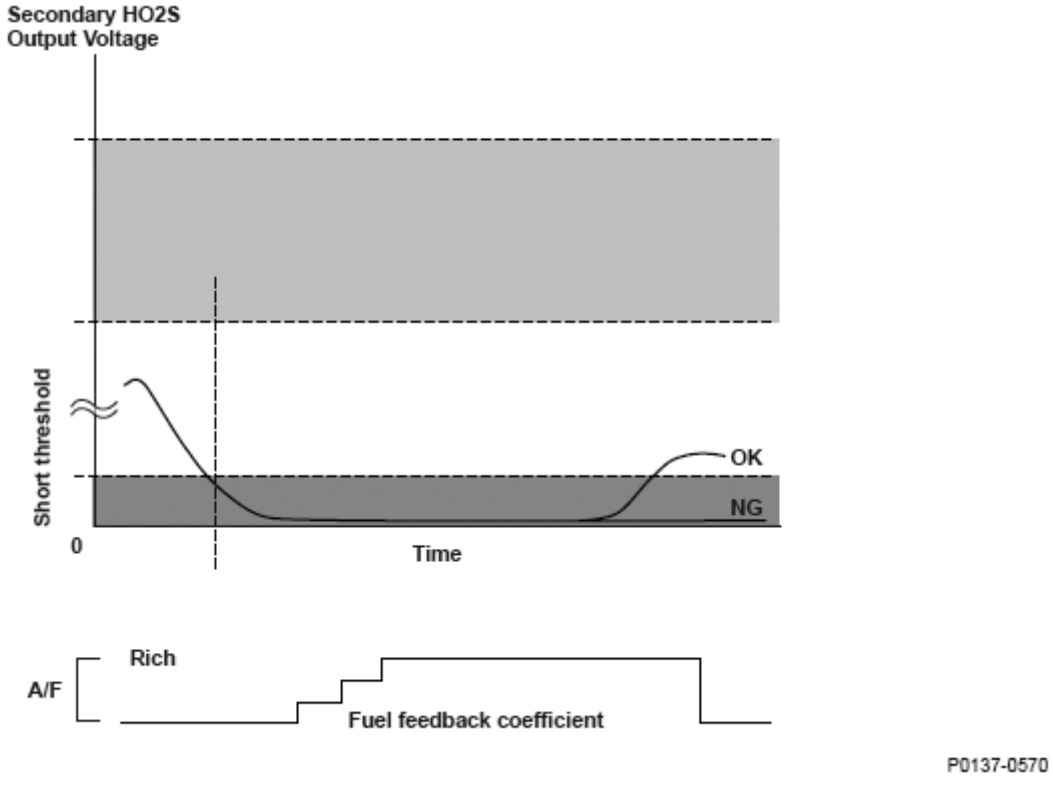


Fig. 97: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the primary heated oxygen sensor (HO2S) (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the primary HO2S output voltage so that the TWC efficiency is optimized.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues low (lean) during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other	Other than at idle	

Malfunction Threshold (K20Z3 Engine)

The secondary HO2S output voltage is 0.05 V or less for at least 60 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 60 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0137 (63): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0137: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT LOW VOLTAGE (R18A1)

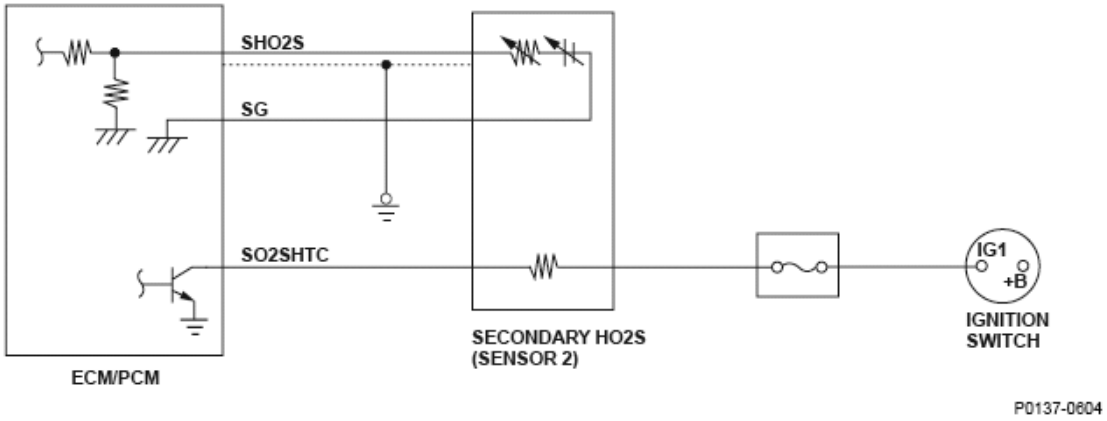


Fig. 98: Secondary Heated Oxygen Sensor - Circuit Diagram

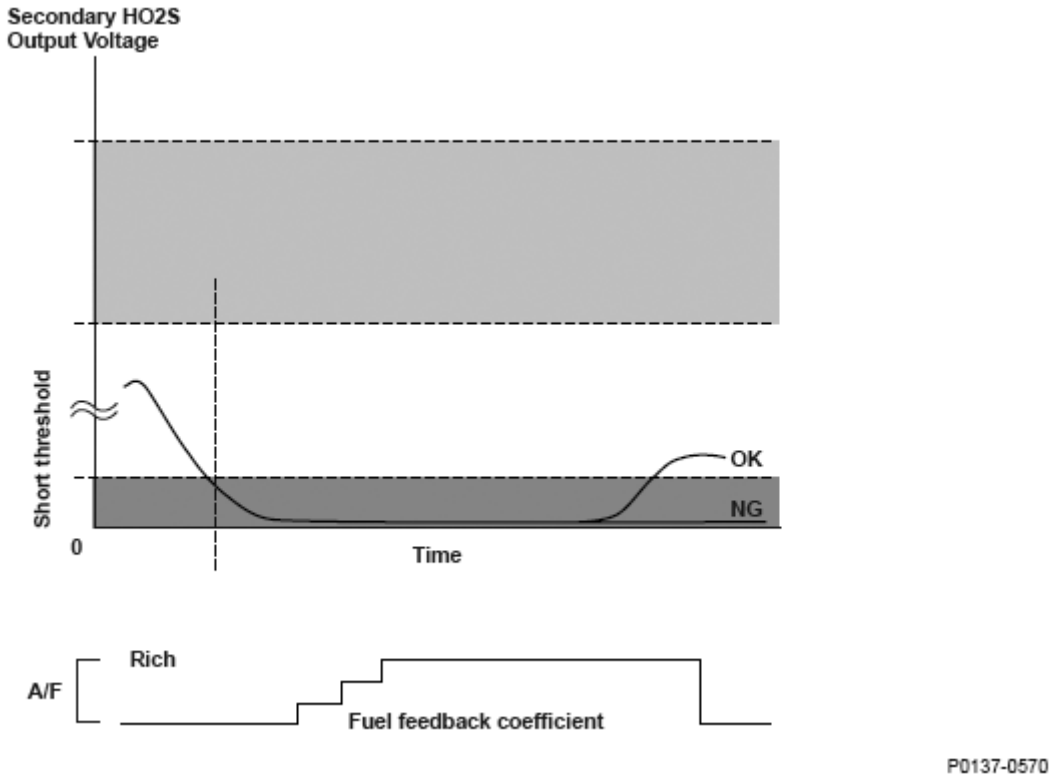


Fig. 99: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the air/fuel ratio (A/F) sensor (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the A/F sensor output voltage so that the TWC efficiency is optimized.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues low (lean) during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	30 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2413, P2646, P2647, P2648, P2649, P2A00	
Other	Other than at idle	

Malfunction Threshold (R18A1 Engine)

The secondary HO2S output voltage is 0.05 V or less for at least 30 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 60 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0137 (63): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0137: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

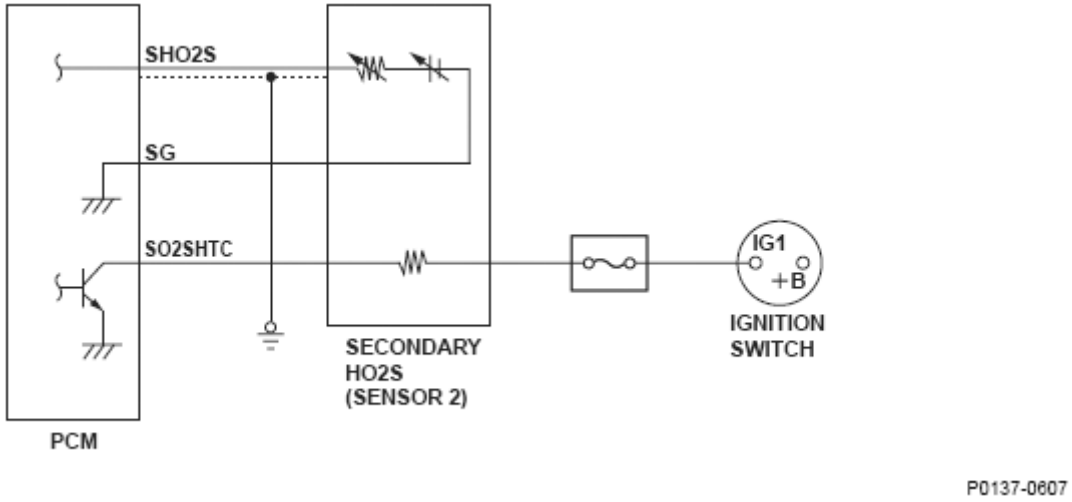


Fig. 100: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Diagram

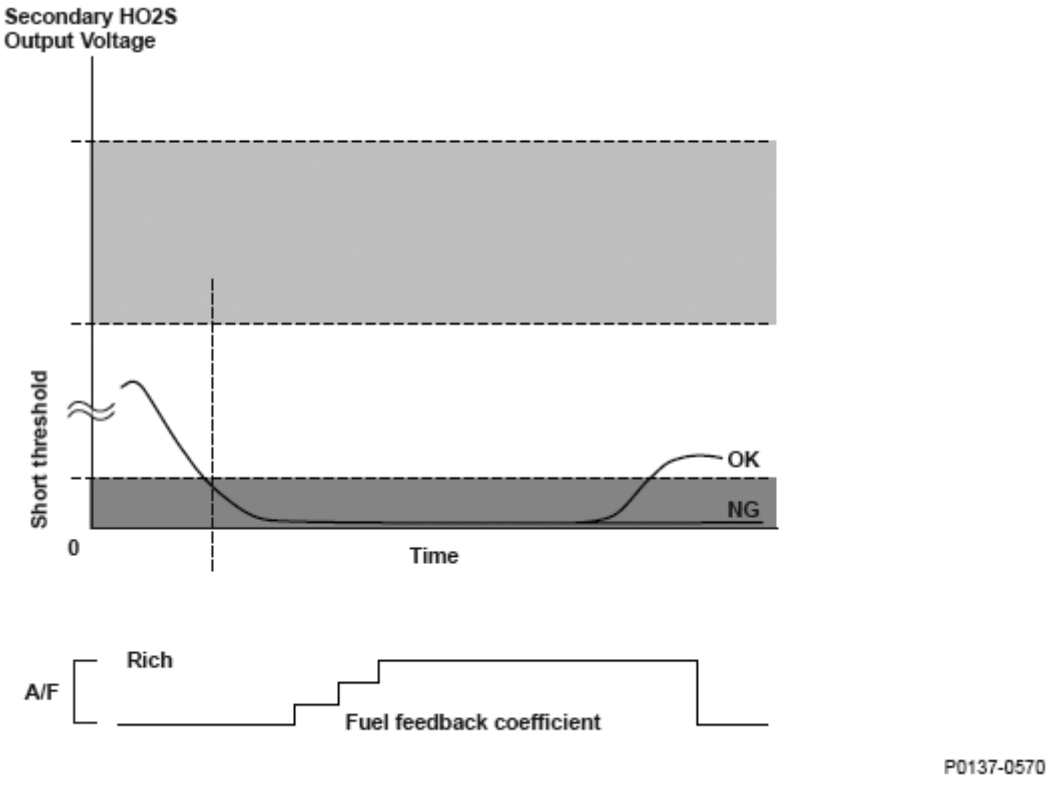


Fig. 101: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the air/fuel ratio (A/F) sensor (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the A/F sensor output voltage so that the TWC efficiency is optimized.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues low (lean) during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	30 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored	15 seconds	-

after starting the engine		
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other	Not during valve pausing	

Malfunction Threshold (R18A4 Engine)

The secondary HO2S output voltage is 0.05 V or less for at least 30 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0138 (63): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0138: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT HIGH VOLTAGE (K20Z3)

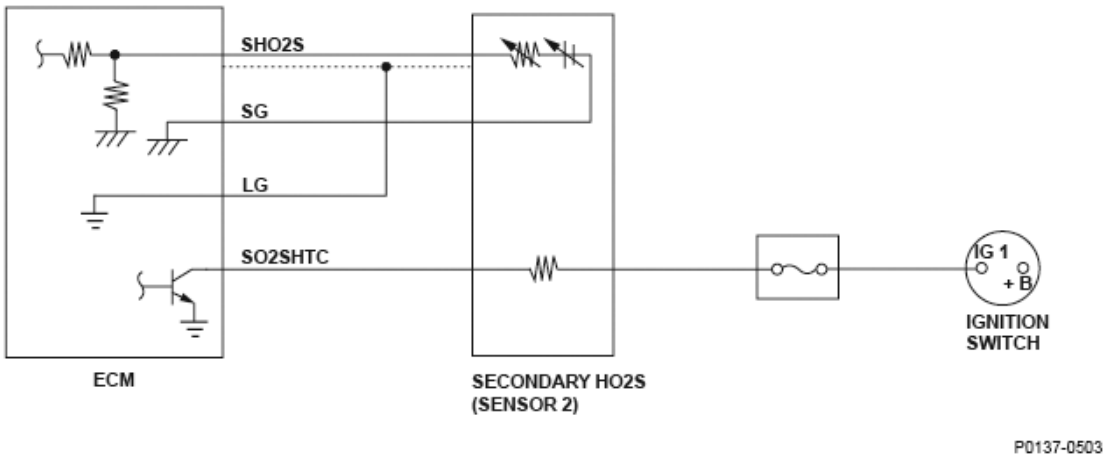


Fig. 102: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Low Voltage - Circuit Diagram

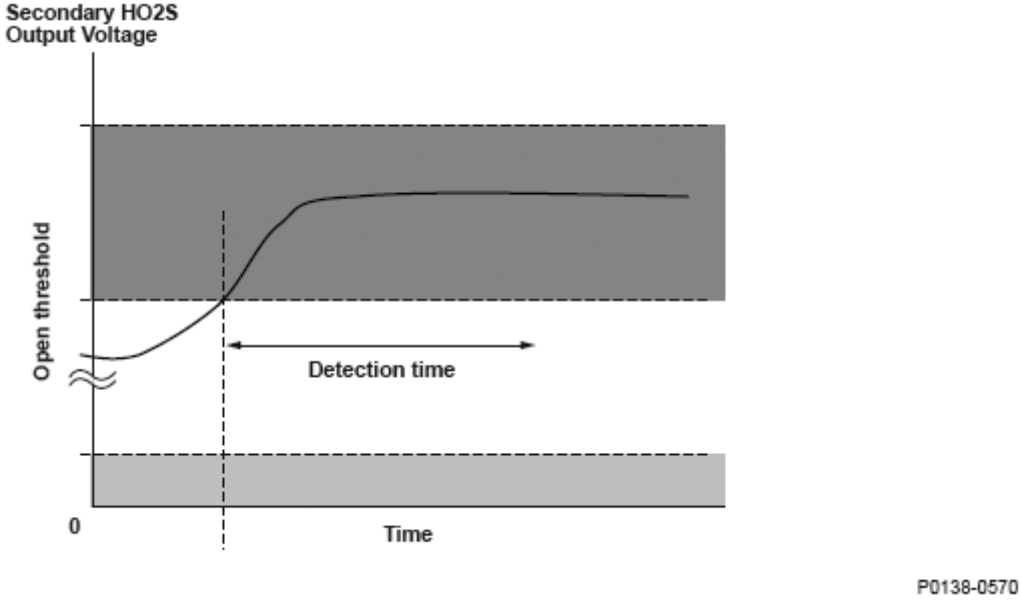


Fig. 103: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the primary heated oxygen sensor (HO2S) (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the primary HO2S output voltage to optimize TWC efficiency.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues high (rich) exceeding the upper limit used during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other	Other than at idle	

Malfunction Threshold (K20Z3 Engine)

The secondary HO2S output voltage is 1.270 V or more for at least 5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0138 (63): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0138: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT HIGH VOLTAGE (R18A1)

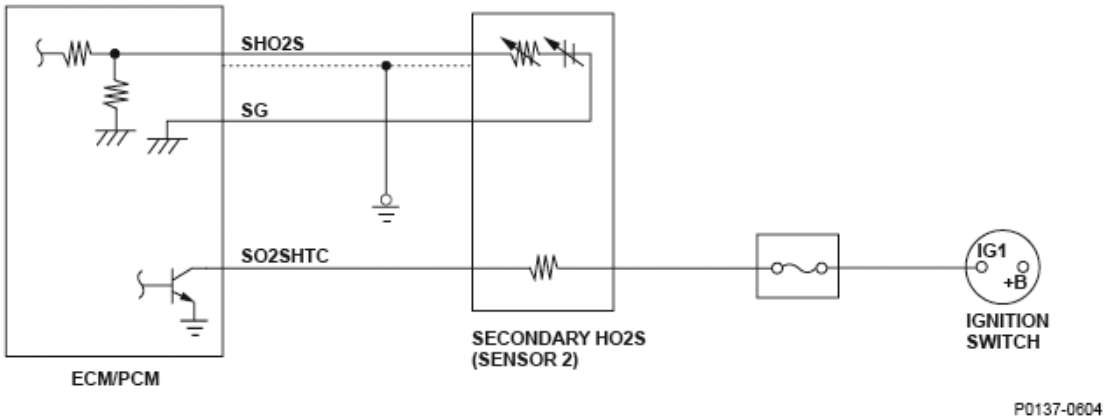


Fig. 104: Secondary Heated Oxygen Sensor - Circuit Diagram

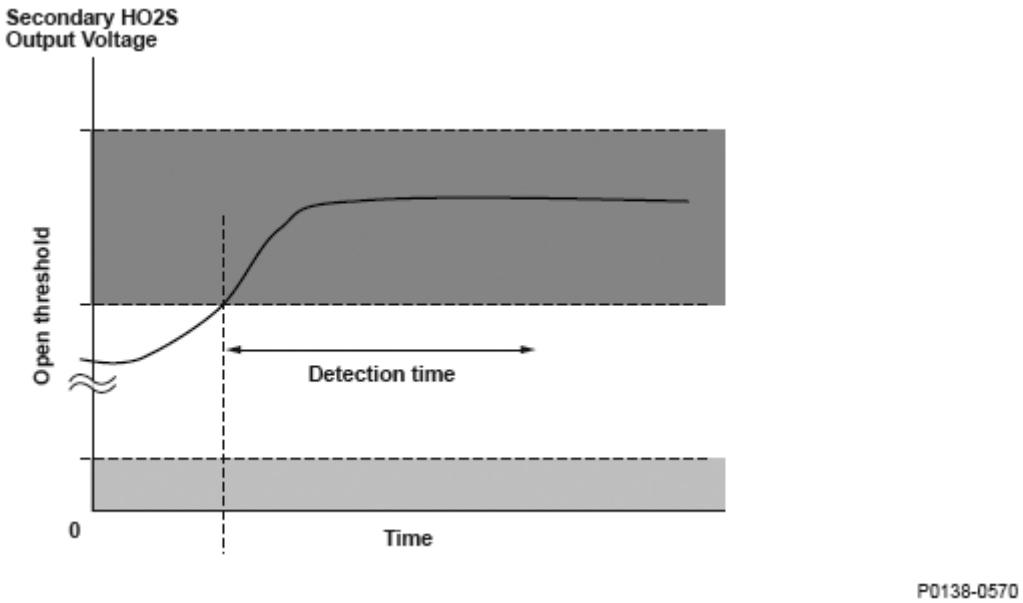


Fig. 105: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the air/fuel ratio (A/F) sensor (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the A/F sensor output voltage to optimize TWC efficiency.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues high (rich) exceeding the upper limit used during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2413, P2646, P2647, P2648, P2649, P2A00	
Other	Other than at idle	

Malfunction Threshold (R18A1 Engine)

The secondary HO2S output voltage is 1.270 V or more for at least 5 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0138 (63): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0138: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

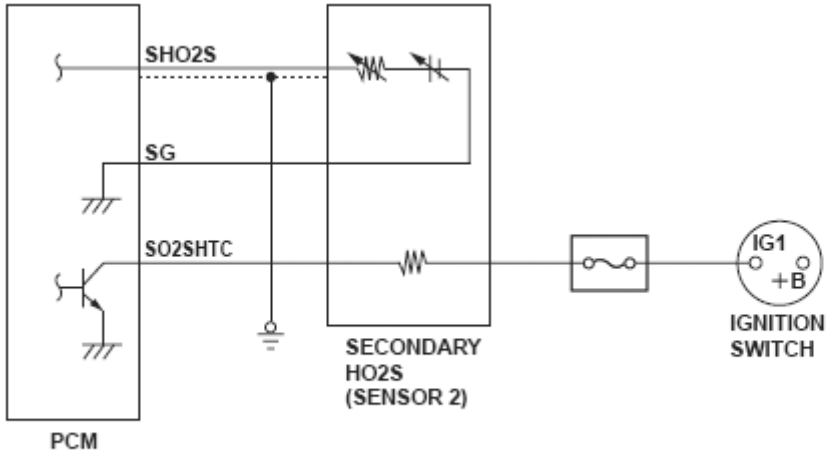


Fig. 106: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Diagram

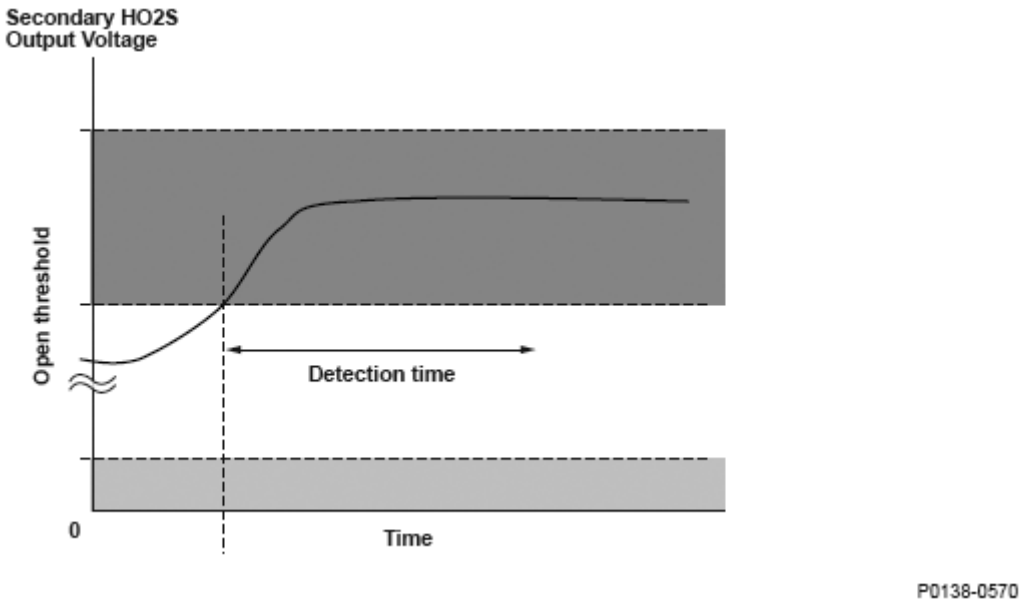


Fig. 107: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control based on the air/fuel ratio (A/F) sensor (sensor 1) output voltage. The secondary HO2S controls the air/fuel ratio from the A/F sensor output voltage to optimize TWC efficiency.

After current is applied to the secondary HO2S heater, if the secondary HO2S output continues high (rich) exceeding the upper limit used during feedback control, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other	Not during valve pausing	

Malfunction Threshold (R18A4 Engine)

The secondary HO2S output voltage is 1.270 V or more for at least 5 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady engine speed between 1,500 - 3,000 rpm for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0139 (63): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0139: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) SLOW RESPONSE (K20Z3)

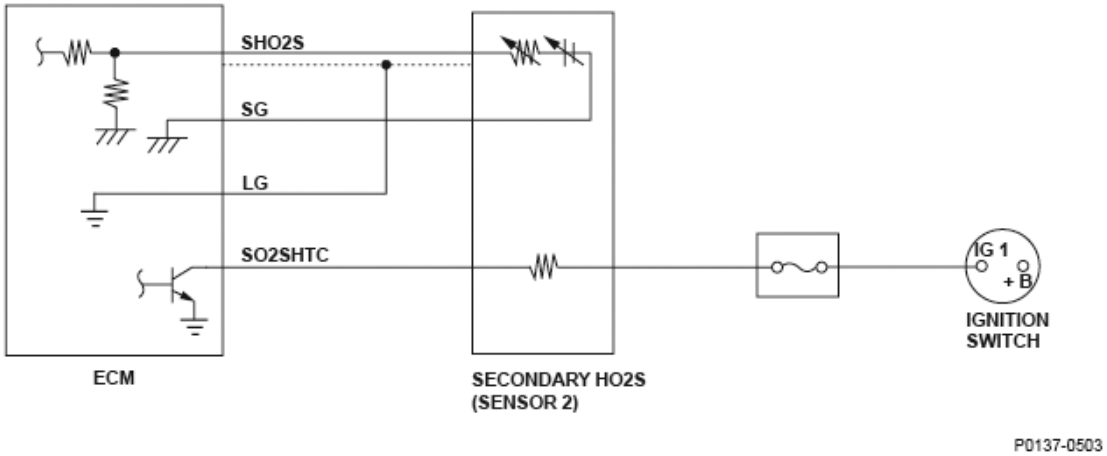


Fig. 108: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Low Voltage - Circuit Diagram

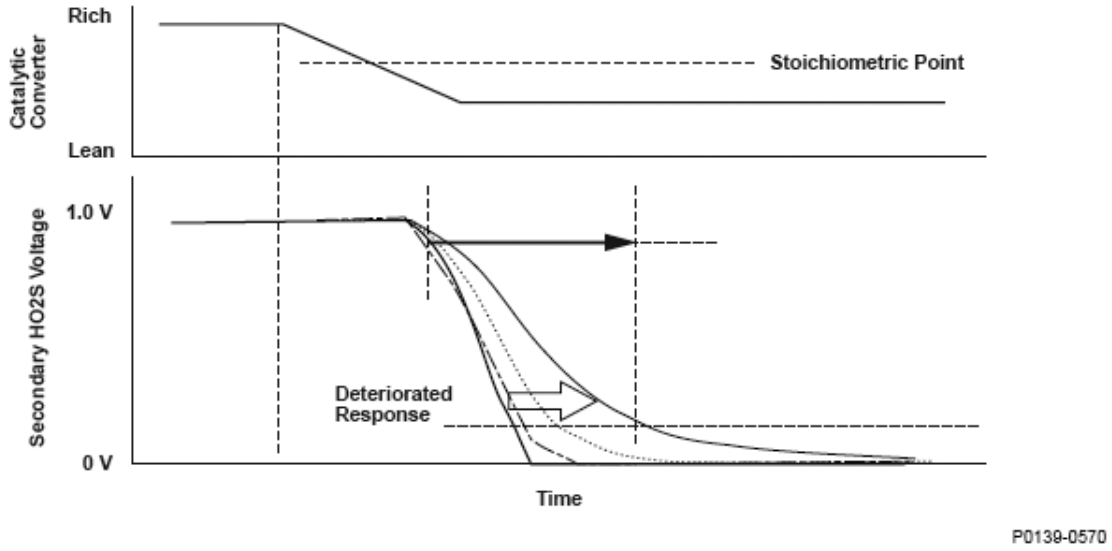


Fig. 109: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (K20Z3 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas

downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control. The secondary HO2S controls the air/fuel ratio with the A/F sensor output voltage to optimize TWC efficiency.

If the response time of the secondary HO2S becomes longer than the specified time after current to the secondary HO2S heater is applied, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	12.3 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Elapsed time after fuel cut-off	-	185 seconds
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,825 rpm	3,025 rpm
MAP value	27 kPa (7.9 in.Hg, 200 mmHg)	79 kPa (23.6 in.Hg, 600 mmHg)
Vehicle speed	30 mph (48 km/h)	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649, P2A00	

Malfunction Threshold (K20Z3 Engine)

1. When the secondary HO2S output drops to the response deterioration judgment threshold value and the response characteristics measurement is finished.

   MALFUNCTION THRESHOLD

MIN	0.53 second
MAX	1 second

2. The voltage does not drop to the response deterioration judgment threshold value after a

predetermined time (1 second) has elapsed.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady speed of 35 mph (57 km/h) or more for at least 12.3 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0139 (63): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0139: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) SLOW RESPONSE (R18A1)

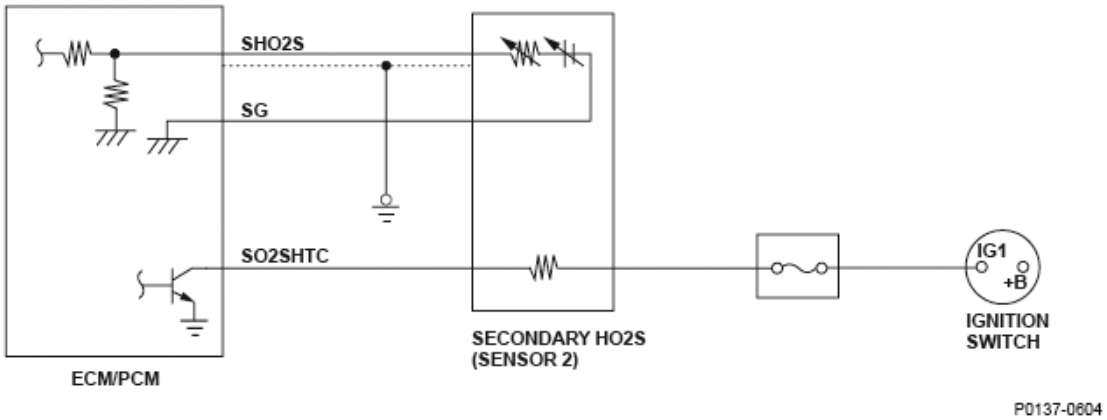


Fig. 110: Secondary Heated Oxygen Sensor - Circuit Diagram

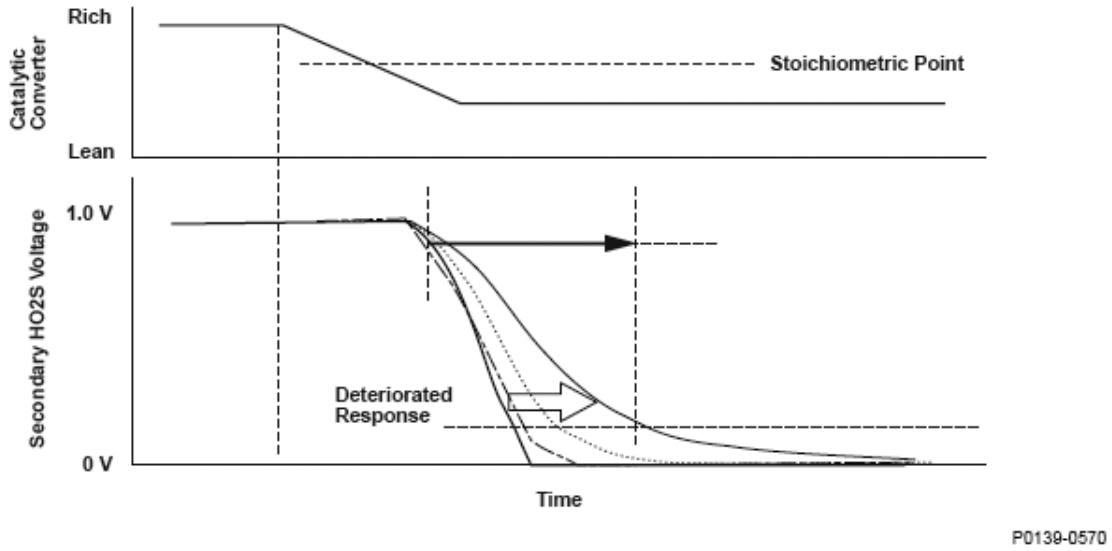


Fig. 111: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A1 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control. The secondary HO2S controls the air/fuel ratio with the A/F sensor output voltage to optimize TWC efficiency.

If the response time of the secondary HO2S becomes longer than the specified time after current to the secondary HO2S heater is applied, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	13.4 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine		15 seconds	-
Elapsed time after fuel cut-off		-	150 seconds
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed	A/T	1,300 rpm	2,450 rpm
	M/T		3,300 rpm
		27 kPa (7.9 in.Hg, 200	

MAP value	mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)
	40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed	30 mph (48 km/h)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2271, P2413, P2646, P2647, P2648, P2649, P2A00	
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF		

Malfunction Threshold (R18A1 Engine)

1. When the secondary HO2S output drops to the response deterioration judgment threshold value and the response characteristics measurement is finished.

   MALFUNCTION THRESHOLD

MIN	0.44 second
MAX	1 second

2. The voltage does not drop to the response deterioration judgment threshold value after a predetermined time (1 second) has elapsed.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady speed of 35 mph (57 km/h) or more for at least 13.4 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0139 (63): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0139: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) SLOW RESPONSE (R18A4 ENGINE)

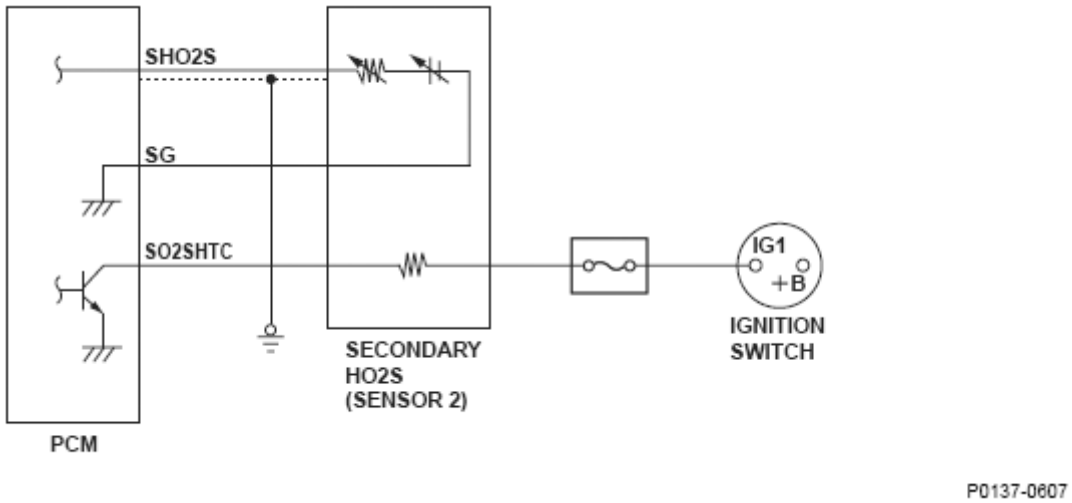


Fig. 112: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Diagram

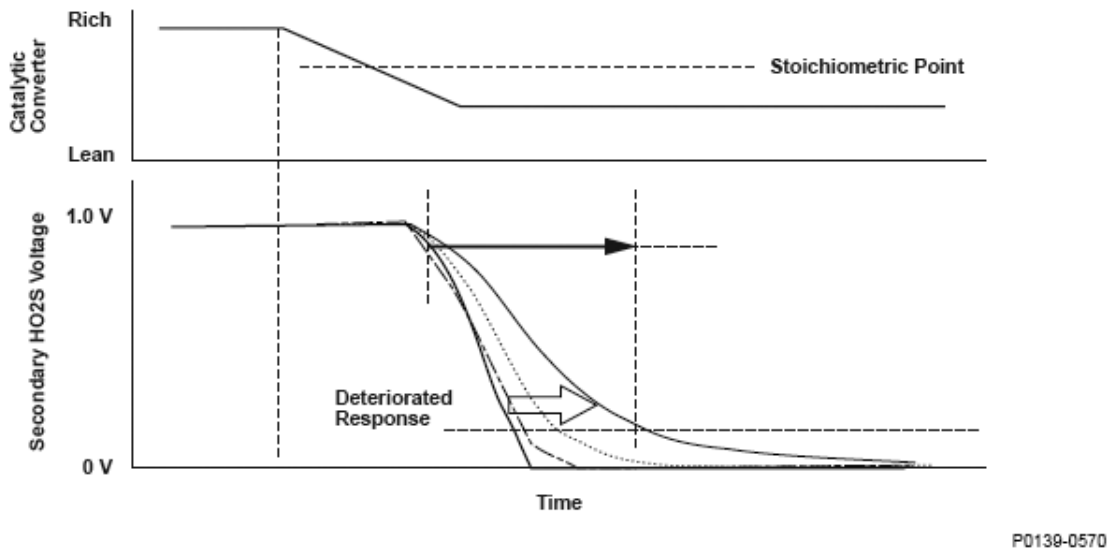


Fig. 113: Secondary Heated Oxygen Sensor Output Voltage - Graph

General Description (R18A4 Engine)

The secondary heated oxygen sensor (HO2S) (sensor 2) detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC) during stoichiometric air/fuel ratio feedback control. The secondary HO2S controls the air/fuel ratio with the A/F sensor output voltage to optimize TWC efficiency.

If the response time of the secondary HO2S becomes longer than the specified time after current to the secondary HO2S heater is applied, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	14.5 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Elapsed time after fuel cut-off	-	150 seconds
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,500 rpm	2,550 rpm
MAP value	46 kPa (13.4 in.Hg, 350 mmHg)	86 kPa (25.5 in.Hg, 650 mmHg)
Vehicle speed	30 mph (48 km/h)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649, P2A00	

Malfunction Threshold (R18A4 Engine)

1. When the secondary HO2S output drops to the response deterioration judgment threshold value and the response characteristics measurement is finished.

   MALFUNCTION THRESHOLD

MIN	0.25 second
MAX	0.90 second

2. The voltage does not drop to the response deterioration judgment threshold value after a predetermined time (1 second) has elapsed.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Then, drive immediately at a steady speed of 35 mph (57 km/h) or more for at least 14.5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0141 (65): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0141: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) HEATER CIRCUIT MALFUNCTION (K20Z3 ENGINE)

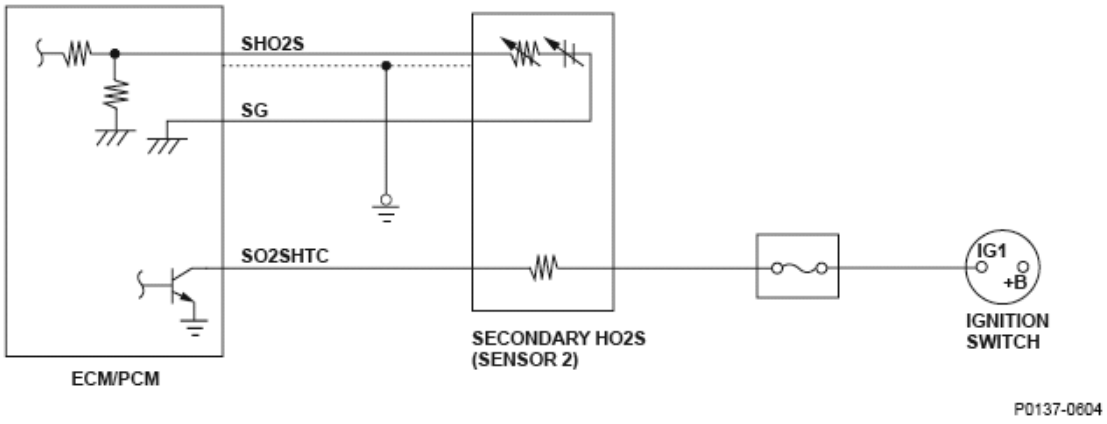


Fig. 114: Secondary Heated Oxygen Sensor - Circuit Diagram

General Description (K20Z3 Engine)

A heater for the zirconia element is embedded in the secondary heated oxygen sensor (secondary HO2S), and it is controlled by the engine control module (ECM)/powertrain control module (PCM). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the secondary HO2S heater draws no more, or no less than a specified amperage, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage (IGP terminal of ECM/PCM)	11.0 V	16.0 V
Engine coolant temperature	41°F (5°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118	

Malfunction Threshold (K20Z3 Engine)

The current is 0.38 A or less, or 3.33 A or more, for at least 5 seconds when the heater is on.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0141 (65): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0141: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) HEATER CIRCUIT MALFUNCTION (R18A1 ENGINE)

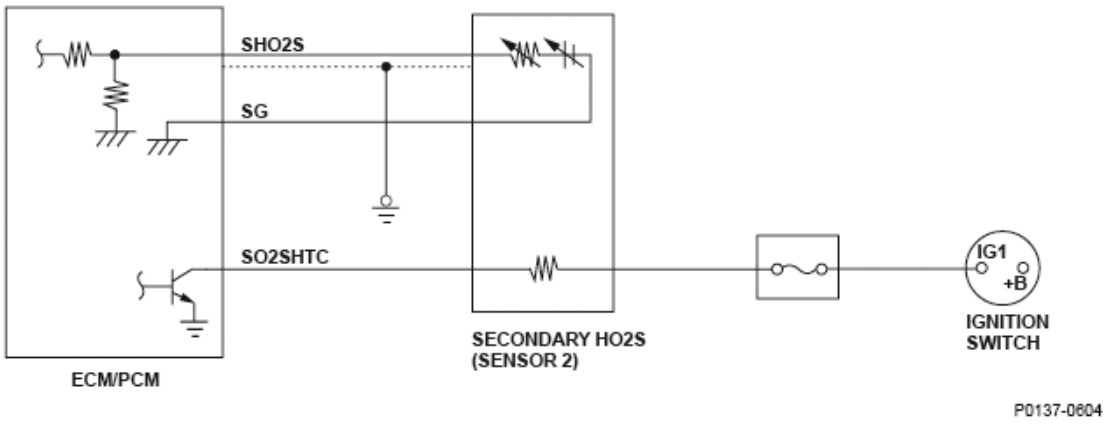


Fig. 115: Secondary Heated Oxygen Sensor - Circuit Diagram

General Description (R18A1 Engine)

A heater for the zirconia element is embedded in the secondary heated oxygen sensor (secondary HO2S), and it is controlled by the engine control module (ECM)/powertrain control module (PCM). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the secondary HO2S heater draws no more, or no less than a specified amperage, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage (IGP terminal of ECM/PCM)	11.0 V	16.0 V
Engine coolant temperature	41°F (5°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118	

Malfunction Threshold (R18A1 Engine)

The current is 0.38 A or less, or 3.33 A or more, for at least 5 seconds when the heater is on.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0141 (65): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0141: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) HEATER CIRCUIT MALFUNCTION (R18A4 ENGINE)

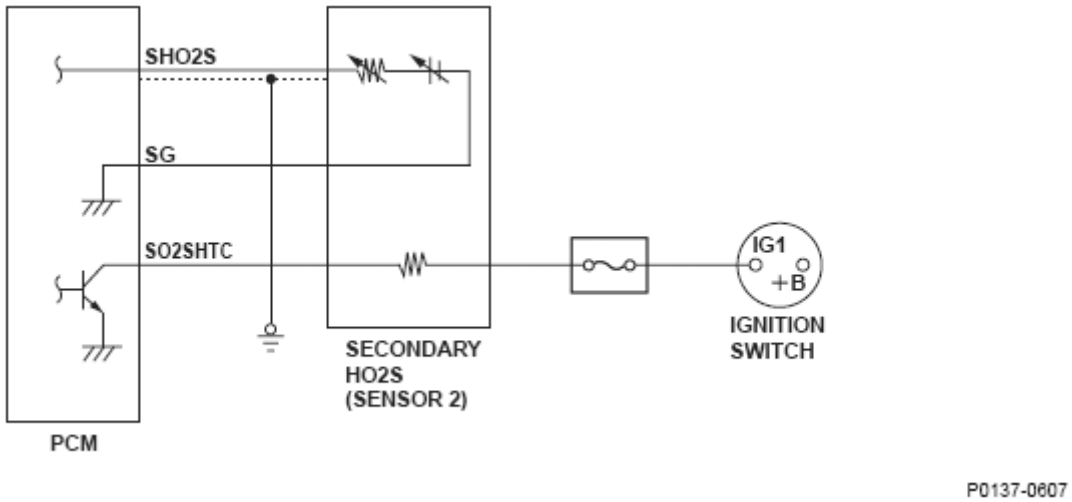


Fig. 116: Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Diagram

General Description (R18A4 Engine)

A heater for the zirconia element is embedded in the secondary heated oxygen sensor (secondary HO2S), and it is controlled by the powertrain control module (PCM). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content when the exhaust gas temperature is cold.

If the secondary HO2S heater draws more or less than a specified amperage, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage (IGP terminal of PCM)	11.0 V	16.0 V
Engine coolant temperature	41°F (5°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118	

Malfunction Threshold (R18A4 Engine)

The current is 0.38 A or less, or 3.33 A or more, for at least 5 seconds when the heater is on.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0171 (45): ADVANCED DIAGNOSTICS (M/T)

DTC P0171: FUEL SYSTEM TOO LEAN (M/T)

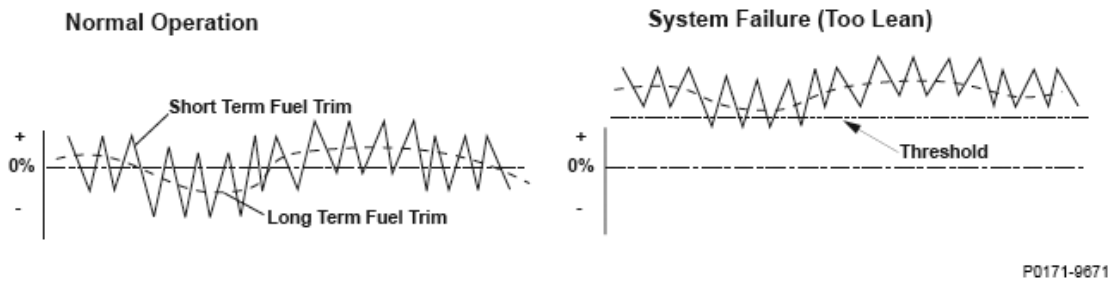


Fig. 117: Fuel System - Graph

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The ECM/PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions.

Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the ECM/PCM memory and is used to determine when fuel metering components malfunction.

When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is higher than normal (too lean), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	Every 7 seconds
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Engine speed	470 rpm(1)	4,000 rpm
	650 rpm(2)	
MAP value	20 kPa (6.0 in.Hg, 150 mmHg)(2)	-

	22 kPa (6.3 in.Hg, 160 mmHg)(1)
Fuel feedback	Closed loop
Monitoring priority	P0420, P0456, P0457, P0497
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2413(1), P2646, P2647, P2648, P2649
(1) R18A1 engine (2) K20Z3 engine	

Malfunction Threshold (M/T)

Long term fuel trim is higher than 1.25 (+25 %).

Driving Pattern (M/T)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool

Clear command or by disconnecting the battery.

DTC P0171 (45): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0171: FUEL SYSTEM TOO LEAN (R18A1 ENGINE)

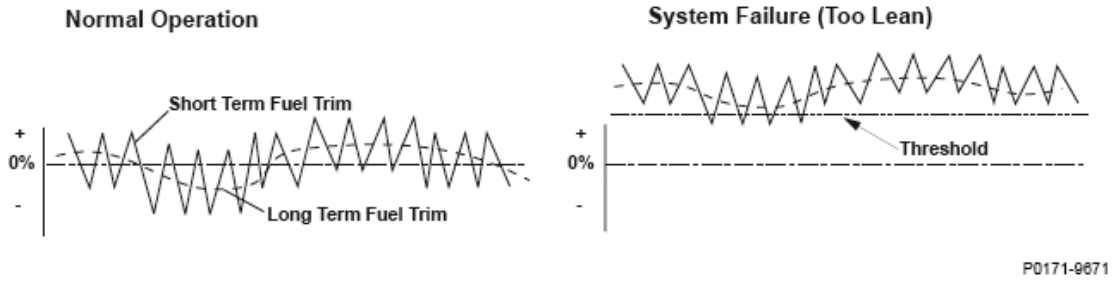


Fig. 118: Fuel System - Graph

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The ECM/PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions.

Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the ECM/PCM memory and is used to determine when fuel metering components malfunction.

When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is higher than normal (too lean), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	Every 7 seconds
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Engine speed	470 rpm(1)	4,000 rpm
	650 rpm(2)	
MAP value	20 kPa (6.0 in.Hg, 150 mmHg)(2)	-
	22 kPa (6.3 in.Hg, 160 mmHg)(1)	
Fuel feedback	Closed loop	
Monitoring priority	P0420, P0456, P0457, P0497	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

Long term fuel trim is higher than 1.25 (+25 %).

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0171 (45): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0171: FUEL SYSTEM TOO LEAN (R18A4 ENGINE)

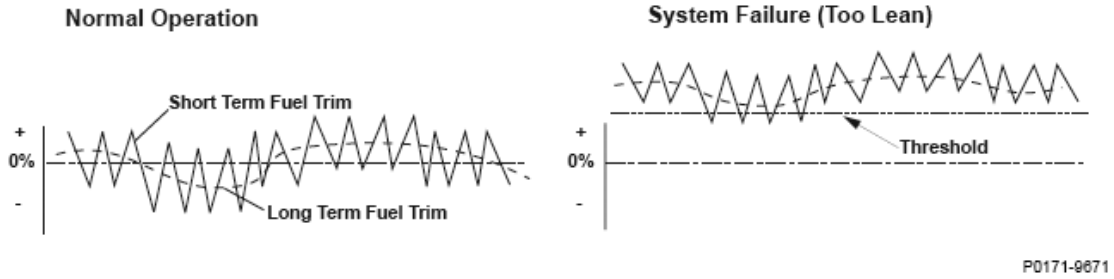


Fig. 119: Fuel System - Graph

General Description (R18A4 Engine)

The powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions.

Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the PCM memory and is used to determine when fuel metering components malfunction. When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is higher than normal (too lean), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	Every 7 seconds
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	20°F (-7°C)	-
Engine speed	470 rpm	4,000 rpm
MAP value	22 kPa (6.3 in.Hg, 160 mmHg)	-
Fuel feedback	Closed loop	
Monitoring priority	P0420	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

Long term fuel trim is higher than 1.330 (+33.0 %).

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the

engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0172 (45): ADVANCED DIAGNOSTICS (M/T)

DTC P0172: FUEL SYSTEM TOO RICH (M/T)

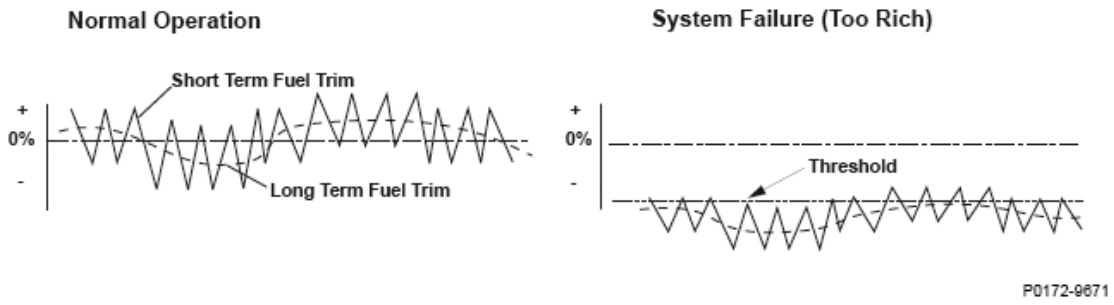


Fig. 120: Fuel System - Graph

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The ECM/PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions. Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the ECM/PCM memory and is used to determine when fuel metering components malfunction. When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is lower than normal (too rich), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	11.2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine coolant temperature	156°F (69°C)	-
Intake air temperature	20°F (-7°C)	-
Engine speed	470 rpm(1)	4,000 rpm
	650 rpm(2)	
MAP value	20 kPa (6.0 in.Hg, 150 mmHg)(2)	-
	22 kPa (6.3 in.Hg, 160 mmHg)(1)	
Fuel feedback	Closed loop	
Monitoring priority	P0420, P0456, P0457, P0497	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (M/T)

Long term fuel trim is lower than 0.792 (-20.8 %)*1 , 0.80 (-20 %)*2 .

Driving Pattern (M/T)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0172 (45): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0172: FUEL SYSTEM TOO RICH (R18A1 ENGINE)

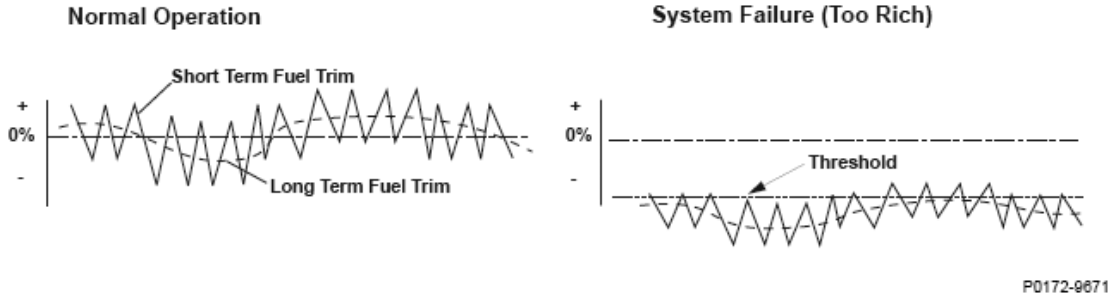


Fig. 121: Fuel System - Graph

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The ECM/PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions. Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the ECM/PCM memory and is used to determine when fuel metering components malfunction. When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is lower than normal (too rich), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	11.2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	20°F (-7°C)	-
Engine speed	470 rpm(1)	4,000 rpm
	650 rpm(2)	
MAP value	20 kPa (6.0 in.Hg, 150 mmHg)(2)	-
	22 kPa (6.3 in.Hg, 160 mmHg)(1)	
Fuel feedback	Closed loop	
Monitoring priority	P0420, P0456, P0457, P0497	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0443, P0496, P0497, P1077(1), P1078(1), P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2413(1), P2646, P2647, P2648, P2649	

(1) R18A1 engine

(2) K20Z3 engine

Malfunction Threshold (R18A1 Engine)

Long term fuel trim is lower than 0.792 (-20.8 %)*1 , 0.80 (-20 %)*2 .

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and

the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0172 (45): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0172: FUEL SYSTEM TOO RICH (R18A4 ENGINE)

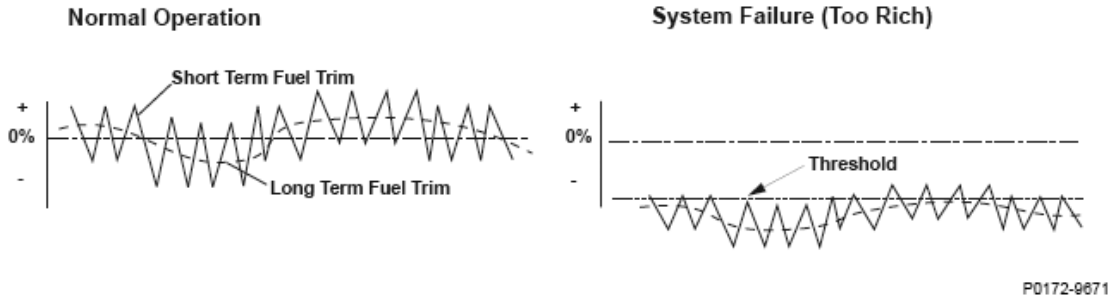


Fig. 122: Fuel System - Graph

General Description (R18A4 Engine)

The powertrain control module (PCM) detects the oxygen content in the exhaust gas from the air/fuel ratio (A/F) sensor (sensor 1) signal voltage, and it uses fuel feedback control to maintain the optimal air/fuel ratio. The air/fuel ratio coefficient for correcting the amount of injected fuel is the short term fuel trim. The PCM varies short term fuel trim continuously to keep the air/fuel ratio close to the stoichiometric ratio for all driving conditions. Long term fuel trim is computed from short term fuel trim and is used to regulate long term deviation from the stoichiometric air/fuel ratio, which occurs when fuel metering components deteriorate with age or system failures occur. In addition, long term fuel trim is stored in the PCM memory and is used to determine when fuel metering components malfunction. When long term fuel trim is higher than normal, which is about 1.0 (0 %), the amount of injected fuel must be increased, and when lower than normal, it must be decreased. If long term fuel trim is lower than normal (too rich), a malfunction in the fuel metering components is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle(1)
Sequence	None
Duration	7 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A
(1) The malfunction judgment is cleared when it is judged as normal under the same driving conditions in which the malfunction is detected.	

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	20°F (-7°C)	-
Engine speed	470 rpm	4,000 rpm
MAP value	22 kPa (6.3 in.Hg, 160 mmHg)	-
Fuel feedback	Closed loop	
Monitoring priority	P0420	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0137, P0138, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

Long term fuel trim is lower than 0.80 (-20 %).

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Then, drive at a steady speed between 15 - 75 mph (24 - 120 km/h) for at least 15 minutes, and watch the long term fuel trim. If the long term fuel trim stays at about 1.0, the vehicle is OK or it is a very minor problem. If a significant fault is still present, the long term fuel trim will move up or down while driving.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Pattern 2.
- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- After clearing the DTC by disconnecting the battery or using the scan tool, extend Driving Pattern 2 to 40 minutes or longer to allow time for long term fuel trim to recover.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the

engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0181 (96): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0181: FUEL TEMPERATURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

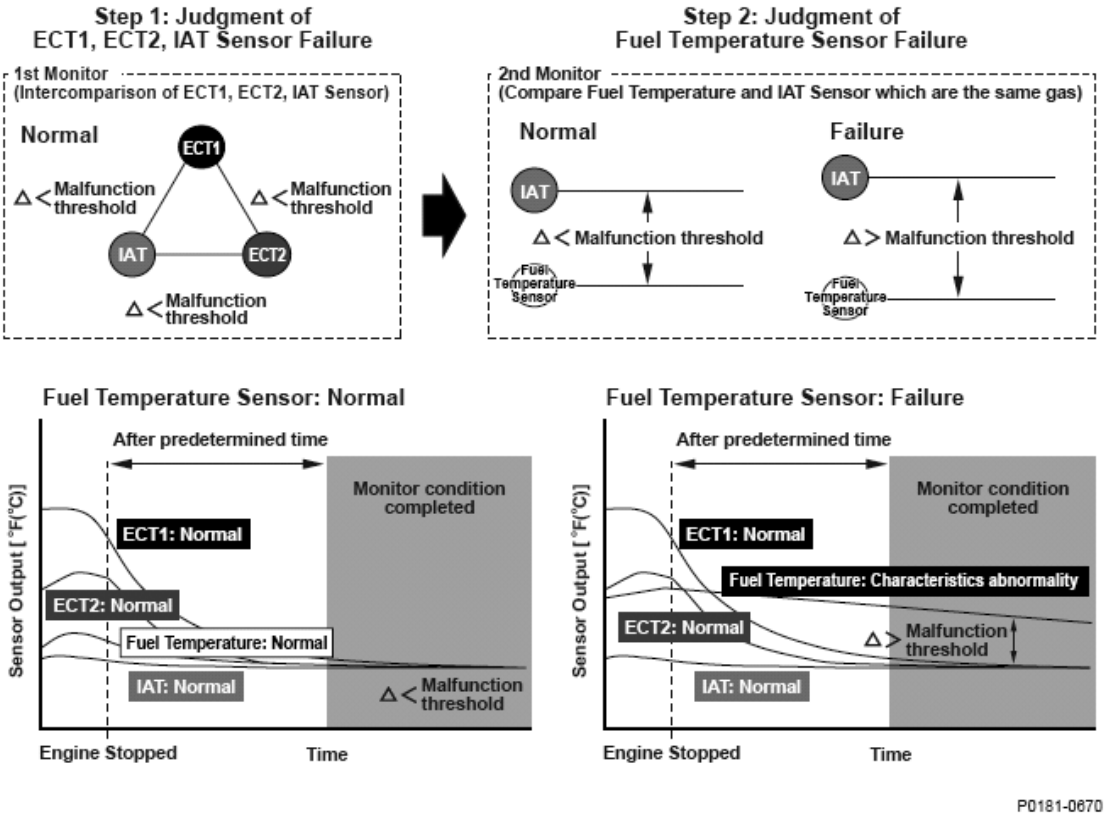


Fig. 123: Fuel Temperature Sensor Performance Graph

General Description (R18A4 Engine)

The powertrain control module (PCM) measures the fuel temperature immediately before the injection of the CNG and corrects the air density of the CNG.

When the engine stops and enough time has passed, each part of the vehicle becomes the same temperature as the ambient air.

At step 1, the two coolant temperature sensors are compared to judge if the intake temperature sensor reading is normal.

When the intake temperature sensor is judged as normal, the intake temperature sensor and CNG fuel temperature sensor are compared at step 2, and if an improper temperature is detected, a CNG fuel temperature sensor problem is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
Monitoring priority	P0111	
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0182, P0183, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A4 Engine)

When the temperature difference between the fuel temperature sensor and IAT is 45 °F (25 °C) or more.

Driving Pattern (R18A4 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0182 (96): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0182: FUEL TEMPERATURE SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

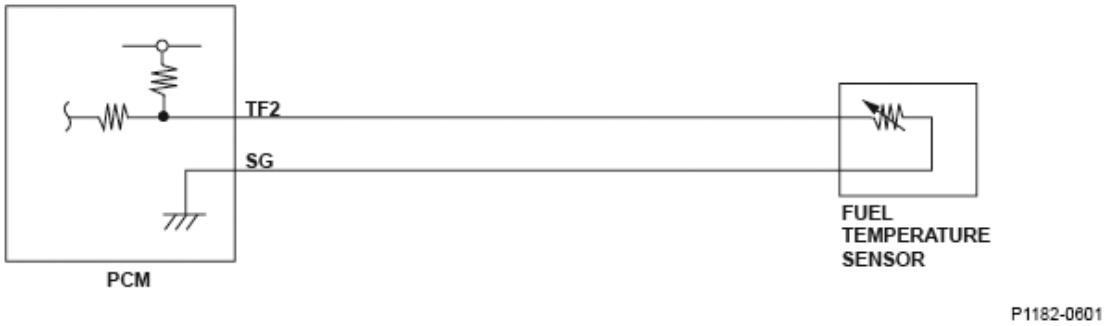


Fig. 124: Fuel Temperature Sensor - Circuit Diagram

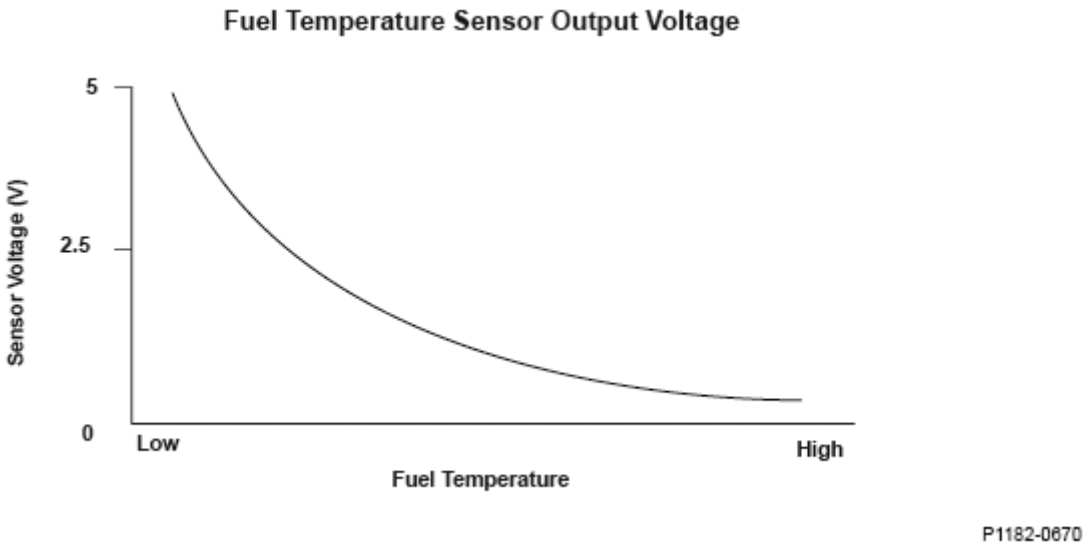


Fig. 125: Fuel Temperature Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel temperature sensor is located on the fuel rail and detects the temperature of the fuel. This signal is used to adjust the fuel injector duration according to the fuel temperature.

The sensor's resistance varies with the fuel temperature sensed by the thermistor. As the fuel temperature falls, the sensor resistance increases, resulting in an increase of sensor output voltage. As the fuel temperature rises, the sensor resistance decreases, resulting in a decrease of sensor output voltage.

If the fuel temperature sensor output voltage is excessively low, the powertrain control module (PCM) detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Ignition switch	ON	
No active DTCs	P0183	

Malfunction Threshold (R18A4 Engine)

The fuel temperature sensor output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0183 (96): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0183: FUEL TEMPERATURE SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

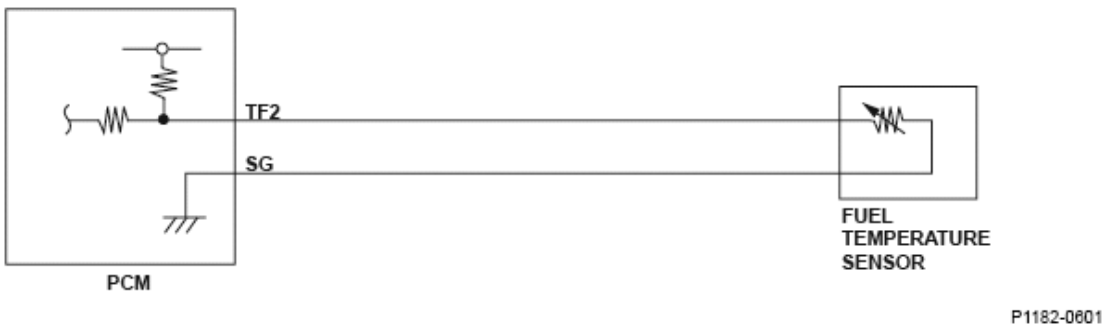


Fig. 126: Fuel Temperature Sensor - Circuit Diagram

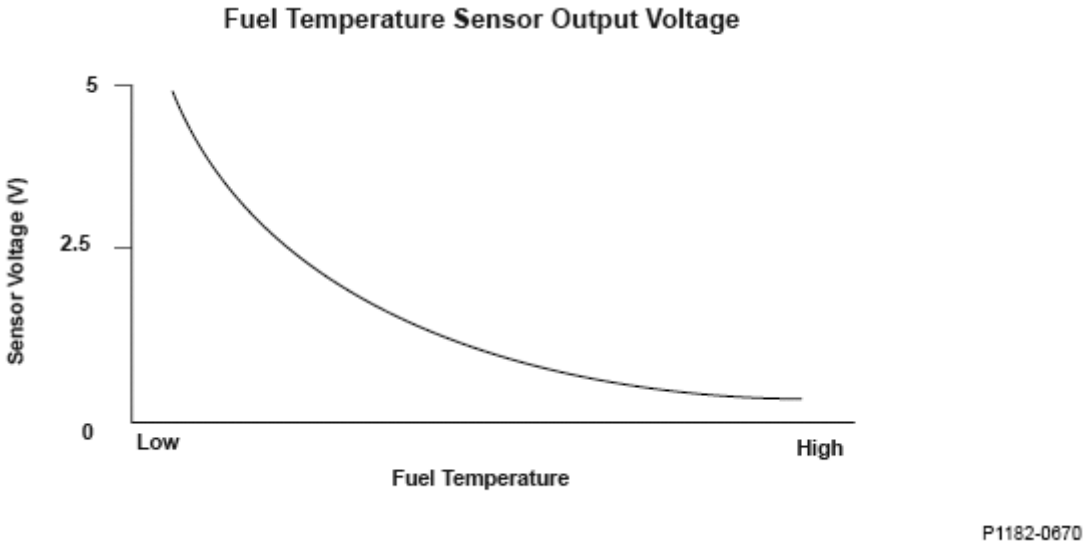


Fig. 127: Fuel Temperature Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel temperature sensor is located on the fuel rail and detects the temperature of the fuel. This signal is used to adjust the fuel injector duration according to the fuel temperature.

The sensor's resistance varies with the fuel temperature sensed by the thermistor. As the fuel temperature falls, the sensor resistance increases, resulting in an increase of sensor output voltage. As the fuel temperature rises, the sensor resistance decreases, resulting in a decrease of sensor output voltage.

If the fuel temperature sensor output voltage is excessively high, the powertrain control module (PCM) detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Intake air temperature	-22°F (-30°C)	-
Ignition switch	ON	
No active DTCs	P0112, P0113, P0182	

Malfunction Threshold (R18A4 Engine)

The fuel temperature sensor output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0191 (96): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0191: FUEL RAIL PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

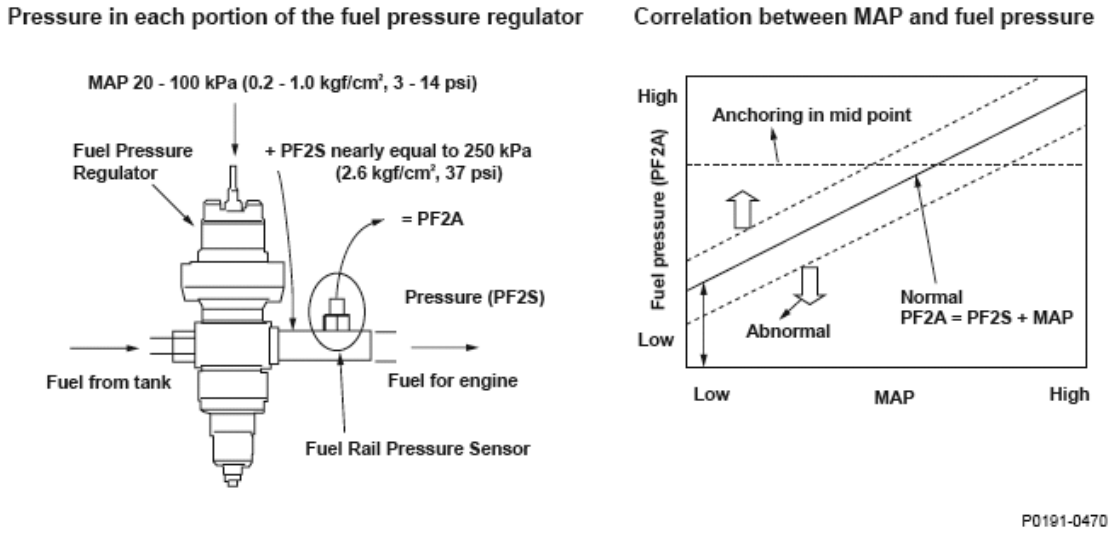


Fig. 128: Fuel Rail Pressure Sensor Performance Description

General Description (R18A4 Engine)

The compressed natural gas (CNG) is supplied from the fuel tank, and it is regulated to about 250 kPa (depending on the MAP sensor value) by the fuel pressure regulator before it reaches the engine. The powertrain control module (PCM) monitors the fuel pressure value detected by the fuel pressure sensor (PF2A) to maintain the correlation with the MAP sensor value. The PCM uses Modes 1 and 2 based on the correlation between the MAP and PF2A shown in the graph to detect abnormal sensor output characteristics.

Mode 1: If the variance of PF2A is within a set range when the MAP varies beyond a certain value, no malfunction is detected, and Mode 2 is started. If the variance of PF2A is out of a set range, a malfunction is detected and a DTC is stored.

Mode 2: If the calculated PF2S is out of a set range, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION - MODE 1

Execution	Once per driving cycle
Sequence	None
Duration	1 second or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

MONITOR DESCRIPTION - MODE 2

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS - MODE 1

Condition	Minimum	Maximum
Elapsed time after starting the engine	5 seconds	-
No active DTCs	P0107, P0108, P0116, P0117, P0118, P0125, P0192, P0193, P1128, P1129	

ENABLE CONDITIONS - MODE 2

Condition	Minimum	Maximum
Elapsed time after starting the engine	5 seconds	-
Engine coolant temperature	156°F (69°C)	-
No active DTCs	P0107, P0108, P0116, P0117, P0118, P0125, P0192, P0193, P1128, P1129	

Malfunction Threshold (R18A4 Engine)

Mode 1: The difference between PF2A values when the MAP is maximum and when the MAP is minimum is 4 bits or less.

Mode 2: PF2A is not between 204 - 326 kPa (2.1 - 3.3 kgf/cm^2 , 30 - 47 psi) for at least 3 seconds. (PF2S = PF2A - MAP)

Driving Pattern (R18A4 Engine)

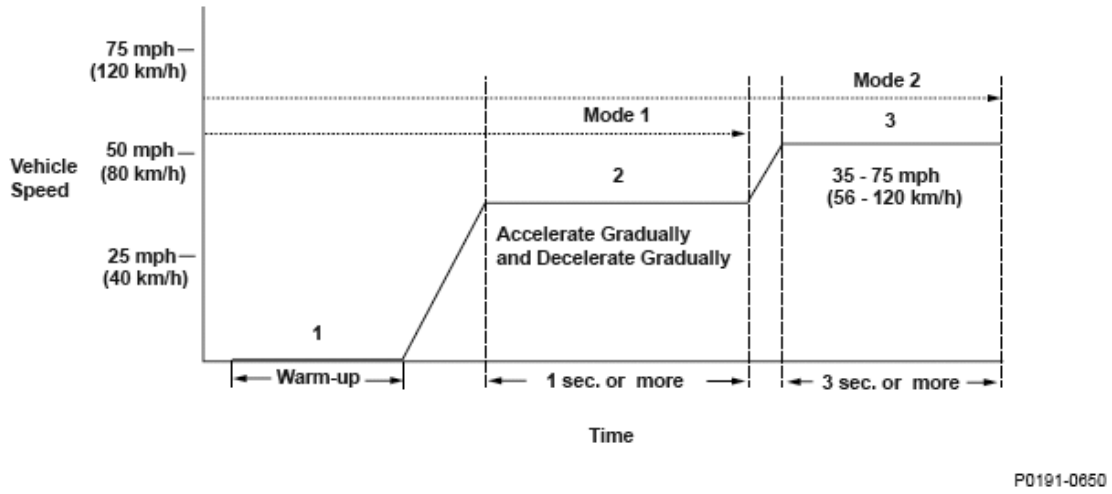


Fig. 129: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle, and gradually accelerate and decelerate for at least 1 second. (Mode 1)
3. Then, drive at a speed between 35 - 75 mph (56 - 120 km/h) for at least 3 seconds. (Mode 2)

- If you have difficulty duplicating the DTC, retest after turning off electrical components such as the audio system and A/C, and try a different gear position.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0192 (95): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0192: FUEL RAIL PRESSURE SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

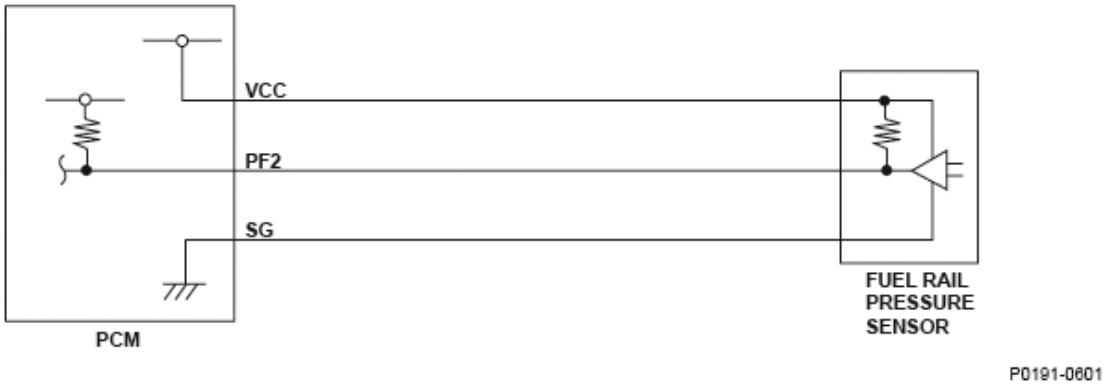


Fig. 130: Fuel Rail Pressure Sensor - Circuit Diagram

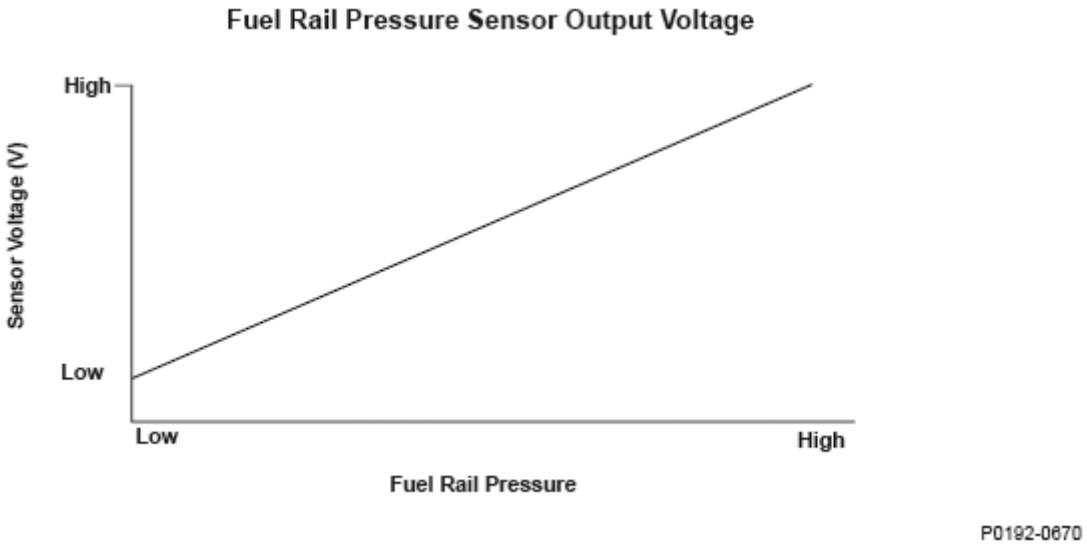


Fig. 131: Fuel Rail Pressure Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel rail pressure sensor senses fuel rail absolute pressure and converts it into electrical signals. The fuel rail pressure sensor outputs low signal voltage at low-fuel rail pressure and high signal voltage at high-fuel rail pressure.

If the fuel rail pressure sensor output voltage is a set value or less, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0193

Malfunction Threshold (R18A4 Engine)

The fuel rail pressure sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0193 (95): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0193: FUEL RAIL PRESSURE SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

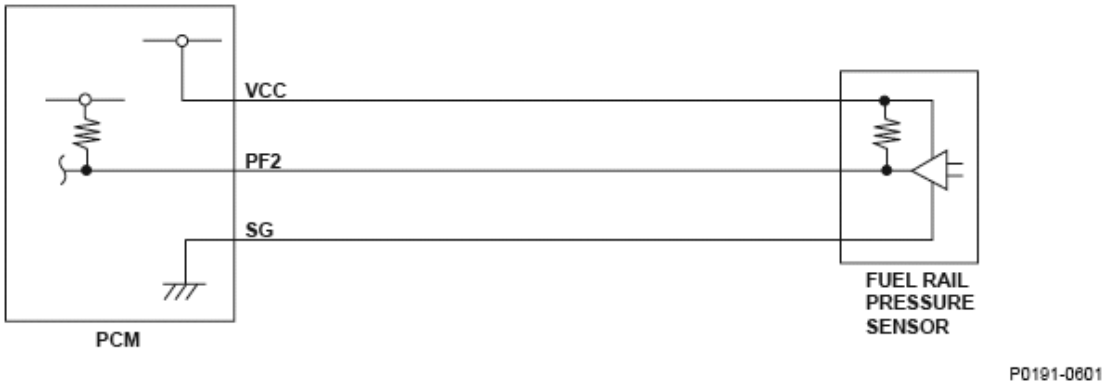


Fig. 132: Fuel Rail Pressure Sensor - Circuit Diagram

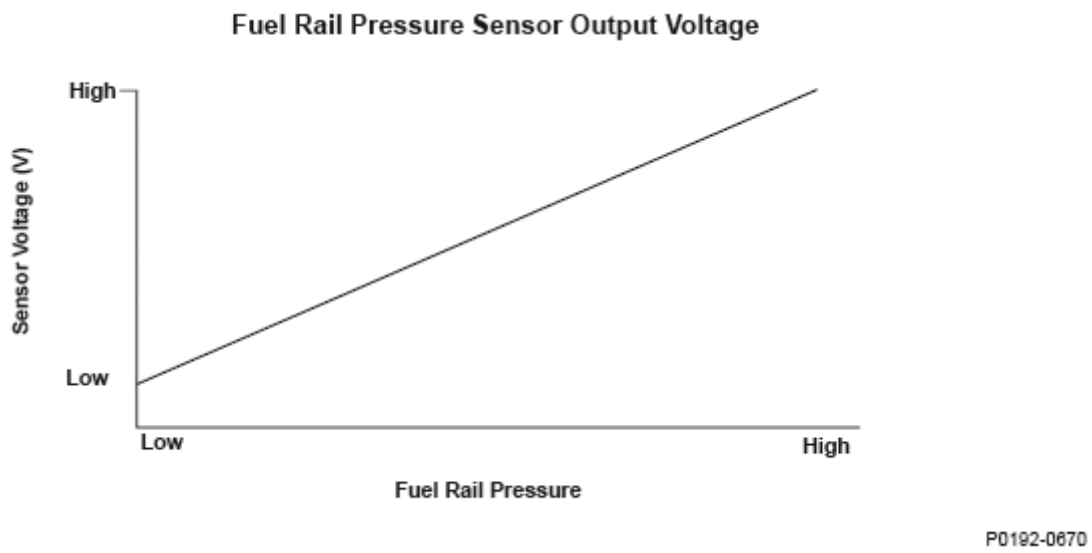


Fig. 133: Fuel Rail Pressure Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel rail pressure sensor senses fuel rail absolute pressure and converts it into electrical signals. The fuel rail pressure sensor outputs low signal voltage at low-fuel rail pressure and high signal voltage at high-fuel rail pressure.

If the fuel rail pressure sensor output voltage is a set value or more, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0192

Malfunction Threshold (R18A4 Engine)

The fuel rail pressure sensor output voltage is 4.77 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0222 (7): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0222: THROTTLE POSITION (TP) SENSOR B CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

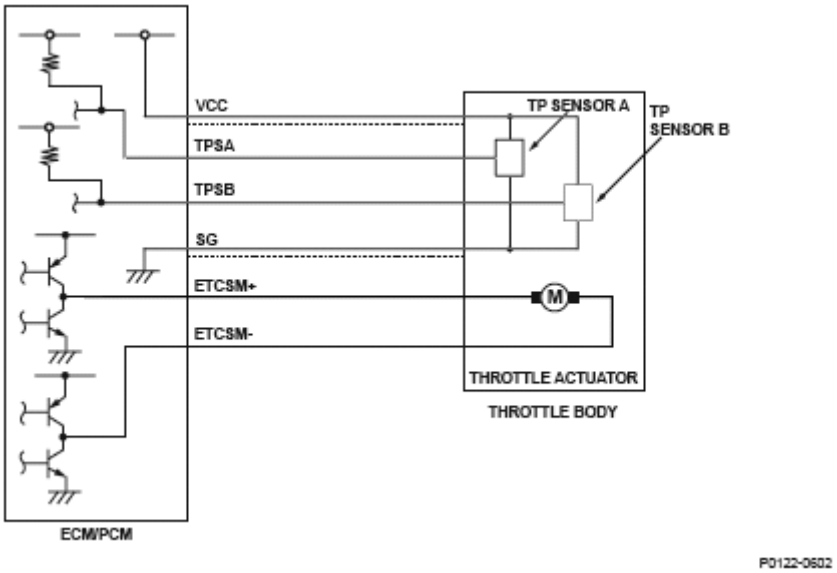


Fig. 134: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the ECM/PCM for target position feedback control. If the signal from TP sensor B is less than a fixed value for a set time, the ECM/PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0223, P2101, P2118, P2135, P2176

Malfunction Threshold (K20Z3 Engine)

The TP sensor B output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0222 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0222: THROTTLE POSITION (TP) SENSOR B CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

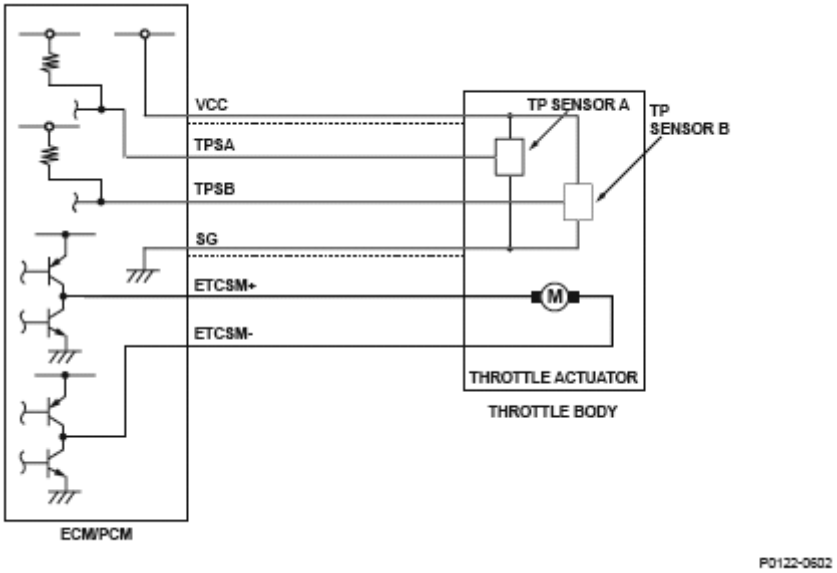


Fig. 135: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor B is less than a fixed value for a set time, the ECM/PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0223, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A1 Engine)

The TP sensor B output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0222 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0222: THROTTLE POSITION (TP) SENSOR B CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

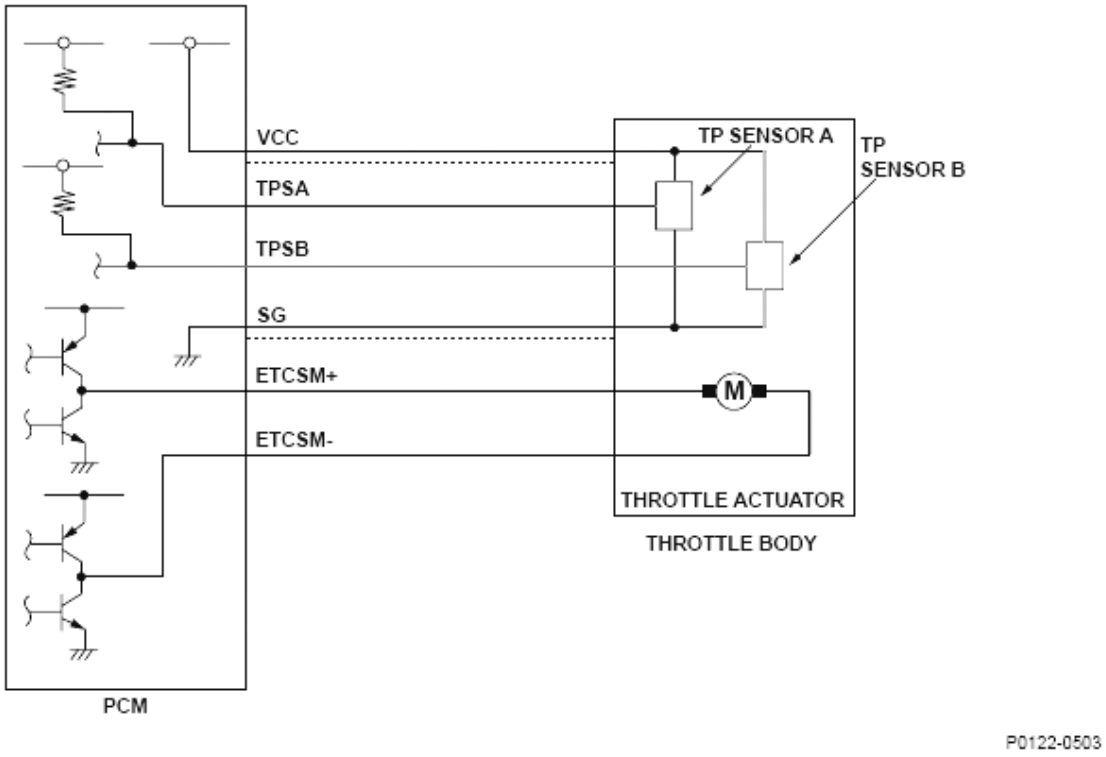


Fig. 136: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed

of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the PCM for target position feedback control.

If the signal from TP sensor B is less than a fixed value for a set time, the PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0223, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A4 Engine)

The TP sensor B output voltage is 0.3 V or less for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0223 (7): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0223: THROTTLE POSITION (TP) SENSOR B CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

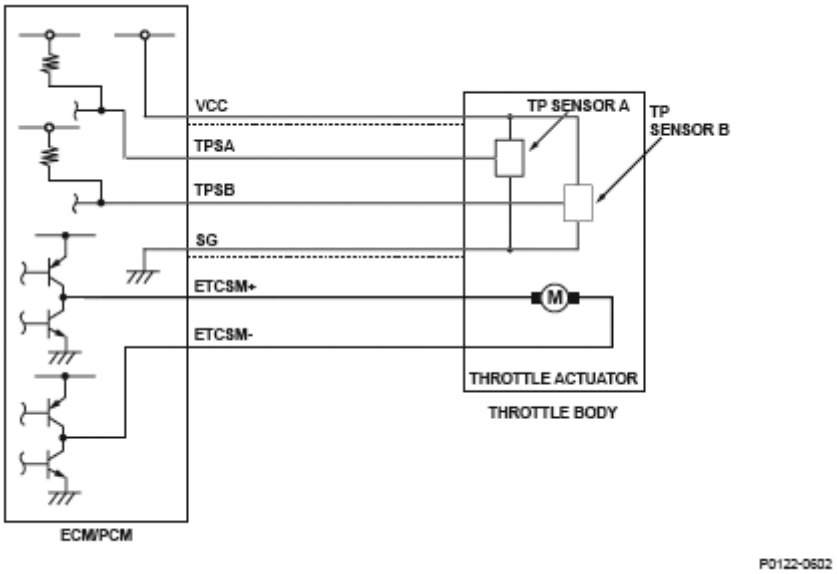


Fig. 137: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor B is more than a fixed value for a set time, the ECM/PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	

Ignition switch	ON
No active DTCs	P0222, P2101, P2118, P2135, P2176

Malfunction Threshold (K20Z3 Engine)

The TP sensor B output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0223 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0223: THROTTLE POSITION (TP) SENSOR B CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

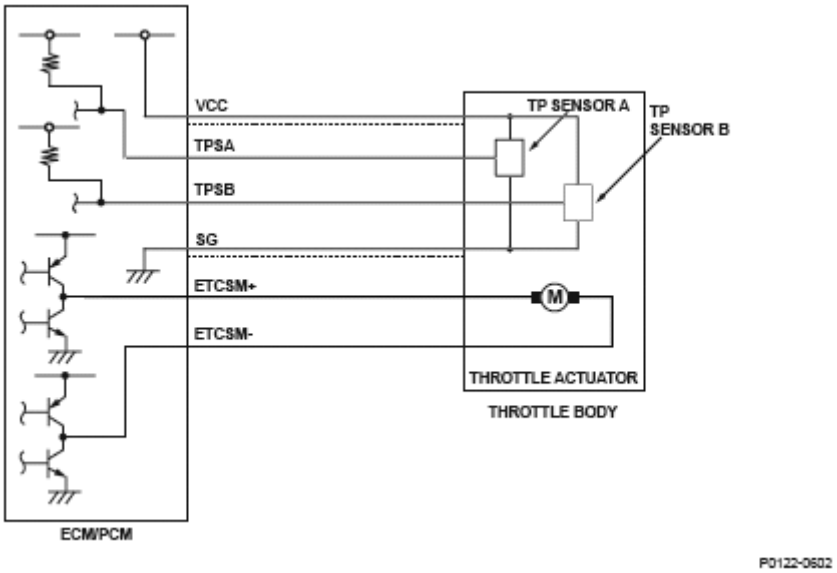


Fig. 138: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor B is more than a fixed value for a set time, the ECM/PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0222, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A1 Engine)

The TP sensor B output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0223 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE, M/T)

DTC P0223: THROTTLE POSITION (TP) SENSOR B CIRCUIT HIGH VOLTAGE (R18A1 ENGINE, M/T)

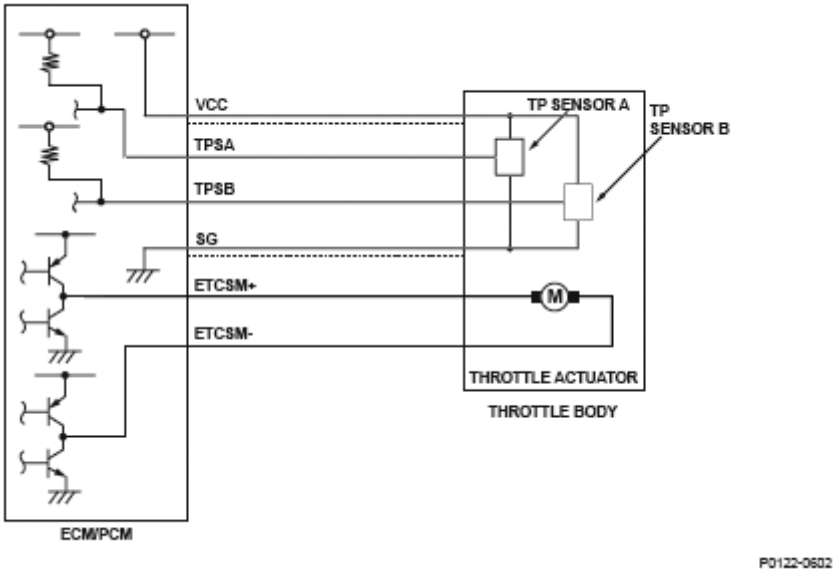


Fig. 139: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine, M/T)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the ECM/PCM for target position feedback control.

If the signal from TP sensor B is more than a fixed value for a set time, the ECM/PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine, M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine, M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0222, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A1 Engine, M/T)

The TP sensor B output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine, M/T)

Conditions for illuminating the MIL (R18A1 Engine, M/T)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine, M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0223 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0223: THROTTLE POSITION (TP) SENSOR B CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

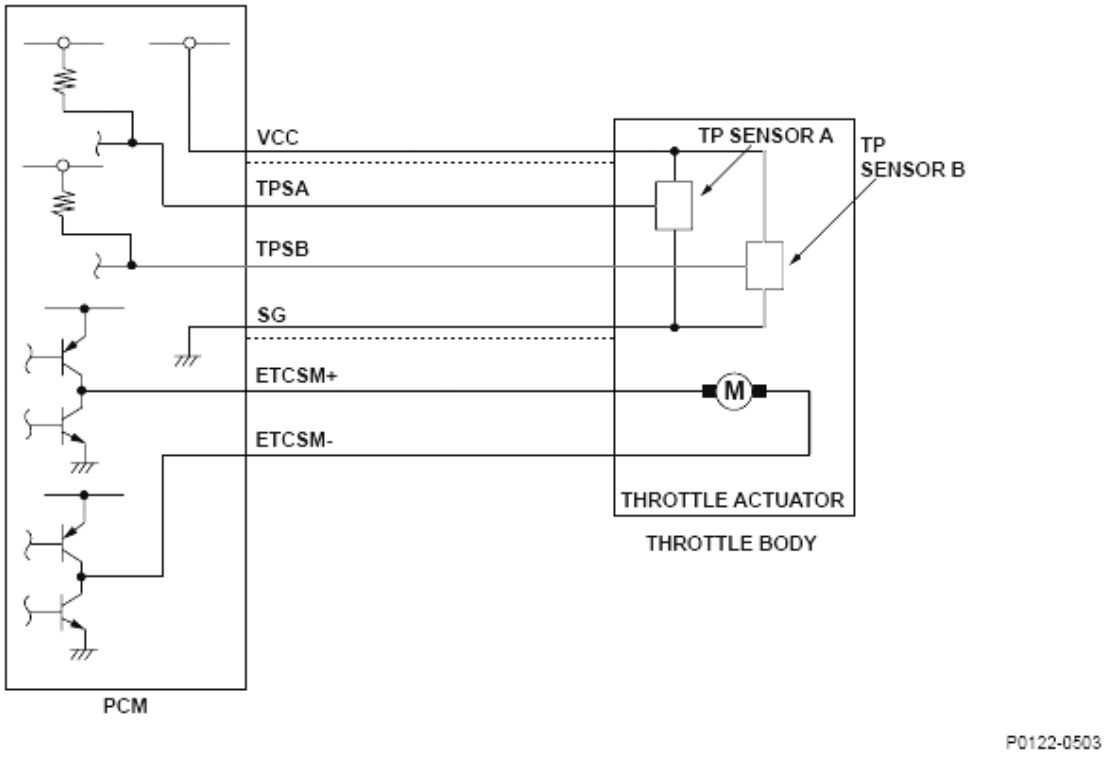


Fig. 140: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed

of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

Throttle position (TP) sensor B is a semiconductor type, and it is attached to the throttle body and shaft to determine throttle valve position.

The throttle valve position signal from TP sensor B is transmitted to the PCM for target position feedback control.

If the signal from TP sensor B is more than a fixed value for a set time, the PCM detects a TP sensor B malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0222, P2101, P2118, P2135, P2176

Malfunction Threshold (R18A4 Engine)

The TP sensor B output voltage is 4.8 V or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0300 (75): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0300: RANDOM MISFIRE DETECTED (K20Z3)

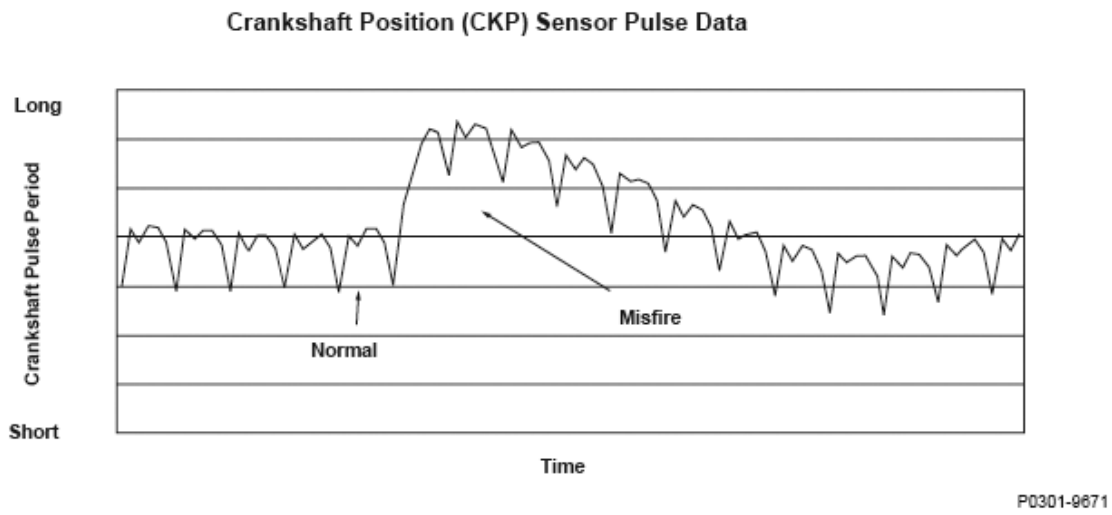


Fig. 141: Crankshaft Position Sensor Pulse Data - Graph

General Description (K20Z3 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The engine control module (ECM) monitors the crankshaft rotation speed based on the output pulses from the crankshaft position (CKP) sensor. By monitoring changes in the crankshaft rotation speed, the ECM counts the number of misfires and determines which cylinder is misfiring. If more than one DTC from P0301 through P0304 has been stored while misfires in multiple cylinders are detected, a malfunction is detected and a DTC is stored.

There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		14°F (-10°C)(1)	-
		68°F (20°C)(2)	
Engine speed		500 rpm	8,000 rpm
MAP value(3)	750 rpm	22 kPa (6.4 in.Hg, 162 mmHg)	-
	2,000 rpm	22 kPa (6.3 in.Hg, 158 mmHg)	-
Fuel feedback		Other than during fuel cut-off operation	
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1128, P1129, P2227, P2228, P2229	
Other		Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of more than 14°F (-10°C).

(2) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(3) Varies with driving conditions.

Malfunction Threshold (K20Z3 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	19 - 89 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	49 times

(1) Depending on engine speed and load.

Driving Pattern (K20Z3 Engine)

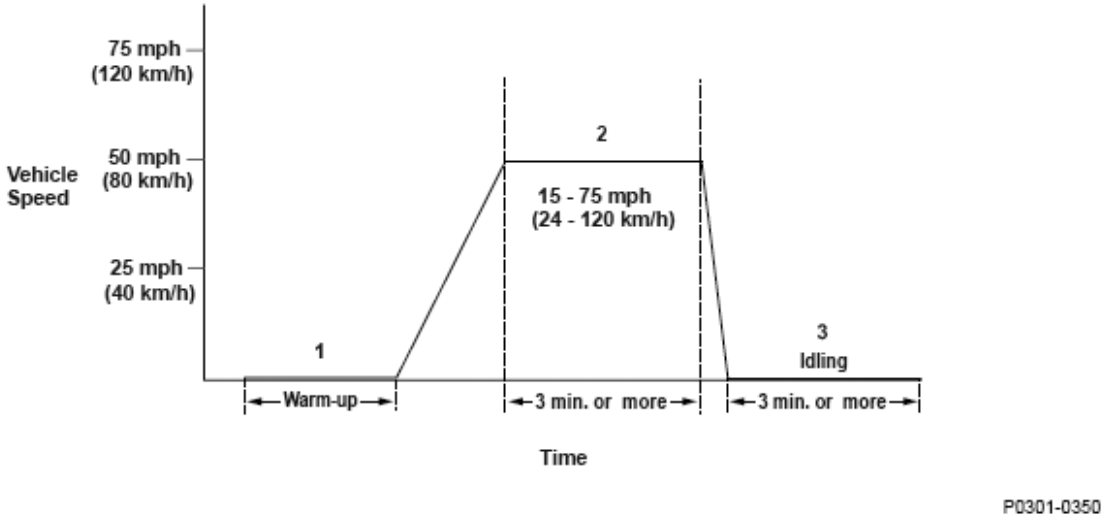


Fig. 142: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

Misfire Type 1: Under high rpm or high load conditions: The MIL blinks once per second if a type 1 misfire (catalyst damaging) occurs, and a Temporary DTC is stored. If the type 1 misfire ceases, the MIL goes off. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks at the first misfire occurrence, and the DTC and the freeze frame data are stored. The MIL remains on steady if the type 1 misfire ceases.

Under normal driving conditions: The MIL blinks once per second if a type 1 misfire occurs a third time, and a Temporary DTC is stored. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks during the third type 1 misfire occurrence, and the DTC and the freeze frame data are stored. If the type 1 misfire ceases, the MIL remains on steady.

Misfire Type 2: When a type 2 misfire (emission-related but not severe enough to immediately damage the TWC) occurs within the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored.

If a type 2 misfire occurs after the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored during the fourth type 2 misfire occurrence.

If a type 2 misfire occurs during the next (second) drive cycle, the MIL comes on, and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0300 (75): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0300: RANDOM MISFIRE DETECTED (R18A1)

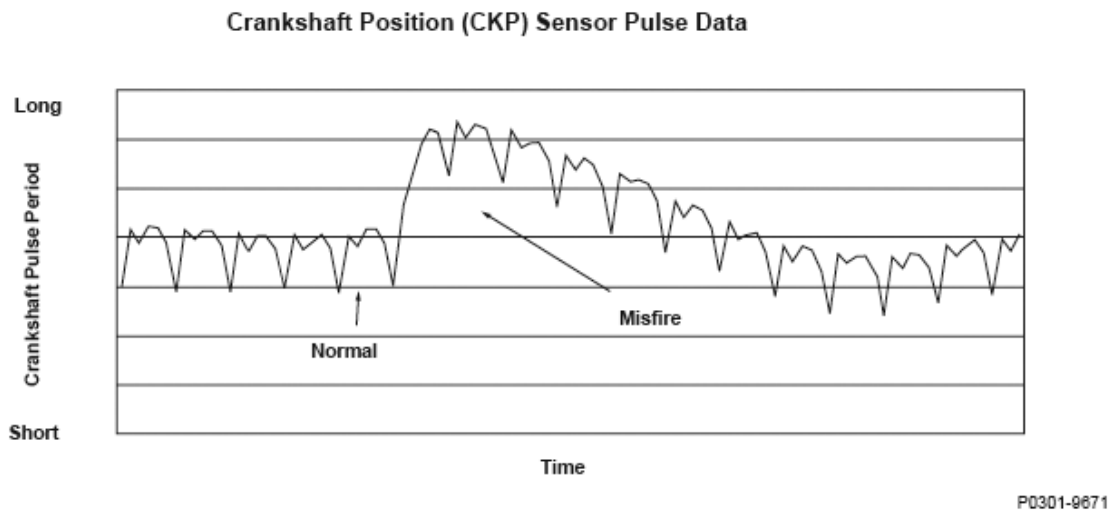


Fig. 143: Crankshaft Position Sensor Pulse Data - Graph

General Description (R18A1 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The engine control module (ECM)/powertrain control module (PCM) monitors the crankshaft rotation speed based on the output pulses from the crankshaft position (CKP) sensor. By monitoring changes in the crankshaft rotation speed, the ECM/ PCM counts the number of misfires and determines which cylinder is misfiring. If more than one DTC from P0301 through P0304 has been stored while misfires in multiple cylinders are detected, a malfunction is detected and a DTC is stored. There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	14°F (-10°C)(1)	-

			68°F (20°C)(2)	
Engine speed			470 rpm	6,800 rpm
MAP value(3)	500 rpm	A/T	24 kPa (7.1 in.Hg, 179 mmHg)	-
		M/T	22 kPa (6.5 in.Hg, 165 mmHg)	
	2,250 rpm	A/T	23 kPa (6.6 in.Hg, 166 mmHg)	-
		M/T	21 kPa (6.2 in.Hg, 157 mmHg)	
Fuel feedback			Other than during fuel cut-off operation	
No active DTCs			P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1128, P1129, P2227, P2228, P2229	
Other			Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of more than 14°F (-10°C).

(2) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(3) Varies with driving conditions.

Malfunction Threshold (R18A1 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	18 - 90 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	24(2), 28(3) times

(1) Depending on engine speed and load.

(2) A/T model

(3) M/T model

Driving Pattern (R18A1 Engine)

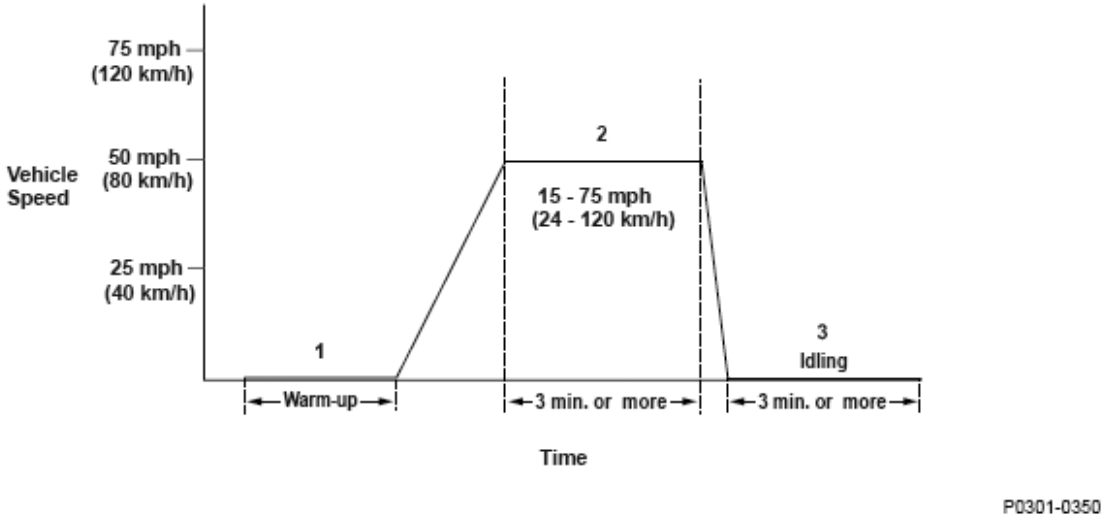


Fig. 144: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

Misfire Type 1:

- If a type 1 misfire (catalyst damaging) occurs once, the MIL blinks once per second, a Temporary DTC is stored, and the high rpm fuel injection stop system activates. The fuel injection stops, at high rpm only, on the bank of cylinders with the cylinder that has the highest misfire counts. the MIL continues to blink and the fuel injection stays off at high rpm, until the drive is completed.
- If a type 1 misfire occurs during a second drive cycle, the MIL and fuel injection behave the same and a DTC is stored.
- After a type 1 misfire has been detected during two drive cycles, the MIL comes on and stays on solid beginning with the third drive cycle, unless the Temporary DTC has been cleared by the ECM/PCM*. Even if the MIL is on, it will start blinking if a type 1 misfire occurs.

Misfire Type 2:

If a type 2 misfire (emission-related but not severe enough to immediately damage the catalyst) occurs, a Temporary DTC is stored, but the MIL does come on or blink. If a type 2 misfire occurs during a second drive cycle, the MIL comes on and stays on unless the Temporary DTC has been cleared by the

ECM/PCM*.

* The temporary DTC is erased under these conditions:

- The vehicle is operated under the same driving conditions as the first misfire detection, and no misfire is detected.
- 80 drive cycles are completed with no misfire detected.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0300 (75): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0300: RANDOM MISFIRE DETECTED (R18A4 ENGINE)

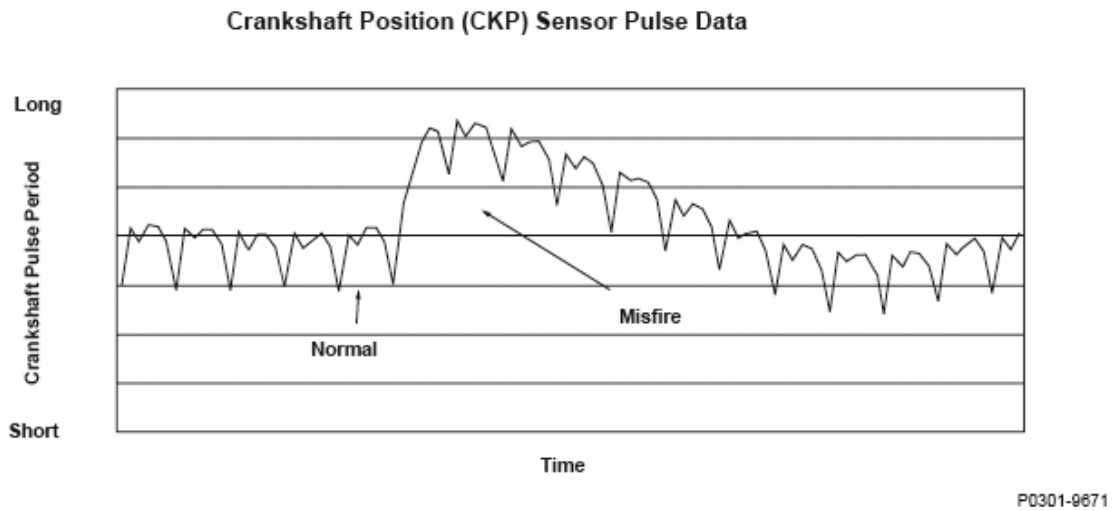


Fig. 145: Crankshaft Position Sensor Pulse Data - Graph

General Description (R18A4 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The powertrain control module (PCM) monitors the crankshaft rotation speed based on the output pulses from the crankshaft position (CKP) sensor. By monitoring changes in the crankshaft rotation speed, the PCM counts the number of misfires and determines which cylinder is misfiring. If more than one DTC from P0301 through P0304 has been stored while misfires in multiple cylinders are detected, a malfunction is detected and a DTC is stored.

There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the

MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		14°F (-10°C)(1)	-
		68°F (20°C)(2)	
Engine speed		470 rpm	6,800 rpm
MAP value(3)	500 rpm	23 kPa (6.7 in.Hg, 168 mmHg)	-
	2,000 rpm	24 kPa (6.9 in.Hg, 175 mmHg)	-
Fuel feedback		Other than during fuel cut-off operation	
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1109, P2227, P2228, P2229	
Other		Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(2) When starting the engine at an engine coolant temperature of more than 14°F (-10°C).

(3) Varies with driving conditions.

Malfunction Threshold (R18A4 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	33 - 82 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	65 times

(1) Depending on engine speed and load.

Driving Pattern (R18A4 Engine)

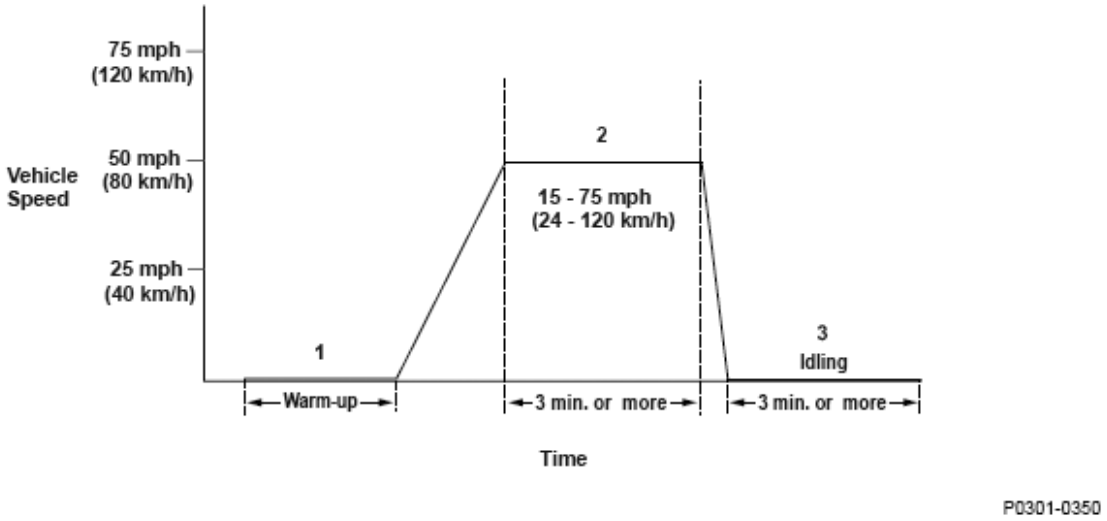


Fig. 146: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

Misfire Type 1: Under high rpm or high load conditions: The MIL blinks once per second if a type 1 misfire (catalyst damaging) occurs, and a Temporary DTC is stored. If the type 1 misfire ceases, the MIL goes off. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks at the first misfire occurrence, and the DTC and the freeze frame data are stored. The MIL remains on steady if the type 1 misfire ceases.

Under normal driving conditions: The MIL blinks once per second if a type 1 misfire occurs a third time, and a Temporary DTC is stored. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks during the third type 1 misfire occurrence, and the DTC and the freeze frame data are stored. If the type 1 misfire ceases, the MIL remains on steady.

Misfire Type 2: When a type 2 misfire (emission-related but not severe enough to immediately damage the TWC) occurs within the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored.

If a type 2 misfire occurs after the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored during the fourth type 2 misfire occurrence.

If a type 2 misfire occurs during the next (second) drive cycle, the MIL comes on, and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0301 (71), P0302 (72), P0303 (73), P304 (74): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED (K20Z3); DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED (K20Z3); DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED (K20Z3); DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED (K20Z3)

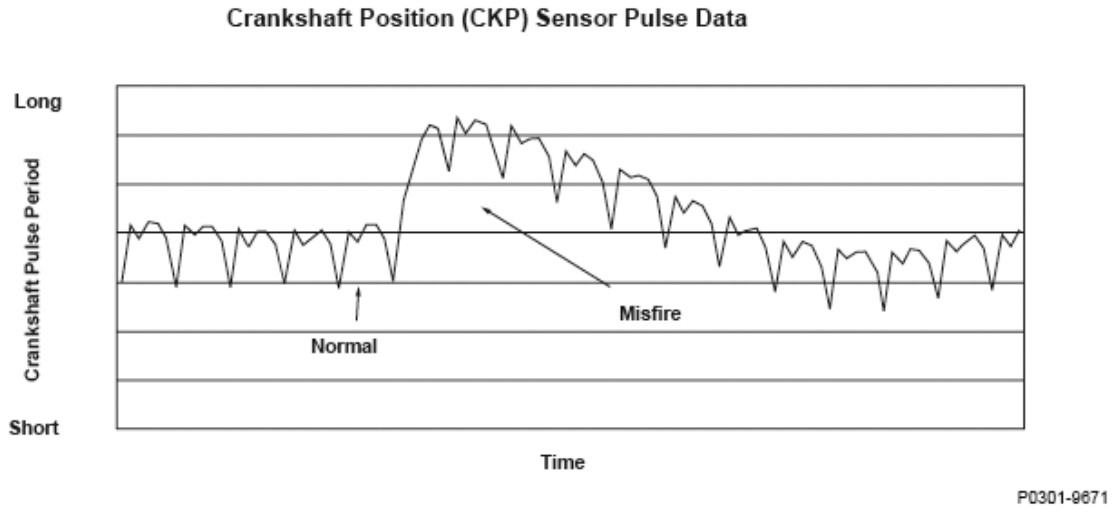


Fig. 147: Crankshaft Position Sensor Pulse Data - Graph

General Description (K20Z3 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The engine control module (ECM) monitors engine misfiring based on the output pulses from the crankshaft position (CKP) sensor, counts the number of misfires, and determines which cylinder is misfiring. If a misfire is detected, a DTC is stored. There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		14°F (-10°C)(1)	-
		68°F (20°C)(2)	
Engine speed		500 rpm	8,000 rpm
MAP value(3)	750 rpm	22 kPa (6.4 in.Hg, 162 mmHg)	-
	2,000 rpm	22 kPa (6.3 in.Hg, 158 mmHg)	-
Fuel feedback		Other than during fuel cut-off operation	
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1128, P1129, P2227, P2228, P2229	
Other		Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of more than 14°F (-10°C).

(2) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(3) Varies with driving conditions.

Malfunction Threshold (K20Z3 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	19 - 89 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	49 times

(1) Depending on engine speed and load.

Driving Pattern (K20Z3 Engine)

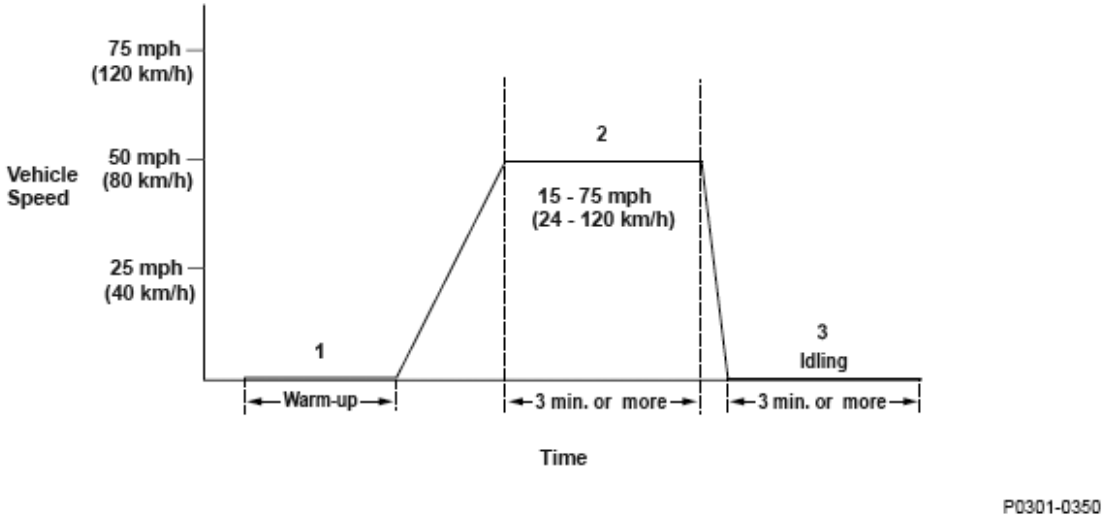


Fig. 148: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

Misfire Type 1: Under high rpm or high load conditions: The MIL blinks once per second if a type 1 misfire (catalyst damaging) occurs, and a Temporary DTC is stored. If the type 1 misfire ceases, the MIL goes off. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks at the first misfire occurrence, and the DTC and the freeze frame data are stored. The MIL remains on steady if the type 1 misfire ceases.

Under normal driving conditions: The MIL blinks once per second if a type 1 misfire occurs a third time, and a Temporary DTC is stored. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks during the third type 1 misfire occurrence, and the DTC and the freeze frame data are stored. If the type 1 misfire ceases, the MIL remains on steady.

Misfire Type 2: When a type 2 misfire (emission-related but not severe enough to immediately damage the TWC) occurs within the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored. If a type 2 misfire occurs after the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored during the fourth type 2 misfire occurrence.

If a type 2 misfire occurs during the next (second) drive cycle, the MIL comes on, and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0301 (71), P0302 (72), P0303 (73), P304 (74): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED (R18A1); DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED (R18A1); DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED (R18A1); DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED (R18A1)

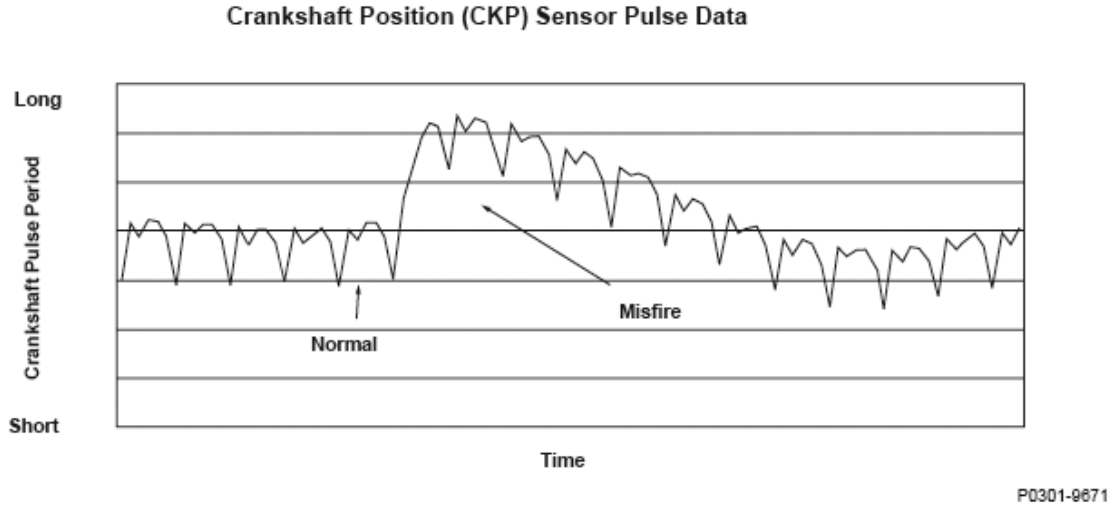


Fig. 149: Crankshaft Position Sensor Pulse Data - Graph

General Description (R18A1 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The engine control module (ECM)/powertrain control module (PCM) monitors engine misfiring based on the output pulses from the crankshaft position (CKP) sensor, counts the number of misfires, and determines which cylinder is misfiring. If a misfire is detected, a DTC is stored.

There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition			Minimum	Maximum
Engine coolant temperature			14°F (-10°C)(1)	-
			68°F (20°C)(2)	
Engine speed			470 rpm	6,800 rpm
MAP value(3)	500 rpm	A/T	24 kPa (7.1 in.Hg, 179 mmHg)	-
		M/T	22 kPa (6.5 in.Hg, 165 mmHg)	
	2,250 rpm	A/T	23 kPa (6.6 in.Hg, 166 mmHg)	-
		M/T	21 kPa (6.2 in.Hg, 157 mmHg)	
Fuel feedback			Other than during fuel cut-off operation	
No active DTCs			P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1128, P1129, P2227, P2228, P2229	
Other			Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of more than 14°F (-10°C).

(2) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(3) Varies with driving conditions.

Malfunction Threshold (R18A1 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	18 - 90 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	24(2), 28(3) times

(1) Depending on engine speed and load.

(2) A/T model

(3) M/T model

Driving Pattern (R18A1 Engine)

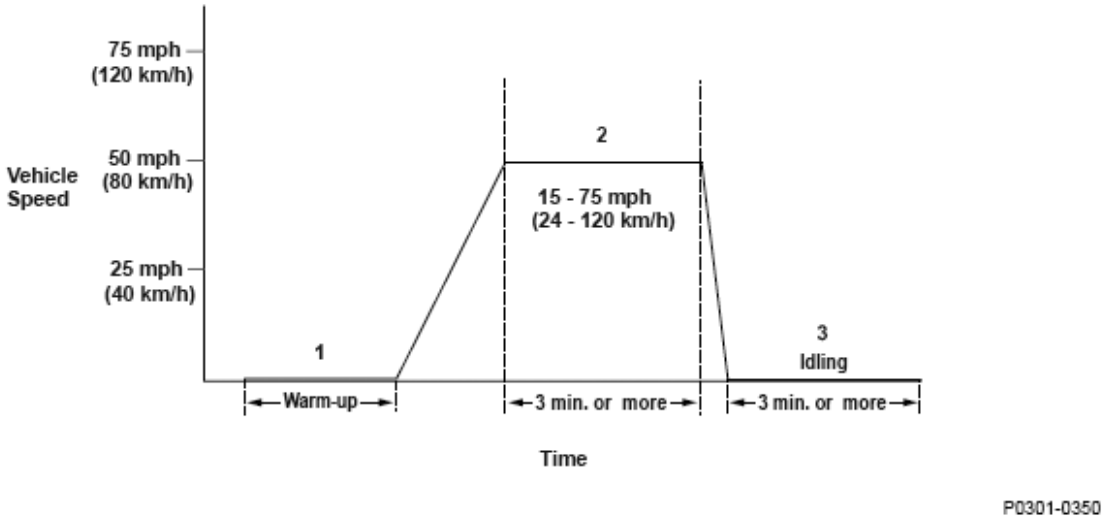


Fig. 150: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

Misfire Type 1:

- If a type 1 misfire (catalyst damaging) occurs once, the MIL blinks once per second, a Temporary DTC is stored, and the high rpm fuel injection stop system activates. The fuel injection stops, at high rpm only, on the bank of cylinders with the cylinder that has the highest misfire counts. the MIL continues to blink and the fuel injection stays off at high rpm, until the drive is completed.
- If a type 1 misfire occurs during a second drive cycle, the MIL and fuel injection behave the same and a DTC is stored.
- After a type 1 misfire has been detected during two drive cycles, the MIL comes on and stays on solid beginning with the third drive cycle, unless the Temporary DTC has been cleared by the ECM/PCM*. Even if the MIL is on, it will start blinking if a type 1 misfire occurs.

Misfire Type 2:

If a type 2 misfire (emission-related but not severe enough to immediately damage the catalyst) occurs, a

Temporary DTC is stored, but the MIL does come on or blink. If a type 2 misfire occurs during a second drive cycle, the MIL comes on and stays on unless the Temporary DTC has been cleared by the ECM/PCM*.

* The temporary DTC is erased under these conditions:

- The vehicle is operated under the same driving conditions as the first misfire detection, and no misfire is detected.
- 80 drive cycles are completed with no misfire detected.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0301 (71), P0302 (72), P0303 (73), P304 (74): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED (R18A4 ENGINE)

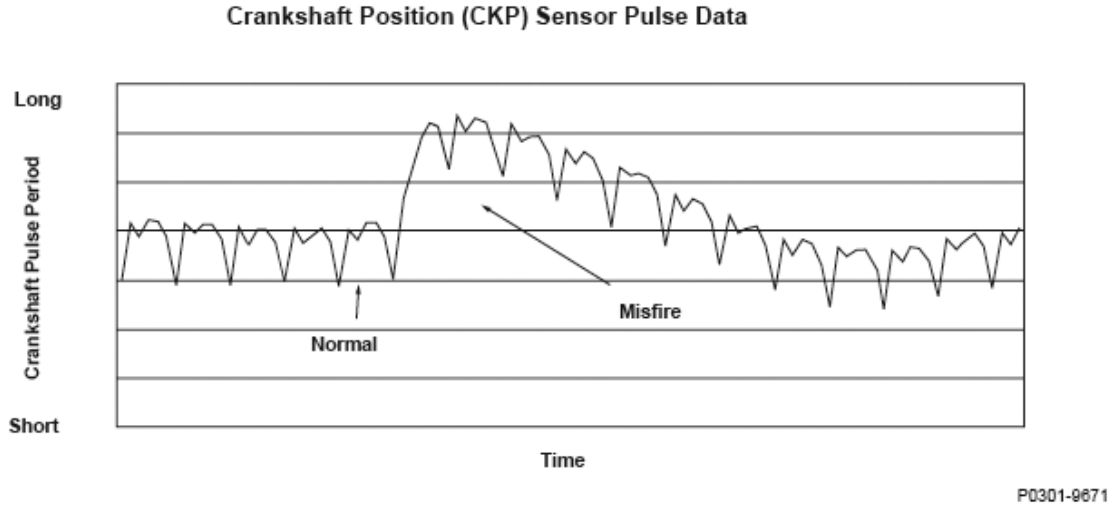


Fig. 151: Crankshaft Position Sensor Pulse Data - Graph

General Description (R18A4 Engine)

The crankshaft vibrates slightly when each cylinder fires. If a misfire occurs, the crankshaft rotation speed changes rapidly. The powertrain control module (PCM) monitors engine misfiring based on the output pulses from the crankshaft position (CKP) sensor, counts the number of misfires, and determines which cylinder is misfiring. If a misfire is detected, a DTC is stored.

There are two types of misfire detection.

Type 1 (1 drive cycle): When the number of misfires per 200 engine revolutions reaches the level that damages the three way catalyst (TWC), a DTC is stored and the MIL blinks. When the misfire ceases, the MIL remains on steady instead of blinking.

Type 2 (2 drive cycles): When the number of misfires per 1,000 engine revolutions reaches the level that affects FTP mode exhaust emissions, a DTC is stored and the MIL comes on.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution		Continuous
Sequence		None
Duration	Type 1	Every 200 rpm
	Type 2	Every 1,000 rpm
DTC Type		Two drive cycles, MIL ON
OBD Status		PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		14°F (-10°C)(1)	-
		68°F (20°C)(2)	
Engine speed		470 rpm	6,800 rpm
MAP value(3)	500 rpm	23 kPa (6.7 in.Hg, 168 mmHg)	-
	2,000 rpm	24 kPa (6.9 in.Hg, 175 mmHg)	-
Fuel feedback		Other than during fuel cut-off operation	
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0222, P0223, P0335, P0339, P1109, P2227, P2228, P2229	
Other		Test-drive on a flat road to avoid misdetection	

(1) When starting the engine at an engine coolant temperature of 14°F (-10°C) or less.

(2) When starting the engine at an engine coolant temperature of more than 14 F (-10°C).

(3) Varies with driving conditions.

Malfunction Threshold (R18A4 Engine)

The number of misfires versus engine revolutions is equal to or greater than the values in the table.

MALFUNCTION THRESHOLD

Misfire Type	The number of engine revolutions	The number of misfires
Misfire Type 1 (Severe)	Per 200 revolutions	33 - 82 times(1)
Misfire Type 2 (Light)	Per 1,000 revolutions	65 times

(1) Depending on engine speed and load.

Driving Pattern (R18A4 Engine)

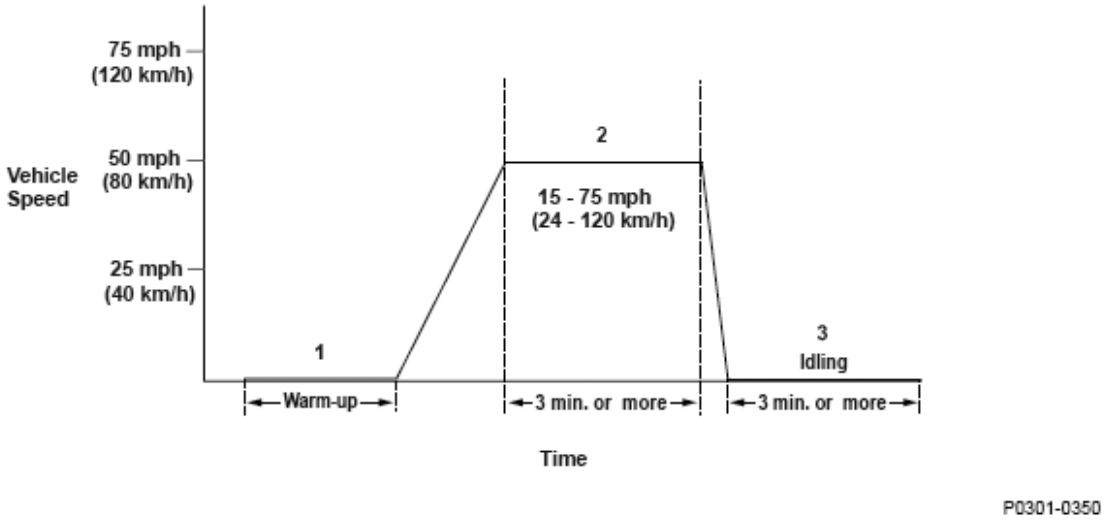


Fig. 152: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 3 minutes.
3. Stop the vehicle, and let the engine idle for at least 3 minutes.

- When freeze frame data is stored, drive the vehicle under those conditions instead of Driving Patterns 2 or 3.
- When you have difficulty duplicating the DTC because of road conditions and traffic situations, repeat the driving pattern several times.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

Misfire Type 1: Under high rpm or high load conditions: The MIL blinks once per second if a type 1 misfire (catalyst damaging) occurs, and a Temporary DTC is stored. If the type 1 misfire ceases, the MIL goes off. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks at the first misfire occurrence, and the DTC and the freeze frame data are stored. The MIL remains on steady if the type 1 misfire ceases.

Under normal driving conditions: The MIL blinks once per second if a type 1 misfire occurs a third time, and a Temporary DTC is stored. If a type 1 misfire occurs during the next (second) drive cycle, the MIL blinks during the third type 1 misfire occurrence, and the DTC and the freeze frame data are stored. If the type 1 misfire ceases, the MIL remains on steady.

Misfire Type 2: When a type 2 misfire (emission-related but not severe enough to immediately damage the TWC) occurs within the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored.

If a type 2 misfire occurs after the first 1,000 engine revolutions after engine start-up, a Temporary DTC is stored during the fourth type 2 misfire occurrence.

If a type 2 misfire occurs during the next (second) drive cycle, the MIL comes on, and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0325 (23): ADVANCED DIAGNOSTICS (M/T)

DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION (M/T)

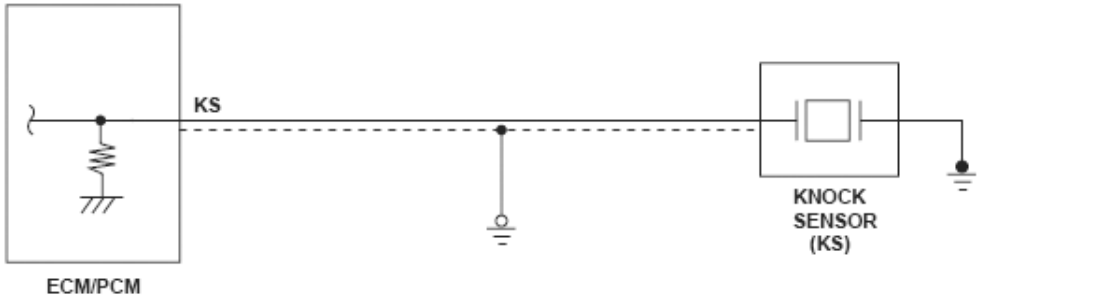


Fig. 153: Knock Sensor Circuit Malfunction Diagram

General Description (M/T)

The knock sensor is mounted on the engine block and detects engine knocking. The vibrations caused by the knocking are converted into electrical signals through the piezo ceramic element. The engine control module (ECM)/powertrain control module (PCM) controls the ignition timing based on the electrical signals. If the signals from the knock sensor do not vary for a set time, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	140°F (60°C)	-
Engine speed	2,000 rpm	-
No active DTCs	P0112, P0113, P0117, P0118, P0335, P0339, P0340(1), P0341(1), P0344(1), P0365, P0369 P0606, P2646, P2647, P2648, P2649	
(1) K20Z3 engine		

Malfunction Threshold (M/T)

No signals from the knock sensor are detected for at least 5 seconds.

Driving Pattern (M/T)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Hold the engine speed at 3,000 - 4,000 rpm for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0325 (23): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION (K20Z3 ENGINE)

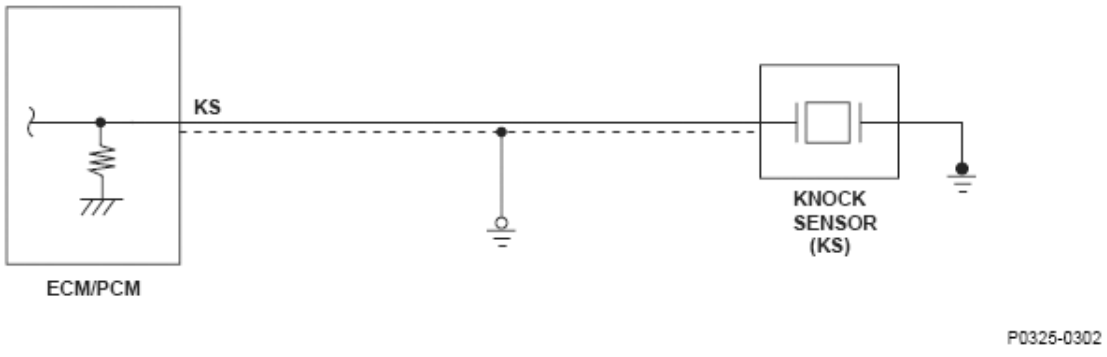


Fig. 154: Knock Sensor Circuit Malfunction Diagram

General Description (K20Z3 Engine)

The knock sensor is mounted on the engine block and detects engine knocking. The vibrations caused by the knocking are converted into electrical signals through the piezo ceramic element. The engine control module (ECM)/powertrain control module (PCM) controls the ignition timing based on the electrical signals. If the signals from the knock sensor do not vary for a set time, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	140°F (60°C)	-
Engine speed	2,000 rpm	-
No active DTCs	P0112, P0113, P0117, P0118, P0335, P0339, P0340(1), P0341(1), P0344(1), P0365, P0369 P0606, P2646, P2647, P2648, P2649	
(1) K20Z3 engine		

Malfunction Threshold (K20Z3 Engine)

No signals from the knock sensor are detected for at least 5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Hold the engine speed at 3,000 - 4,000 rpm for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0335 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR NO SIGNAL (K20Z3 ENGINE)

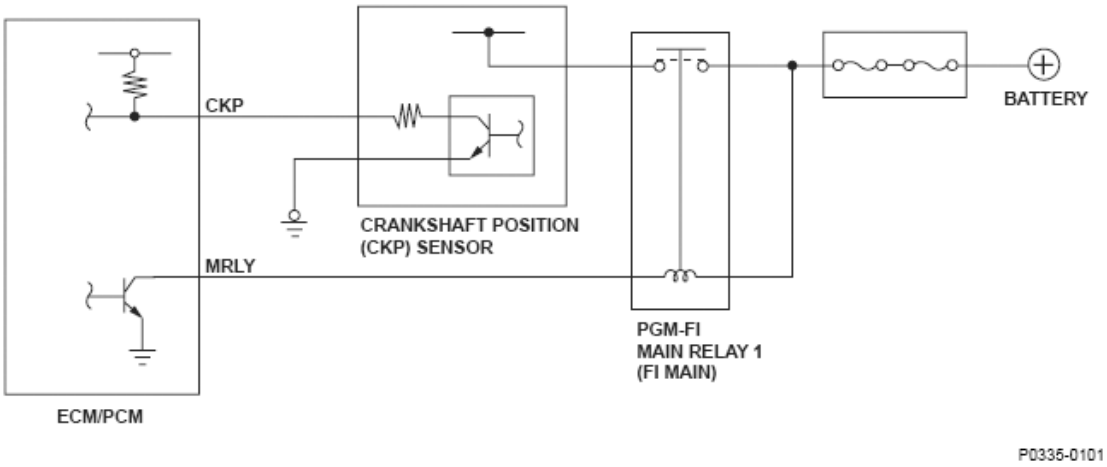


Fig. 155: Crankshaft Position Sensor Signal - Circuit Diagram

General Description (K20Z3 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If no pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0365, P0369

Malfunction Threshold (K20Z3 Engine)

No signals from the CKP sensor are input at least 50 times.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0335 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR NO SIGNAL (R18A4 ENGINE)

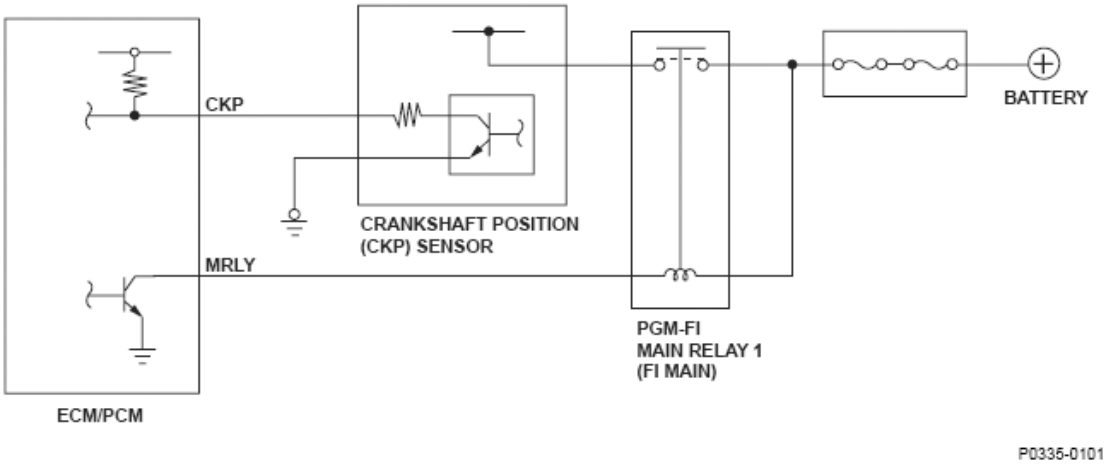


Fig. 156: Crankshaft Position Sensor Signal - Circuit Diagram

General Description (R18A4 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If no pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0365, P0369

Malfunction Threshold (R18A4 Engine)

No signals from the CKP sensor are input at least 50 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0335 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR NO SIGNAL (R18A4 ENGINE)

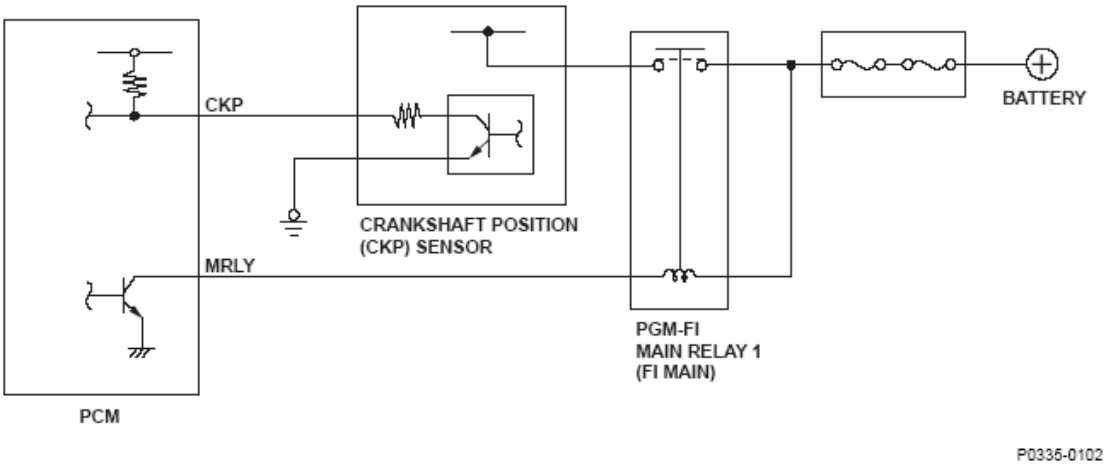


Fig. 157: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A4 Engine)

Crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If no pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0365, P0369

Malfunction Threshold (R18A4 Engine)

No signals from the CKP sensor are input at least 50 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the

PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0335 (88): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR NO SIGNAL (R18A1 ENGINE)

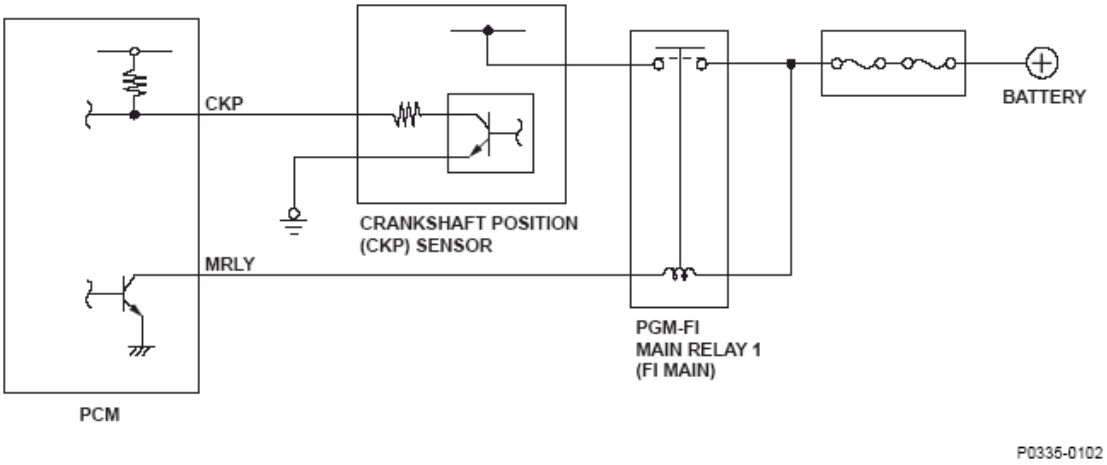


Fig. 158: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A1 Engine)

Crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If no pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0339, P0365, P0369

Malfunction Threshold (R18A1 Engine)

No signals from the CKP sensor are input at least 50 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0335 (88): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0335: CRANKSHAFT POSITION (CKP) SENSOR NO SIGNAL (R18A4 ENGINE)

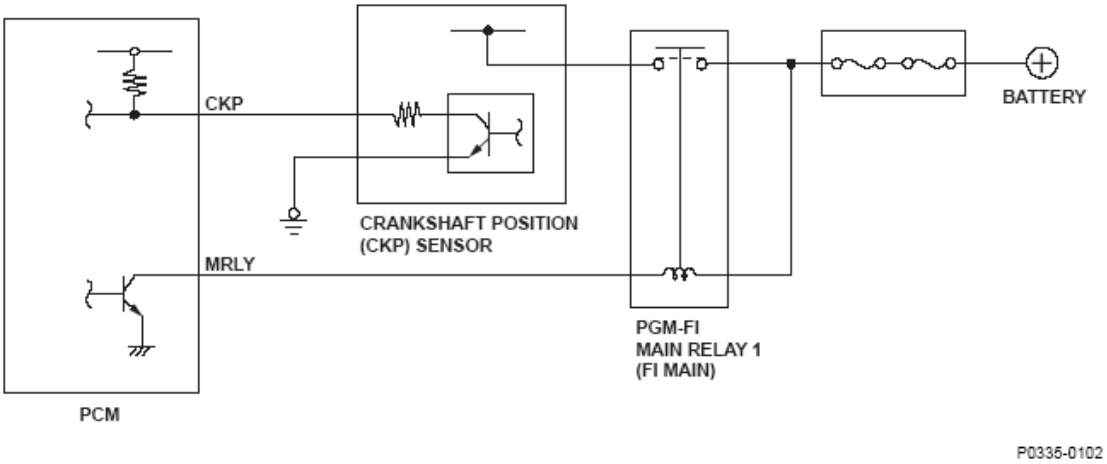


Fig. 159: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A4 Engine)

Crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If no pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0339, P0365, P0369

Malfunction Threshold (R18A4 Engine)

No signals from the CKP sensor are input at least 50 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0339 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0339: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (K20Z3 ENGINE)

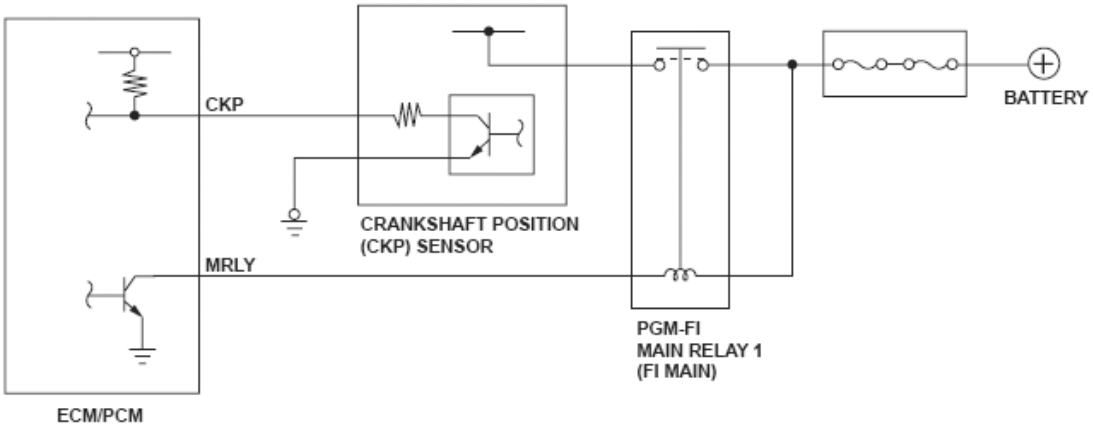


Fig. 160: Crankshaft Position Sensor Signal - Circuit Diagram

General Description (K20Z3 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If an abnormal amount of pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335	

Malfunction Threshold (K20Z3 Engine)

No signals from the CKP sensor are input at least 30 times.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0339 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1

ENGINE)

DTC P0339: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (R18A1 ENGINE)

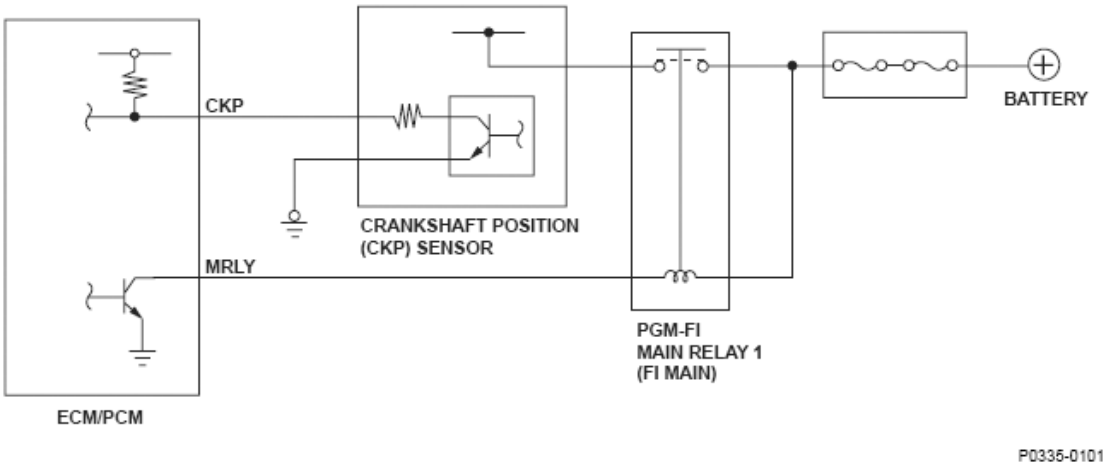


Fig. 161: Crankshaft Position Sensor Signal - Circuit Diagram

General Description (R18A1 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If an abnormal amount of pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335	

Malfunction Threshold (R18A1 Engine)

No signals from the CKP sensor are input at least 30 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0339 (4) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0339: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (R18A4 ENGINE)

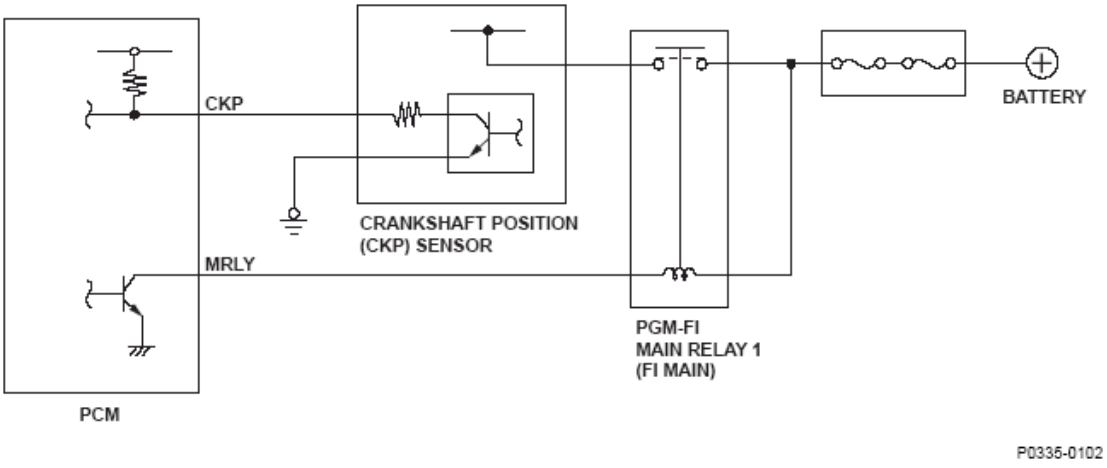


Fig. 162: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A4 Engine)

Crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If an abnormal amount of pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335	

Malfunction Threshold (R18A4 Engine)

Abnormal signals from the CKP sensor are input at least 30 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0339 (88): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0339: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (R18A1 ENGINE)

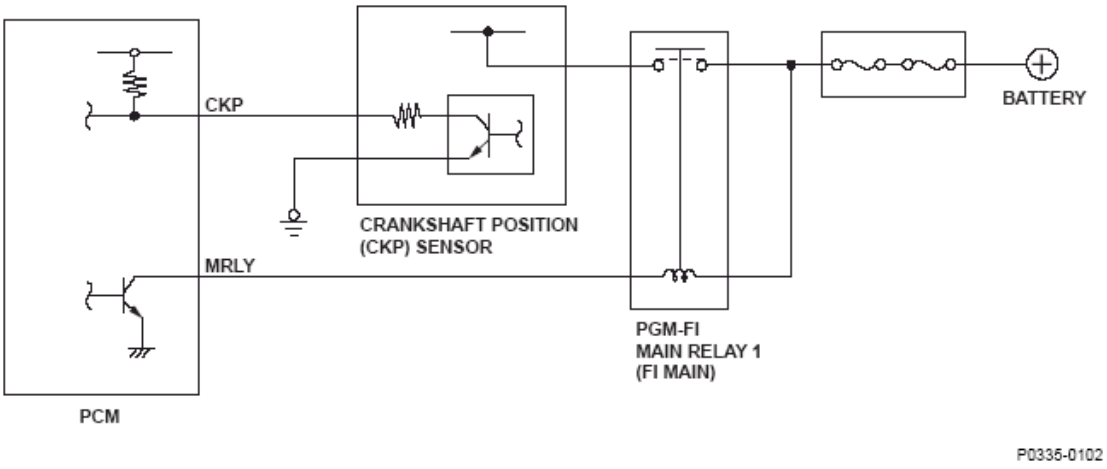


Fig. 163: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A1 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If an abnormal amount of pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0365, P0369

Malfunction Threshold (R18A1 Engine)

Abnormal signals from the CKP sensor are input at least 30 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0339 (88): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0339: CRANKSHAFT POSITION (CKP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (R18A4 ENGINE)

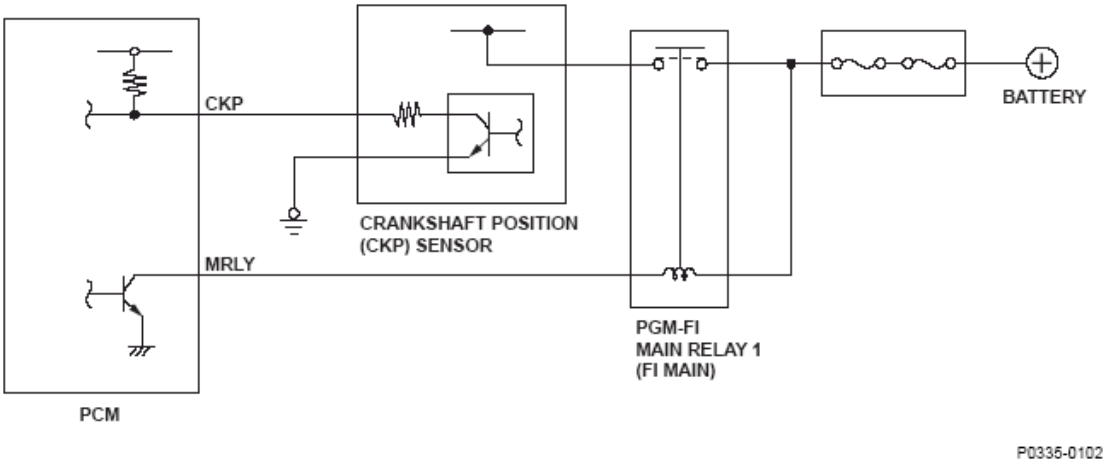


Fig. 164: Crankshaft Position Sensor - Circuit Diagram (No Signal)

General Description (R18A4 Engine)

The crankshaft position (CKP) sensor consists of a rotor and a semiconductor that detects rotor position. When the engine starts, the rotor turns and the magnetic flux in the semiconductor device changes. The changes of magnetic flux are converted into pulsing signals to the powertrain control module (PCM). The CKP sensor detects injection/ignition timing for each cylinder and engine speed.

If an abnormal amount of pulsing signals from the CKP sensor are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0365, P0369

Malfunction Threshold (R18A4 Engine)

Abnormal signals from the CKP sensor are input at least 30 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0340 (57): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0340: CAMSHAFT POSITION (CMP) SENSOR A NO SIGNAL (K20Z3)

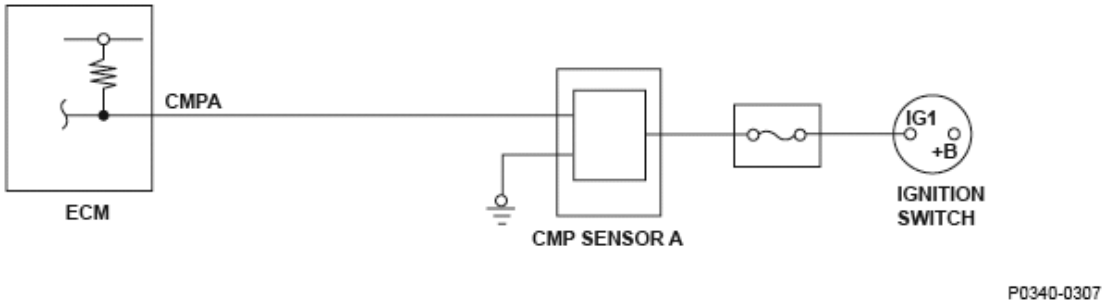


Fig. 165: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Camshaft position (CMP) sensor A detects the intake camshaft timing and sends pulsing signals to the engine control module (ECM). The ECM determines the advance or the retard of the camshaft timing according to the signals from the crankshaft position (CKP) sensor and CMP sensor A. If no pulsing signals are detected from CMP sensor A, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	-

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0344

Malfunction Threshold (K20Z3 Engine)

No signals from CMP sensor A are detected at least 25 times in succession.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0341 (57): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0341: CAMSHAFT POSITION (CMP) SENSOR A AND CRANKSHAFT POSITION (CKP) SENSOR INCORRECT PHASE DETECTED (K20Z3)

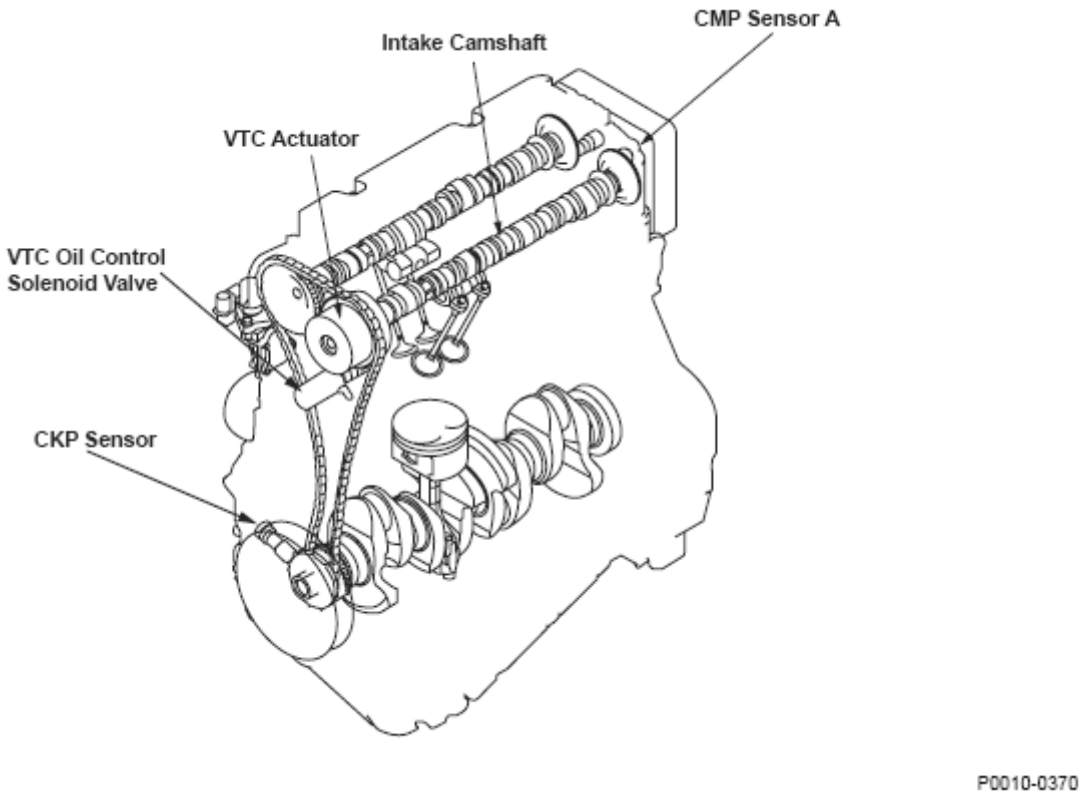


Fig. 166: Identifying Oil Control Solenoid Valve And CKP Sensor

General Description (K20Z3 Engine)

Camshaft position (CMP) sensor A detects the intake camshaft timing and sends pulsing signals to the engine control module (ECM). The ECM determines the advance or the retard of the camshaft timing according to the signals from the crankshaft position (CKP) sensor and CMP sensor A. If the pulse deviates from a set range over a specified time period while the variable valve timing control (VTC) is not activated, or the timing of the camshaft deviates from a set range over a specified time period while the engine is running with the VTC activated, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0010, P0335, P0339, P0340, P0344, P1009	

Malfunction Threshold (K20Z3 Engine)

VTC OFF

- The gap between the position of the CMP sensor A pulse and the median of the CMP sensor A assembly is 10 ° or more for at least 5 seconds.

Engine running, VTC active

- The timing of the camshaft is out of the specified range (other than when BTDC is between 10 - 100°) for at least 5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed between 19 - 38 mph (30 - 60 km/h) for at least 10 minutes.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0344 (57): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0344: CAMSHAFT POSITION (CMP) SENSOR A CIRCUIT INTERMITTENT INTERRUPTION (K20Z3)

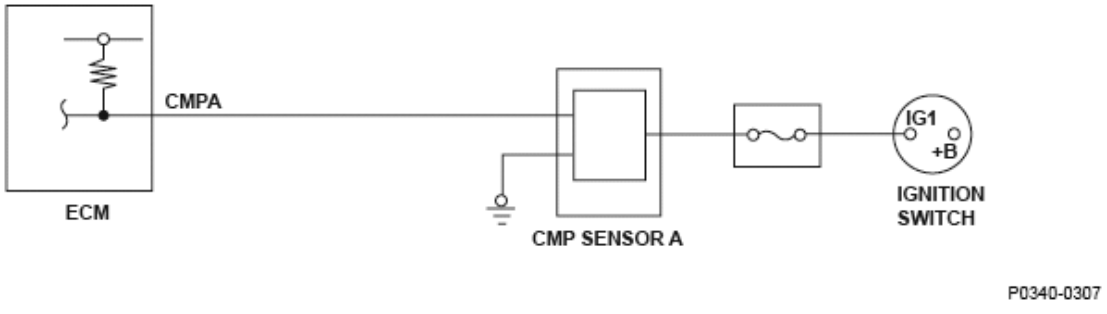


Fig. 167: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Camshaft position (CMP) sensor A detects the intake camshaft timing and sends pulsing signals to the engine control module (ECM). The ECM determines the advance or the retard of the camshaft timing according to the signals from the crankshaft position (CKP) sensor and CMP sensor A. If the number of pulsing signals from CMP sensor A during intervals between the CKP standard pulses is more or less than the proper number, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	-
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0340

Malfunction Threshold (K20Z3 Engine)

More or less than two CMP sensor A pulses are detected during intervals between the CKP standard pulses. This condition occurs at least 30 times.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0351 (71), P0352 (72), P0353 (73), P0354 (74): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0351: NO. 1 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION (R18A1); DTC P0352: NO. 2 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION (R18A1); DTC P0353: NO. 3

CYLINDER IGNITION COIL CIRCUIT MALFUNCTION (R18A1); DTC P0354: NO. 4 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION (R18A1)

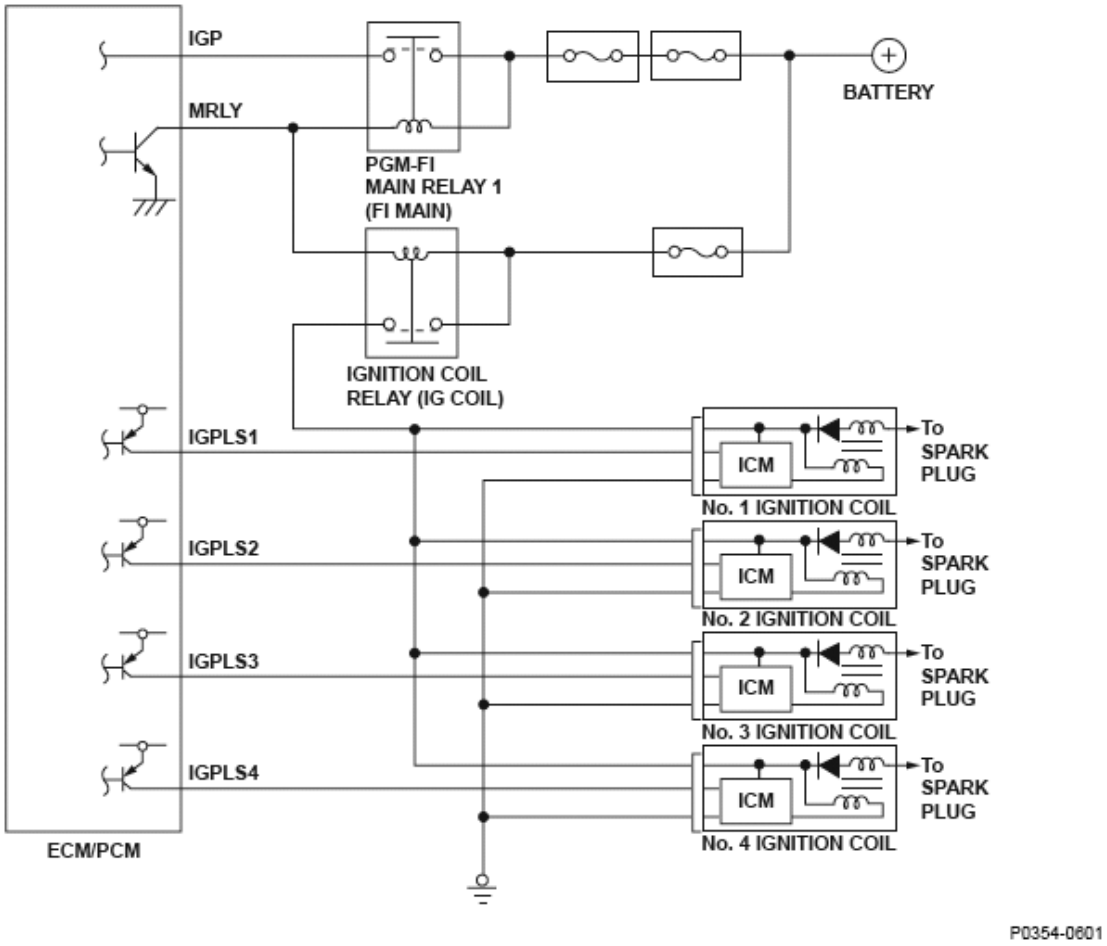


Fig. 168: Cylinder Ignition Coil - Circuit Diagram

General Description (R18A1 Engine)

The igniter ignites at the optimum time based on the control of the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM detects a malfunction when the engine is running.

When the ignition is turned on and the return signal does not change for a specified time or more, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more (when the engine speed is 700 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0365, P0369

Malfunction Threshold (R18A1 Engine)

The return signal does not change for at least 5 seconds when the ignition coil is triggered.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0351 (71), P0352 (72), P0353 (73), P0354 (74): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0351: NO. 1 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0352: NO. 2 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0353: NO. 3 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0354: NO. 4 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION (R18A1 ENGINE)

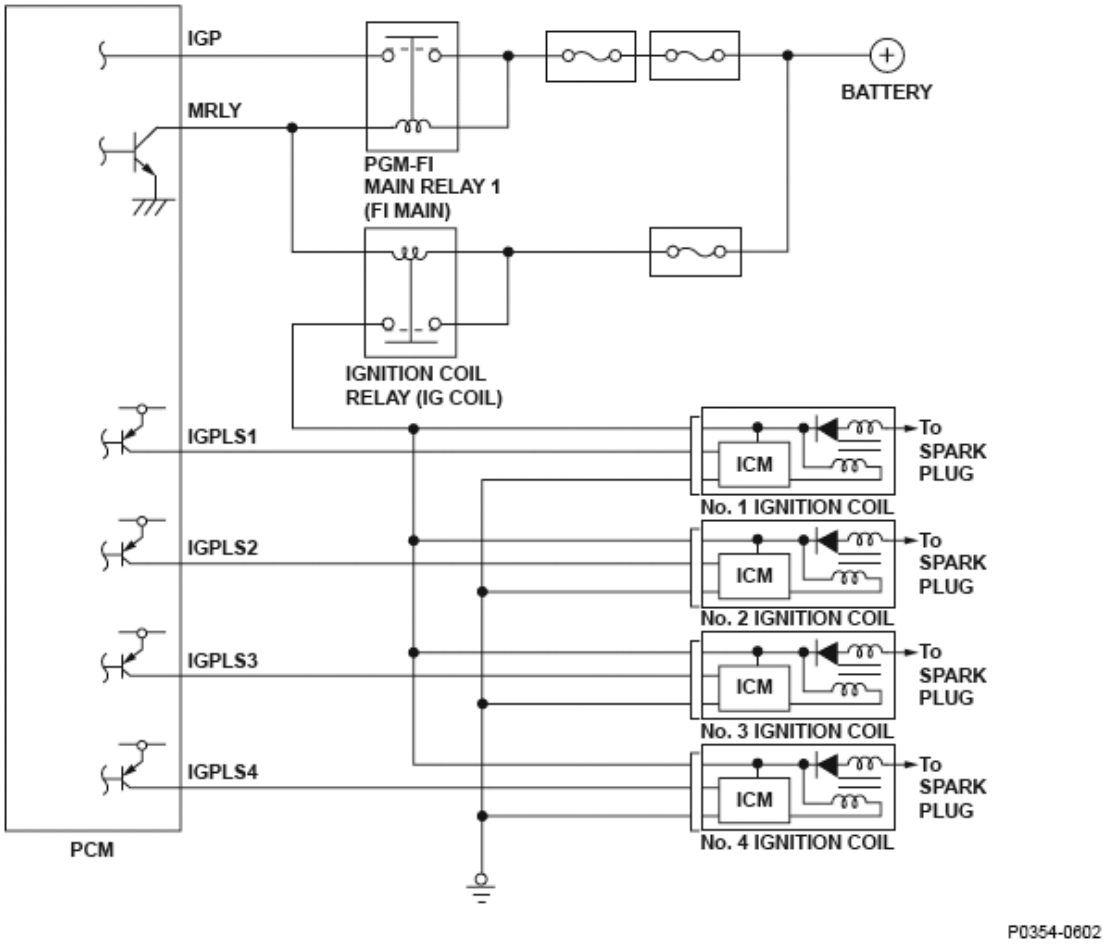


Fig. 169: Cylinder Ignition Coil - Circuit Diagram

General Description (R18A1 Engine)

The igniter ignites at the optimum time based on the control of the powertrain control module (PCM). The PCM detects a malfunction when the engine is running.

When the ignition is turned on and the return signal does not change for a specified time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more (when the engine speed is 700 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	

State of the engine	Running
No active DTCs	P0335, P0339, P0365, P0369

Malfunction Threshold (R18A1 Engine)

The return signal does not change for at least 5 seconds when the ignition coil is triggered.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0365 (8) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0365: CAMSHAFT POSITION (CMP) SENSOR NO SIGNAL (R18A1)

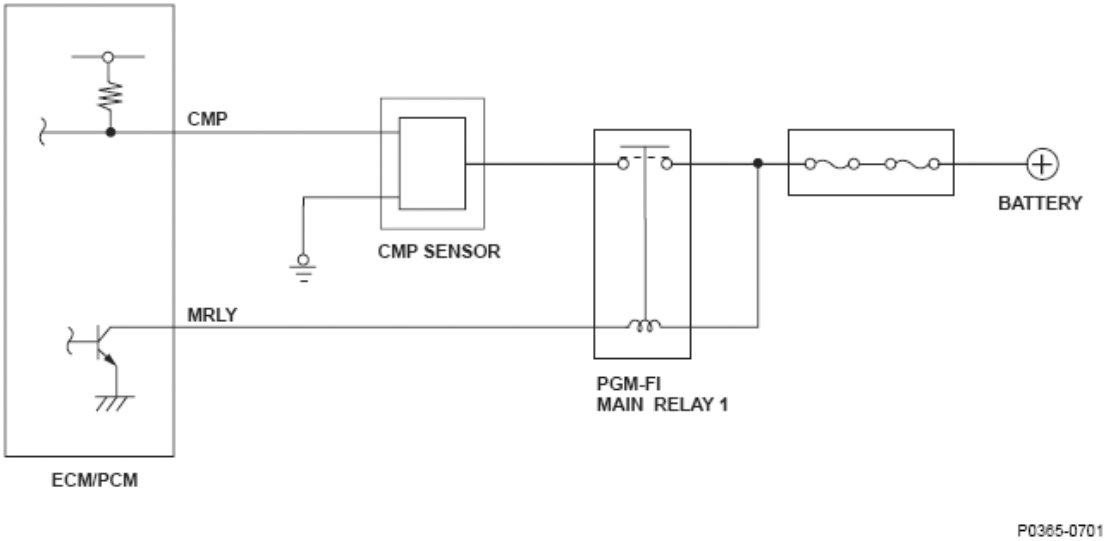


Fig. 170: Camshaft Position (CMP) Sensor Circuit Diagram

General Description (R18A1 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The

CMP sensor detects the top dead center position of each cylinder for fuel injection timing.

If no CMP sensor pulsing signals are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0369

Malfunction Threshold (R18A1 Engine)

No CMP sensor pulsing signals are detected at least 50 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0365 (8) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0365: CAMSHAFT POSITION (CMP) SENSOR NO SIGNAL (R18A4 ENGINE)

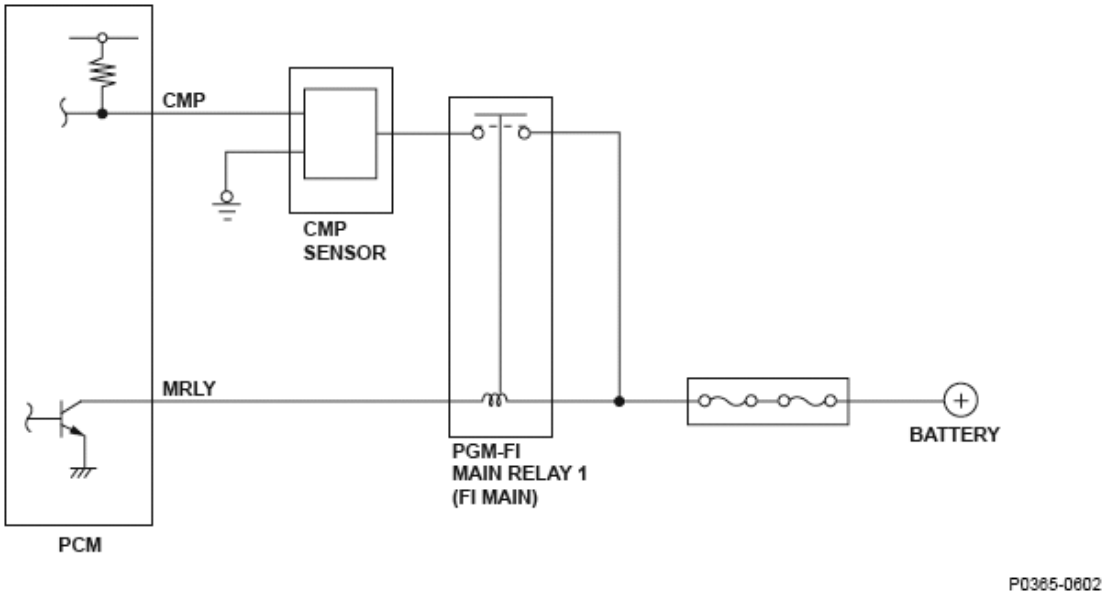


Fig. 171: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing. If no CMP sensor pulsing signals are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0369

Malfunction Threshold (R18A4 Engine)

No CMP sensor pulsing signals are detected at least 50 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0365 (8): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0365: CAMSHAFT POSITION (CMP) SENSOR B NO SIGNAL (K20Z3)

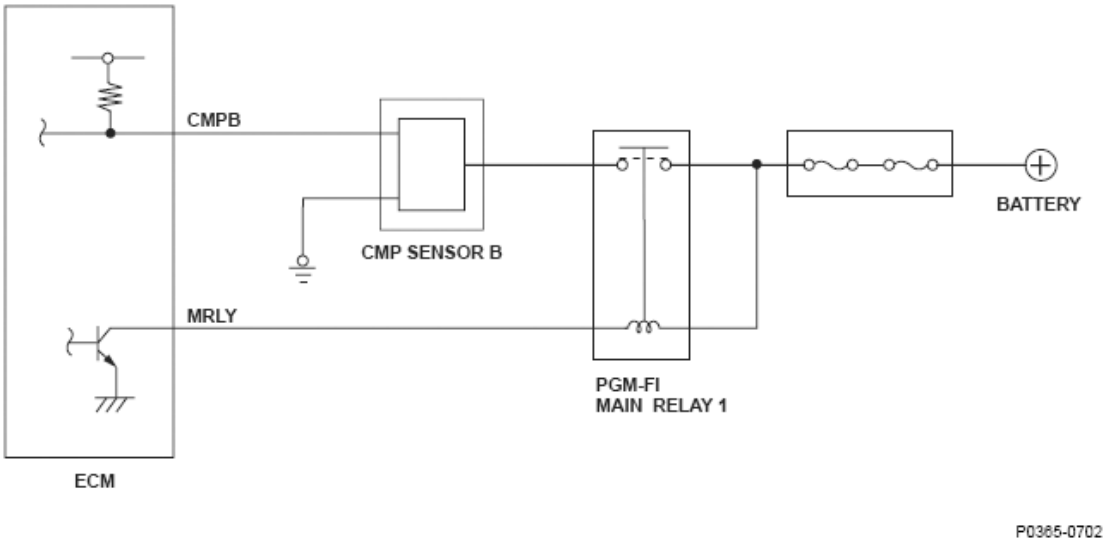


Fig. 172: Camshaft Position (CMP) Sensor B Circuit Diagram

General Description (K20Z3 Engine)

Camshaft position (CMP) sensor B consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the engine control module (ECM). CMP sensor B detects the top dead center of each cylinder for fuel injection timing.

If no CMP sensor B pulsing signals are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0369

Malfunction Threshold (K20Z3 Engine)

No CMP sensor B pulsing signals are detected at least 50 times.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0365 (89): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0365: CAMSHAFT POSITION (CMP) SENSOR NO SIGNAL (R18A1 ENGINE)

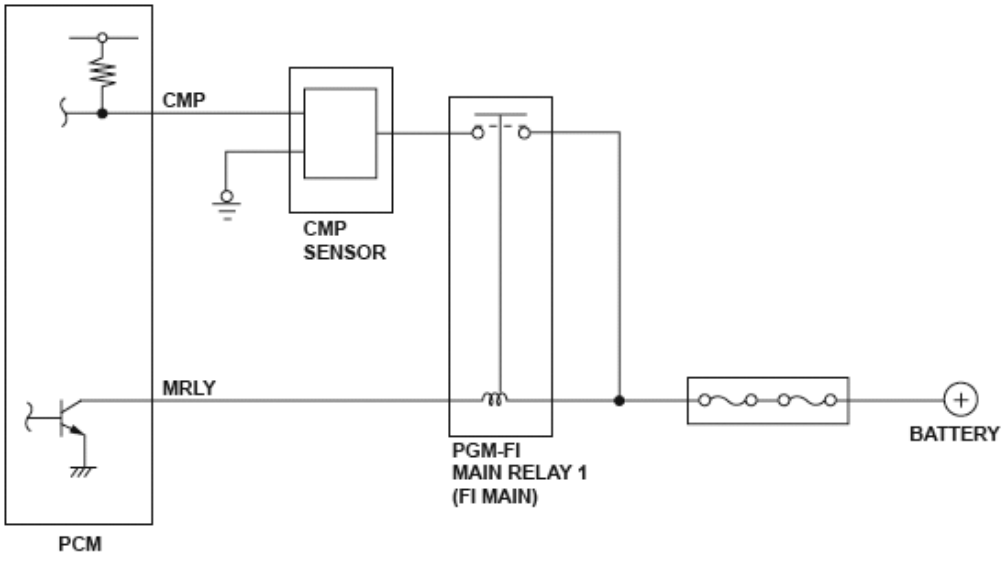


Fig. 173: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing.

If no CMP sensor pulsing signals are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0369

Malfunction Threshold (R18A1 Engine)

No CMP sensor pulsing signals are detected at least 50 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0365 (89): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0365: CAMSHAFT POSITION (CMP) SENSOR NO SIGNAL (R18A4 ENGINE)

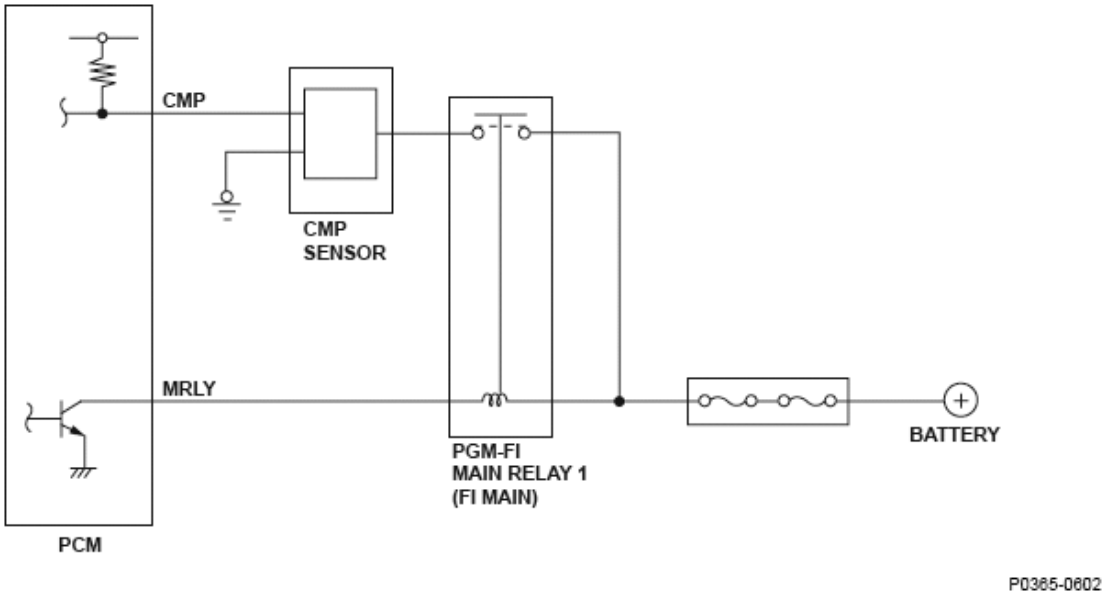


Fig. 174: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing.

If no CMP sensor pulsing signals are detected, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0369

Malfunction Threshold (R18A4 Engine)

No CMP sensor pulsing signals are detected at least 50 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0369 (8) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0369: CAMSHAFT POSITION (CMP) SENSOR CIRCUIT INTERMITTENT INTERRUPTION (R18A1)

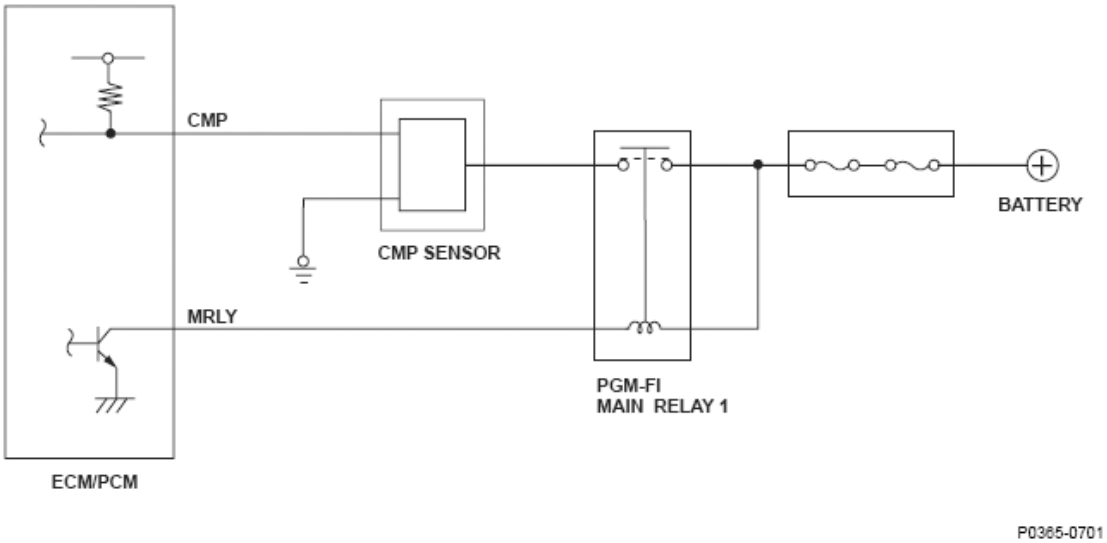


Fig. 175: Camshaft Position (CMP) Sensor Circuit Diagram

General Description (R18A1 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the engine control module (ECM)/powertrain control module (PCM). The CMP sensor detects the top dead center position of each cylinder for fuel injection timing.

If CMP sensor pulsing signals are detected an abnormal number of times due to noise, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0365

Malfunction Threshold (R18A1 Engine)

Abnormal CMP sensor pulsing signals are detected at least 30 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0369 (8) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0369: CAMSHAFT POSITION (CMP) SENSOR INTERMITTENT INTERRUPTION (R18A4 ENGINE)

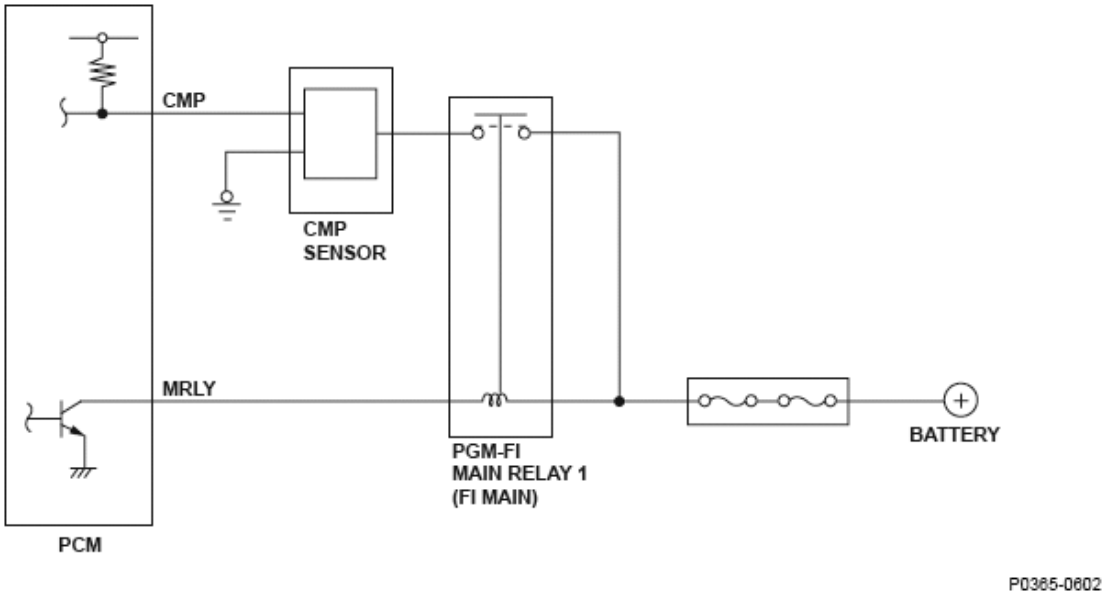


Fig. 176: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing.

If CMP sensor pulsing signals are detected an abnormal number of times due to noise, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335, P0339, P0365	

Malfunction Threshold (R18A4 Engine)

Abnormal CMP sensor pulsing signals are detected at least 30 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0369 (8): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0369: CAMSHAFT POSITION (CMP) SENSOR B CIRCUIT INTERMITTENT INTERRUPTION (K20Z3)

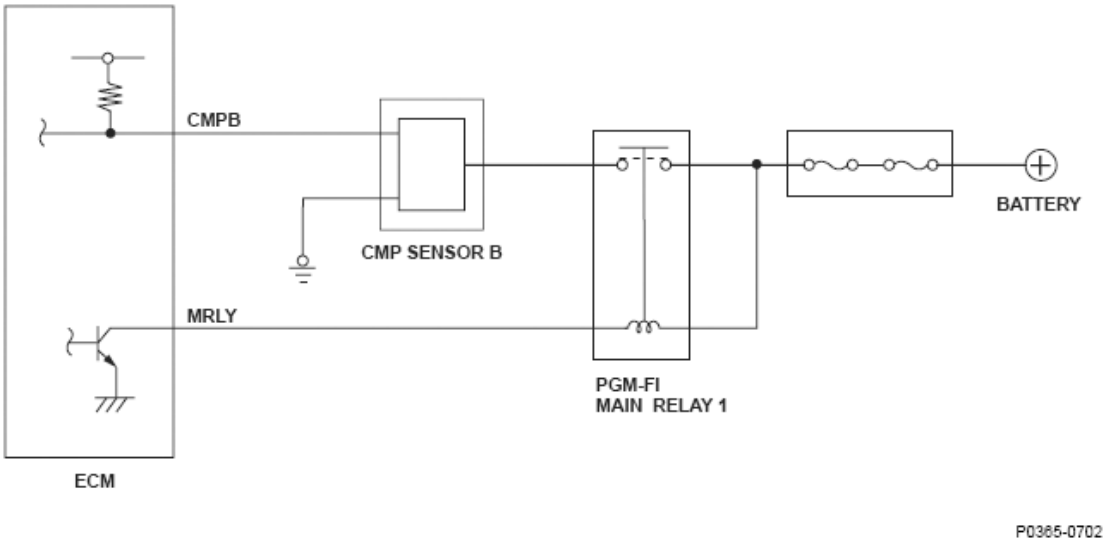


Fig. 177: Camshaft Position (CMP) Sensor B Circuit Diagram

General Description (K20Z3 Engine)

Camshaft position (CMP) sensor B consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the engine control module (ECM). CMP sensor B detects the top dead center of each cylinder for fuel injection timing.

If CMP sensor B pulsing signals are detected an abnormal number of times due to noise, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P0335, P0339, P0365

Malfunction Threshold (K20Z3 Engine)

Abnormal CMP sensor B pulsing signals are detected at least 30 times.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0369 (89): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0369: CAMSHAFT POSITION (CMP) SENSOR INTERMITTENT INTERRUPTION (R18A1 ENGINE)

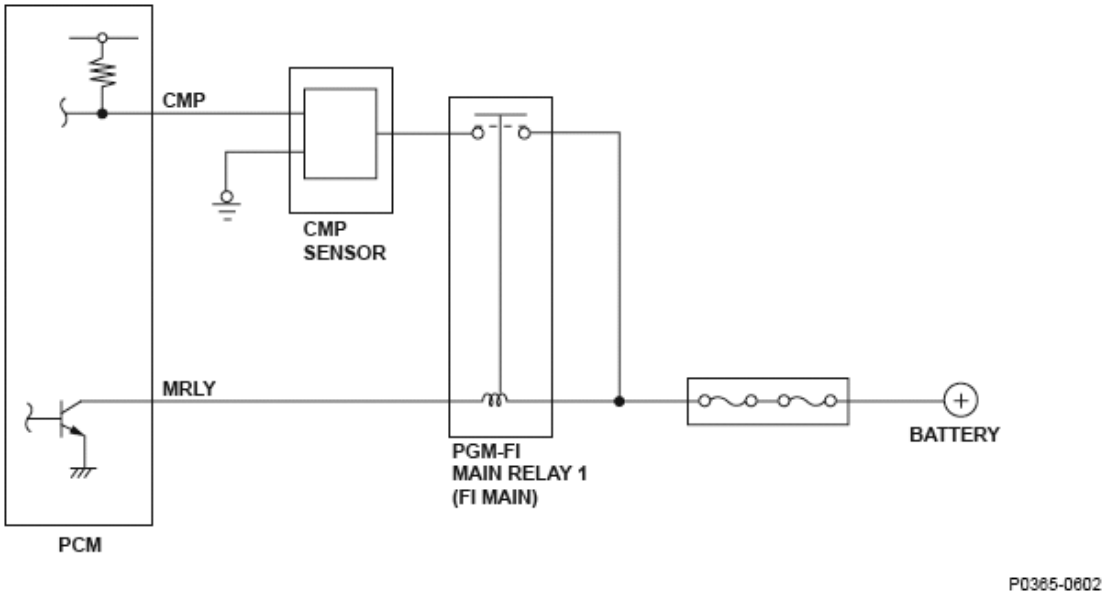


Fig. 178: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing.

If CMP sensor pulsing signals are detected an abnormal number of times due to noise, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335, P0339, P0365	

Malfunction Threshold (R18A1 Engine)

Abnormal CMP sensor pulsing signals are detected at least 30 times.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0369 (89): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0369: CAMSHAFT POSITION (CMP) SENSOR INTERMITTENT INTERRUPTION (R18A4 ENGINE)

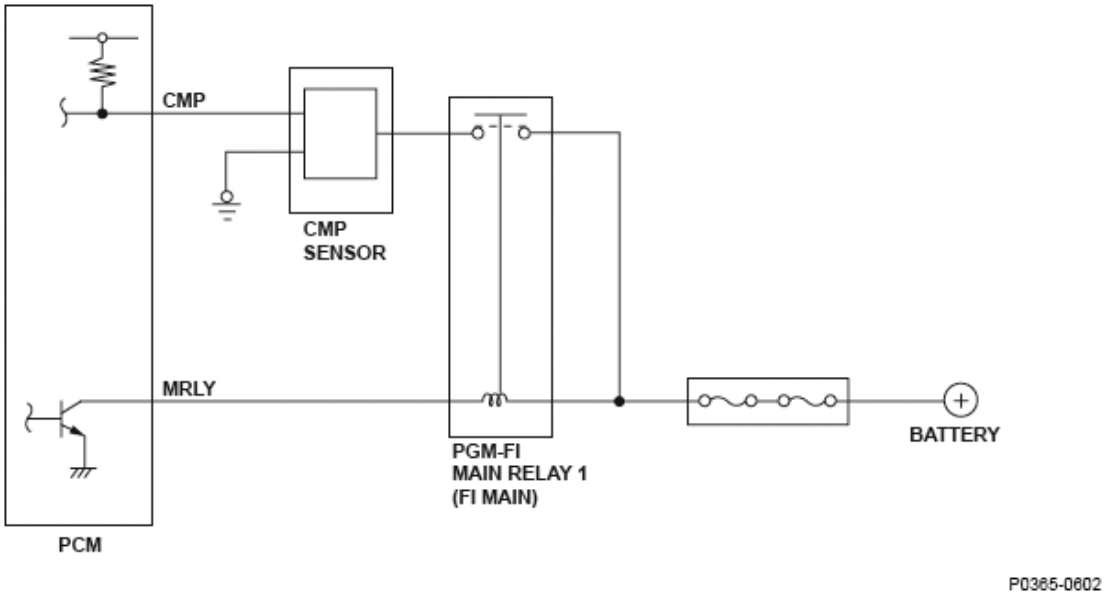


Fig. 179: Camshaft Position (CMP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

The camshaft position (CMP) sensor consists of a rotor and a semiconductor that detects rotor position. When the rotor turns after starting the engine, the changes of magnetic flux in the semiconductor are converted into pulsing signals to the powertrain control module (PCM). The CMP sensor detects the top dead center of each cylinder for fuel injection timing.

If CMP sensor pulsing signals are detected an abnormal number of times due to noise, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	1.2 seconds or more (when the engine speed is 750 rpm)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-
No active DTCs	P0335, P0339, P0365	

Malfunction Threshold (R18A4 Engine)

Abnormal CMP sensor pulsing signals are detected at least 30 times.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0400 (80): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0400: EXHAUST GAS RECIRCULATION (EGR) SYSTEM LEAK DETECTED (R18A1)

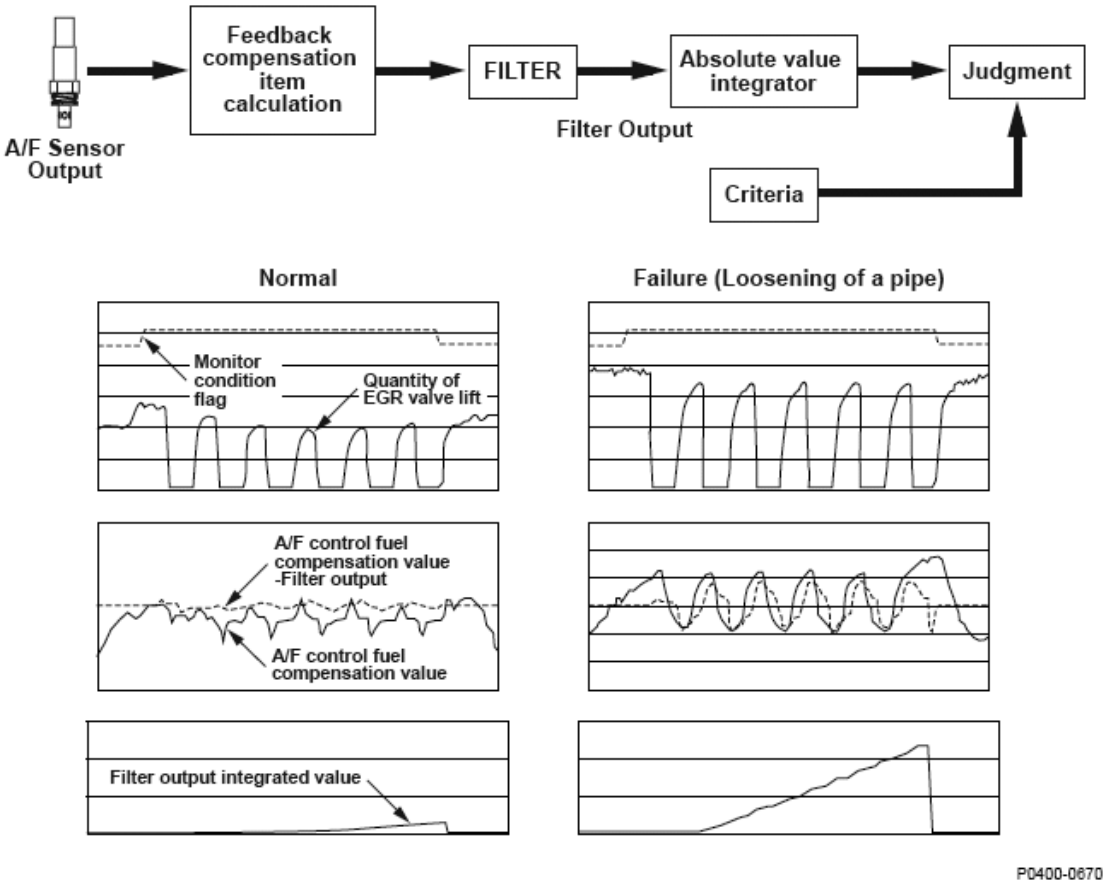


Fig. 180: Exhaust Gas Recirculation (EGR) System Signal Output

General Description (R18A1 Engine)

The exhaust gas recirculation (EGR) deterioration failure conditions include a sticking lift sensor, restricted passages, and leakage from the external piping.

At any specific EGR lift value there is a corresponding A/F compensation value. If the A/F compensation value is greater than the corresponding EGR lift value, the engine control module (ECM)/powertrain control module (PCM) detects this as a malfunction (the likely cause is leakage from the external piping), and DTC P0400 is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	8.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		156°F (69°C)	-
Engine speed		1,500 rpm	4,000 rpm
MAP value	2,000 rpm	52 kPa (15.4 in.Hg, 390 mmHg)	86 kPa (25.5 in.Hg, 650 mmHg)
	4,000 rpm	32 kPa (9.3 in.Hg, 235 mmHg)	59 kPa (17.7 in.Hg, 450 mmHg)
Vehicle speed		26 mph (41 km/h)	-
Commanded EGR valve lift		0.016 in. (0.4 mm)	-
Battery voltage		10.5 V	-
Fuel trim		0.73	1.47
Fuel feedback		Closed loop at stoichiometric	
Monitoring priority		P0456, P0457, P0497	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0133, P0134, P0135, P0171, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0401, P0404, P0406, P0443, P0496, P0497, P0506, P0507, P1077, P1078, P1116, P1128, P1129, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P2227, P2228, P2229, P2238, P2252, P2413, P2646, P2647, P2648, P2649, P2A00	
Other		Without excessive load change	

Malfunction Threshold (R18A1 Engine)

The A/F sensor response parameter according to the opening and closing of the EGR is 31,457 (LT80A) or more.

Driving Pattern (R18A1 Engine)

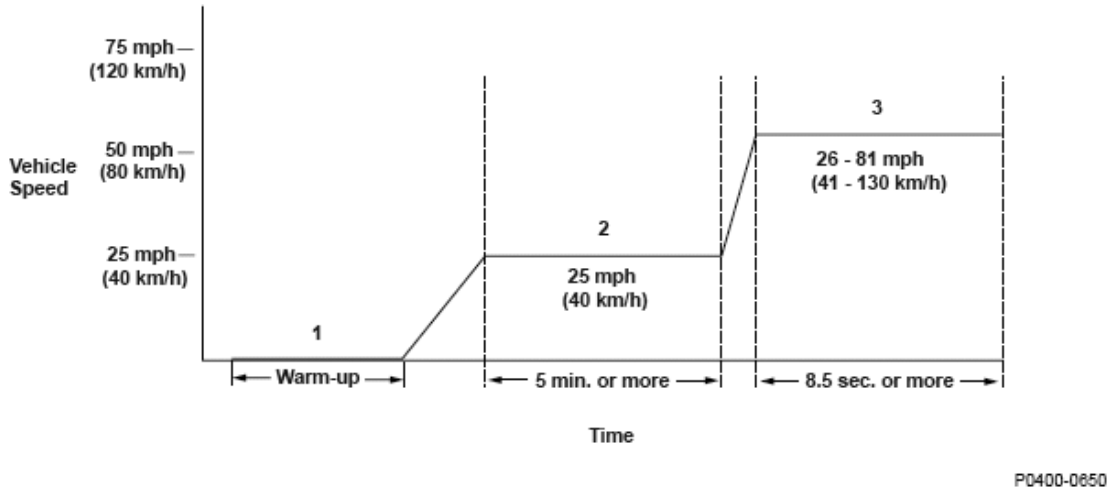


Fig. 181: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 25 mph (40 km/h) or less, for at least 5 minutes.
3. Then, drive immediately at a steady speed between 26 - 81 mph (41 - 130 km/h) for at least 8.5 seconds.

- If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0401 (80): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0401: EXHAUST GAS RECIRCULATION (EGR) INSUFFICIENT FLOW (R18A1)

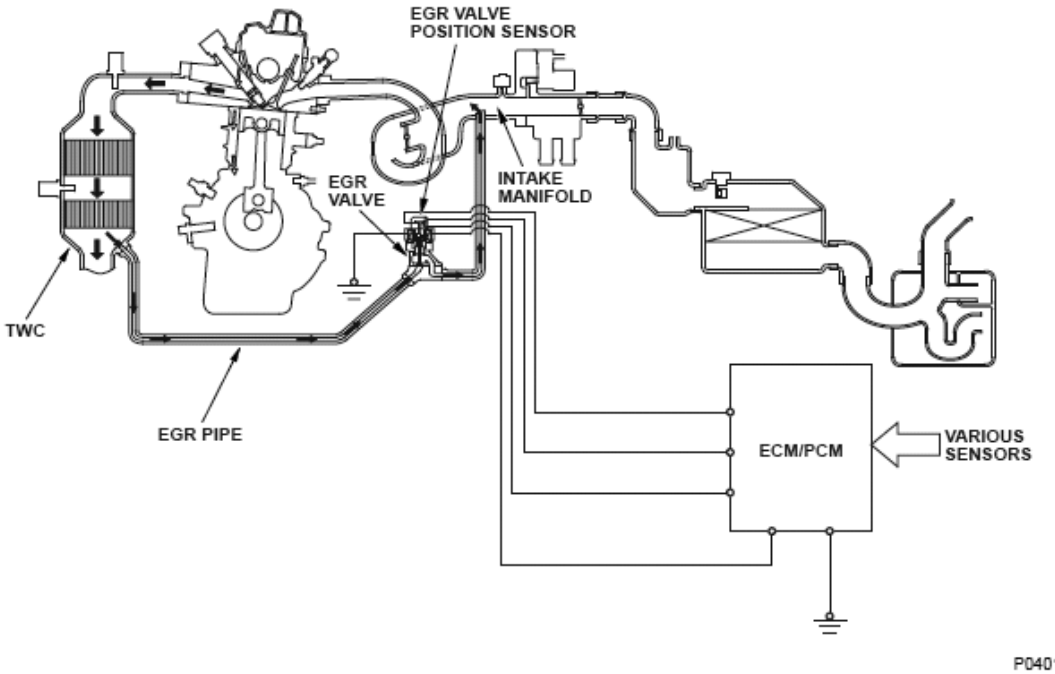


Fig. 182: Exhaust Gas Recirculation (EGR) Air Flow Diagram

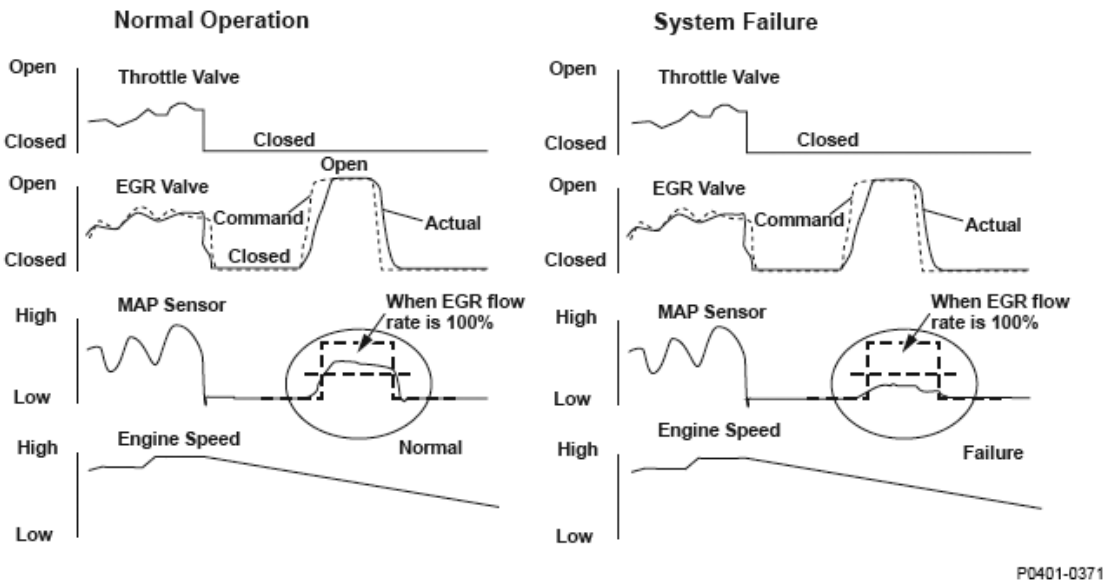


Fig. 183: Exhaust Gas Recirculation Valve Operation Graph

General Description (R18A1 Engine)

The exhaust gas recirculation (EGR) valve, which is controlled by the engine control module (ECM)/powertrain control module (PCM), is opened and the exhaust gas flows from the exhaust manifold through the EGR valve and the intake manifold and the EGR passage. the exhaust gas is circulated into the air/fuel mixture and the mixture is drawn into the combustion chamber to lower combustion temperatures, thus reducing oxides of nifrogen (NOx) emissions.

The EGR flow is inspected as follows. The EGR valve is closed during deceleration with the throttle valve fully closed. Then the ECM/PCM fully opens the EGR valve. After a set time, the ECM/PCM computes the ratio of the present EGR flow to the normal EGR flow by monitoring the fluctuation of the intake manifold pressure between when the EGR valve is fully opened and when it is fully closed. If the EGR flow rate is lower than normal, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	"EGR valve insufficient lift" P0404, P2413 is OK
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Engine speed	1,200 rpm	3,600 rpm

MAP value	10 kPa (2.8 in.Hg, 70 mmHg)	-
Vehicle speed	26 mph (41 km/h)	-
Battery voltage	10.5 V	-
Throttle position	Fully closed	
Fuel feedback	During deceleration	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0134, P0135, P0222, P0223, P0335, P0339, P0404, P0406, P0443, P0496, P0497, P0506, P0507, P1077, P1078, P1128, P1129, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P2227, P2228, P2229, P2238, P2252, P2413, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A1 Engine)

The ratio of the current EGR flow to the normal EGR flow is 20 % or less.

The difference between the MAP value before and after the Enable Conditions are met is no more than the values in the table. The change in pressure should occur for at least 3.5 seconds.

MALFUNCTION THRESHOLD

Engine speed	Barometric pressure	
	62 kPa (18.2 in.Hg, 460 mmHg)	102 kPa (30.0 in.Hg, 760 mmHg)
1,200 rpm	15 kPa (4.6 in.Hg, 118 mmHg)	25 kPa (7.4 in.Hg, 189 mmHg)
2,400 rpm	7 kPa (2.2 in.Hg, 56 mmHg)	12 kPa (3.5 in.Hg, 91 mmHg)

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EGR TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

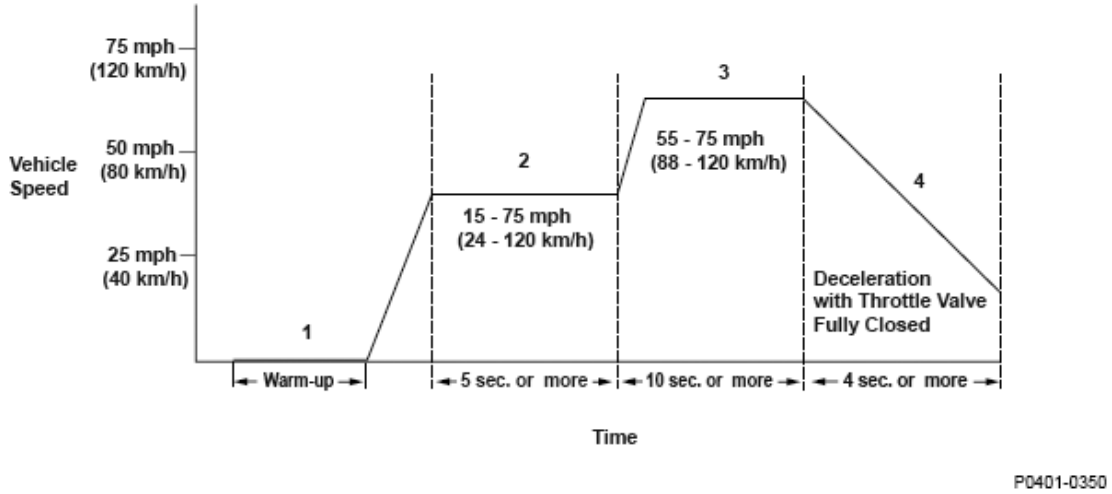


Fig. 184: Vehicle Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the

radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 5 seconds.
3. Then, drive at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed for at least 4 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0404 (12): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0404: EXHAUST GAS RECIRCULATION (EGR) VALVE CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1)

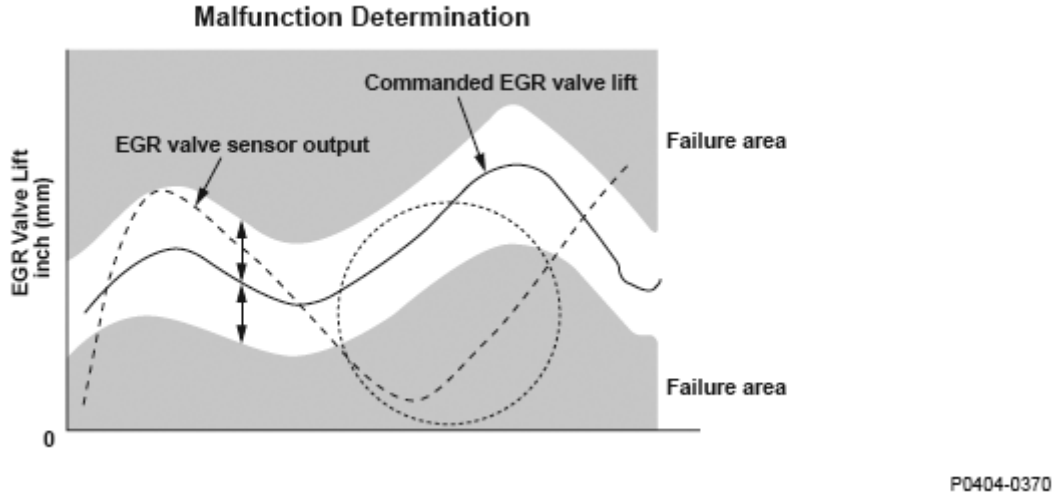


Fig. 185: Exhaust Gas Recirculation Valve Lift Graph

General Description (R18A1 Engine)

The exhaust gas recirculation (EGR) valve, which is controlled by the engine control module (ECM)/powertrain control module (PCM), is opened and the exhaust gas flows from the exhaust manifold through the EGR valve and the intake manifold and the EGR passage. The exhaust gas is circulated into the

air/fuel mixture and the mixture is drawn into the combustion chamber to lower combustion temperatures, thus reducing oxides of nitrogen (NOx) emissions.

A sensor (lift sensor) is built into the EGR valve and detects the amount of valve lift. The command value for the target valve lift is stored in the ECM/PCM so that exhaust gas recirculation can be optimized according to driving conditions.

Comparing this command value with the lift sensor output signal value, the ECM/PCM controls the EGR valve to make the amount of actual valve lift equal to the command value.

If the lift sensor output (actual valve lift) is greater than the commanded valve lift, an abnormality in the EGR valve or the lift sensor output is determined.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	-	5,500 rpm
Battery voltage	10.5 V	-
Commanded EGR valve lift	0.010 in. (0.25 mm)	-
No active DTCs	P0101, P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0406, P1128, P1129, P1157, P1172, P2195, P2238, P2252	

Malfunction Threshold (R18A1 Engine)

The difference between the command value of the amount of EGR valve lift in the ECM/PCM and the actual amount of valve lift is 0.041 in. (1.020 mm) or more for at least 5 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EGR TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0406 (12): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0406: EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR CIRCUIT HIGH VOLTAGE (R18A1)

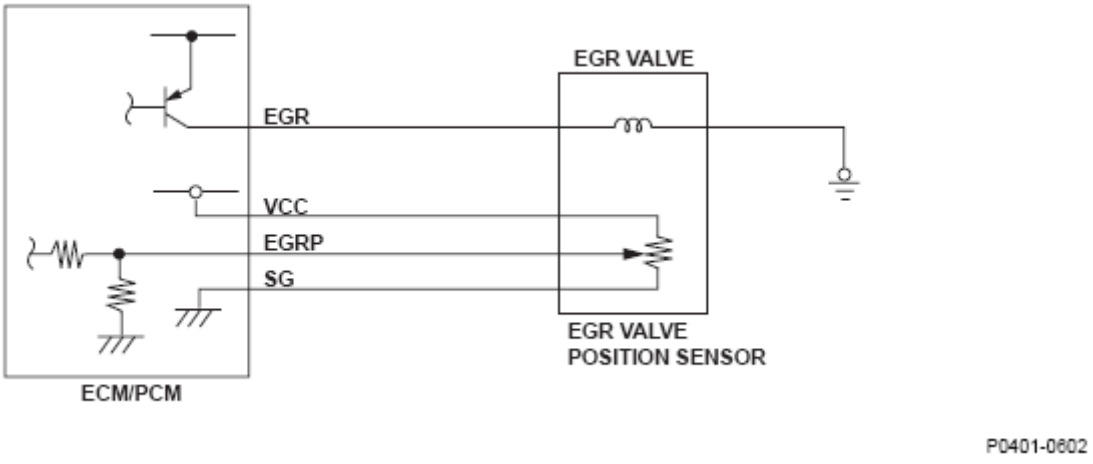


Fig. 186: Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit Diagram - High Voltage

General Description (R18A1 Engine)

The exhaust gas recirculation (EGR) system reduces oxides of nitrogen (NOx). NOx is generated by high combustion temperatures. The EGR system lowers peak combustion temperature by recirculating inert exhaust gas into the air/fuel mixture, thus reducing NOx emissions. To determine the optimal amount of recirculating exhaust gas, depending on driving conditions, a command value (the amount of valve lift) is stored in the engine control module (ECM)/powertrain control module (PCM). The EGR valve position sensor indicates the amount of valve lift, and the ECM/PCM controls the EGR valve so that the amount of actual valve lift equals the command value by comparing the command value and the actual amount of valve lift.

If EGR valve position sensor output voltage is not within a specified value, a malfunction is detected and a

DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running

Malfunction Threshold (R18A1 Engine)

The EGR valve position sensor output voltage is 4.88 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0420 (67): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (K20Z3)

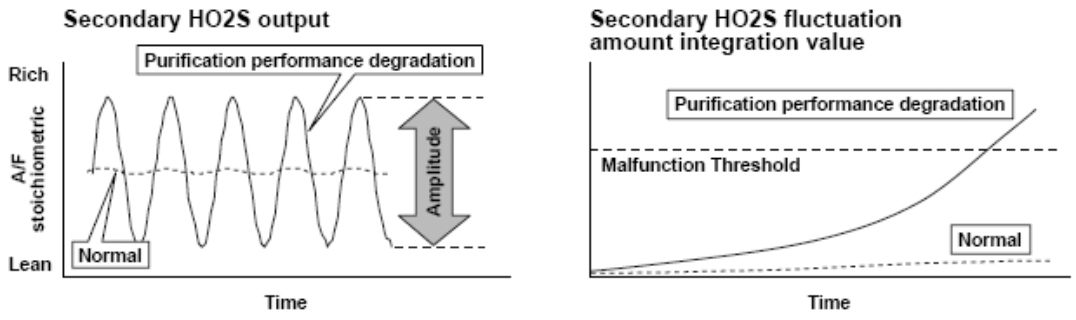


Fig. 187: Catalyst System Mixture Ratio

General Description (K20Z3 Engine)

The three way catalystic converter (TWC) converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to water vapor, carbon dioxide (CO2), and dinitrogen (N2).

The engine control module (ECM) fluctuates the air/fuel ratio (A/F) temporarily to detect the purification performance of TWC and measures the degree of fluctuation in the secondary HO2S output. If the accumulation value for a set time is too much, deterioration of purification performance of catalysis is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	9.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Estimated TWC temperature	932°F (500°C)	-
Vehicle speed	26 mph (41 km/h)	-
Fuel trim	0.69	1.47
Fuel feedback	Other than wide open throttle	
	Closed loop at stoichiometric	
	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117,	

No active DTCs	P0118, P0133, P0134, P0135, P0137, P0138, P0139, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649, P2A00
Others	Has record of deceleration at least once
	Cruise load or more

Malfunction Threshold (K20Z3 Engine)

The secondary HO2S fluctuation integration value is 3,300 mV or more for at least 9.5 seconds.

Driving Pattern (K20Z3 Engine)

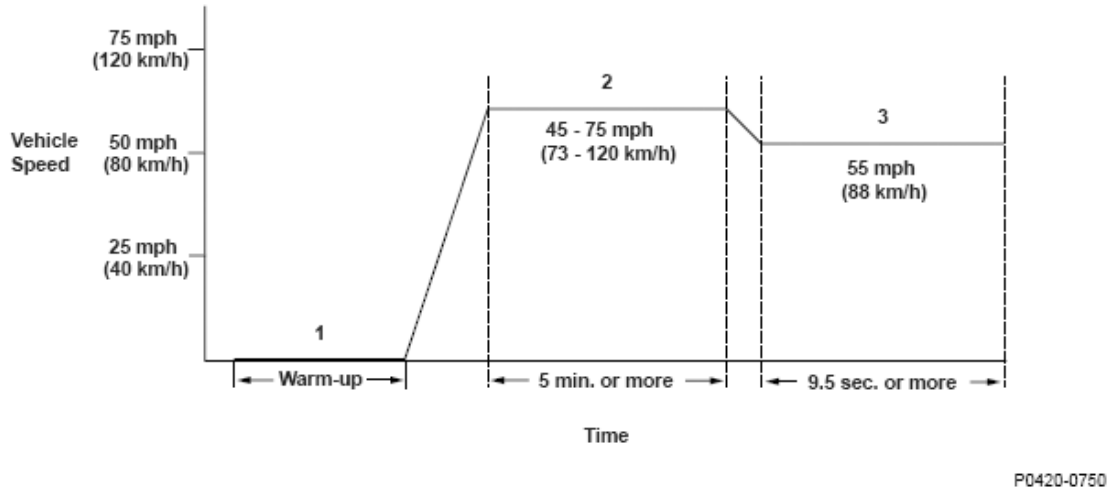


Fig. 188: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 45 - 75 mph (73 - 120 km/h) for at least 5 minutes, to warm up the TWC.
3. Set a vehicle speed of 55 mph (88 km/h) on the cruise control, and drive for at least 9.5 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0420 (67): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (R18A1)

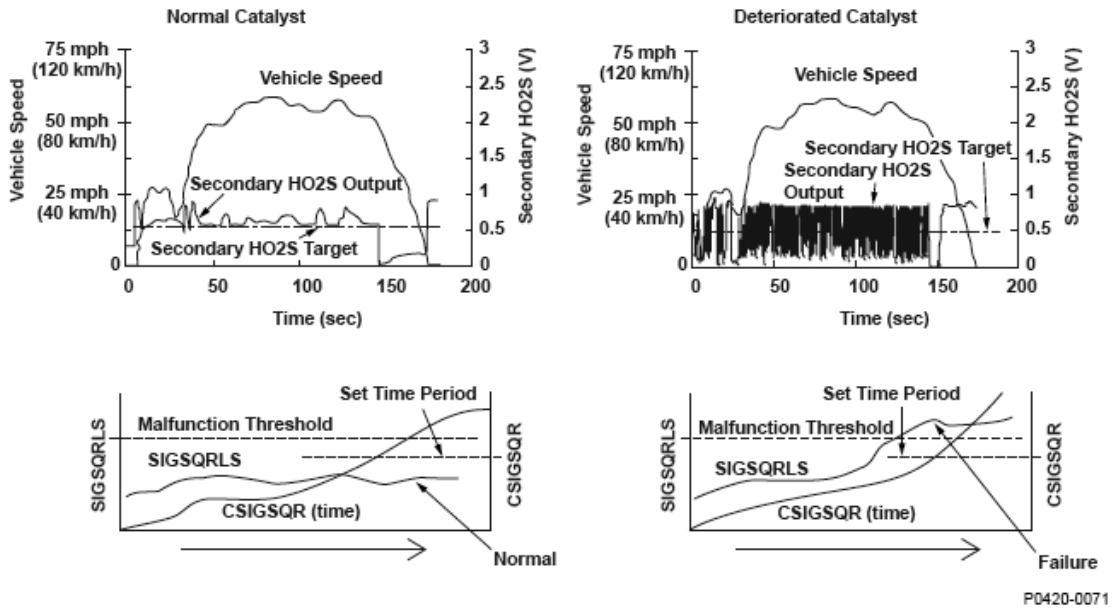


Fig. 189: Catalyst System Efficiency Voltage And Time - Graph

General Description (R18A1 Engine)

The three way catalytic converter (TWC) converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to water vapor, carbon dioxide (CO2), and dinitrogen (N2).

The TWC efficiency does not depend entirely on engine conditions or the deterioration level of the TWC. It can be optimized by stabilizing the secondary HO2S output.

If the TWC deteriorates, the air/fuel ratio downstream of the TWC (the secondary HO2S output) often differs from the target secondary HO2S output, and the status is represented by the parameter (SIGSQRLS).

Therefore, if the SIGSQRLS exceeds a specified value for a set time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	51.3 seconds or more
DTC Type	Two drive cycles, MIL ON

OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Estimated TWC temperature		932°F (500°C)	-
Engine speed	A/T	1,250 rpm	2,510 rpm
	M/T		3,360 rpm
MAP value	A/T	27 kPa (7.9 in.Hg, 200 mmHg)(1)	67 kPa (20.0 in.Hg, 510 mmHg)(1)
		34 kPa (9.9 in.Hg, 250 mmHg)(2)	79 kPa (23.6 in.Hg, 600 mmHg)(2)
	M/T	27 kPa (7.9 in.Hg, 200 mmHg)(1)	67 kPa (20.0 in.Hg, 510 mmHg)(1)
		31 kPa (9.1 in.Hg, 230 mmHg)(2)	79 kPa (23.6 in.Hg, 600 mmHg)(2)
Vehicle speed		4 mph (5 km/h)	-
Fuel trim		0.73	1.47
Fuel feedback		Closed loop	
Monitoring priority		P0456, P0457, P0497	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0139, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0404, P0443, P0496, P0497, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2413, P2646, P2647, P2648, P2649, P2A00	

(1) Rocker arm oil control solenoid: ON

(2) Rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A1 Engine)

The number of detections is 722 (CTAGLT67) or more.

Driving Pattern (R18A1 Engine)

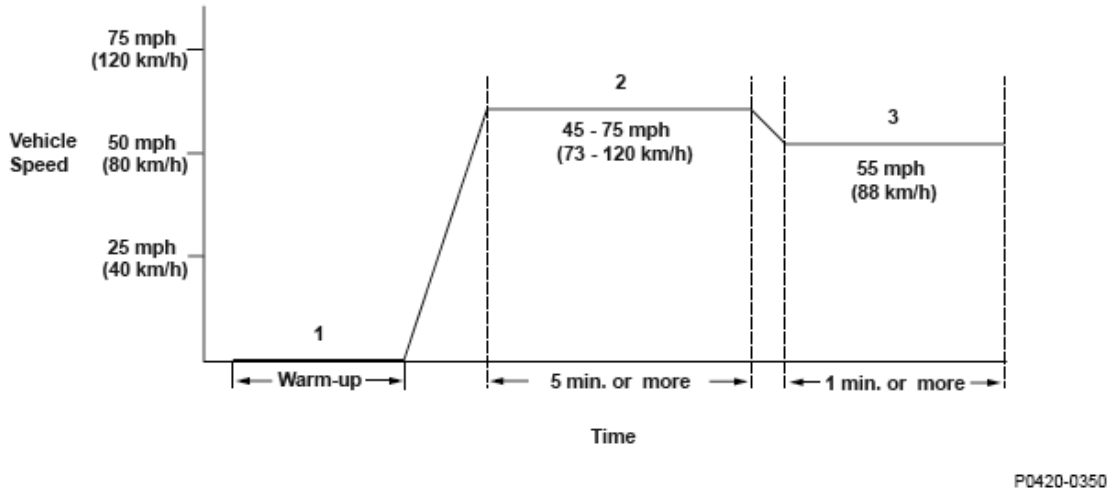


Fig. 190: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 45 - 75 mph (73 - 120 km/h) for at least 5 minutes, to warm up the TWC.
3. Set a vehicle speed of 55 mph (88 km/h) on the cruise control, and drive for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0420 (67): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD (R18A4 ENGINE)

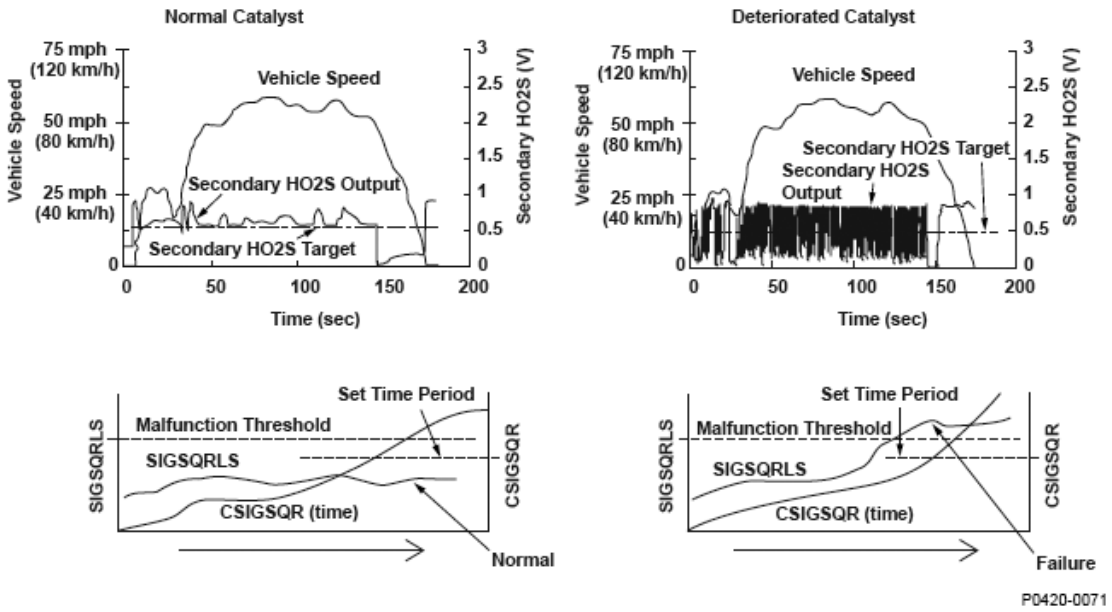


Fig. 191: Catalyst System Efficiency Voltage And Time - Graph

General Description (R18A4 Engine)

The three way catalytic converter (TWC) converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to water vapor, carbon dioxide (CO2), and dinitrogen (N2).

The TWC efficiency does not depend entirely on engine conditions or the deterioration level of the TWC. It can be optimized by stabilizing the secondary HO2S output.

If the TWC deteriorates, the air/fuel ratio downstream of the TWC (the secondary HO2S output) often differs from the target secondary HO2S output, and the status is represented by the parameter (SIGSQRLS).

Therefore, if the SIGSQRLS exceeds a specified value for a set time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	51.3 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Estimated TWC temperature	932°F (500°C)	-

Engine speed	1,250 rpm	2,510 rpm
MAP value	27 kPa (7.9 in.Hg, 200 mmHg)(1)	67 kPa (20.0 in.Hg, 510 mmHg) (1)
	34 kPa (9.9 in.Hg, 250 mmHg)(2)	79 kPa (23.6 in.Hg, 600 mmHg) (2)
Vehicle speed	4 mph (5 km/h)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0139, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1109, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2270, P2271, P2646, P2647, P2648, P2649	
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF		

Malfunction Threshold (R18A4 Engine)

The number of detections is 736 (CTAGLT67) or more.

Driving Pattern (R18A4 Engine)

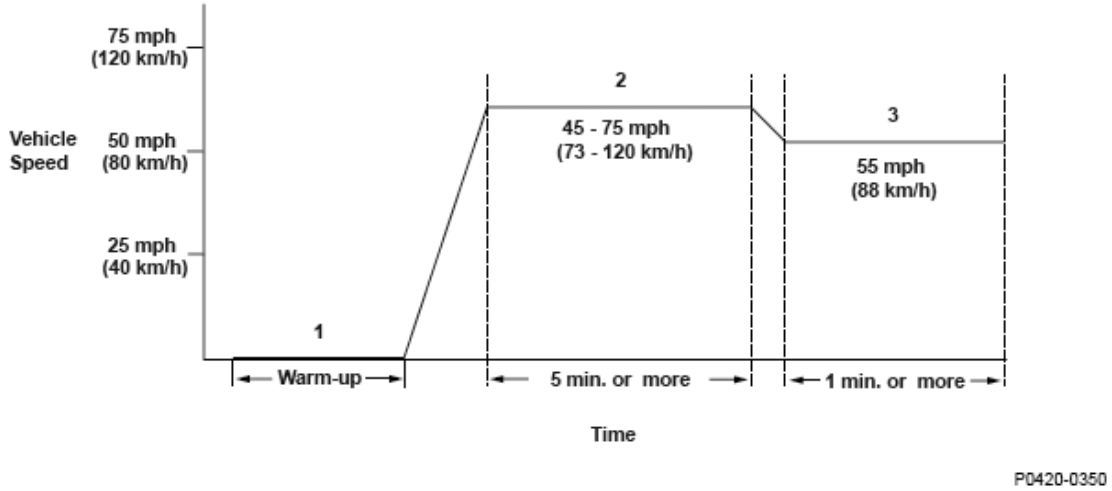


Fig. 192: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 45 - 75 mph (73 - 120 km/h) for at least 5 minutes, to warm up the TWC.
3. Set a vehicle speed of 55 mph (88 km/h) on the cruise control, and drive for at least 1 minute.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0443 (92): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0443: EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE CIRCUIT MALFUNCTION (K20Z3 ENGINE)

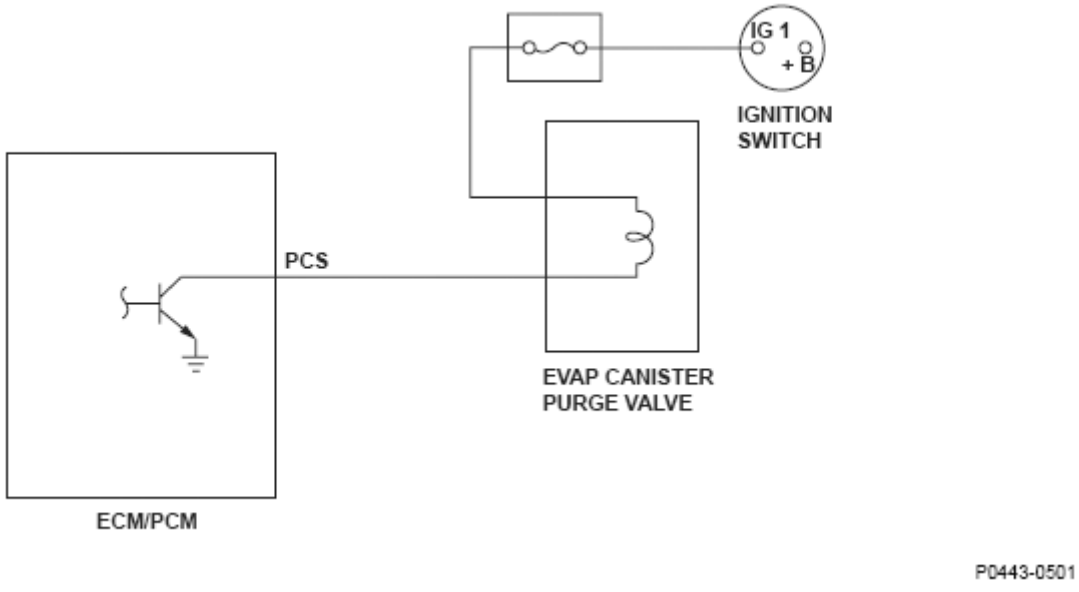


Fig. 193: Evaporative Emission Control System Canister Purge Valve Circuit Malfunction Diagram

General Description (K20Z3 Engine)

The evaporative emission (EVAP) canister purge valve is attached to the vacuum port between the EVAP canister and the intake manifold. The engine control module (ECM)/powertrain control module (PCM) does not turn on the EVAP canister purge valve when the engine coolant temperature is 140 °F (60 °C) or less. The ECM/PCM adjusts the amount of fuel vapor sent to the engine by controlling the EVAP canister purge valve duty cycle.

When the return signal does not change according to the EVAP canister purge valve output for a set time, the ECM/PCM detects a malfunction, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
EVAP canister purge valve output duty	2 %	98 %
State of the engine	Running	

Malfunction Threshold (K20Z3 Engine)

The return signal does not change according to the EVAP canister purge valve output for at least 5 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0443 (92): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0443: EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE CIRCUIT MALFUNCTION (R18A1 ENGINE)

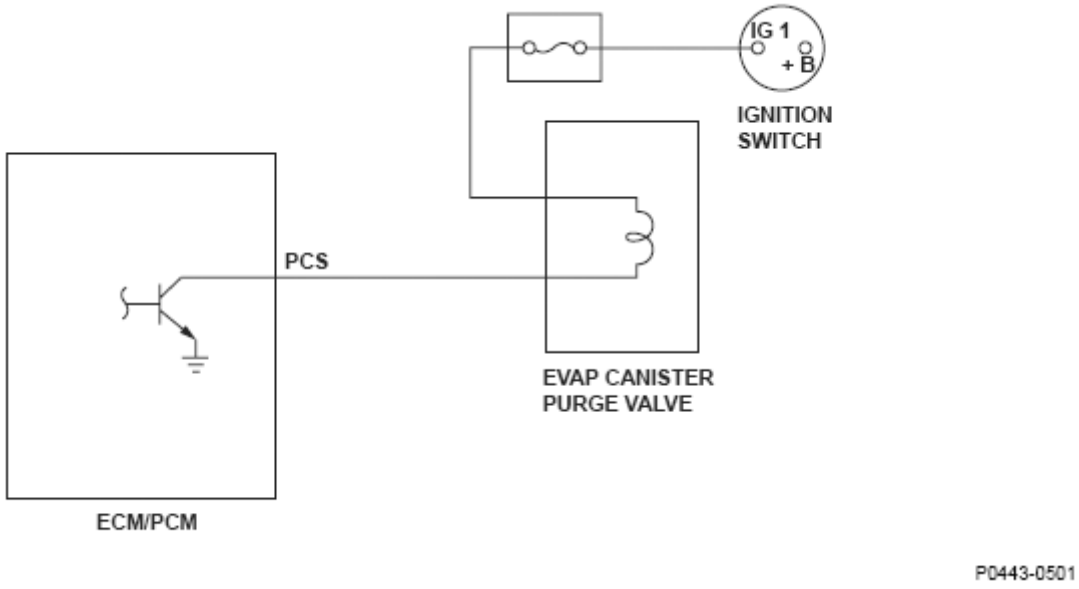


Fig. 194: Evaporative Emission Control System Canister Purge Valve Circuit Malfunction Diagram

General Description (R18A1 Engine)

The evaporative emission (EVAP) canister purge valve is attached to the vacuum port between the EVAP canister and the intake manifold. The engine control module (ECM)/powertrain control module (PCM) does not turn on the EVAP canister purge valve when the engine coolant temperature is 140°F (60°C) or less. The ECM/PCM adjusts the amount of fuel vapor sent to the engine by controlling the EVAP canister purge valve duty cycle.

When the return signal does not change according to the EVAP canister purge valve output for a set time, the ECM/PCM detects a malfunction, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
EVAP canister purge valve output duty	2 %	98 %
State of the engine	Running	

Malfunction Threshold (R18A1 Engine)

The return signal does not change according to the EVAP canister purge valve output for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0451 (91): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0451: FUEL TANK PRESSURE (FTP) SENSOR RANGE/PERFORMANCE PROBLEM (K20Z3)

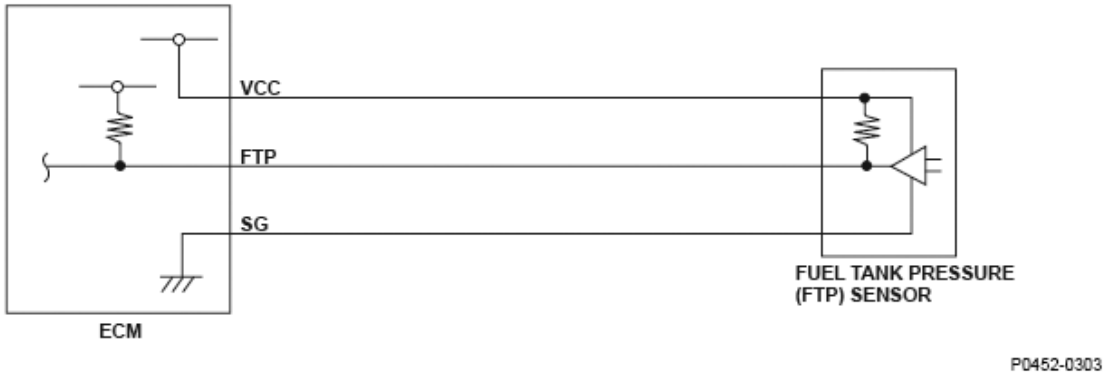


Fig. 195: Fuel Tank Pressure (FTP) Sensor Range/Performance Problem - Circuit Diagram

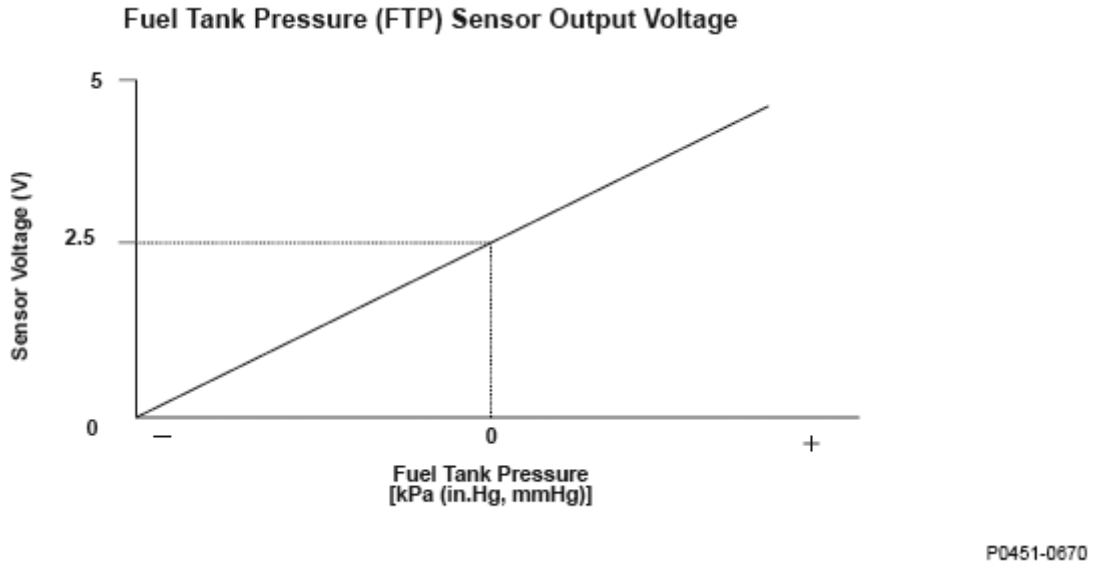


Fig. 196: Fuel Tank Pressure (FTP) Sensor Voltage - Graph

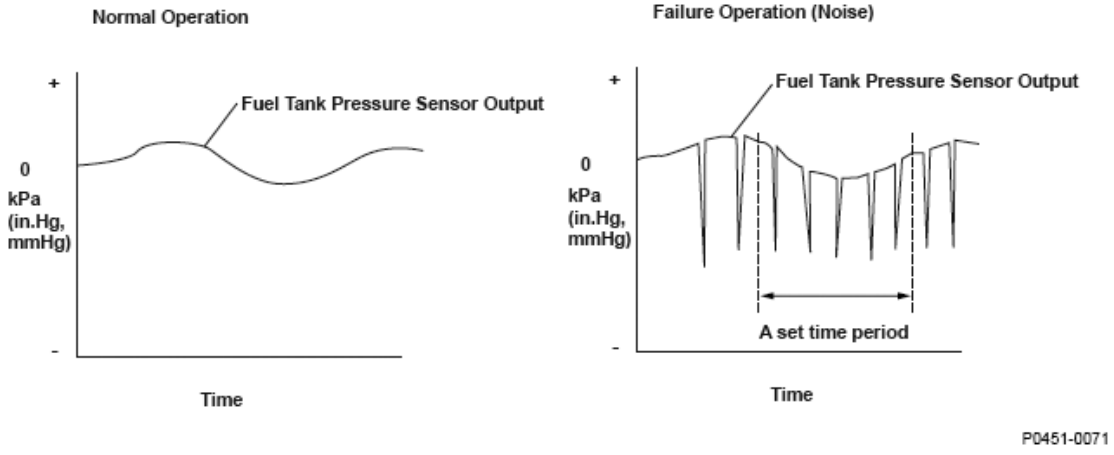


Fig. 197: Fuel Tank Pressure - Graph

General Description (K20Z3 Engine)

The fuel tank pressure (FTP) sensor is installed on the evaporative emission (EVAP) canister. The FTP sensor is used to detect leaks in the EVAP system. The engine control module (ECM) monitors the FTP sensor output voltage. The FTP sensor output voltage rises as the fuel tank pressure increases. Conversely, the FTP sensor output voltage drops as the fuel tank pressure decreases. Rapid changes in the FTP sensor output voltage due to electrical noise or an intermittent open during the EVAP leak detection may cause incorrect leak detection, so abnormal output is monitored.

If the FTP sensor output voltage changes a specified number of times within a set time, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None

Duration	20 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2 seconds	-
Throttle position	Fully closed	
No active DTCs	P0122, P0123, P0222, P0223, P0452, P0453, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176	

Malfunction Threshold (K20Z3 Engine)

The FTP sensor output fluctuates by 0.3 kPa (0.1 in.Hg, 2 mmHg) or more at least five times within 3 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine in a cold condition, and let it idle for at least 20 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0451 (91): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0451: FUEL TANK PRESSURE (FTP) SENSOR RANGE/PERFORMANCE PROBLEM (R18A1)

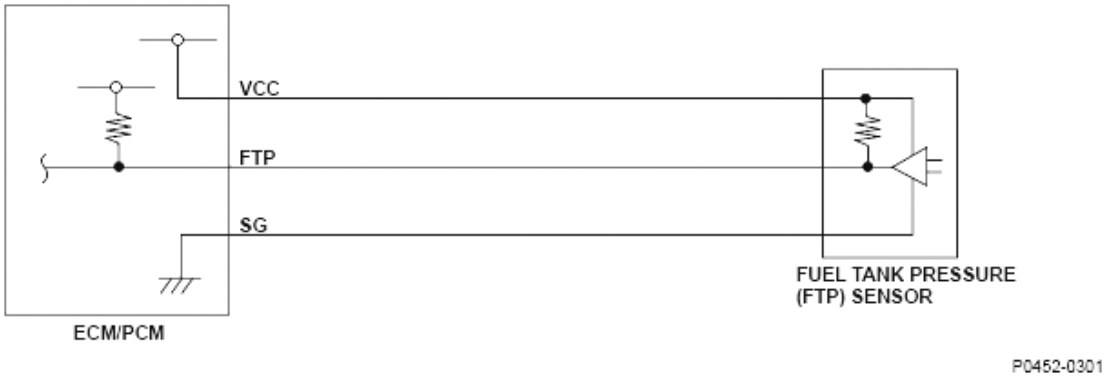


Fig. 198: Fuel Tank Pressure Sensor - Circuit Diagram

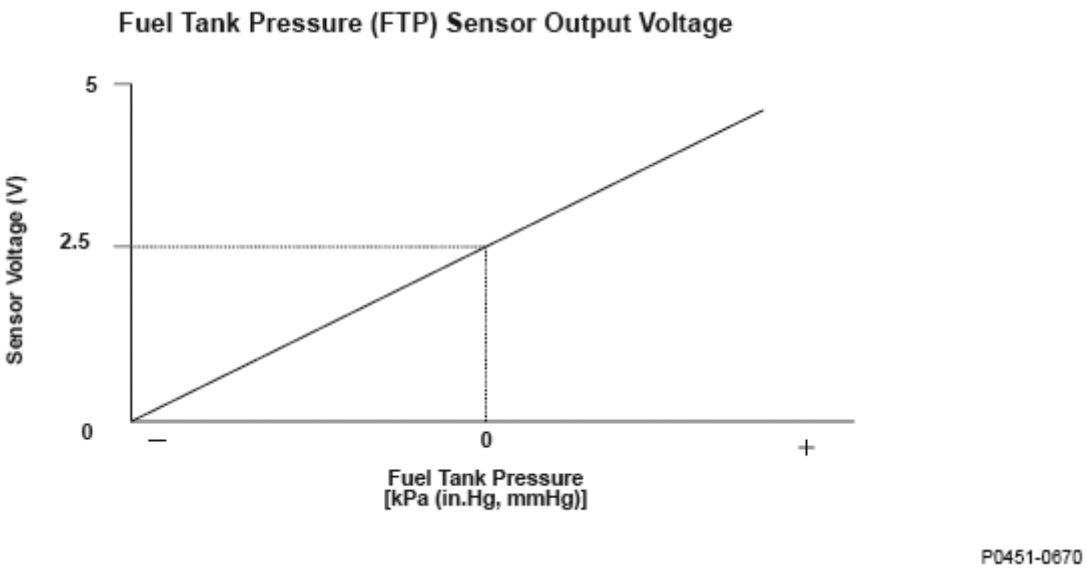


Fig. 199: Fuel Tank Pressure (FTP) Sensor Voltage - Graph

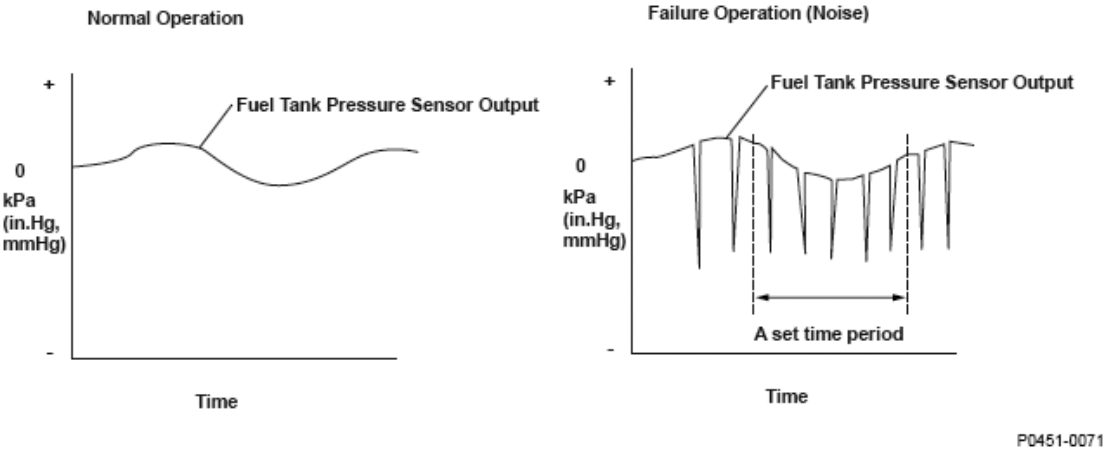


Fig. 200: Fuel Tank Pressure - Graph

General Description (R18A1 Engine)

The fuel tank pressure (FTP) sensor is installed on the evaporative emission (EVAP) canister. The FTP sensor is used to detect leaks in the EVAP system. The engine control module (ECM)/powertrain control

module (PCM) monitors the FTP sensor output voltage. The FTP sensor output voltage rises as the fuel tank pressure increases. Conversely, the FTP sensor output voltage drops as the fuel tank pressure decreases. Rapid changes in the FTP sensor output voltage due to electrical noise or an intermittent open during the EVAP leak detection may cause incorrect leak detection, so abnormal output is monitored.

If the FTP sensor output voltage changes a specified number of times within a set time, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2 seconds	-
Throttle position	Fully closed	
No active DTCs	P0122, P0123, P0222, P0223, P0452, P0453, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176	

Malfunction Threshold (R18A1 Engine)

The FTP sensor output fluctuates by 0.3 kPa (0.1 in.Hg, 2 mmHg) or more at least five times within 3 seconds.

Driving Pattern (R18A1 Engine)

Start the engine in a cold condition, and let it idle for at least 20 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool

Clear command or by disconnecting the battery.

DTC P0452 (91): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0452: FUEL TANK PRESSURE (FTP) SENSOR CIRCUIT LOW VOLTAGE (K20Z3)

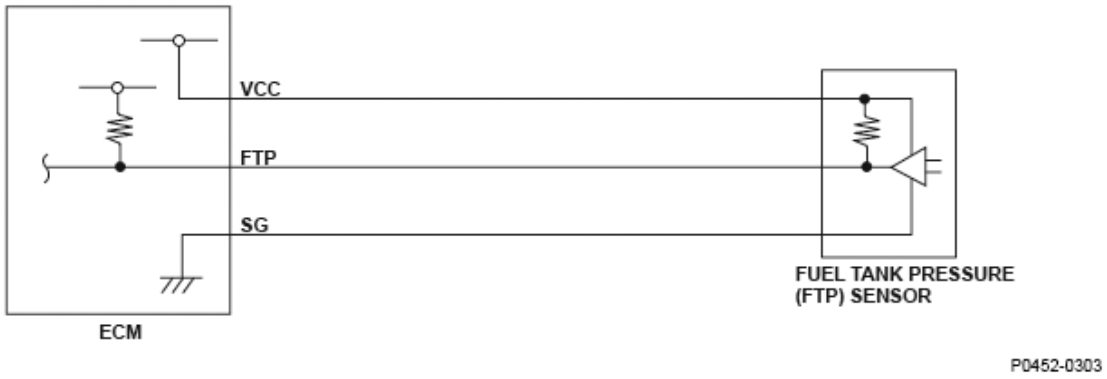


Fig. 201: Fuel Tank Pressure (FTP) Sensor Range/Performance Problem - Circuit Diagram

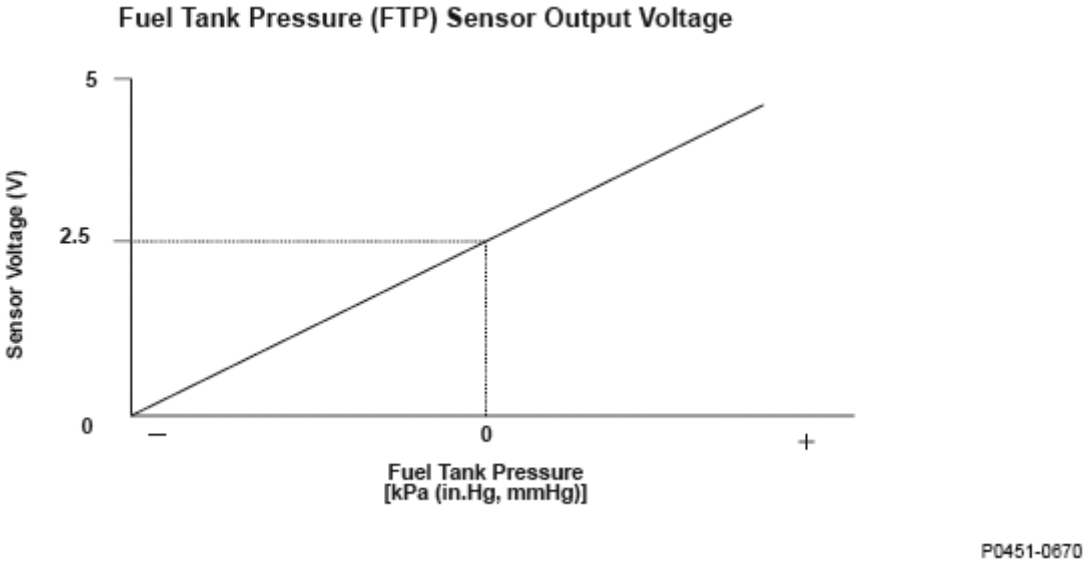


Fig. 202: Fuel Tank Pressure (FTP) Sensor Voltage - Graph

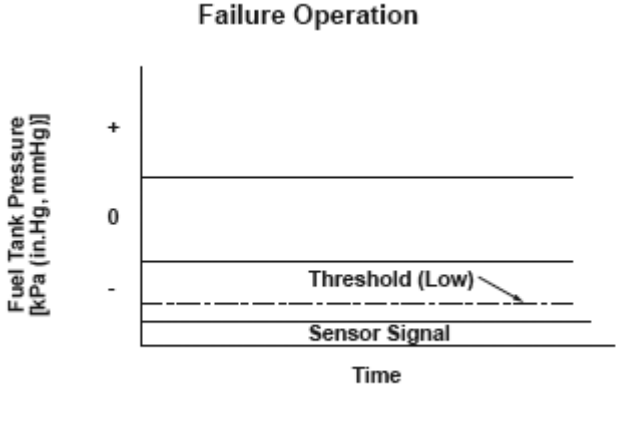


Fig. 203: Fuel Tank Pressure Operation - Graph

General Description (K20Z3 Engine)

The fuel tank pressure (FTP) sensor is installed on the evaporative emission (EVAP) canister and detects the fuel tank pressure. The FTP sensor is used to detect leaks in the EVAP system.

The engine control module (ECM) monitors the FTP sensor output voltage. The FTP sensor output voltage rises as the fuel tank pressure increases. Conversely, the FTP sensor output voltage drops as the fuel tank pressure decreases. If the FTP sensor output voltage does not reach a target value within a set time after starting the engine in a cold condition, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2 seconds	-
Other	At idle	

Malfunction Threshold (K20Z3 Engine)

The output from the fuel tank pressure sensor is less than -7 kPa (-2.1 in.Hg, -55 mmHg) for at least 3 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine in a cold condition, and let it idle until the radiator fan comes on.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by

disconnecting the battery.

DTC P0453 (91): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0453: FUEL TANK PRESSURE (FTP) SENSOR CIRCUIT HIGH VOLTAGE (K20Z3)

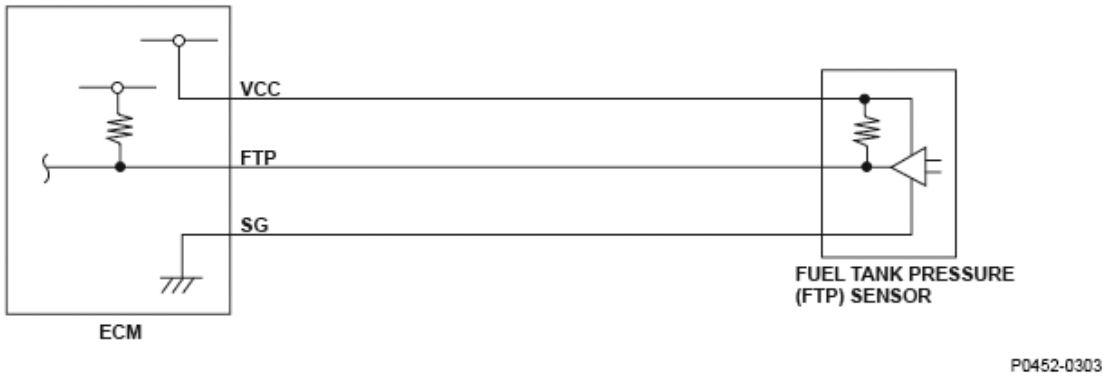


Fig. 204: Fuel Tank Pressure (FTP) Sensor Range/Performance Problem - Circuit Diagram

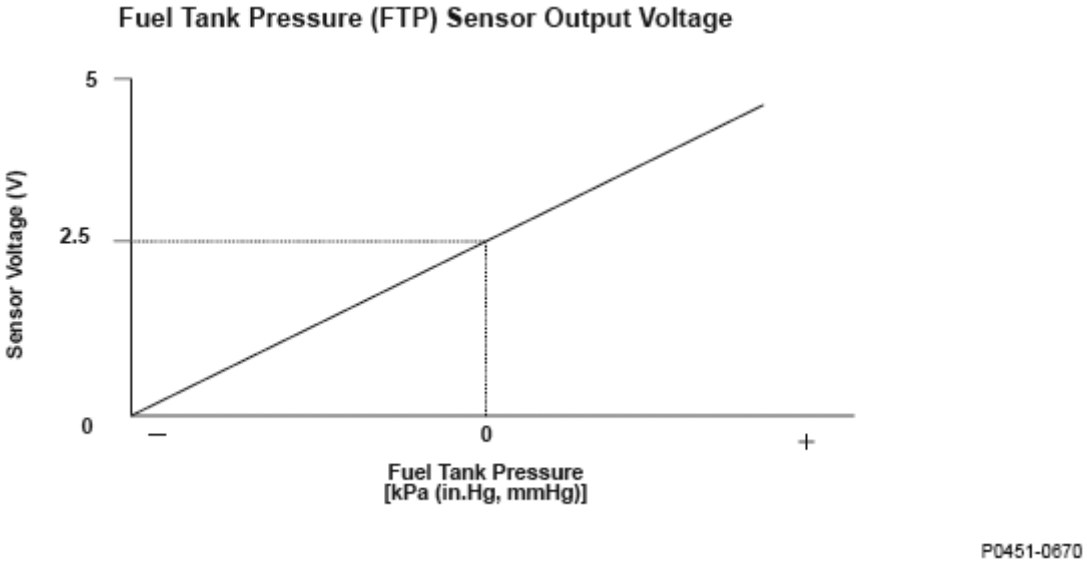


Fig. 205: Fuel Tank Pressure (FTP) Sensor Voltage - Graph

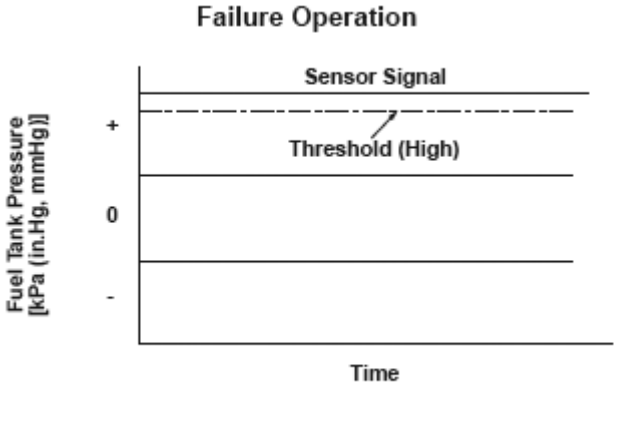


Fig. 206: Fuel Tank Pressure Operation - Graph

General Description (K20Z3 Engine)

The fuel tank pressure (FTP) sensor is installed on the evaporative emission (EVAP) canister and detects the fuel tank pressure. The FTP sensor is used to detect leaks in the EVAP system.

The engine control module (ECM) monitors the FTP sensor output voltage. The FTP sensor output voltage rises as the fuel tank pressure increases. Conversely, the FTP sensor output voltage drops as the fuel tank pressure decreases. If the FTP sensor output voltage is higher than a target value within a set time after starting the engine in a cold condition, the ECM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2 seconds	-
Other	At idle	

Malfunction Threshold (K20Z3 Engine)

The output from the fuel tank pressure sensor is more than 8 kPa (2.2 in.Hg, 55 mmHg) for at least 3 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine in a cold condition, and let it idle until the radiator fan comes on.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by

disconnecting the battery.

DTC P0455 (90): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0455: EVAPORATIVE EMISSION (EVAP) SYSTEM LARGE LEAK DETECTED (K20Z3)

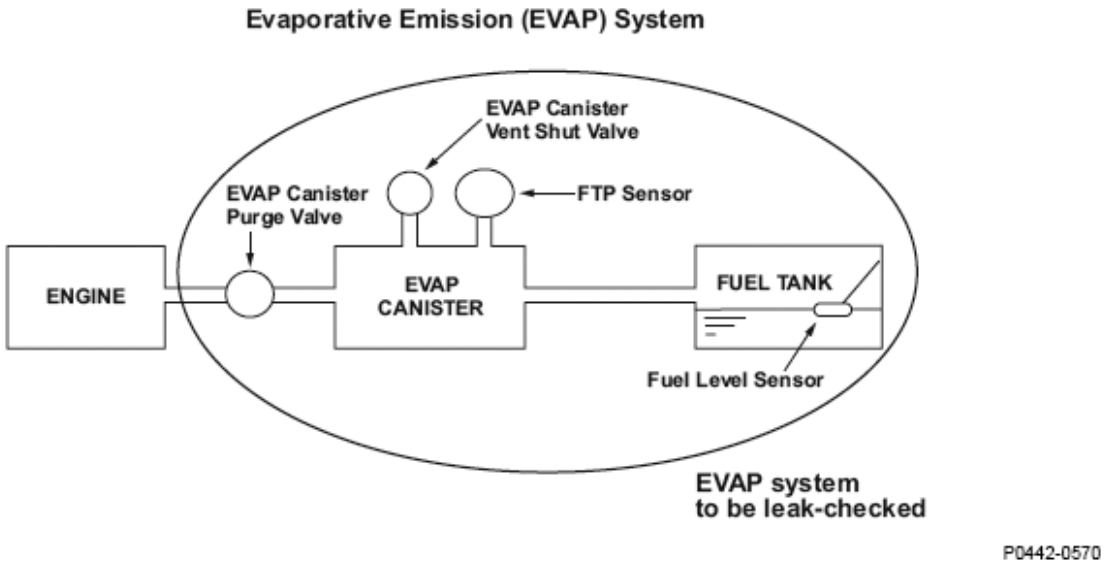


Fig. 207: Evaporative Emission (EVAP) System Large Leak Detected - Diagram

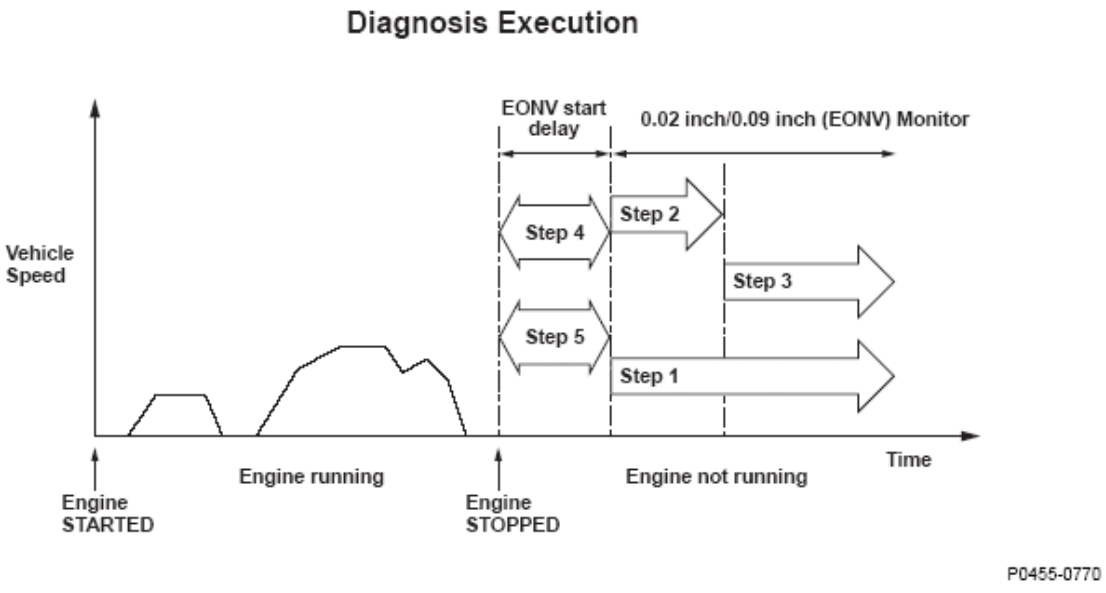


Fig. 208: Evaporative Emission (EVAP) System Diagnosis Execution

General Description (K20Z3 Engine)

The evaporative emission (EVAP) leak detection system uses an engine off natural vacuum (EONV) method. The EONV method detects leakage from the change in fuel tank pressure via the fuel tank pressure (FTP) sensor with the engine off.

Here is an overview of the malfunction detection for the EONV method:

Step 1: Judgement of detection of 0.09 inch leak as normal operation

Step 2: Judgement of detection of 0.02 inch leak as normal operation

Step 3: Detection of 0.02 inch leak

Step 4: Detection of atmospheric pressure failure

Step 5: Flickering of the FTP sensor

< Step 1, 2 and 3 proceed simultaneously. Step 4 and 5 proceed simultaneously. >

Step 1:

After the engine has stopped, the engine control module (ECM) monitors the variation of the FTP sensor output to detect "no 0.09 inch leak" depending on the variation of the pressure inside the fuel tank.

- If the variation of the pressure is less than a specified value and continues for a specified duration, it is identified as a "0.09 inch leak" and the diagnosis completes.
- If the variation of the pressure is more than a specified value before a specified duration has passed, it is defined as "no 0.09 inch leak", the judgement of detection of a 0.09 inch leak is completed, and it goes to 0.02 inch leak monitor.

Step 2:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the increasing pressure inside the fuel tank.

- If "no 0.02 inch leak" is detected, it is identified as normal; the diagnosis is complete.
- If the pressure inside the fuel tank does not increase a specified value or more within a specified duration, it goes to step 3.

Step 3:

The ECM continues to monitor the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the decreasing pressure inside the fuel tank. until the detection completes.

- If a "0.02 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no leakage" is detected, it is identified as normal; the diagnosis is complete.
- If the pressure is not atmospheric pressure or less when the detection is completed, that data is stored and the diagnosis is complete.

Step 4:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect atmospheric pressure, after keeping the canister vent opened for a specified duration to stabilize the pressure inside the fuel tank.

- If the pressure inside the fuel tank after a specified duration has not reached a specified value from the

sensor zero point, a canister vent blockage is detected.

Step 5:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect FTP sensor electrical noise failure, after keeping the canister vent opened for a specified time to stabilize the pressure inside the fuel tank.

- If the deviation of pressure inside the fuel tank and an average value after a specified duration has exceeded a specified value for more than a specified duration, an FTP sensor electrical noise failure is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	36 minutes, 37 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time before starting the engine	6 hours	-
Initial condition A(1)	-	18°F (10°C)
Initial condition B(2)	-	18°F (10°C)
Initial engine coolant temperature	40°F (5°C)	95°F (35°C)
Initial intake air temperature	40°F (5°C)	95°F (35°C)
Barometric pressure	76 kPa (22.5 in.Hg, 569 mmHg)	-
Battery voltage	10.5 V	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P0685, P1116, P1454, P145C, P2227, P2228, P2229, P2422, P2610	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	No refueling is required	

(1) The initial intake air temperature minus the current intake air temperature

(2) The initial engine coolant temperature minus the initial intake air temperature

Malfunction Threshold (K20Z3 Engine)

The variation of pressure inside the fuel tank is 0.03 kPa (0.009 in.Hg, 0.24 mmHg) or more.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.
2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 37 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0455 (90): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0455: EVAPORATIVE EMISSION (EVAP) SYSTEM LARGE LEAK DETECTED (R18A1)

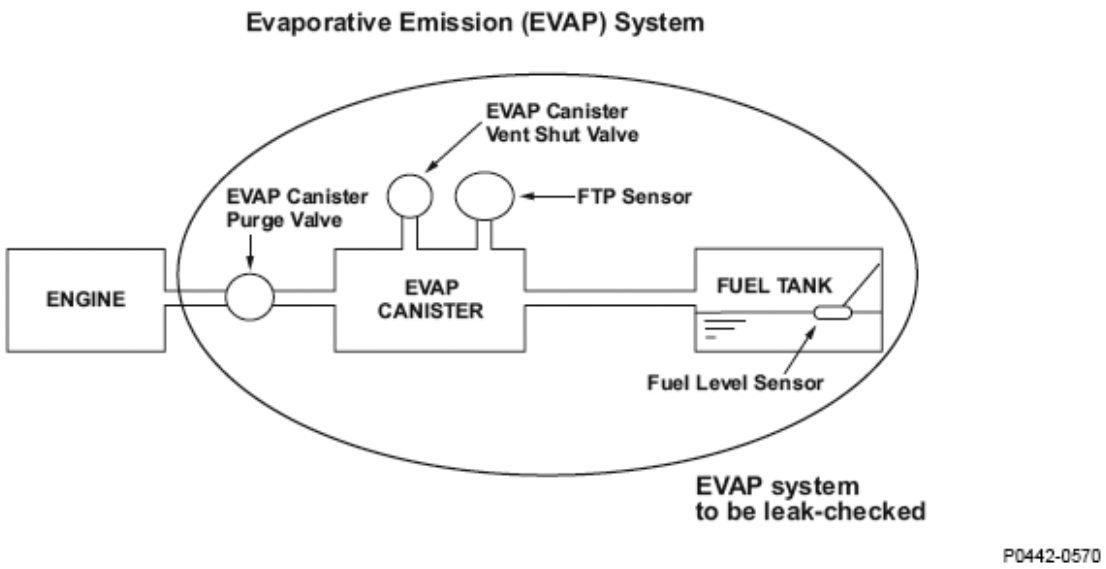


Fig. 209: Evaporative Emission (EVAP) System Large Leak Detected - Diagram

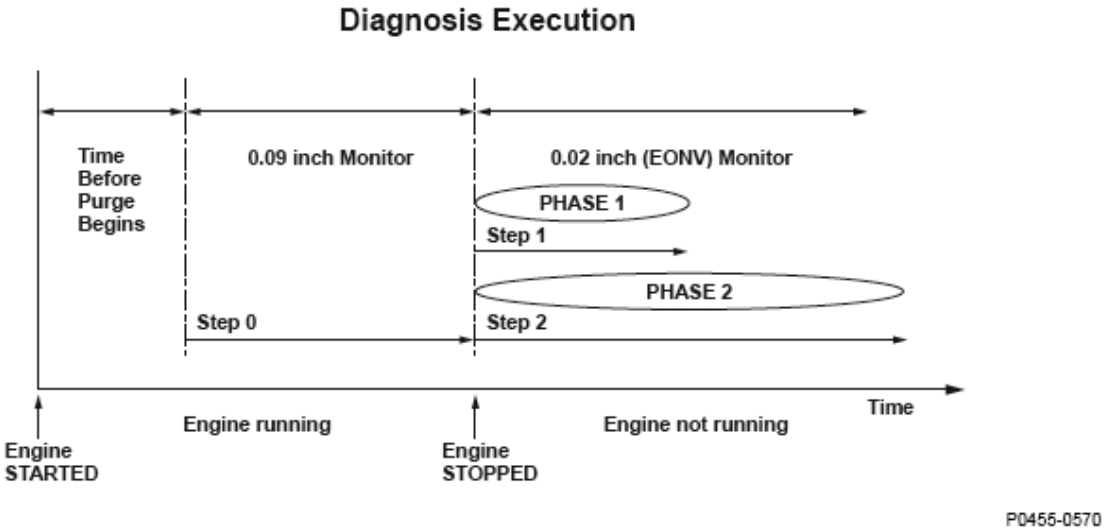


Fig. 210: Evaporative Emission (EVAP) System - Diagnosis Execution

General Description (R18A1 Engine)

The evaporative emission (EVAP) leak detection system uses a vacuum-retention (decompression) method and an engine off natural vacuum (EONV) method. This method detects leakage by monitoring the vacuum-retention ability of the EVAP system (from EVAP canister purge valve to fuel tank). The EONV method detects leakage from the change in fuel tank pressure via the fuel tank pressure (FTP) sensor with the engine off.

Here is an overview of the malfunction detection for the EONV method:

Step 0: Judgement of detection of 0.09 inch leak as normal operation < decompressing monitor >

Step 1: Judgement of detection of 0.02 inch leak as normal operation < phase 1 >

Step 2: Detection of 0.02 inch leak < phase 2 >

Step 0:

Once required conditions for the monitor are met, the engine control module (ECM)/powertrain control module (PCM) applies vacuum to the EVAP system line from the purge control solenoid (PCS) valve through the fuel tank, and monitors the variation of the FTP sensor output to detect a "0.09 inch leak".

- If a "0.09 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no 0.09 inch leak" is detected, the ECM/PCM goes to step 1, judgement of detection of a 0.02 inch leak as normal operation < phase 1 >.
- If sufficient vacuum cannot be drawn on the EVAP system line, it is identified as either "**EVAP SYSTEM LOW PURGE FLOW (P0497)**" or "**EVAP SYSTEM LEAK DETECTED FUEL FILL CAP LOOSE/OFF (P0457)**" .

Step 1:

After the engine has stopped, the ECM/PCM monitors the variation of the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the increasing pressure inside the fuel tank.

- If "no 0.02 inch leak" is detected, it is identified as normal; the diagnosis is complete.
- If "no 0.02 inch leak" is not detected, the ECM/PCM goes to step 2, detection of a 0.02 inch leak < phase 2 >.

Step 2:

The ECM/PCM continues to monitor the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the decreasing pressure inside the fuel tank.

- If a "0.02 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no leakage" is detected, it is identified as normal; the diagnosis is complete.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	45 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time before starting the engine	6 hours	-
Initial condition A(1)	-	18°F (10°C)
Initial condition B(2)	-	18°F (10°C)

Initial engine coolant temperature	40°F (5°C)	95°F (35°C)
Initial intake air temperature	40°F (5°C)	95°F (35°C)
Engine coolant temperature	156°F (69°C)	212°F (100°C)
Engine coolant temperature before EVAP purge control starts	140 °F (60 °C)	-
Vehicle speed	7 mph (10 km/h)	-
Barometric pressure	76 kPa (22.5 in.Hg, 569 mmHg)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop at stoichiometric	
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P0685, P1116, P1454, P2227, P2228, P2229, P2422, P2610	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	No refueling is required	
(1) The initial intake air temperature minus the current intake air temperature (2) The initial engine coolant temperature minus the initial intake air temperature		

Malfunction Threshold (R18A1 Engine)

The variation of pressure inside the fuel tank is -2 kPa (-0.5 in.Hg, -12 mmHg) or more.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.
2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 32 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0456 (90): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0456: EVAPORATIVE EMISSION (EVAP) SYSTEM VERY SMALL LEAK DETECTED (K20Z3)

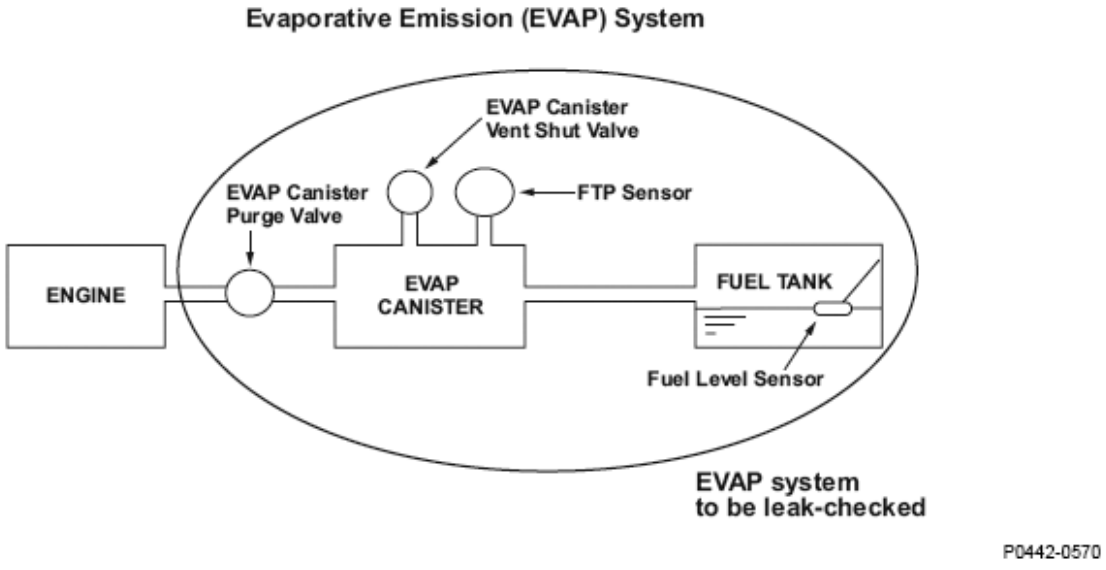


Fig. 211: Evaporative Emission (EVAP) System Large Leak Detected - Diagram

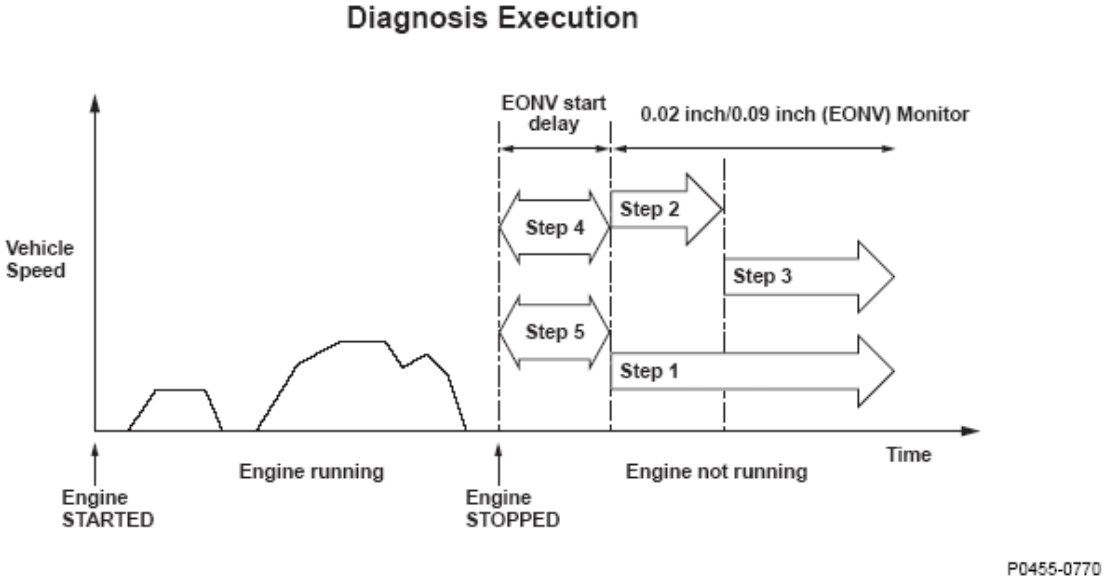


Fig. 212: Evaporative Emission (EVAP) System Diagnosis Execution

General Description (K20Z3 Engine)

The evaporative emission (EVAP) leak detection system uses an engine off natural vacuum (EONV) method. The EONV method detects leakage from the change in fuel tank pressure via the fuel tank pressure (FTP) sensor with the engine off.

Here is an overview of the malfunction detection for the EONV method:

Step 1: Judgement of detection of 0.09 inch leak as normal operation

Step 2: Judgement of detection of 0.02 inch leak as normal operation

Step 3: Detection of 0.02 inch leak

Step 4: Detection of atmospheric pressure failure

Step 5: Flickering of the FTP sensor

< Step 1, 2 and 3 proceed simultaneously. Step 4 and 5 proceed simultaneously. >

Step 1:

After the engine has stopped, the engine control module (ECM) monitors the variation of the FTP sensor output to detect "no 0.09 inch leak" depending on the variation of the pressure inside the fuel tank.

- If the variation of the pressure is less than a specified value and continues for a specified duration, it is identified as a "0.09 inch leak" and the diagnosis completes.
- If the variation of the pressure is more than a specified value before a specified duration has passed, it is defined as "no 0.09 inch leak", the judgement of detection of a 0.09 inch leak is completed, and it goes to 0.02 inch leak monitor.

Step 2:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the increasing pressure inside the fuel tank.

- If "no 0.02 inch leak" is detected, it is identified as normal; the diagnosis is complete.
- If the pressure inside the fuel tank does not increase a specified value or more within a specified duration, it goes to step 3.

Step 3:

The ECM continues to monitor the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the decreasing pressure inside the fuel tank. until the detection completes.

- If a "0.02 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no leakage" is detected, it is identified as normal; the diagnosis is complete.
- If the pressure is not atmospheric pressure or less when the detection is completed, that data is stored and the diagnosis is complete.

Step 4:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect atmospheric pressure, after keeping the canister vent opened for a specified duration to stabilize the pressure inside the fuel tank.

- If the pressure inside the fuel tank after a specified duration has not reached a specified value from the sensor zero point, a canister vent blockage is detected.

Step 5:

After the engine has stopped, the ECM monitors the variation of the FTP sensor output to detect FTP sensor electrical noise failure, after keeping the canister vent opened for a specified time to stabilize the pressure inside the fuel tank.

- If the deviation of pressure inside the fuel tank and an average value after a specified duration has exceeded a specified value for more than a specified duration, an FTP sensor electrical noise failure is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P0455, P0457, P0497 are judged as OK
Duration	At least 11 minutes, 37 seconds but not more than 36 minutes, 37 seconds
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time before starting the engine	6 hours	-
Initial condition A(1)	-	18°F (10°C)
Initial condition B(2)	-	18°F (10°C)
Initial engine coolant temperature	40°F (5°C)	95°F (35°C)
Initial intake air temperature	40°F (5°C)	95°F (35°C)
Barometric pressure	76 kPa (22.5 in.Hg, 569 mmHg)	-
Battery voltage	10.5 V	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P0685, P1116, P1454, P145C, P2227, P2228, P2229, P2422, P2610	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	

	No refueling is required
(1) The initial intake air temperature minus the current intake air temperature	
(2) The initial engine coolant temperature minus the initial intake air temperature	

Malfunction Threshold (K20Z3 Engine)

- The misalignment of zero point pressure inside the fuel tank is 0.6 kPa (0.1 in.Hg, 5 mmHg) or more.
- The output from the FTP sensor flickering is 3.04 seconds or more.
- The variation of pressure inside the fuel tank after phase 1 is 0.3 kPa (0.1 in.Hg, 2.8 mmHg) or more (depending on fuel level and barometric pressure).
- The sum of the variations of pressure inside the fuel tank after phase 1 and phase 2 is 10 kPa (3.1 in.Hg, 80 mmHg) or less (depending on fuel level and barometric pressure).
- The barometric pressure is stable for at least 29 minutes, 55 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.
2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 37 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0456 (90): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0456: EVAPORATIVE EMISSION (EVAP) SYSTEM VERY SMALL LEAK DETECTED (R18A1)

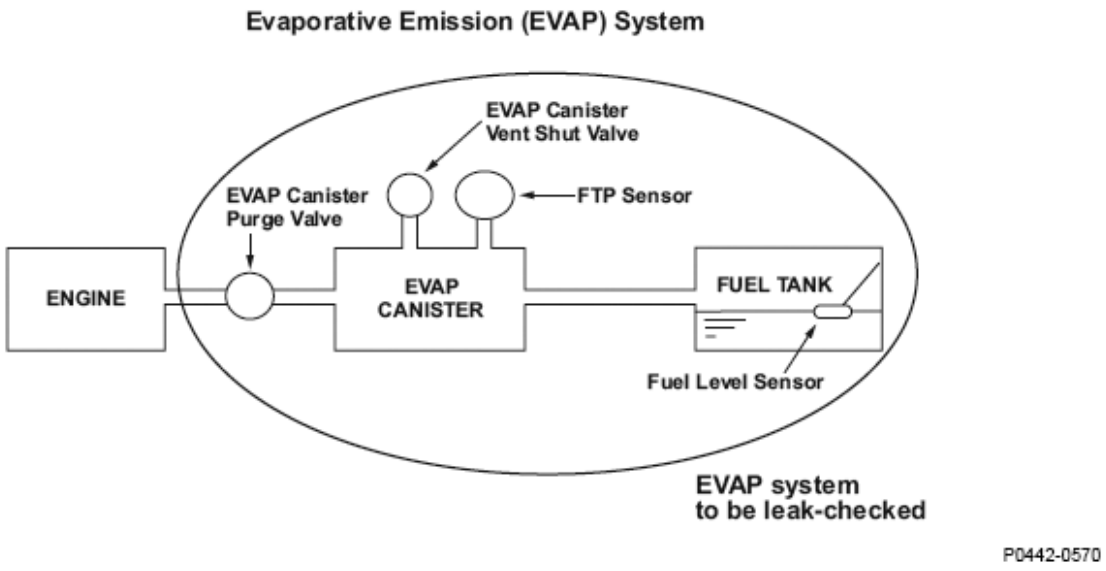


Fig. 213: Evaporative Emission (EVAP) System Large Leak Detected - Diagram

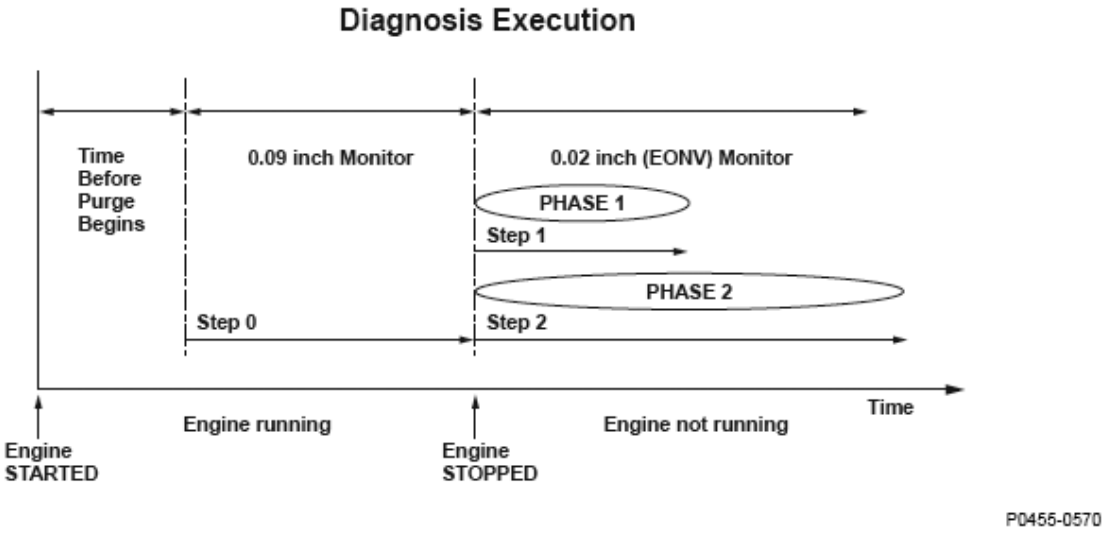


Fig. 214: Evaporative Emission (EVAP) System - Diagnosis Execution

General Description (R18A1 Engine)

The evaporative emission (EVAP) leak detection system uses a vacuum-retention (decompression) method and an engine off natural vacuum (EONV) method. This method detects leakage by monitoring the vacuum-retention ability of the EVAP system (from EVAP canister purge valve to fuel tank). The EONV method detects leakage from the change in fuel tank pressure via the fuel tank pressure (FTP) sensor with the engine off.

Here is an overview of the malfunction detection for the EONV method:

Step 0: Judgement of detection of 0.09 inch leak as normal operation < decompressing monitor >

Step 1: Judgement of detection of 0.02 inch leak as normal operation < phase 1 >

Step 2: Detection of 0.02 inch leak < phase 2 >

Step 0:

Once required conditions for the monitor are met, the engine control module (ECM)/powertrain control module (PCM) applies vacuum to the EVAP system line from the purge control solenoid (PCS) valve through the fuel tank, and monitors the variation of the FTP sensor output to detect a "0.09 inch leak".

- If a "0.09 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no 0.09 inch leak" is detected, the ECM/PCM goes to step 1, judgement of detection of a 0.02 inch leak as normal operation < phase 1 >.
- If sufficient vacuum cannot be drawn on the EVAP system line, it is identified as either "**EVAP SYSTEM LOW PURGE FLOW (P0497)**" or "**EVAP SYSTEM LEAK DETECTED FUEL FILL CAP LOOSE/OFF (P0457)**" .

Step 1:

After the engine has stopped, the ECM/PCM monitors the variation of the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the increasing pressure inside the fuel tank.

- If "no 0.02 inch leak" is detected, it is identified as normal; the diagnosis is complete.
- If "no 0.02 inch leak" is not detected, the ECM/PCM goes to step 2, detection of a 0.02 inch leak < phase 2 >.

Step 2:

The ECM/PCM continues to monitor the FTP sensor output to detect "no 0.02 inch leak" depending on the variation corresponding to the decreasing pressure inside the fuel tank.

- If a "0.02 inch leak" is detected, it is identified as a malfunction; the diagnosis is complete.
- If "no leakage" is detected, it is identified as normal; the diagnosis is complete.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P0455, P0457, P0497 are judged as OK
Duration	At least 11 minutes, 37 seconds but not more than 31 minutes, 37 seconds
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time before starting the	6 hours	-

engine		
Initial condition A(1)	-	18°F (10°C)
Initial condition B(2)	-	18°F (10°C)
Initial engine coolant temperature	40°F (5°C)	95°F (35°C)
Initial intake air temperature	40°F (5°C)	95°F (35°C)
Barometric pressure	76 kPa (22.5 in.Hg, 569 mmHg)	-
Battery voltage	10.5 V	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P0685, P1116, P1454, P2227, P2228, P2229, P2422, P2610	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	Driving 1 hour or more	
	No refueling is required	
(1) The initial intake air temperature minus the current intake air temperature (2) The initial engine coolant temperature minus the initial intake air temperature		

Malfunction Threshold (R18A1 Engine)

The variation of pressure inside the fuel tank after phase 1 is 0.3 kPa (0.1 in.Hg, 2.8 mmHg) or more (depending on fuel level and barometric pressure).

The sum of the variations of pressure inside the fuel tank after phase 1 and phase 2 is 10 kPa (3.1 in.Hg, 80 mmHg) or less (depending on fuel level and barometric pressure).

The barometric pressure is stable for at least 20 minutes.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.
2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 32 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0457 (90): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0457: EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING (K20Z3)

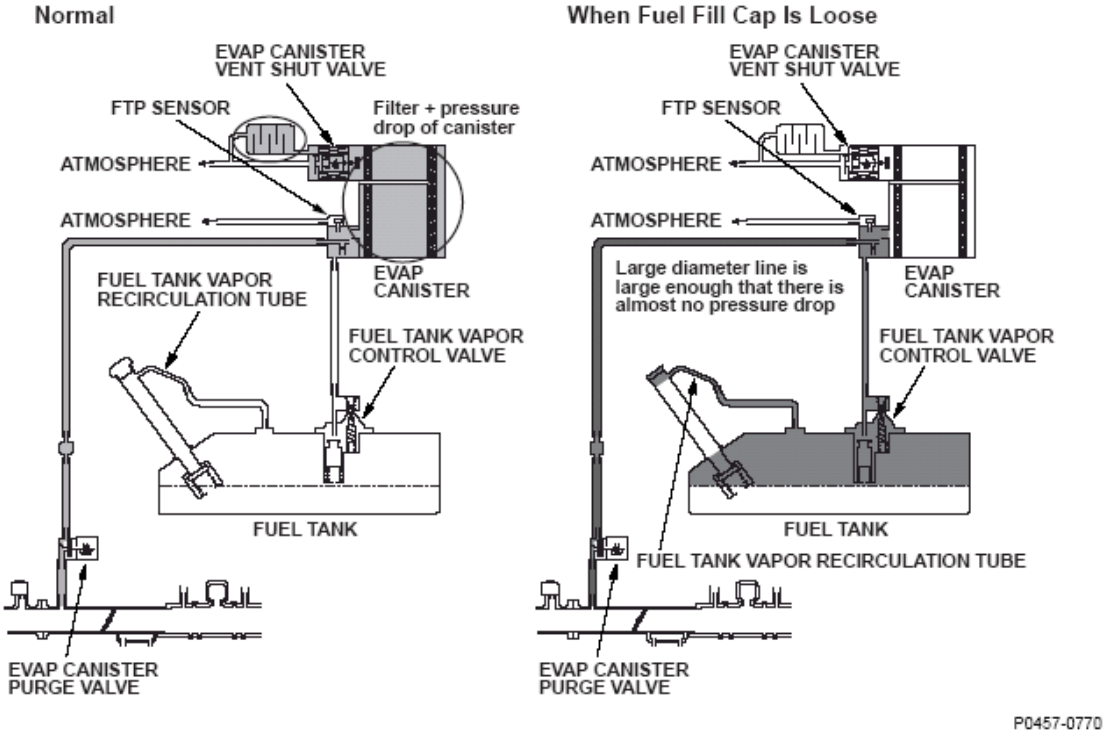


Fig. 215: Evaporative Emission (EVAP) System Diagram (Fuel Fill Cap Loose)

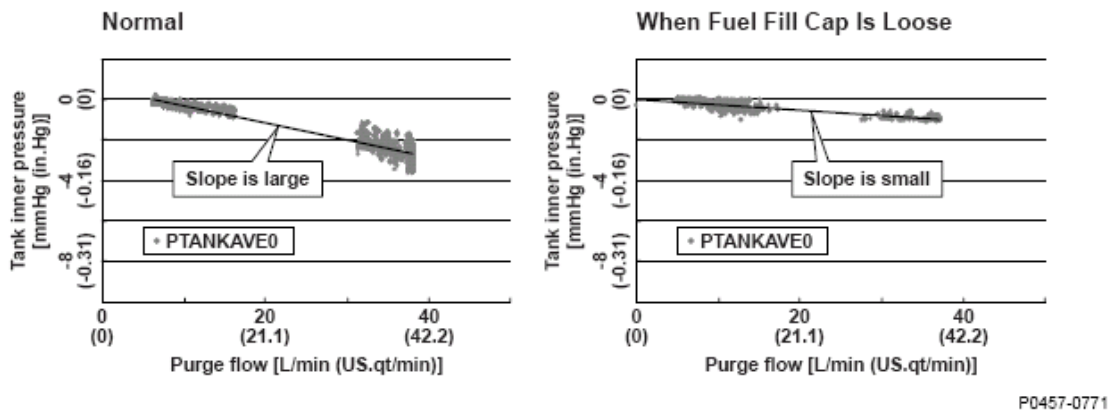


Fig. 216: Fuel Tank Inner Pressure Graph

General Description (K20Z3 Engine)

When the fuel fill cap is installed properly, the purge flow occurs due to the airflow resistance of the canister, and tank pressure will be reduced.

When the fuel fill cap is loosened, the fuel tank pressure will not decrease even when the airflow resistance decreases and the purge flow occurs, because air is being exhausted from the tank to the atmosphere.

By examining the fuel tank pressure with less purge flow area and the fuel tank pressure with more purge flow area, and using the above characteristics, a loose fuel fill cap is detected.

The engine control module (ECM) calculates the relationship of the purge flow and fuel tank pressure (FTP) sensor, and when the slope of the decreasing fuel tank pressure to the purge flow increase is small, a loose fuel fill cap is detected.

< Above failure detection is normally operated during purge >

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	P0455 or P0456 are judged as NG
Duration	12 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
Vehicle speed	2 mph (2 km/h)	-
Barometric pressure	76 kPa (22.5 in.Hg, 569 mmHg)	-
Battery voltage	10.5 V	-

Low purge flow side detection	5 l/min (5.3 US qt/min, 4.4 lmp qt/min)	10 l/min (10.5 US qt/min, 8.7 lmp qt/min)
High purge flow side detection	35 l/min (37.0 US qt/min, 30.8 lmp qt/min)	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop at stoichiometric	
Duration of redetection implementation permission	Every 54.6 minutes	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P1454, P145C, P2195, P2227, P2228, P2229, P2238, P2252, P2422, P2647, U0155	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	No refueling is required	

Malfunction Threshold (K20Z3 Engine)

The output from the fuel cap monitor is 0.018 or more for at least 12 seconds (when there is no NG judgment history in this drive cycle).

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 12 seconds.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 12 minutes.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the fuel fill cap caution (K20Z3 Engine)

1. When a loose fuel fill cap is judged by this detection, the fuel fill cap caution is displayed. At this time, a DTC is not stored.
2. When the first drive cycle leak judgement (temporary DTC stored) is detected at a 0.02 inch leak or a 0.09 inch leak, the fuel fill cap caution is displayed when the ignition is turned on the next time.

Conditions for clearing the fuel fill cap caution (K20Z3 Engine)

1. When the fuel fill cap caution is displayed by the first drive cycle leak judgement (temporary DTC stored) at a 0.02 inch leak or a 0.09 inch leak, the fuel fill cap caution goes out when the next failure

occurs (second drive cycle) and P0457 is stored. (MIL illuminates)

2. When no leak is judged by a 0.02 inch leak or a 0.09 inch leak after the fuel fill cap caution is displayed, the fuel fill cap caution goes out when the ignition is turned on the next time. (P0457 is not stored at this time)
3. When driven three times without this failure detected and a 0.02 inch leak or a 0.09 inch leak detection is not done after the fuel fill cap caution is displayed, the fuel fill cap caution goes out. (P0457 is not stored at this time)
4. Use the Clear command of scan tool to erase the caution. The caution is erased when the MIL is illuminated.

DTC P0457 (90): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0457: EVAPORATIVE EMISSION (EVAP) SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING (R18A1)

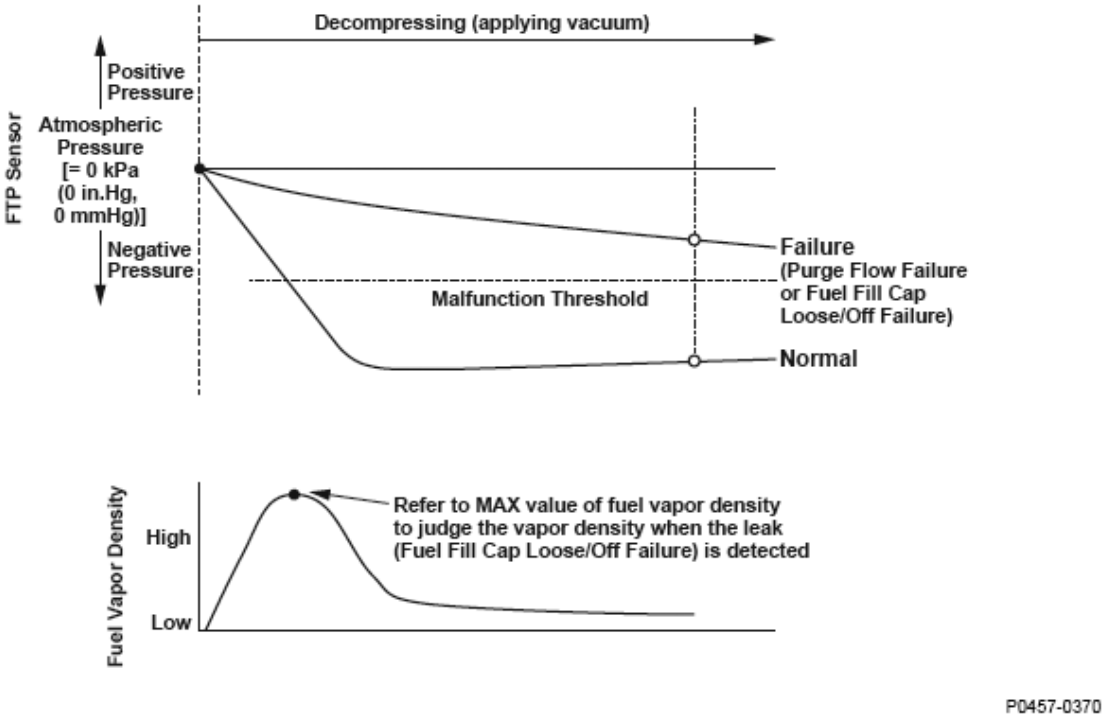


Fig. 217: Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose Or Missing - Graph

General Description (R18A1 Engine)

There are two conditions when the evaporative emission (EVAP) system will not hold vacuum sufficiently, and the pressure in the fuel tank doesn't become negative.

1. EVAP system low purge flow.
2. EVAP system leakage or the fuel fill cap is loose/off.

Here is a description of condition 2:

The engine control module (ECM)/powertrain control module (PCM) monitors the fuel tank pressure (FTP)

sensor output. If the FTP sensor output does not indicate the specified vacuum when applying vacuum when the fuel vapor density is high, the ECM/PCM detects a large leak (fuel fill cap loose/off) and a DTC is stored. [The malfunction detection is done during EVAP system leak detection (P0455, P0456).]

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	45 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Initial engine coolant temperature	40°F (5°C)	-
Initial intake air temperature	40°F (5°C)	-
Engine coolant temperature	156°F (69°C)	212°F (100°C)
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
Vehicle speed	7 mph (10 km/h)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop at stoichiometric	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P1454, P2195, P2227, P2228, P2229, P2238, P2252, P2422, P2647, U0155	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	No refueling is required	

Malfunction Threshold (R18A1 Engine)

- The output from the fuel tank pressure sensor is -0.2 kPa (-0.07 in.Hg, -2 mmHg) or more for at least 45 seconds.
- Fuel vapor density during compression is at least 0.1 g (0.004 oz) for up to 45 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.
2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 32 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the fuel fill cap caution (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory and the caution is indicated. If the malfunction recurs during the next (third) drive cycle with the ECT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored. The caution is cleared when the MIL comes on.

Conditions for clearing the fuel fill cap caution (R18A1 Engine)

The caution will be cleared if the malfunction does not recur during the EVAP system leakage diagnostic or if driving is performed without this malfunction detection three times. The caution can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0461 (121): ADVANCED DIAGNOSTICS (M/T)

DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE / PERFORMANCE PROBLEM (M/T)

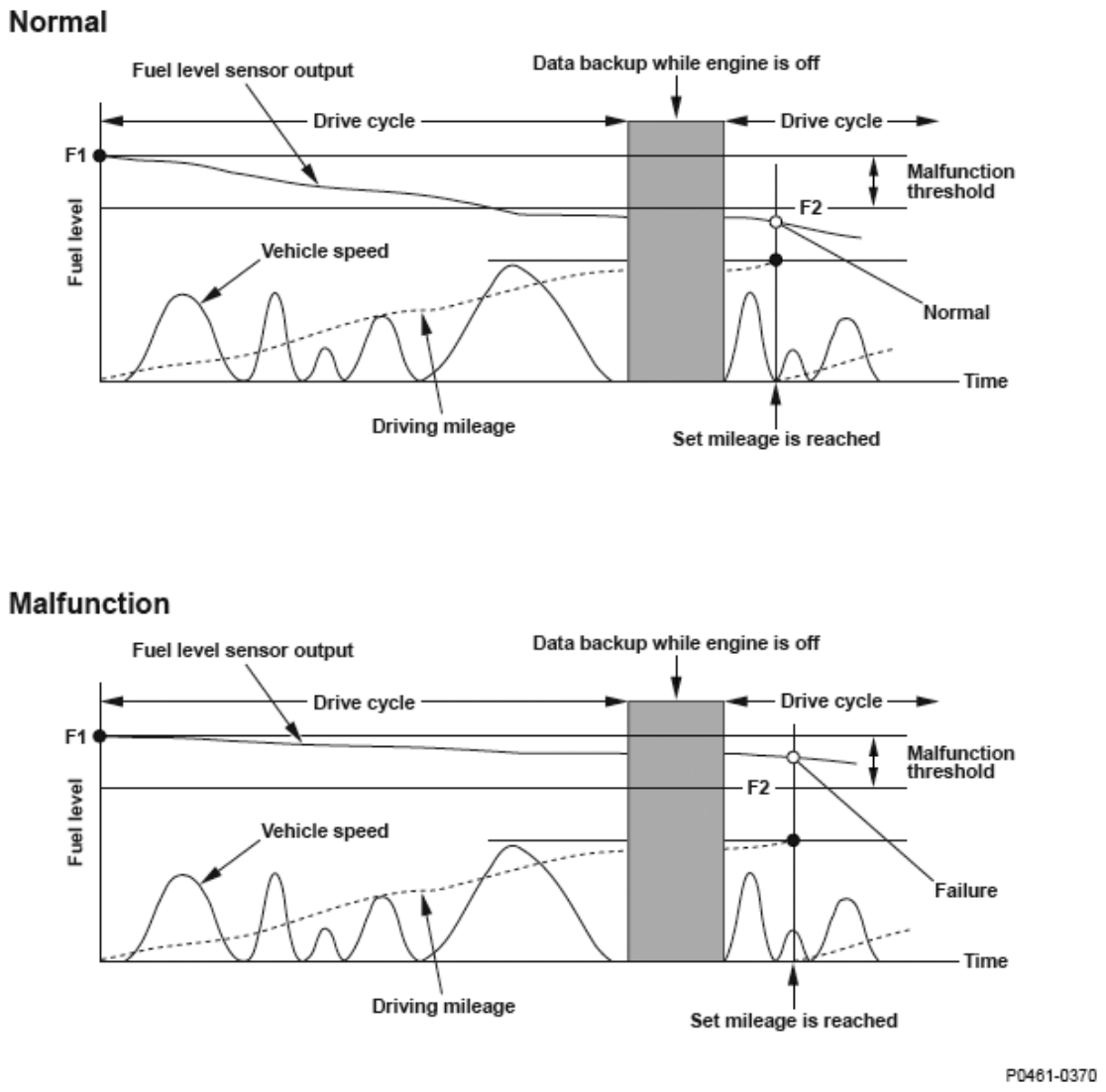


Fig. 218: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range / Performance Problem - Graph

General Description (M/T)

The fuel level sensor is incorporated with the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float into electrical signals that correspond to the fuel level, and it indicates the amount of fuel in the fuel tank. If the engine control module (ECM)/powertrain control module (PCM) receives no change in the fuel level sensor output after driving for a specified number of miles, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	-
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Mileage	125 miles (200 km)	-
No active DTCs	P0462, P0463, U0155	
Others	Avoid driving and stopping on a steep road	

Malfunction Threshold (M/T)

The change in the fuel level sensor output is 3.5 % or less.

Driving Pattern (M/T)

Drive for the specified mileage under Enable Conditions without refueling. (turning the ignition switch off is acceptable.)

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the indicator (M/T)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (M/T)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0461 (121): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE / PERFORMANCE PROBLEM (R18A1 ENGINE)

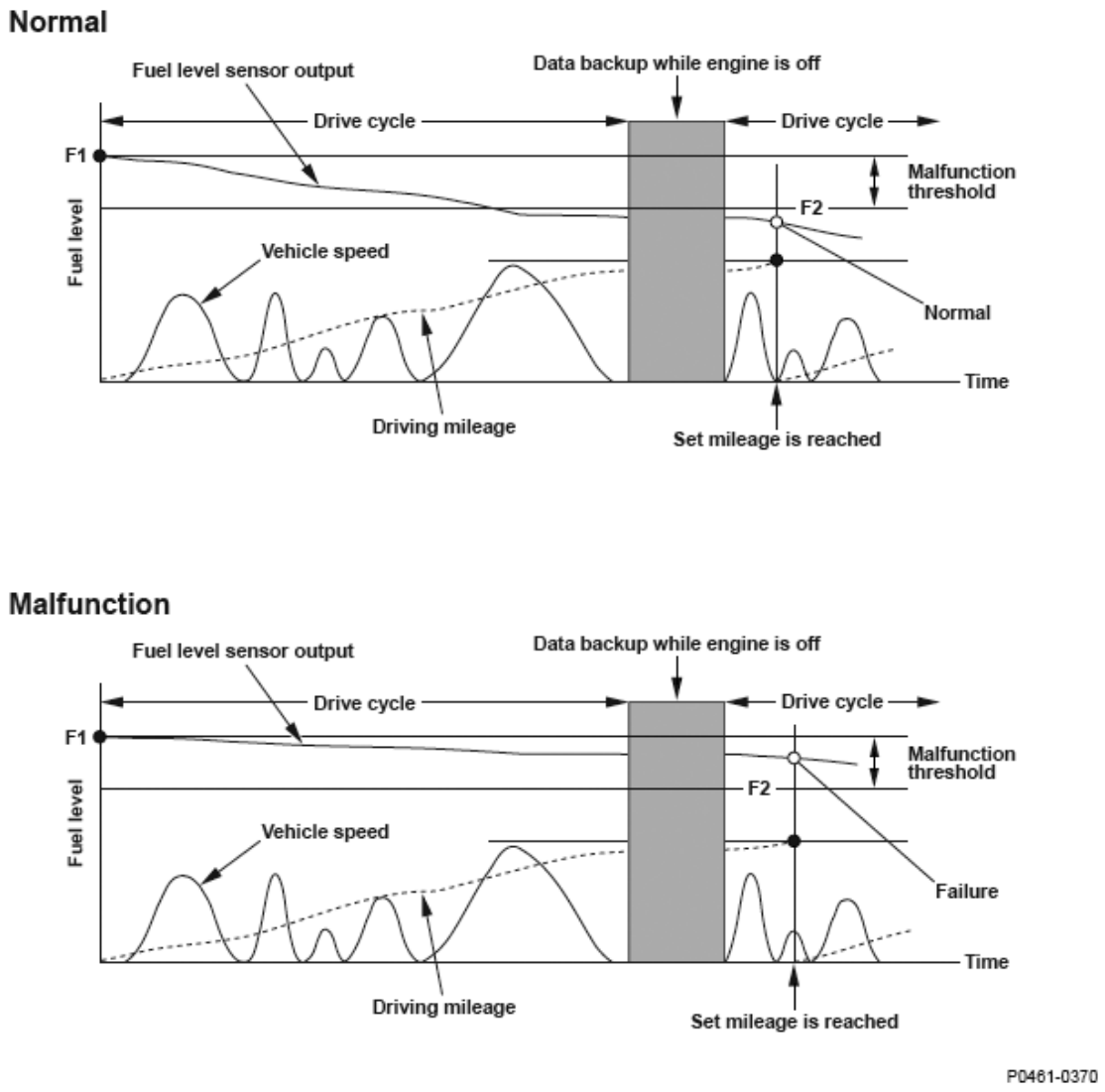


Fig. 219: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem - Graph

General Description (R18A1 Engine)

The fuel level sensor is incorporated with the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float into electrical signals that correspond to the fuel level, and it indicates the amount of fuel in the fuel tank. If the engine control module (ECM)/powertrain control module (PCM) receives no change in the fuel level sensor output after driving for a specified number of miles, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	-
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Mileage	125 miles (200 km)	-
No active DTCs	P0462, P0463, U0155	
Others	Avoid driving and stopping on a steep road	

Malfunction Threshold (R18A1 Engine)

The change in the fuel level sensor output is 3.5 % or less.

Driving Pattern (R18A1 Engine)

Drive for the specified mileage under Enable Conditions without refueling. (turning the ignition switch off is acceptable.)

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0462 (121): ADVANCED DIAGNOSTICS (M/T)

DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE (M/T)

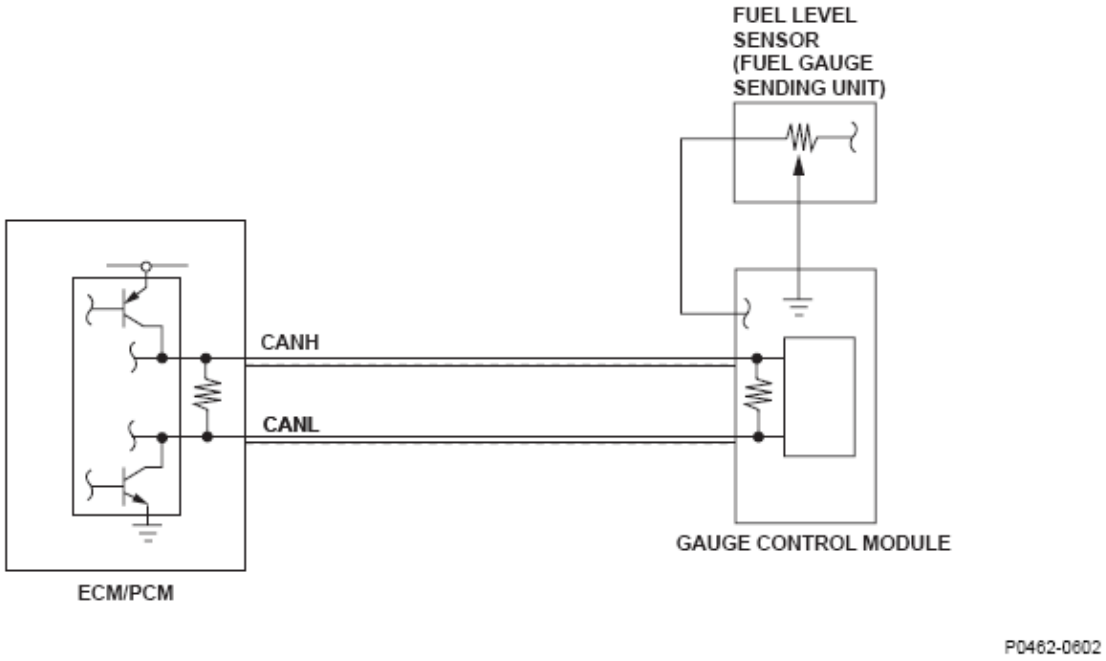


Fig. 220: Fuel Level Sensor Circuit Diagram

General Description (M/T)

The fuel level sensor (fuel gauge sending unit) is incorporated into the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float to electrical signals as an output that corresponds to fuel level variations in the fuel tank. The fuel level, which is indicated by the gauge control module, is sent to the engine control module (ECM)/powertrain control module (PCM) via the controller area network (CAN). If the ECM/PCM detects a signal from the fuel level sensor (fuel gauge sending unit) below a predetermined value for a set time or more, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P0463, U0028(1), U0155	
(1) K20Z3 engine		

Malfunction Threshold (M/T)

The fuel level sensor (fuel gauge sending unit) output voltage is 0.09 V or less for at least 5 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the indicator (M/T)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (M/T)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0462 (121): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

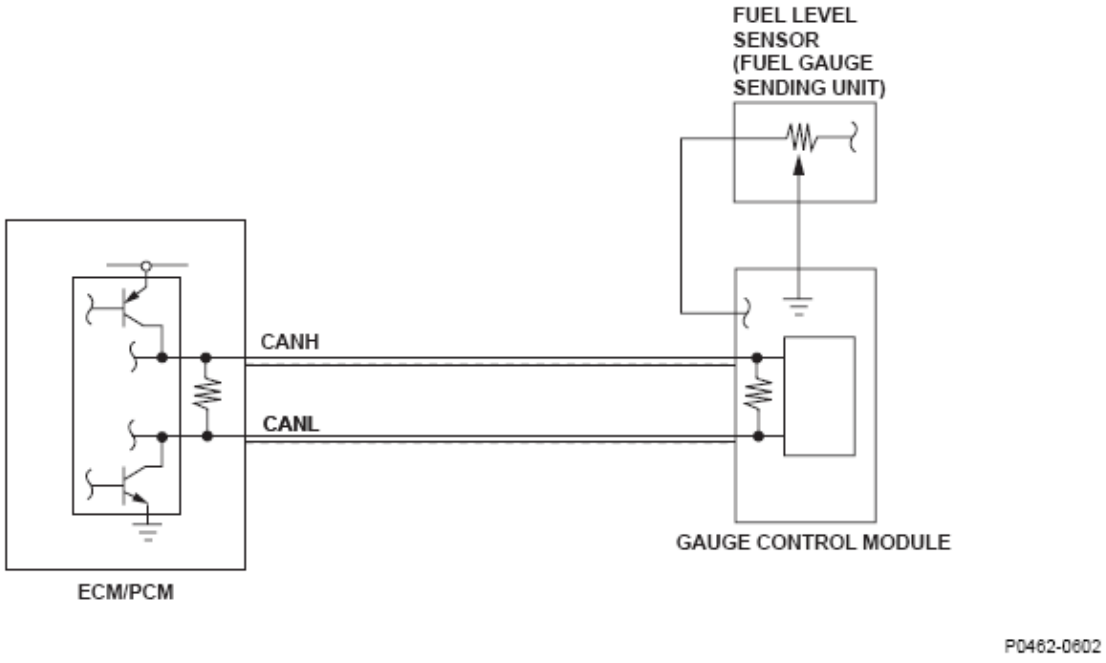


Fig. 221: Fuel Level Sensor Circuit Diagram

General Description (R18A1 Engine)

The fuel level sensor (fuel gauge sending unit) is incorporated into the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float to electrical signals as an output that corresponds to fuel level variations in the fuel tank. The fuel level, which is indicated by the gauge control module, is sent to the engine control module (ECM)/powertrain control module (PCM) via the controller area network (CAN). If the ECM/PCM detects a signal from the fuel level sensor (fuel gauge sending unit) below a predetermined value for a set time or more, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P0463, U0028(1), U0155	
(1) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

The fuel level sensor (fuel gauge sending unit) output voltage is 0.09 V or less for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0463 (121): ADVANCED DIAGNOSTICS (M/T)

DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE (M/T)

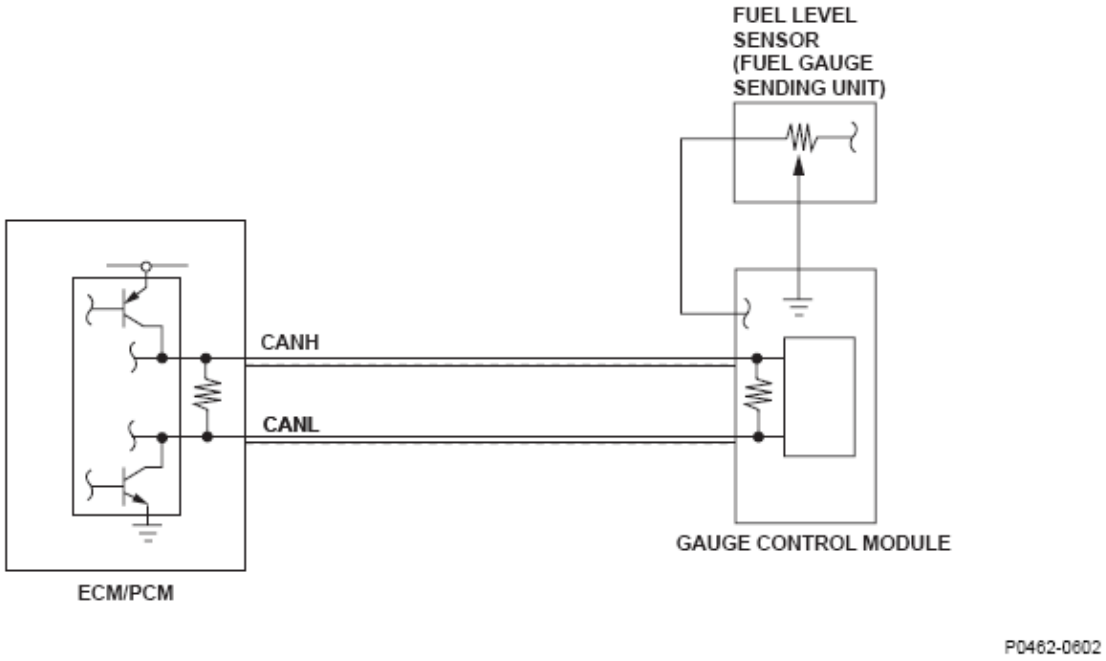


Fig. 222: Fuel Level Sensor Circuit Diagram

General Description (M/T)

The fuel level sensor (fuel gauge sending unit) is incorporated into the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float to electrical signals as an output that corresponds to fuel level variations in the fuel tank. The fuel level, which is indicated by the gauge control module, is sent to the engine control module (ECM)/powertrain control module (PCM) via the controller area network (CAN). If the ECM/PCM detects a signal from the fuel level sensor (fuel gauge sending unit) above a predetermined value for a set time or more, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P0462, U0028(1), U0155	
(1) K20Z3 engine		

Malfunction Threshold (M/T)

The fuel level sensor (fuel gauge sending unit) output voltage is 4.84 V or more for at least 5 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the indicator (M/T)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (M/T)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0463 (121): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

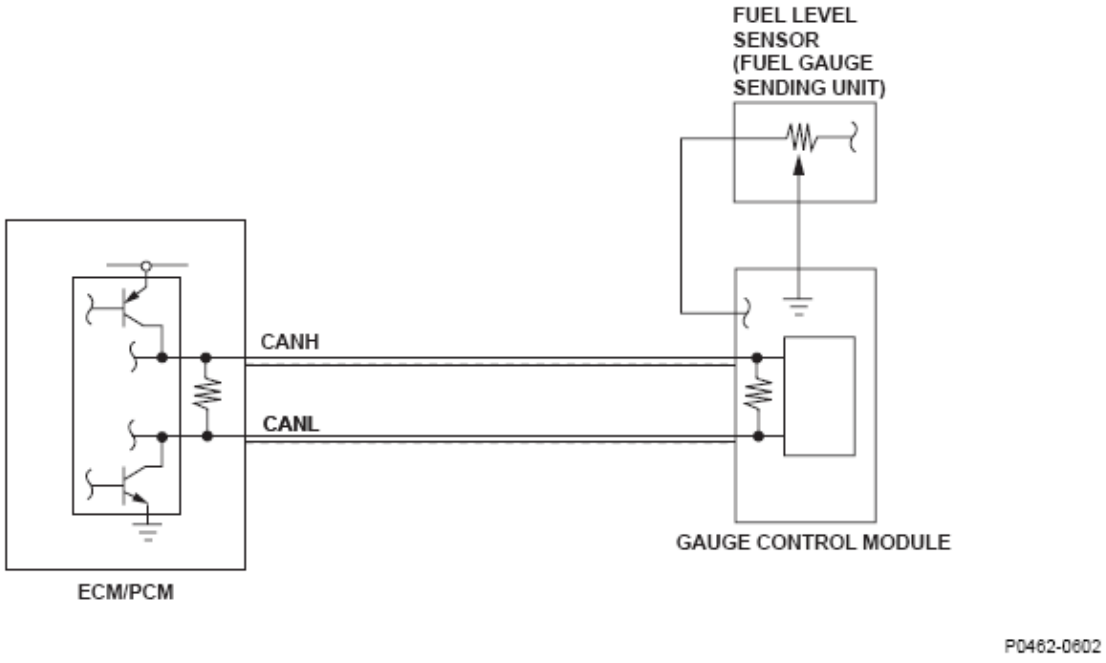


Fig. 223: Fuel Level Sensor Circuit Diagram

General Description (R18A1 Engine)

The fuel level sensor (fuel gauge sending unit) is incorporated into the fuel pump and installed in the fuel tank. Using a built-in potentiometer and float, it converts the movement of the float to electrical signals as an output that corresponds to fuel level variations in the fuel tank. The fuel level, which is indicated by the gauge control module, is sent to the engine control module (ECM)/powertrain control module (PCM) via the controller area network (CAN). If the ECM/PCM detects a signal from the fuel level sensor (fuel gauge sending unit) above a predetermined value for a set time or more, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P0462, U0028(1), U0155	
(1) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

The fuel level sensor (fuel gauge sending unit) output voltage is 4.84 V or more for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0496 (92): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0496: EVAPORATIVE EMISSION (EVAP) SYSTEM HIGH PURGE FLOW DETECTED (K20Z3)

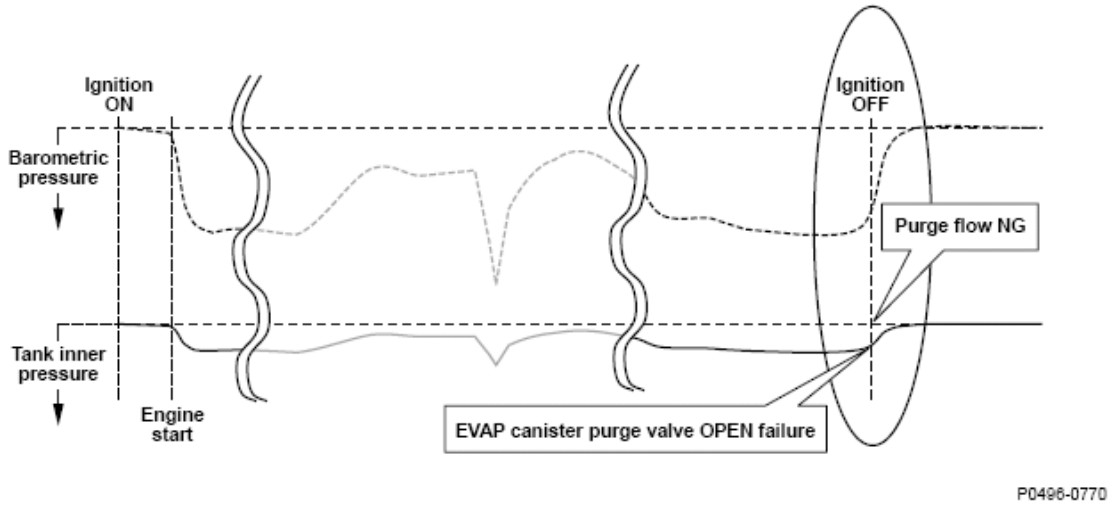


Fig. 224: Evaporative Emission (EVAP) System High Purge Flow Graph

General Description (K20Z3 Engine)

The fuel (vapor) vaporized in the fuel tank is stored in the canister temporarily and introduced in the engine through the evaporative emission (EVAP) canister purge valve. The engine control module (ECM) controls the amount of vapor introduced in the engine by repeatedly switching the power of the EVAP canister purge valve at a constant frequency according to the condition of the engine.

< STEP 1 >

The EVAP canister purge valve opens normally (EVAP canister purge valve OPEN OK) and detects that the purge flow is normal when the pulse of the EVAP canister purge valve drive cycle is transmitted to fuel tank pressure (FTP) sensor by the purge flow (pulse method).

OK determination: Pulse exists (P145C OK)

- P0497 Purge flow OK
- P0496 EVAP canister purge valve stuck Open OK

NG determination: No pulse (P145C NG)

- Either purge flow P0497 abnormality or P0496 EVAP canister purge valve OPEN failure.
- In this case, classify the failure part according to < STEP 2 >.

< STEP 2 >

If there is no pulse, it is determined as either no purge flow or the EVAP canister purge valve is stuck OPEN:

When the FTP sensor fluctuates from negative pressure to atmospheric pressure after the ignition is turned off: P0496 EVAP canister purge valve stuck OPEN

When there is no fluctuation of the FTP sensor: P0497 purge flow NG

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P145C is judged as OK
Duration	-
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Low load duration time	10 seconds	-
Wait for stability after the ignition is turned off	10 seconds	-
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0451, P0452, P0453, P0498, P0499, P0685, P1128, P1129, P1157, P1172, P1454, P2195, P2227, P2228, P2229, P2238, P2252, P2422	

Malfunction Threshold (K20Z3 Engine)

The output from the EVAP canister purge valve is 0.2 kPa (0.07 in.Hg, 2 mmHg) or more for at least 10 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 77 seconds.
3. Turn off the ignition for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0496 (92): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0496: EVAPORATIVE EMISSION (EVAP) SYSTEM HIGH PURGE FLOW DETECTED (R18A1)

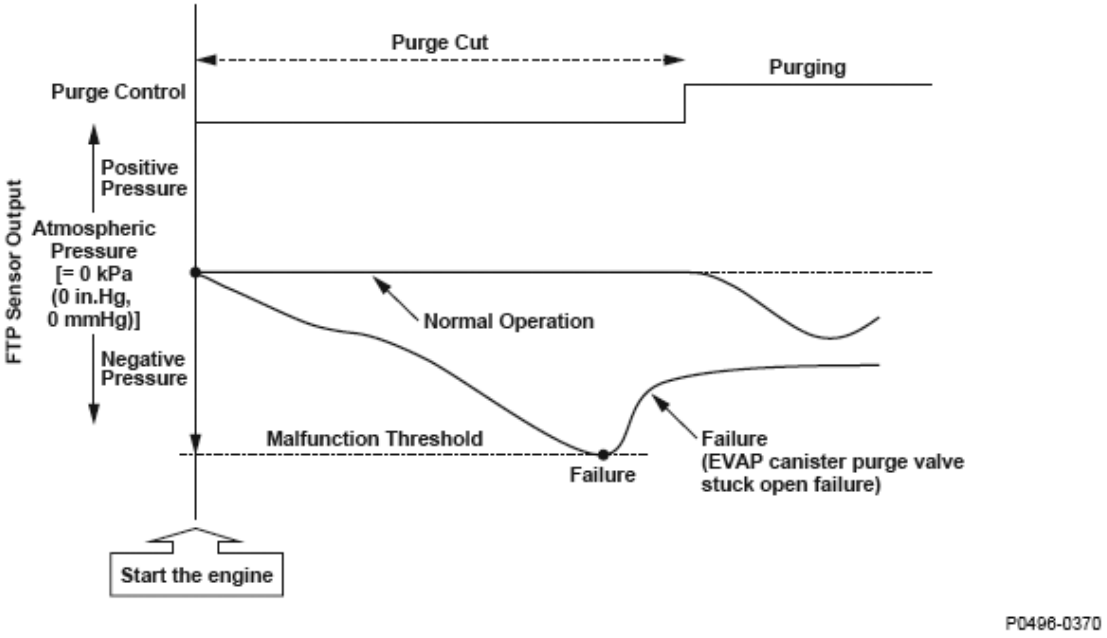


Fig. 225: Evaporative Emission (EVAP) System High Purge Flow - Graph

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) adjusts the amount of fuel vapor sent to the engine by controlling the evaporative emission (EVAP) canister purge valve. If the EVAP canister purge valve is stuck open, engine vacuum flows into the purge line before purge control starts when starting the engine. The ECM/PCM monitors the fuel tank pressure (FTP) sensor output when purge control starts. If the FTP sensor output indicates negative pressure, the ECM/PCM detects a malfunction in the EVAP canister purge valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time before starting the engine	10 seconds	-
Initial condition A(1)	-	18°F (10°C)
Initial condition B(2)	-	18°F (10°C)
Initial engine coolant temperature	40°F (5°C)	95°F (35°C)
Initial intake air temperature	40°F (5°C)	95°F (35°C)
Engine coolant temperature before EVAP purge control starts	-	140°F (60°C)
MAP value	-	81 kPa (24.0 in.Hg, 610 mmHg)
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0125, P0443, P0451, P0452, P0453, P0498, P0499, P1109, P1116, P1128, P1129, P1454, P2227, P2228, P2229	

(1) Initial engine coolant temperature minus initial intake air temperature

(2) Initial intake air temperature minus current intake air temperature

Malfunction Threshold (R18A1 Engine)

The output from the fuel tank pressure sensor is -2 kPa (-0.6 in.Hg, -15 mmHg) or less for at least 10 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

Start the engine at an engine coolant temperature and intake air temperature as specified under Enable Conditions, and let it idle until the radiator fan comes on.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0497 (90): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0497: EVAPORATIVE EMISSION (EVAP) SYSTEM LOW PURGE FLOW DETECTED (K20Z3)

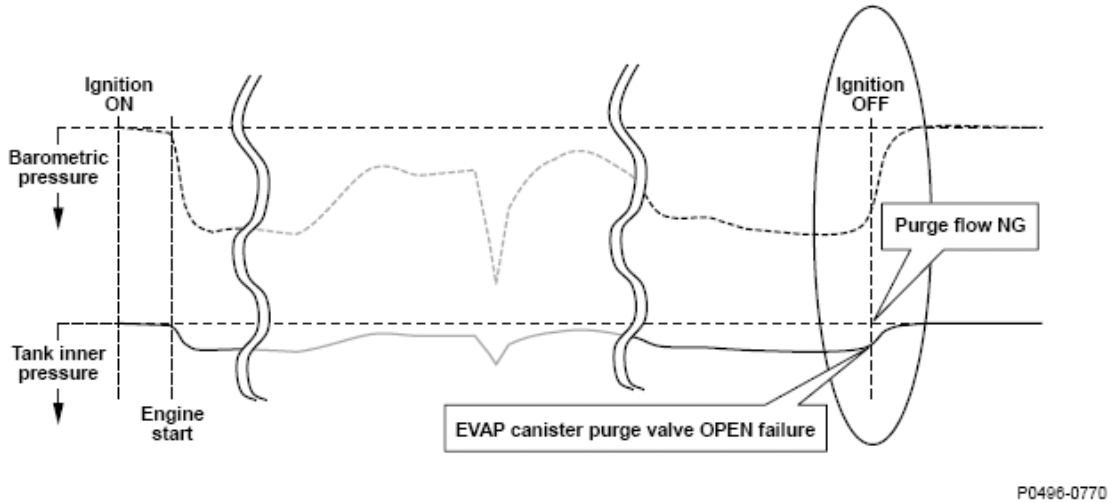


Fig. 226: Evaporative Emission (EVAP) System High Purge Flow Graph

General Description (K20Z3 Engine)

The fuel (vapor) vaporized in the fuel tank is stored in the canister temporarily and introduced in the engine through the evaporative emission (EVAP) canister purge valve. The engine control module (ECM) controls the amount of vapor introduced in the engine by repeatedly switching the power of the EVAP canister purge valve at a constant frequency according to the condition of the engine.

< STEP 1 >

The EVAP canister purge valve opens normally (EVAP canister purge valve OPEN OK) and detects that the purge flow is normal when the pulse of the EVAP canister purge valve drive cycle is transmitted to fuel tank pressure (FTP) sensor by the purge flow (pulse method).

OK determination: Pulse exists (P145C OK)

- P0497 Purge flow OK
- P0496 EVAP canister purge valve stuck Open OK

NG determination: No pulse (P145C NG)

- Either purge flow P0497 abnormality or P0496 EVAP canister purge valve OPEN failure.
- In this case, classify the failure part according to < STEP 2 >.

< STEP 2 >

If there is no pulse, it is determined as either no purge flow or the EVAP canister purge valve is stuck OPEN:

When the FTP sensor fluctuates from negative pressure to atmospheric pressure after the ignition is turned off: P0496 EVAP canister purge valve stuck OPEN

When there is no fluctuation of the FTP sensor: P0497 purge flow NG

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P145C is judged as OK
Duration	-
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Low load duration time	10 seconds	-
Wait for stability after the ignition is turned off	10 seconds	-
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0451, P0452, P0453, P0496, P0498, P0499, P0685, P1128, P1129, P1157, P1172, P1454, P2195, P2227, P2228, P2229, P2238, P2252, P2422	

Malfunction Threshold (K20Z3 Engine)

The output from the fuel tank pressure sensor is 0.2 kPa (0.07 in.Hg, 2 mmHg) or less for at least 10 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 77 seconds.
3. Turn off the ignition for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0497 (90): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0497: EVAPORATIVE EMISSION (EVAP) SYSTEM LOW PURGE FLOW DETECTED (R18A1)

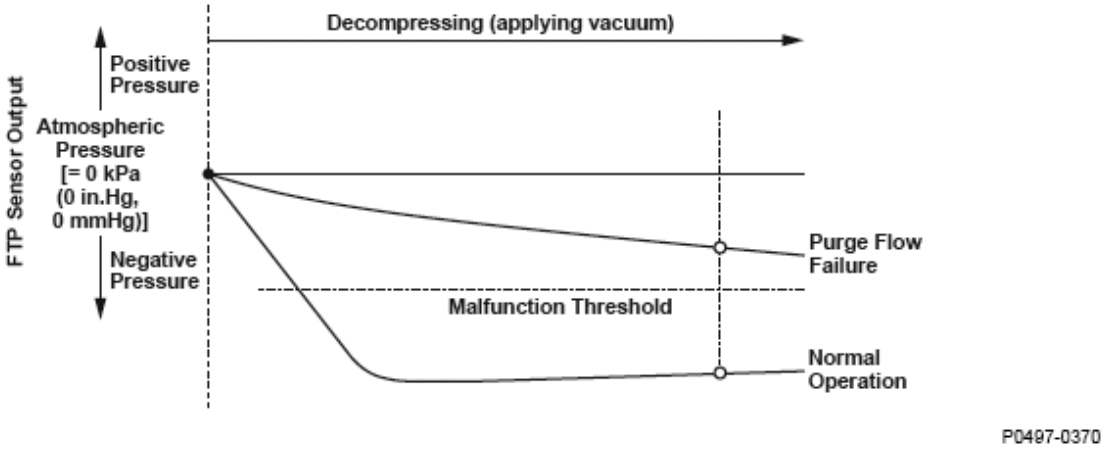


Fig. 227: Evaporative Emission (EVAP) System Low Purge Flow - Graph

General Description (R18A1 Engine)

There are two conditions when the evaporative emission (EVAP) system will not hold vacuum, and the pressure in the fuel tank doesn't become negative.

1. EVAP system low purge flow.
2. EVAP system leakage or the fuel fill cap is loose/off.

Here is a description of condition 1:

The malfunction detection is done during EVAP system leak detection (P0455, P0456).

The engine control module (ECM)/powertrain control module (PCM) monitors the fuel tank pressure (FTP) sensor output. If the FTP sensor output does not indicate the prescribed negative pressure when purging, the

ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	45 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Initial engine coolant temperature	40°F (5°C)	-
Initial intake air temperature	40°F (5°C)	-
Engine coolant temperature	156°F (69°C)	212°F (100°C)
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
Vehicle speed	7 mph (10 km/h)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop at stoichiometric	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0451, P0452, P0453, P0496, P0498, P0499, P0685, P1128, P1129, P1157, P1172, P1454, P2195, P2227, P2228, P2229, P2238, P2252, P2422	
Others	Other than when there is excessive vapor generation (fuel level is not full)	
	Avoid abrupt acceleration, deceleration, and turns	
	Test-drive on a flat road to avoid misdetection	
	No refueling is required	

Malfunction Threshold (R18A1 Engine)

The output from the fuel tank pressure sensor is at least -0.2 kPa (-0.07 in.Hg, -2 mmHg) for up to 45 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. After the vehicle has been left for an appropriate amount of time as specified, with the engine coolant temperature and intake air temperature within the specified range, start the engine.

2. Warm up the engine at idle until the radiator fan comes on.
3. Drive the vehicle immediately at a speed between 45 - 75 mph (72 - 120 km/h) for at least 20 minutes.
4. After stopping the engine, turn the ignition switch off, and leave the vehicle for 32 minutes or more (EONV executes).
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle with the ECT and IAT at engine start-up within the specified temperature range, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle with the ECT and IAT at engine start-up within the specified temperature range, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0498 (117): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0498: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

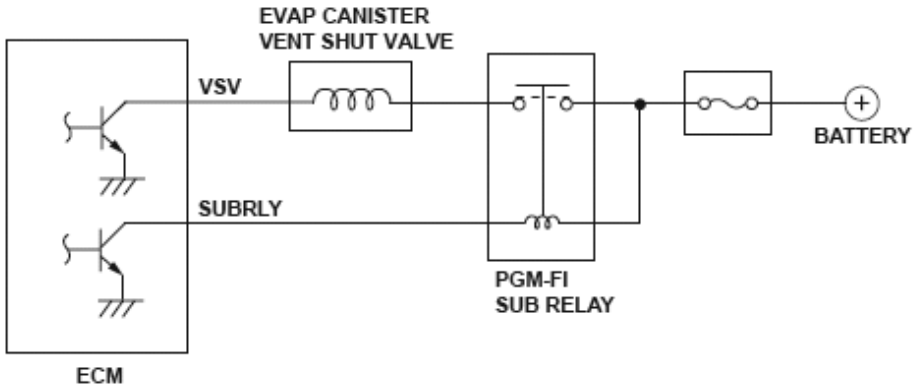


Fig. 228: Evaporative Emission (EVAP) Canister Vent Shut Valve - Circuit Diagram

General Description (K20Z3 Engine)

The evaporative emission (EVAP) canister vent shut valve is attached to the EVAP canister to control the venting of the EVAP canister to atmosphere.

The EVAP canister vent shut valve is open (open to atmosphere) when the VSV signal is OFF.

If the return signal is "OFF" when the engine control module (ECM) outputs the "ON" signal to the EVAP canister vent shut valve, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P0499	

Malfunction Threshold (K20Z3 Engine)

The return signal is "OFF" for at least 5 seconds when the ECM outputs the "ON" signal to the EVAP canister vent shut valve.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0498 (117): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0498: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

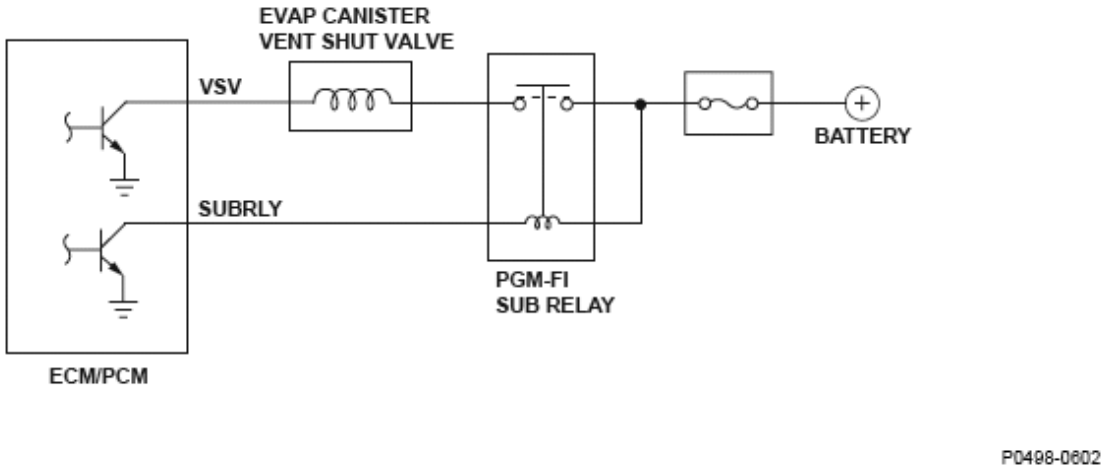


Fig. 229: Evaporative Emission (EVAP) Canister Vent Shut Valve - Circuit Diagram

General Description (R18A1 Engine)

The evaporative emission (EVAP) canister vent shut valve is attached to the EVAP canister to control the venting of the EVAP canister to atmosphere.

The EVAP canister vent shut valve is open (open to atmosphere) when the VSV signal is OFF.

If the return signal is "OFF" when the engine control module (ECM)/powertrain control module (PCM) outputs the "ON" signal to the EVAP canister vent shut valve, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P0499	

Malfunction Threshold (R18A1 Engine)

The return signal is "OFF" for at least 5 seconds when the ECM/PCM outputs the "ON" signal to the EVAP canister vent shut valve.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0499 (117): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0499: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

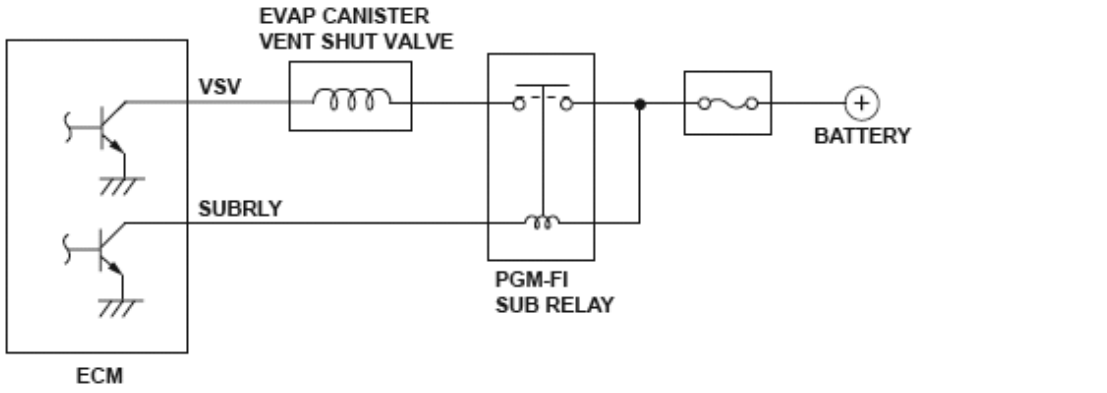


Fig. 230: Evaporative Emission (EVAP) Canister Vent Shut Valve - Circuit Diagram

General Description (K20Z3 Engine)

The evaporative emission (EVAP) canister vent shut valve is attached to the EVAP canister to control the venting of the EVAP canister to atmosphere.

The EVAP canister vent shut valve is open (open to atmosphere) when the VSV signal is OFF.

If the return signal is "ON" when the engine control module (ECM) outputs the "OFF" signal to the EVAP canister vent shut valve, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P0498	

Malfunction Threshold (K20Z3 Engine)

The return signal is "ON" for at least 5 seconds when the ECM outputs the "OFF" signal to the EVAP canister vent shut valve.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0499 (117): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0499: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

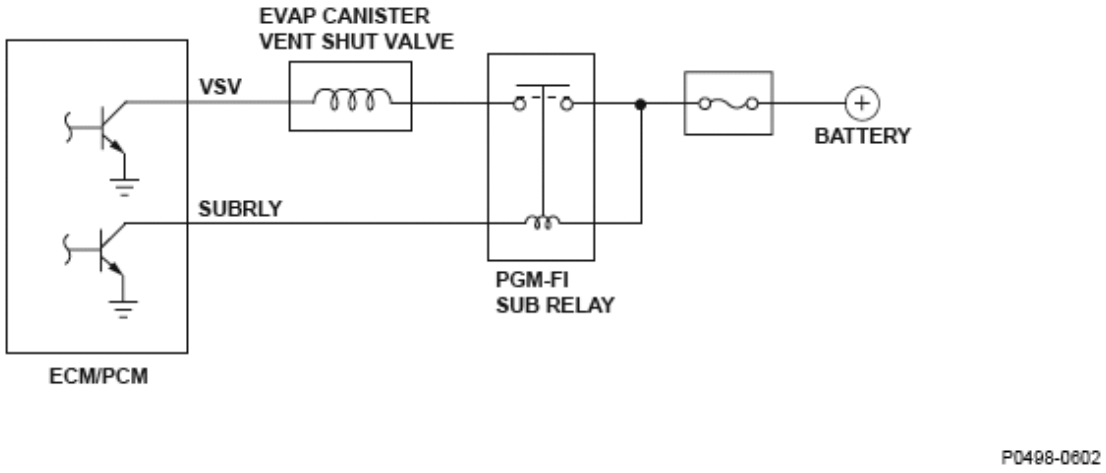


Fig. 231: Evaporative Emission (EVAP) Canister Vent Shut Valve - Circuit Diagram

General Description (R18A1 Engine)

The evaporative emission (EVAP) canister vent shut valve is attached to the EVAP canister to control the venting of the EVAP canister to atmosphere.

The EVAP canister vent shut valve is open (open to atmosphere) when the VSV signal is OFF.

If the return signal is "ON" when the engine control module (ECM)/powertrain control module (PCM) outputs the "OFF" signal to the EVAP canister vent shut valve, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P0498	

Malfunction Threshold (R18A1 Engine)

The return signal is "ON" for at least 5 seconds when the ECM/PCM outputs the "OFF" signal to the EVAP canister vent shut valve.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0506 (14): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED (K20Z3)

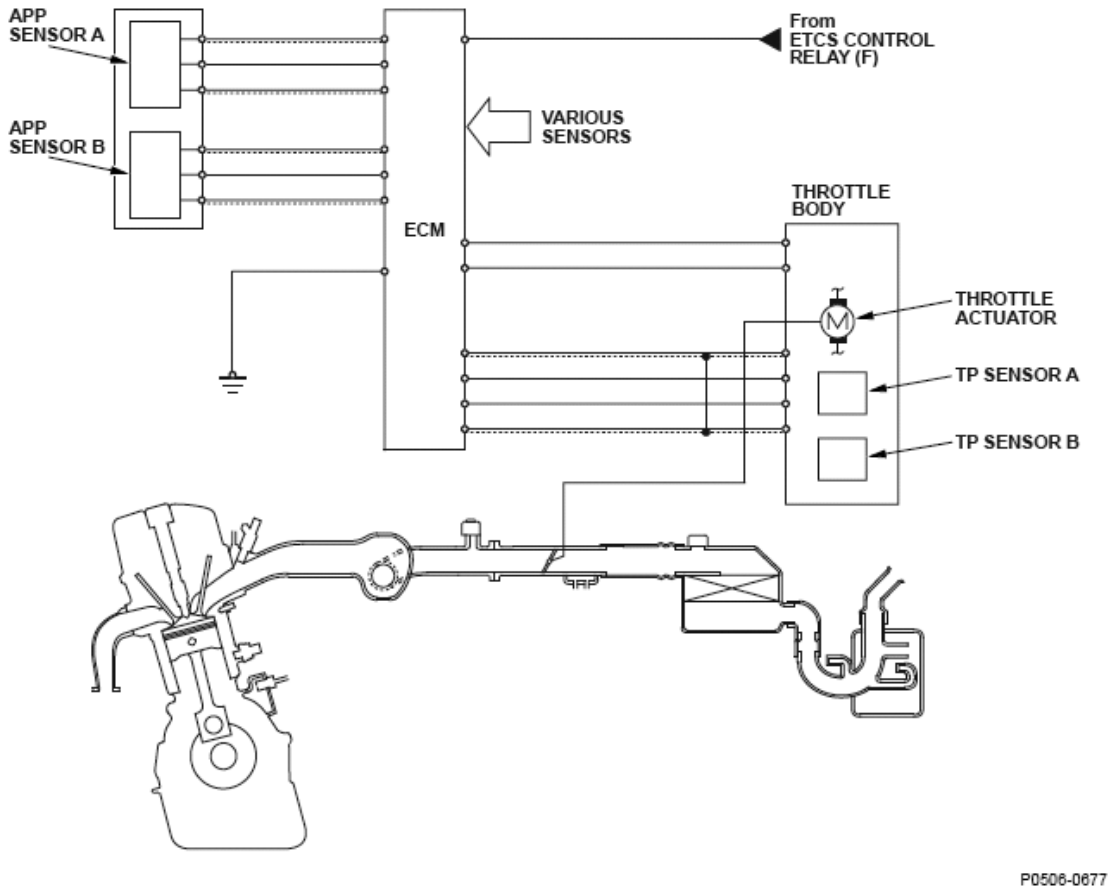


Fig. 232: Idle Control System - Communication Diagram

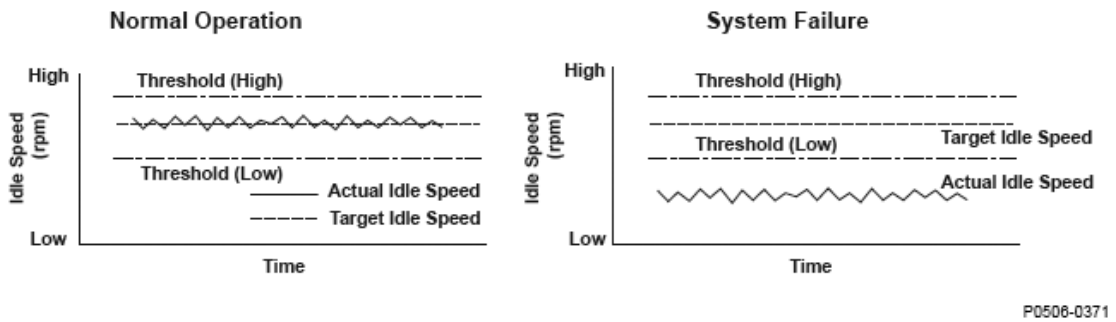


Fig. 233: Idle Control System RPM - Graph

General Description (K20Z3 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the engine control module (ECM). The ECM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the ECM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Battery voltage	10.5 V	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0443, P0496, P0497, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (K20Z3 Engine)

The actual idle speed is at least 100 rpm less than the target idle speed for at least 20 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 20 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0506 (14): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED (R18A1)

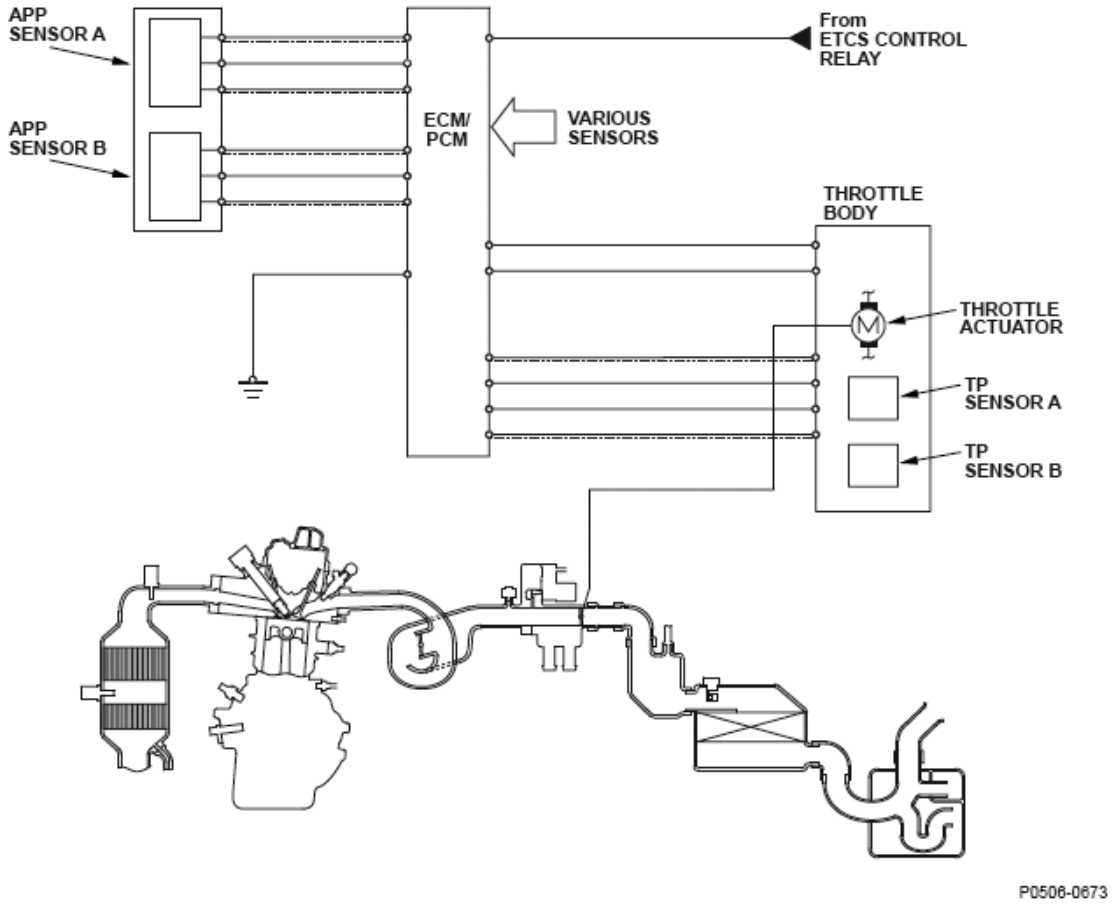


Fig. 234: Idle Control System - Communication Diagram

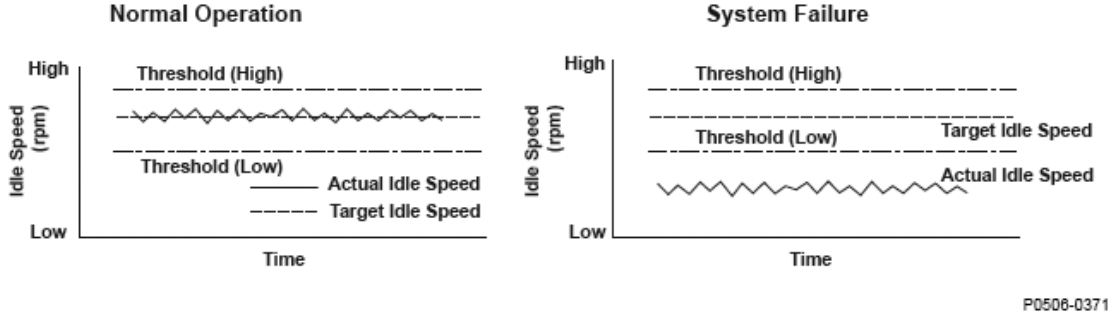


Fig. 235: Idle Control System RPM - Graph

General Description (R18A1 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the ECM/PCM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	24 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0401, P0404, P0443, P0496, P0497, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2413, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (R18A1 Engine)

The actual idle speed is at least 100 rpm less than the target idle speed for at least 24 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 24 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0506 (14): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED (R18A1 ENGINE)

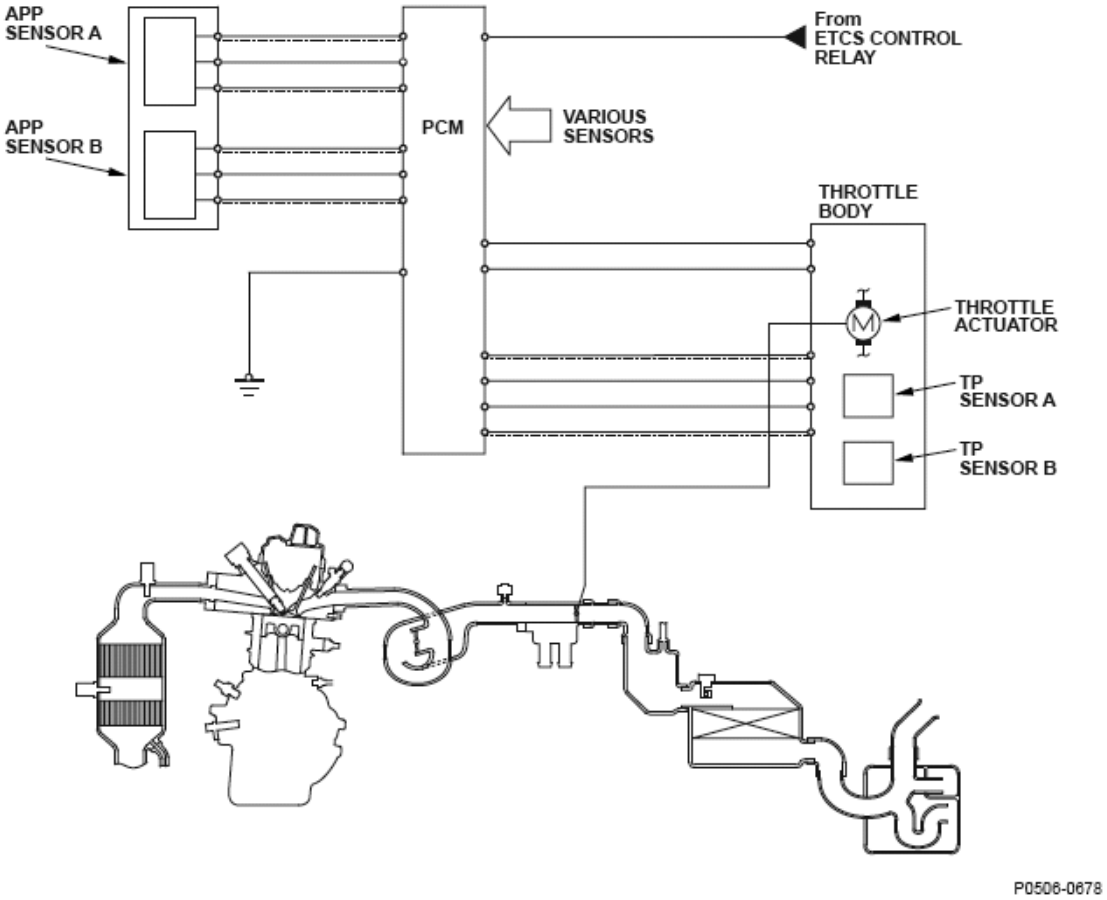


Fig. 236: Idle Control System - Communication Diagram

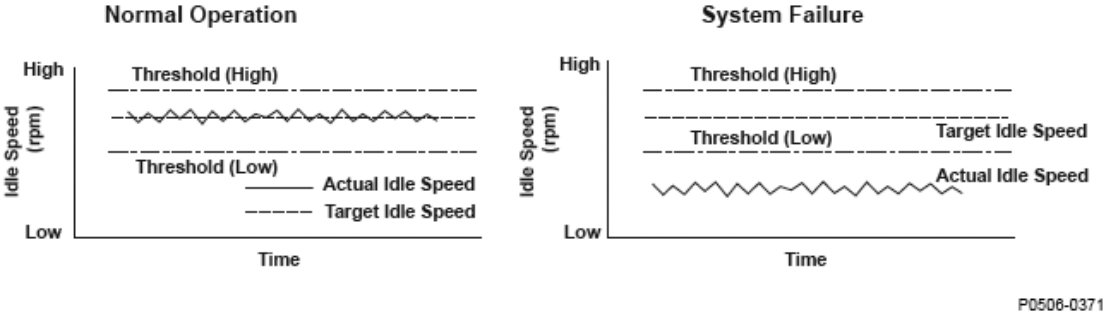


Fig. 237: Idle Control System RPM - Graph

General Description (R18A1 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the powertrain control module (PCM). The PCM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the PCM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	24 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Barometric pressure	76 kPa (22.5 in.Hg, 570 mmHg)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1109, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (R18A1 Engine)

The actual idle speed is at least 100 rpm less than the target idle speed for at least 24 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 24 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0507 (14): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED (K20Z3)

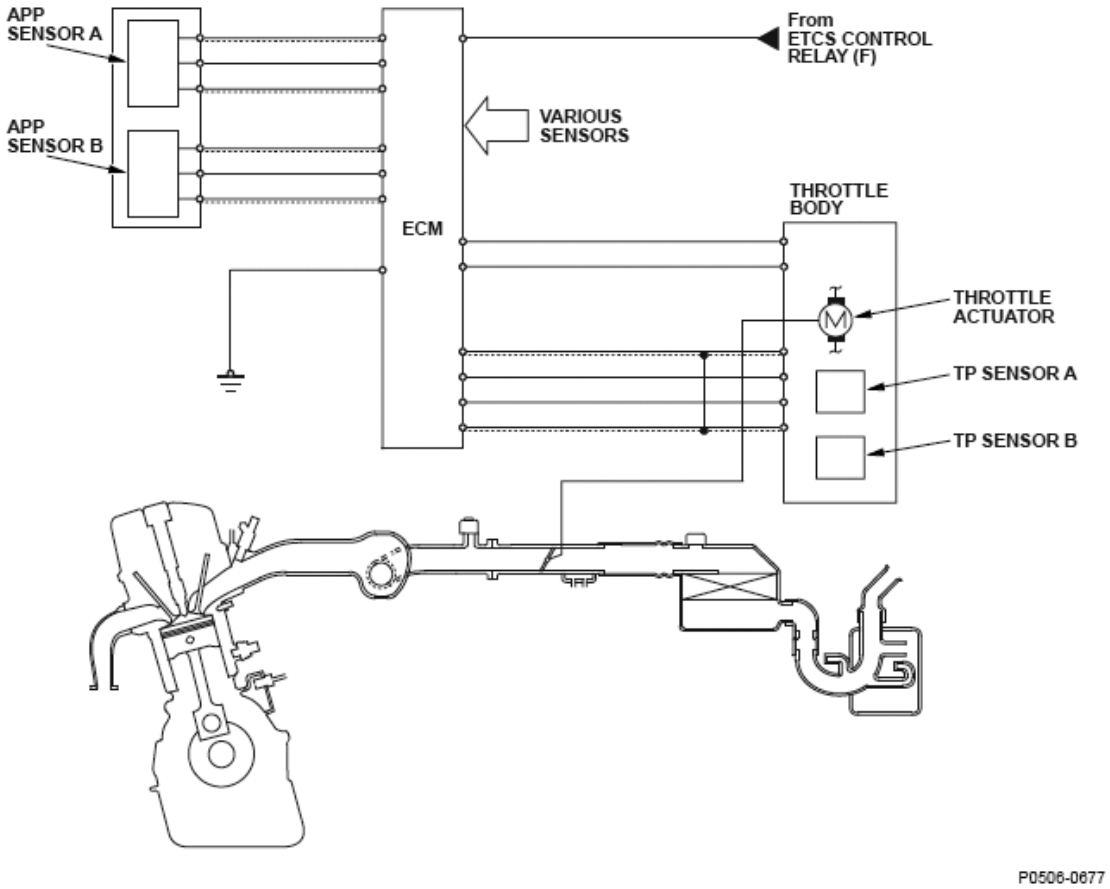


Fig. 238: Idle Control System - Communication Diagram

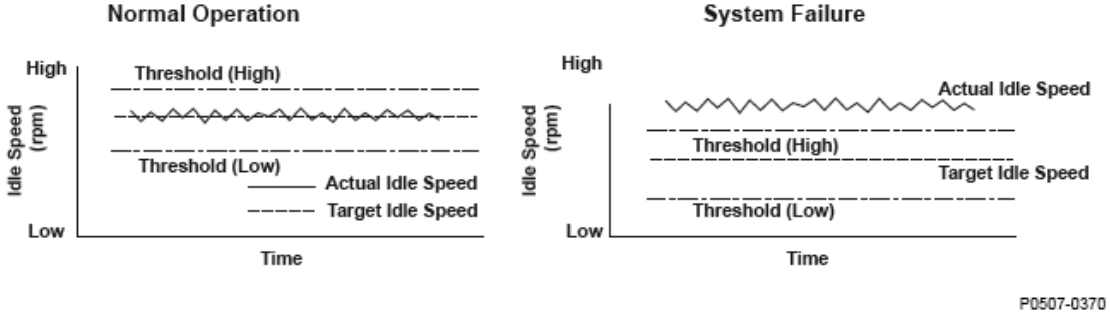


Fig. 239: Idle Control System RPM - Graph

General Description (K20Z3 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the engine control module (ECM). The ECM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the ECM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Battery voltage	10.5 V	-
Fuel trim	0.69	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0443, P0496, P0497, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (K20Z3 Engine)

The actual idle speed is at least 200 rpm greater than the target idle speed for at least 20 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 20 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0507 (14): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED (R18A1)

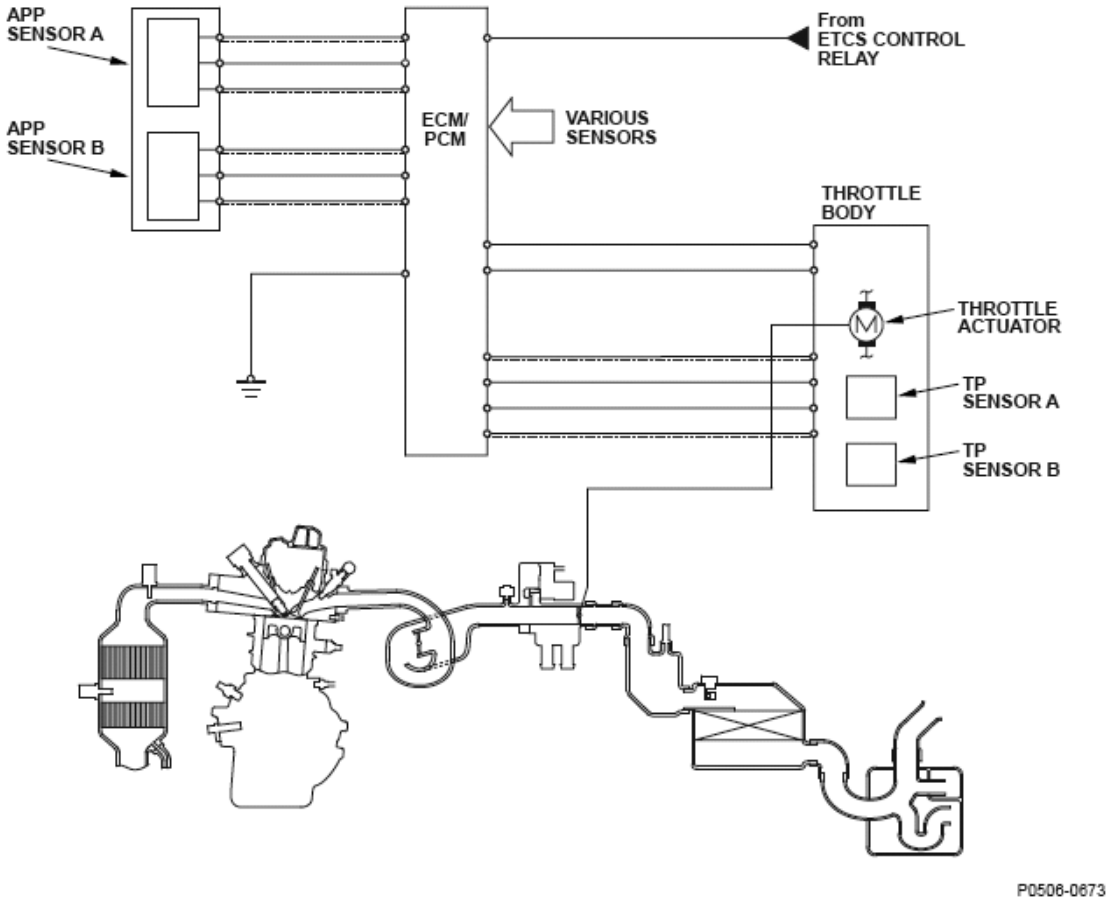


Fig. 240: Idle Control System - Communication Diagram

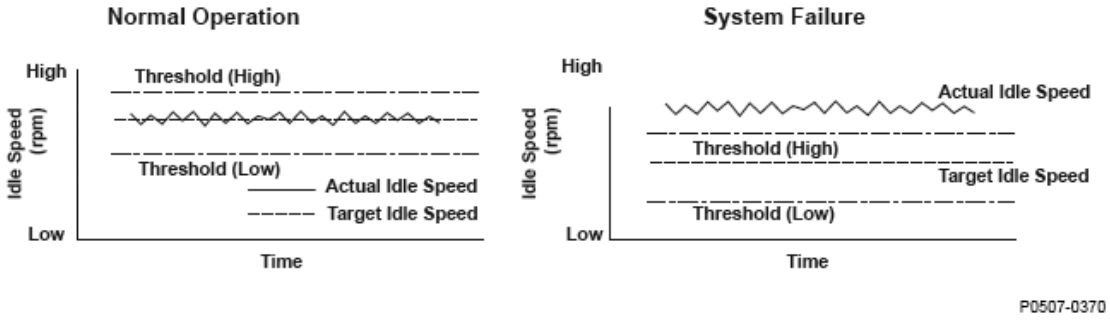


Fig. 241: Idle Control System RPM - Graph

General Description (R18A1 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the engine control module (ECM)/powertrain control module (PCM). The ECM/PCM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the ECM/PCM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	24 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0401, P0404, P0443, P0496, P0497, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2413, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (R18A1 Engine)

The actual idle speed is at least 200 rpm greater than the target idle speed for at least 24 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 24 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0507 (14): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED (R18A4 ENGINE)

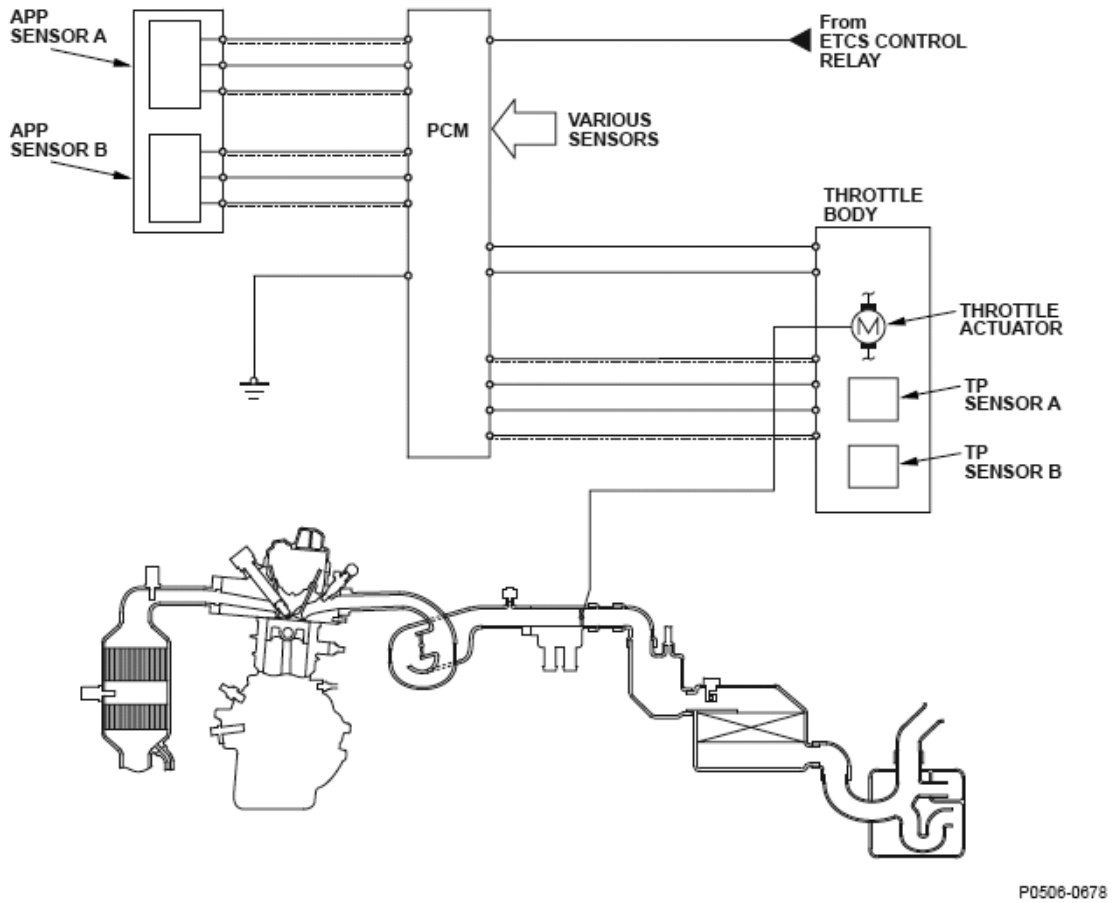


Fig. 242: Idle Control System - Communication Diagram

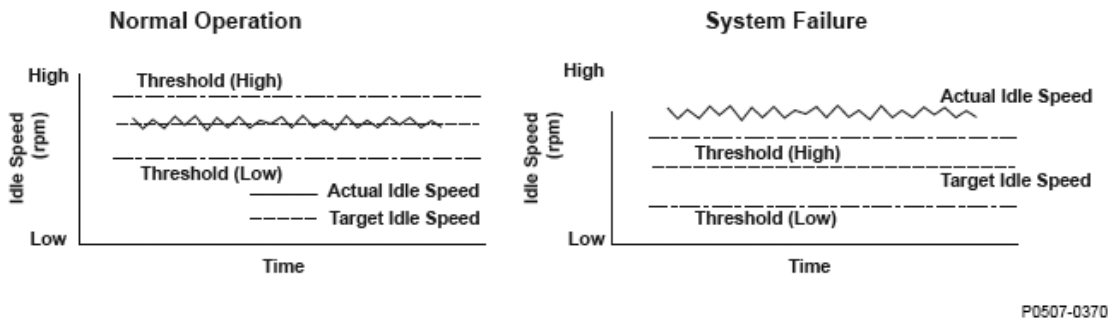


Fig. 243: Idle Control System RPM - Graph

General Description (R18A4 Engine)

A target idle speed that meets the engine operating conditions (coolant temperature, A/C ON or OFF, etc.) is stored in the powertrain control module (PCM). The PCM monitors and controls the idle speed so that the actual idle speed is equal to the target idle speed. If the actual idle speed varies beyond a specified value from the target speed over a certain period of time, the PCM detects a malfunction in the idle speed control system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	24 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	19°F (-7°C)	-
Barometric pressure	76 kPa (22.5 in.Hg, 570 mmHg)	-
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
Throttle position	Fully closed	
No active DTCs	P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1109, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2646, P2647, P2648, P2649	
Other	The engine is under no load	

Malfunction Threshold (R18A4 Engine)

The actual idle speed is at least 200 rpm greater than the target idle speed for at least 24 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Let the engine idle for at least 24 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P050A (167): ADVANCED DIAGNOSTICS (M/T)

DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM (M/T)

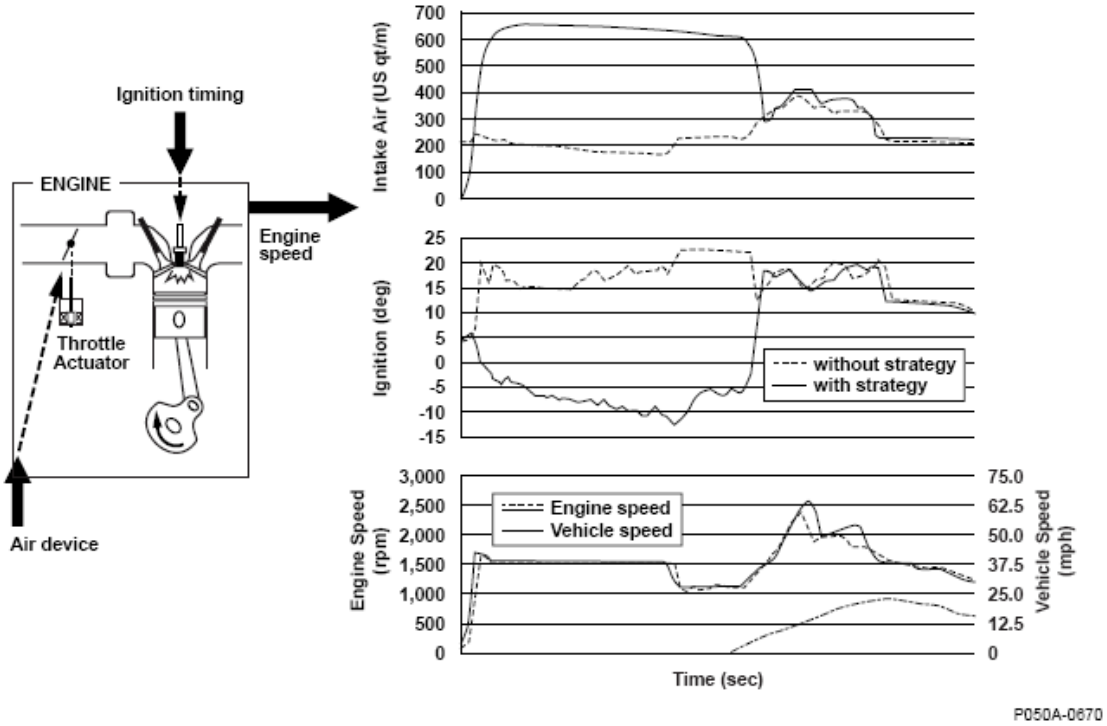


Fig. 244: Cold Start Idle Air Control System Performance Chart - SULEV Model (1 Of 2)

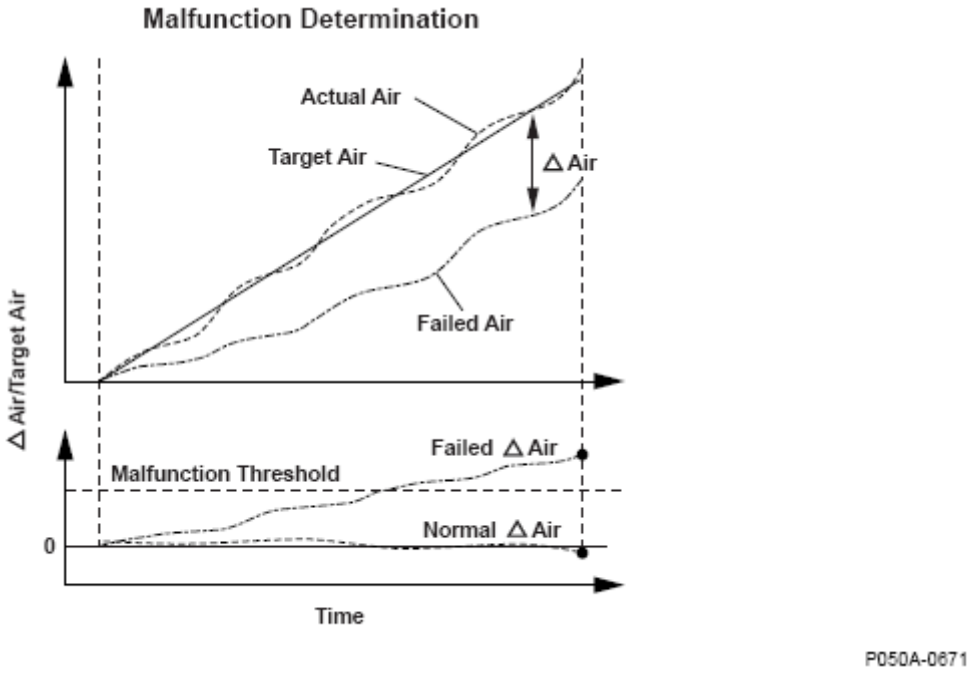


Fig. 245: Cold Start Idle Air Control System Performance Chart - SULEV Model (2 Of 2)

General Description (M/T)

The quick warm-up system supplies additional air and retards the ignition timing when the engine is cold to activate the catalytic converter as quickly as possible.

When the actual amount of air is less than the target amount, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Duration of quick warm-up system operation after engine start-up	-	40 seconds(2)
		55 seconds(1)
Engine coolant temperature	32°F (0°C)	140°F (60°C)
Throttle position	Fully closed	
	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0222, P0223,	

No active DTCs	P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351(1), P0352(1), P0353(1), P0354(1), P0404(1), P0406(1), P0506, P0507, P1116, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649
Other	Vehicle stopped
(1) R18A1 engine (2) K20Z3 engine	

Malfunction Threshold (M/T)

The total airflow is decreased by a factor of 0.810*1 , 0.803*2 for at least 10 seconds.

Confirmation Procedure with the HDS (M/T)

Do the ETCS TEST in the INSPECTION MENU with the HDS.

Driving Pattern (M/T)

1. Allow the engine to cool to an ambient engine coolant temperature of 140°F (60°C) or less.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P050A (167): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM (R18A1 ENGINE)

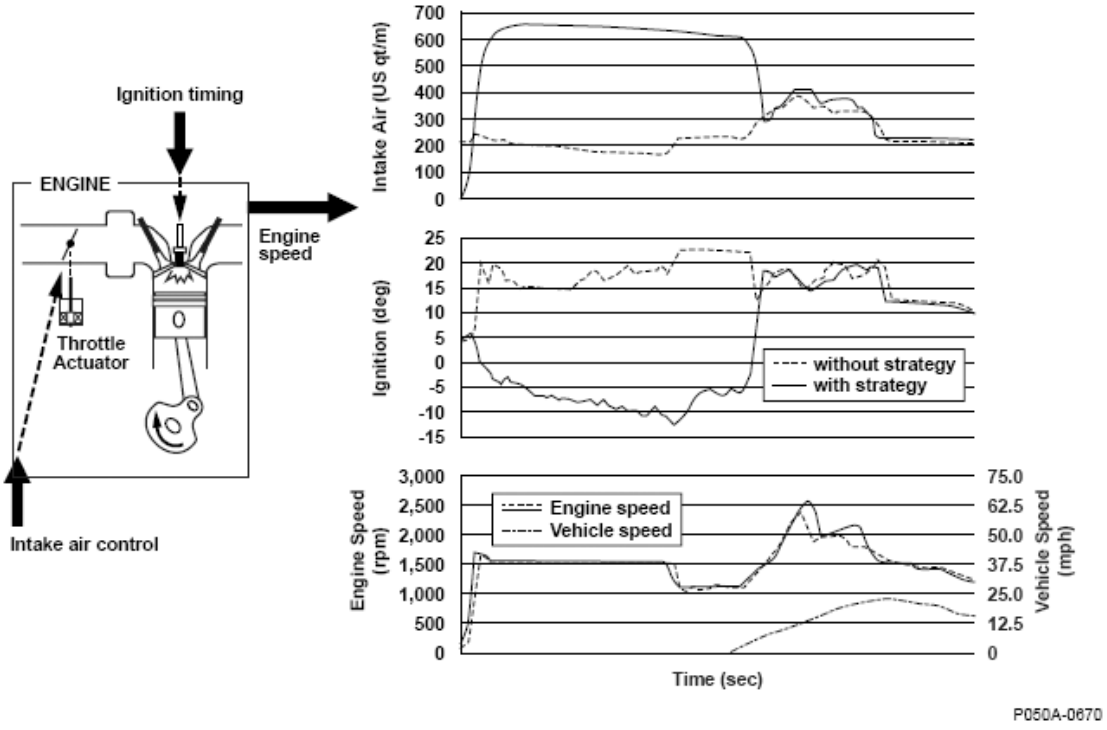


Fig. 246: Cold Start Idle Air Control System Performance Graph

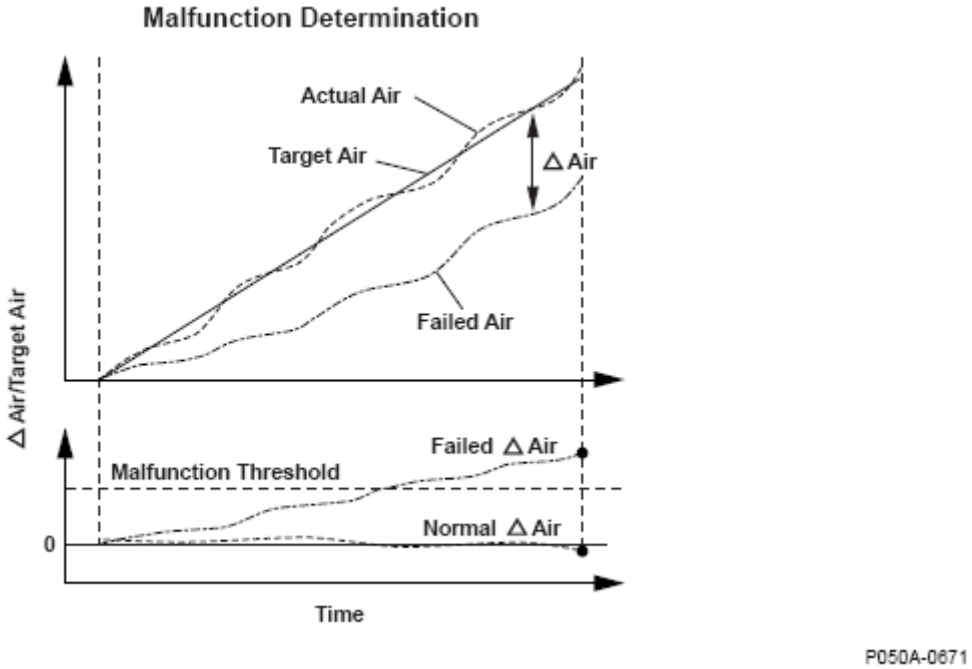


Fig. 247: Cold Start Idle Air Control System Performance Chart - SULEV Model

General Description (R18A1 Engine)

The quick warm-up system supplies additional air and retards the ignition timing when the engine is cold to activate the catalytic converter as quickly as possible.

When the actual amount of air is less than the target amount, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Duration of quick warm-up system operation after engine start-up	-	40 seconds(2)
		55 seconds(1)
Engine coolant temperature	32°F (0°C)	140°F (60°C)
Throttle position	Fully closed	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351(1), P0352(1), P0353(1), P0354(1), P0404(1), P0406(1), P0506, P0507, P1116, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649	
Other	Vehicle stopped	

(1) R18A1 engine

(2) K20Z3 engine

Malfunction Threshold (R18A1 Engine)

The total airflow is decreased by a factor of 0.810*1 , 0.803*2 for at least 10 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the ETCS TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Allow the engine to cool to an ambient engine coolant temperature of 140°F (60°C) or less.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM

memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P050B (167): ADVANCED DIAGNOSTICS (M/T)

DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM (M/T)

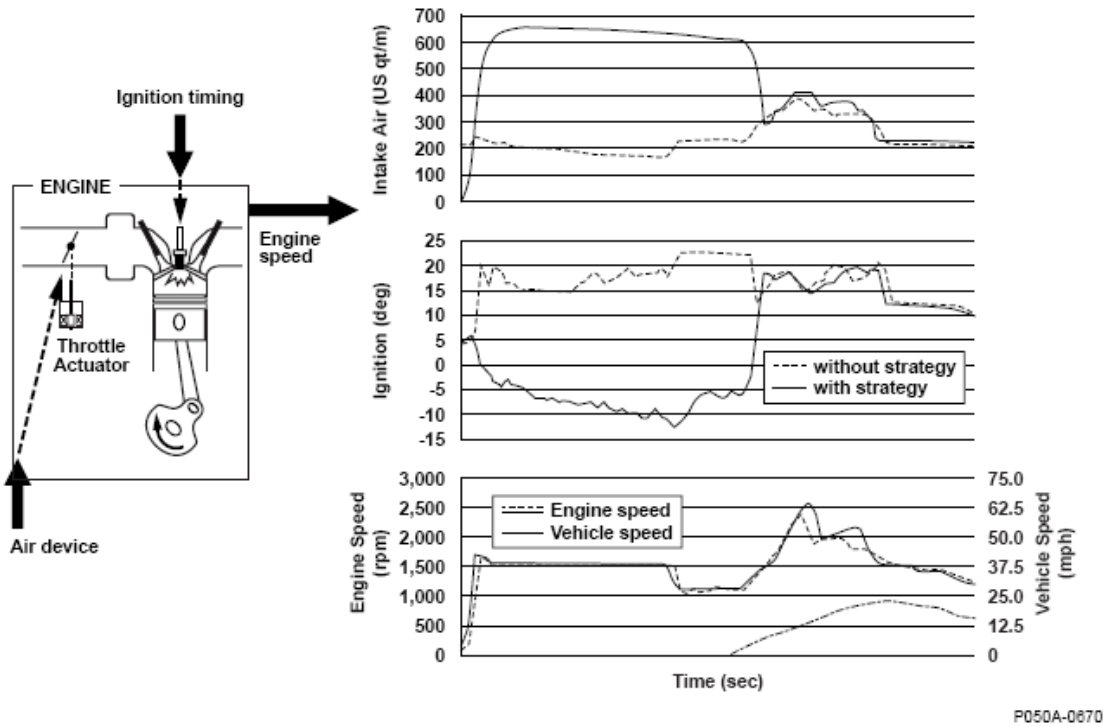


Fig. 248: Cold Start Ignition Timing Control System Chart (1 Of 2)

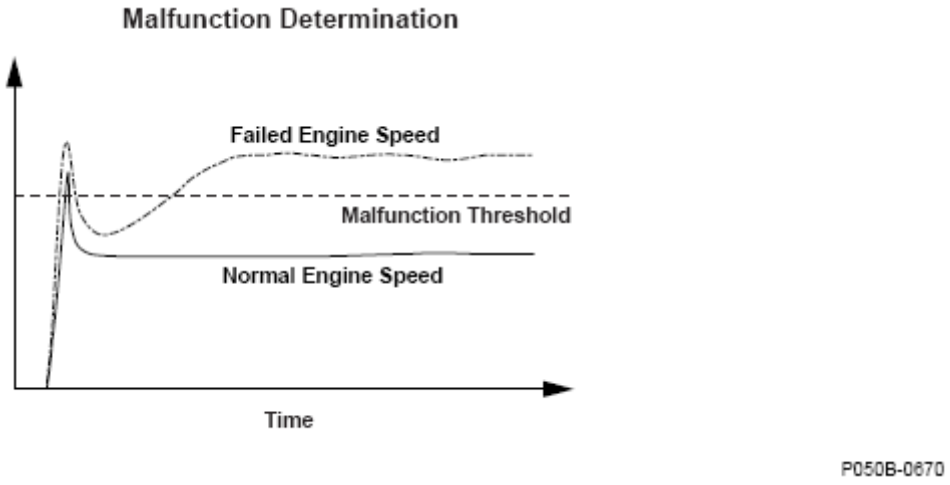


Fig. 249: Cold Start Ignition Timing Control System Chart (2 Of 2)

General Description (M/T)

The quick warm-up system supplies additional air and retards the ignition timing when the engine is cold to activate the catalytic converter as quickly as possible.

When the actual engine speed is a specified value or more, and it continues for a specified time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2.5 seconds	-
Duration of quick warm-up system operation after engine start-up	-	40 seconds(2)
		55 seconds(1)
Engine coolant temperature	32°F (0°C)	140°F (60°C)
Throttle position	Fully closed	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351(1), P0352(1), P0353(1), P0354(1), P0404(1), P0406(1), P0506, P0507,	

	P1116, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649
Other	Vehicle stopped
(1) R18A1 engine (2) K20Z3 engine	

Malfunction Threshold (M/T)

The engine speed is 2,400 rpm*1 , 2,500 rpm*2 or more for at least 3.5 seconds.

Confirmation Procedure with the HDS (M/T)

Do the ETCS TEST in the INSPECTION MENU with the HDS.

Driving Pattern (M/T)

1. Allow the engine to cool to an ambient engine coolant temperature of 140 °F (60 °C) or less.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P050B (167): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM (R18A1 ENGINE)

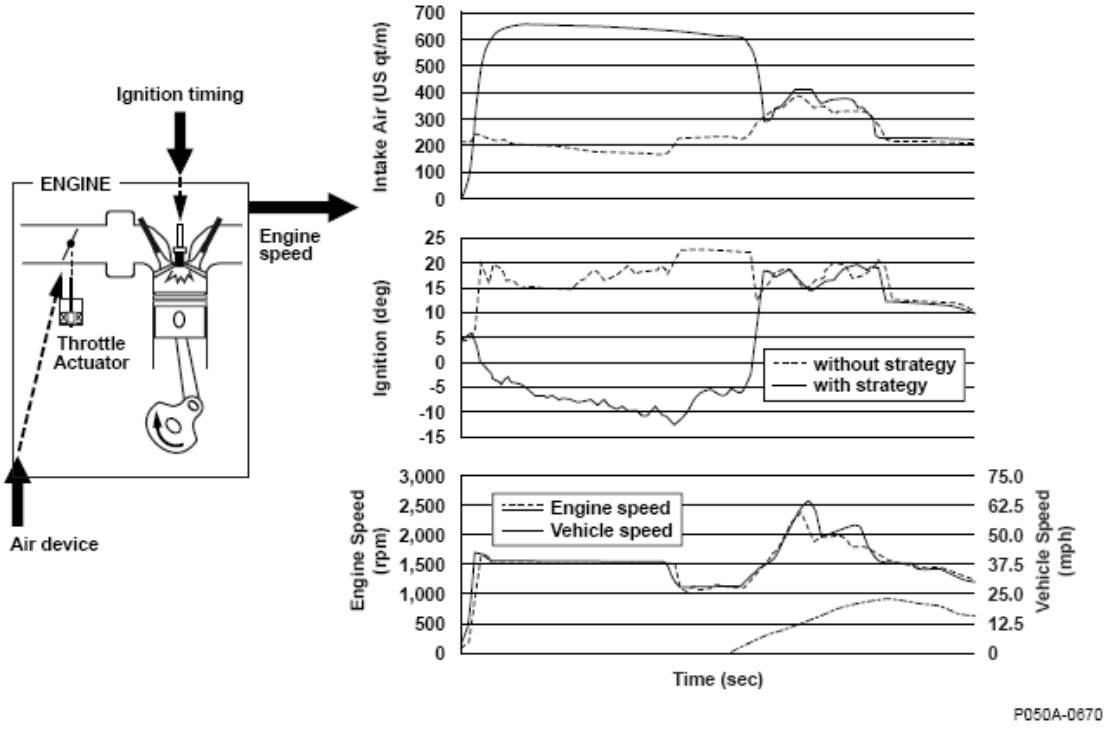


Fig. 250: Cold Start Idle Air Control System Performance Chart (1 Of 2)

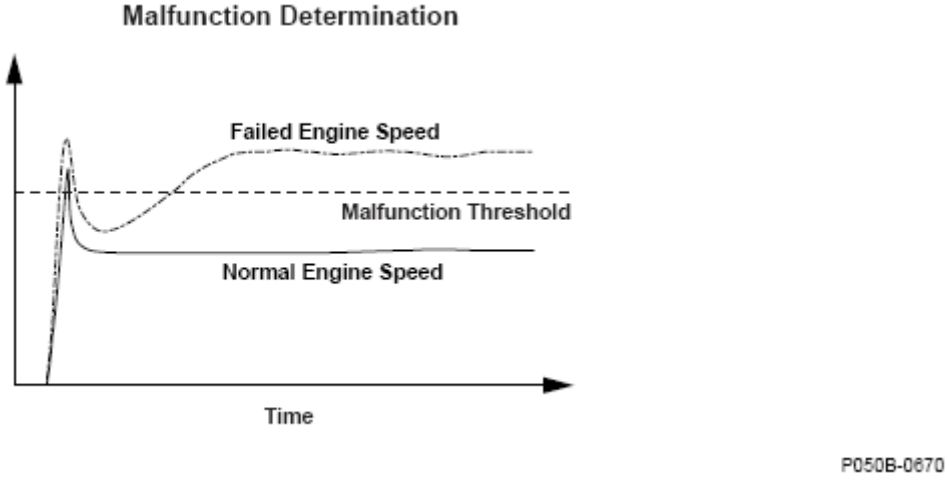


Fig. 251: Cold Start Idle Air Control System Performance Chart (2 Of 2)

General Description (R18A1 Engine)

The quick warm-up system supplies additional air and retards the ignition timing when the engine is cold to activate the catalytic converter as quickly as possible.

When the actual engine speed is a specified value or more, and it continues for a specified time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	2.5 seconds	-
Duration of quick warm-up system operation after engine start-up	-	40 seconds(2)
		55 seconds(1)
Engine coolant temperature	32°F (0°C)	140°F (60°C)
Throttle position	Fully closed	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0116, P0117, P0118, P0122, P0123, P0125, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351(1), P0352(1), P0353(1), P0354(1), P0404(1), P0406(1), P0506, P0507, P1116, P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649	
Other	Vehicle stopped	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

The engine speed is 2,400 rpm*1 , 2,500 rpm*2 or more for at least 3.5 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the ETCS TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Allow the engine to cool to an ambient engine coolant temperature of 140°F (60°C) or less.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and

the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0522 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0522: ENGINE OIL PRESSURE (EOP) SENSOR CIRCUIT LOW VOLTAGE (R18A1)

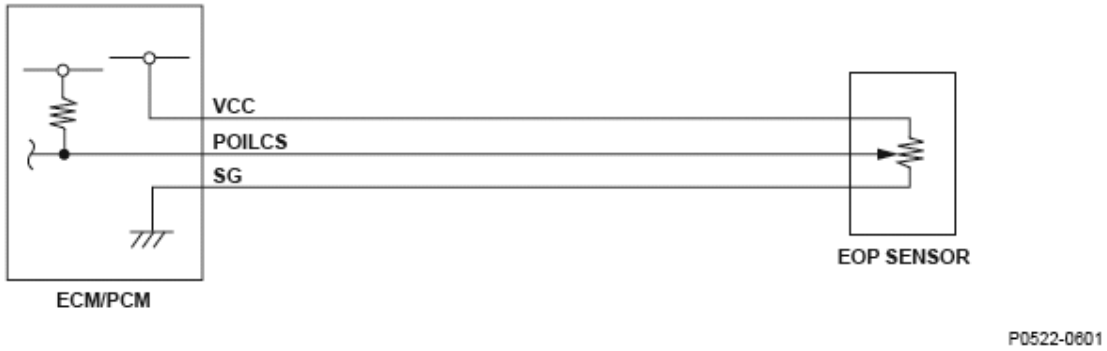


Fig. 252: Engine Oil Pressure (EOP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The engine oil pressure (EOP) sensor detects the engine oil pressure in the VTEC system.

When the voltage from the EOP sensor is a set value or less for a specified time, the engine control module (ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Barometric pressure	69 kPa (20.5 in.Hg, 520 mmHg)	-
No active DTCs	P0117, P0118, P0523, P1109, P2228, P2229	

Malfunction Threshold (R18A1 Engine)

The EOP sensor output voltage is 0.18 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0522 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0522: ENGINE OIL PRESSURE (EOP) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

Fig. 253: Engine Oil Pressure (EOP) Sensor Circuit Low Voltage - Circuit Diagram (J35A7)

General Description (R18A4 Engine)

The engine oil pressure (EOP) sensor detects the engine oil pressure in the VTEC system.

When the voltage from the EOP sensor is a set value or less for a specified time, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Barometric pressure	69 kPa (20.5 in.Hg, 520 mmHg)	-
No active DTCs	P0117, P0118, P0523, P1109, P2228, P2229	

Malfunction Threshold (R18A4 Engine)

The EOP sensor output voltage is 0.18 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0523 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0523: ENGINE OIL PRESSURE (EOP) SENSOR CIRCUIT HIGH VOLTAGE (R18A1)

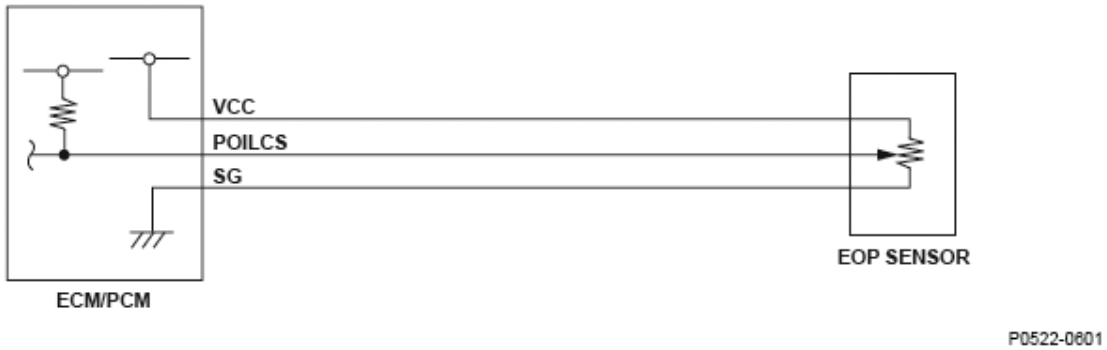


Fig. 254: Engine Oil Pressure (EOP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The engine oil pressure (EOP) sensor detects the engine oil pressure in the VTEC system.

When the voltage from the EOP sensor is a set value or more for a specified time, the engine control module

(ECM)/powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	-	6,000 rpm
Engine coolant temperature	104°F (40°C)	-
No active DTCs	P0117, P0118, P0522, P1109, P2228, P2229	

Malfunction Threshold (R18A1 Engine)

The EOP sensor output voltage is 4.79 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0523 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0523: ENGINE OIL PRESSURE (EOP) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

Fig. 255: Engine Oil Pressure (EOP) Sensor Circuit Low Voltage - Circuit Diagram (J35A7)

General Description (R18A4 Engine)

The engine oil pressure (EOP) sensor detects the engine oil pressure in the VTEC system.

When the voltage from the EOP sensor is a set value or more for a specified time, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	-	6,000 rpm
Engine coolant temperature	104°F (40°C)	-
No active DTCs	P0117, P0118, P0522, P1109, P2228, P2229	

Malfunction Threshold (R18A4 Engine)

The EOP sensor output voltage is 4.79 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0532 (191): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

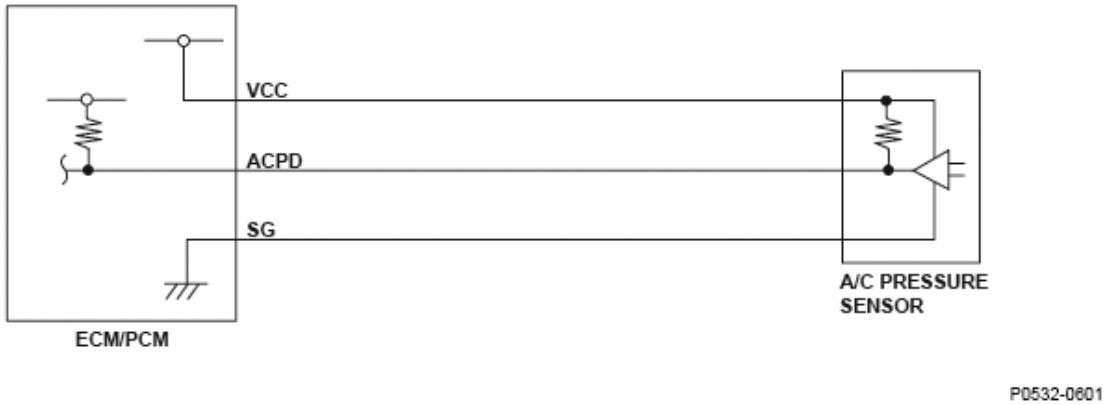


Fig. 256: A/C Pressure Sensor - Circuit Diagram

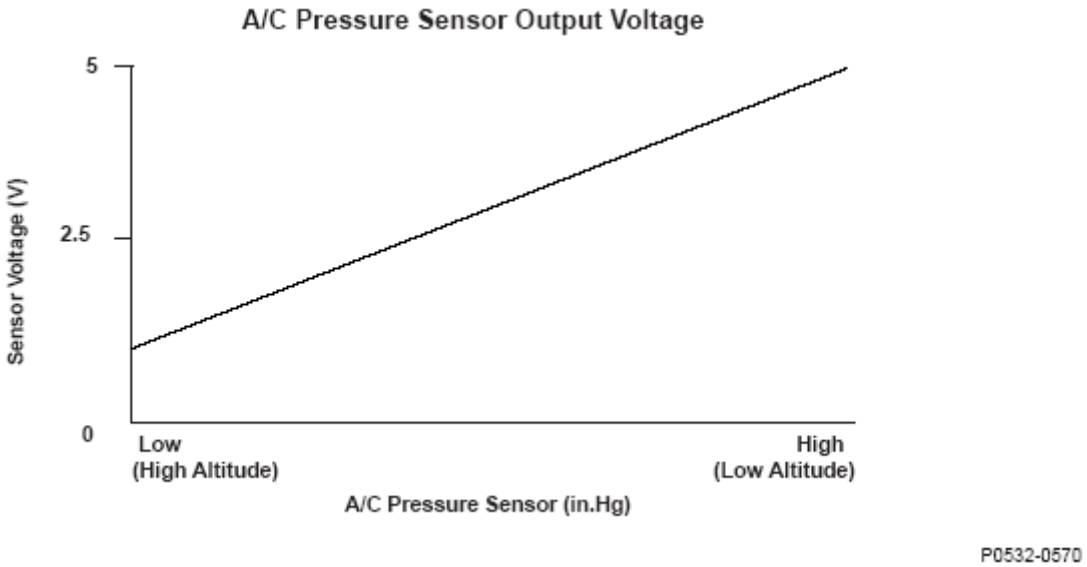


Fig. 257: A/C Pressure Sensor Voltage Graph

General Description (K20Z3 Engine)

The A/C pressure sensor measures the pressure change of the air conditioning refrigerant gas. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air conditioning load is high). The engine contol module (ECM)/powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is lower than the preset voltage for a set time or more, a

malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0533

Malfunction Threshold (K20Z3 Engine)

The A/C pressure sensor output voltage is 0.24 V or less for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0532 (191): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

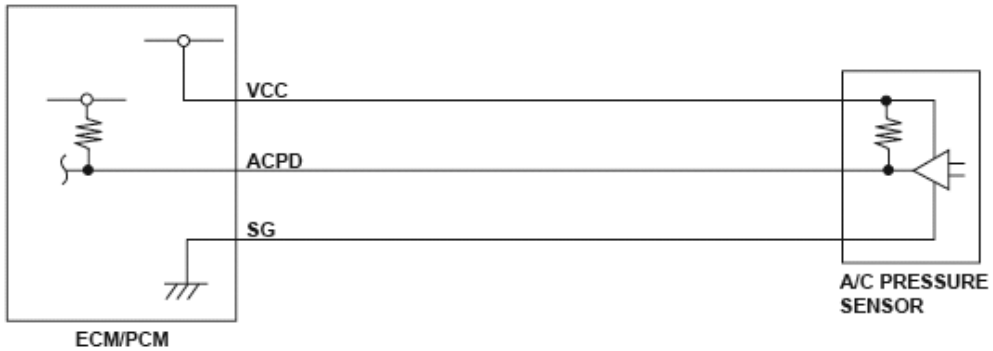


Fig. 258: A/C Pressure Sensor - Circuit Diagram

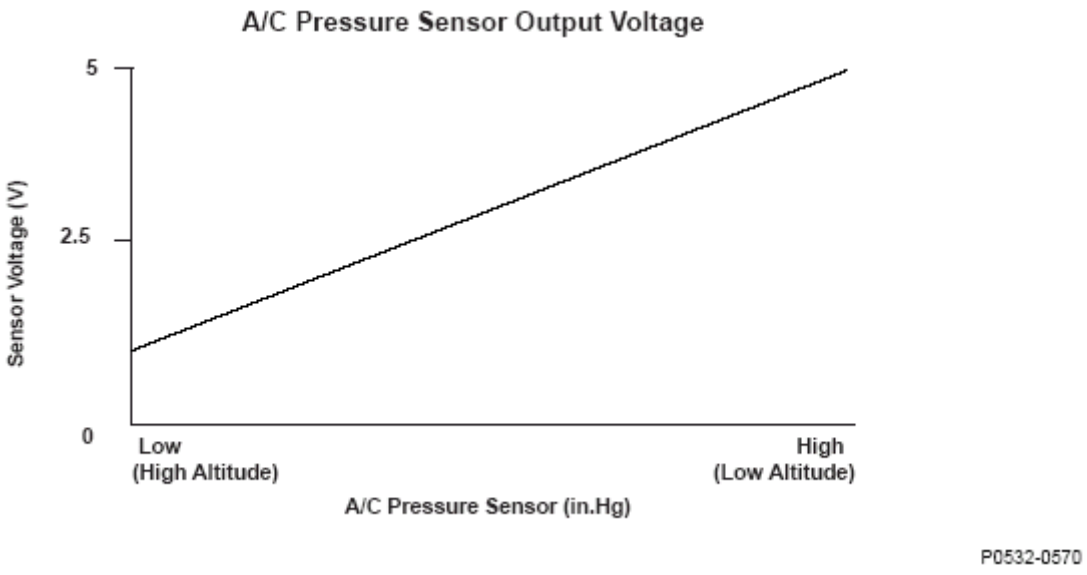


Fig. 259: A/C Pressure Sensor Voltage Graph

General Description (R18A1 Engine)

The A/C pressure sensor measures the pressure change of the air conditioning refrigerant gas. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air conditioning load is high). The engine contol module (ECM)/powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is lower than the preset voltage for a set time or more, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0533

Malfunction Threshold (R18A1 Engine)

The A/C pressure sensor output voltage is 0.24 V or less for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0532 (191): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

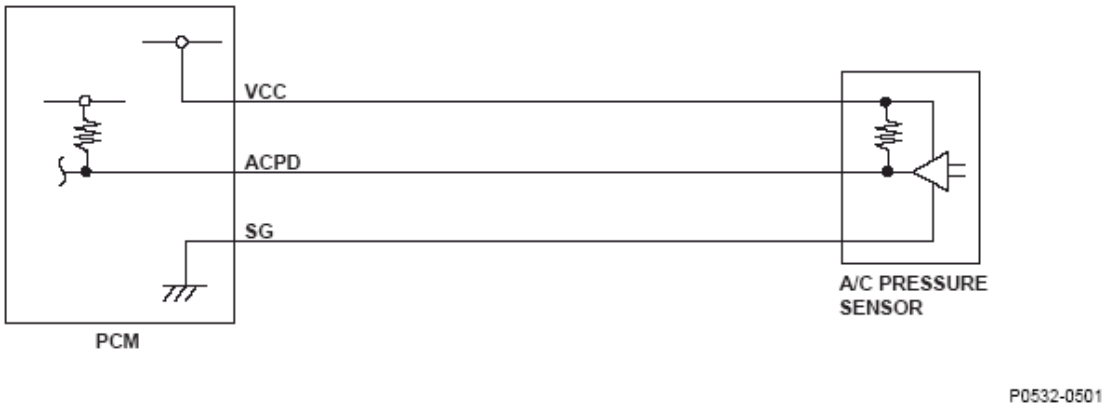


Fig. 260: A/C Pressure Sensor - Circuit Diagram

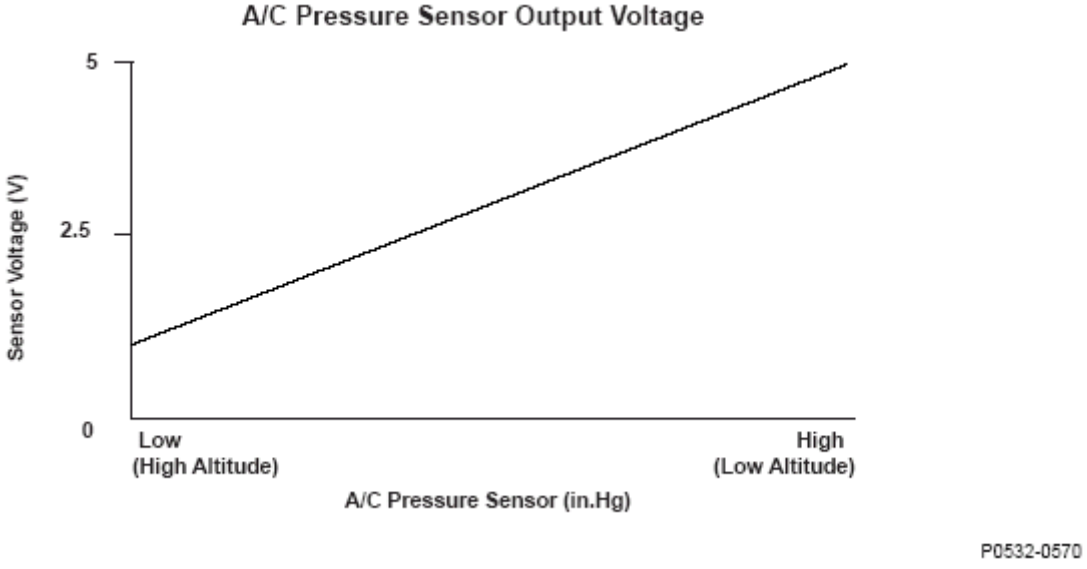


Fig. 261: A/C Pressure Sensor Voltage Graph

General Description (R18A4 Engine)

The A/C pressure sensor measures the pressure change of the refrigerant. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air conditioning load is high). The powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is lower than the preset voltage for a set time or more, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0533

Malfunction Threshold (R18A4 Engine)

The A/C pressure sensor output voltage is 0.24 V or less for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0533 (191): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

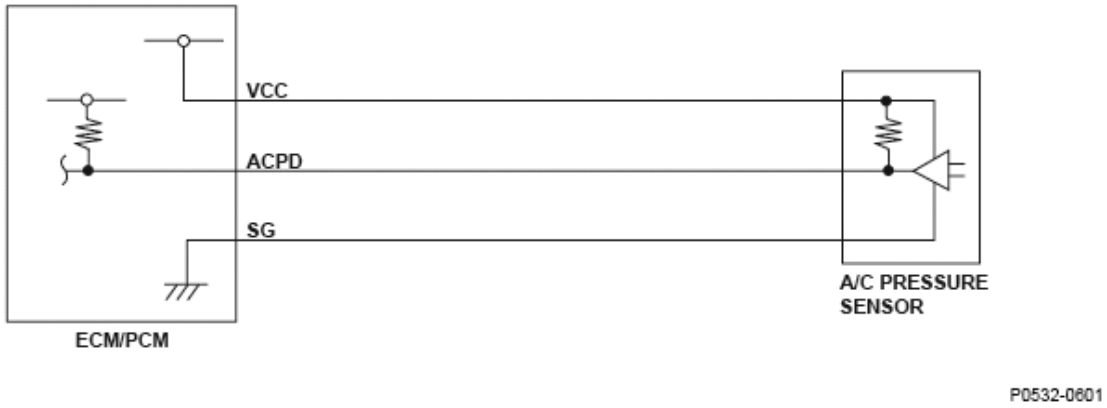


Fig. 262: A/C Pressure Sensor - Circuit Diagram

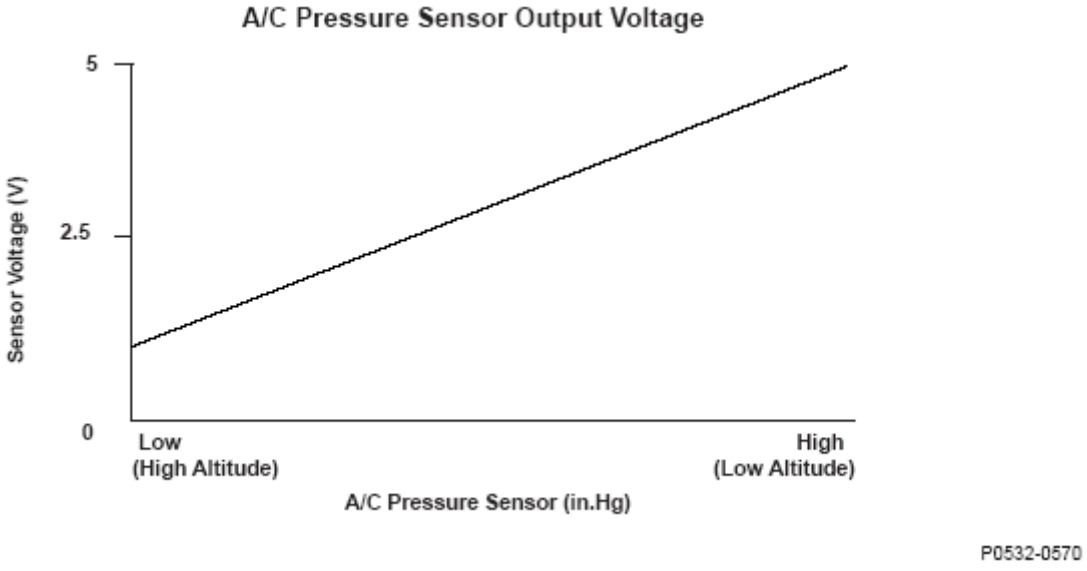


Fig. 263: A/C Pressure Sensor Voltage Graph

General Description (K20Z3 Engine)

The A/C pressure sensor measures the pressure change of the air conditioning refrigerant gas. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air conditioning load is high). The engine control module (ECM)/powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is higher than the preset voltage for a set time or more, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF

OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0532

Malfunction Threshold (K20Z3 Engine)

The A/C pressure sensor output voltage is 4.76 V or more for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0533 (191): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

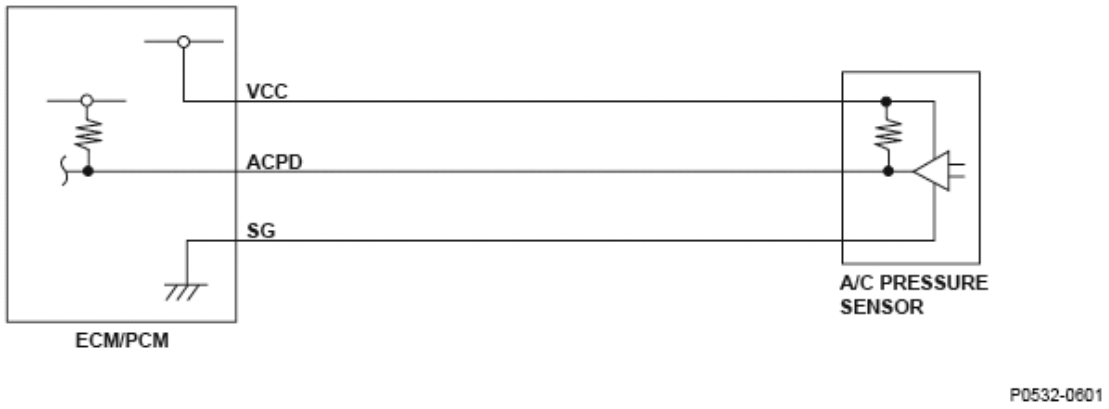


Fig. 264: A/C Pressure Sensor - Circuit Diagram

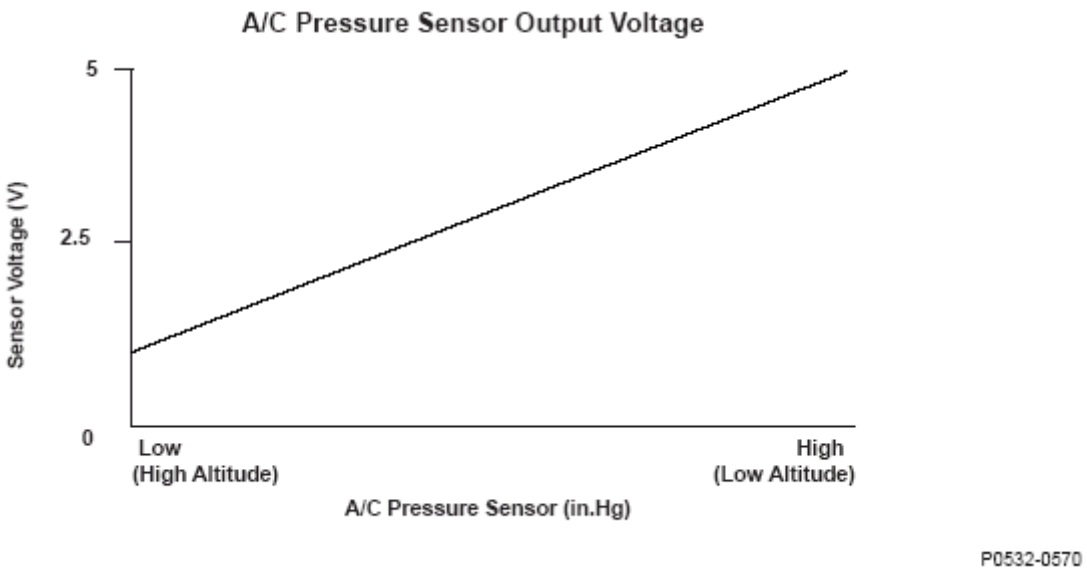


Fig. 265: A/C Pressure Sensor Voltage Graph

General Description (R18A1 Engine)

The A/C pressure sensor measures the pressure change of the air conditioning refrigerant gas. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air conditioning load is high). The engine control module (ECM)/powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is higher than the preset voltage for a set time or more, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0532

Malfunction Threshold (R18A1 Engine)

The A/C pressure sensor output voltage is 4.76 V or more for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0533 (191): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

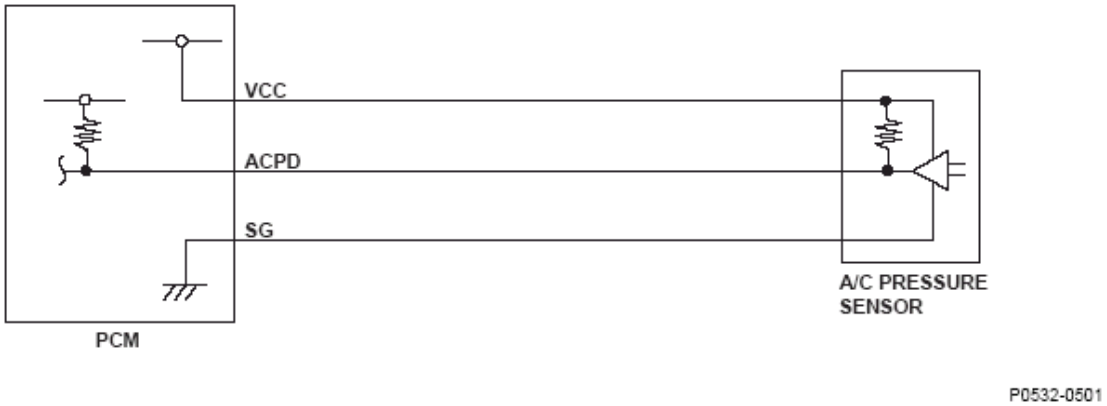


Fig. 266: A/C Pressure Sensor - Circuit Diagram

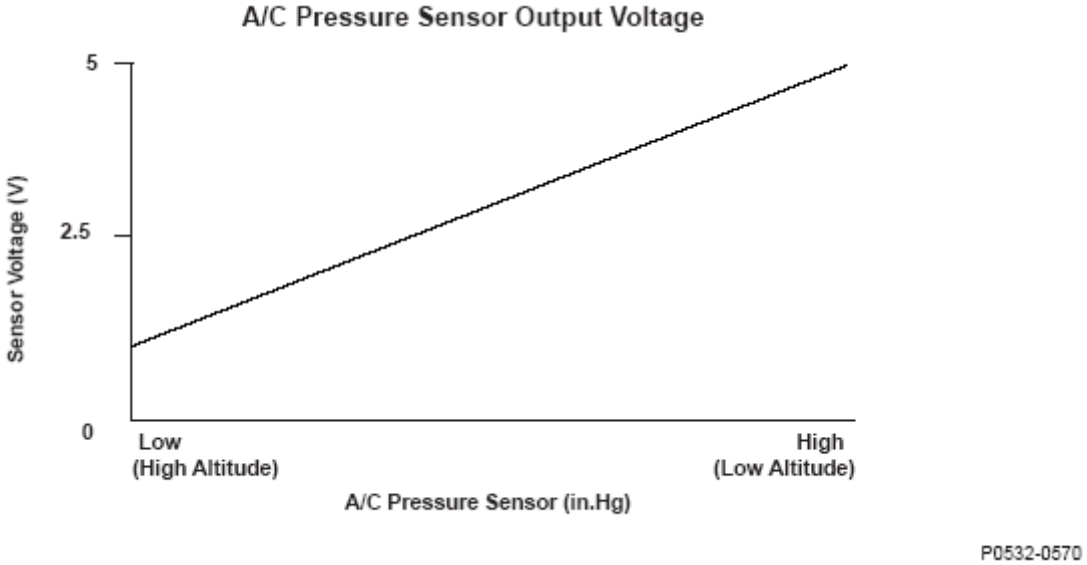


Fig. 267: A/C Pressure Sensor Voltage Graph

General Description (R18A4 Engine)

The A/C pressure sensor measures the pressure change of the refrigerant. The signal from the A/C pressure sensor is low at low voltage (when the air conditioning load is low) and high at high voltage (when the air

conditioning load is high). The powertrain control module (PCM) compares the preset voltage to the A/C pressure sensor output voltage.

When the A/C pressure sensor output voltage is higher than the preset voltage for a set time or more, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0532

Malfunction Threshold (R18A4 Engine)

The A/C pressure sensor output voltage is 4.76 V or more for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0562 (34): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0562: CHARGING SYSTEM LOW VOLTAGE (K20Z3)

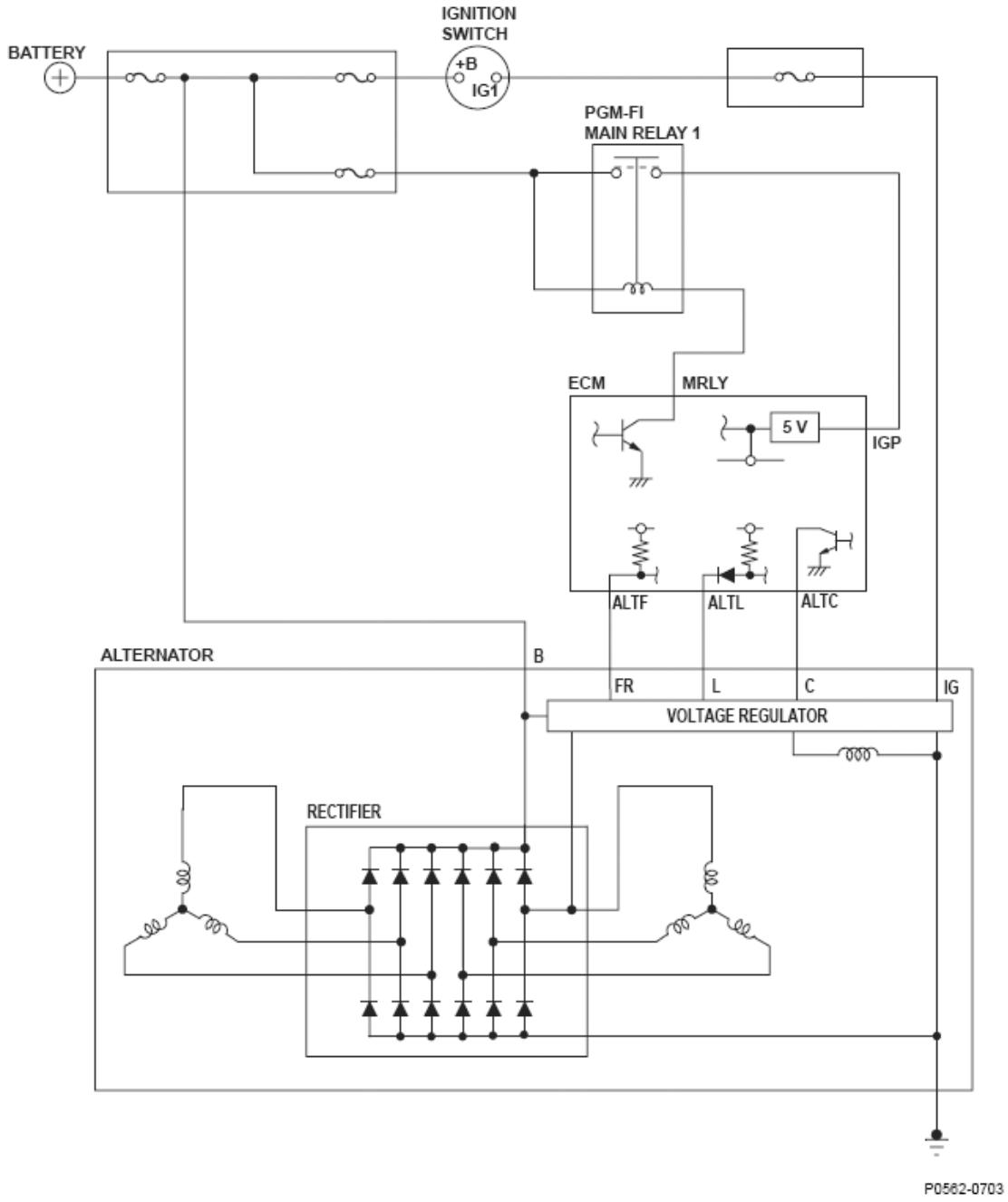


Fig. 268: Charging System Circuit Diagram

General Description (K20Z3 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)). The alternator output signal is sent to the ECM, and it varies according to the battery's state of charge, the electrical load, and engine speed.

When the IGP (power source) terminal voltage is a set value or less for a set time, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (K20Z3 Engine)

The IGP terminal voltage is 11.0 V or less for at least 60 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0562 (34): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0562: CHARGING SYSTEM LOW VOLTAGE (R18A1)

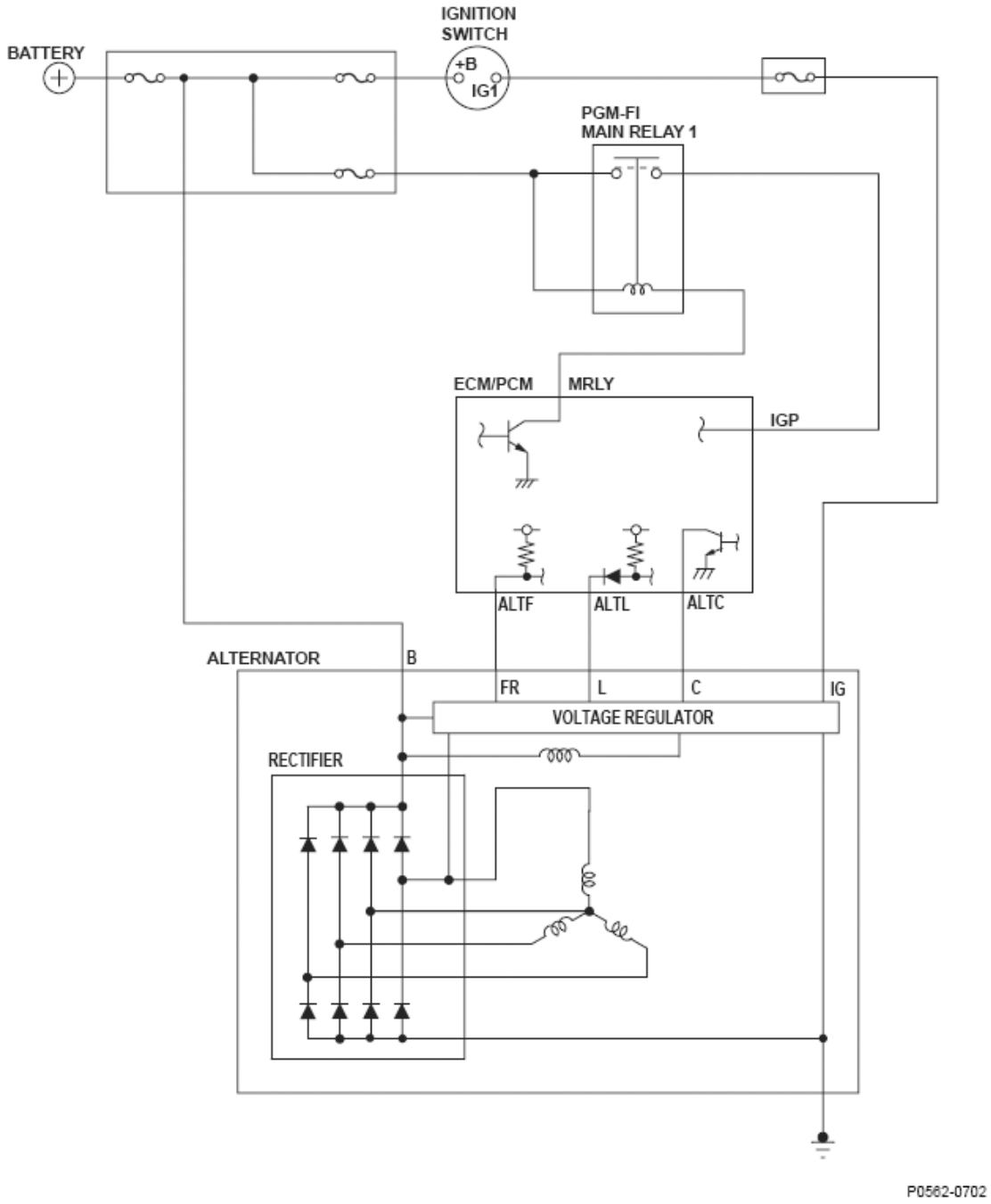


Fig. 269: Charging System Circuit Diagram (Engine Type R18A1)

General Description (R18A1 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)/powertrain control module (PCM)). The alternator output signal is sent to the ECM/PCM, and it varies according to the battery's state of charge, the electrical load, and engine speed.

When the IGP (power source) terminal voltage is a set value or less for a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (R18A1 Engine)

The IGP terminal voltage is 11.0 V or less for at least 60 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0562 (34): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0562: CHARGING SYSTEM LOW VOLTAGE (R18A4 ENGINE)

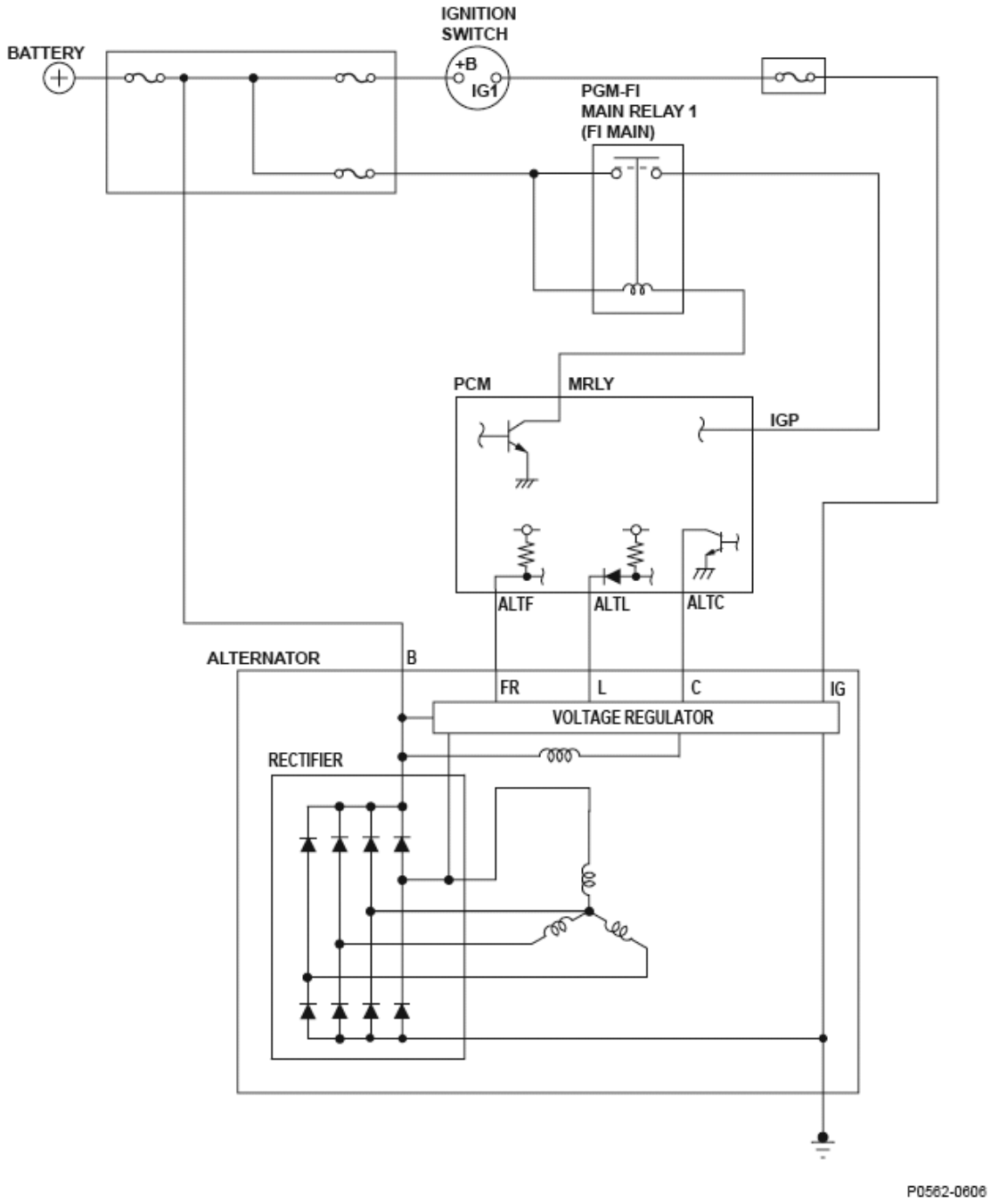


Fig. 270: Charging System - Circuit Diagram

General Description (R18A4 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the powertrain control module (PCM)). The alternator output signal is sent to the PCM, and it varies according to the battery's state of charge, the electrical load, and engine speed.

When the IGP (power source) terminal voltage is a set value or less for a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (R18A4 Engine)

The IGP terminal voltage is 11.0 V or less for at least 60 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0563 (34): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0563: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE (K20Z3 ENGINE)

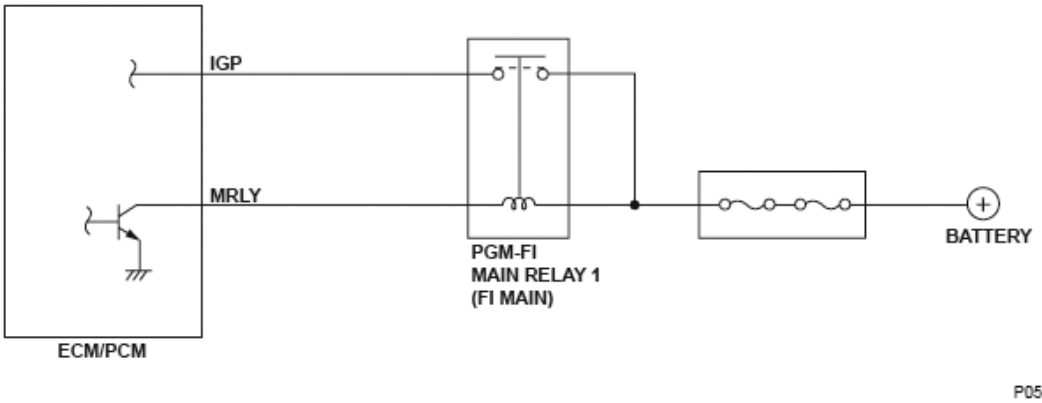


Fig. 271: Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source - Circuit Diagram

General Description (K20Z3 Engine)

If there is a short to ground in the harness between the engine control module (ECM)/powertrain control module (PCM) and the PGM-FI main relay 1 (FI MAIN), the PGM-FI main relay 1 (FI MAIN) stays ON even though the ignition switch is OFF, and the ECM/PCM remains active. However, the engine is not running because the power for the gauges, the ignition, and the fuel pump is turned OFF by the ignition switch.

When the ECM/PCM operates for a set time after the ignition switch is turned OFF, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage (IGP terminal of ECM/PCM)	10.1 V	-

Malfunction Threshold (K20Z3 Engine)

The ECM/PCM operates for at least 5 seconds after the ignition switch is turned OFF.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0563 (34): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0563: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE (R18A1 ENGINE)

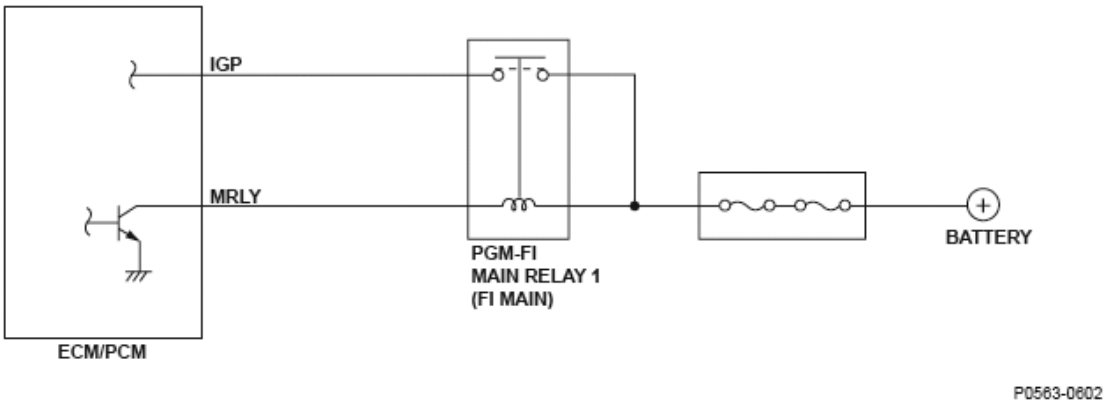


Fig. 272: Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source - Circuit Diagram

General Description (R18A1 Engine)

If there is a short to ground in the harness between the engine control module (ECM)/powertrain control module (PCM) and the PGM-FI main relay 1 (FI MAIN), the PGM-FI main relay 1 (FI MAIN) stays ON even though the ignition switch is OFF, and the ECM/PCM remains active. However, the engine is not running because the power for the gauges, the ignition, and the fuel pump is turned OFF by the ignition switch.

When the ECM/PCM operates for a set time after the ignition switch is turned OFF, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage (IGP terminal of ECM/PCM)	10.1 V	-

Malfunction Threshold (R18A1 Engine)

The ECM/PCM operates for at least 5 seconds after the ignition switch is turned OFF.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory.

The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0563 (34): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0563: POWERTRAIN CONTROL MODULE (PCM) POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE (R18A4 ENGINE)

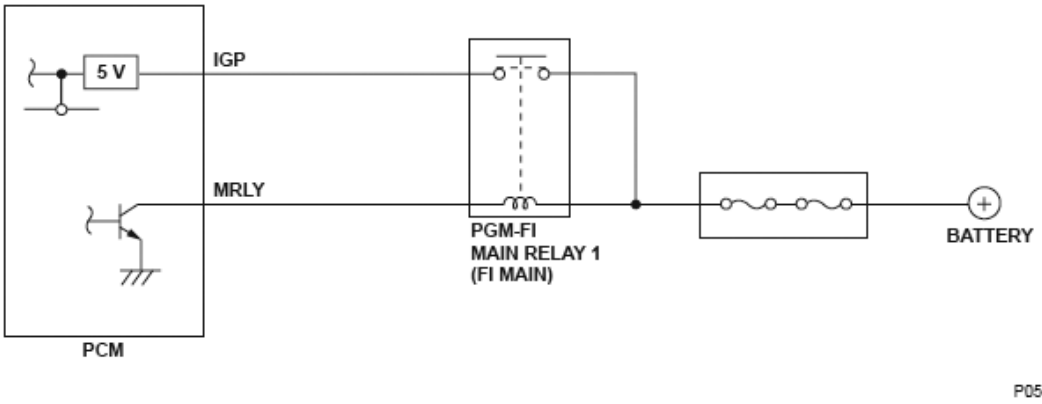


Fig. 273: Powertrain Control Module (PCM) Power Source Circuit Diagram - Unexpected Voltage

General Description (R18A4 Engine)

If there is a short to ground in the harness between the powertrain control module (PCM) and the PGM-FI main relay 1 (FI MAIN), the PGM-FI main relay 1 (FI MAIN) stays ON even though the ignition switch is OFF, and the PCM remains active. However, the engine is not running because the power for the gauges, the ignition, and the fuel pump is turned OFF by the ignition switch.

When the PCM operates for a set time after the ignition switch is turned OFF, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Battery voltage (IGP terminal of PCM)	10.1 V	-

Malfunction Threshold (R18A4 Engine)

The PCM operates for at least 5 seconds after the ignition switch is turned OFF.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0602 (196): ADVANCED DIAGNOSTICS (M/T)

DTC P0602: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) PROGRAMMING ERROR (M/T)

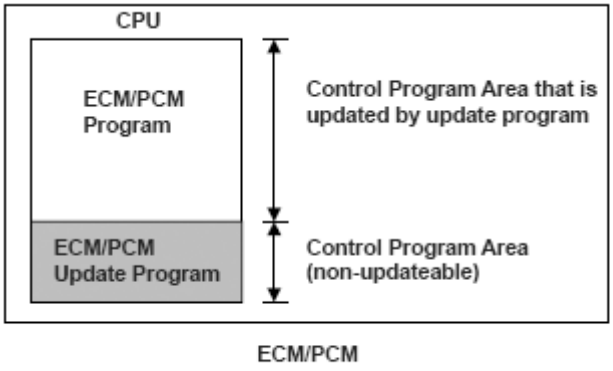


Fig. 274: ECM/PCM Programming Error

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) is equipped with an update program to update its control program. The programs in the CPU of the ECM/PCM are classified as an ECM/PCM program (update-capable program) and a program for the update function (non-updateable program). The program update only updates the ECM/PCM program.

When the ECM/PCM power is turned off during an update, the power for the update function is lost, and the update process stops. When the program update is stopped before it is completed, the ECM/PCM stores a DTC that indicates the update is not finished.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (M/T)

The ECM/PCM program update is stopped before it is finished for at most 1 second.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When the ECM/PCM program is not written in the ECM/PCM, the MIL comes on and the DTC is stored in the ECM/PCM memory.

Conditions for clearing the MIL (M/T)

The MIL and the DTC will be cleared when the ECM/PCM program update is complete.

DTC P0602 (196): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0602: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) PROGRAMMING ERROR (R18A1 ENGINE)

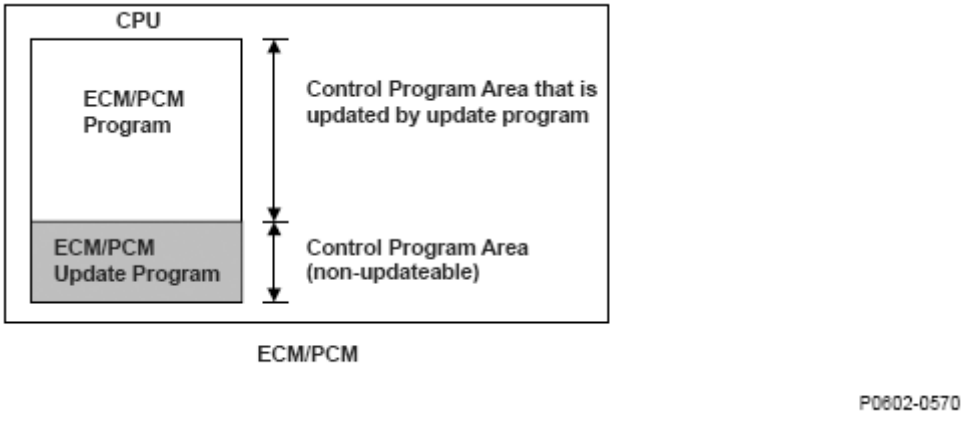


Fig. 275: ECM/PCM Programming Error

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) is equipped with an update program to update its control program. The programs in the CPU of the ECM/PCM are classified as an ECM/PCM program (update-capable program) and a program for the update function (non-updateable program). The program update only updates the ECM/PCM program.

When the ECM/PCM power is turned off during an update, the power for the update function is lost, and the update process stops. When the program update is stopped before it is completed, the ECM/PCM stores a DTC that indicates the update is not finished.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A1 Engine)

The ECM/PCM program update is stopped before it is finished for at most 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When the ECM/PCM program is not written in the ECM/PCM, the MIL comes on and the DTC is stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL and the DTC will be cleared when the ECM/PCM program update is complete.

DTC P0602 (196): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0602: POWERTRAIN CONTROL MODULE (PCM) PROGRAMMING ERROR (R18A4 ENGINE)

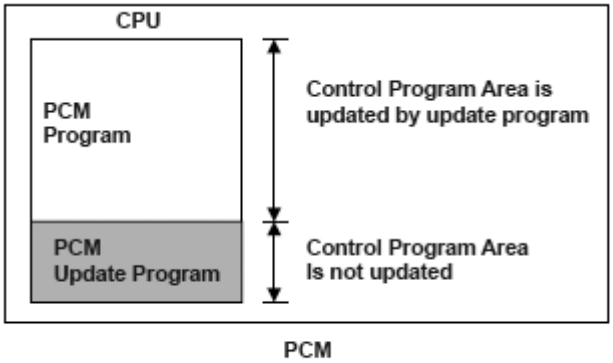


Fig. 276: Powertrain Control Module (PCM) Programming Error Chart

General Description (R18A4 Engine)

The powertrain control module (PCM) is equipped with an update program to update its control program. The programs in the CPU of the PCM are classified as a PCM program (update-capable program) and a program for the update function (non-updateable program). The program update only updates the PCM program.

When the PCM power is turned off during an update, the power for the update function is lost, and the update process stops.

When the program update is stopped before it is completed, the PCM stores a DTC that indicates the update is not finished.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A4 Engine)

The PCM program update is stopped before it is finished for at most 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When the PCM program is not written in the PCM, the DTC is stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The DTC will be cleared when the PCM program update is complete.

DTC P0603 (0): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0603: POWERTRAIN CONTROL MODULE (PCM) KEEP ALIVE MEMORY (KAM) ERROR (R18A1 ENGINE)

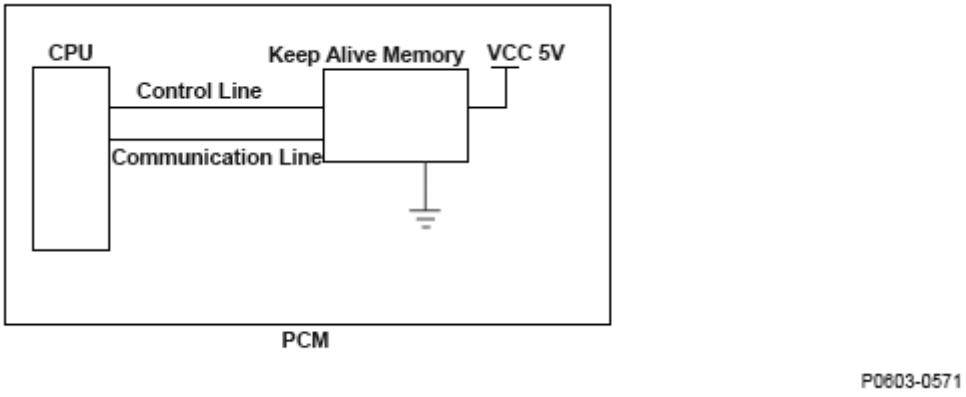


Fig. 277: Powertrain Control Module (PCM) Internal Control Module KAM Error Chart

General Description (R18A1 Engine)

The powertrain control module (PCM) is equipped with a keep-alive memory. The data (control learn data, etc.) for powertrain control and information (vehicle identification number (VIN), etc.) related to vehicle control is stored in the keep alive memory, so that it can be maintained even when power is not supplied to the PCM such as when the battery is disconnected. When power is restored to the PCM, the CPU retrieves the stored information from the keep-alive memory, but when the data retrieval process is not finished normally, a malfunction is detected and a DTC is stored.

The CPU writes data to the keep-alive memory from the CPU: Control related data is written when the ignition is turned on, and vehicle information when commanded from the HDS.

If the data writing process is not completed normally, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Ignition switch	ON	

Malfunction Threshold (R18A1 Engine)

A malfunction is detected whenever the keep alive data retrieval and writing process is not completed normally.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0603 (0): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0603: POWERTRAIN CONTROL MODULE (PCM) KEEP ALIVE MEMORY (KAM) ERROR (R18A4 ENGINE)

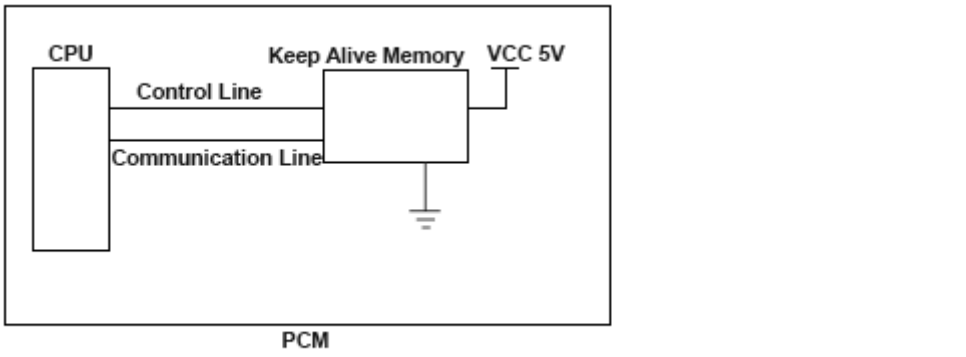


Fig. 278: Powertrain Control Module (PCM) Internal Control Module KAM Error Chart

General Description (R18A4 Engine)

The powertrain control module (PCM) is equipped with a keep-alive memory. The data (control learn data, etc.) for powertrain control and information (vehicle identification number (VIN), etc.) related to vehicle control is stored in the keep alive memory, so that it can be maintained even when power is not supplied to the PCM such as when the battery is disconnected. When power is restored to the PCM, the CPU retrieves the stored information from the keep-alive memory, but when the data retrieval process is not finished normally, a malfunction is detected and a DTC is stored.

The CPU writes data to the keep-alive memory from the CPU: Control related data is written when the

ignition is turned on, and vehicle information when commanded from the HDS.

If the data writing process is not completed normally, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Ignition switch	ON	

Malfunction Threshold (R18A4 Engine)

A malfunction is detected whenever the keep alive data retrieval and writing process is not completed normally.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0603 (131) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR (K20Z3 ENGINE)

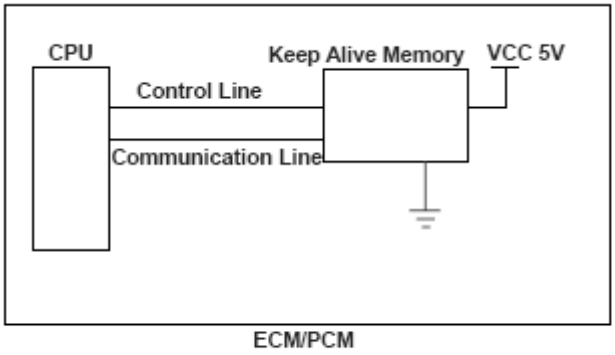


Fig. 279: ECM/PCM Internal Malfunction - Circuit Diagram

General Description (K20Z3 Engine)

The engine control module (ECM)/powertrain control module (PCM) is equipped with a keep-alive memory. The data (control learn data etc) for powertrain control and information (Vehicle Identify Number (VIN) etc) related to the vehicle control is stored in the keep alive memory, so that it can be maintained even when the power is not supplied to the ECM/PCM such as when the battery is disconnected. When the power is restored to the ECM/PCM, the CPU retrieves the stored information from the keep-alive memory, but when the data retrieval process is not finished normally, a malfunction is detected and a DTC is stored.

The CPU writes data to the keep-alive memory from the CPU: Control related data is written when the ignition is turned on, and vehicle information when commanded from the scan tool.

If the data writing process is not completed normally, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (K20Z3 Engine)

A malfunction is detected whenever the keep alive data retrieval and writing process is not completed normally.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0603 (131) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR (R18A1 ENGINE)

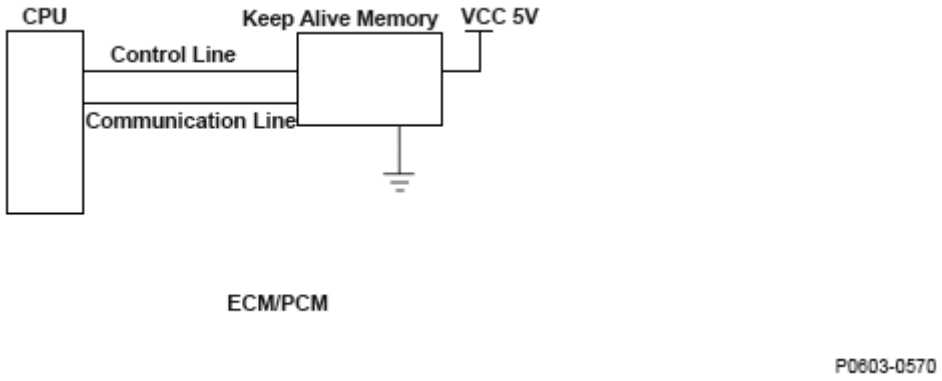


Fig. 280: ECM/PCM Internal Control Module - Communication Diagram

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) is equipped with a keep-alive memory. The data (control learn data etc) for powertrain control and information (Vehicle Identify Number (VIN) etc) related to the vehicle control is stored in the keep alive memory, so that it can be maintained even when the power is not supplied to the ECM/PCM such as when the battery is disconnected. When the power is restored to the ECM/PCM, the CPU retrieves the stored information from the keep-alive memory, but when the data retrieval process is not finished normally, a malfunction is detected and a DTC is stored.

The CPU writes data to the keep-alive memory from the CPU: Control related data is written when the ignition is turned on, and vehicle information when commanded from the scan tool.

If the data writing process is not completed normally, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A1 Engine)

A malfunction is detected whenever the keep alive data retrieval and writing process is not completed normally.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0603 (131) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0603: POWERTRAIN CONTROL MODULE (PCM) INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR (R18A4 ENGINE)

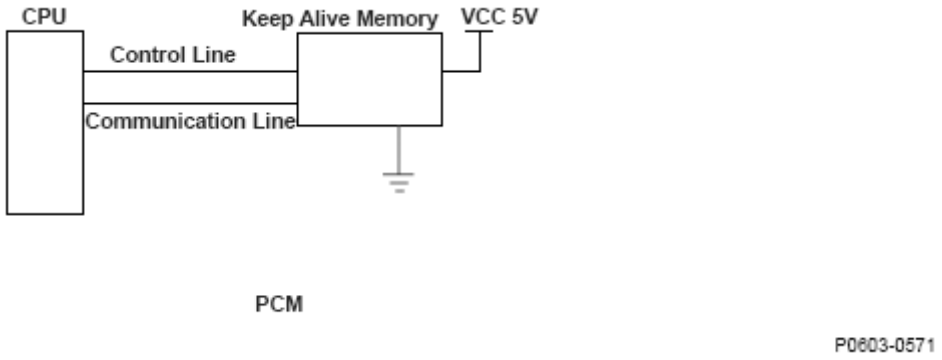


Fig. 281: Powertrain Control Module (PCM) - Communication Diagram

General Description (R18A4 Engine)

The powertrain control module (PCM) is equipped with a keep-alive memory. The data (control learn data etc) for powertrain control and information (vehicle identification number (VIN), etc) related to vehicle control is stored in the keep alive memory, so that it can be maintained even when power is not supplied to the PCM such as when the battery is disconnected. When power is restored to the PCM, the CPU retrieves the stored information from the keep-alive memory, but when the data retrieval process is not finished normally, a malfunction is detected and a DTC is stored.

The CPU writes data to the keep-alive memory from the CPU: Control related data is written when the ignition is turned on, and vehicle information when commanded from the HDS.

If the data writing process is not completed normally, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A4 Engine)

A malfunction is detected whenever the keep alive data retrieval and writing process is not completed normally.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0606 (0): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0606: ECM/PCM PROCESSOR MALFUNCTION (K20Z3 ENGINE)

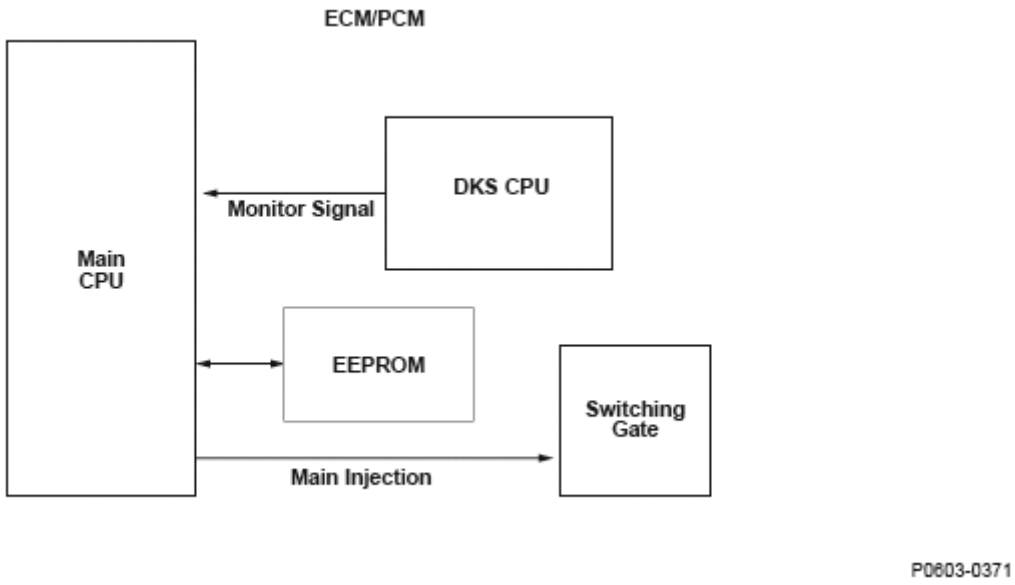


Fig. 282: ECM/PCM Processor - Communication Diagram

General Description (K20Z3 Engine)

If something is wrong in the engine control module (ECM)/powertrain control module (PCM), and the monitor signal from the digital knock system (DKS) CPU is not received for a set period of time, or a signal communication error remains for a set period time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10 V	-
State of the engine	Running	
Other	After 30 seconds have elapsed since start-up, or after the engine speed exceeds 1,000 rpm once	
No active DTCs	P0335, P0339, P0365, P0369	

Malfunction Threshold (K20Z3 Engine)

Either condition mentioned below must be met for at least 5 seconds.

- No signal from the DKS CPU is detected.
- Signal from the DKS CPU is detected to be abnormal.

Driving Pattern (K20Z3 Engine)

Start the engine, let it idle for at least 30 seconds or raise the engine speed to at least 1,000 rpm.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0606 (0): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0606: ECM/PCM PROCESSOR MALFUNCTION (R18A1 ENGINE)

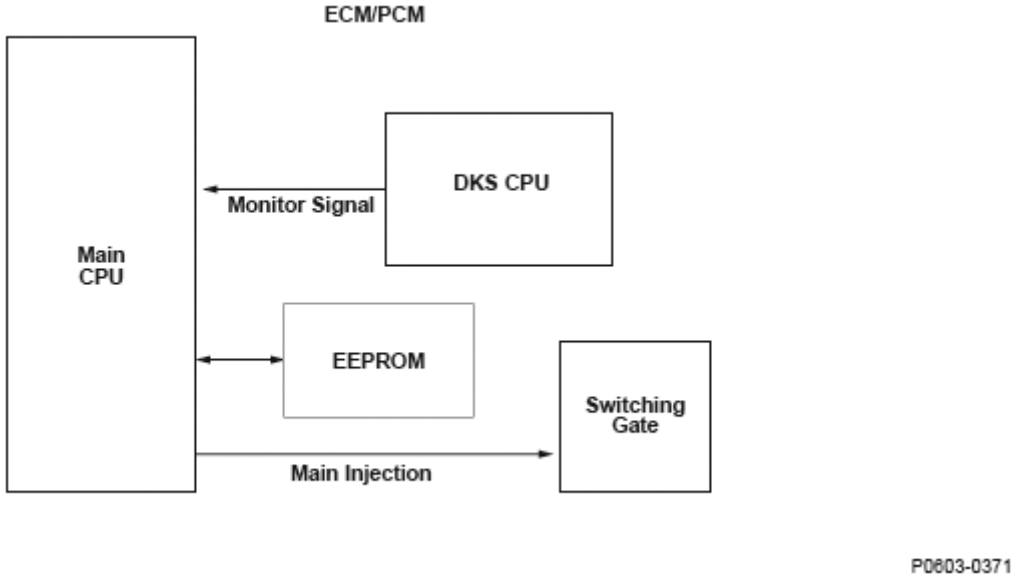


Fig. 283: ECM/PCM Processor - Communication Diagram

General Description (R18A1 Engine)

If something is wrong in the engine control module (ECM)/powertrain control module (PCM), and the monitor signal from the digital knock system (DKS) CPU is not received for a set period of time, or a signal

communication error remains for a set period time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10 V	-
State of the engine	Running	
Other	After 30 seconds have elapsed since start-up, or after the engine speed exceeds 1,000 rpm once	
No active DTCs	P0335, P0339, P0365, P0369	

Malfunction Threshold (R18A1 Engine)

Either condition mentioned below must be met for at least 5 seconds.

- No signal from the DKS CPU is detected.
- Signal from the DKS CPU is detected to be abnormal.

Driving Pattern (R18A1 Engine)

Start the engine, let it idle for at least 30 seconds or raise the engine speed to at least 1,000 rpm.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0606 (0): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0606: POWERTRAIN CONTROL MODULE (PCM) PROCESSOR MALFUNCTION (R18A4 ENGINE)

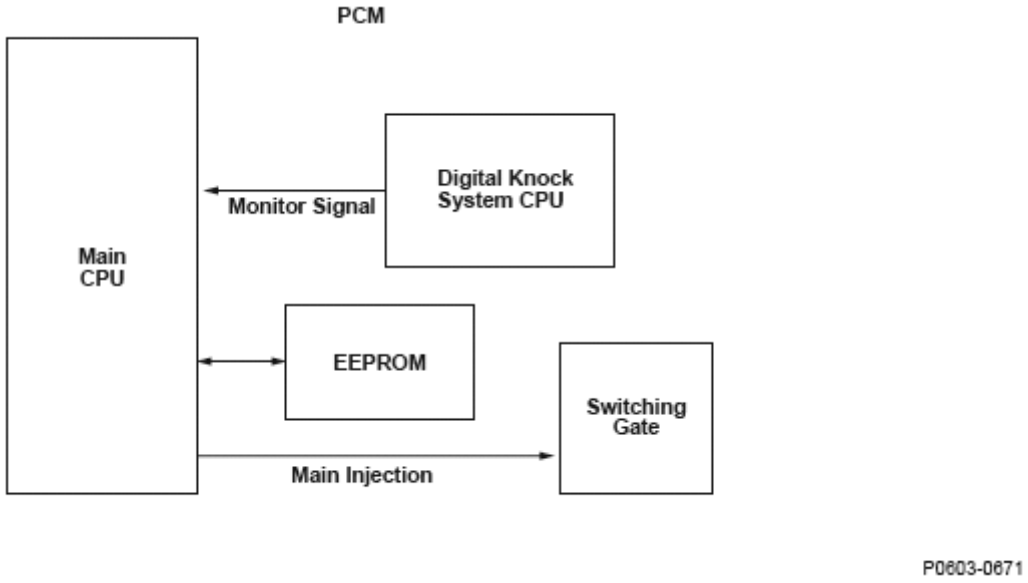


Fig. 284: Powertrain Control Module (PCM) Processor - Communication Diagram

General Description (R18A4 Engine)

If something is wrong in the powertrain control module (PCM), and the monitor signal from the digital knock system CPU is not received for a set time, or a signal communication error remains for a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P0335, P0339, P0365, P0369	

Malfunction Threshold (R18A4 Engine)

One of these conditions must be met for at least 5 seconds.

- No signal from the digital knock system CPU is detected.
- Signal from the digital knock system CPU is detected to be abnormal.

Driving Pattern (R18A4 Engine)

Start the engine, let it idle for at least 30 seconds or hold the engine speed to at least 1,000 rpm.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P060A (131): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P060A: POWERTRAIN CONTROL MODULE (PCM) INTERNAL CONTROL MODULE MALFUNCTION (R18A1)

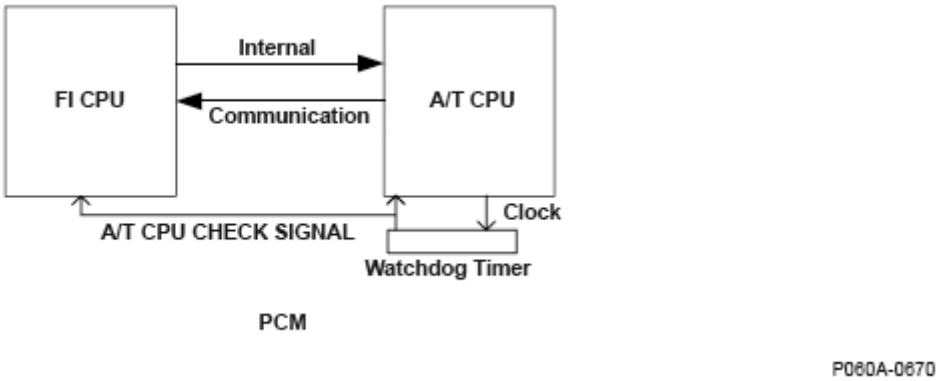


Fig. 285: Powertrain Control Module (PCM) - Communication Diagram

General Description (R18A1 Engine)

When a malfunction occurs in the internal communication between the FI CPU and the A/T CPU in the powertrain control module (PCM) and the internal communication is interrupted for a set time or more, or when the watchdog timer that monitors the A/T CPU detects an abnormality in the A/T CPU and notifies the FI CPU via the A/T CPU check signal line, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more(1), 0.2 second or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A
(1) Symptom 1 (2) Symptom 2	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	

Malfunction Threshold (R18A1 Engine)

One of these symptom occurs.

- Symptom 1

  The internal communication between the FI CPU and A/T CPU is abnormal or the internal communication is interrupted for at least 1 second.

- Symptom 2

  The watchdog timer that monitors the A/T CPU detects an abnormality, and the FI CPU receives the A/T CPU check signal for at least 0.2 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P060A (131): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P060A: POWERTRAIN CONTROL MODULE (PCM) (A/T SYSTEM) INTERNAL CONTROL

MODULE MALFUNCTION (R18A4 ENGINE)

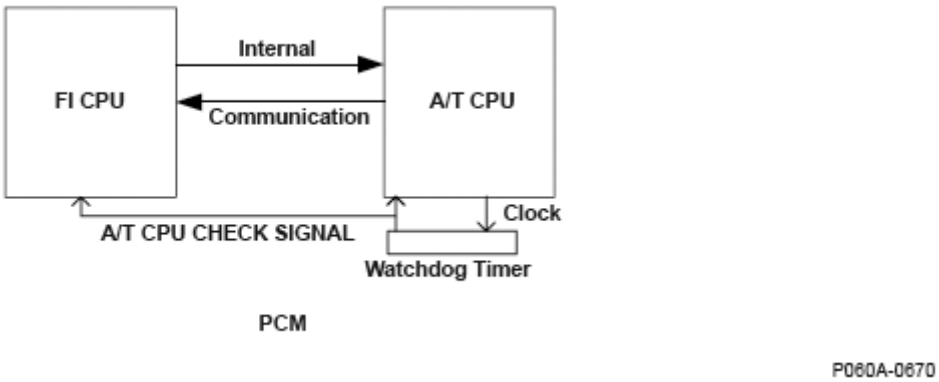


Fig. 286: Powertrain Control Module (PCM) - Communication Diagram

General Description (R18A4 Engine)

When a malfunction occurs in the internal communication between the FI CPU and the A/T CPU in the powertrain control module (PCM) and the internal communication is interrupted for a set time or more, or when the watchdog timer that monitors the A/T CPU detects an abnormality in the A/T CPU and notifies the FI CPU via the A/T CPU check signal line, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more(1), 0.2 seconds or more()
DTC Type	One drive cycle, MIL ON
OBD Status	N/A
(1) Symptom 1 (2) Symptom 2	

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	

Malfunction Threshold (R18A4 Engine)

One of these symptom occurs.

- Symptom 1

  The internal communication between the FI CPU and A/T CPU is abnormal or the internal

communication is interrupted for at least 1 second.

- Symptom 2

  The watchdog timer that monitors the A/T CPU detects an abnormality, and the FI CPU receives the A/T CPU check signal for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0630 (139): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0630: VIN NOT PROGRAMMED OR MISMATCH (K20Z3 ENGINE)

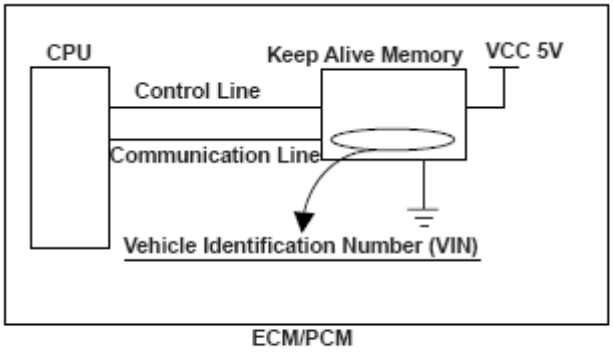


Fig. 287: ECM/PCM Diagram

General Description (K20Z3 Engine)

The Engine control module (ECM)/powertrain control module (PCM) stores a vehicle identification number (VIN) in the keep-alive memory and outputs the VIN according to the command from the scan tool.

The VIN for each vehicle is registered to the ECM/PCM using the scan tool. The registered VIN is read by the CPU from the keep-alive memory after the ignition is turned on or after the Clear command is executed.

If the VIN is not registered in the keep-alive memory when the ignition is turned on or when the Clear command is executed, it is detected as a VIN unregistered condition and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0603

Malfunction Threshold (K20Z3 Engine)

The VIN is not registered in the keep-alive memory in the ECM/PCM.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

When the VIN registration is completed, MIL is cleared.

DTC P0630 (139): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0630: VIN NOT PROGRAMMED OR MISMATCH (R18A1 ENGINE)

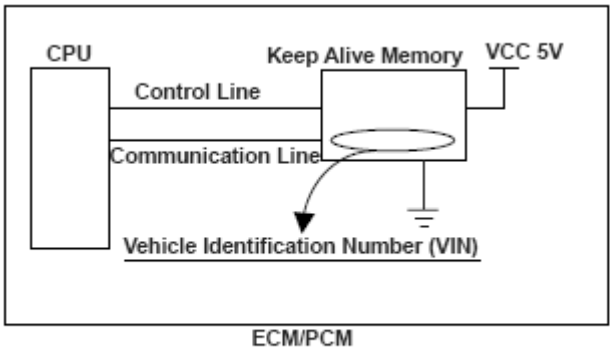


Fig. 288: Vehicle Identification Number Display

General Description (R18A1 Engine)

The Engine control module (ECM)/powertrain control module (PCM) stores a vehicle identification number (VIN) in the keep-alive memory and outputs the VIN according to the command from the scan tool.

The VIN for each vehicle is registered to the ECM/PCM using the scan tool. The registered VIN is read by the CPU from the keep-alive memory after the ignition is turned on or after the Clear command is executed.

If the VIN is not registered in the keep-alive memory when the ignition is turned on or when the Clear command is executed, it is detected as a VIN unregistered condition and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0603

Malfunction Threshold (R18A1 Engine)

The VIN is not registered in the keep-alive memory in the ECM/PCM.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

When the VIN registration is completed, MIL is cleared.

DTC P0630 (139): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0630: VIN NOT PROGRAMMED OR MISMATCH (R18A4 ENGINE)

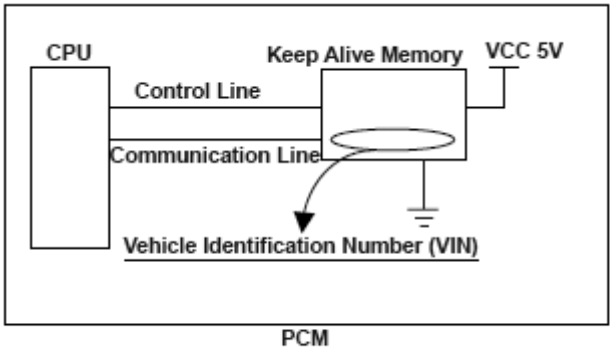


Fig. 289: Identifying PCM Diagram

General Description (R18A4 Engine)

The powertrain control module (PCM) stores a vehicle identification number (VIN) in the keep-alive memory and outputs the VIN according to the command from the HDS.

The VIN for each vehicle is registered to the PCM using the HDS. The registered VIN is read by the CPU from the keep-alive memory after the ignition is turned on or after the Clear command is executed.

If the VIN is not registered in the keep-alive memory when the ignition is turned on or when the Clear command is executed, it is detected as a VIN unregistered condition and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P0603

Malfunction Threshold (R18A4 Engine)

The VIN is not registered in the keep-alive memory in the PCM.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the

PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

When the VIN registration is completed, the MIL is cleared.

DTC P0685 (135): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0685: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) POWER CONTROL CIRCUIT/INTERNAL CIRCUIT MALFUNCTION (K20Z3 ENGINE)

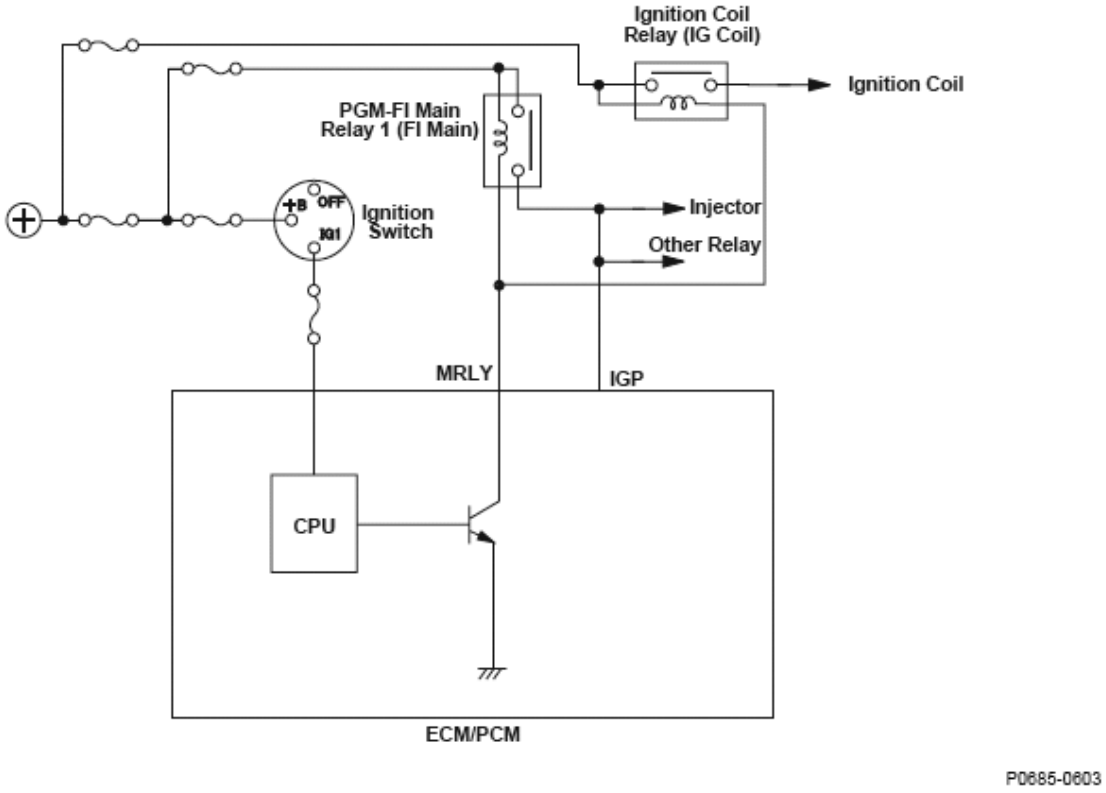


Fig. 290: Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control - Circuit Diagram

General Description (K20Z3 Engine)

After the ignition switch is turned off, the engine control module (ECM)/powertrain control module (PCM) does not shut down immediately. After finishing a predetermined process according to the request of each device and system, the power supply is automatically disconnected (self shut-down function). The ECM/PCM power is disconnected by controlling PGM-FI main relay 1 (FI MAIN).

During a normal ECM/PCM shut down, the shut down process is executed by the CPU, PGM-FI main relay 1 (FI MAIN) is turned off, and the voltage to the ECM/PCM is turned off to shut down the ECM/PCM. When the voltage to the ECM/PCM is turned off and the ECM/PCM shuts down without the normal shut down procedure, a malfunction in the PGM-FI main relay 1 (FI MAIN) control circuit is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-

Malfunction Threshold (K20Z3 Engine)

The ECM/PCM is shut down without the normal shut down procedure.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0685 (135): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0685: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) POWER CONTROL CIRCUIT/INTERNAL CIRCUIT MALFUNCTION (R18A1 ENGINE)

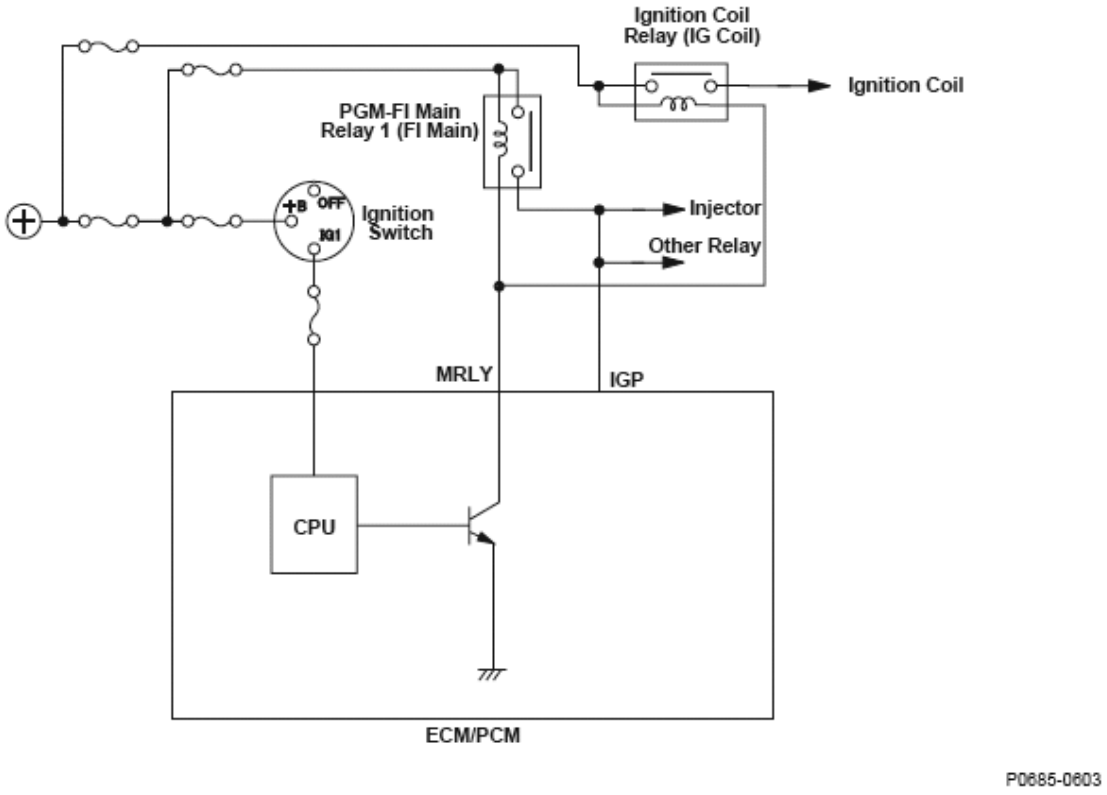


Fig. 291: Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control - Circuit Diagram

General Description (R18A1 Engine)

After the ignition switch is turned off, the engine control module (ECM)/powertrain control module (PCM) does not shut down immediately. After finishing a predetermined process according to the request of each device and system, the power supply is automatically disconnected (self shut-down function). The ECM/PCM power is disconnected by controlling PGM-FI main relay 1 (FI MAIN).

During a normal ECM/PCM shut down, the shut down process is executed by the CPU, PGM-FI main relay 1 (FI MAIN) is turned off, and the voltage to the ECM/PCM is turned off to shut down the ECM/PCM. When the voltage to the ECM/PCM is turned off and the ECM/PCM shuts down without the normal shut down procedure, a malfunction in the PGM-FI main relay 1 (FI MAIN) control circuit is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	400 rpm	-

Malfunction Threshold (R18A1 Engine)

The ECM/PCM is shut down without the normal shut down procedure.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0685 (135): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0685: POWERTRAIN CONTROL MODULE (PCM) POWER CONTROL CIRCUIT INTERNAL CIRCUIT MALFUNCTION (R18A4 ENGINE)

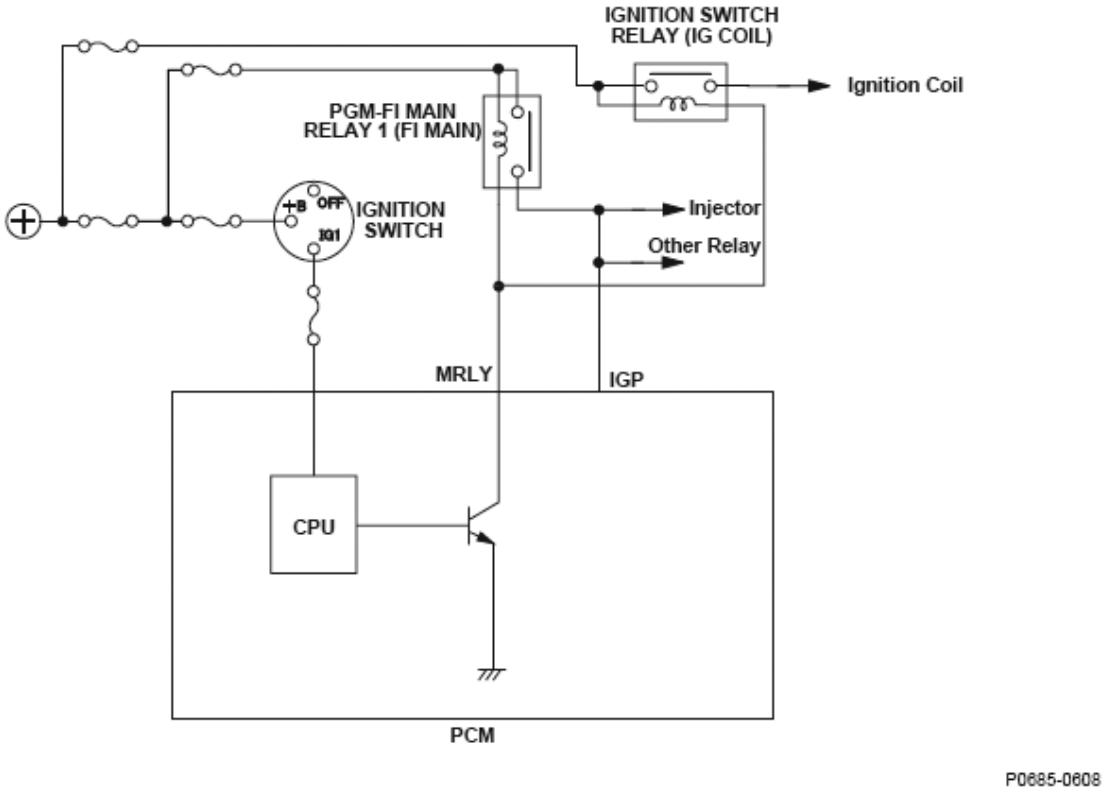


Fig. 292: Powertrain Control Module (PCM) Power Control - Circuit Diagram

General Description (R18A4 Engine)

After the ignition switch is turned off, the powertrain control module (PCM) does not shut down immediately. After finishing a predetermined process according to the request of each device and system, the power supply is automatically disconnected (self shut-down function). The PCM power is disconnected by controlling PGM-FI main relay 1 (FI MAIN).

During a normal PCM shut down, the shut down process is executed by the CPU, PGM-FI main relay 1 (FI MAIN) is turned off, and the voltage to the PCM is turned off to shut down the PCM. When the voltage to the PCM is turned off and the PCM shuts down without the normal shut down procedure, a malfunction in the PGM-FI main relay 1 (FI MAIN) control circuit is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine speed	400 rpm	-

Malfunction Threshold (R18A4 Engine)

The PCM is shut down without the normal shut down procedure.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive drive cycles in which the engine conditions are similar to the first time the malfunction was detected.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0705 (5): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0705: SHORT IN TRANSMISSION RANGE SWITCH CIRCUIT (MULTIPLE SHIFT-POSITION INPUT)

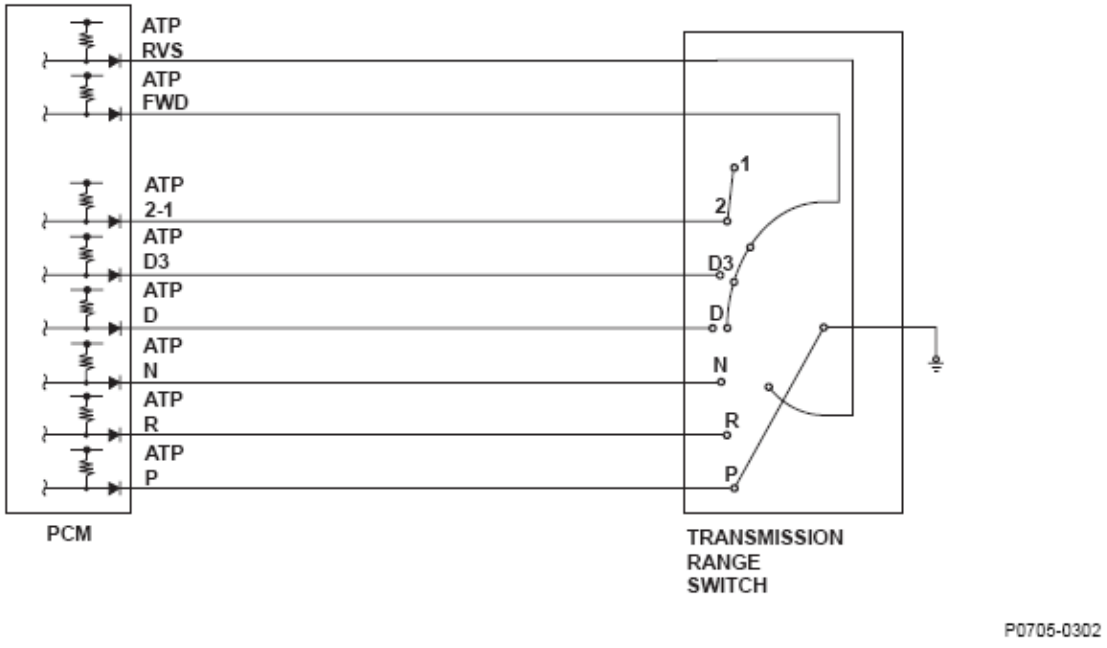


Fig. 293: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							

	P	R	RVS	N	D	D3	2 / 1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A1 Engine)

The transmission range switch is attached to the control shaft. Operation of the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the signal Low/High combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the PCM detects multiple switch inputs instead of the correct switch input for the selected range at that time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-

Malfunction Threshold (R18A1 Engine)

Case 1

The PCM detects the selected range switch input and another range switch (except FWD switch) input simultaneously for at least 1 second.

Case 2

The PCM detects the P, R, or N range switch input and the FWD switch input simultaneously for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, and then place the shift lever in each position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0705 (5): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0705: SHORT IN TRANSMISSION RANGE SWITCH CIRCUIT (MULTIPLE SHIFT-POSITION INPUT)

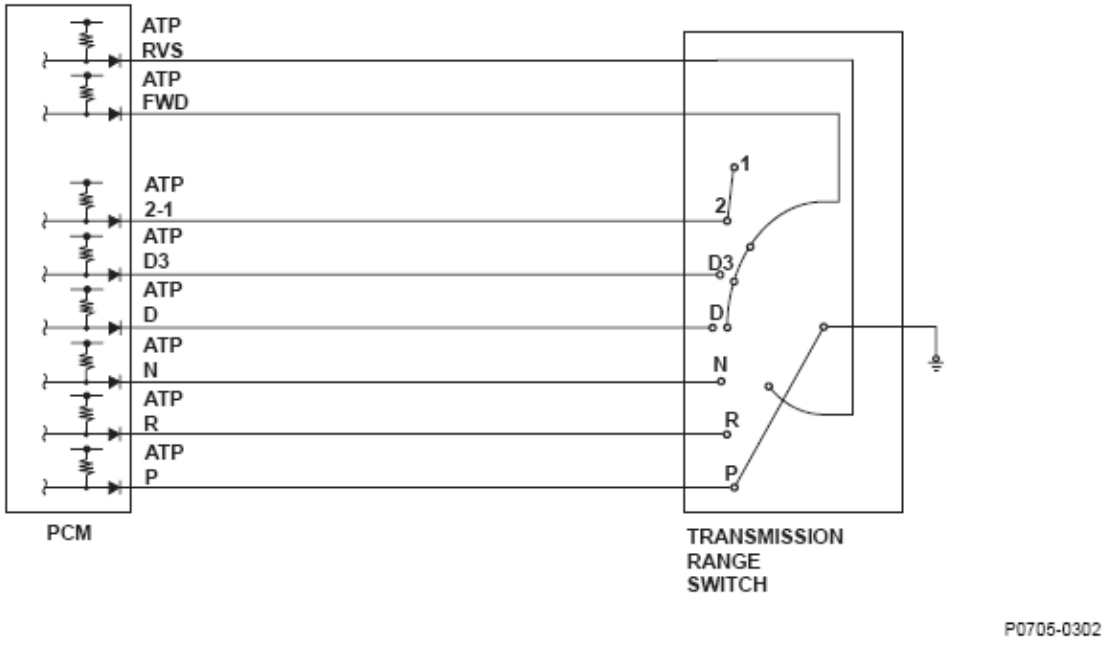


Fig. 294: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2 / 1	FWD

P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A4 Engine)

The transmission range switch is attached to the control shaft. Operation of the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the signal Low/High combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the PCM detects multiple switch inputs instead of the correct switch input for the selected range at that time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-

Malfunction Threshold (R18A4 Engine)

Case 1

The PCM detects the selected range switch input and another range switch (except FWD switch) input simultaneously for at least 1 second.

Case 2

The PCM detects the P, R, or N range switch input and the FWD switch input simultaneously for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, and then place the shift lever in each position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0706 (6): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0706: OPEN IN TRANSMISSION RANGE SWITCH CIRCUIT (R18A1 ENGINE)

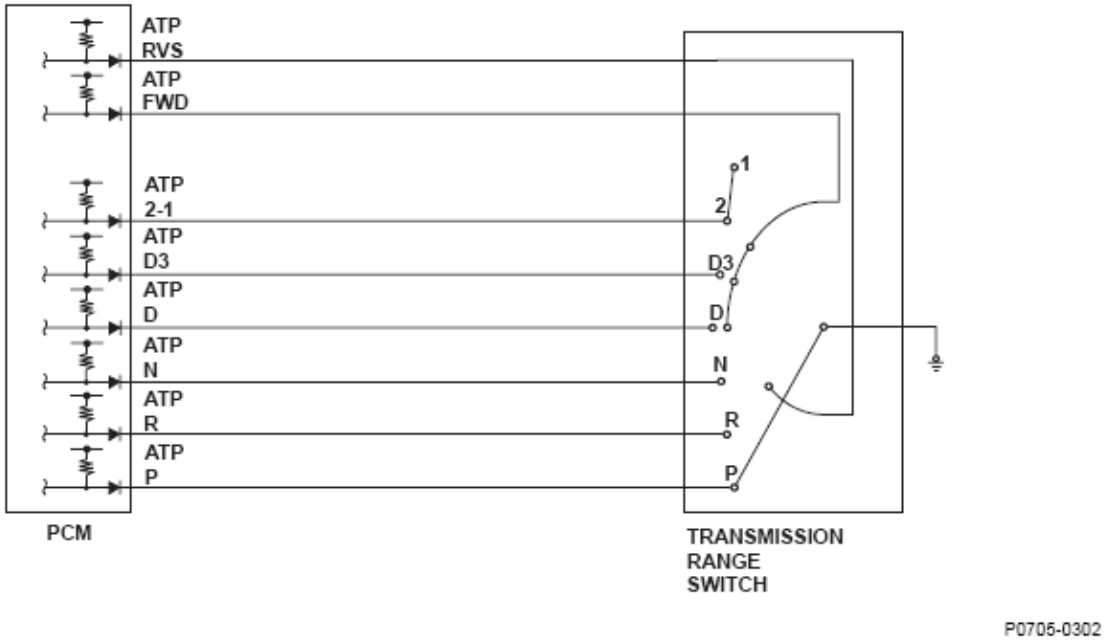


Fig. 295: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2 / 1	FWD
P	o	X	X	X	X	X	X	X

R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A1 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on the control shaft rotational angle. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the FWD switch stays open while the vehicle repeatedly accelerates to a specified vehicle speed and then stops despite being in the D position, the PCM detects a malfunction in the transmission range switch (open) and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator OFF
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0705, P0721, P0722	

Malfunction Threshold (R18A1 Engine)

No FWD position signal is detected when the vehicle speed changes from 6 mph (10 km/h) --> 25 mph (40 km/h) --> 6 mph (10 km/h) in the D or D3 position.

Driving Pattern (R18A1 Engine)

1. Start the engine, and accelerate to 25 mph (40 km/h) or more in the D position, then slow down to 6 mph (10 km/h).
2. Stop the vehicle, turn the ignition switch OFF, and repeat step 1.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0706 (6): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0706: OPEN IN TRANSMISSION RANGE SWITCH CIRCUIT (R18A4 ENGINE)

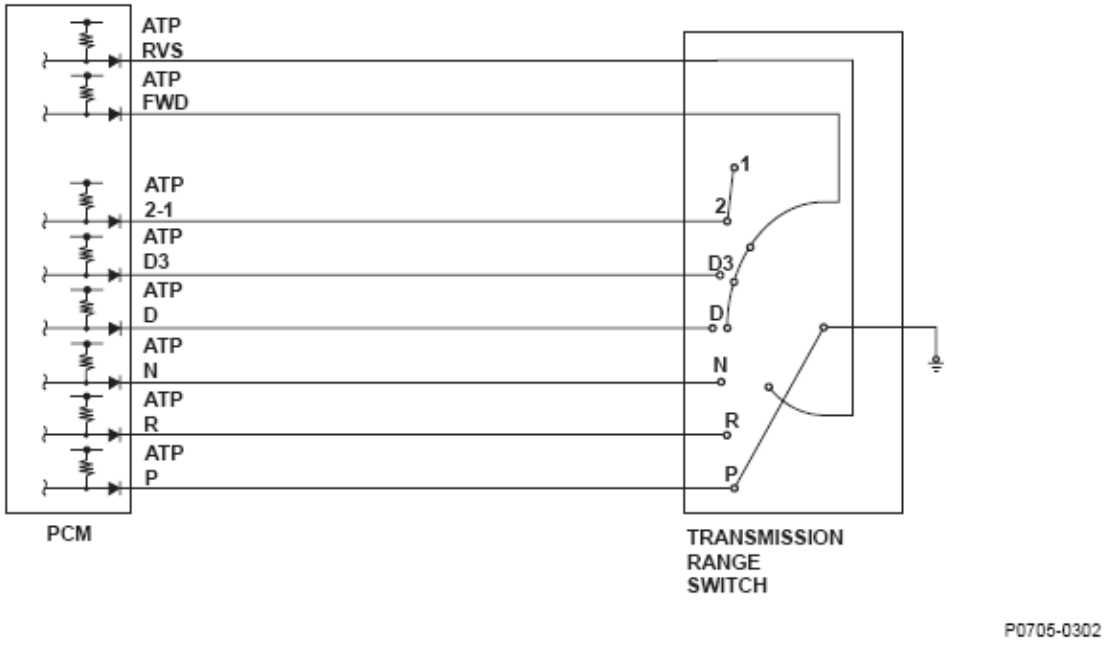


Fig. 296: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2 / 1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o

D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A4 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on the control shaft rotational angle. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the FWD switch stays open while the vehicle repeatedly accelerates to a specified vehicle speed and then stops despite being in the D position, the PCM detects a malfunction in the transmission range switch (open) and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator OFF
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0705, P0721, P0722	

Malfunction Threshold (R18A4 Engine)

No FWD position signal is detected when the vehicle speed changes from 6 mph (10 km/h) --> 25 mph (40 km/h) --> 6 mph (10 km/h) in the D or D3 position.

Driving Pattern (R18A4 Engine)

1. Start the engine, and accelerate to 25 mph (40 km/h) or more in the D position, then slow down to 6 mph (10 km/h).
2. Stop the vehicle, turn the ignition switch OFF, and repeat step 1.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0711 (28): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0711: PROBLEM IN ATF TEMPERATURE SENSOR CIRCUIT (R18A1 ENGINE)

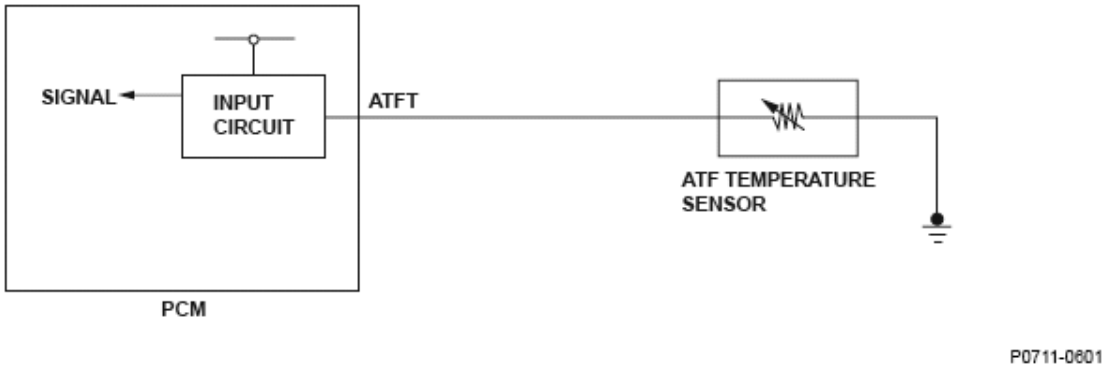


Fig. 297: ATF Temperature Sensor - Circuit Diagram

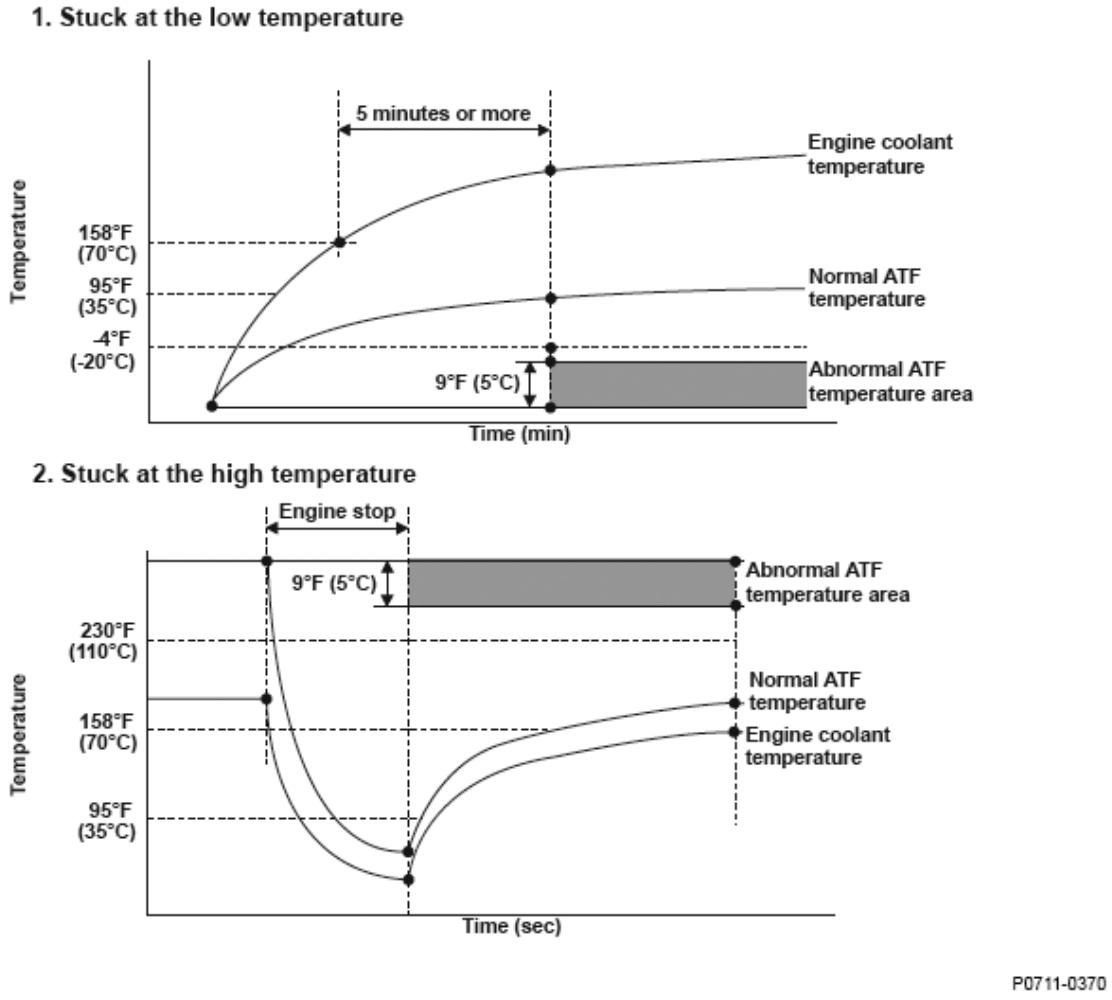


Fig. 298: ATF Temperature Graph

General Description (R18A1 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the PCM detects a low signal voltage.

If the ATF temperature sensor signal does not change, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 minutes or more(1)
	20 seconds or more(2)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

(1) Stuck at low temperature is detected

(2) Stuck at hgh temperature is detected

Enable Conditions (R18A1 Engine)

1. Stuck at Low temperature

ENABLE CONDITIONS - LOW TEMPERATURE

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-	-4°F (-20°C)
Initial engine coolant temperature	-	95°F (35°C)
Engine coolant temperature	158°F (70°C)	-
Throttle position	4.0 °	-
Vehicle speed	19 mph (30 km/h)	-
No active DTCs	P0116, P0117, P0118, P0712, P0713, P0721, P0722	
Other	After the engine coolant temperature reaches the fixed value, both the vehicle speed and the throttle position meet the conditions for at least 5 minutes	

2. Stuck at High temperature

ENABLE CONDITIONS - HIGH TEMPERATURE

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	230°F (110°C)	-
Previous engine coolant temperature when the ignition switch was turned OFF	158°F (70°C)	-
Present engine coolant temperature when the ignition switch is turned ON	-	95°F (35°C)
Engine coolant temperature	158°F (70°C)	-
No active DTCs	P0116, P0117, P0118, P0712, P0713, P0721, P0722	

Malfunction Threshold (R18A1 Engine)

1. Stuck at low temperature

   The ATF temperature rise is 9°F (5°C) or less after the ignition switch is turned ON, and the current ATF temperature is -4°F (-20°C) or less for at least 5 minutes.

2. Stuck at high temperature

   The ATF temperature drop is -9°F (-5°C) or less after the ignition switch is turned OFF, and the current ATF temperature is 230°F (110°C) or more for at least 20 seconds.

Driving Pattern (R18A1 Engine)

1. Stuck at Low temperature

   Start the engine with engine coolant temperature at 95°F (35°C) or less, and warm up the engine until the engine coolant temperature reaches 158°F (70°C) or more. Then drive the vehicle at a speed of 19 mph (30 km/h) or more with the throttle position at 4.0° or more for at least 5 minutes.

2. Stuck at High temperature

   Turn off the engine with the engine coolant temperature at 158°F (70°C) or more. Restart the engine after the engine coolant temperature drops to 95°F (35°C) or less, and warm up the engine until the engine coolant temperature reaches 158°F (70°C), and wait for at least 20 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0711 (28): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0711: PROBLEM IN ATF TEMPERATURE SENSOR CIRCUIT (R18A4 ENGINE)

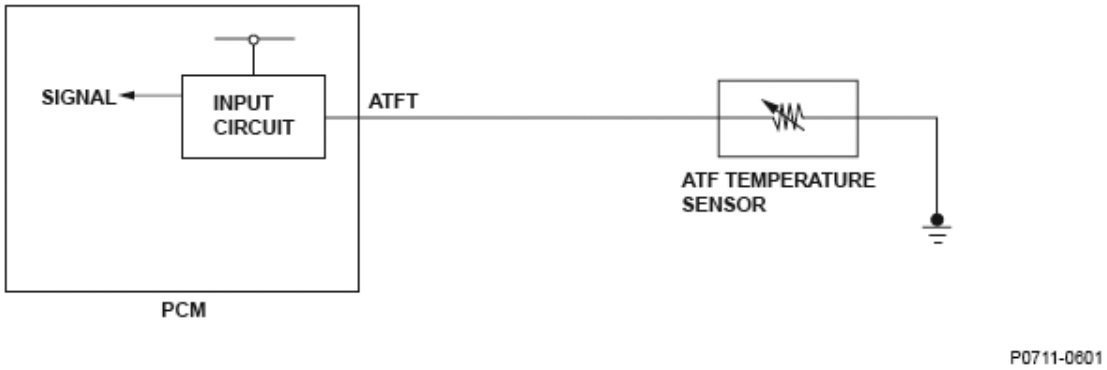


Fig. 299: ATF Temperature Sensor - Circuit Diagram

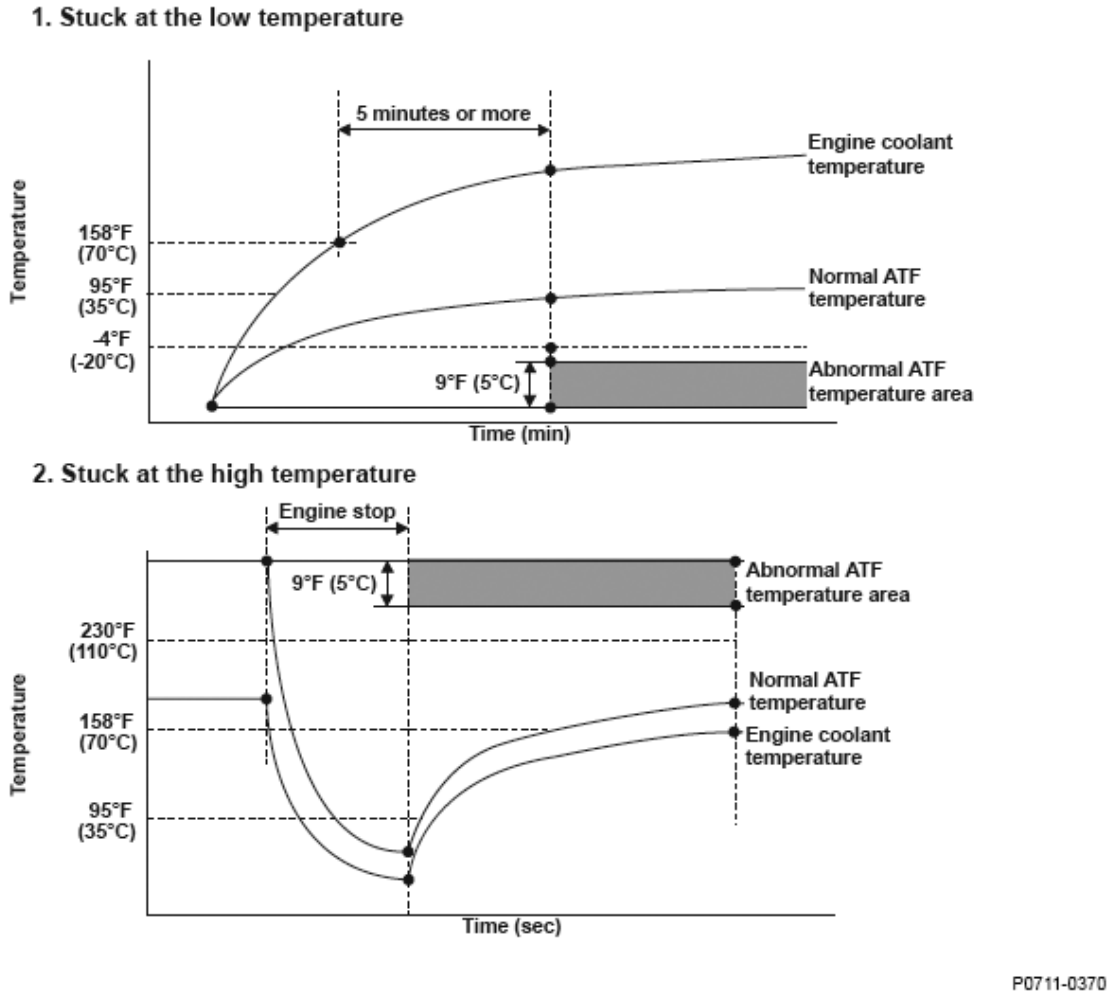


Fig. 300: ATF Temperature Graph

General Description (R18A4 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the PCM detects a low signal voltage.

If the ATF temperature sensor signal does not change, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 minutes or more(1)
	20 seconds or more(2)
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

(1) Stuck at low temperature is detected

(2) Stuck at hgh temperature is detected

Enable Conditions (R18A4 Engine)

1. Stuck at Low temperature

ENABLE CONDITIONS - LOW TEMPERATURE

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-	-4°F (-20°C)
Initial engine coolant temperature	-	95°F (35°C)
Engine coolant temperature	158°F (70°C)	-
Throttle position	4.0 °	-
Vehicle speed	19 mph (30 km/h)	-
No active DTCs	P0116, P0117, P0118, P0712, P0713, P0721, P0722	
Other	After the engine coolant temperature reaches the fixed value, both the vehicle speed and the throttle position meet the conditions for at least 5 minutes	

2. Stuck at High temperature

ENABLE CONDITIONS - HIGH TEMPERATURE

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	230°F (110°C)	-
Previous engine coolant temperature when the ignition switch was turned OFF	158°F (70°C)	-
Present engine coolant temperature when the ignition switch is turned ON	-	95°F (35°C)
Engine coolant temperature	158°F (70°C)	-
No active DTCs	P0116, P0117, P0118, P0712, P0713, P0721, P0722	

Malfunction Threshold (R18A4 Engine)

1. Stuck at low temperature

   The ATF temperature rise is 9°F (5°C) or less after the ignition switch is turned ON, and the current ATF temperature is -4°F (-20°C) or less for at least 5 minutes.

2. Stuck at high temperature

   The ATF temperature drop is -9°F (-5°C) or less after the ignition switch is turned OFF, and the current ATF temperature is 230°F (110°C) or more for at least 20 seconds.

Driving Pattern (R18A4 Engine)

1. Stuck at Low temperature

   Start the engine with engine coolant temperature at 95°F (35°C) or less, and warm up the engine until the engine coolant temperature reaches 158°F (70°C) or more. Then drive the vehicle at a speed of 19 mph (30 km/h) or more with the throttle position at 4.0° or more for at least 5 minutes.

2. Stuck at High temperature

   Turn off the engine with the engine coolant temperature at 158°F (70°C) or more. Restart the engine after the engine coolant temperature drops to 95°F (35°C) or less, and warm up the engine until the engine coolant temperature reaches 158°F (70°C), and wait for at least 20 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0712 (28): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0712: SHORT IN ATF TEMPERATURE SENSOR CIRCUIT (R18A1 ENGINE)

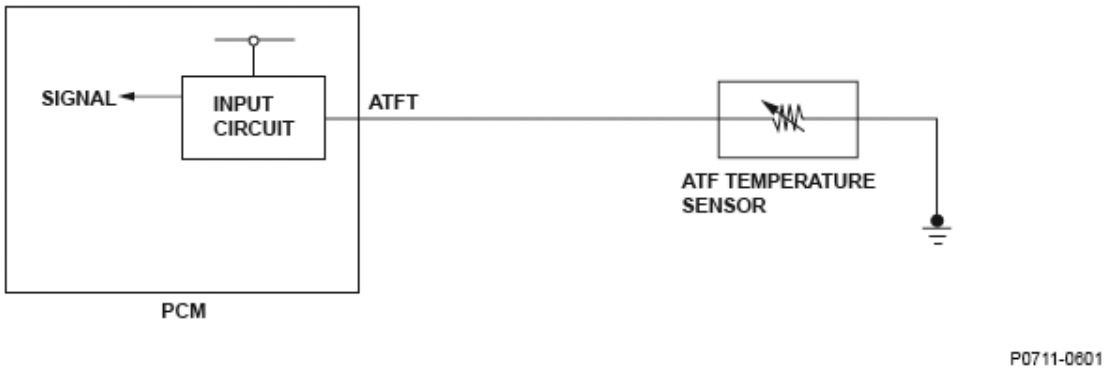


Fig. 301: ATF Temperature Sensor - Circuit Diagram

General Description (R18A1 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the

PCM detects a low signal voltage.

When the ATF temperature sensor signal voltage to the PCM is under the specification, indicating that the temperature is above the specification (a short to ground), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0711, P0713	

Malfunction Threshold (R18A1 Engine)

The ATF temperature sensor output voltage is less than 0.07 V for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0712 (28): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0712: SHORT IN ATF TEMPERATURE SENSOR CIRCUIT (R18A4 ENGINE)

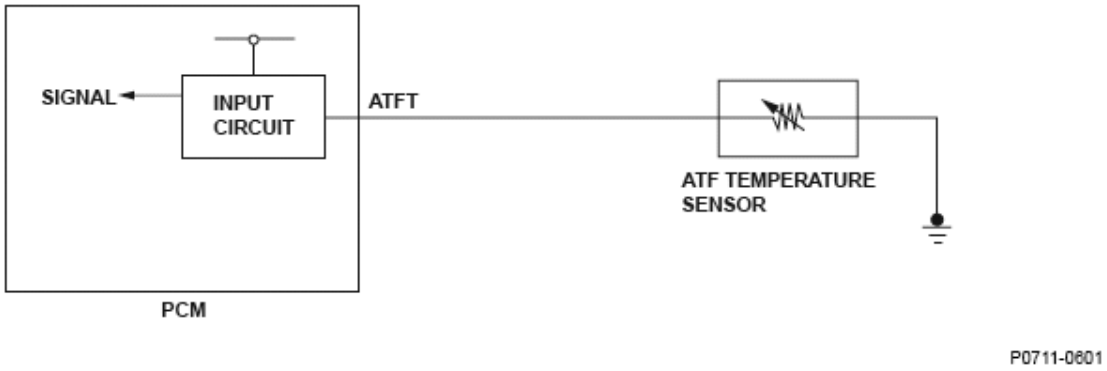


Fig. 302: ATF Temperature Sensor - Circuit Diagram

General Description (R18A4 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the PCM detects a low signal voltage.

When the ATF temperature sensor signal voltage to the PCM is under the specification, indicating that the temperature is above the specification (a short to ground), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0711, P0713	

Malfunction Threshold (R18A4 Engine)

The ATF temperature sensor output voltage is less than 0.07 V for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0713 (28): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0713: OPEN IN ATF TEMPERATURE SENSOR CIRCUIT (R18A1 ENGINE)

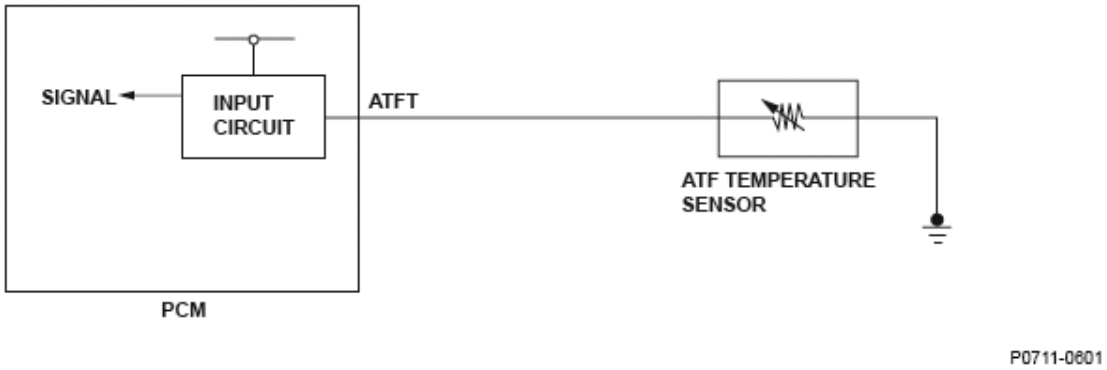


Fig. 303: ATF Temperature Sensor - Circuit Diagram

General Description (R18A1 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the PCM detects a low signal voltage.

When the ATF temperature sensor signal voltage to the PCM is above the specification, indicating that the temperature is under the specification (open), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0711, P0712	

Malfunction Threshold (R18A1 Engine)

The ATF temperature sensor output voltage is 4.93 V or more for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0713 (28): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0713: OPEN IN ATF TEMPERATURE SENSOR CIRCUIT (R18A4 ENGINE)

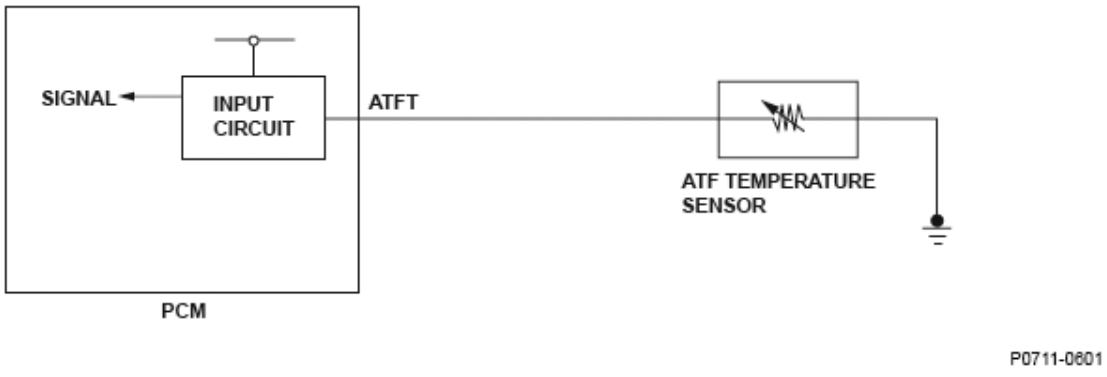


Fig. 304: ATF Temperature Sensor - Circuit Diagram

General Description (R18A4 Engine)

The ATF temperature sensor is a thermistor type sensor whose resistance changes according to the change in ATF temperature. The powertrain control module (PCM) sends a 5 V reference voltage to the grounded sensor through a pull-up resistor. When the ATF temperature is low, the sensor resistance increases and the PCM detects a high signal voltage. As the ATF temperature rises, the sensor resistance decreases and the PCM detects a low signal voltage.

When the ATF temperature sensor signal voltage to the PCM is above the specification, indicating that the

temperature is under the specification (open), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0711, P0712	

Malfunction Threshold (R18A4 Engine)

The ATF temperature sensor output voltage is 4.93 V or more for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0716 (15): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0716: PROBLEM IN INPUT SHAFT (MAINSHAFT) SPEED SENSOR CIRCUIT (R18A1 ENGINE)

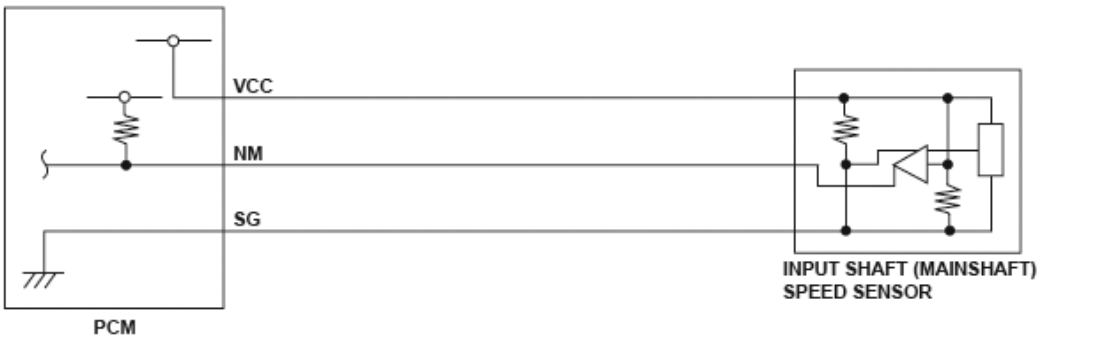


Fig. 305: Problem In Input Shaft (Mainshaft) Speed Sensor Circuit Diagram

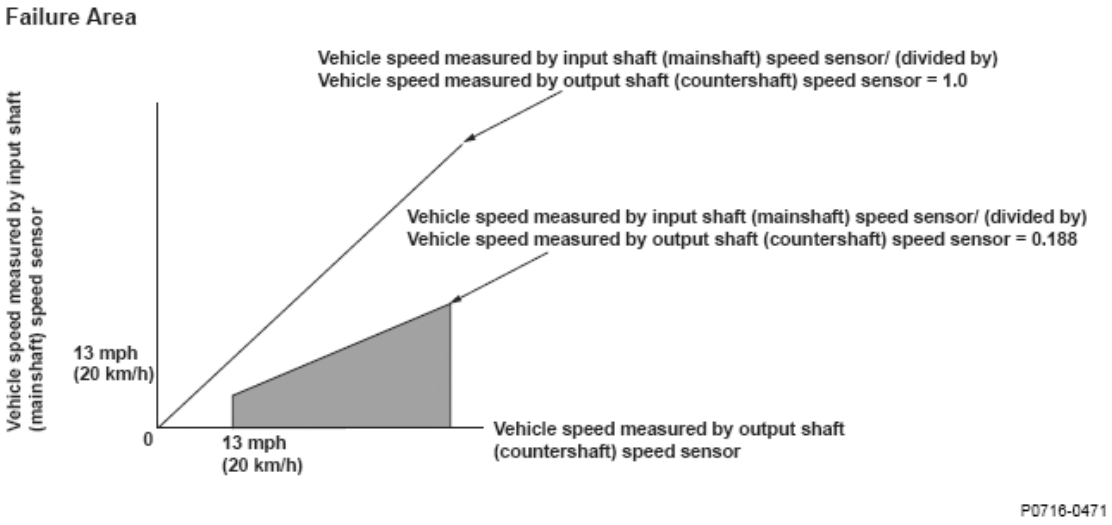


Fig. 306: Speed Sensor Graph

General Description (R18A1 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the velocity ratio measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0717, P0721, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
Others	Not during shifting	
	Not when the shift lever is being shifted	
	No electrical noise in the countershaft speed sensor output circuit	

Malfunction Threshold (R18A1 Engine)

The vehicle speed measured by the input shaft (mainshaft) speed sensor/(divided by) the vehicle speed measured by the output shaft (countershaft) speed sensor < 0.188 for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0716 (15): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0716: PROBLEM IN INPUT SHAFT (MAINSHAFT) SPEED SENSOR CIRCUIT (R18A4 ENGINE)

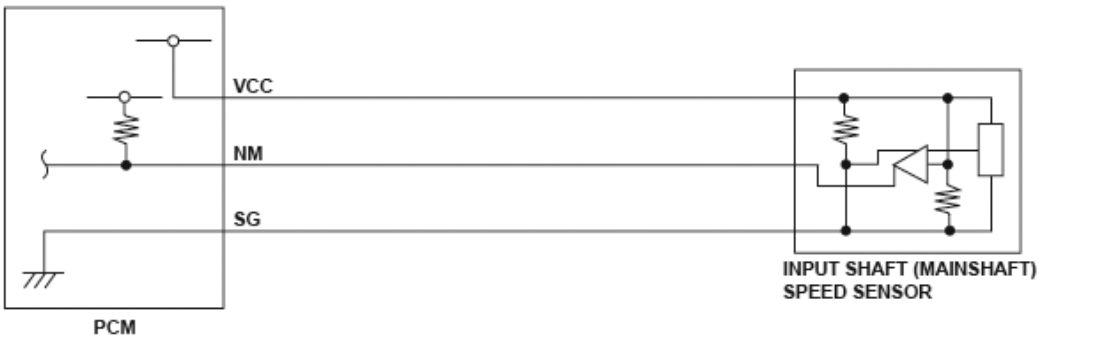


Fig. 307: Problem In Input Shaft (Mainshaft) Speed Sensor Circuit Diagram

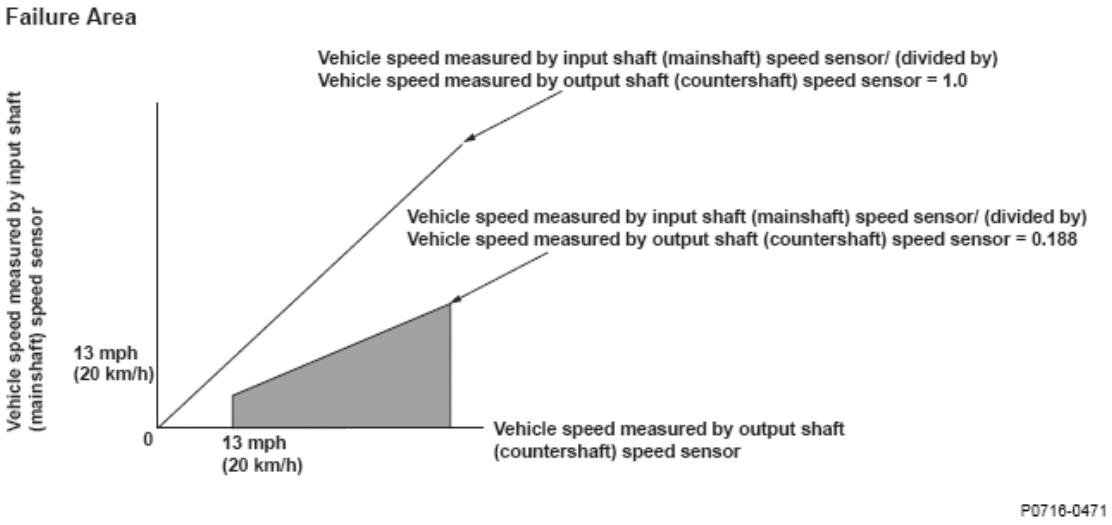


Fig. 308: Speed Sensor Graph

General Description (R18A4 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the velocity ratio measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0717, P0721, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
Others	Not during shifting	
	Not when the shift lever is being shifted	
	No electrical noise in the countershaft speed sensor output circuit	

Malfunction Threshold (R18A4 Engine)

The vehicle speed measured by the input shaft (mainshaft) speed sensor/(divided by) the vehicle speed measured by the output shaft (countershaft) speed sensor < 0.188 for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0717 (15): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0717: PROBLEM IN INPUT SHAFT (MAINSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

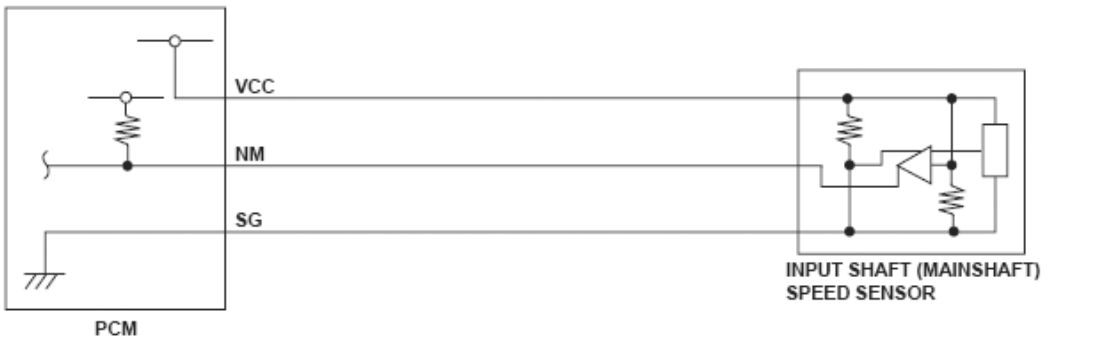


Fig. 309: Input Shaft (Mainshaft) Speed Sensor - Circuit Diagram

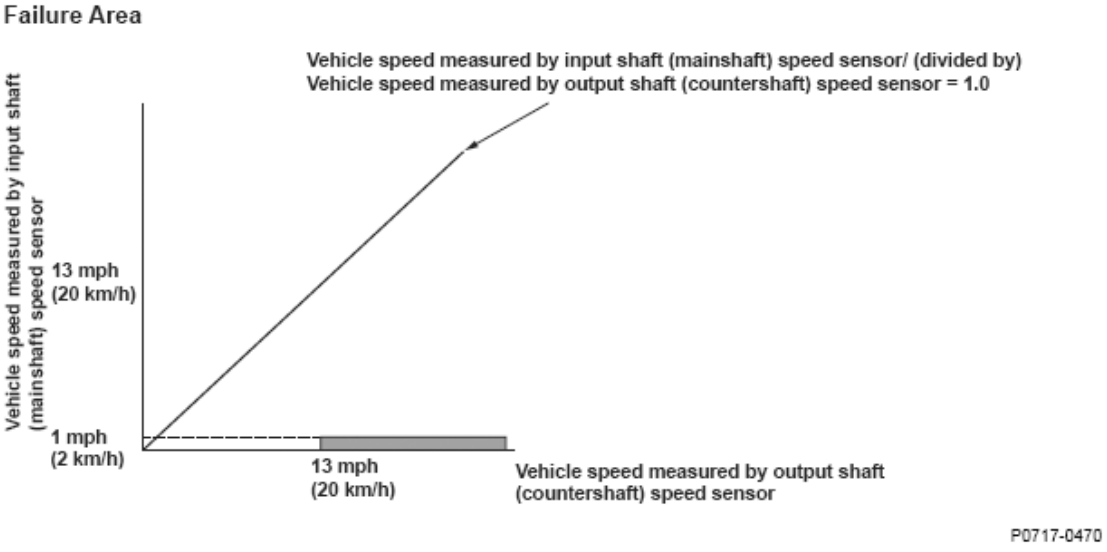


Fig. 310: Speed Sensor Graph

General Description (R18A1 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the correlation between the vehicle speed measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0721, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
Others	Not during shifting	
	Not when the shift lever is being shifted	
	No electrical noise in the output shaft (countershaft) speed sensor output circuit	

Malfunction Threshold (R18A1 Engine)

When the vehicle speed measured by the output shaft (countershaft) speed sensor is 13 mph (20 km/h) or more, the vehicle speed measured by the input shaft (mainshaft) speed sensor is 1 mph (2 km/h) or less for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0717 (15): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0717: PROBLEM IN INPUT SHAFT (MAINSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

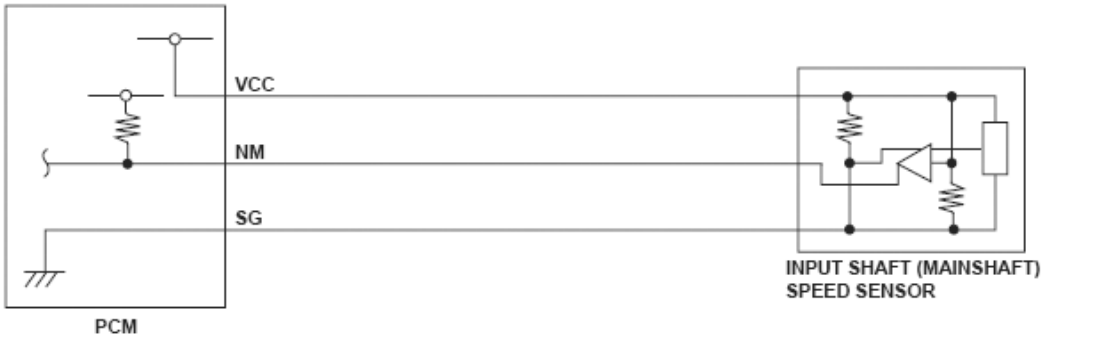


Fig. 311: Input Shaft (Mainshaft) Speed Sensor - Circuit Diagram

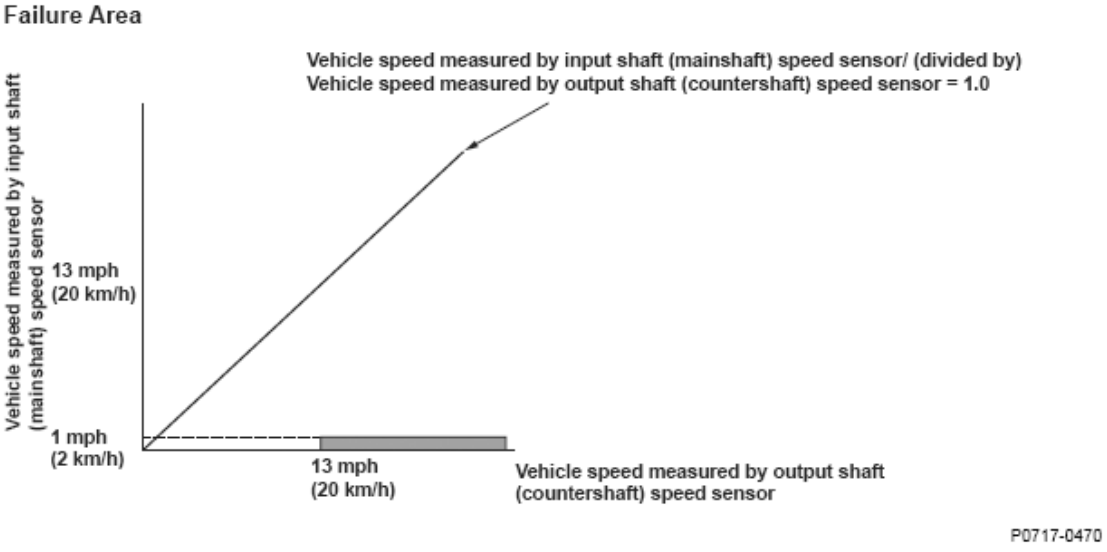


Fig. 312: Speed Sensor Graph

General Description (R18A4 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the correlation between the vehicle speed measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0721, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
Others	Not during shifting	
	Not when the shift lever is being shifted	
	No electrical noise in the output shaft (countershaft) speed sensor output circuit	

Malfunction Threshold (R18A4 Engine)

When the vehicle speed measured by the output shaft (countershaft) speed sensor is 13 mph (20 km/h) or more, the vehicle speed measured by the input shaft (mainshaft) speed sensor is 1 mph (2 km/h) or less for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0718 (15): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0718: INPUT SHAFT (MAINSHAFT) SPEED SENSOR INTERMITTENT FAILURE (R18A1 ENGINE)

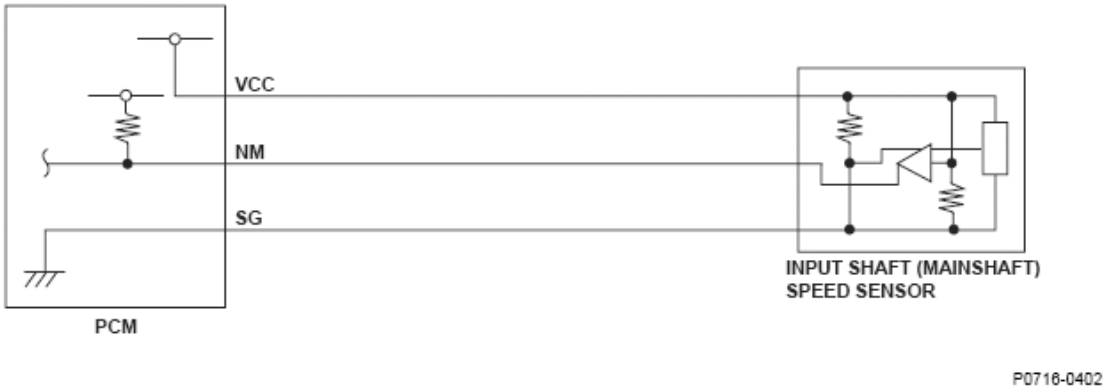


Fig. 313: Input Shaft (Mainshaft) Speed Sensor - Circuit Diagram

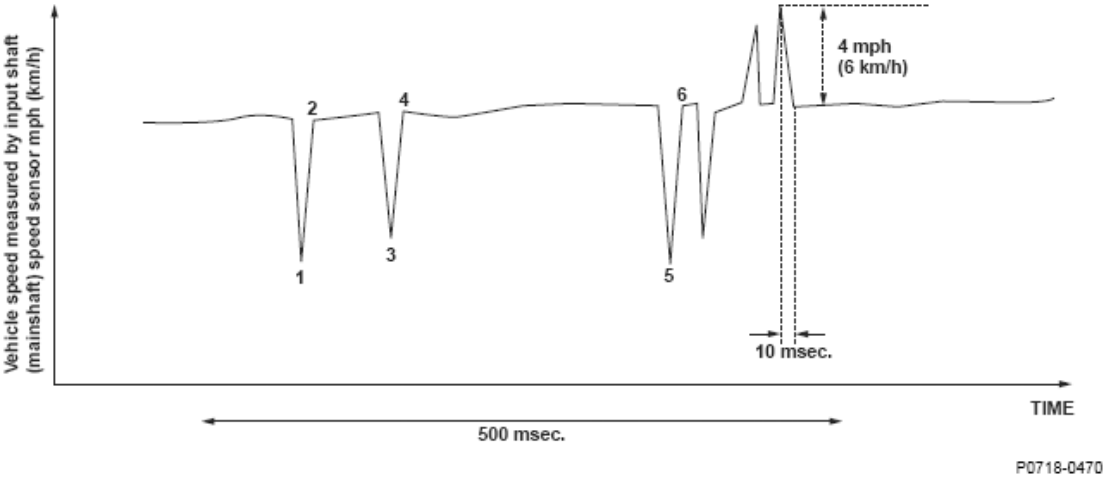


Fig. 314: Input Shaft Speed Sensor Graph

General Description (R18A1 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the fluctuation of the vehicle speed measured by the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	500 msec
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	13 mph (20 km/h)	-
No active DTCs	P0716, P0717, P0721, P0722	
Others	Not during shifting	
	Not when an output shaft (countershaft) speed sensor intermittent failure is detected	

Malfunction Threshold (R18A1 Engine)

The fluctuation of the vehicle speed measured by the input shaft (mainshaft) speed sensor in 10 milliseconds is 4 mph (6km/h) or more, and it fluctuates at least six times within 500 milliseconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more so it shifts from 1st to 5th in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0718 (15): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0718: INPUT SHAFT (MAINSHAFT) SPEED SENSOR INTERMITTENT FAILURE (R18A4 ENGINE)

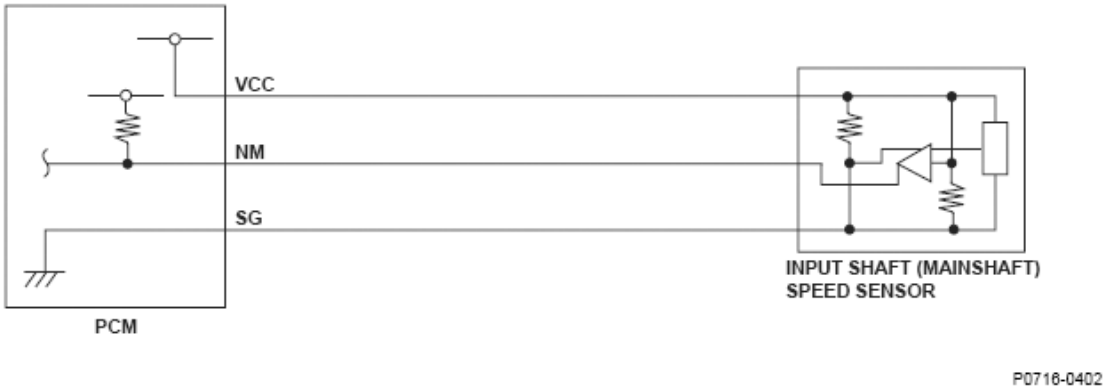


Fig. 315: Input Shaft (Mainshaft) Speed Sensor - Circuit Diagram

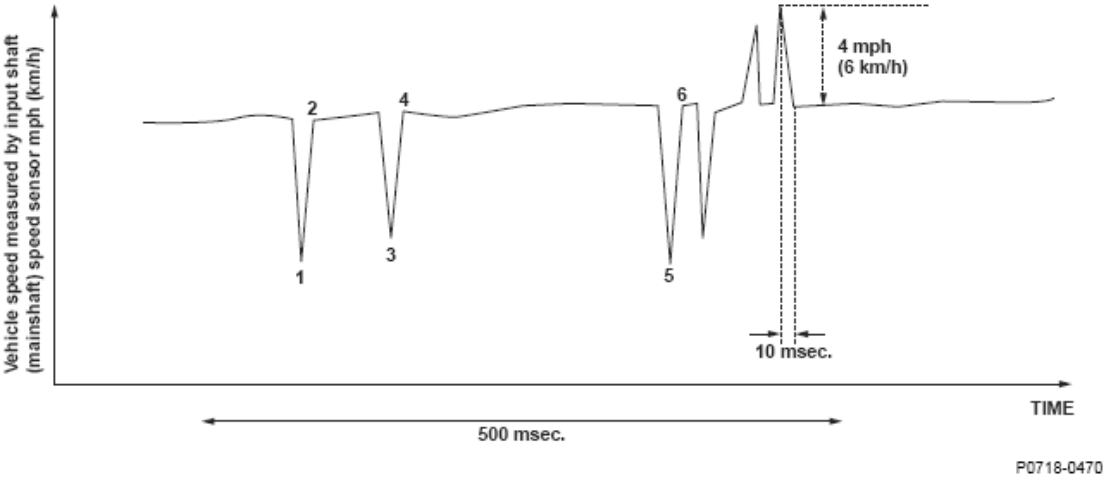


Fig. 316: Input Shaft Speed Sensor Graph

General Description (R18A4 Engine)

The input shaft (mainshaft) speed sensor is attached to the outside of the transmission housing. The input shaft (mainshaft) speed sensor generates a pulsing signal according to the speed of the input shaft (mainshaft) idler gear on the input shaft (mainshaft). Using that signal, the powertrain control module (PCM) determines the speed of the input shaft (mainshaft). If no pulses occur with the input shaft (mainshaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the fluctuation of the vehicle speed measured by the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	500 msec
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	13 mph (20 km/h)	-
No active DTCs	P0716, P0717, P0721, P0722	
Others	Not during shifting	
	Not when an output shaft (countershaft) speed sensor intermittent failure is detected	

Malfunction Threshold (R18A4 Engine)

The fluctuation of the vehicle speed measured by the input shaft (mainshaft) speed sensor in 10 milliseconds is 4 mph (6km/h) or more, and it fluctuates at least six times within 500 milliseconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more so it shifts from 1st to 5th in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0720 (122): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION (K20Z3 ENGINE)

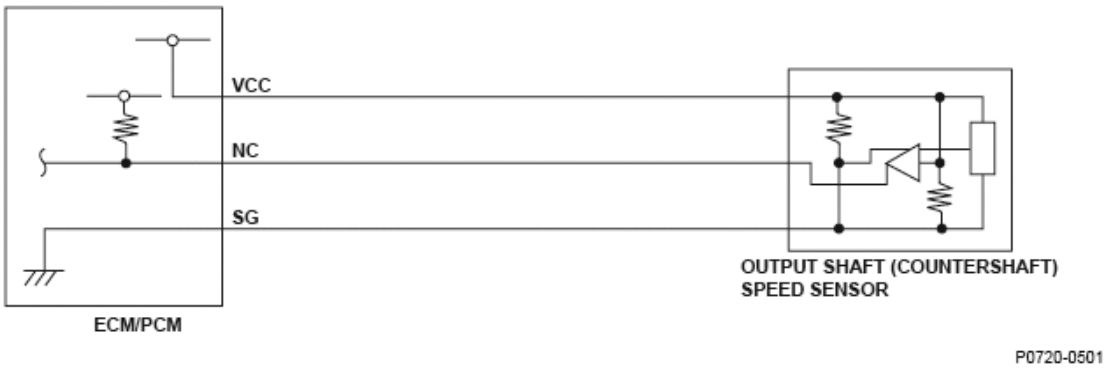


Fig. 317: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The output shaft (countershaft) speed sensor is attached to the transmission housing to sense output shaft (countershaft) revolutions. The engine control module (ECM)/powertrain control module (PCM) determines the vehicle speed according to the signal from the output shaft (countershaft) speed sensor to the control units. If no signal from the output shaft (countershaft) speed sensor is received for a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Engine speed	-	4,000 rpm
State of the engine	Running	

Malfunction Threshold (K20Z3 Engine)

No signal from the output shaft (countershaft) speed sensor is detected for at least 5 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0720 (122): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION (R18A1 ENGINE)

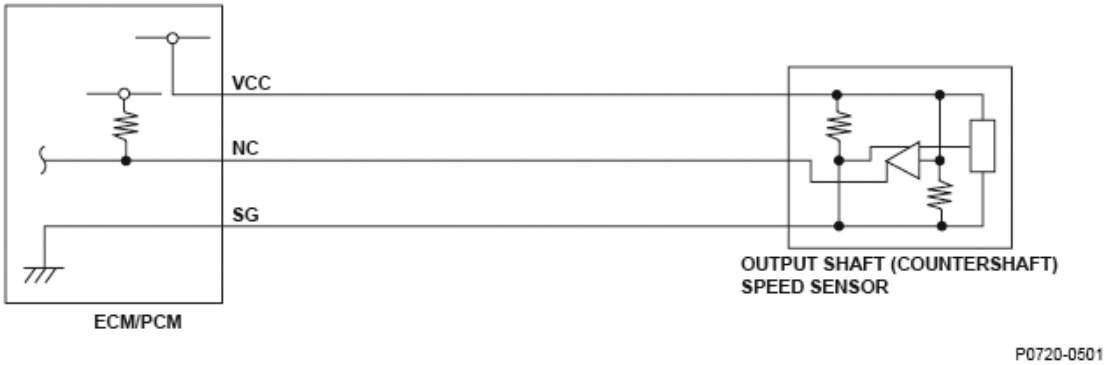


Fig. 318: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

General Description (R18A1 Engine)

The output shaft (countershaft) speed sensor is attached to the transmission housing to sense output shaft (countershaft) revolutions. The engine control module (ECM)/powertrain control module (PCM) determines the vehicle speed according to the signal from the output shaft (countershaft) speed sensor to the control units. If no signal from the output shaft (countershaft) speed sensor is received for a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Engine speed	-	4,000 rpm
State of the engine	Running	

Malfunction Threshold (R18A1 Engine)

No signal from the output shaft (countershaft) speed sensor is detected for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0720 (122): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION (R18A4 ENGINE)

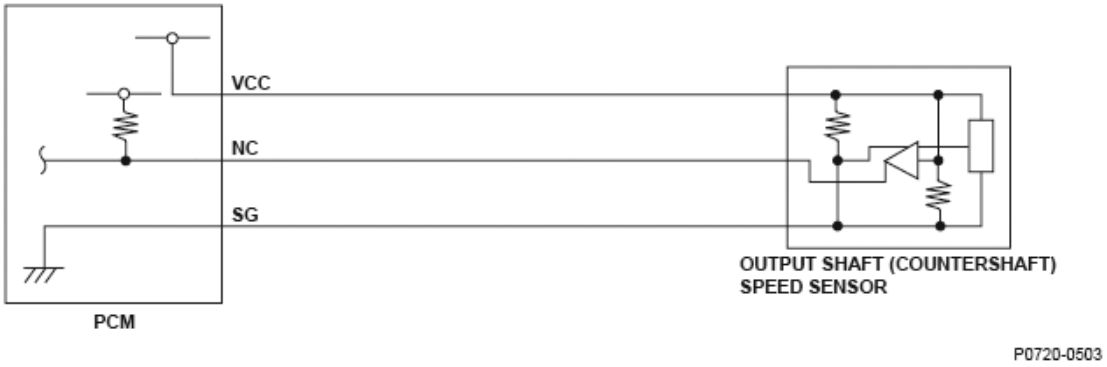


Fig. 319: Output Shaft Speed Sensor Circuit Diagram

General Description (R18A4 Engine)

The output shaft (countershaft) speed sensor is attached to the transmission housing to sense output shaft (countershaft) revolutions. The powertrain control module (PCM) determines the vehicle speed according to the signal from the output shaft (countershaft) speed sensor to the control units. If no signal from the output shaft (countershaft) speed sensor is received for a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None

Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Engine speed	-	4,000 rpm
State of the engine	Running	

Malfunction Threshold (R18A4 Engine)

No signal from the output shaft (countershaft) speed sensor is detected for at least 5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0721 (9): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0721: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (R18A1 ENGINE)

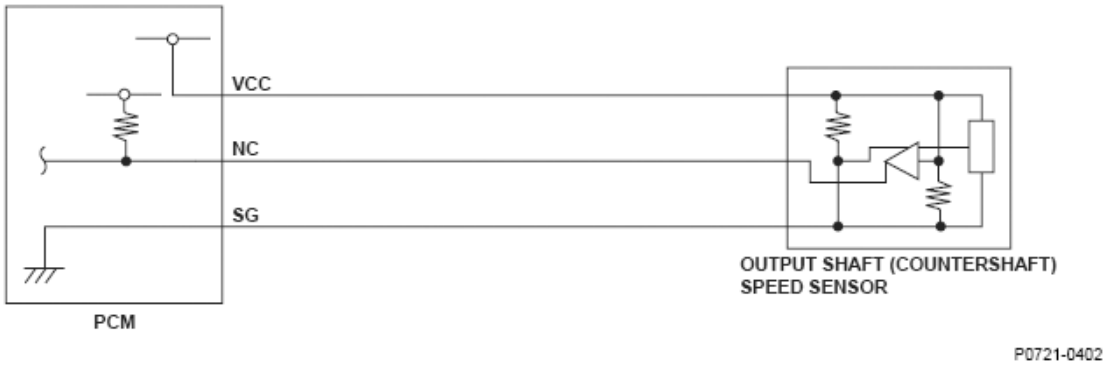


Fig. 320: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

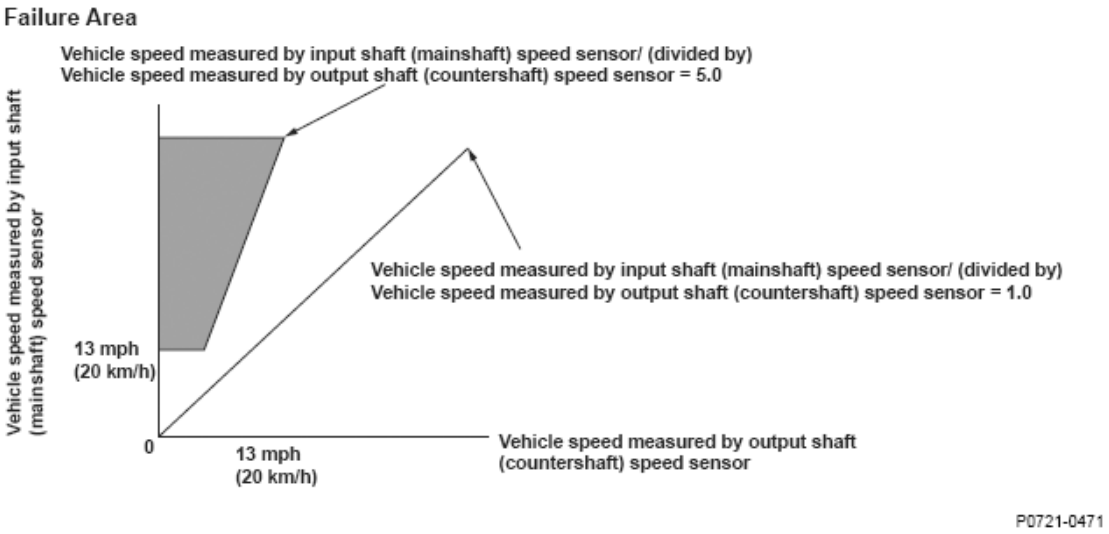


Fig. 321: Output Shaft (Countershaft) Speed Sensor Graph

General Description (R18A1 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the velocity ratio measured by the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0717, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	

Others	Not during shifting
	Not when the shift lever is being shifted
	No electrical noise in the input shaft (mainshaft) speed sensor output circuit

Malfunction Threshold (R18A1 Engine)

The vehicle speed measured by the input shaft (mainshaft) speed sensor/(divided by) the vehicle speed measured by the output shaft (countershaft) speed sensor > 5.0 for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0721 (9): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0721: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (R18A4 ENGINE)

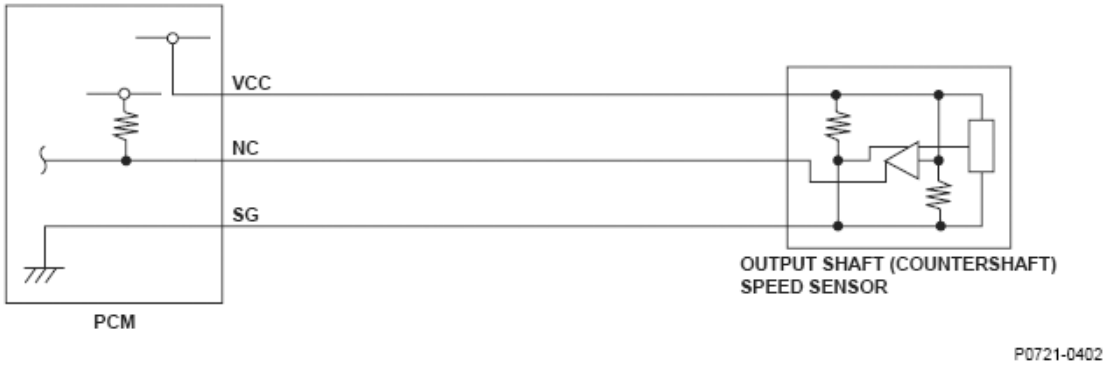


Fig. 322: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

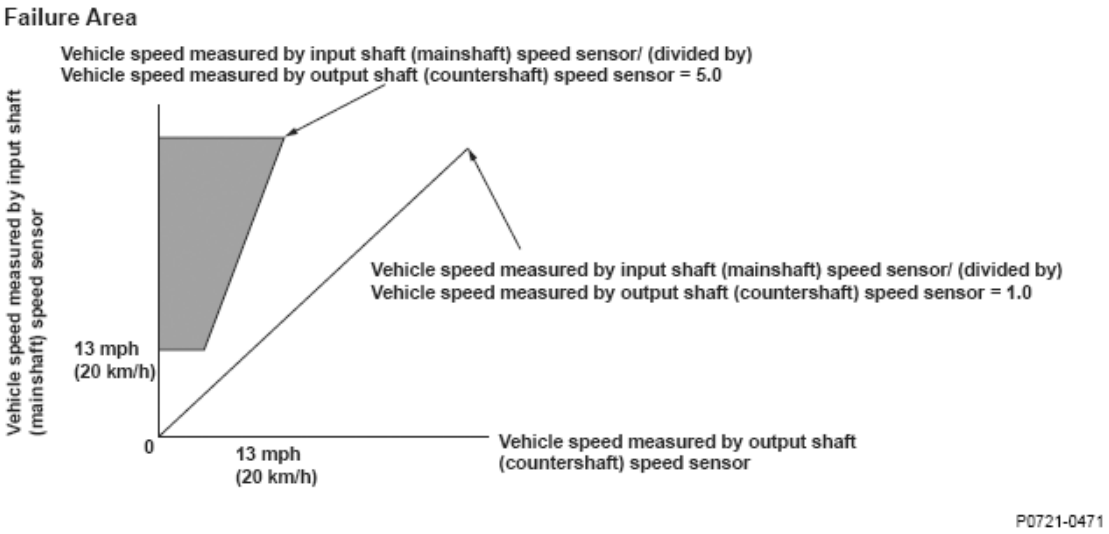


Fig. 323: Output Shaft (Countershaft) Speed Sensor Graph

General Description (R18A4 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the velocity ratio measured by the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0717, P0722, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	

Others	Not during shifting
	Not when the shift lever is being shifted
	No electrical noise in the input shaft (mainshaft) speed sensor output circuit

Malfunction Threshold (R18A4 Engine)

The vehicle speed measured by the input shaft (mainshaft) speed sensor/(divided by) the vehicle speed measured by the output shaft (countershaft) speed sensor > 5.0 for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0722 (9): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0722: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

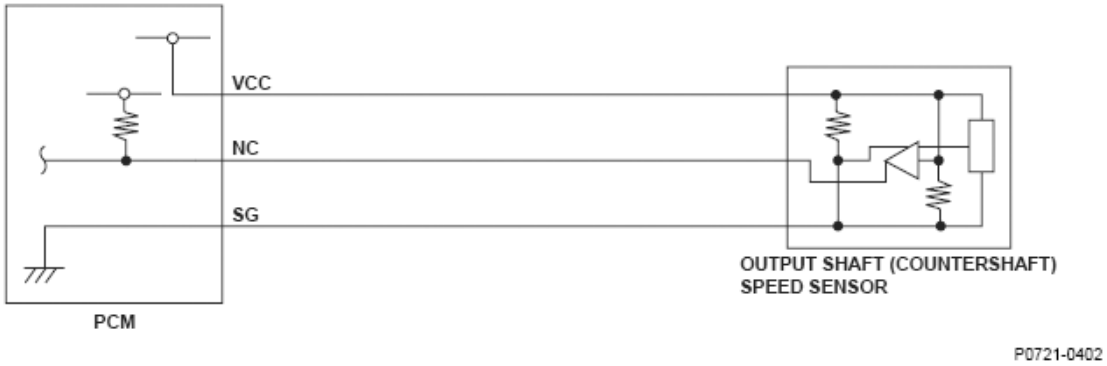


Fig. 324: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

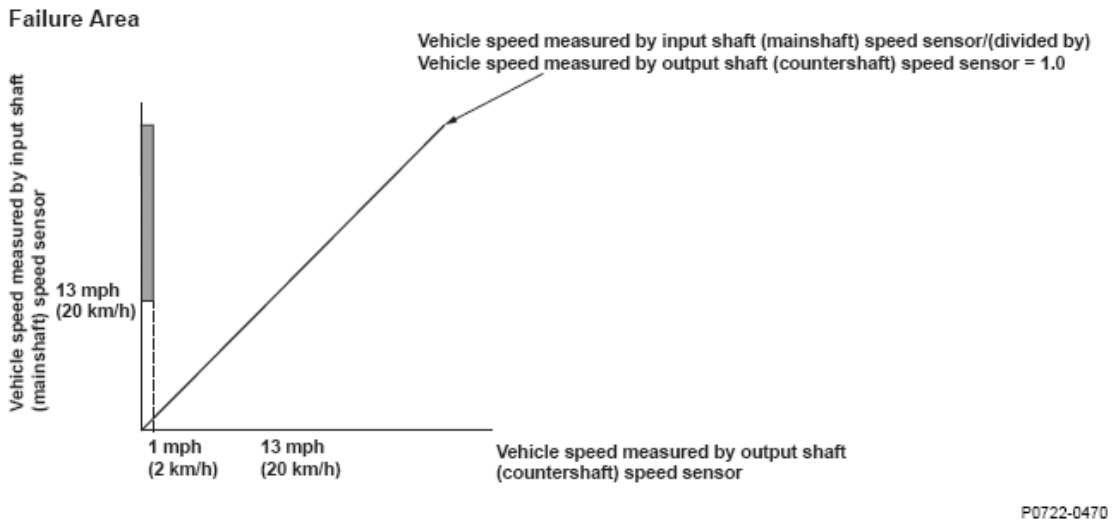


Fig. 325: Output Shaft Countershaft Speed Sensor Graph

General Description (R18A1 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the correlation between the vehicle speed measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0717, P0721, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
	Not during shifting	

Others	Not when the shift lever is being shifted
	No electrical noise in the input shaft (mainshaft) speed sensor output circuit

Malfunction Threshold (R18A1 Engine)

When the vehicle speed measured by the input shaft (mainshaft) speed sensor is 13 mph (20 km/h) or more, the vehicle speed measured by the output shaft (countershaft) speed sensor is 1 mph (2 km/h) or less for at least 10 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0722 (9): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0722: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)

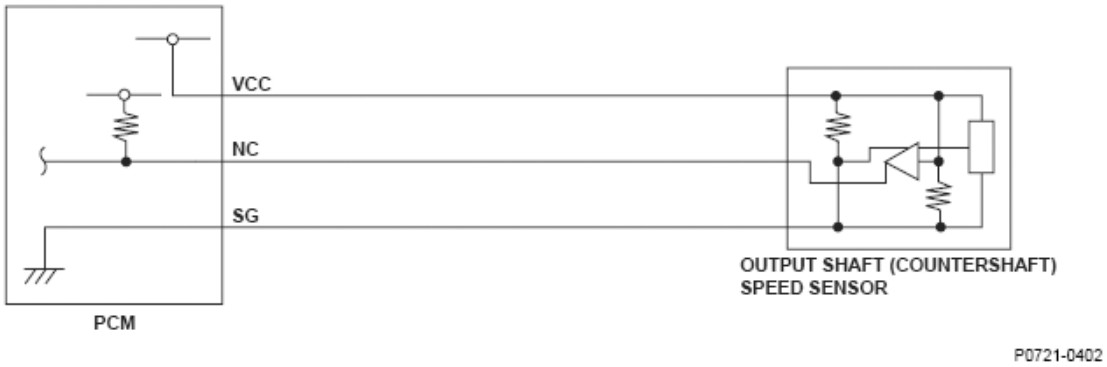


Fig. 326: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

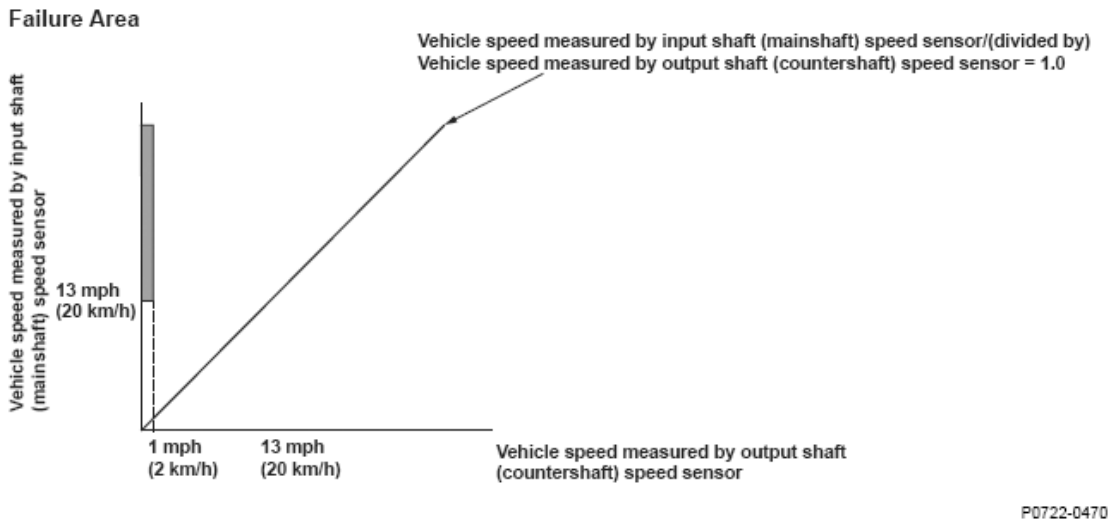


Fig. 327: Output Shaft Countershaft Speed Sensor Graph

General Description (R18A4 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the correlation between the vehicle speed measured by the output shaft (countershaft) speed sensor and the input shaft (mainshaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	500 rpm	-
Vehicle speed	13 mph (20 km/h)	-
Shift lever position	D, D3, 2, or 1	
No active DTCs	P0705, P0706, P0716, P0717, P0721, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	
	Not during shifting	

Others	Not when the shift lever is being shifted
	No electrical noise in the input shaft (mainshaft) speed sensor output circuit

Malfunction Threshold (R18A4 Engine)

When the vehicle speed measured by the input shaft (mainshaft) speed sensor is 13 mph (20 km/h) or more, the vehicle speed measured by the output shaft (countershaft) speed sensor is 1 mph (2 km/h) or less for at least 10 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more for at least 10 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0723 (9): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0723: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR INTERMITTENT FAILURE (R18A1 ENGINE)

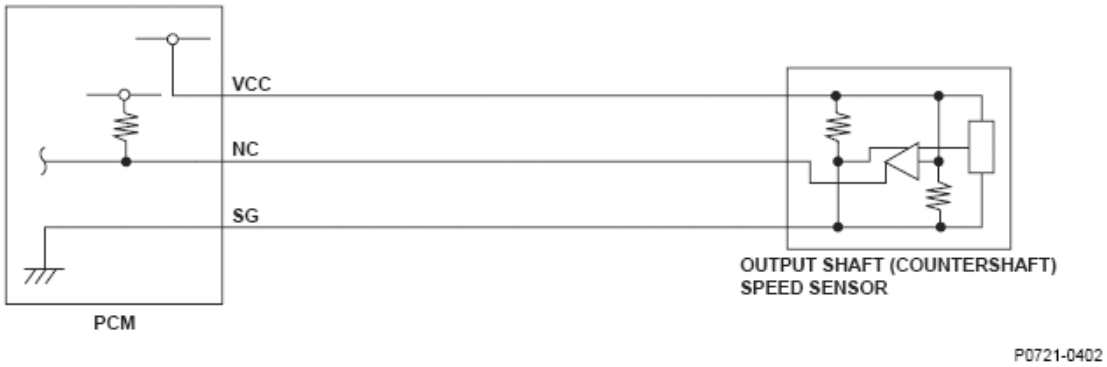


Fig. 328: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

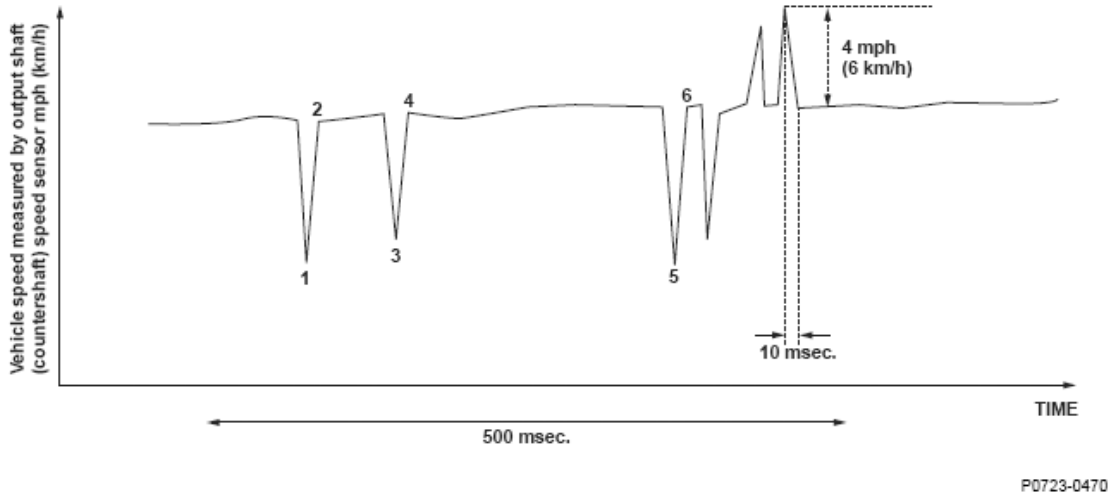


Fig. 329: Output Shaft (Countershaft) Speed Sensor Graph

General Description (R18A1 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the fluctuation of the vehicle speed measured by the output shaft (countershaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	500 msec
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	13 mph (20 km/h)	-
No active DTCs	P0721, P0722	
Others	Not during shifting	
	Not when an input shaft (mainshaft) speed sensor intermittent failure is detected	

Malfunction Threshold (R18A1 Engine)

The fluctuation of the vehicle speed measured by the output shaft (countershaft) speed sensor in 10 milliseconds is 4 mph (6km/h) or more, and it fluctuates at least six times within 500 milliseconds.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more so it shifts from 1st to 5th in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0723 (9): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0723: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR INTERMITTENT FAILURE (R18A4 ENGINE)

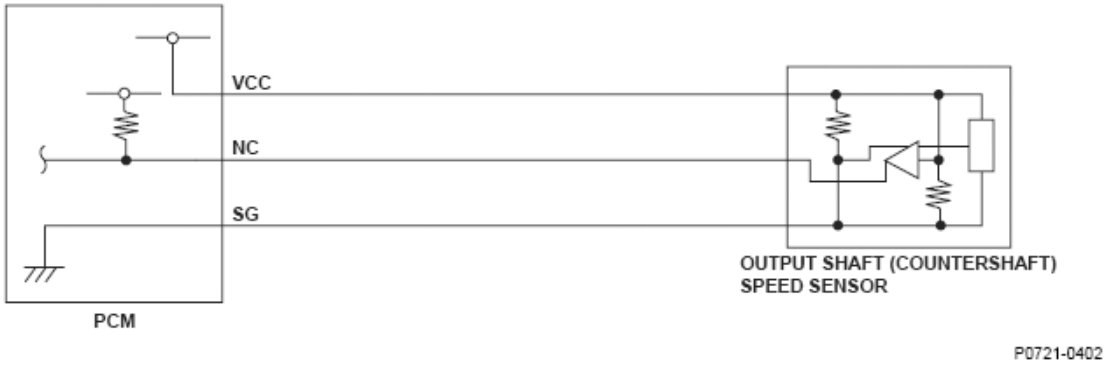


Fig. 330: Output Shaft (Countershaft) Speed Sensor - Circuit Diagram

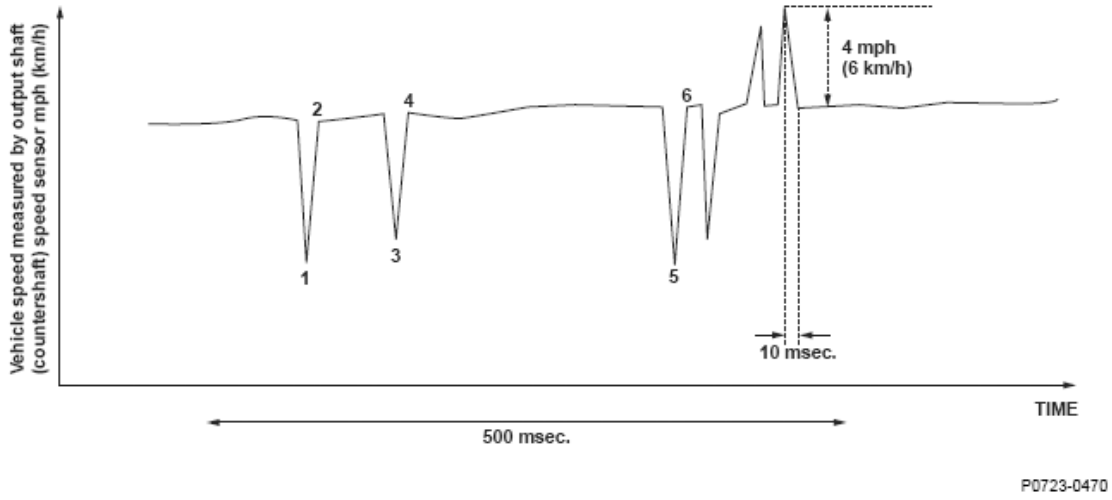


Fig. 331: Output Shaft (Countershaft) Speed Sensor Graph

General Description (R18A4 Engine)

The output shaft (countershaft) speed sensor is attached to the outside of the transmission housing. The output shaft (countershaft) speed sensor generates a pulsing signal according to the speed of the park gear on the output shaft (countershaft). Using that signal, the powertrain control module (PCM) determines the speed of the output shaft (countershaft). If pulse dropouts occur with the output shaft (countershaft) rotating, the PCM detects a malfunction that may be caused by an open, a temporary open, or a short to ground. Based on the fluctuation of the vehicle speed measured by the output shaft (countershaft) speed sensor, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	500 msec
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	13 mph (20 km/h)	-
No active DTCs	P0721, P0722	
Others	Not during shifting	
	Not when an input shaft (mainshaft) speed sensor intermittent failure is detected	

Malfunction Threshold (R18A4 Engine)

The fluctuation of the vehicle speed measured by the output shaft (countershaft) speed sensor in 10 milliseconds is 4 mph (6km/h) or more, and it fluctuates at least six times within 500 milliseconds.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle at a speed of 13 mph (20 km/h) or more so it shifts from 1st to 5th in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0731 (64): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0731: PROBLEM IN 1ST CLUTCH AND 1ST CLUTCH HYDRAULIC CIRCUIT (1ST GEAR INCORRECT RATIO)

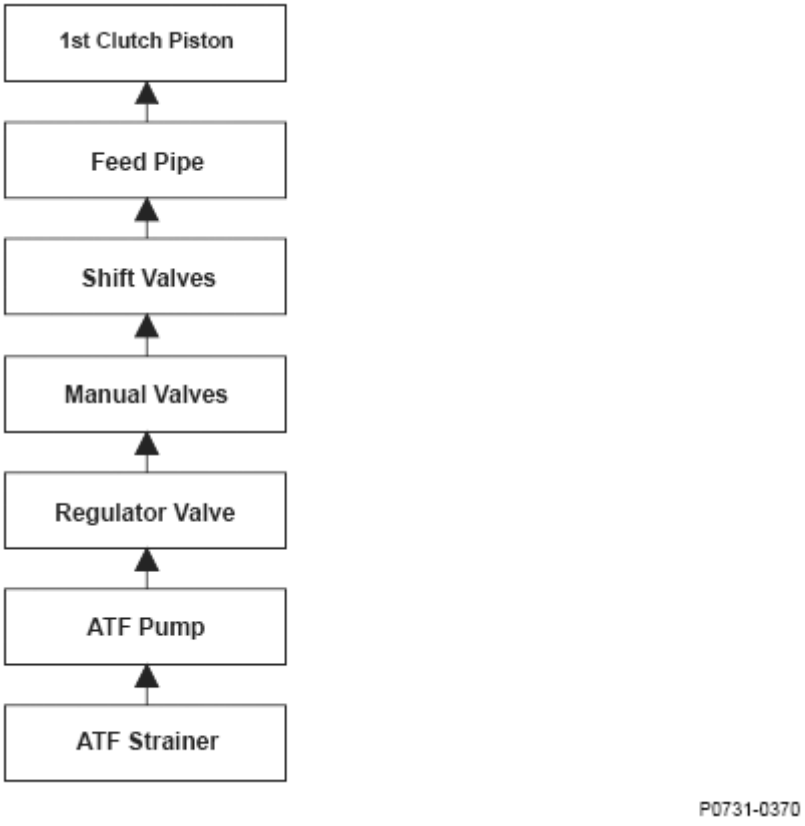


Fig. 332: 1st Clutch Hydraulic Circuit Chart

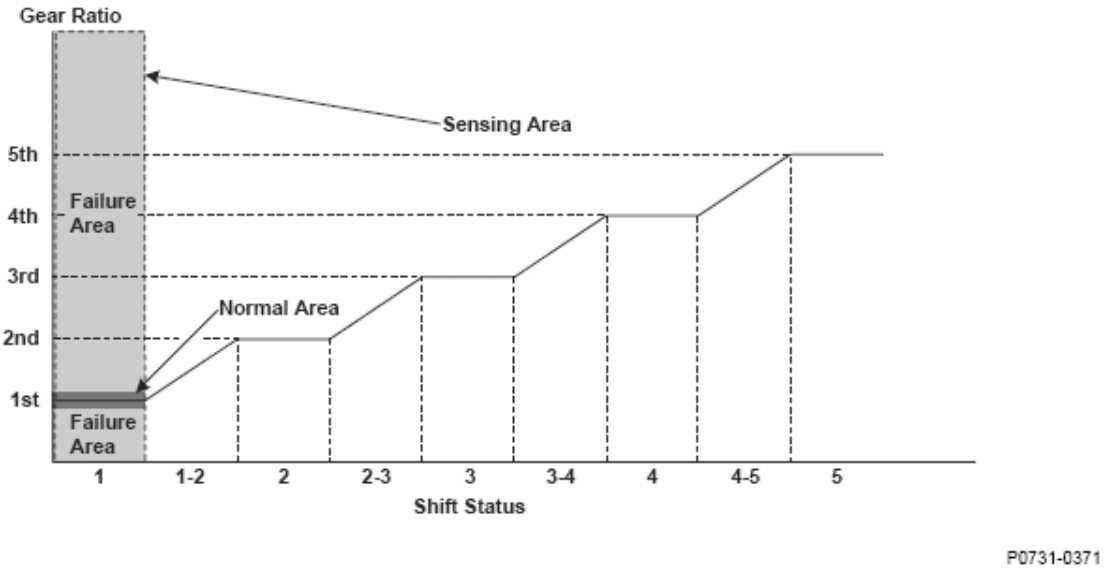


Fig. 333: Gear Ratio Graph

General Description (R18A1 Engine)

To engage 1st gear, line pressure is supplied to the 1st clutch piston, engaging the 1st clutch, and the secondary shaft and the secondary shaft 1st gear are connected and revolve together. Hydraulic pressure is supplied to the 1st clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 1st clutch piston. (A shift valve failure in the supply route

above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 1st gear ratio, it is detected as a malfunction of the hydraulic circuit or the 1st clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever position	D	
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0732, P0733, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 1st gear command.

- Actual gear ratio is greater than the 1st gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 1st gear ratio by a factor of 0.75.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 1st gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0731 (64): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0731: PROBLEM IN 1ST CLUTCH AND 1ST CLUTCH HYDRAULIC CIRCUIT (1ST GEAR INCORRECT RATIO)

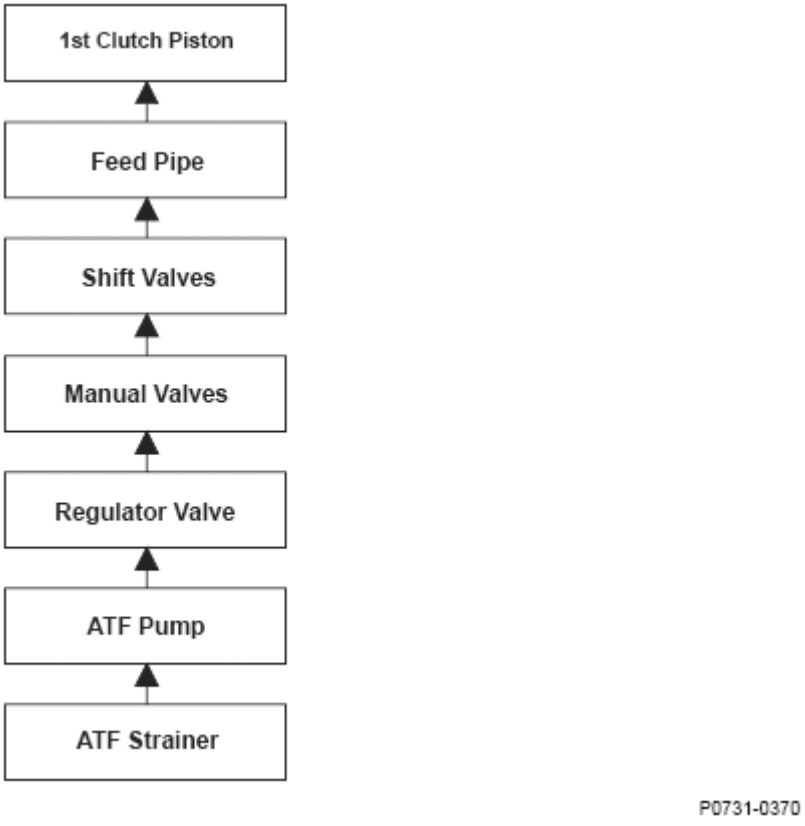


Fig. 334: 1st Clutch Hydraulic Circuit Chart

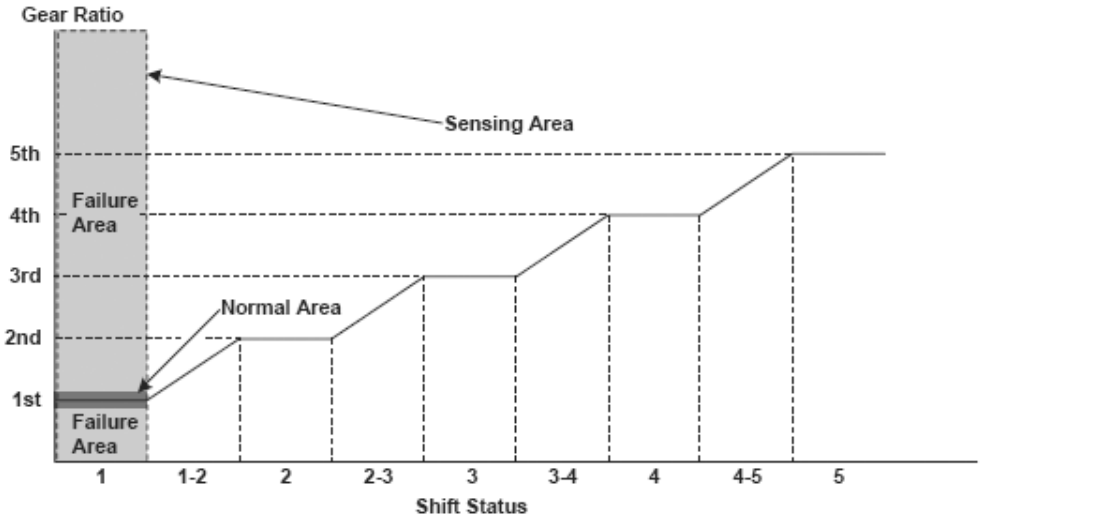


Fig. 335: Gear Ratio Graph

General Description (R18A4 Engine)

To engage 1st gear, line pressure is supplied to the 1st clutch piston, engaging the 1st clutch, and the secondary shaft and the secondary shaft 1st gear are connected and revolve together. Hydraulic pressure is supplied to the 1st clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 1st clutch piston. (A shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 1st gear ratio, it is detected as a malfunction of the hydraulic circuit or the 1st clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever		

position	D
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0732, P0733, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 1st gear command.

- Actual gear ratio is greater than the 1st gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 1st gear ratio by a factor of 0.75.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 1st gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0732 (64): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0732: PROBLEM IN 2ND CLUTCH AND 2ND CLUTCH HYDRAULIC CIRCUIT (2ND GEAR INCORRECT RATIO)

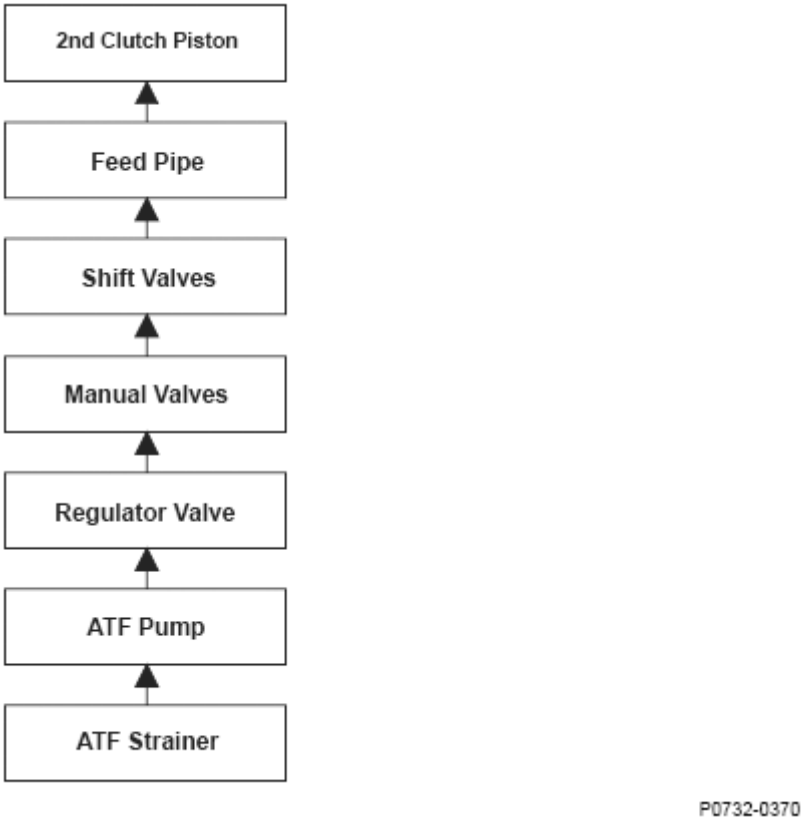


Fig. 336: 2nd Clutch Hydraulic Circuit Chart

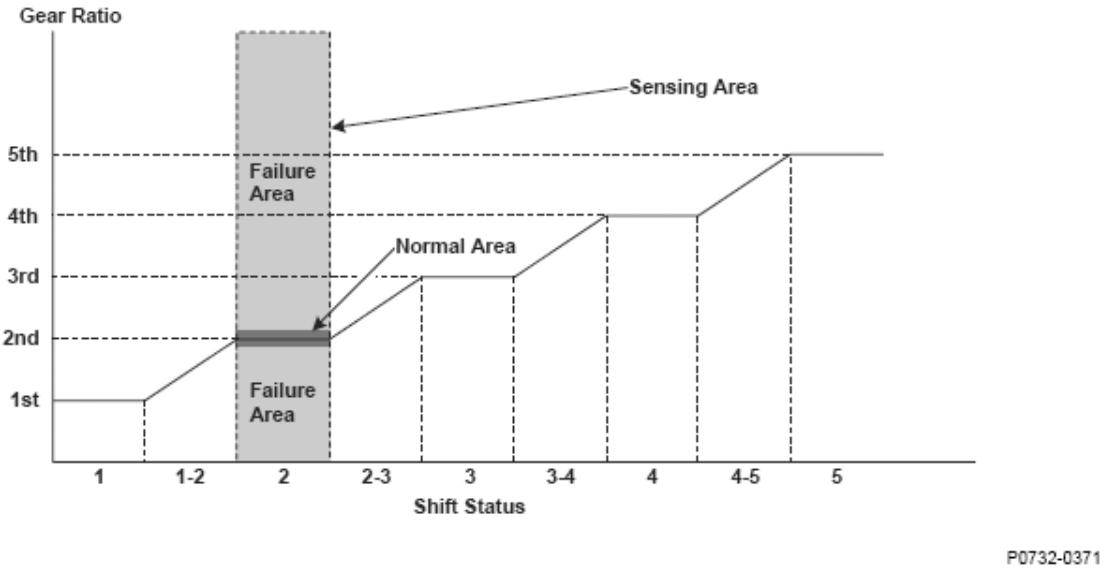


Fig. 337: Gear Ratio Graph

General Description (R18A1 Engine)

To engage 2nd gear, line pressure is supplied to the 2nd clutch piston, engaging the 2nd clutch, and the secondary shaft and the secondary shaft 2nd gear are connected and revolve together. Hydraulic pressure is supplied to the 2nd clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 2nd clutch piston. (A shift valve failure in the supply route

above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 2nd gear ratio, it is detected as a malfunction of the hydraulic circuit or the 2nd clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever position	D	
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0733, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 2nd gear command.

- Actual gear ratio is greater than the 2nd gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 2nd gear ratio by a factor of 0.75.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 2nd gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0732 (64): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0732: PROBLEM IN 2ND CLUTCH AND 2ND CLUTCH HYDRAULIC CIRCUIT (2ND GEAR INCORRECT RATIO)

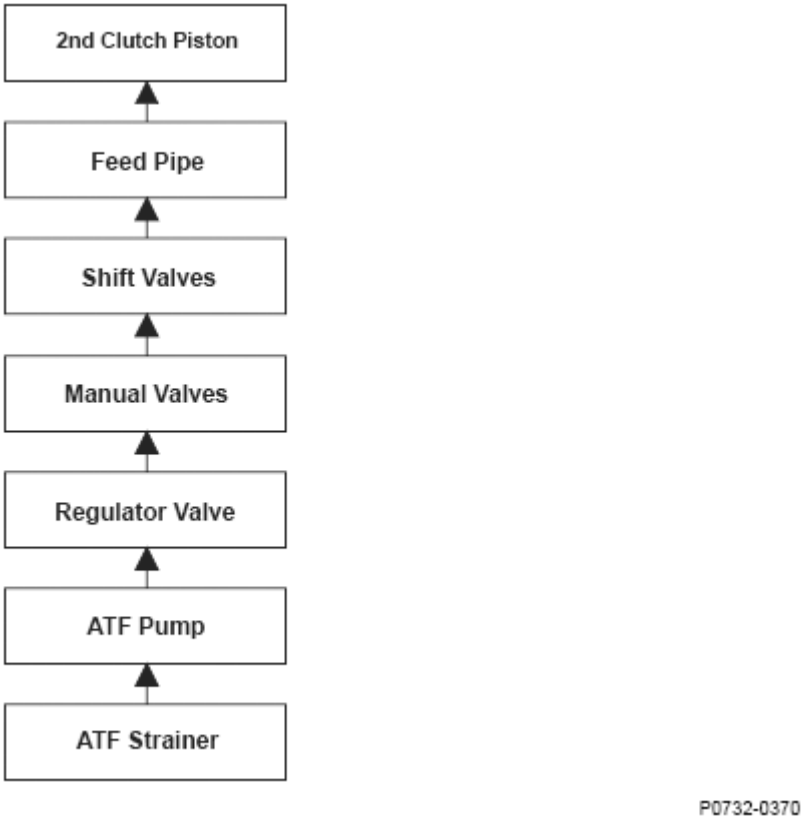


Fig. 338: 2nd Clutch Hydraulic Circuit Chart

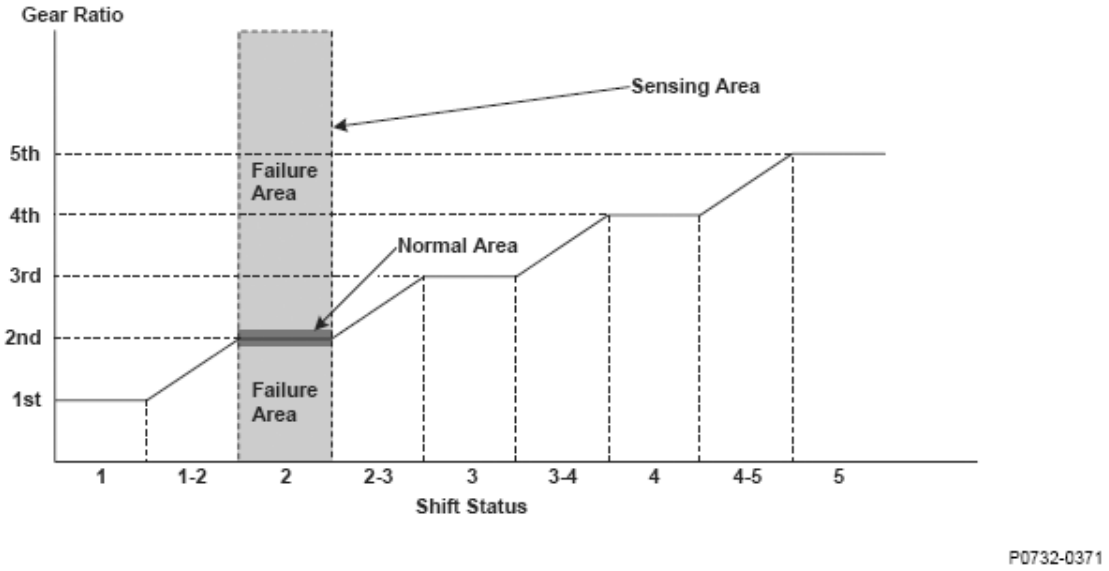


Fig. 339: Gear Ratio Graph

General Description (R18A4 Engine)

To engage 2nd gear, line pressure is supplied to the 2nd clutch piston, engaging the 2nd clutch, and the secondary shaft and the secondary shaft 2nd gear are connected and revolve together. Hydraulic pressure is supplied to the 2nd clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 2nd clutch piston. (A shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 2nd gear ratio, it is detected as a malfunction of the hydraulic circuit or the 2nd clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever		

position	D
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0733, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 2nd gear command.

- Actual gear ratio is greater than the 2nd gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 2nd gear ratio by a factor of 0.75.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 2nd gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0733 (64): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0733: PROBLEM IN 3RD CLUTCH AND 3RD CLUTCH HYDRAULIC CIRCUIT (3RD GEAR INCORRECT RATIO)

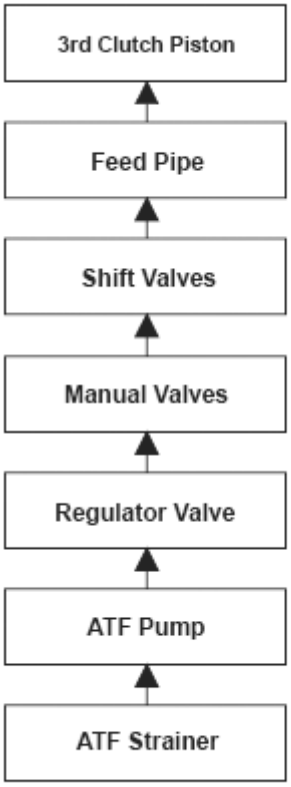


Fig. 340: 3rd Clutch Hydraulic Circuit Chart

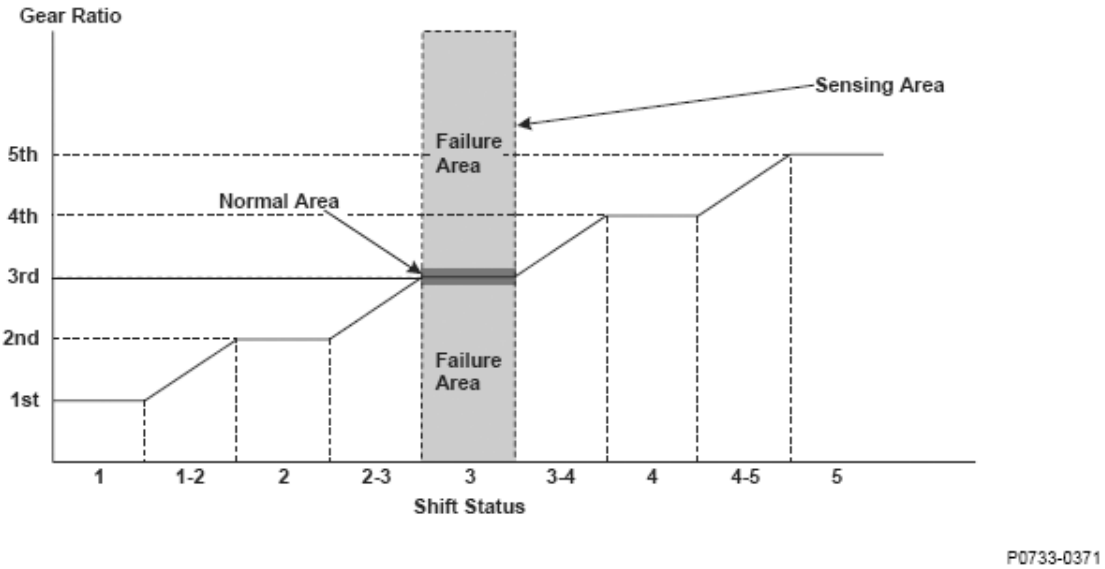


Fig. 341: Gear Ratio Graph

General Description (R18A1 Engine)

To engage 3rd gear, line pressure is supplied to the 3rd clutch piston, the 3rd clutch is engaged, and the output shaft (countershaft) and the output shaft (countershaft) 3rd gear are connected and revolve together. Hydraulic pressure is supplied to the 3rd clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 3rd clutch piston. (The shift valve failure

in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 3rd gear ratio, it is detected as a malfunction of the hydraulic circuit or the 3rd clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever position	D	
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 3rd gear command.

- Actual gear ratio is greater than the 3rd gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 3rd gear ratio by a factor of 0.75.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 3rd gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0733 (64): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0733: PROBLEM IN 3RD CLUTCH AND 3RD CLUTCH HYDRAULIC CIRCUIT (3RD GEAR INCORRECT RATIO)

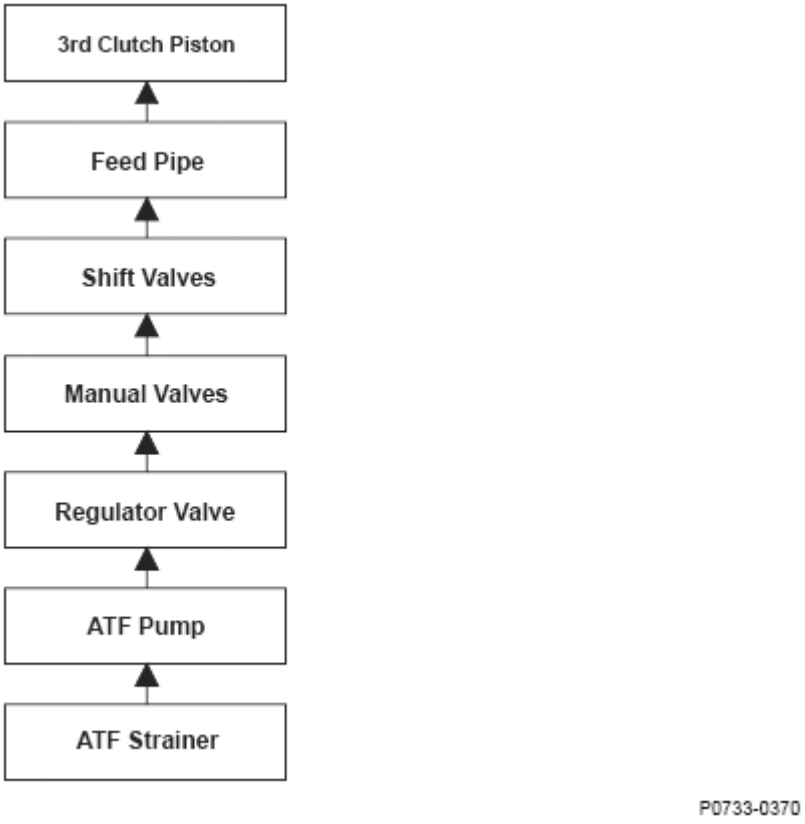


Fig. 342: 3rd Clutch Hydraulic Circuit Chart

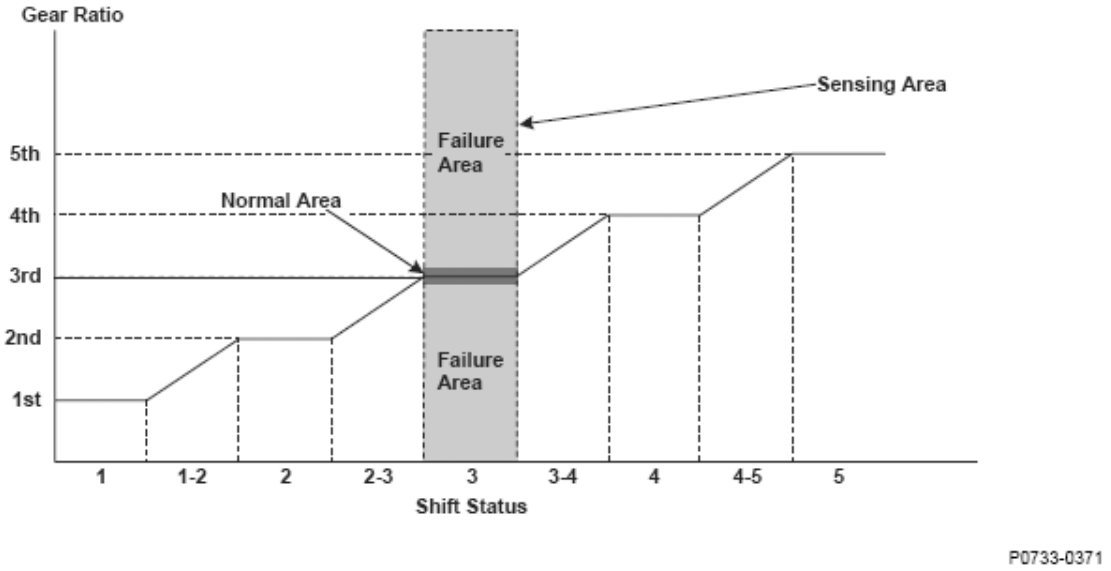


Fig. 343: Gear Ratio Graph

General Description (R18A4 Engine)

To engage 3rd gear, line pressure is supplied to the 3rd clutch piston, the 3rd clutch is engaged, and the output shaft (countershaft) and the output shaft (countershaft) 3rd gear are connected and revolve together. Hydraulic pressure is supplied to the 3rd clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 3rd clutch piston. (The shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 3rd gear ratio, it is detected as a malfunction of the hydraulic circuit or the 3rd clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever		

position	D
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0734, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 3rd gear command.

- Actual gear ratio is greater than the 3rd gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 3rd gear ratio by a factor of 0.75.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 3rd gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0734 (64): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0734: PROBLEM IN 4TH CLUTCH AND 4TH CLUTCH HYDRAULIC CIRCUIT (4TH GEAR INCORRECT RATIO)

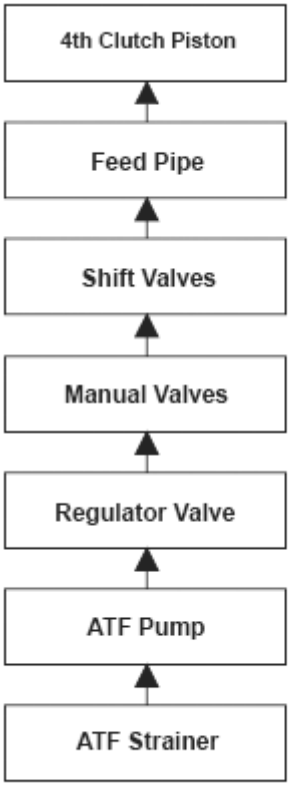


Fig. 344: 4th Clutch Hydraulic Circuit Chart

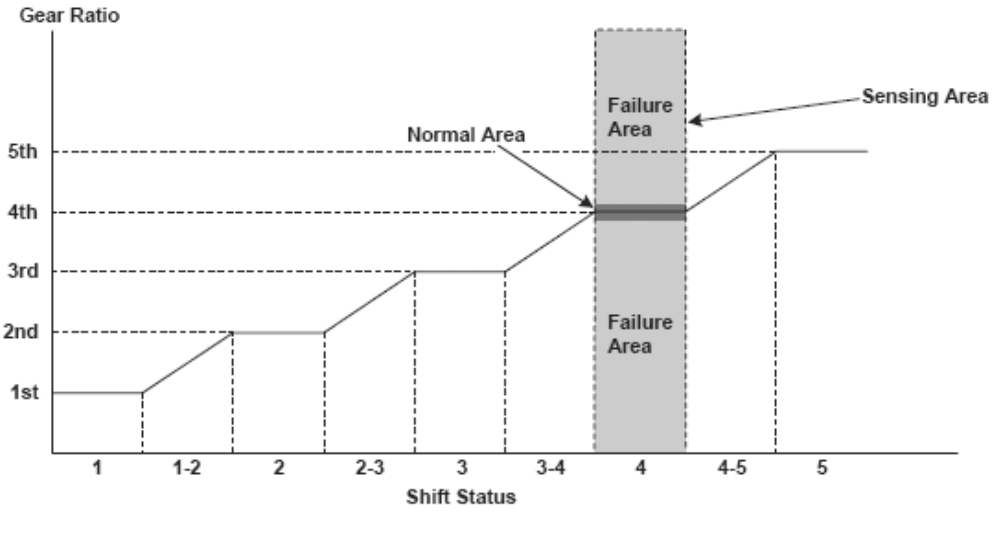


Fig. 345: Gear Ratio Graph

General Description (R18A1 Engine)

To engage 4th gear, line pressure is supplied to the 4th clutch piston, engaging the 4th clutch, and the input shaft (mainshaft) and the input shaft (mainshaft) 4th gear are connected and revolve together. Hydraulic pressure is supplied to the 4th clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 4th clutch piston. (A shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain

control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 4th gear ratio, it is detected as a malfunction of the hydraulic circuit or the 4th clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever position	D	
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0733, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 4th gear command.

- Actual gear ratio is greater than the 4th gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 4th gear ratio by a factor of 0.75.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 4th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0734 (64): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0734: PROBLEM IN 4TH CLUTCH AND 4TH CLUTCH HYDRAULIC CIRCUIT (4TH GEAR INCORRECT RATIO)

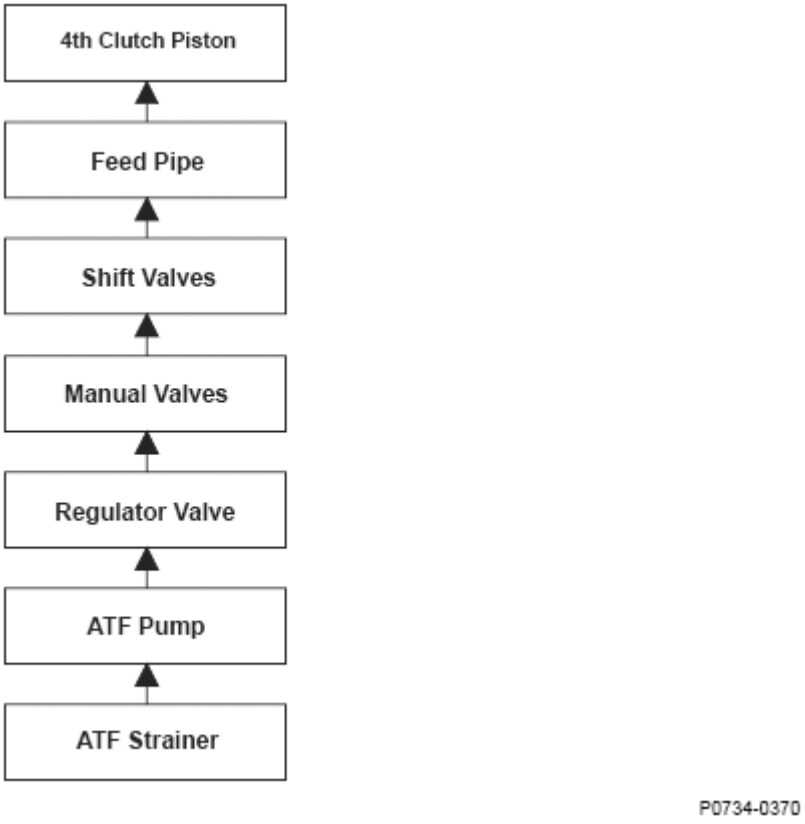


Fig. 346: 4th Clutch Hydraulic Circuit Chart

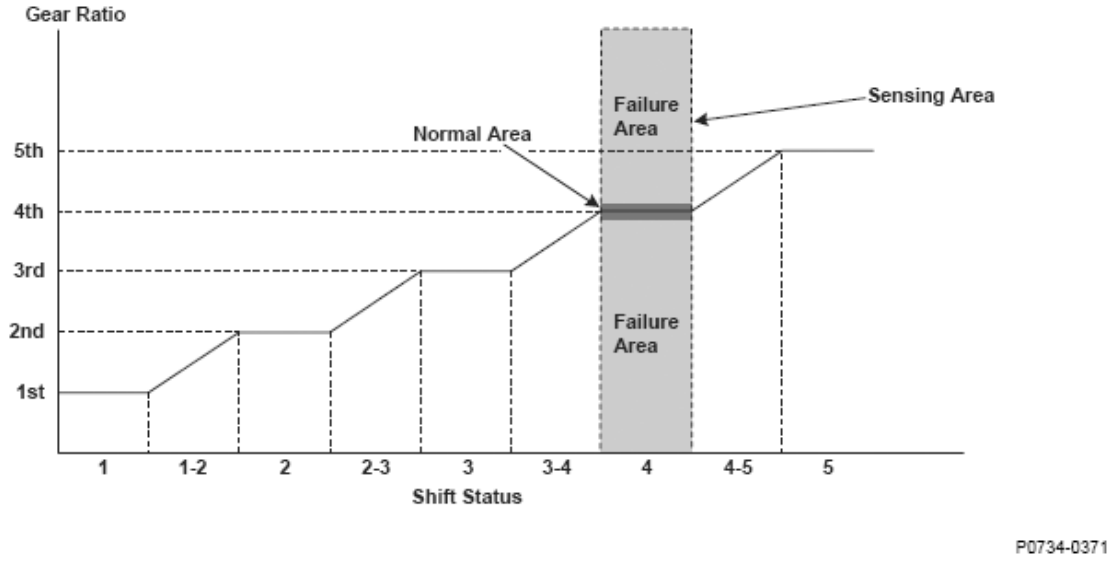


Fig. 347: Gear Ratio Graph

General Description (R18A4 Engine)

To engage 4th gear, line pressure is supplied to the 4th clutch piston, engaging the 4th clutch, and the input shaft (mainshaft) and the input shaft (mainshaft) 4th gear are connected and revolve together. Hydraulic pressure is supplied to the 4th clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 4th clutch piston. (A shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 4th gear ratio, it is detected as a malfunction of the hydraulic circuit or the 4th clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever		

position	D
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0733, P0735, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 4th gear command.

- Actual gear ratio is greater than the 4th gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 4th gear ratio by a factor of 0.75.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 4th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0735 (64): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0735: PROBLEM IN 5TH CLUTCH AND 5TH CLUTCH HYDRAULIC CIRCUIT (5TH GEAR INCORRECT RATIO)

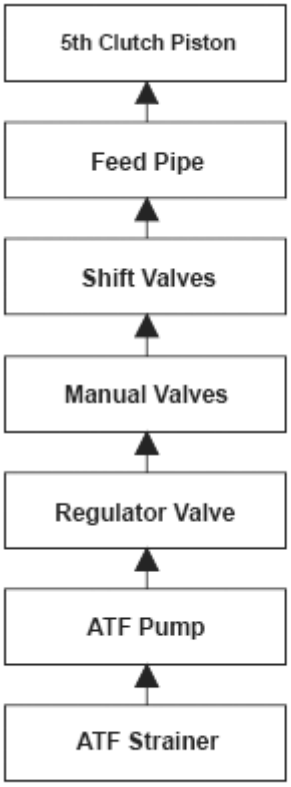


Fig. 348: 5th Clutch Hydraulic Circuit Chart

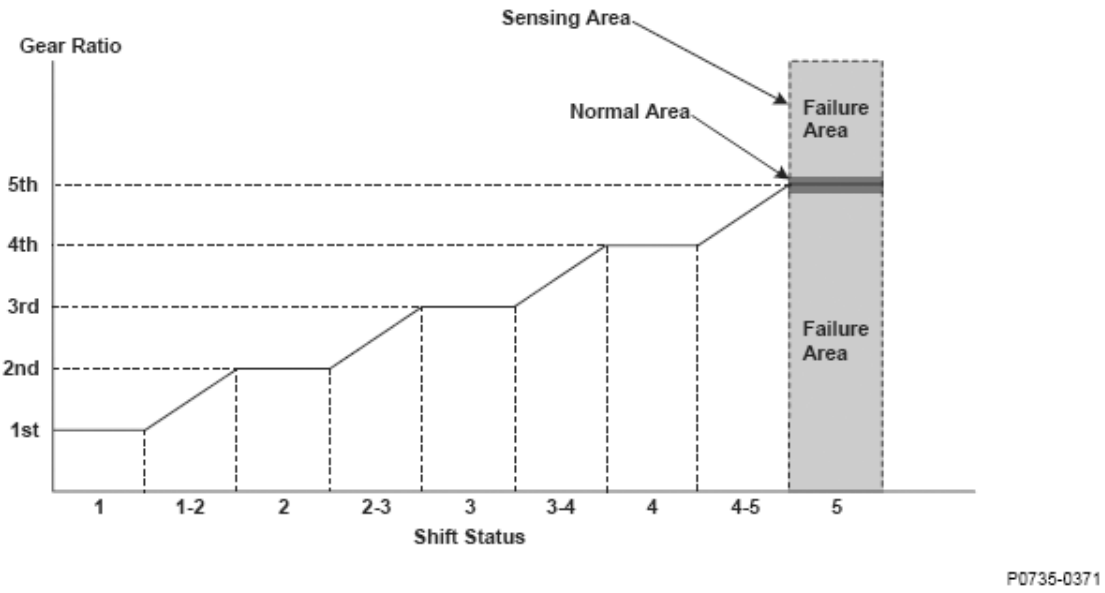


Fig. 349: Gear Ratio Graph

General Description (R18A1 Engine)

To engage 5th gear, line pressure is supplied to the 5th clutch piston, engaging the 5th clutch, and the input shaft (mainshaft) and the input shaft (mainshaft) 5th gear are connected and revolve together. Hydraulic pressure is supplied to the 5th clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 5th clutch piston. (A shift valve failure in the

supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 5th gear ratio, it is detected as a malfunction of the hydraulic circuit or the 5th clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-
Shift lever position	D	
No active DTCs	P0116, P0117, P0118, P0112, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0733, P0734, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 5th gear command.

- Actual gear ratio is greater than the 5th gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 5th gear ratio by a factor of 0.75.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0735 (64): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0735: PROBLEM IN 5TH CLUTCH AND 5TH CLUTCH HYDRAULIC CIRCUIT (5TH GEAR INCORRECT RATIO)

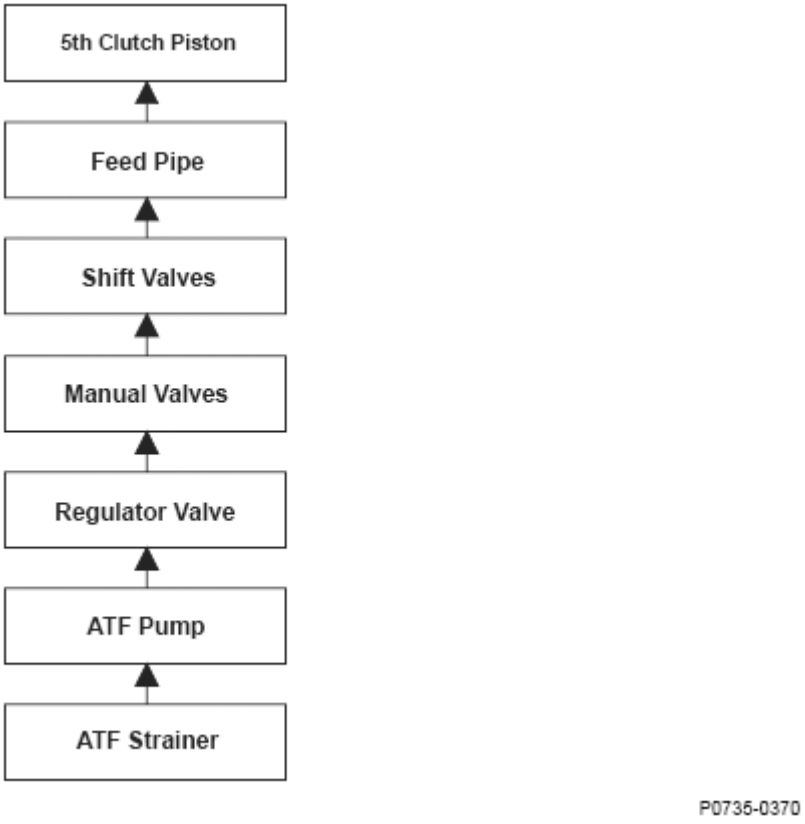


Fig. 350: 5th Clutch Hydraulic Circuit Chart

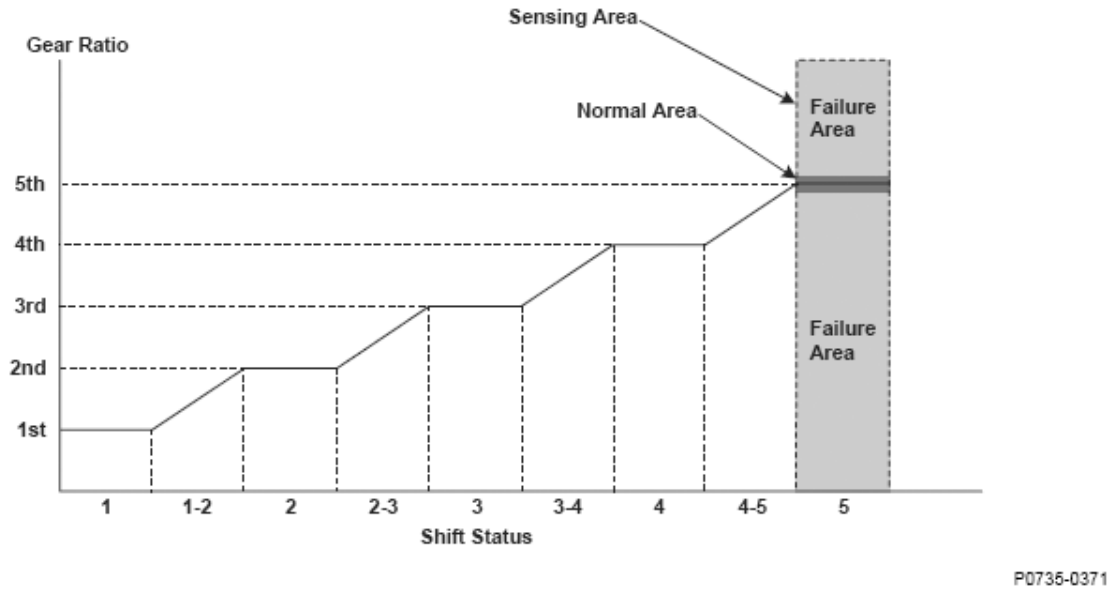


Fig. 351: Gear Ratio Graph

General Description (R18A4 Engine)

To engage 5th gear, line pressure is supplied to the 5th clutch piston, engaging the 5th clutch, and the input shaft (mainshaft) and the input shaft (mainshaft) 5th gear are connected and revolve together. Hydraulic pressure is supplied to the 5th clutch through the ATF strainer --> the ATF pump --> the regulator valve --> the manual valve --> the shift valves --> the feed pipe --> 5th clutch piston. (A shift valve failure in the supply route above is detected by the malfunction detection of each shift solenoid valve.) The powertrain control module (PCM) computes the ratio of the input shaft (mainshaft) speed to the output shaft (countershaft) speed. When the ratio is not the 5th gear ratio, it is detected as a malfunction of the hydraulic circuit or the 5th clutch, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	12 seconds or more
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Vehicle speed	8 mph (12 km/h)	-

Shift lever position	D
No active DTCs	P0116, P0117, P0118, P0112, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0731, P0732, P0733, P0734, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The actual gear ratio must match one of these conditions for at least 12 seconds with the 5th gear command.

- Actual gear ratio is greater than the 5th gear ratio by a factor of 1.2.
- Actual gear ratio is less than the 5th gear ratio by a factor of 0.75.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the D position, and drive the vehicle at a speed of 8 mph (12 km/h) or more for at least 12 seconds in 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0741 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0741: TORQUE CONVERTER CLUTCH HYDRAULIC CIRCUIT STUCK OFF (R18A1 ENGINE)

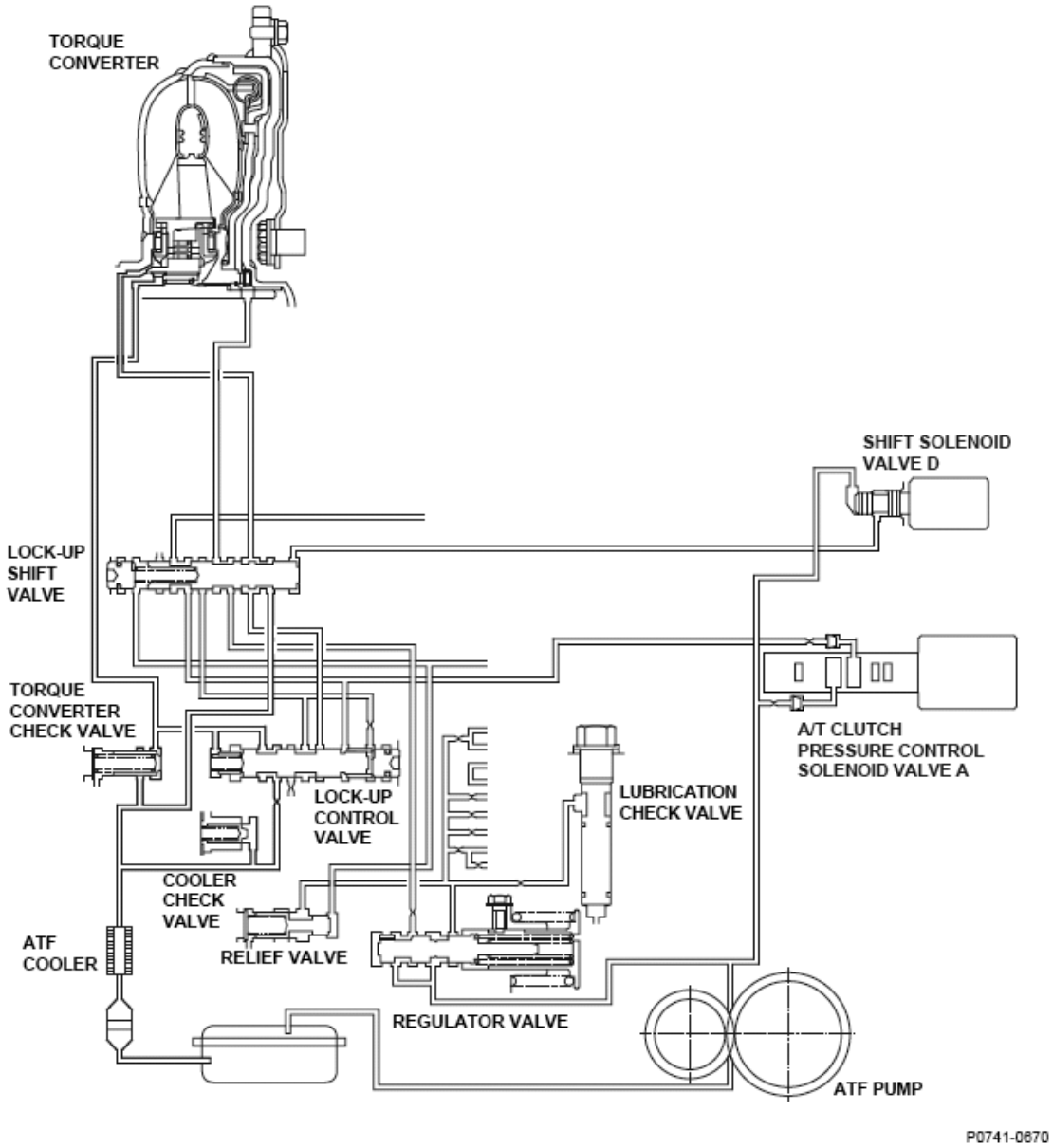


Fig. 352: Torque Converter Clutch Hydraulic - System Diagram

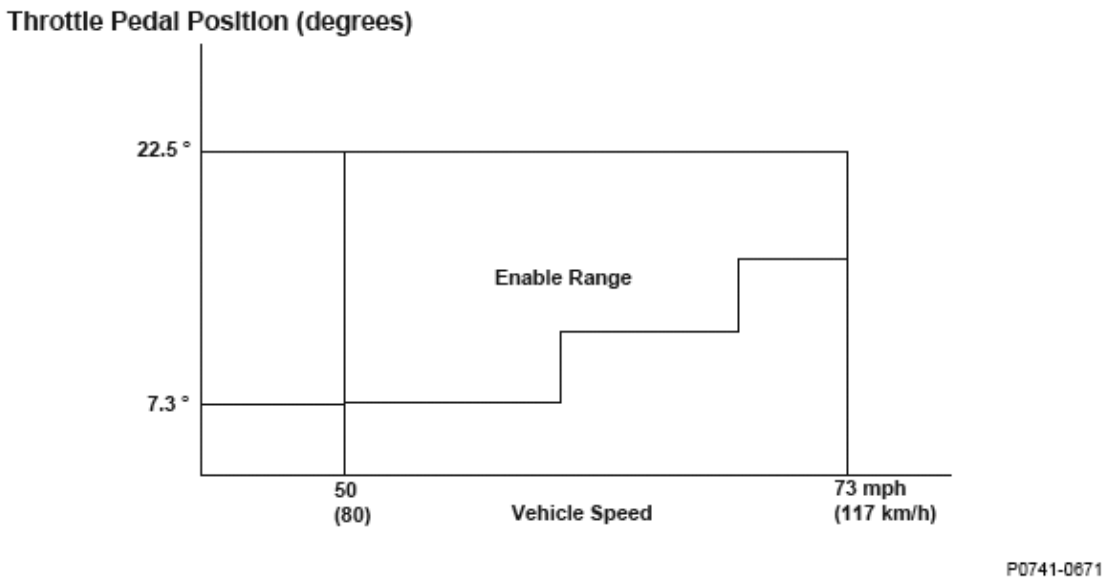


Fig. 353: Throttle Pedal Position Angle

General Description (R18A1 Engine)

The power transfer capacity of the torque converter clutch is controlled by the balance of automatic transmission fluid (ATF) supplied to and discharged from the torque converter. When hydraulic pressure is applied internally, the torque converter clutch turns ON, and when hydraulic pressure is applied from the back pressure side, the lock-up clutch turns OFF. As the hydraulic pressure from the internal pressure side increases, the power transfer capacity of the torque converter clutch increases. The direction of hydraulic pressure supply is switched by shift solenoid valve D and the lock-up shift valve. ATF is supplied from the internal pressure side to shift solenoid valve D when the signal from the powertrain control module (PCM) is ON (12 V), and ATF is supplied from the back pressure side when it is OFF (0 V). The balance of internal pressure and back pressure is controlled by A/T clutch pressure control solenoid valve A and the lock-up control valve. A/T clutch pressure control solenoid valve A maximizes the power transfer capacity of the torque converter clutch when the signal from the PCM is ON (1 A), and it minimizes the power transfer capacity of the torque converter clutch when the signal from the PCM is OFF (0 A). If the ratio of engine speed and mainshaft speed is not about 1:1 while the PCM is issuing the command to turn shift solenoid valve D and A/T clutch pressure control solenoid valve A ON, the PCM detects a faulty lock-up control system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	20 seconds
DTC Type	Two drive cycles, MIL ON, D indicator OFF
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Battery voltage	11.0 V	-
Engine coolant temperature	158°F (70°C)	212°F (100°C)
ATF temperature	-	284°F (140°C)
Shift status	5th	
Torque converter clutch	During controlling operation	
No active DTCs	P0116, P0117, P0118, P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1780	
Other	When both the vehicle speed and the throttle position are in Enable Range	

Malfunction Threshold (R18A1 Engine)

The ratio of the engine revolution to the transmission input pulse does not reach about 100 % for at least 20 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a constant speed of 60 mph (96 km/h) for at least 20 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0746 (76): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0746: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A STUCK OFF (R18A1 ENGINE)

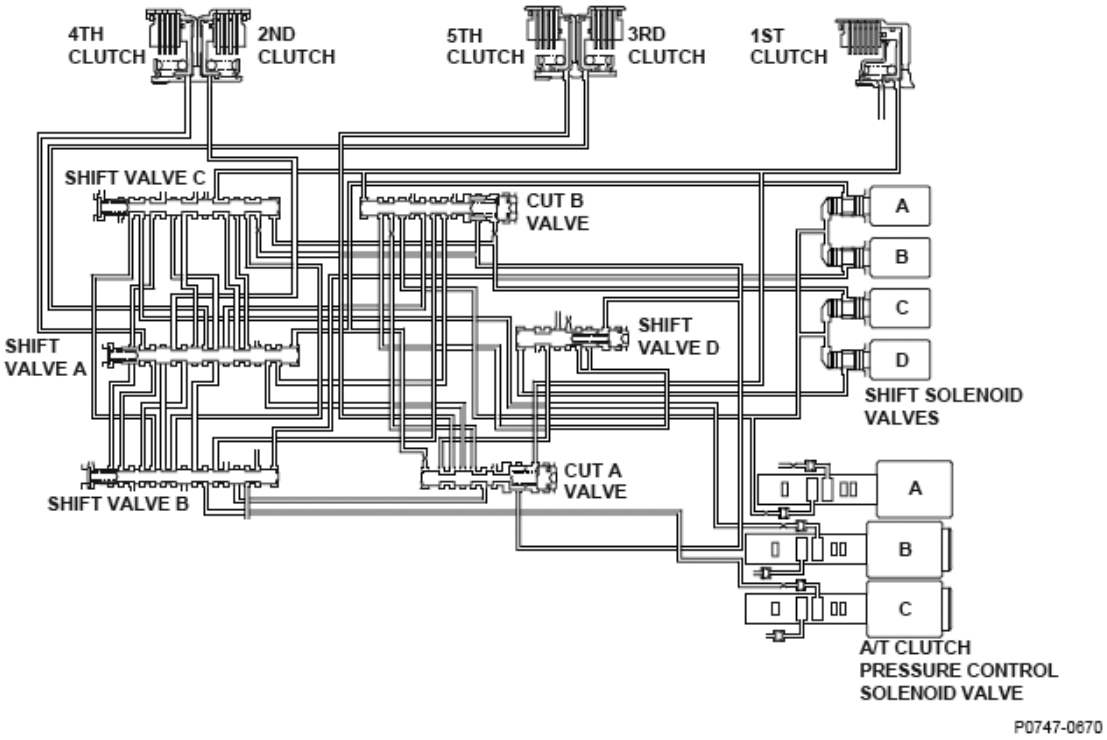


Fig. 354: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1st	CPC A	LINE	CPC C		CPC A						
2nd	CPC B		CPC B	LINE	CPC B		CPC A				
3rd	CPC C				CPC C	CPC C	CPC C				
4th							CPC B	CPC B	CPC B		
5th									CPC C	CPC C	

CPC: Clutch Pressure Control pressure

Fig. 355: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of input shaft (mainshaft) and output shaft (countershaft) revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve A or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(2), (4), (5)
ATF temperature	-	248°F (120°C)(2), (4), (5)
Shift status	1st(1), (3)	
	N --> R(2), (4), (5)	
	R(6)	
No active DTCs	P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

(5) Symptom 3-A

(6) Symptom 3-B

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	N --> R	Neutral

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	N --> R	Neutral

SYMPTOM 3 (SYMPTOM 3-B OCCURS AFTER SYMPTOM 3-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	N --> R	Neutral
3-B	Driving in the R position	Reverse

Driving Pattern (R18A1 Engine)

1. Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.
2. Shift from the N position to the R position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0746 (76): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0746: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A STUCK OFF (R18A4 ENGINE)

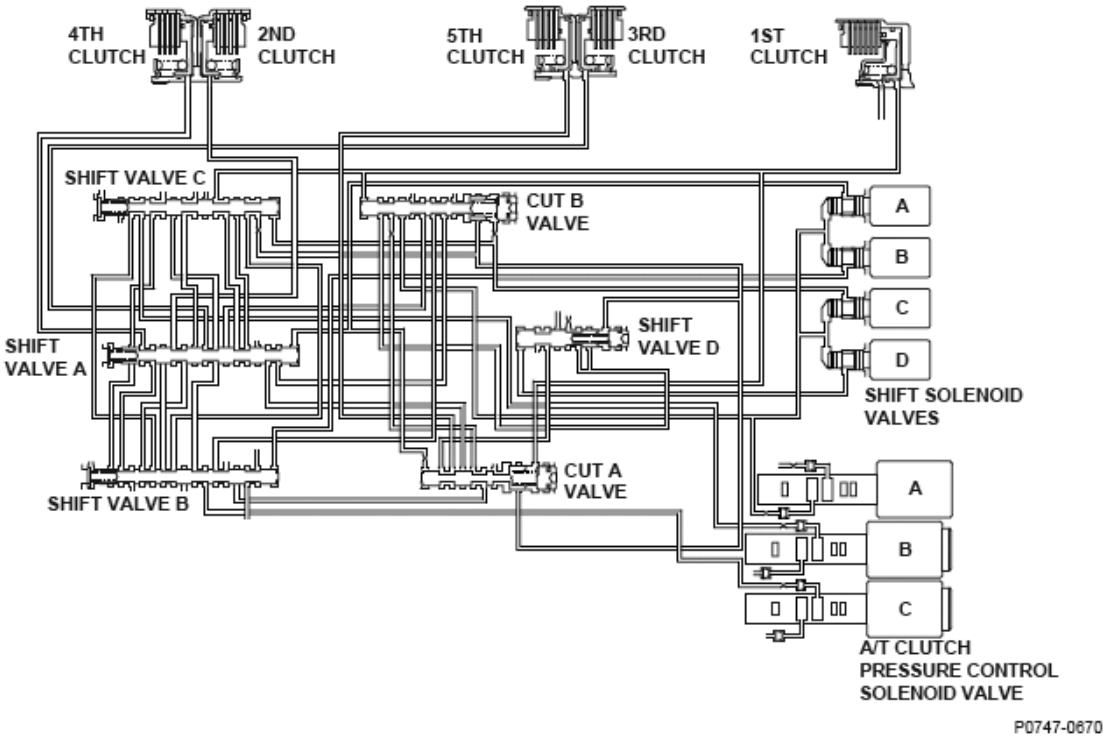


Fig. 356: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 357: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of input shaft (mainshaft) and output shaft (countershaft) revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve A or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(2), (4), (5)
ATF temperature	-	248 °F (120 °C)(2), (4), (5)
Shift status	1st(1), (3)	
	N --> R(2), (4), (5)	
	R(6)	
No active DTCs	P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

(5) Symptom 3-A

(6) Symptom 3-B

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	N --> R	Neutral

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	N --> R	Neutral

SYMPTOM 3 (SYMPTOM 3-B OCCURS AFTER SYMPTOM 3-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	N --> R	Neutral
3-B	Driving in the R position	Reverse

Driving Pattern (R18A4 Engine)

1. Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.
2. Shift from the N position to the R position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0747 (76): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0747: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A STUCK ON (R18A1 ENGINE)

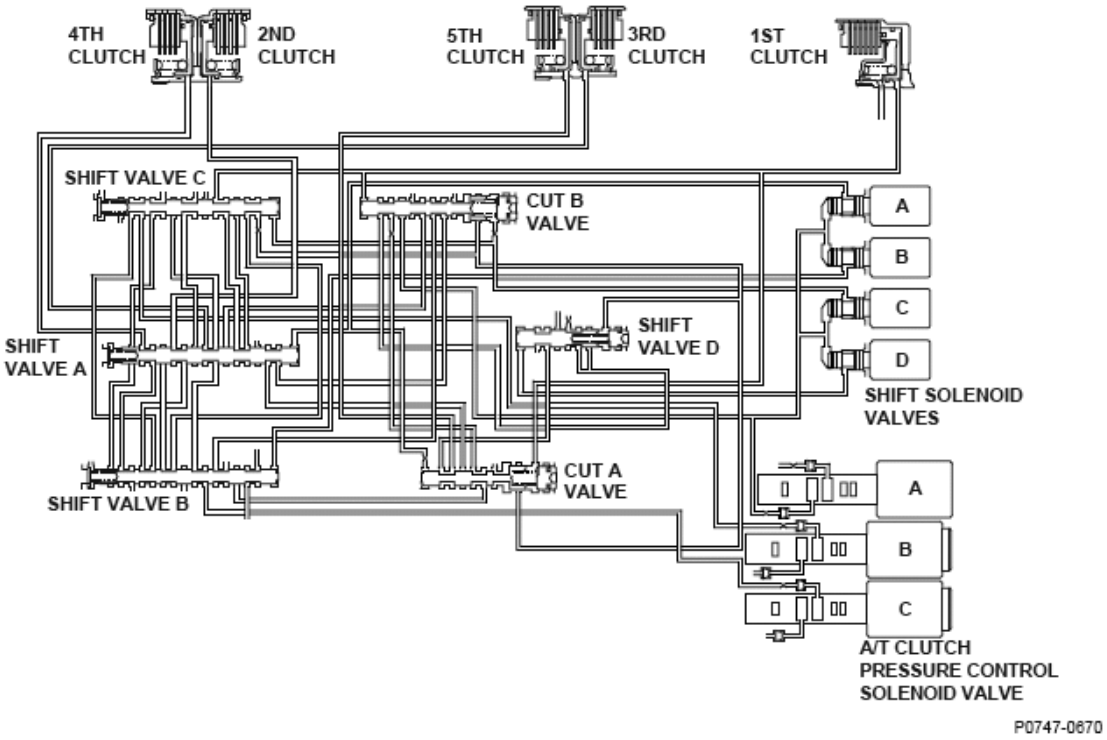


Fig. 358: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1st	CPC A	LINE	CPC C		CPC A						
2nd	CPC B		CPC B	LINE	CPC B		CPC A				
3rd	CPC C				CPC C	CPC C	CPC C				
4th							CPC B	CPC B	CPC B		
5th									CPC C	CPC C	

CPC: Clutch Pressure Control pressure

Fig. 359: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of input shaft (mainshaft) and output shaft (countershaft) revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve A or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	2 mph (4 km/h)	-
Shift status	3rd --> 4th	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Other	Torque converter clutch lock-up OFF	

Malfunction Threshold (R18A1 Engine)

Symptom 1 occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0747 (76): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0747: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A STUCK ON (R18A4 ENGINE)

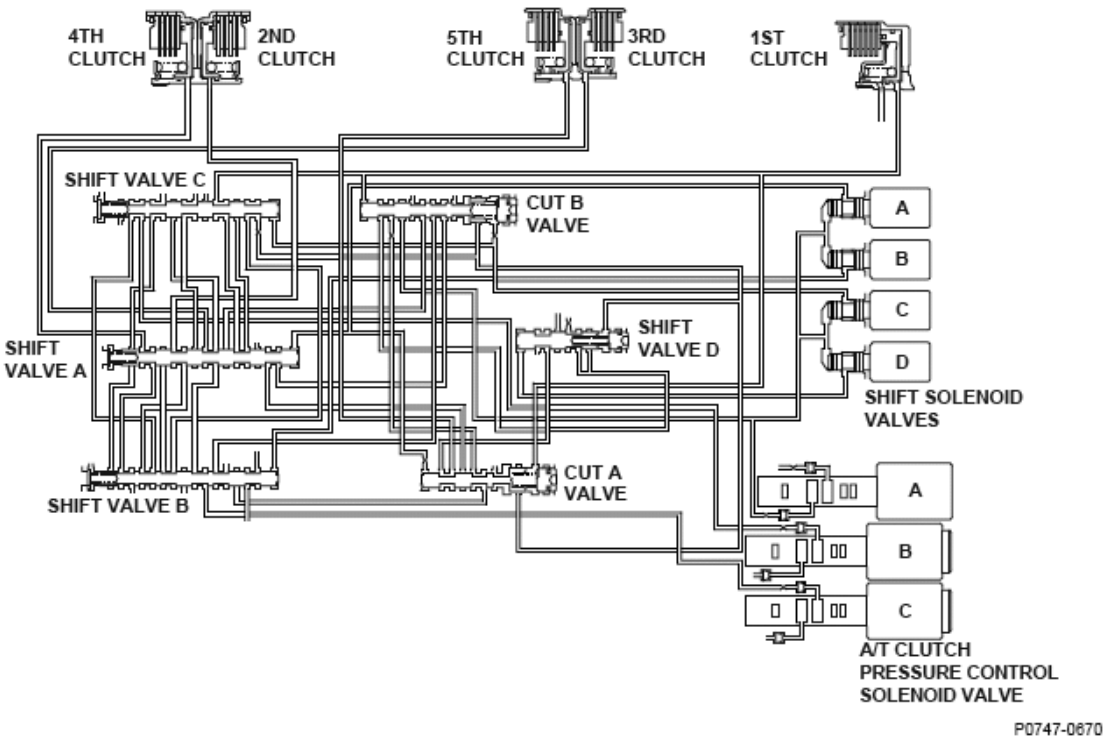


Fig. 360: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 361: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the

ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of input shaft (mainshaft) and output shaft (countershaft) revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve A or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	2 mph (4 km/h)	-
Shift status	3rd --> 4th	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Other	Torque converter clutch lock-up OFF	

Malfunction Threshold (R18A4 Engine)

Symptom 1 occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0751 (70): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0751: SHIFT SOLENOID VALVE A STUCK OFF (R18A1 ENGINE)

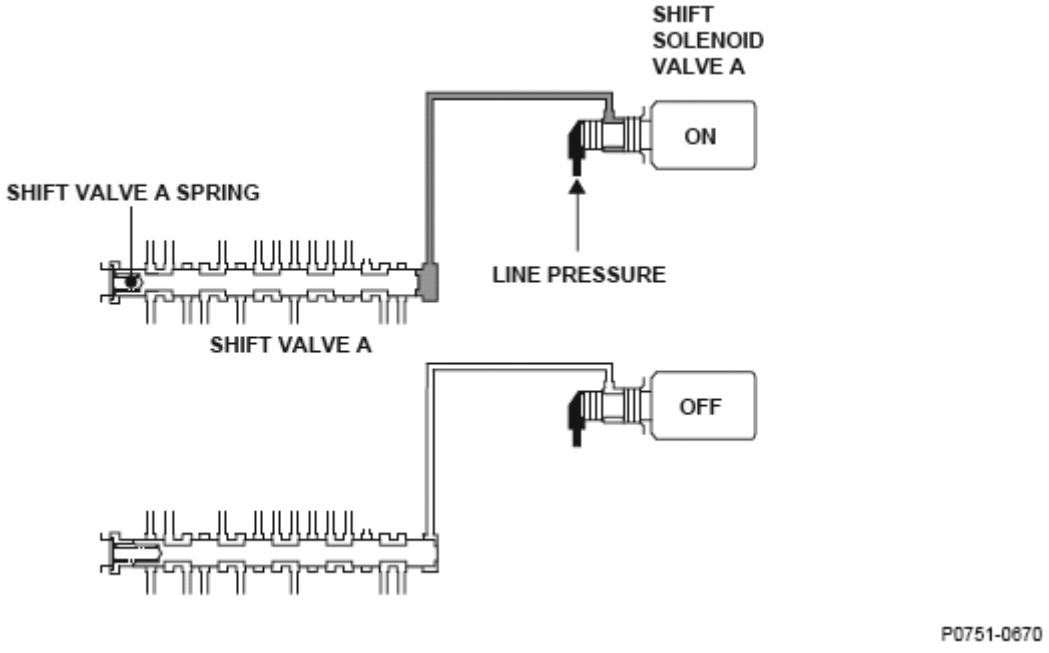


Fig. 362: Shift Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 363: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve A is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve A. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve A from the PCM is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve A OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)(2)	-
ATF temperature	-4°F (-20°C)(1), (2), (4)	-
Vehicle speed	5 mph (9 km/h)(1), (2), (4)	-
Accelerator pedal position	2 %(2)	-
Accelerator pedal position variation	-	2 %/20 milliseconds(2)
Shift status	1st --> 2nd(1), (4)	
	3rd --> 4th(2)	
	5th(3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	1st --> 2nd gear upshift	Driving in 1st gear
1-B	3rd --> 4th gear upshift	The engine speed flares

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	1st --> 2nd gear upshift	Driving in 1st gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0751 (70): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0751: SHIFT SOLENOID VALVE A STUCK OFF (R18A4 ENGINE)

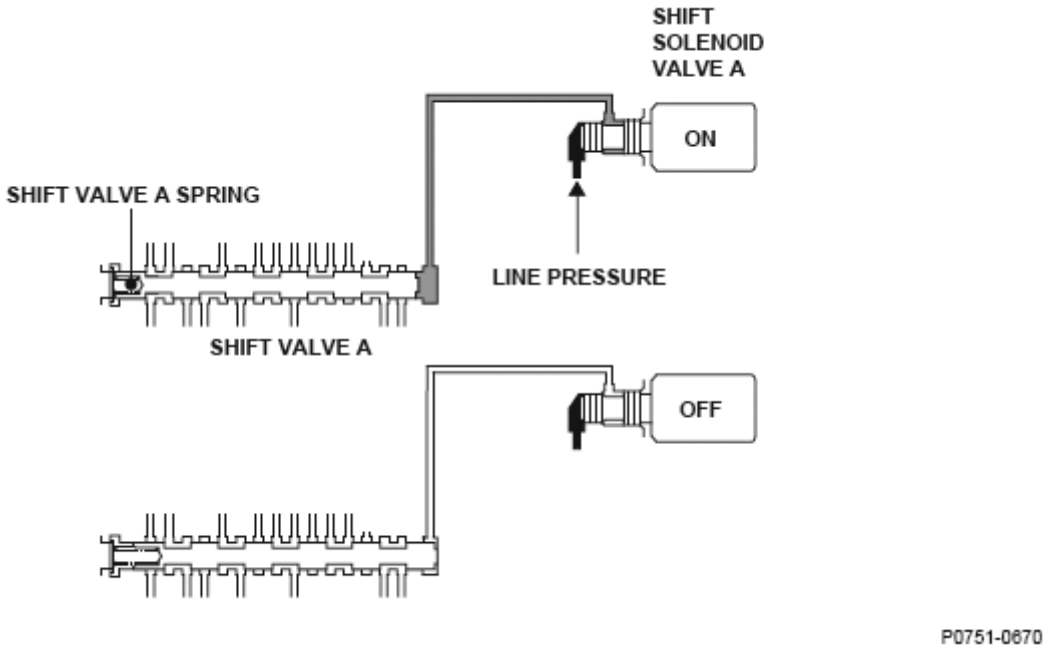


Fig. 364: Shift Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 365: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve A is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve A. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve A from the PCM is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve A OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)(2)	-
ATF temperature	-4°F (-20°C)(1), (2), (4)	-
Vehicle speed	5 mph (9 km/h)(1), (2), (4)	-
Accelerator pedal position	2 %(2)	-
Accelerator pedal position variation	-	2 %/20 milliseconds(2)
Shift status	1st --> 2nd(1), (4)	
	3rd --> 4th(2)	
	5th(3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS.)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	1st --> 2nd gear upshift	Driving in 1st gear
1-B	3rd --> 4th gear upshift	The engine speed flares

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	1st --> 2nd gear upshift	Driving in 1st gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0752 (70): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0752: SHIFT SOLENOID VALVE A STUCK ON (R18A1 ENGINE)

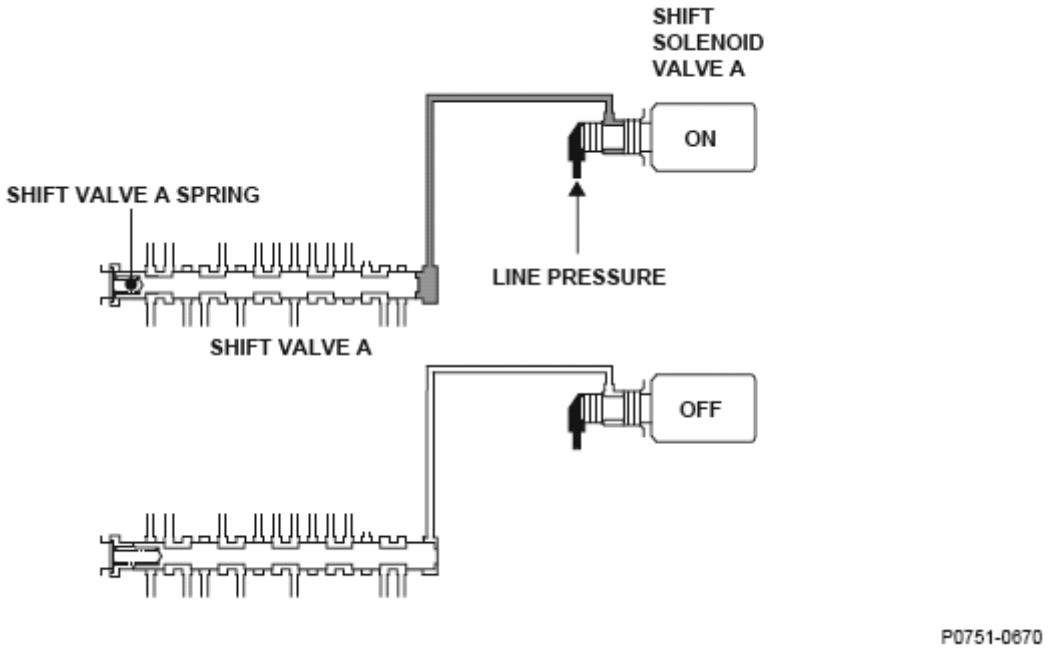


Fig. 366: Shift Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 367: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve A is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve A. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve A from the PCM is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve A ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)(2), (4), (5)	-
Vehicle speed	5 mph (9 km/h)(2), (4), (5)	
Shift status	1st(1), (6)	
	2nd --> 3rd(2), (4), (5)	
	5th(3), (7)	
	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796,	

No active DTCs	P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780
(1) Symptom 1-A (2) Symptom 1-B (3) Symptom 2-A (4) Symptom 2-B (5) Symptom 3-A (6) Symptom 3-B (7) Symptom 3-C	

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	2nd --> 3rd gear upshift	Driving in 2nd gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	2nd --> 3rd gear upshift	Driving in 2nd gear

SYMPTOM 3 (SYMPTOM 3-B OR SYMPTOM 3-C OCCURS AFTER SYMPTOM 3-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	2nd --> 3rd gear upshift	Driving in 2nd gear
3-B	Driving in 1st gear	Neutral
3-C	Driving in 5th gear	Neutral

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0752 (70): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0752: SHIFT SOLENOID VALVE A STUCK ON (R18A4 ENGINE)

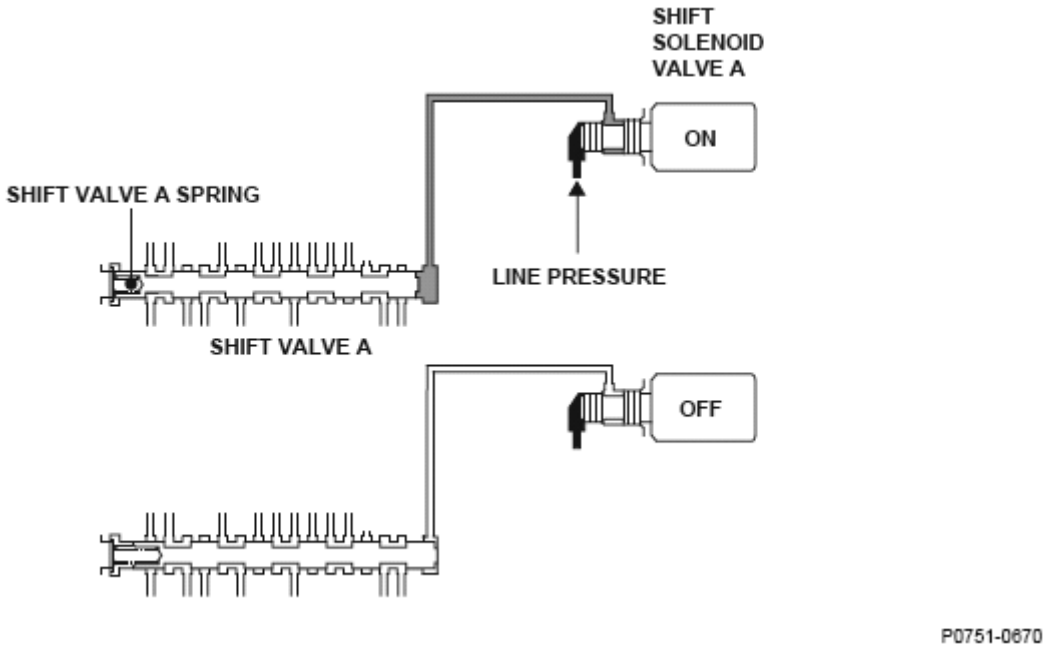


Fig. 368: Shift Solenoid Valve - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 369: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve A is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve A. The signal from the PCM is

output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve A from the PCM is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve A ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)(2), (4), (5)	-
Vehicle speed	5 mph (9 km/h)(2), (4), (5)	-
Shift status	1st(1), (6)	
	2nd --> 3rd(2), (4), (5)	
	5th(3), (7)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

(5) Symptom 3-A

(6) Symptom 3-B

(7) Symptom 3-C

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	2nd --> 3rd gear upshift	Driving in 2nd gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	2nd --> 3rd gear upshift	Driving in 2nd gear

SYMPTOM 3 (SYMPTOM 3-B OR SYMPTOM 3-C OCCURS AFTER SYMPTOM 3-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	2nd --> 3rd gear upshift	Driving in 2nd gear
3-B	Driving in 1st gear	Neutral
3-C	Driving in 5th gear	Neutral

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0756 (71): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0756: SHIFT SOLENOID VALVE B STUCK OFF (R18A1 ENGINE)

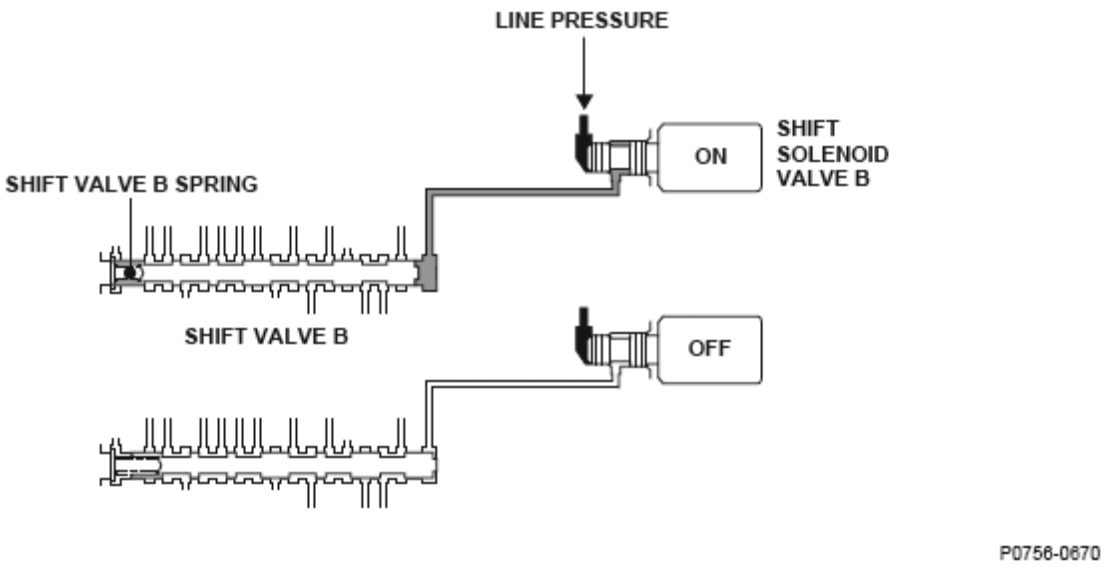


Fig. 370: Shift Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 371: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve B is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve B. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve B from the PCM is ON, and line pressure is applied to shift valve B, it operates against the shift valve B spring. When the signal to shift solenoid valve B from the PCM is OFF, and line pressure is discharged, shift valve B is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve B OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern

DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (4)	
	4th --> 5th(2)	
	5th(3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 2-A

(3) Symptom 3-A

(4) Symptom 3-B

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Driving in 3rd gear

MALFUNCTION THRESHOLD - SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	4th --> 5th gear upshift	Turn on the 3rd clutch transmission fluid pressure switch

SYMPTOM 3 (SYMPTOM 3-B OCCURS AFTER SYMPTOM 3-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 5th gear	Neutral
3-B	Driving in 1st gear	Driving in 3rd gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0756 (71): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0756: SHIFT SOLENOID VALVE B STUCK OFF (R18A4 ENGINE)

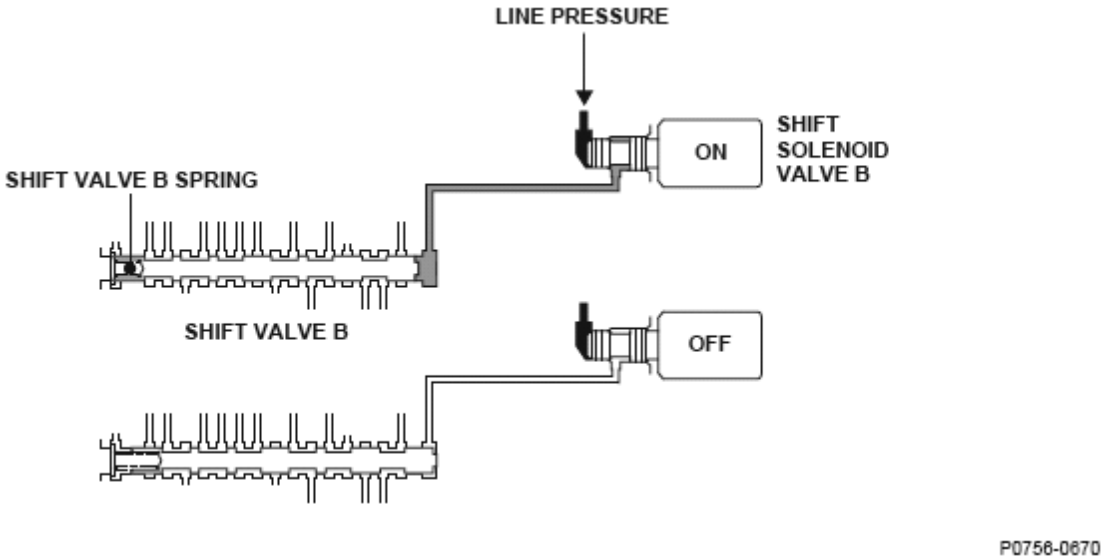


Fig. 372: Shift Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 373: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve B is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve B. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve B from the PCM is ON, and line pressure is applied to shift valve B, it operates against the shift valve B spring. When the signal to shift solenoid valve B from the PCM is OFF, and line pressure is discharged, shift valve B is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve B OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (4)	
	4th --> 5th(2)	
	5th(3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746,	

	P1747, P1780
(1) Symptom 1-A (2) Symptom 2-A (3) Symptom 3-A (4) Symptom 3-B	

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Driving in 3rd gear

MALFUNCTION THRESHOLD - SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	4th --> 5th gear upshift	Turn on the 3rd clutch transmission fluid pressure switch

SYMPTOM 3 (SYMPTOM 3-B OCCURS AFTER SYMPTOM 3-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 5th gear	Neutral
3-B	Driving in 1st gear	Driving in 3rd gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0757 (71): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0757: SHIFT SOLENOID VALVE B STUCK ON (R18A1 ENGINE)

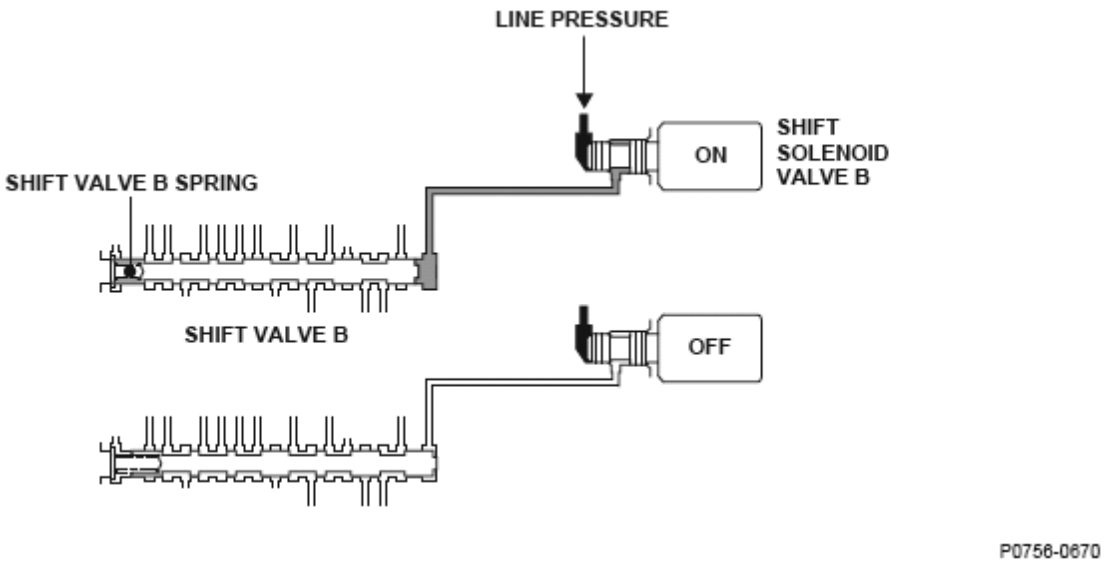


Fig. 374: Shift Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st	CPC A	LINE	CPC C		CPC A					
2nd	CPC B		CPC B	LINE	CPC B		CPC A			
3rd	CPC C				CPC C	CPC C	CPC C			
4th							CPC B	CPC B	CPC B	
5th									CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 375: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve B is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve B. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve B from the PCM is ON, and line pressure is applied to shift valve B, it operates against the shift valve B spring. When the signal to shift solenoid valve B from the PCM is OFF, and line pressure is discharged, shift valve B is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve B ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (2)	
	3rd(3), (4), (5)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 2-A

(3) Symptom 3-A

(4) Symptom 1-B

(5) Symptom 2-B

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	Driving in 3rd gear	Driving in 5th gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	Driving in 3rd gear	Driving in 5th gear

SYMPTOM 3

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 3rd gear	Driving in 5th gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0757 (71): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0757: SHIFT SOLENOID VALVE B STUCK ON (R18A4 ENGINE)

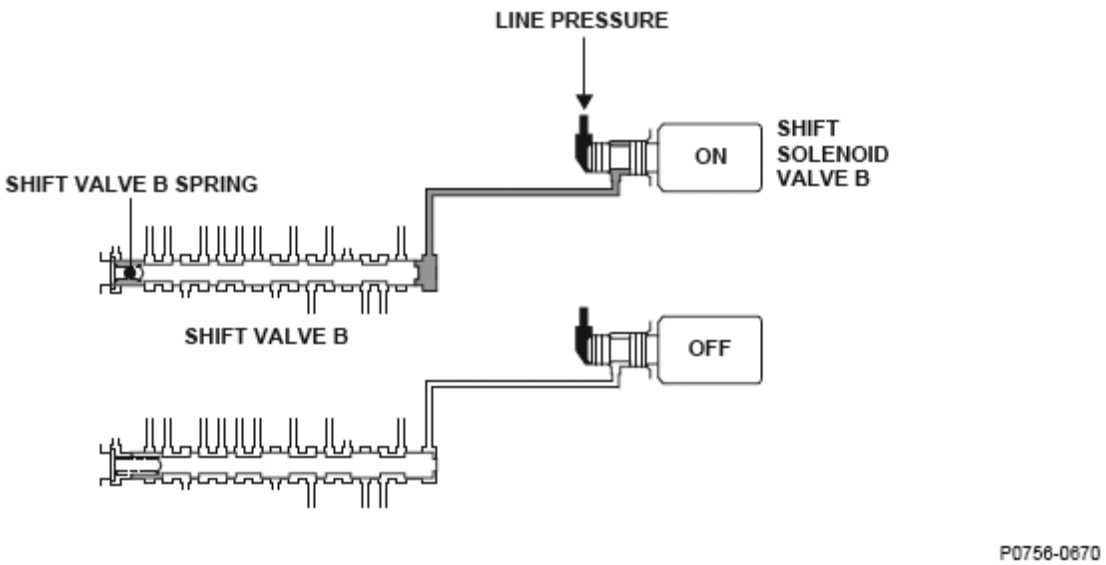


Fig. 376: Shift Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 377: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve B is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve B. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve B from the PCM is ON, and line pressure is applied to shift valve B, it operates against the shift valve B spring. When the signal to shift solenoid valve B from the PCM is OFF, and line pressure is discharged, shift valve B is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve B ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (2)	
	3rd(3), (4), (5)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 2-A

(3) Symptom 3-A

(4) Symptom 1-B

(5) Symptom 2-B

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	Driving in 3rd gear	Driving in 5th gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	Driving in 3rd gear	Driving in 5th gear

SYMPTOM 3

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 3rd gear	Driving in 5th gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0761 (72): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0761: SHIFT SOLENOID VALVE C STUCK OFF (R18A1 ENGINE)

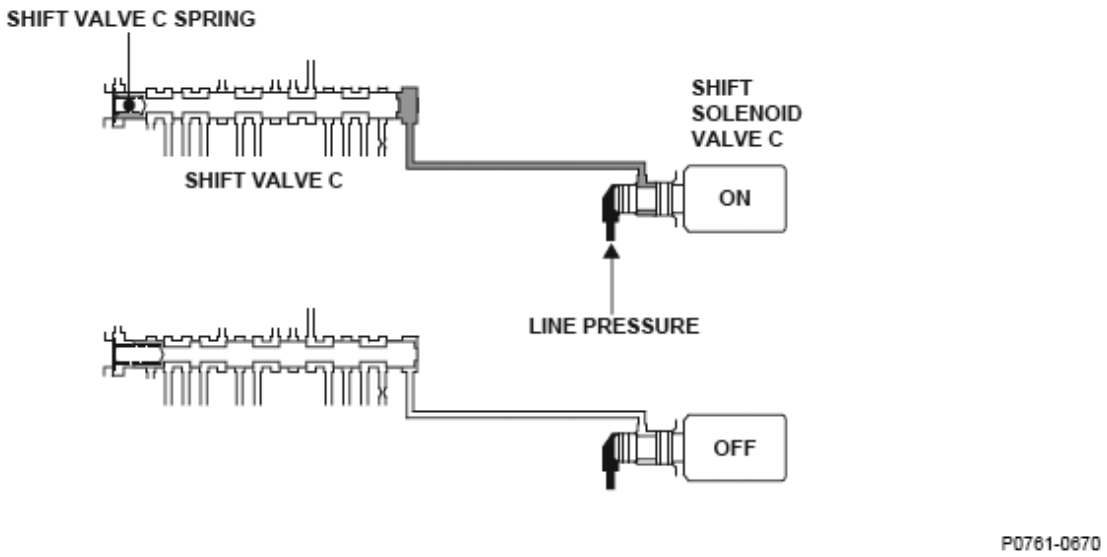


Fig. 378: Shift Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 379: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve C is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve C. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve C from the PCM is ON, and line pressure is applied to shift valve C, it operates against the shift valve C spring. When the signal to shift solenoid valve C from the PCM is OFF, and line pressure is discharged, shift valve C is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve C OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	3rd --> 4th(1), (3)	
	5th(2)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
(1) Symptom 1-A (2) Symptom 2-A (3) Symptom 2-B		

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0761 (72): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0761: SHIFT SOLENOID VALVE C STUCK OFF (R18A4 ENGINE)

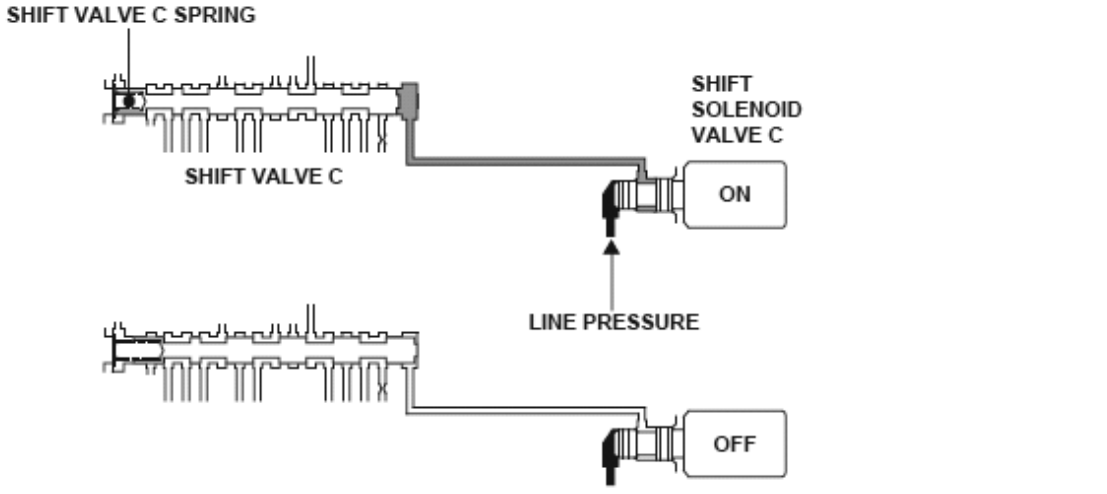


Fig. 380: Shift Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 381: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve C is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve C. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve C from the PCM is ON, and line pressure is applied to shift valve C, it operates against the shift valve C spring. When the signal to shift solenoid valve C from the PCM is OFF, and line pressure is discharged, shift valve C is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve C OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	3rd --> 4th(1), (3)	
	5th(2)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 2-A

(3) Symptom 2-B

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

MALFUNCTION THRESHOLD - SYMPTOM 1

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 5th gear	Neutral
2-B	3rd --> 4th gear upshift	Turn on the 2nd clutch transmission fluid pressure switch

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0762 (72): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0762: SHIFT SOLENOID VALVE C STUCK ON (R18A1 ENGINE)

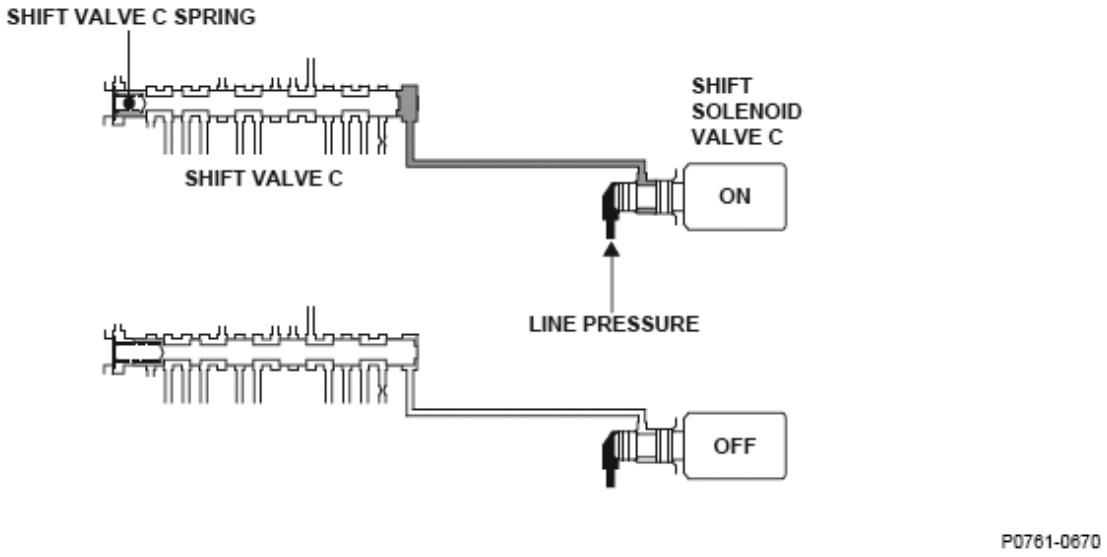


Fig. 382: Shift Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 383: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve C is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve C. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve C from the PCM is ON, and line pressure is applied to shift valve C, it operates against the shift valve C spring. When the signal to shift solenoid valve C from the PCM is OFF, and line pressure is discharged, shift valve C is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve C ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (3)	
	2nd(2), (4), (5)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

(5) Symptom 3-A

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	Driving in 2nd gear	Driving in 4th gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	Driving in 2nd gear	Driving in 4th gear

SYMPTOM 3

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 2nd gear	Driving in 4th gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0762 (72): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0762: SHIFT SOLENOID VALVE C STUCK ON (R18A4 ENGINE)

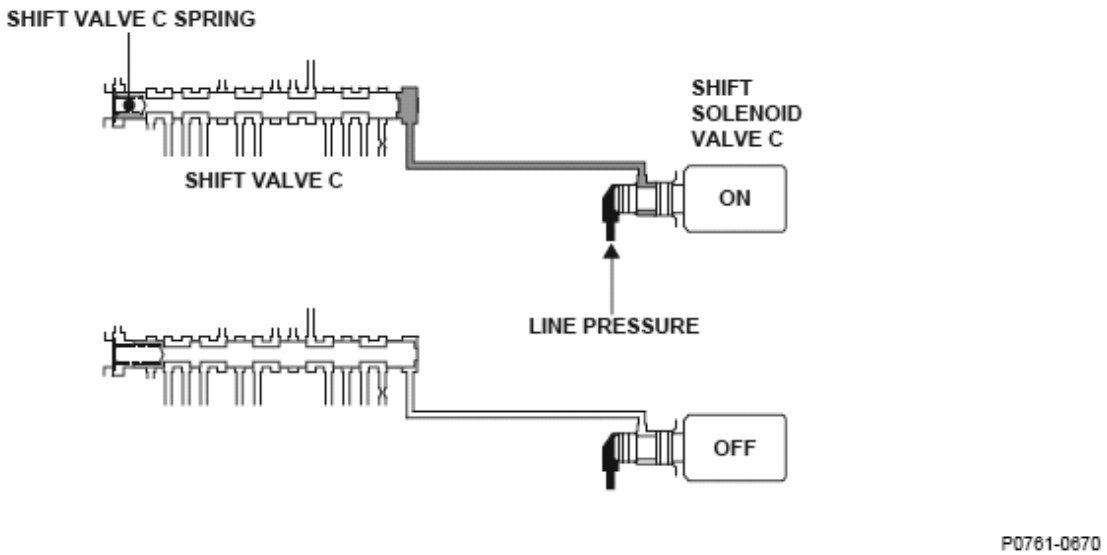


Fig. 384: Shift Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st	CPC A	LINE	CPC C		CPC A					
2nd	CPC B		CPC B	LINE	CPC B		CPC A			
3rd	CPC C				CPC C	CPC C	CPC C			
4th							CPC B	CPC B	CPC B	
5th									CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 385: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve C is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve C. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve C from the PCM is ON, and line pressure is applied to shift valve C, it operates against the shift valve C spring. When the signal to shift solenoid valve C from the PCM is OFF, and line pressure is discharged, shift valve C is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve C ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	1st(1), (3)	
	2nd(2), (4), (5)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780612 of 1085	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

(5) Symptom 3-A

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	Driving in 2nd gear	Driving in 4th gear

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	Driving in 2nd gear	Driving in 4th gear

SYMPTOM 3

Symptom	Gear position commanded by the PCM	Actual gear position
3-A	Driving in 2nd gear	Driving in 4th gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0766 (73): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0766: SHIFT SOLENOID VALVE D STUCK OFF (R18A1 ENGINE)

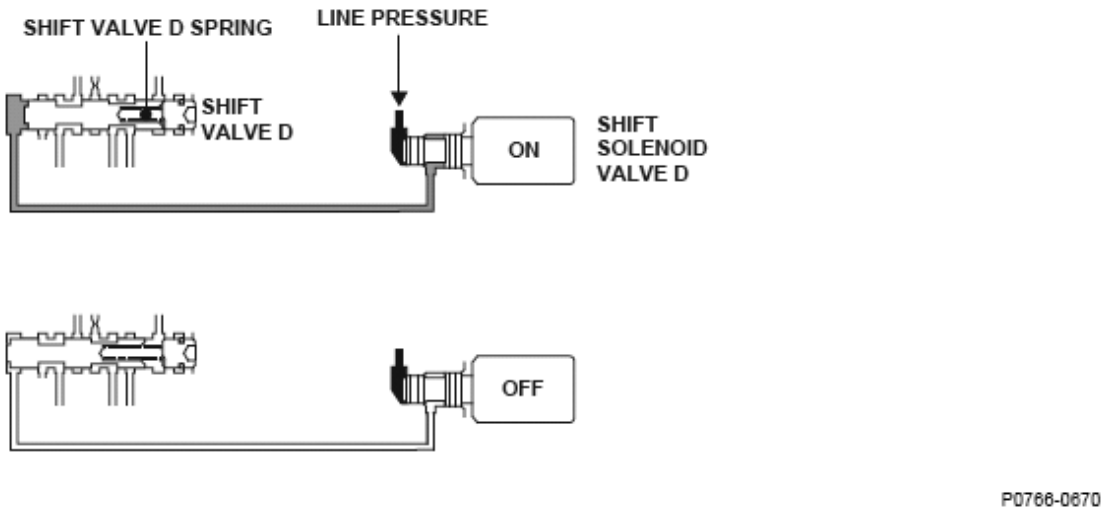


Fig. 386: Shift Solenoid Valve D - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 387: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve D is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve D. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve D from the PCM is ON, and line pressure is applied to shift valve D, it operates against the shift valve D spring. When the signal to shift solenoid valve D from the PCM is OFF, and line pressure is discharged, shift valve D is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve D OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	R(1)	
	1st(2)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

Malfunction Threshold (R18A1 Engine)

Symptom 1 occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in the R position	Neutral
1-B	Driving in 1st gear	Driving in 1st gear

Driving Pattern (R18A1 Engine)

1. Start the engine.
2. Shift to the N position, then shift to the R position and drive briefly.
3. Shift to the D position and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0766 (73): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0766: SHIFT SOLENOID VALVE D STUCK OFF (R18A4 ENGINE)

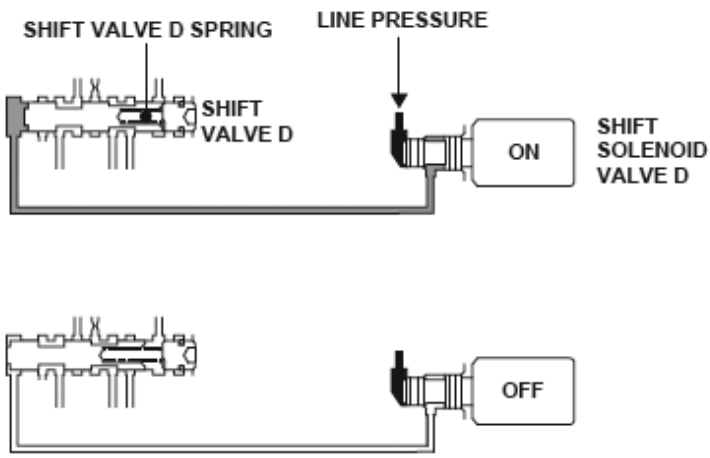


Fig. 388: Shift Solenoid Valve D - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 389: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve D is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve D. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve D from the PCM is ON, and line pressure is applied to shift valve D, it operates against the shift valve D spring. When the signal to shift solenoid valve D from the PCM is OFF, and line pressure is discharged, shift valve D is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve D OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Shift status	R(1)	
	1st(2)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

Malfunction Threshold (R18A4 Engine)

Symptom 1 occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in the R position	Neutral
1-B	Driving in 1st gear	Driving in 1st gear

Driving Pattern (R18A4 Engine)

1. Start the engine.
2. Shift to the N position, then shift to the R position and drive briefly.
3. Shift to the D position and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0767 (73): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0767: SHIFT SOLENOID VALVE D STUCK ON (R18A1 ENGINE)

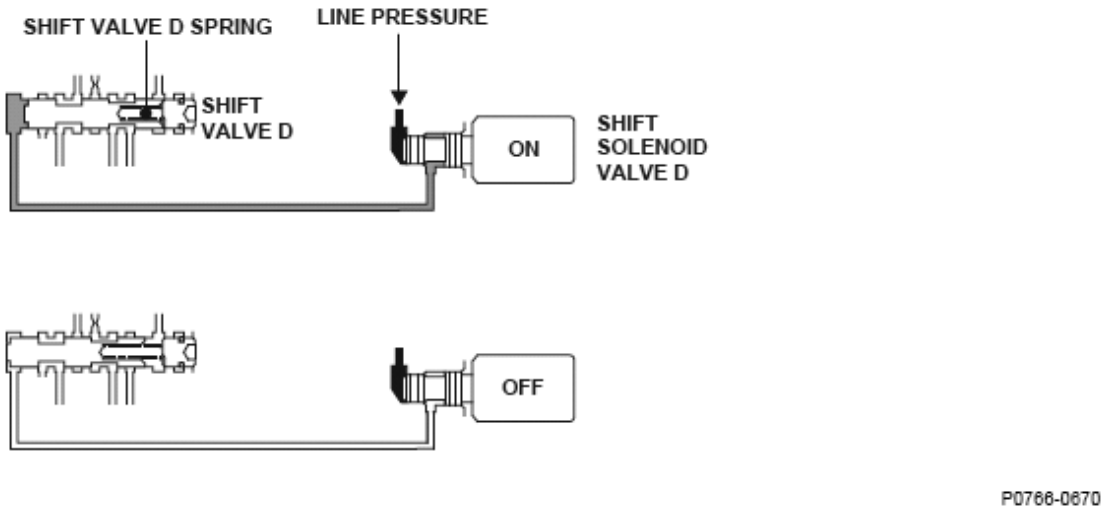


Fig. 390: Shift Solenoid Valve D - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 391: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Shift solenoid valve D is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve D. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve D from the PCM is ON, and line pressure is applied to shift valve D, it operates against the shift valve D spring. When the signal to shift solenoid valve D from the PCM is OFF, and line pressure is discharged, shift valve D is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve D ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(2), (4)
ATF temperature	-	248°F (120°C)(2), (4)
Shift status	1st(1), (3)	
	N --> R(2), (4)	
No active DTCs	P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

(4) Symptom 2-B

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	N --> R	Reverse

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	N --> R	Reverse

Driving Pattern (R18A1 Engine)

1. Start the engine.

2. Shift to the D position, and accelerate the vehicle until the transmission shifts into 5th gear.
3. Shift to the N position, then shift to the R position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0767 (73): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0767: SHIFT SOLENOID VALVE D STUCK ON (R18A4 ENGINE)

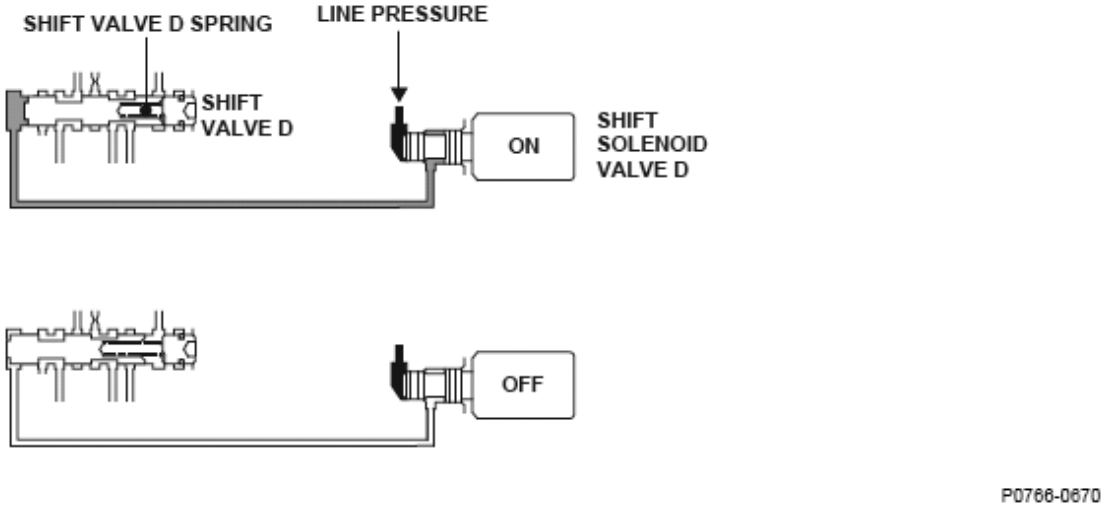


Fig. 392: Shift Solenoid Valve D - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 393: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Shift solenoid valve D is installed in the transmission housing. It is controlled by the ON/OFF signal from the powertrain control module (PCM), to apply line pressure to shift valve D. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. When the signal to shift solenoid valve D from the PCM is ON, and line pressure is applied to shift valve D, it operates against the shift valve D spring. When the signal to shift solenoid valve D from the PCM is OFF, and line pressure is discharged, shift valve D is inactive. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change determined by the shift schedule. When an improper gear ratio is output compared to the predetermined gear change mode, a shift solenoid valve D ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(2), (4)
ATF temperature	-	248°F (120°C)(2), (4)
Shift status	1st(1), (3)	
	N --> R(2), (4)	
No active DTCs	P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973,	

	P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780
(1) Symptom 1-A (2) Symptom 1-B (3) Symptom 2-A (4) Symptom 2-B	

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 1st gear	Neutral
1-B	N --> R	Reverse

SYMPTOM 2 (SYMPTOM 2-B OCCURS AFTER SYMPTOM 2-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Driving in 5th gear
2-B	N --> R	Reverse

Driving Pattern (R18A4 Engine)

1. Start the engine.
2. Shift to the D position, and accelerate the vehicle until the transmission shifts into 5th gear.
3. Shift to the N position, then shift to the R position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0776 (77): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0776: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK OFF (R18A1 ENGINE)

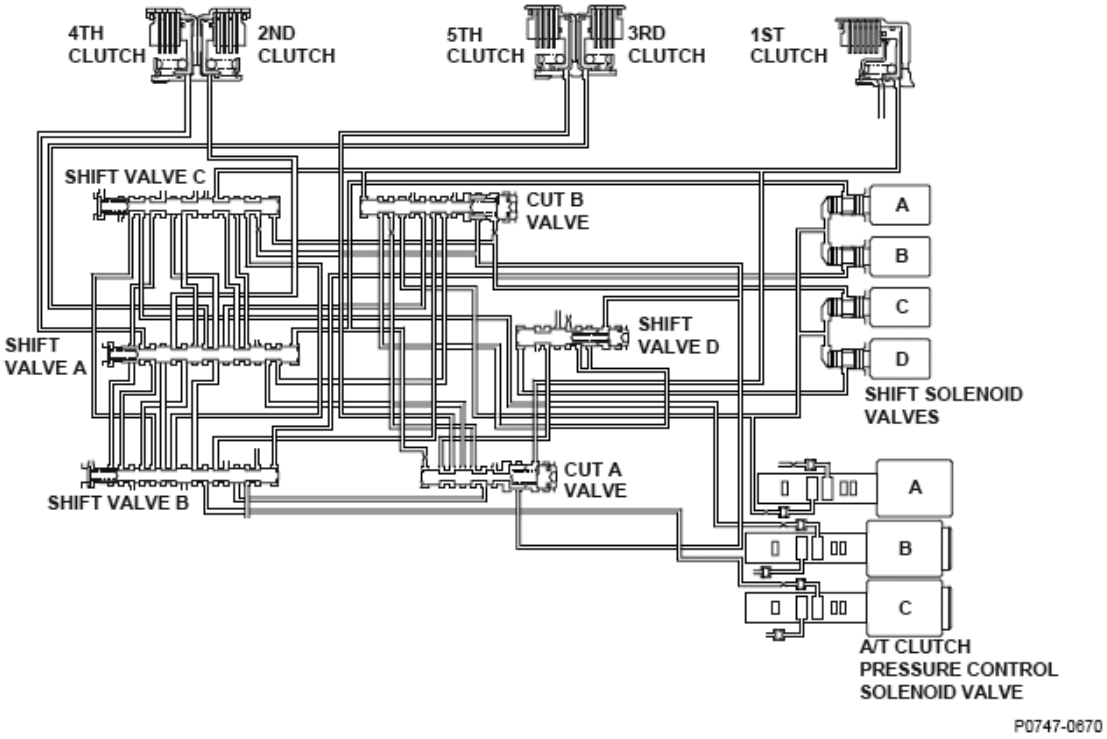


Fig. 394: A/T Clutch Pressure Control Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 395: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve B or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Accelerator pedal position	2 %	-
Accelerator pedal position variation	-	1 %/20 milliseconds
Shift status	1st --> 2nd	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The engine speed flares for at least 2.5 seconds when upshifting from 1st - 2nd.

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0776 (77): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0776: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK OFF (R18A4 ENGINE)

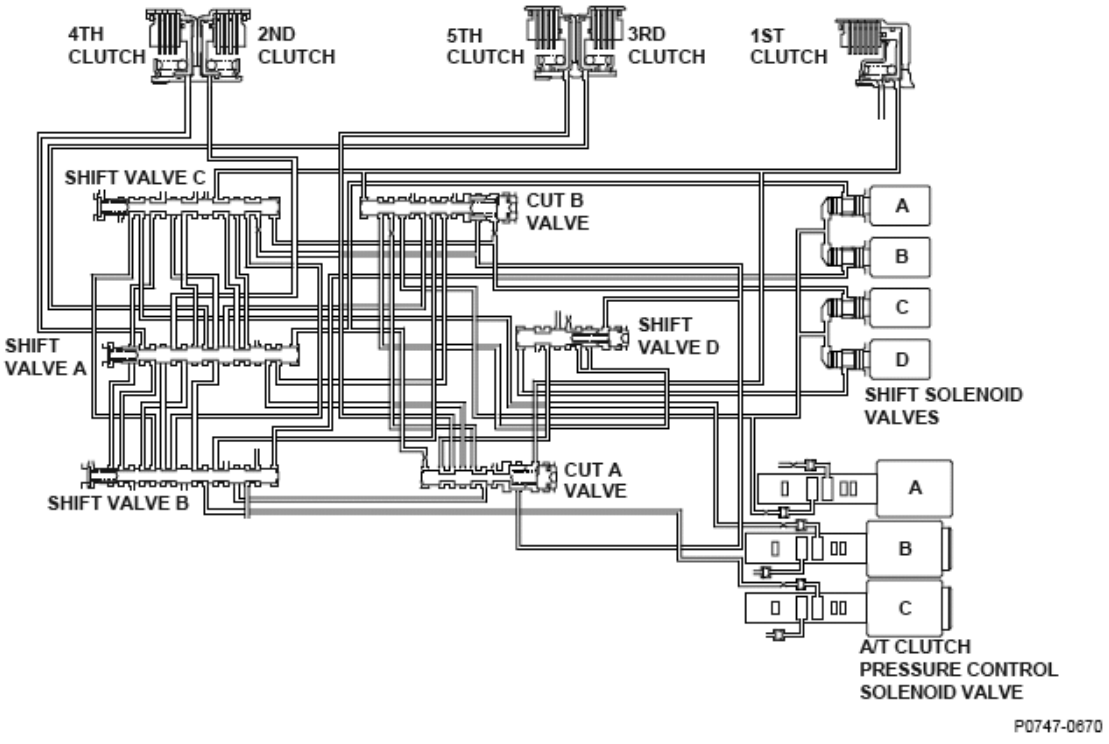


Fig. 396: A/T Clutch Pressure Control Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1st	CPC A	LINE	CPC C		CPC A						
2nd	CPC B		CPC B	LINE	CPC B		CPC A				
3rd	CPC C				CPC C	CPC C	CPC C				
4th							CPC B	CPC B	CPC B		
5th									CPC C	CPC C	

CPC: Clutch Pressure Control pressure

Fig. 397: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to

each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve B or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Accelerator pedal position	2 %	-
Accelerator pedal position variation	-	1 %/20 milliseconds
Shift status	1st --> 2nd	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A4 Engine)

The engine speed flares for at least 2.5 seconds when upshifting from 1st - 2nd.

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and

the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0777 (77): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0777: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK ON (R18A1 ENGINE)

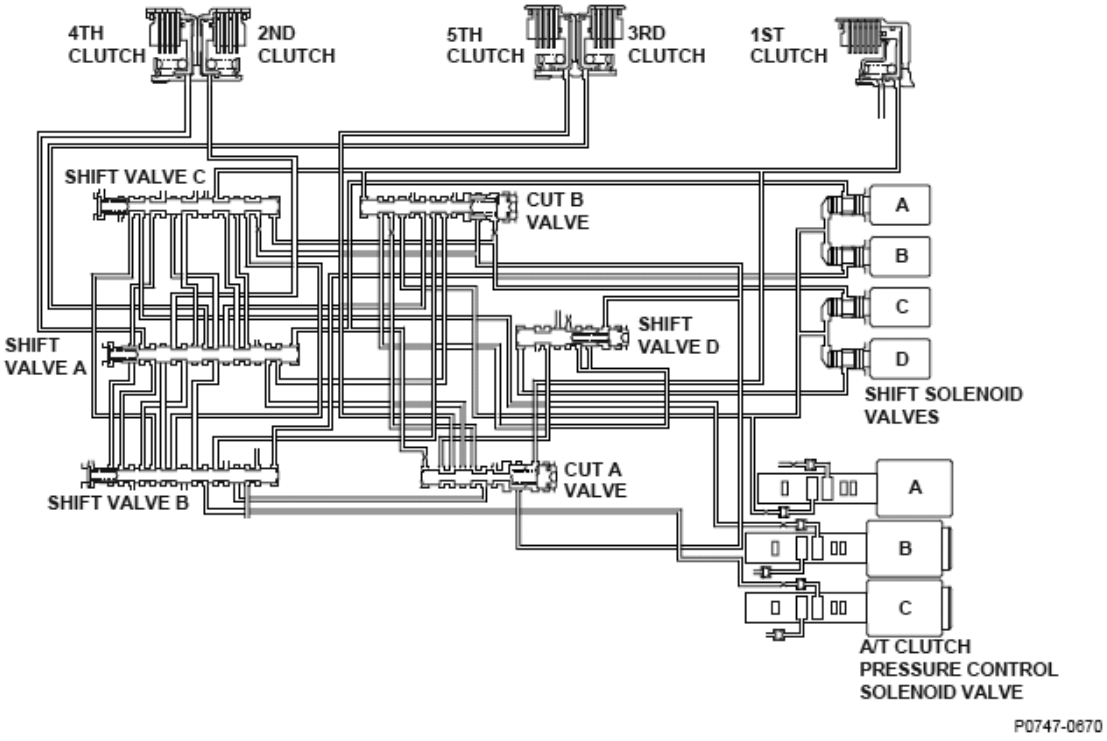


Fig. 398: A/T Clutch Pressure Control Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 399: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve B or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Shift status	2nd --> 3rd(1)	
	4th --> 5th(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position

1-A	2nd --> 3rd gear upshift	Held in 2nd gear
1-B	4th --> 5th gear upshift	Held in 4th gear

SYMPTOM 2-A

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	4th --> 5th gear upshift	Held in 4th gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0777 (77): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0777: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B STUCK ON (R18A4 ENGINE)

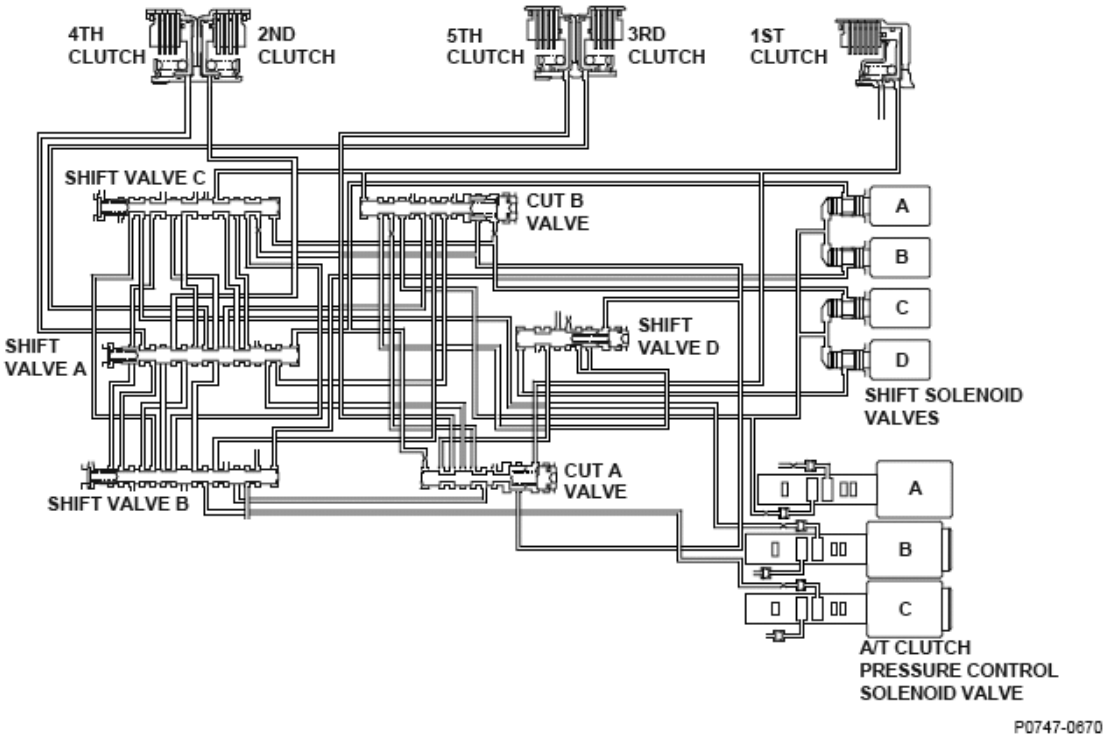


Fig. 400: A/T Clutch Pressure Control Solenoid Valve B - System Diagram

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1st	CPC A	LINE	CPC C		CPC A						
2nd	CPC B		CPC B	LINE	CPC B		CPC A				
3rd	CPC C				CPC C	CPC C	CPC C				
4th							CPC B	CPC B	CPC B		
5th									CPC C	CPC C	

CPC: Clutch Pressure Control pressure

Fig. 401: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve B or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Shift status	2nd --> 3rd(1)	
	4th --> 5th(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	2nd --> 3rd gear upshift	Held in 2nd gear
1-B	4th --> 5th gear upshift	Held in 4th gear

SYMPTOM 2-A

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	4th --> 5th gear upshift	Held in 4th gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0796 (78): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0796: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK OFF (R18A1 ENGINE)

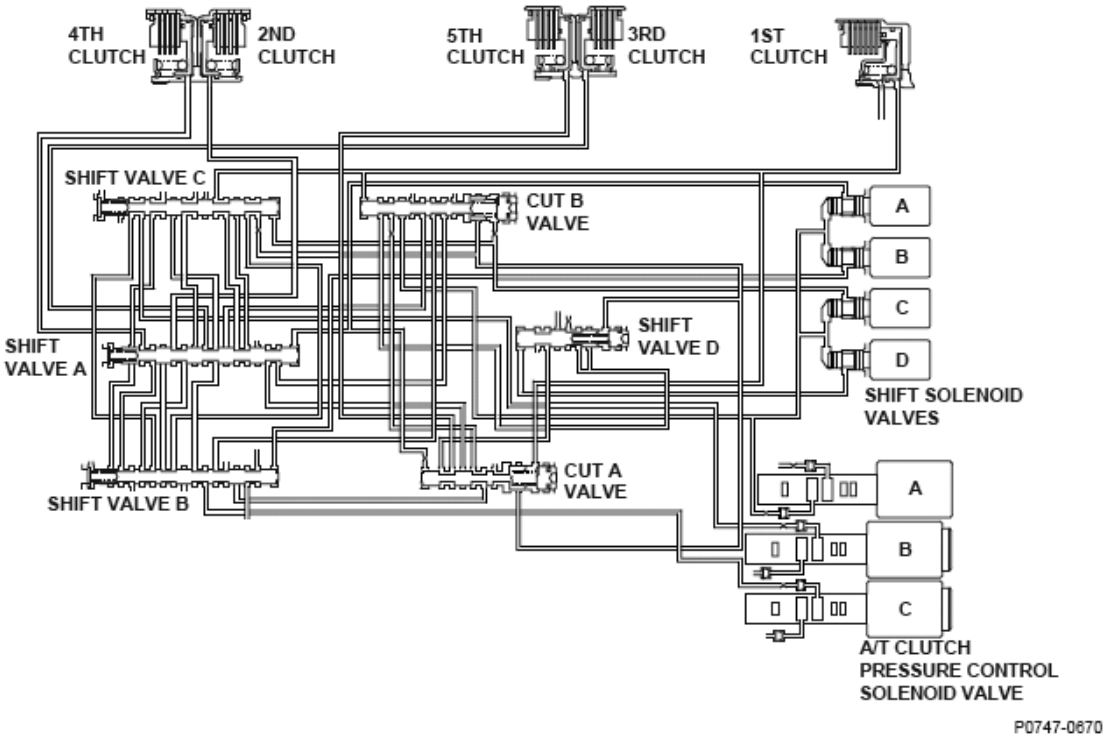


Fig. 402: A/T Clutch Pressure Control Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 403: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve C or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)(2)	-
ATF temperature	-4°F (-20°C)(2), (3)	-
Vehicle speed	5 mph (9 km/h)(2), (3)	-
Accelerator pedal position	2 %(2), (3)	-
Accelerator pedal position variation	-	1 %/20 milliseconds(2), (3)
Shift status	5th(1)	
	2nd --> 3rd(2), (3)	
	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718,	

No active DTCs	P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780
(1) Symptom 1-A (2) Symptom 1-B (3) Symptom 2-A	

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 5th gear	Neutral
1-B	2nd --> 3rd gear upshift	The engine speed flares

SYMPTOM 2 (SYMPTOM 2 OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	2nd --> 3rd gear upshift	The engine speed flares

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0796 (78): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0796: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK OFF (R18A4 ENGINE)

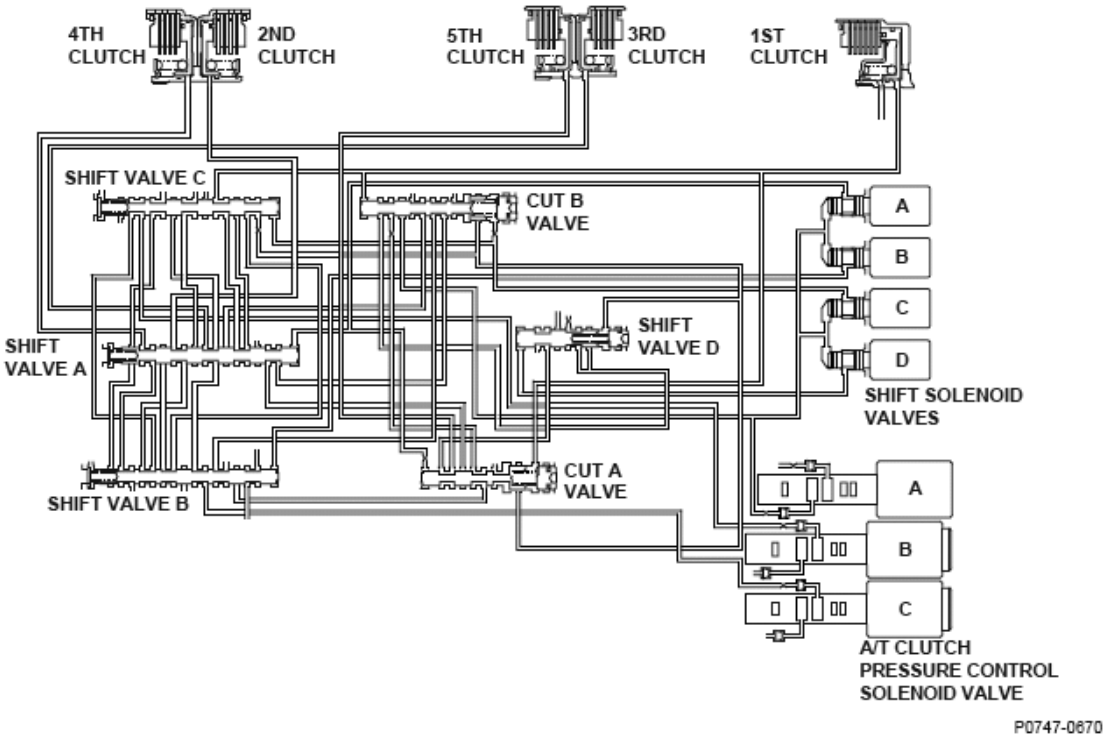


Fig. 404: A/T Clutch Pressure Control Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 405: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve C or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine coolant temperature	32°F (0°C)(2)	-
ATF temperature	-4°F (-20°C)(2), (3)	-
Vehicle speed	5 mph (9 km/h)(2), (3)	-
Accelerator pedal position	2 %(2), (3)	-
Accelerator pedal position variation	-	1 %/20 milliseconds(2), (3)
Shift status	5th(1)	
	2nd --> 3rd(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
(1) Symptom 1-A (2) Symptom 1-B (3) Symptom 2-A		

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 5th gear	Neutral
1-B	2nd --> 3rd gear upshift	The engine speed flares

SYMPTOM 2 (SYMPTOM 2 OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	2nd --> 3rd gear upshift	The engine speed flares

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0797 (78): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0797: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK ON (R18A1 ENGINE)

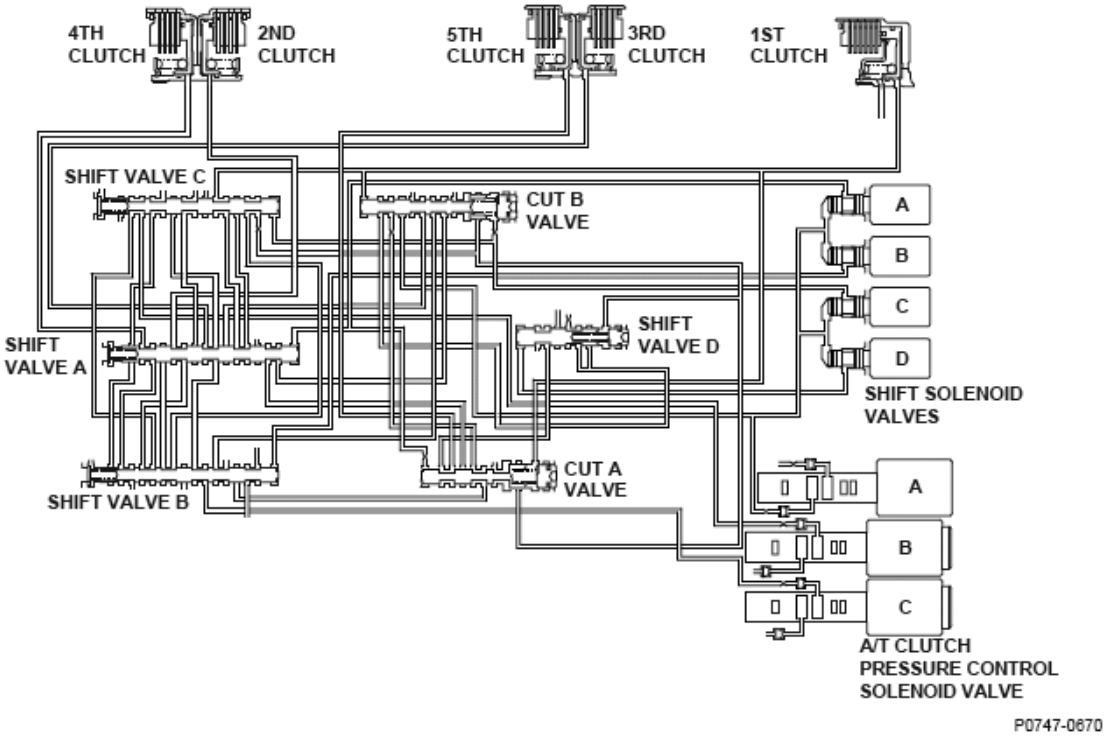


Fig. 406: A/T Clutch Pressure Control Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 407: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve C or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Shift status	1st --> 2nd(1)	
	3rd --> 4th(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	1st --> 2nd gear upshift	Held in 1st gear
1-B	3rd --> 4th gear upshift	Held in 3rd gear

SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	3rd --> 4th gear upshift	Held in 3rd gear

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0797 (78): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0797: A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C STUCK ON (R18A4 ENGINE)

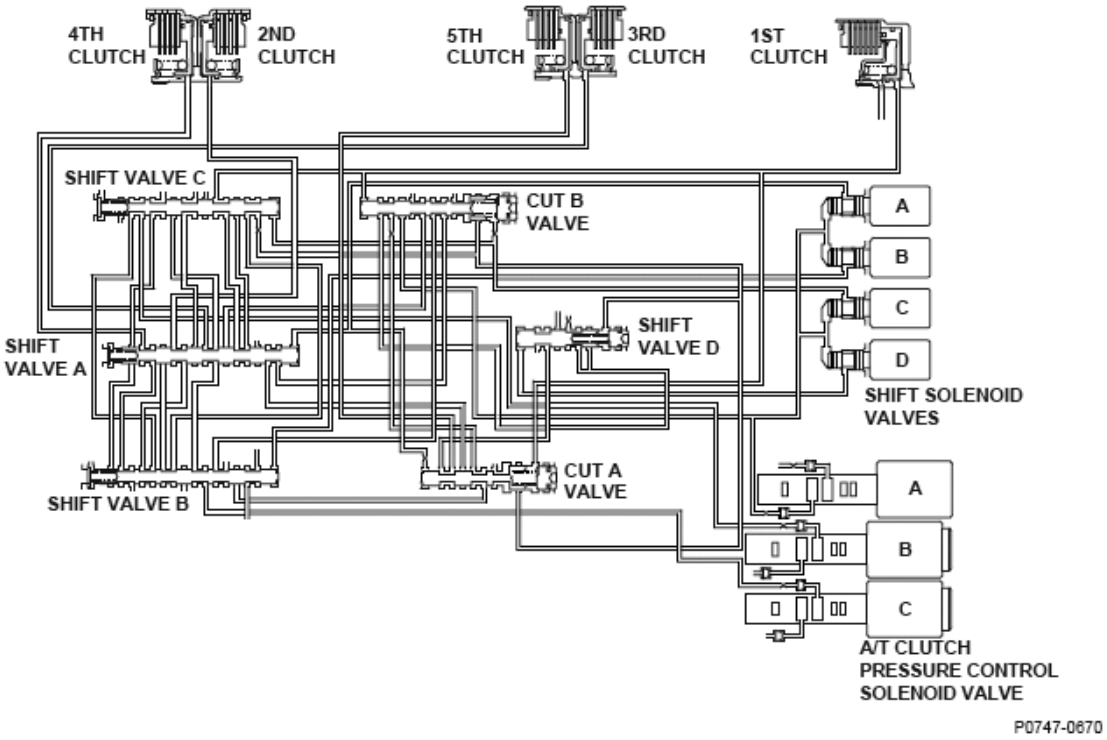


Fig. 408: A/T Clutch Pressure Control Solenoid Valve C - System Diagram

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 409: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

Hydraulic pressure to each clutch is controlled by the shift valve. The shift valve activates according to the ON/OFF status of shift solenoid valves A, B, C, and D. Hydraulic pressure supply in D position is shown above. The line pressure or the clutch pressure control pressure (CPC A, CPC B, or CPC C) is supplied to each clutch by the shift valve activated. The powertrain control module (PCM) computes the actual ratio of mainshaft and countershaft revolutions. If a difference between the actual ratio and the commanded gear occurs when shifting to each gear position, a malfunction in A/T clutch pressure control solenoid valve C or the hydraulic system is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
ATF temperature	-4°F (-20°C)	-
Vehicle speed	5 mph (9 km/h)	-
Shift status	1st --> 2nd(1)	
	3rd --> 4th(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0706, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	1st --> 2nd gear upshift	Held in 1st gear
1-B	3rd --> 4th gear upshift	Held in 3rd gear

SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	3rd --> 4th gear upshift	Held in 3rd gear

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0812 (65): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0812: OPEN IN TRANSMISSION RANGE SWITCH ATP R SWITCH CIRCUIT (R18A1 ENGINE)

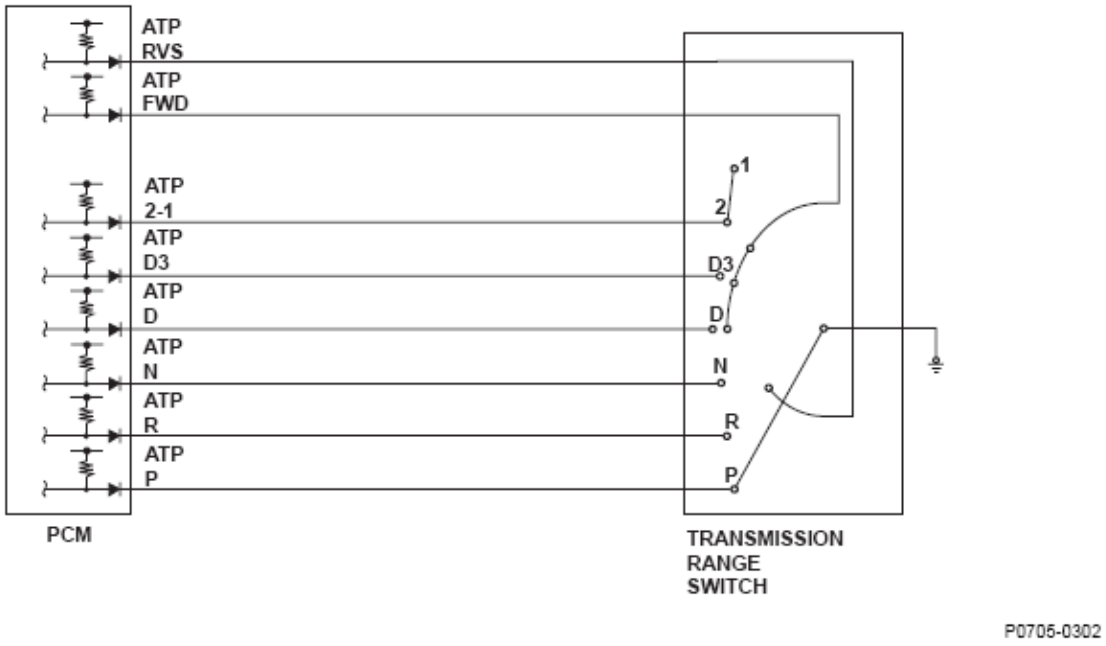


Fig. 410: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2/1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o

1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A1 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the R switch is OPEN with the shift lever in the R position, the PCM detects a switch OPEN failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Shift lever position	R	
No active DTCs	P0705, P0716, P0717, P0721, P0722, P1717	

Malfunction Threshold (R18A1 Engine)

No R signal is detected with the shift lever in the R position.

Driving Pattern (R18A1 Engine)

1. Start the engine.
2. Drive the vehicle at a speed of 3 mph (5 km/h) or less in the R position for at least 2 seconds.
3. Drive the vehicle at a speed of 3 mph (5 km/h) or more in the R position for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0812 (65): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0812: OPEN IN TRANSMISSION RANGE SWITCH ATP R SWITCH CIRCUIT (R18A4 ENGINE)

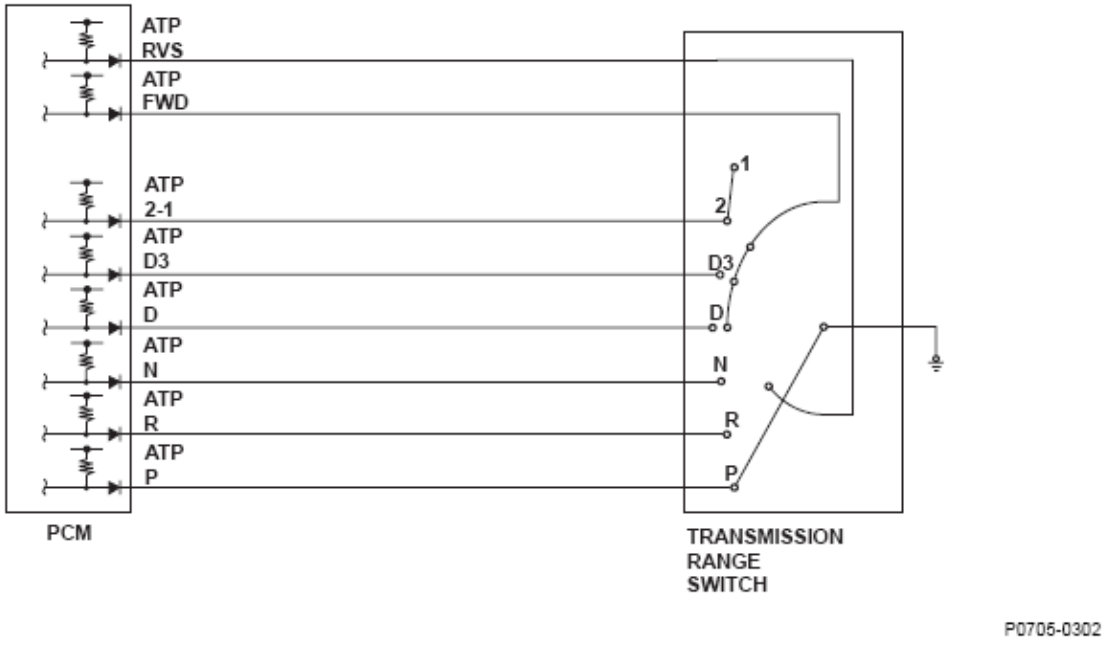


Fig. 411: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2/1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A4 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the R switch is OPEN with the shift lever in the R position, the PCM detects a switch OPEN failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Shift lever position	R	
No active DTCs	P0705, P0716, P0717, P0721, P0722, P1717	

Malfunction Threshold (R18A4 Engine)

No R signal is detected with the shift lever in the R position.

Driving Pattern (R18A4 Engine)

1. Start the engine.
2. Drive the vehicle at a speed of 3 mph (5 km/h) or less in the R position for at least 2 seconds.
3. Drive the vehicle at a speed of 3 mph (5 km/h) or more in the R position for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0842 (25): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0842: SHORT IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON (R18A1 ENGINE)

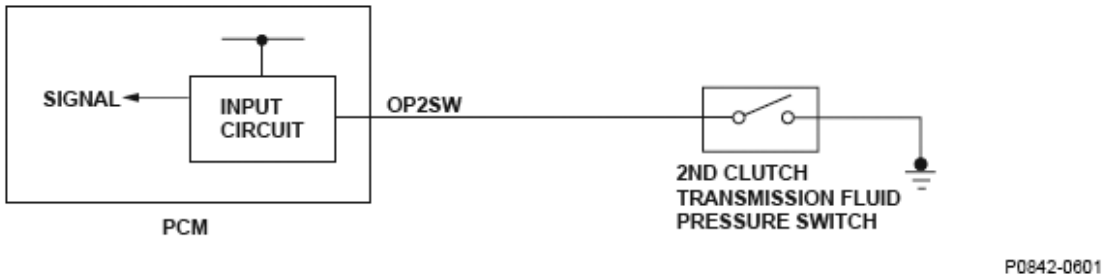


Fig. 412: 2nd Clutch Transmission Fluid Pressure Switch Circuit Diagram

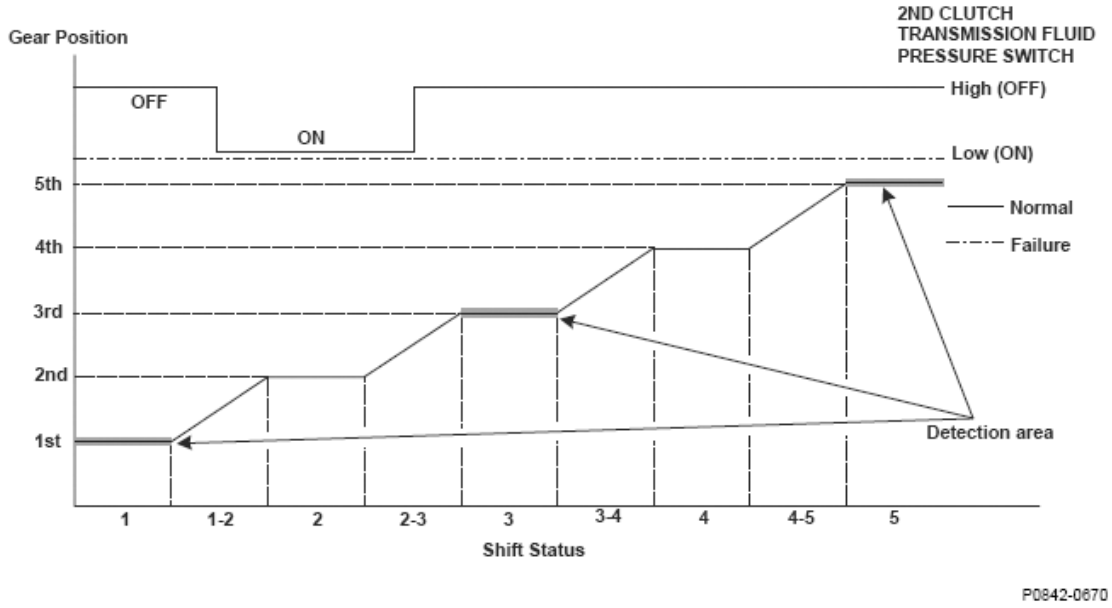


Fig. 413: Gear Position Graph

General Description (R18A1 Engine)

The 2nd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 2nd clutch. When hydraulic pressure is supplied to the 2nd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 2nd clutch, the switch is turned OFF. The signal from the 2nd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 2nd gear (1st --> 2nd, 3rd --> 2nd) to reduce the shock that occurs at the gear change.

If the 2nd clutch transmission fluid pressure switch is ON while driving the vehicle with the speed ratio of the output shaft (countershaft) to the input shaft (mainshaft) other than the 2nd ratio, the PCM detects a 2nd clutch transmission fluid pressure switch failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0843, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Others	Not during shifting	

Malfunction Threshold (R18A1 Engine)

The input signal from the 2nd clutch transmission fluid pressure switch to the PCM is low when driving in 1st gear, 3rd gear, or 5th gear.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in the D position and 3rd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0842 (25): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0842: SHORT IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON (R18A4 ENGINE)

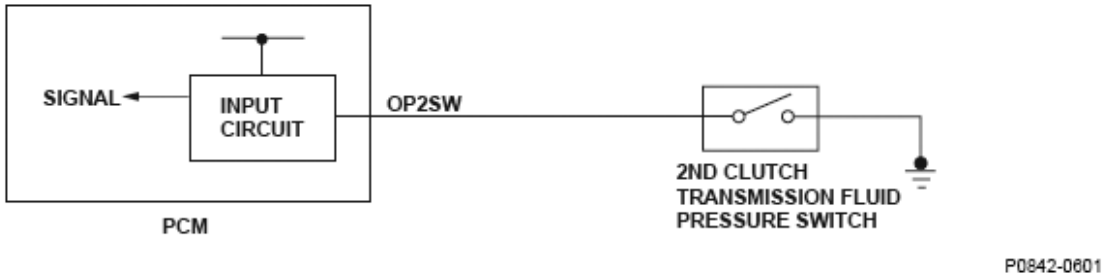


Fig. 414: 2nd Clutch Transmission Fluid Pressure Switch Circuit Diagram

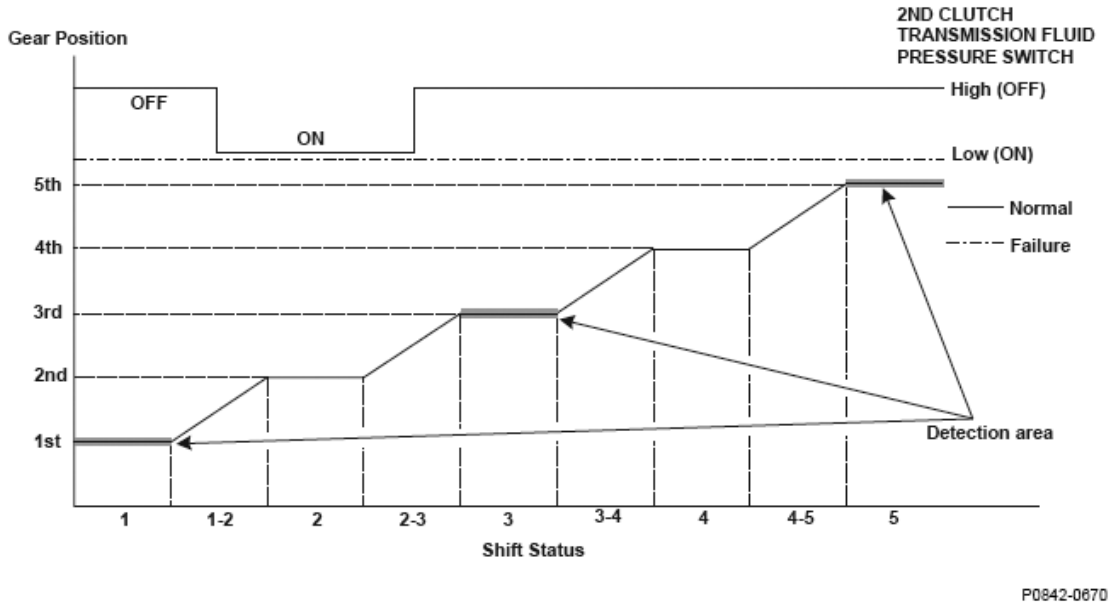


Fig. 415: Gear Position Graph

General Description (R18A4 Engine)

The 2nd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 2nd clutch. When hydraulic pressure is supplied to the 2nd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 2nd clutch, the switch is turned OFF. The signal from the 2nd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 2nd gear (1st --> 2nd, 3rd --> 2nd) to reduce the shock that occurs at the gear change.

If the 2nd clutch transmission fluid pressure switch is ON while driving the vehicle with the speed ratio of the output shaft (countershaft) to the input shaft (mainshaft) other than the 2nd ratio, the PCM detects a 2nd clutch transmission fluid pressure switch failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0843, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Others	Not during shifting	

Malfunction Threshold (R18A4 Engine)

The input signal from the 2nd clutch transmission fluid pressure switch to the PCM is low when driving in 1st gear, 3rd gear, or 5th gear.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in the D position and 3rd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0843 (25): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0843: OPEN IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF (R18A1 ENGINE)

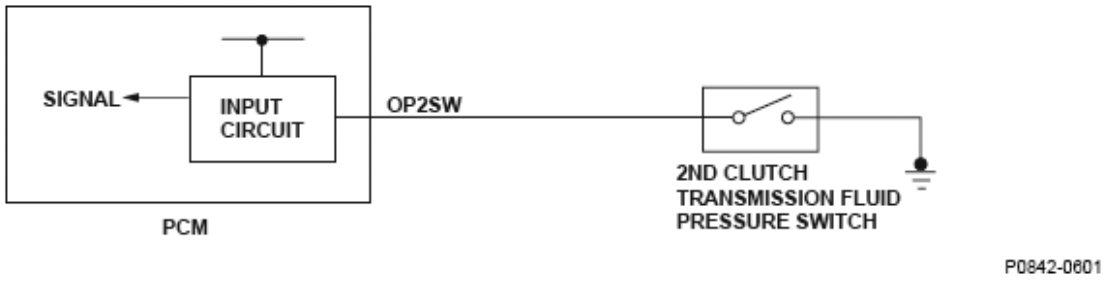


Fig. 416: 2nd Clutch Transmission Fluid Pressure Switch Circuit Diagram

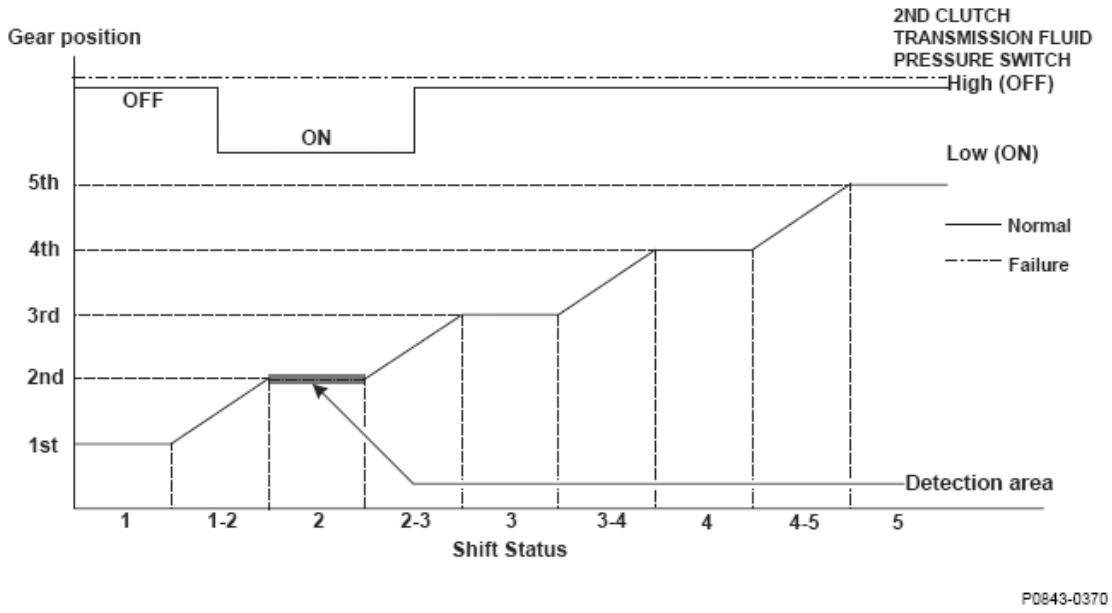


Fig. 417: Gear Position Graph

General Description (R18A1 Engine)

The 2nd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 2nd clutch. When hydraulic pressure is supplied to the 2nd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 2nd clutch, the switch is turned OFF. The signal from the 2nd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 2nd gear (1st --> 2nd, 3rd --> 2nd) to reduce the shock that occurs at the gear change. If the 2nd clutch transmission fluid pressure switch is OFF while the rotation speed ratio of the input/output pulses is that of 2nd gear, the PCM detects a malfunction in the 2nd clutch transmission fluid pressure switch and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Others	Not during shifting	

Malfunction Threshold (R18A1 Engine)

The input signal from the 2nd clutch transmission fluid pressure switch to the PCM is high when driving in 2nd gear.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in the D position and 2nd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0843 (25): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0843: OPEN IN 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF (R18A4 ENGINE)

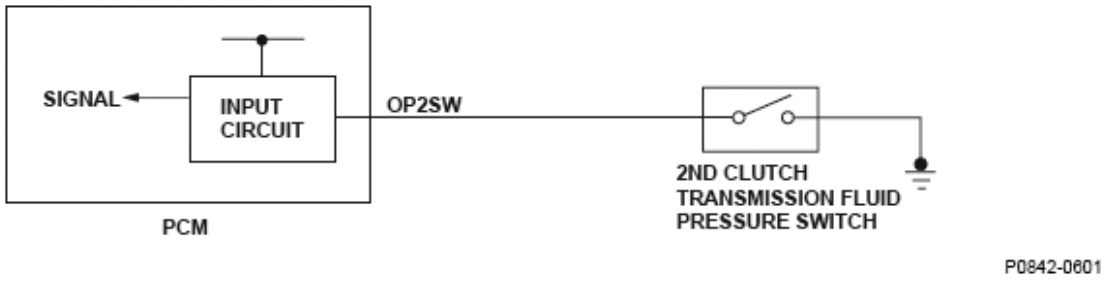


Fig. 418: 2nd Clutch Transmission Fluid Pressure Switch Circuit Diagram

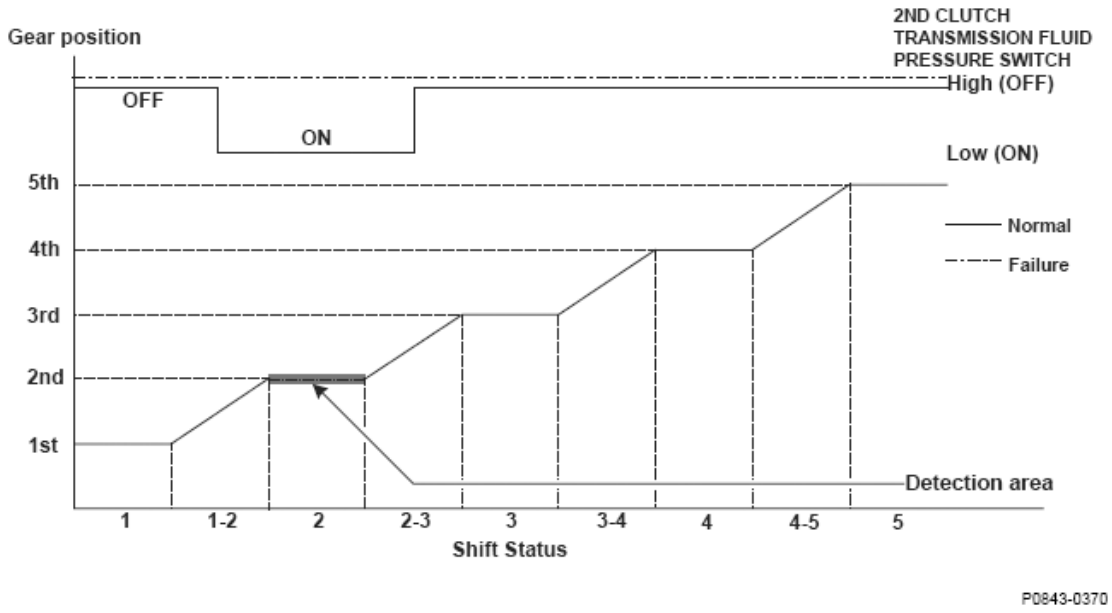


Fig. 419: Gear Position Graph

General Description (R18A4 Engine)

The 2nd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 2nd clutch. When hydraulic pressure is supplied to the 2nd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 2nd clutch, the switch is turned OFF. The signal from the 2nd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 2nd gear (1st --> 2nd, 3rd --> 2nd) to reduce the shock that occurs at the gear change. If the 2nd clutch transmission fluid pressure switch is OFF while the rotation speed ratio of the input/output pulses is that of 2nd gear, the PCM detects a malfunction in the 2nd clutch transmission fluid pressure switch and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Others	Not during shifting	

Malfunction Threshold (R18A4 Engine)

The input signal from the 2nd clutch transmission fluid pressure switch to the PCM is high when driving in 2nd gear.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in the D position and 2nd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0847 (26): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0847: SHORT IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON (R18A1 ENGINE)

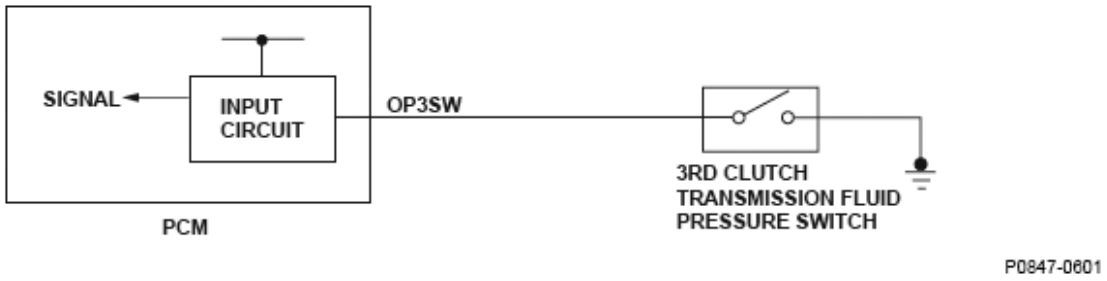


Fig. 420: 3rd Clutch Transmission Fluid Pressure Switch - Circuit Diagram

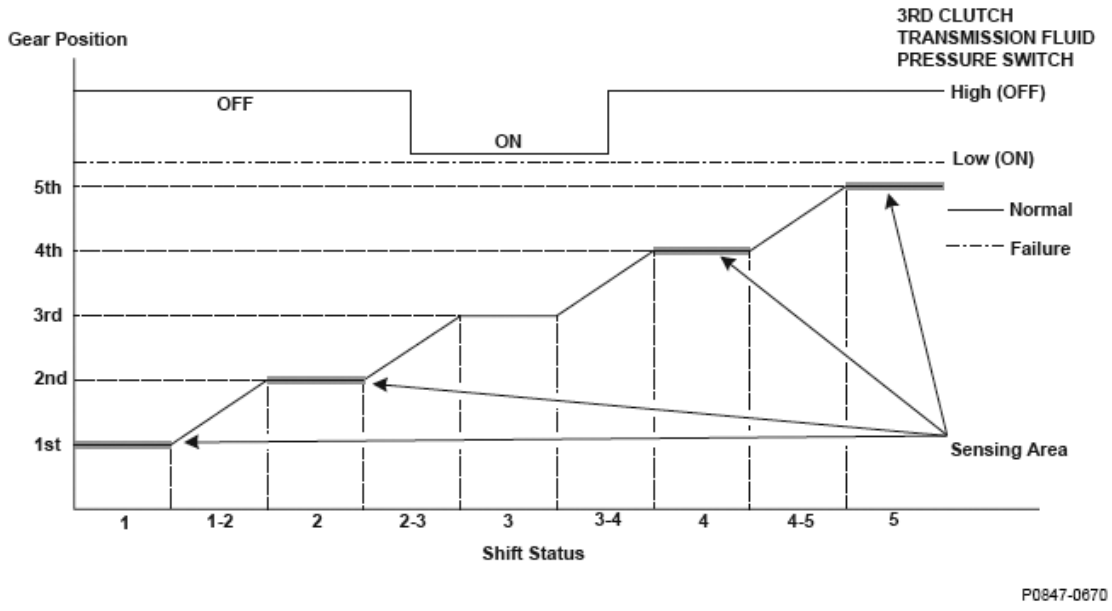


Fig. 421: Gear Position Graph

General Description (R18A1 Engine)

The 3rd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 3rd clutch. When hydraulic pressure is supplied to the 3rd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 3rd clutch, the switch is turned OFF. The signal from the 3rd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 3rd gear (2nd --> 3rd, 4th --> 3rd) to reduce the shock that occurs at the gear change.

If the 3rd clutch transmission fluid pressure switch is ON while driving, and the speed ratio of the output shaft (countershaft) to the input shaft (mainshaft) is other than the 3rd ratio, the PCM detects a 3rd clutch transmission fluid pressure switch failure, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Other	Not during shifting	

Malfunction Threshold (R18A1 Engine)

The input signal from the 3rd clutch transmission fluid pressure switch to the PCM is low when driving in 1st gear, 2nd gear, 4th gear, or 5th gear.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in the D position and 4th gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0847 (26): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0847: SHORT IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK ON (R18A4 ENGINE)

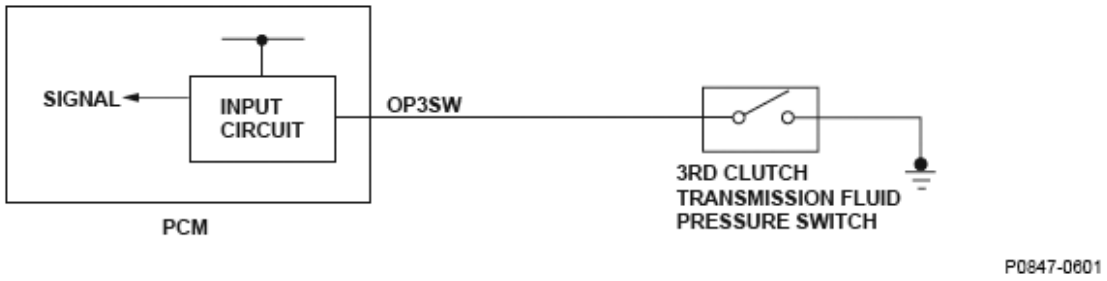


Fig. 422: 3rd Clutch Transmission Fluid Pressure Switch - Circuit Diagram

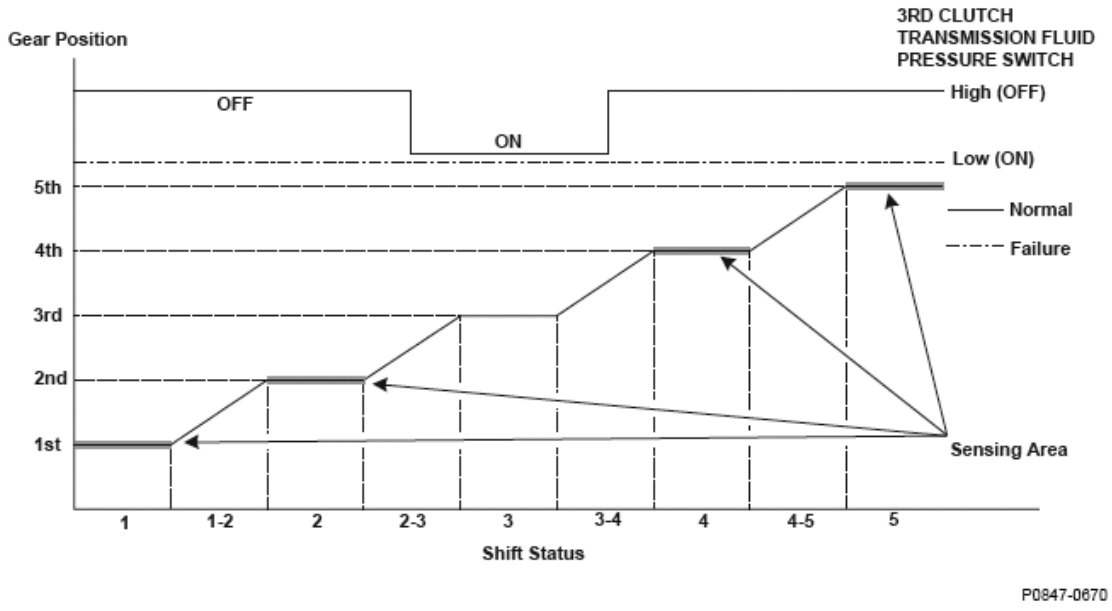


Fig. 423: Gear Position Graph

General Description (R18A4 Engine)

The 3rd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 3rd clutch. When hydraulic pressure is supplied to the 3rd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 3rd clutch, the switch is turned OFF. The signal from the 3rd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 3rd gear (2nd --> 3rd, 4th --> 3rd) to reduce the shock that occurs at the gear change.

If the 3rd clutch transmission fluid pressure switch is ON while driving, and the speed ratio of the output shaft (countershaft) to the input shaft (mainshaft) is other than the 3rd ratio, the PCM detects a 3rd clutch transmission fluid pressure switch failure, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	
Other	Not during shifting	

Malfunction Threshold (R18A4 Engine)

The input signal from the 3rd clutch transmission fluid pressure switch to the PCM is low when driving in 1st gear, 2nd gear, 4th gear, or 5th gear.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in the D position and 4th gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0848 (26): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0848: OPEN IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF (R18A1 ENGINE)

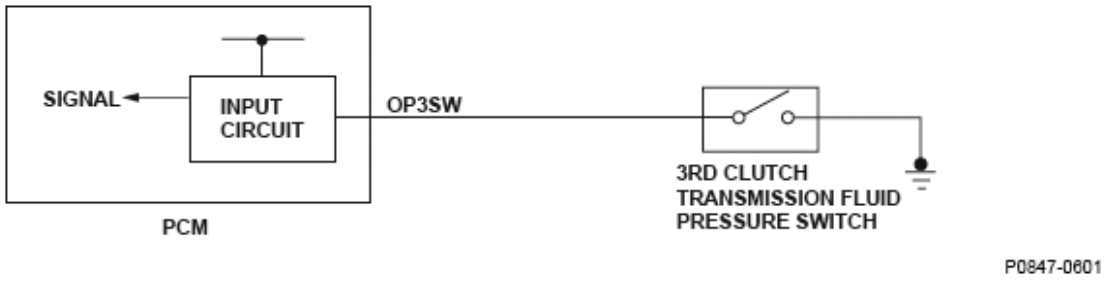


Fig. 424: 3rd Clutch Transmission Fluid Pressure Switch - Circuit Diagram

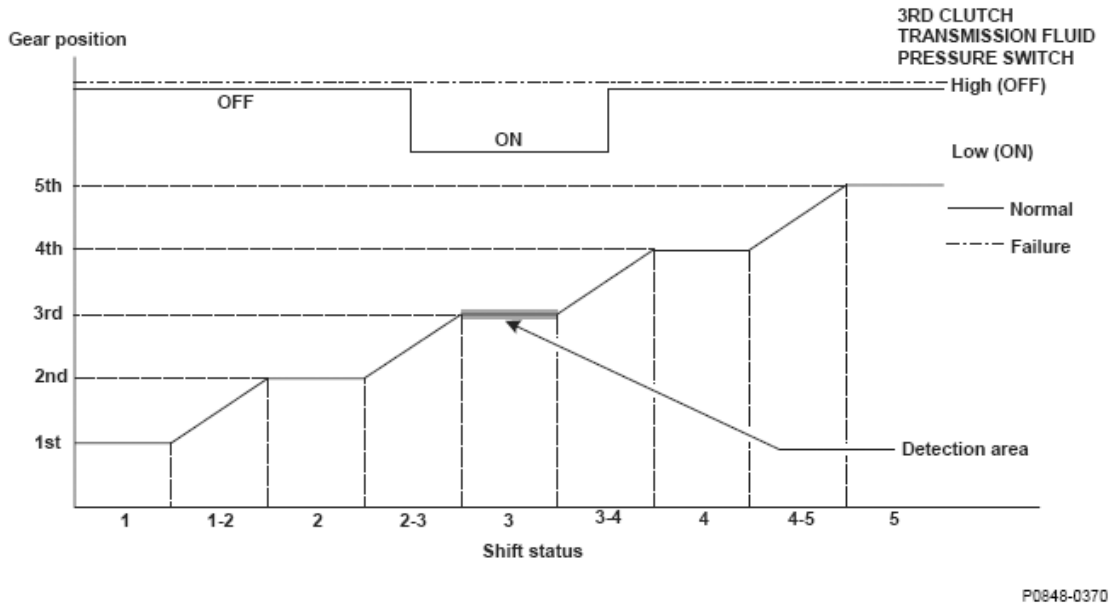


Fig. 425: Gear Position Graph

General Description (R18A1 Engine)

The 3rd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 3rd clutch. When hydraulic pressure is supplied to the 3rd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 3rd clutch, the switch is turned OFF. The signal from the 3rd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 3rd gear (2nd --> 3rd, 4th --> 3rd) to reduce the shock that occurs at the gear change. If the 3rd clutch transmission fluid pressure switch is OFF while the rotation speed ratio of the input/output pulses is that of 3rd gear, the PCM detects a malfunction in the 3rd clutch transmission fluid pressure switch and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0847, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780	

Malfunction Threshold (R18A1 Engine)

The input signal from the 3rd clutch transmission fluid pressure switch to the PCM is high when driving in 3rd gear.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in the D position and 3rd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0848 (26): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0848: OPEN IN 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CIRCUIT, OR 3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH STUCK OFF (R18A4 ENGINE)

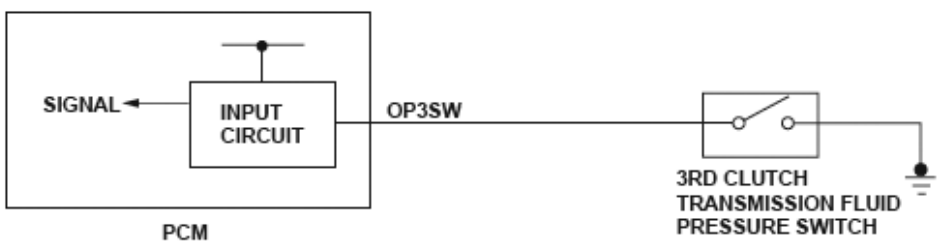


Fig. 426: 3rd Clutch Transmission Fluid Pressure Switch - Circuit Diagram

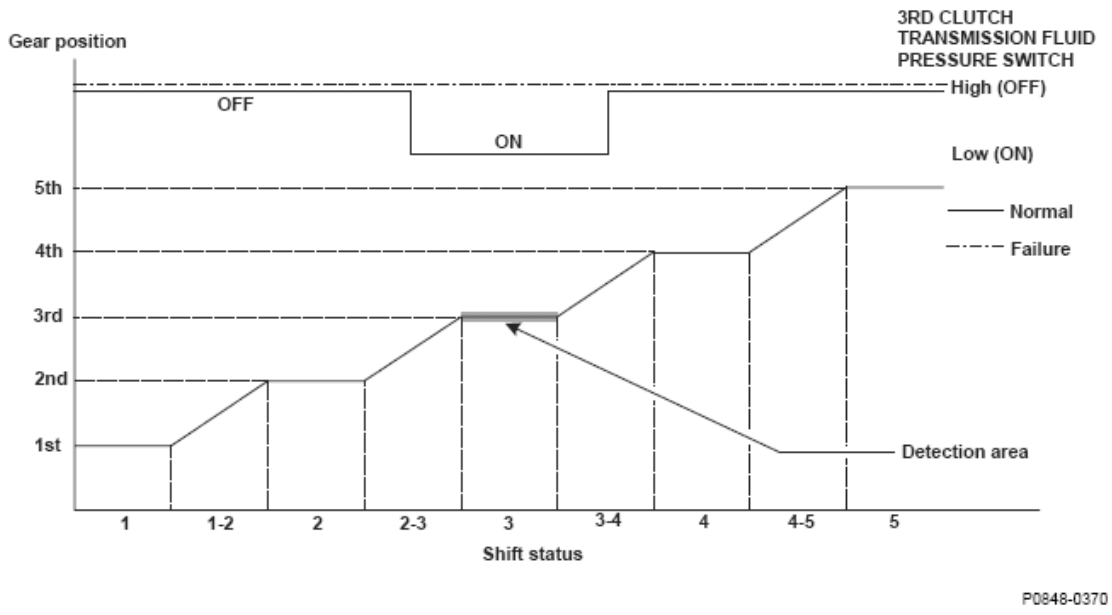


Fig. 427: Gear Position Graph

General Description (R18A4 Engine)

The 3rd clutch transmission fluid pressure switch is installed in the hydraulic pressure circuit to the 3rd clutch. When hydraulic pressure is supplied to the 3rd clutch, the switch is turned ON. When hydraulic pressure is not supplied to the 3rd clutch, the switch is turned OFF. The signal from the 3rd clutch transmission fluid pressure switch is input to the powertrain control module (PCM). The PCM detects the hydraulic pressure supply conditions at the gear change to 3rd gear (2nd --> 3rd, 4th --> 3rd) to reduce the shock that occurs at the gear change. If the 3rd clutch transmission fluid pressure switch is OFF while the rotation speed ratio of the input/output pulses is that of 3rd gear, the PCM detects a malfunction in the 3rd clutch transmission fluid pressure switch and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active	P0116, P0117, P0118, P0716, P0717, P0721, P0722, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0847,	

DTCs	P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746, P1747, P1780

Malfunction Threshold (R18A4 Engine)

The input signal from the 3rd clutch transmission fluid pressure switch to the PCM is high when driving in 3rd gear.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in the D position and 3rd gear for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0962 (16): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0962: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CIRCUIT (R18A1 ENGINE)

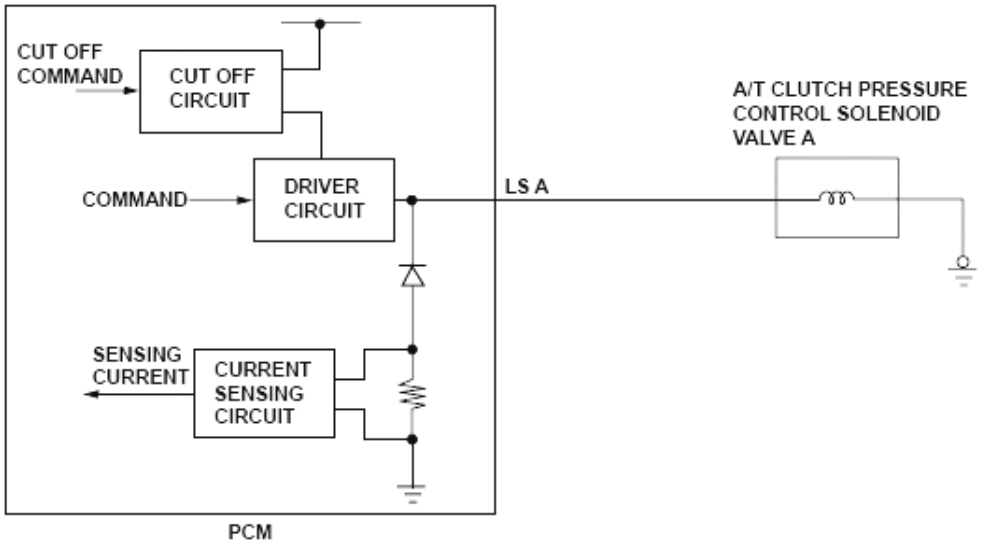


Fig. 428: A/T Clutch Pressure Control Solenoid - Circuit Diagram

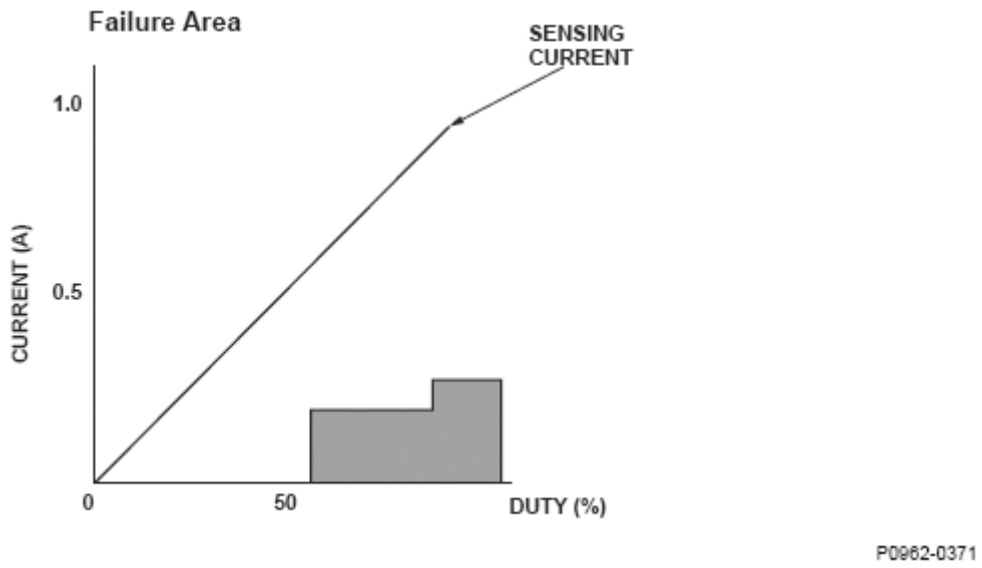


Fig. 429: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve A is used for clutch pressure control and lock-up control. A spool in A/T clutch pressure control solenoid valve A pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve A and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0963, P0970, P0971, P0973, P0974	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.19	Low Input
More than 89	Less than 0.27	Low Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0962 (16): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0962: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CIRCUIT (R18A4 ENGINE)

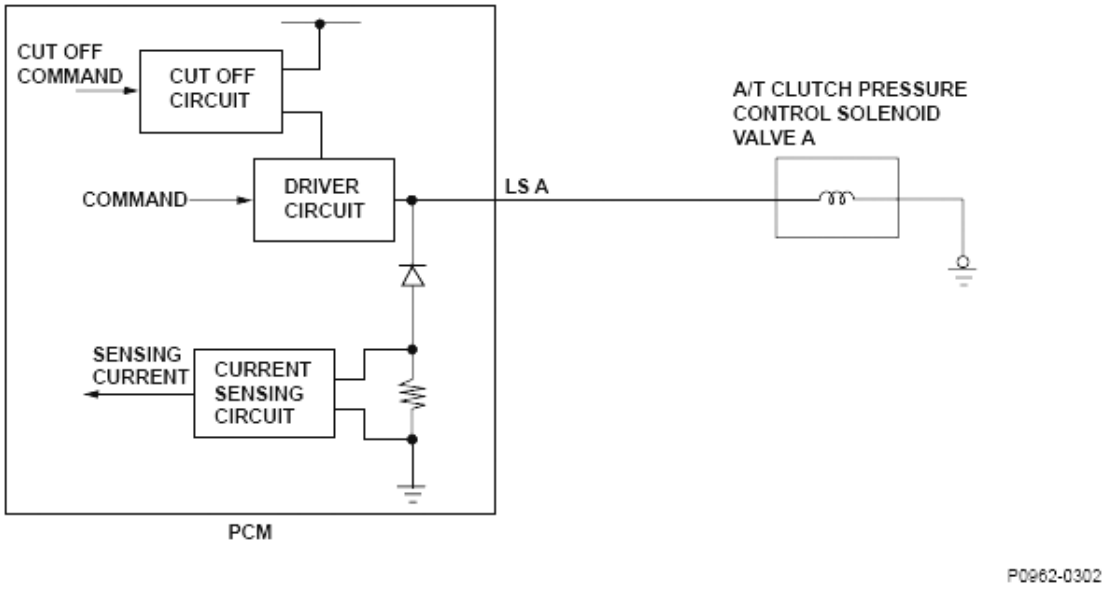


Fig. 430: A/T Clutch Pressure Control Solenoid - Circuit Diagram

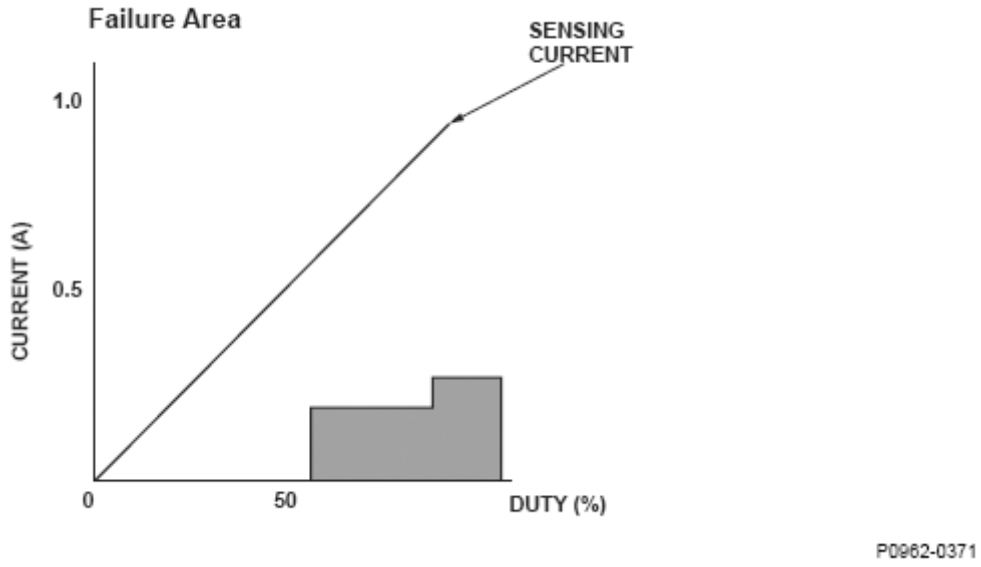


Fig. 431: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve A is used for clutch pressure control and lock-up control. A spool in A/T clutch pressure control solenoid valve A pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve A and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0963, P0970, P0971, P0973, P0974	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.19	Low Input
More than 89	Less than 0.27	Low Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0963 (16): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0963: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A (R18A1 ENGINE)

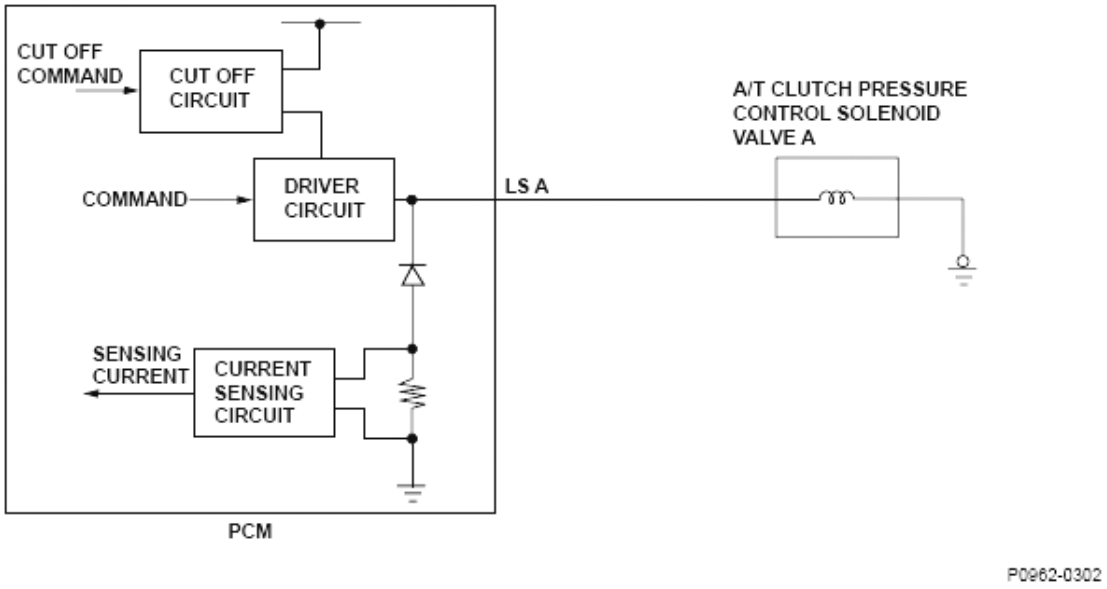


Fig. 432: A/T Clutch Pressure Control Solenoid - Circuit Diagram

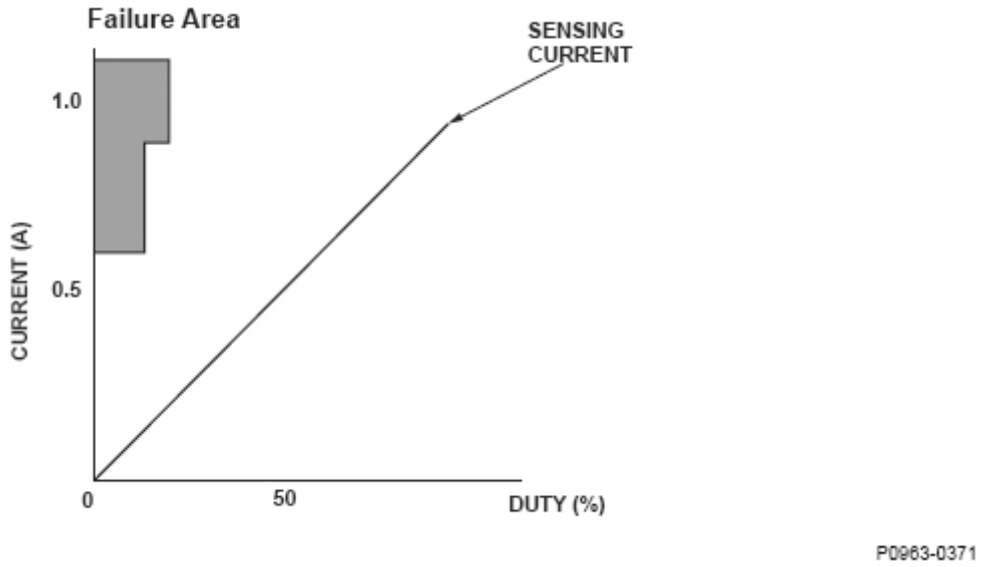


Fig. 433: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve A is used for clutch pressure control and lock-up control. A spool in A/T clutch pressure control solenoid valve A pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve A and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0970, P0971, P0973, P0974	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0963 (16): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0963: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A (R18A4 ENGINE)

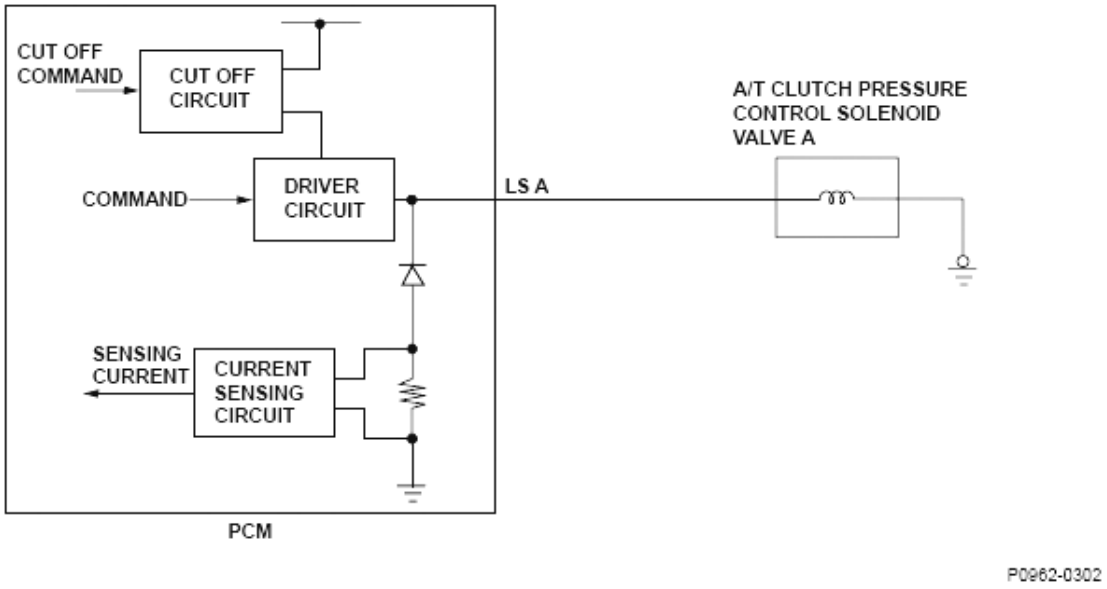


Fig. 434: A/T Clutch Pressure Control Solenoid - Circuit Diagram

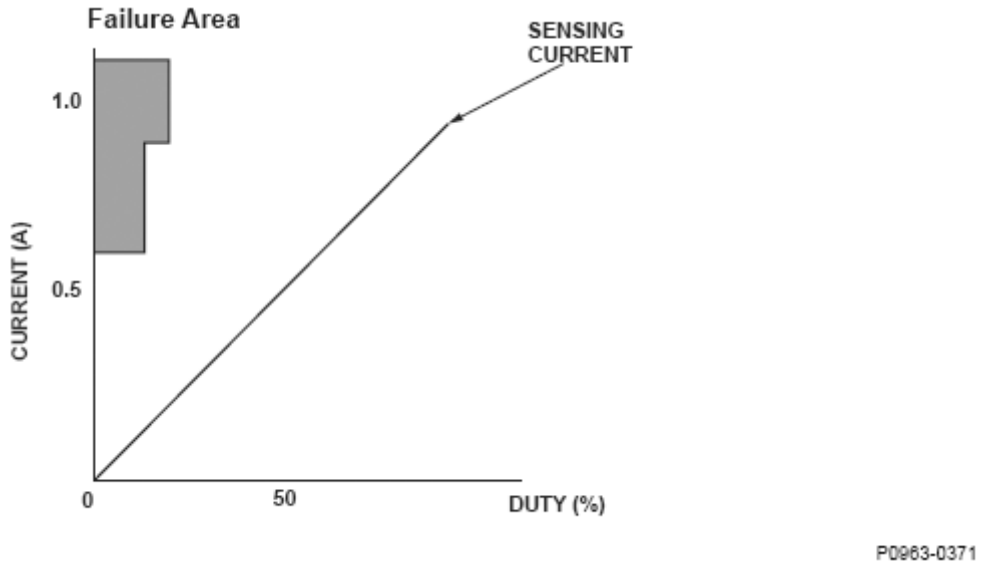


Fig. 435: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve A is used for clutch pressure control and lock-up control. A spool in A/T clutch pressure control solenoid valve A pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve A and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0970, P0971, P0973, P0974	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0966 (23): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0966: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CIRCUIT (R18A1 ENGINE)

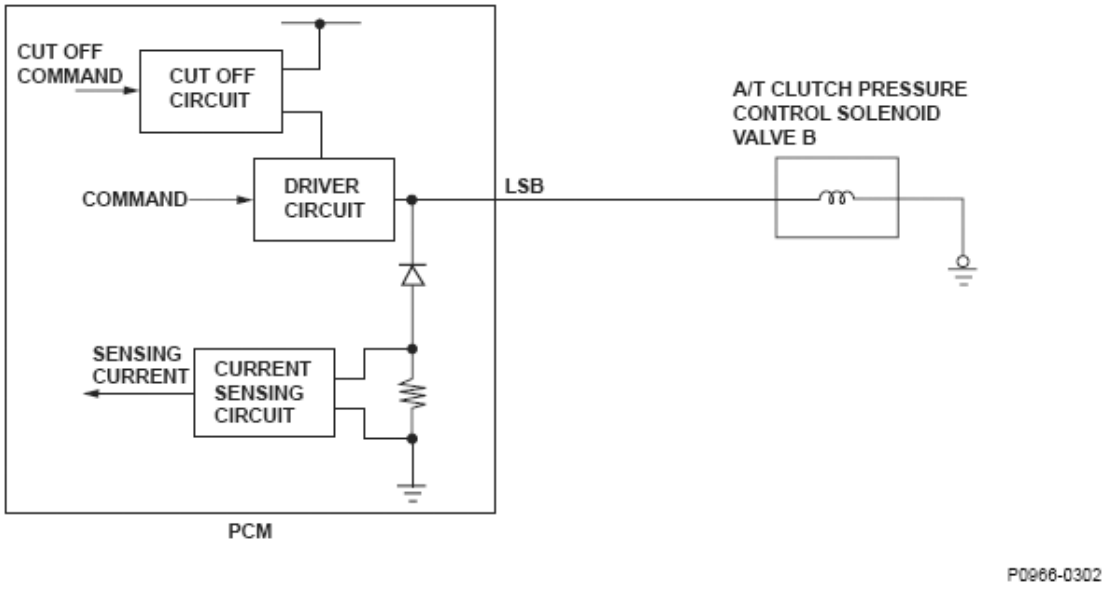


Fig. 436: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

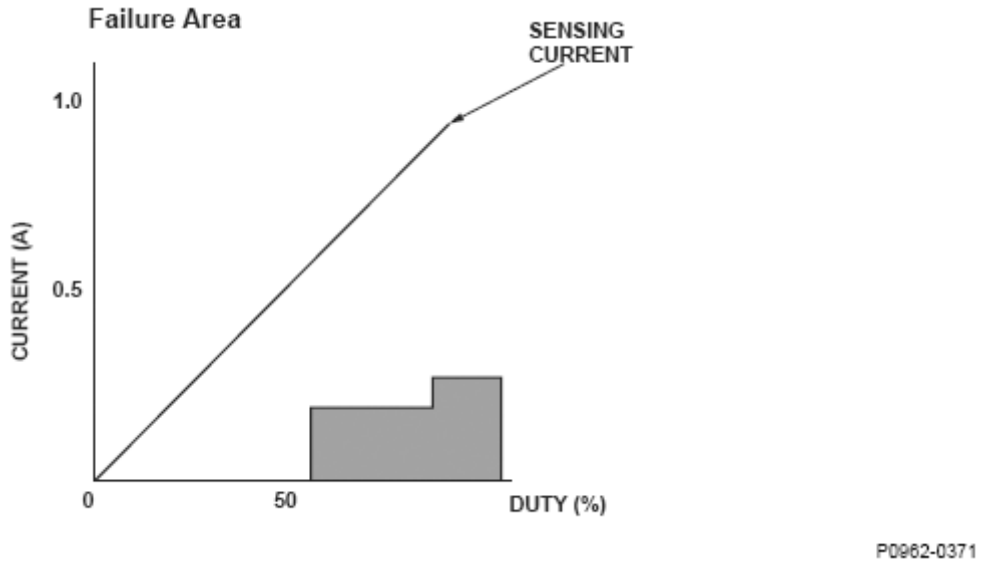


Fig. 437: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve B is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve B pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve B and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0967, P0976, P0977, P0979, P0980	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.9	Low Input
More than	89 Less than 0.27	Low Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0966 (23): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0966: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CIRCUIT (R18A4 ENGINE)

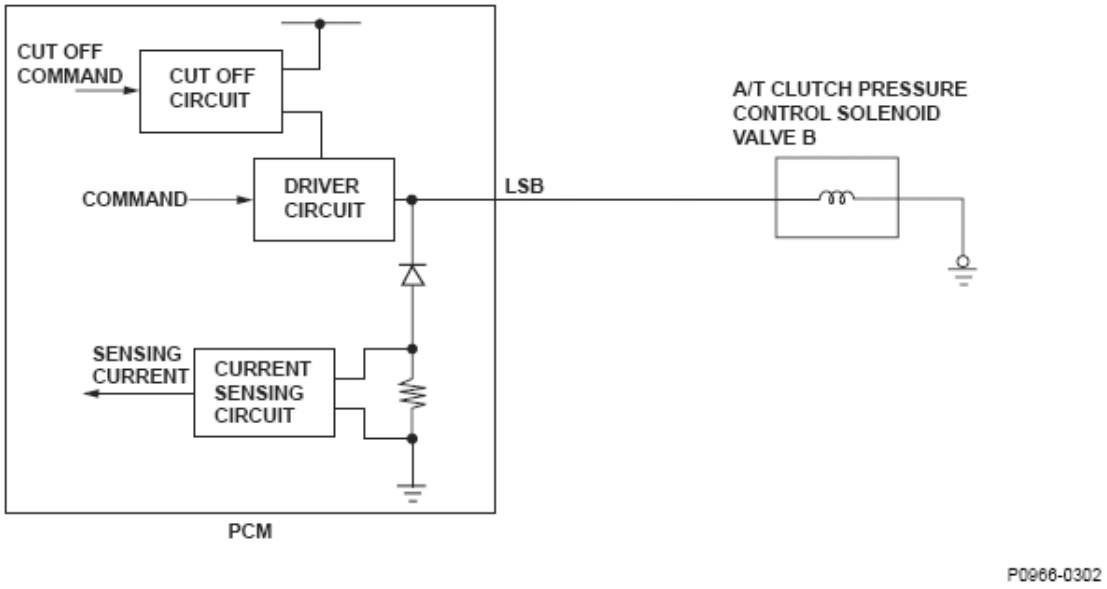


Fig. 438: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

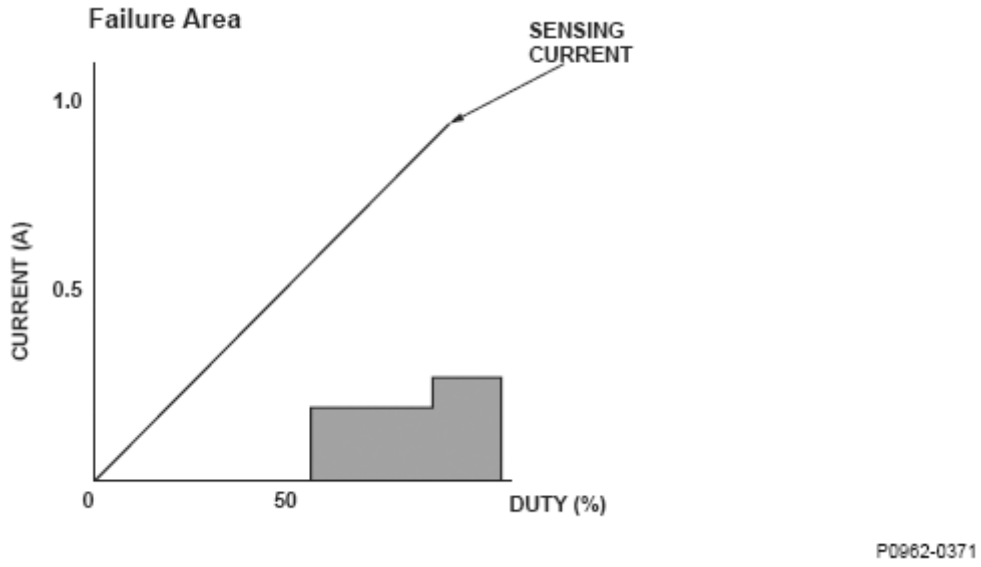


Fig. 439: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve B is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve B pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve B and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0967, P0976, P0977, P0979, P0980	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.9	Low Input
More than 89	Less than 0.27	Low Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0967 (23): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0967: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B (R18A1 ENGINE)

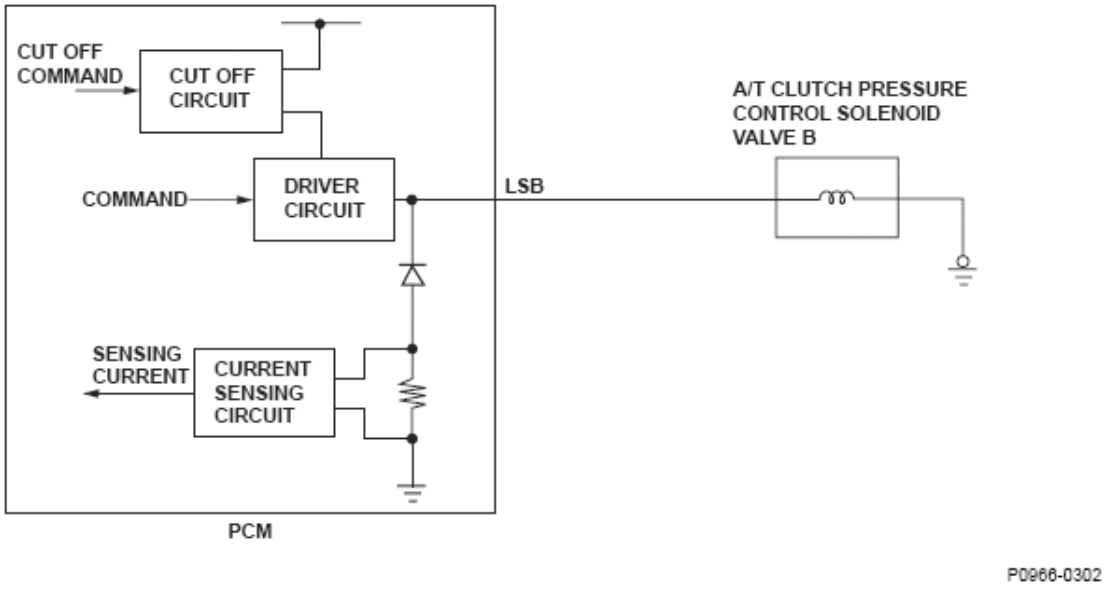


Fig. 440: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

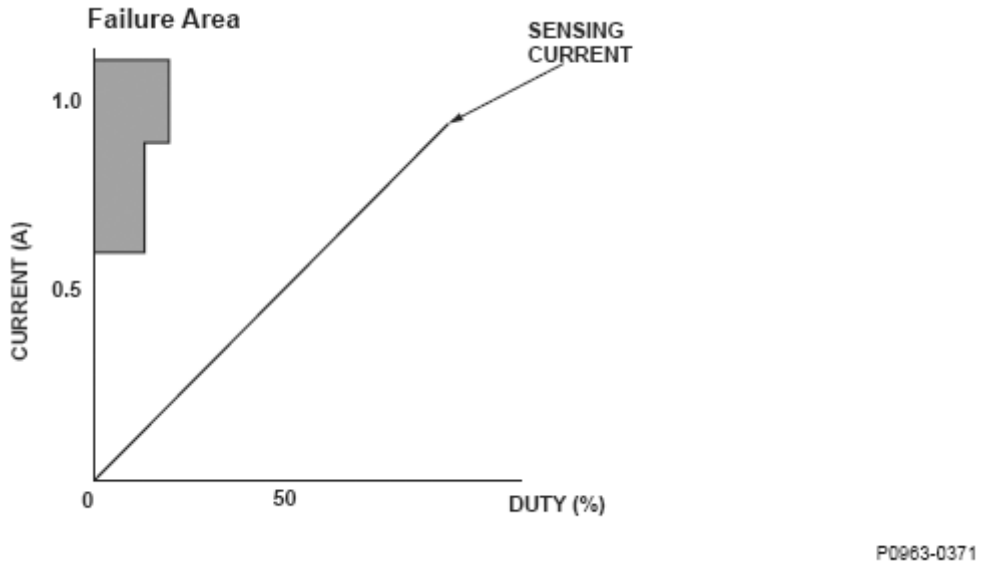


Fig. 441: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve B is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve B pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve B and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0976, P0977, P0979, P0980	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0967 (23): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0967: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B (R18A4 ENGINE)

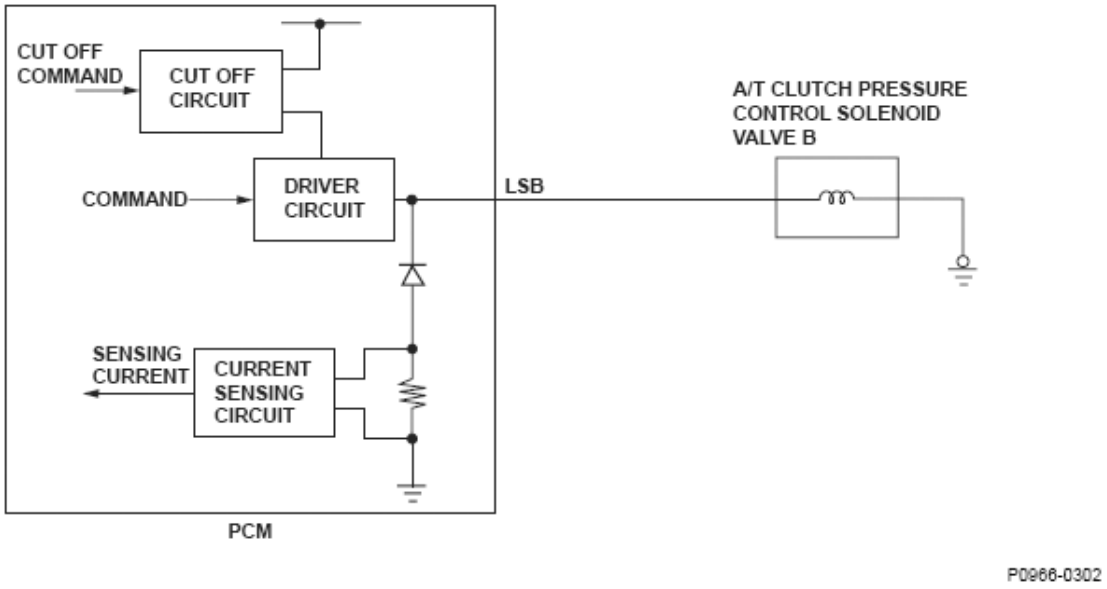


Fig. 442: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

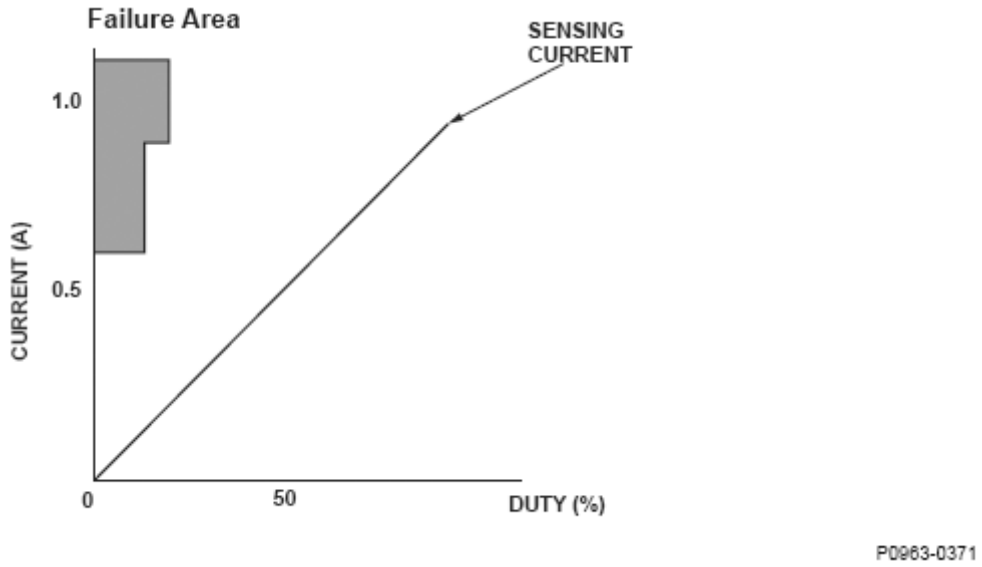


Fig. 443: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve B is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve B pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve B and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0976, P0977, P0979, P0980	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0970 (29): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0970: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CIRCUIT (R18A1 ENGINE)

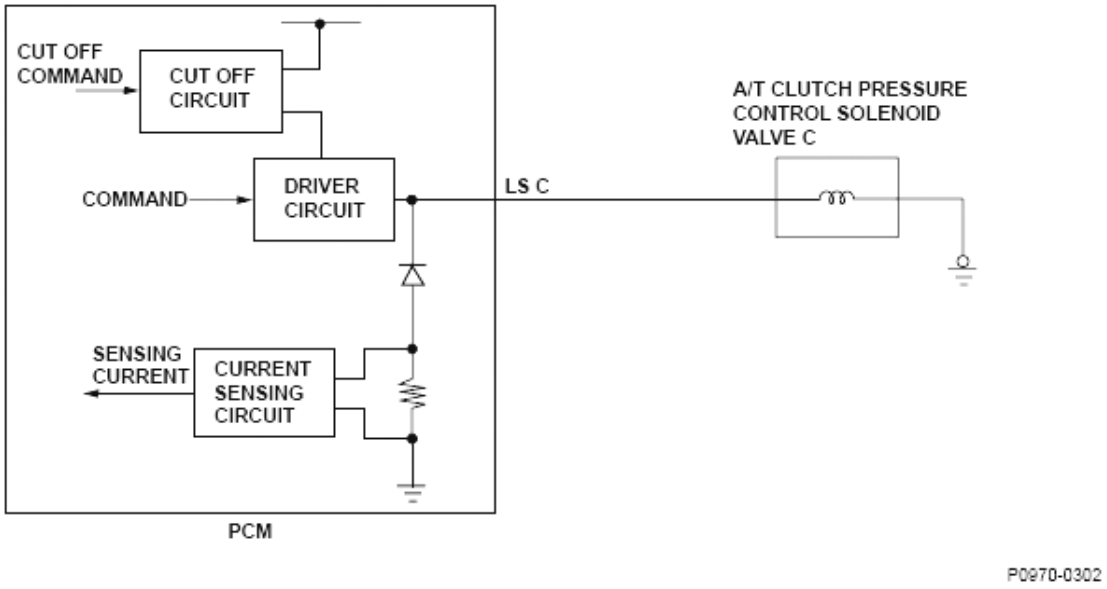


Fig. 444: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

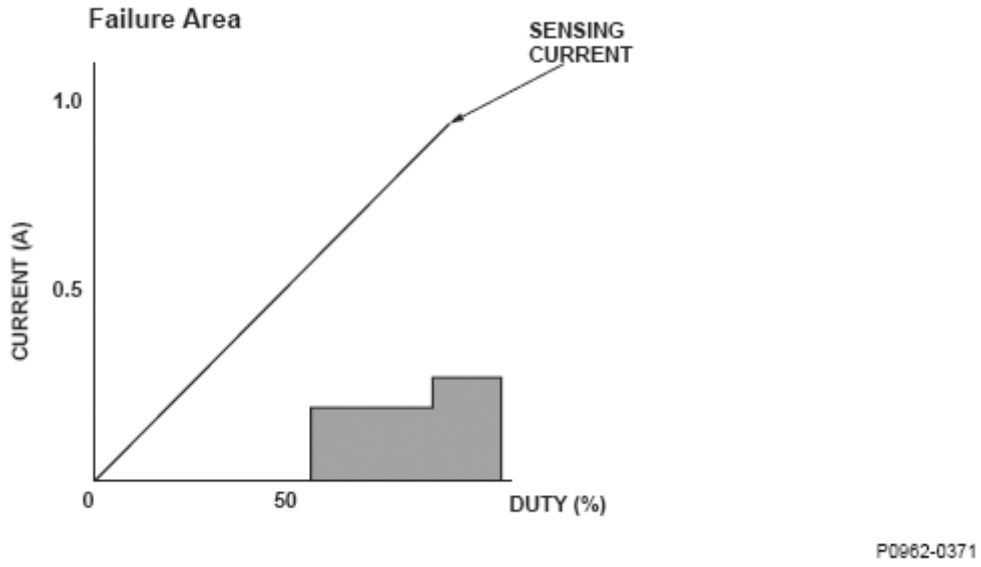


Fig. 445: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve C is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve C pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve C and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0971, P0973, P0974	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.19	Low Input
More than 89	Less than 0.27	Low Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0970 (29): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0970: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CIRCUIT (R18A4 ENGINE)

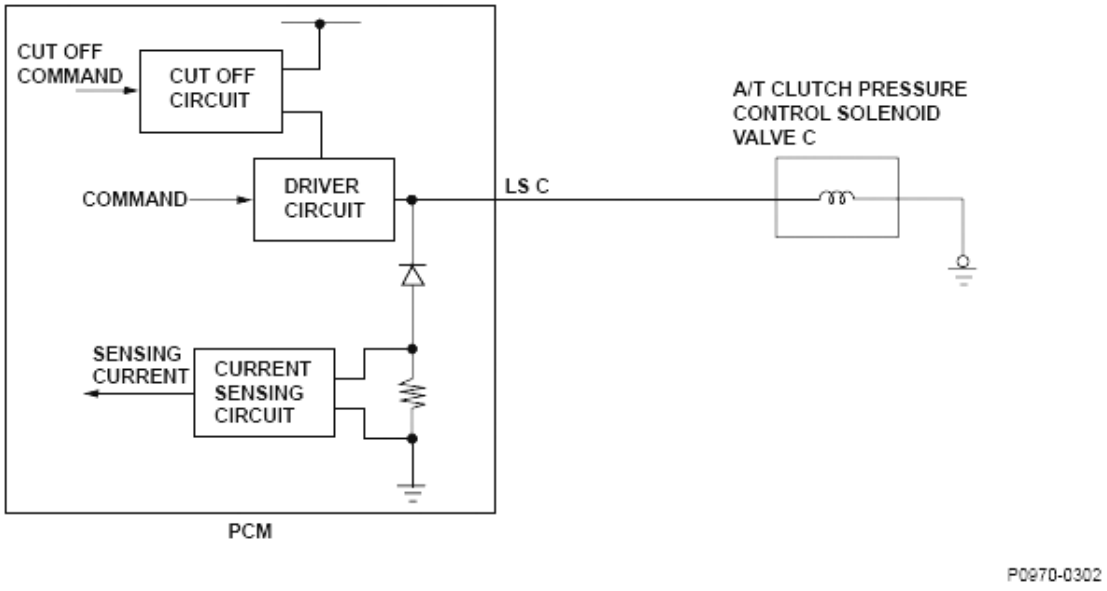


Fig. 446: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

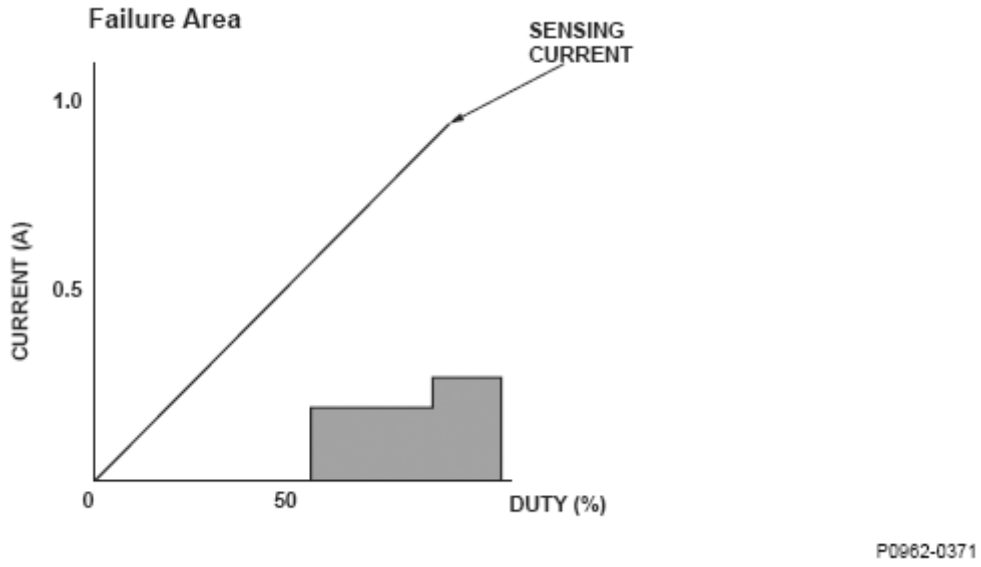


Fig. 447: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve C is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve C pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve C and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0971, P0973, P0974	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
56.5 - 89	Less than 0.19	Low Input
More than 89	Less than 0.27	Low Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0971 (29): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0971: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C (R18A1 ENGINE)

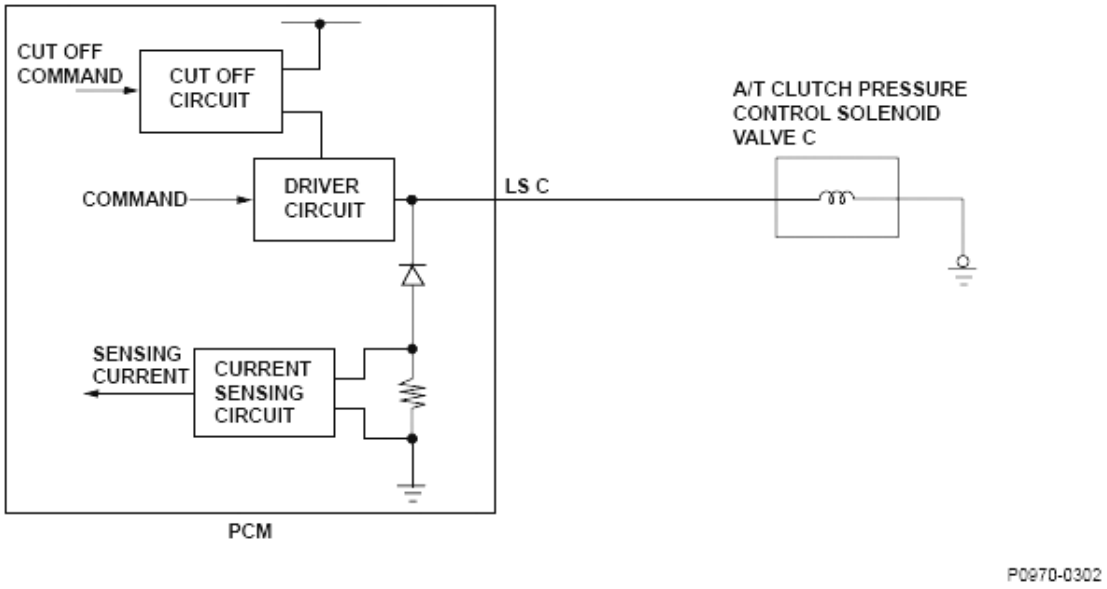


Fig. 448: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

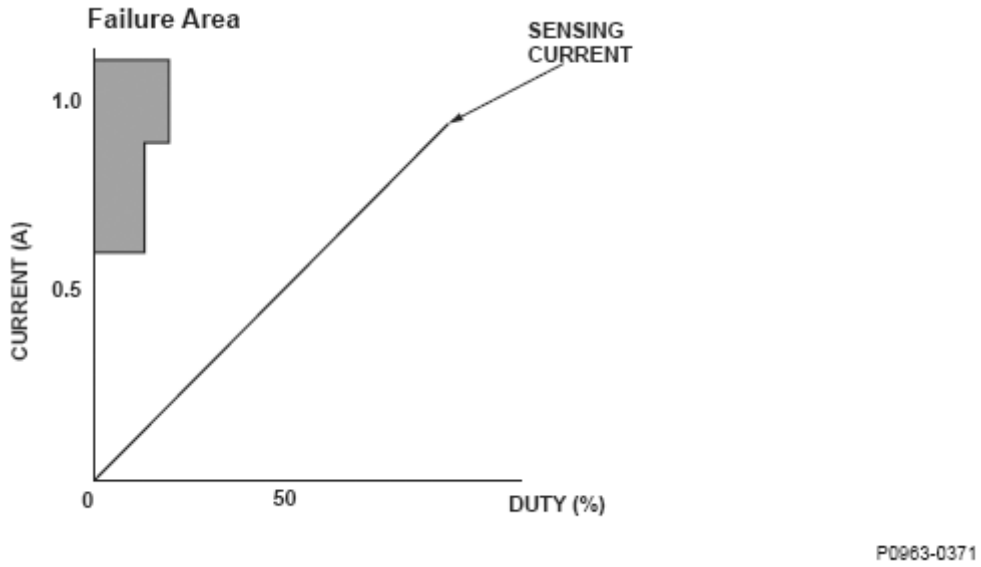


Fig. 449: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A1 Engine)

A/T clutch pressure control solenoid valve C is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve C pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve C and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0973, P0974	

Malfunction Threshold (R18A1 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A1 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0971 (29): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0971: PROBLEM IN A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C (R18A4 ENGINE)

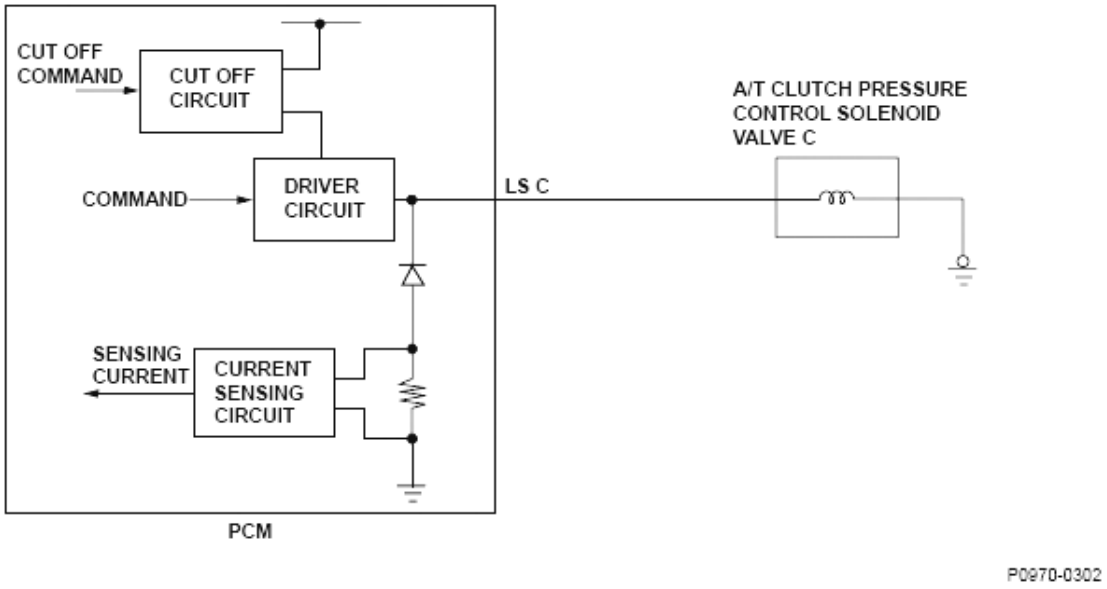


Fig. 450: A/T Clutch Pressure Control Solenoid Valve - Circuit Diagram

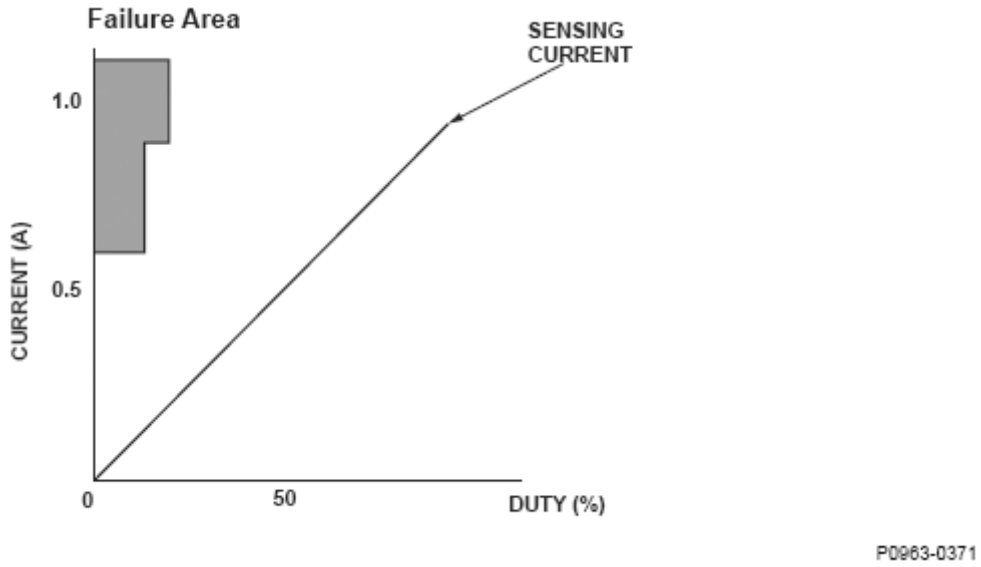


Fig. 451: A/T Clutch Pressure Control Solenoid Valve Failure Area Graph

General Description (R18A4 Engine)

A/T clutch pressure control solenoid valve C is used for clutch pressure control. A spool in A/T clutch pressure control solenoid valve C pushes a valve according to the duty cycle that is controlled by the powertrain control module (PCM) to pressurize fluid so the hydraulic pressure is proportional to the current. The PCM measures the current flowing through A/T clutch pressure control solenoid valve C and uses feedback control to compensate for the difference between the actual current and the commanded one. If the measured current for the PCM output duty cycle is not within a specified range (open or short), a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0973, P0974	

Malfunction Threshold (R18A4 Engine)

The measured current for the PCM's command value is as specified here for at least 1 second.

MALFUNCTION THRESHOLD

Duty (%)	Current (A)	Failure mode
Less than 13.7	More than 0.6	High Input
13.7 - 20	More than 0.9	High Input

Driving Pattern (R18A4 Engine)

Start the engine, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0973 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0973: SHORT IN SHIFT SOLENOID VALVE A CIRCUIT (R18A1 ENGINE)

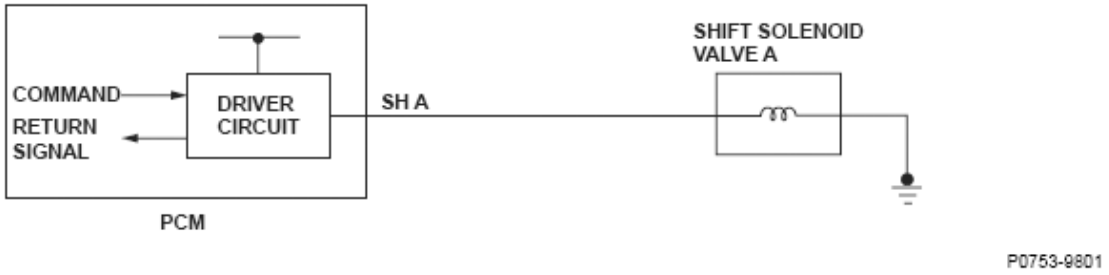


Fig. 452: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 453: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0971, P0974	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn ON shift solenoid valve A for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle with the 1st gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0973 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0973: SHORT IN SHIFT SOLENOID VALVE A CIRCUIT (R18A4 ENGINE)

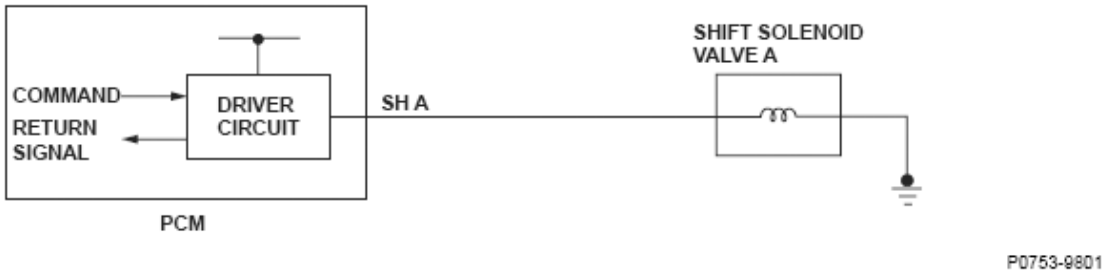


Fig. 454: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 455: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0971, P0974	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn ON shift solenoid valve A for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle with the 1st gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0974 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0974: OPEN IN SHIFT SOLENOID VALVE A CIRCUIT (R18A1 ENGINE)

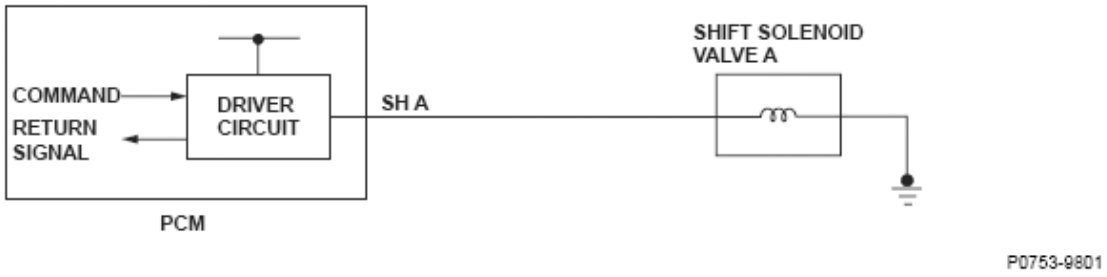


Fig. 456: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 457: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0971, P0973	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn OFF shift solenoid valve A for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0974 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0974: OPEN IN SHIFT SOLENOID VALVE A CIRCUIT (R18A4 ENGINE)

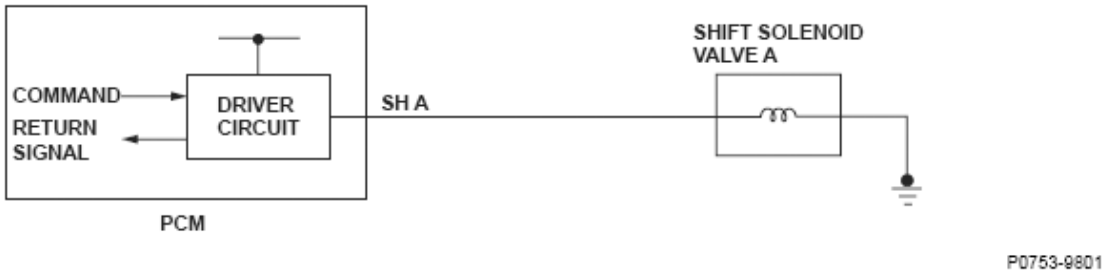


Fig. 458: Shift Solenoid Valve - Circuit Diagram

Gear position \ Shift solenoid valve	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 459: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0962, P0963, P0970, P0971, P0973	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn OFF shift solenoid valve A for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0976 (8): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0976: SHORT IN SHIFT SOLENOID VALVE B CIRCUIT (R18A1 ENGINE)

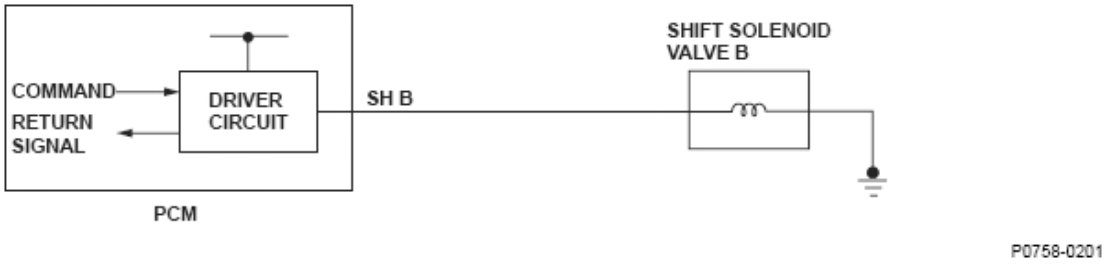


Fig. 460: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 461: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more

DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0977, P0979, P0980	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn ON shift solenoid valve B for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0976 (8): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0976: SHORT IN SHIFT SOLENOID VALVE B CIRCUIT (R18A4 ENGINE)

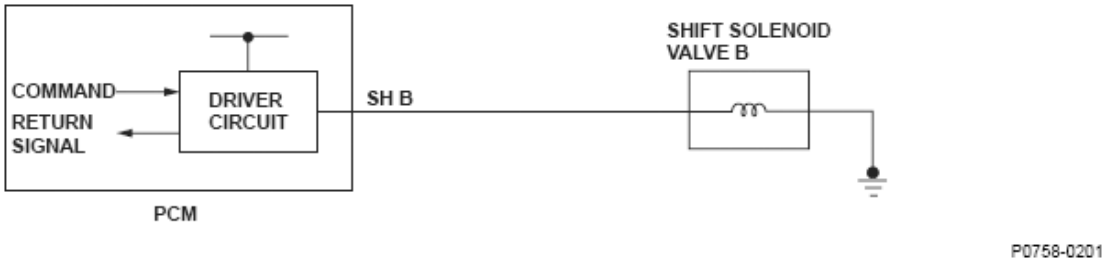


Fig. 462: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 463: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0977, P0979, P0980	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn ON shift solenoid valve B for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0977 (8): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0977: OPEN IN SHIFT SOLENOID VALVE B CIRCUIT (R18A1 ENGINE)

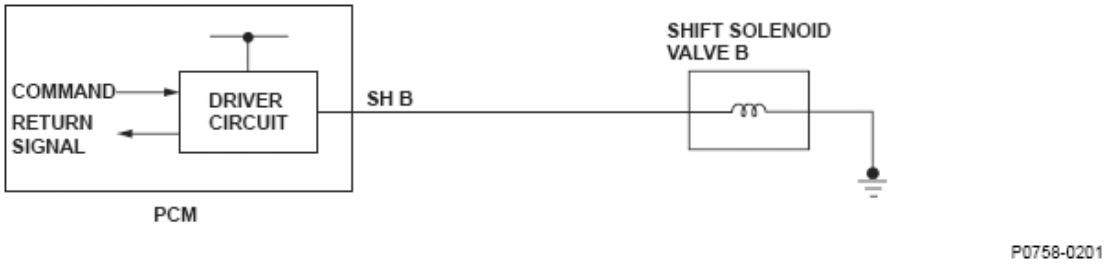


Fig. 464: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 465: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0979, P0980	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn OFF shift solenoid valve B for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, drive the vehicle so that it shifts from 1st to 3rd gear in the D position, then drive the vehicle in 3rd gear for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0977 (8): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0977: OPEN IN SHIFT SOLENOID VALVE B CIRCUIT (R18A4 ENGINE)

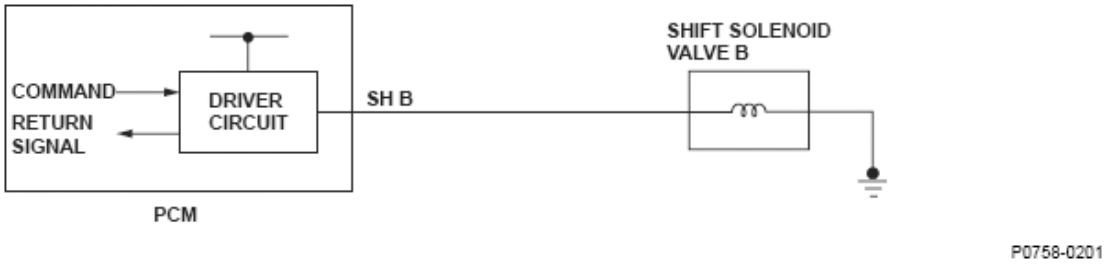


Fig. 466: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 467: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0979, P0980	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn OFF shift solenoid valve B for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, drive the vehicle so that it shifts from 1st to 3rd gear in the D position, then drive the vehicle in 3rd gear for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0979 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0979: SHORT IN SHIFT SOLENOID VALVE C CIRCUIT (R18A1 ENGINE)

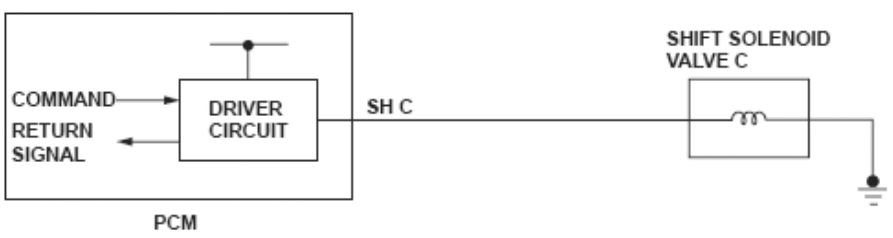


Fig. 468: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 469: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0977, P0980	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn ON shift solenoid valve C for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in 1st gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0979 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0979: SHORT IN SHIFT SOLENOID VALVE C CIRCUIT (R18A4 ENGINE)

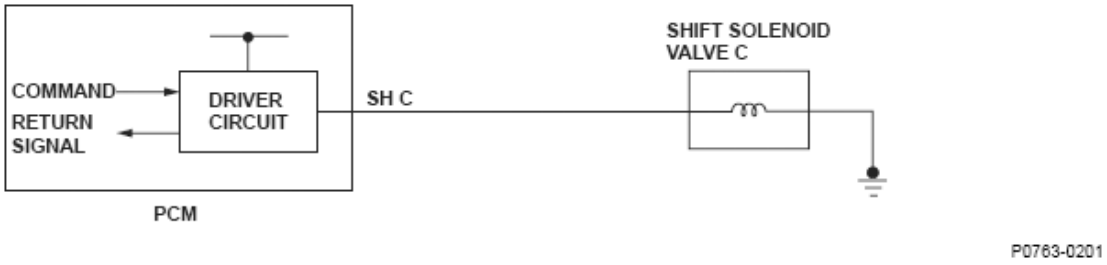


Fig. 470: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 471: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0977, P0980	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn ON shift solenoid valve C for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in 1st gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0980 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0980: OPEN IN SHIFT SOLENOID VALVE C CIRCUIT (R18A1 ENGINE)

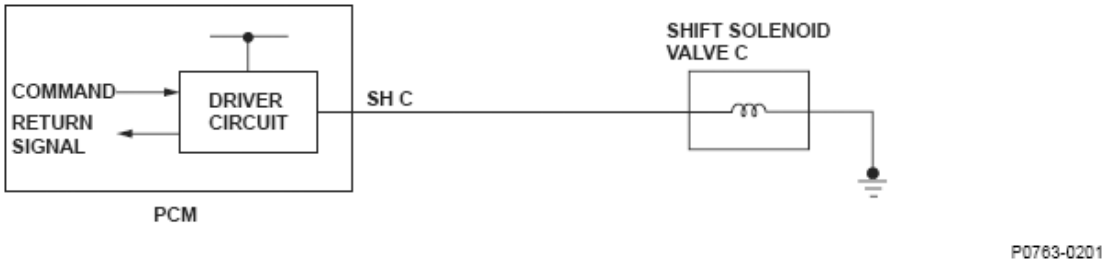


Fig. 472: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 473: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0977, P0979	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn OFF shift solenoid valve C for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0980 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0980: OPEN IN SHIFT SOLENOID VALVE C CIRCUIT (R18A4 ENGINE)

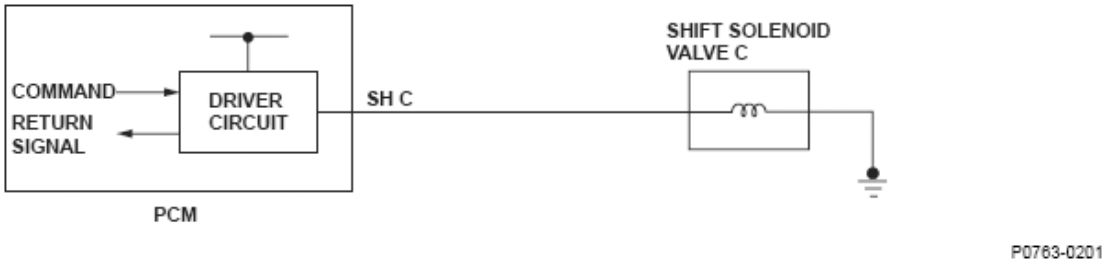


Fig. 474: Shift Solenoid Valve - Circuit Diagram

Gear position \ Shift solenoid valve	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 475: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0966, P0967, P0976, P0977, P0979	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn OFF shift solenoid valve C for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0982 (60): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0982: SHORT IN SHIFT SOLENOID VALVE D CIRCUIT (R18A1 ENGINE)

Fig. 476: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 477: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more

DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0983	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn ON shift solenoid valve D for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, and drive the vehicle in 2nd gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0982 (60): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0982: SHORT IN SHIFT SOLENOID VALVE D CIRCUIT (R18A4 ENGINE)

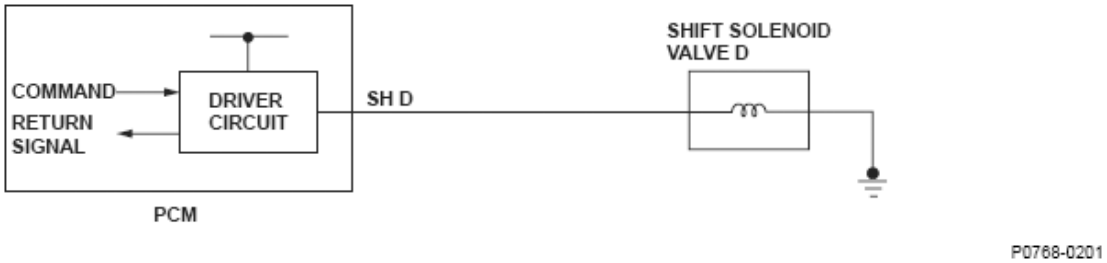


Fig. 478: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 479: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn ON the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0983	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn ON shift solenoid valve D for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, and drive the vehicle in 2nd gear in the D position for at least 1 second.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0983 (60): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P0983: OPEN IN SHIFT SOLENOID VALVE D CIRCUIT (R18A1 ENGINE)

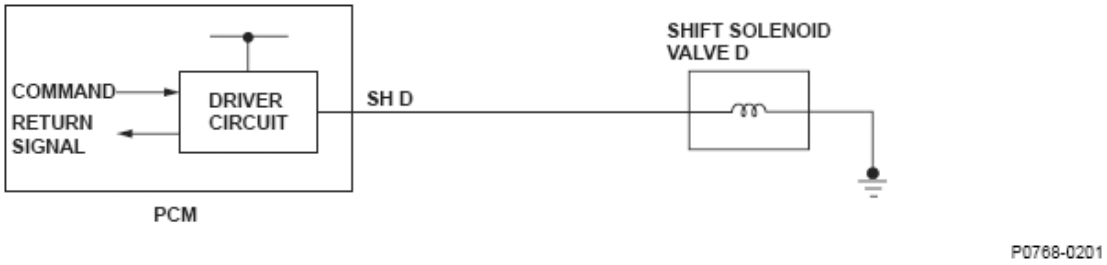


Fig. 480: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 481: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A1 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0982	

Malfunction Threshold (R18A1 Engine)

The return signal does not match the command to turn OFF shift solenoid valve D for at least 1 second.

Driving Pattern (R18A1 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P0983 (60): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P0983: OPEN IN SHIFT SOLENOID VALVE D CIRCUIT (R18A4 ENGINE)

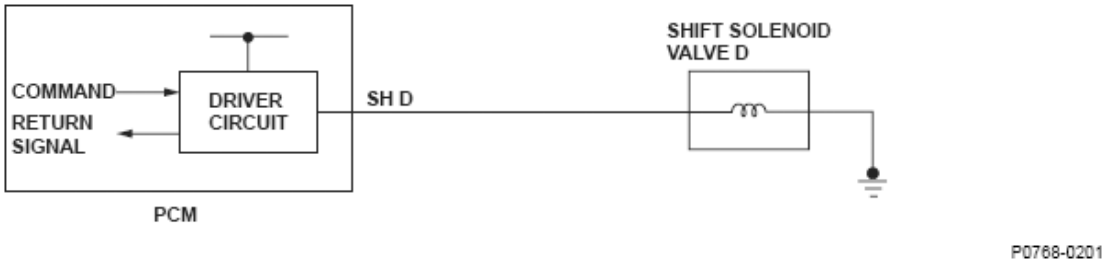


Fig. 482: Shift Solenoid Valve - Circuit Diagram

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 483: Shift Solenoid Valve Driving Signal Combination Chart

General Description (R18A4 Engine)

When shift solenoid valves A, B, C, and D are turned ON, the hydraulic pressure circuit opens. The hydraulic pressure circuit supplies/discharges hydraulic pressure to/from each clutch according to the combination of the ON/OFF status of those valves and the shift valves. The powertrain control module (PCM) commands the driver circuit to turn on the shift solenoid valve. The circuit diagnoses malfunctions such as a circuit short or open, and sends back a return signal during the PCM's command. When the return signal does not match the PCM command, a malfunction is detected by the PCM. The malfunction is detected when the return signal does not match the PCM command to turn OFF the shift solenoid valve, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0982	

Malfunction Threshold (R18A4 Engine)

The return signal does not match the command to turn OFF shift solenoid valve D for at least 1 second.

Driving Pattern (R18A4 Engine)

Start the engine, shift to the P position, and wait for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1009 (56): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1009: VARIABLE VALVE TIMING CONTROL (VTC) ADVANCE MALFUNCTION (K20Z3)

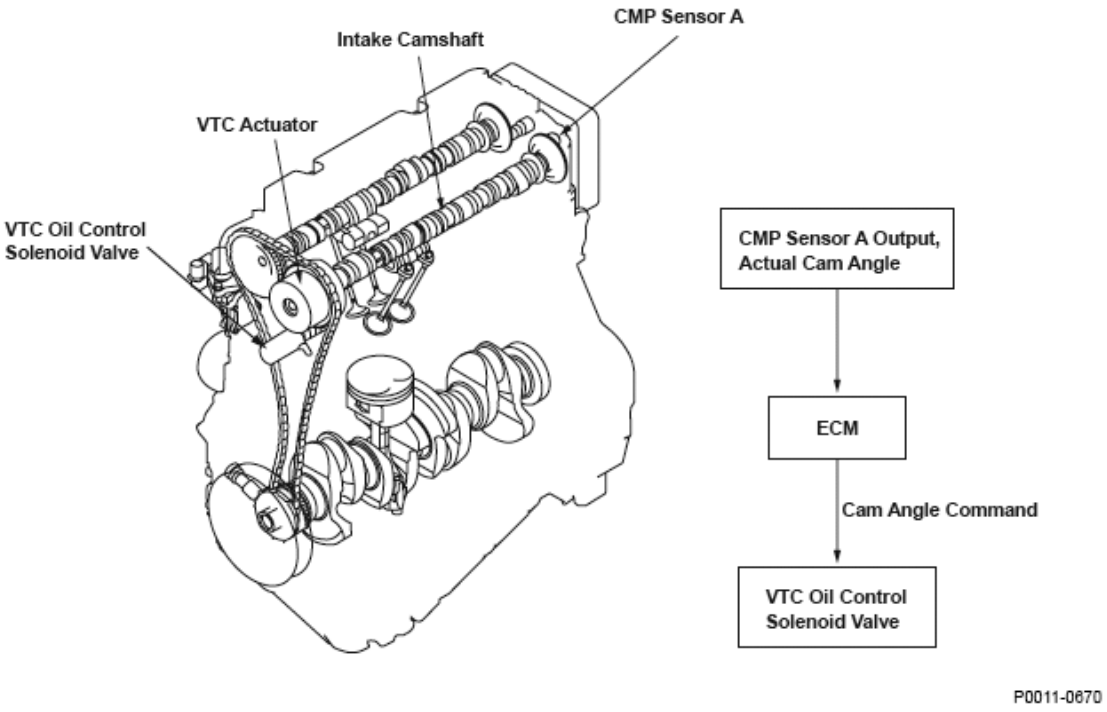


Fig. 484: Identifying Oil Control Solenoid Valve And CKP Sensor

General Description (K20Z3 Engine)

The variable valve timing control (VTC) system controls the phase of the intake camshaft. It uses oil pressure to operate the VTC actuator so the valve timing is optimized depending on driving conditions. The engine control module (ECM) monitors the phase control command and the actual timing of the camshaft by using camshaft position (CMP) sensor A. If an over-advanced camshaft phase (compared to the directed value) continues or when the camshaft phase is otherwise abnormal, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.5 second or more, up to 3 seconds
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the		

engine	0.5 second	-
No active DTCs	P0335, P0339, P0340, P0341, P0344	
Other	After restarting the engine with the intake camshaft angle 10 ° for 0.5 second or more	

Malfunction Threshold (K20Z3 Engine)

When the camshaft phase value is not 48.8 ° or less within the monitored area (camshaft phase control directed value plus failure judgment value) after 3 seconds have passed, or when the camshaft phase value is 20.0 ° or less and continues for 3 seconds or more, even when the VTC does not actuate.

Driving Pattern (K20Z3 Engine)

Start the engine. Let it idle.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1077 (106): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1077: INTAKE MANIFOLD TUNING (IMT) VALVE STUCK IN HIGH RPM POSITION (R18A1)

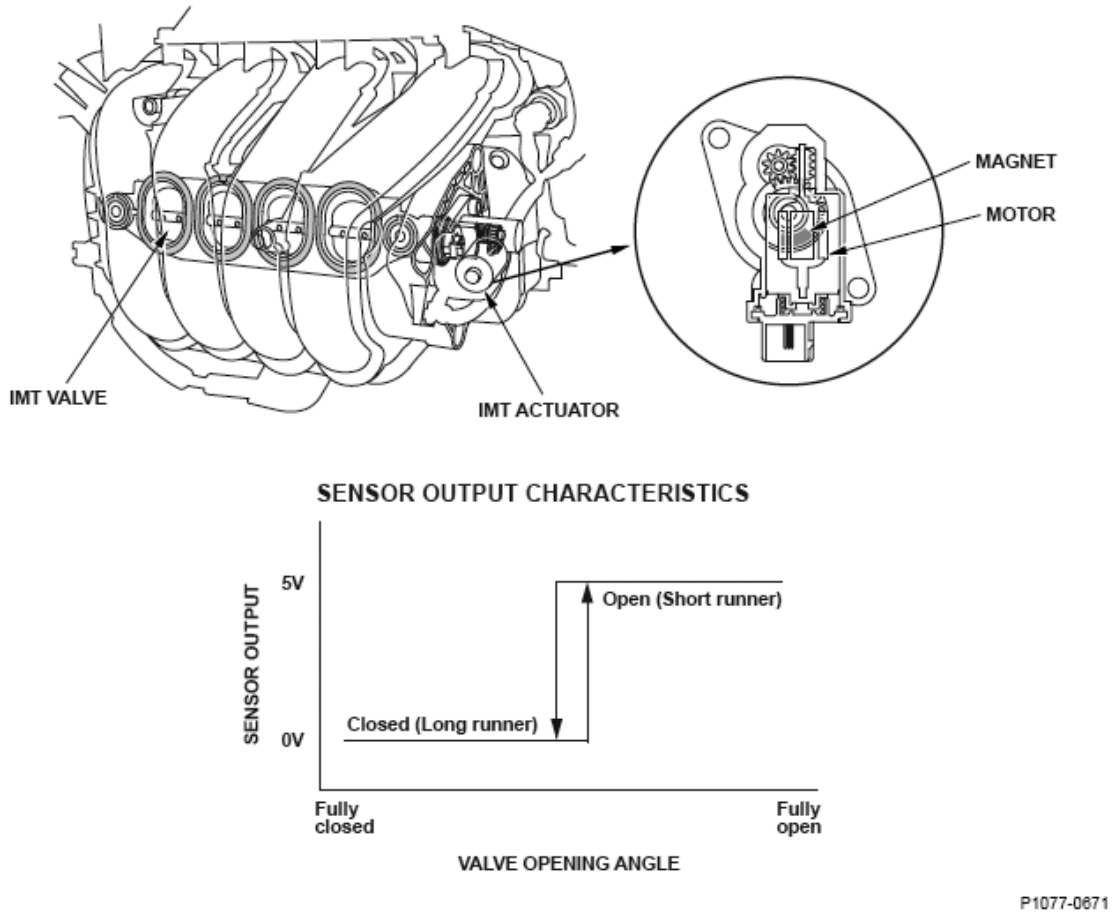


Fig. 485: Identifying IMT Valve And IMT Actuator Location

General Description (R18A1 Engine)

The intake manifold tuning (IMT) system controls engine output by selecting either long or short intake runner lengths. The system consists of the IMT valve, the IMT actuator, and the engine control module (ECM)/powertrain control module (PCM). The IMT actuator is attached to the intake manifold and it includes the motor and the Hall-effect-IC position sensing unit. The ECM/PCM actuates the motor, which operates the IMT valve. When the IMT valve is closed, the long runner is selected, increasing torque at low engine speed. When the IMT valve is open, the short runner is selected, increasing torque at high engine speed. A Hall-effect-IC position sensing unit is integrated with the motor to provide precise open/close feedback to the ECM/PCM. The IMT actuator sends a long runner return signal to the ECM/PCM when the IMT valve is closed, and it sends a short runner return signal when the IMT valve is open.

If the ECM/PCM receives no closed return signal when it sends a close command, or if it receives no open return signal when sending an open command to the IMT actuator, for a specified time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	6 seconds or more

DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Intake air temperature	32°F (0°C)	-
Engine speed	-	5,000 rpm
Battery voltage	10.5 V	-
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0563, P1128, P1129, P2227, P2228, P2229	

Malfunction Threshold (R18A1 Engine)

When the ECM/PCM sends a close (long runner) command, no long runner return signal is received for at least 6 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the IMT TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Let the engine idle for at least 6 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1077 (106): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1077: INTAKE MANIFOLD TUNING (IMT) VALVE STUCK IN HIGH RPM POSITION (R18A4 ENGINE)

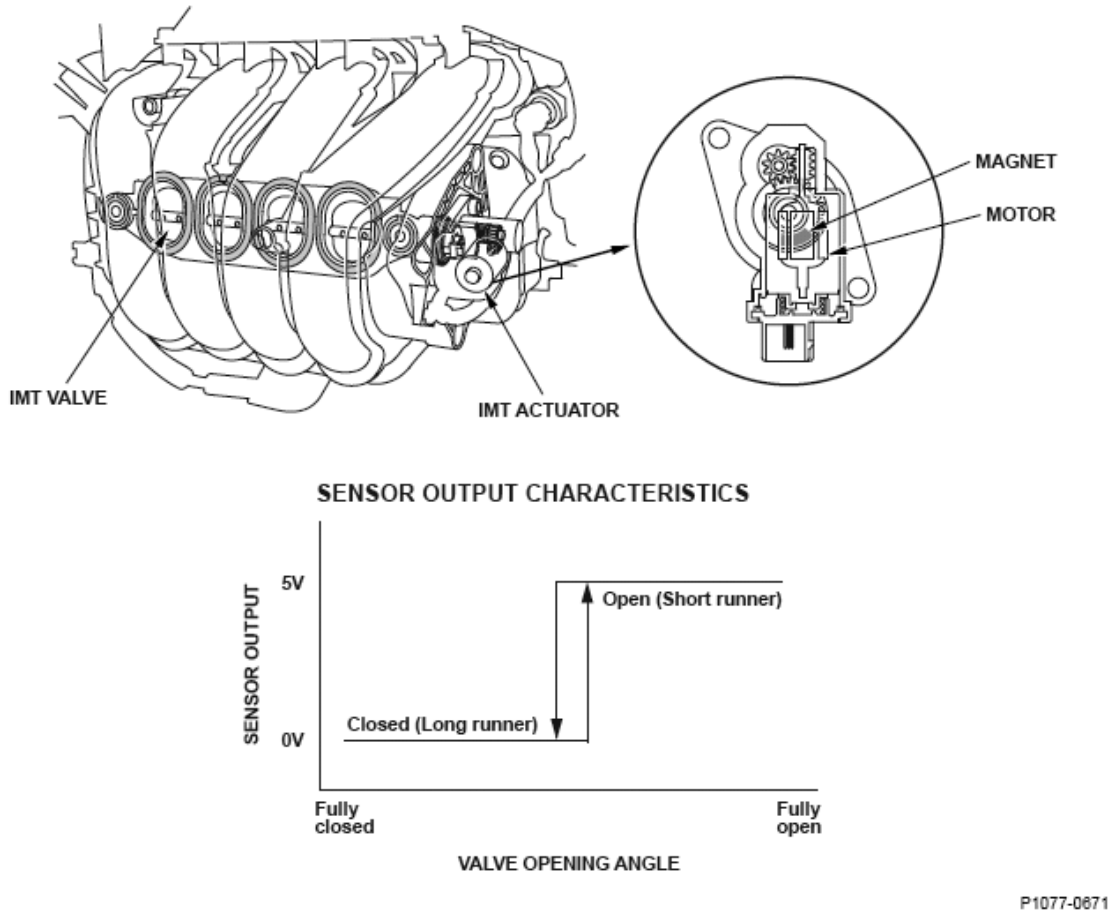


Fig. 486: Identifying IMT Valve And IMT Actuator Location

General Description (R18A4 Engine)

The intake manifold tuning (IMT) system controls engine output by selecting either long or short intake runner lengths. The system consists of the IMT valve, the IMT actuator, and the powertrain control module (PCM). The IMT actuator is attached to the intake manifold and it includes the motor and the Hall-effect-IC position sensing unit. The PCM actuates the motor, which operates the IMT valve. When the IMT valve is closed, the long runner is selected, increasing torque at low engine speed. When the IMT valve is open, the short runner is selected, increasing torque at high engine speed. A Hall-effect-IC position sensing unit is integrated with the motor to provide precise open/close feedback to the PCM. The IMT actuator sends a long runner return signal to the PCM when the IMT valve is closed, and it sends a short runner return signal when the IMT valve is open.

If the PCM receives no closed return signal when it sends a close command, or if it receives no open return signal when sending an open command to the IMT actuator, for a specified time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	6 seconds or more

DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Intake air temperature	32°F (0°C)	-
Engine speed	-	5,000 rpm
Battery voltage	10.5 V	-
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0563, P1109, P1128, P1129, P2227, P2228, P2229	

Malfunction Threshold (R18A4 Engine)

When the PCM sends a close (long runner) command, no long runner return signal is received for at least 6 seconds.

Confirmation Procedure with the HDS (R18A4 Engine)

Do the IMT TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Let the engine idle for at least 6 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1078 (106): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1078: INTAKE MANIFOLD TUNING (IMT) VALVE STUCK IN LOW RPM POSITION (R18A1)

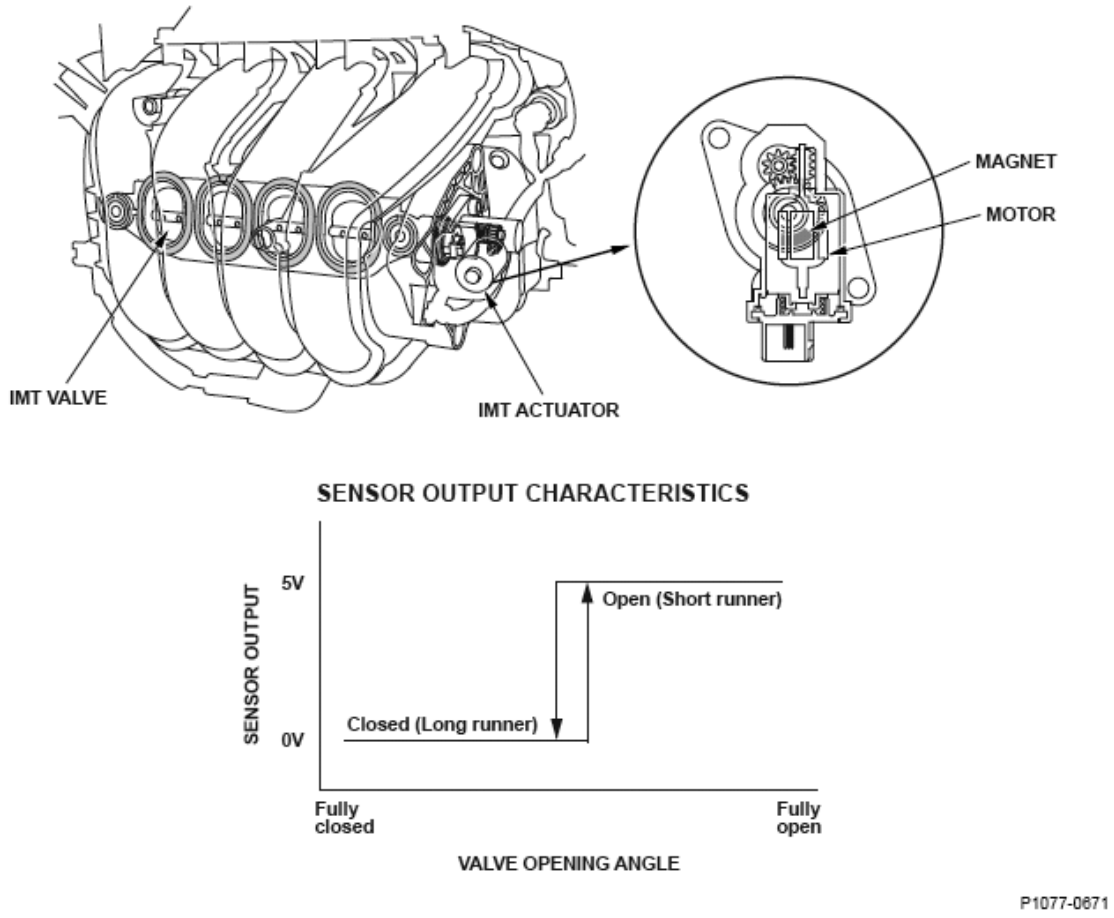


Fig. 487: Identifying IMT Valve And IMT Actuator Location

General Description (R18A1 Engine)

The intake manifold tuning (IMT) system controls engine output by selecting either long or short intake runner lengths. The system consists of the IMT valve, the IMT actuator, and the engine control module (ECM)/powertrain control module (PCM). The IMT actuator is attached to the intake manifold and it includes the motor and the Hall-effect-IC position sensing unit. The ECM/PCM actuates the motor, which operates the IMT valve. When the IMT valve is closed, the long runner is selected, increasing torque at low engine speed. When the IMT valve is open, the short runner is selected, increasing torque at high engine speed. A Hall-effect-IC position sensing unit is integrated with the motor to provide precise open/close feedback to the ECM/PCM. The IMT actuator sends a long runner return signal to the ECM/PCM when the IMT valve is closed, and it sends a short runner return signal when the IMT valve is open.

If the ECM/PCM receives no closed return signal when it sends a close command, or if it receives no open return signal when sending an open command to the IMT actuator, for a specified time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more

DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Intake air temperature	32°F (0°C)	-
Engine speed	5,200 rpm	-
Battery voltage	10.5 V	-
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0563, P1128, P1129, P2227, P2228, P2229	

Malfunction Threshold (R18A1 Engine)

When the ECM/PCM sends an open (short runner) command, no short runner return signal is received for at least 3 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the IMT TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Hold the engine speed to 5,200 rpm or more for at least 3 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1078 (106): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1078: INTAKE MANIFOLD TUNING (IMT) VALVE STUCK IN LOW RPM POSITION (R18A4 ENGINE)

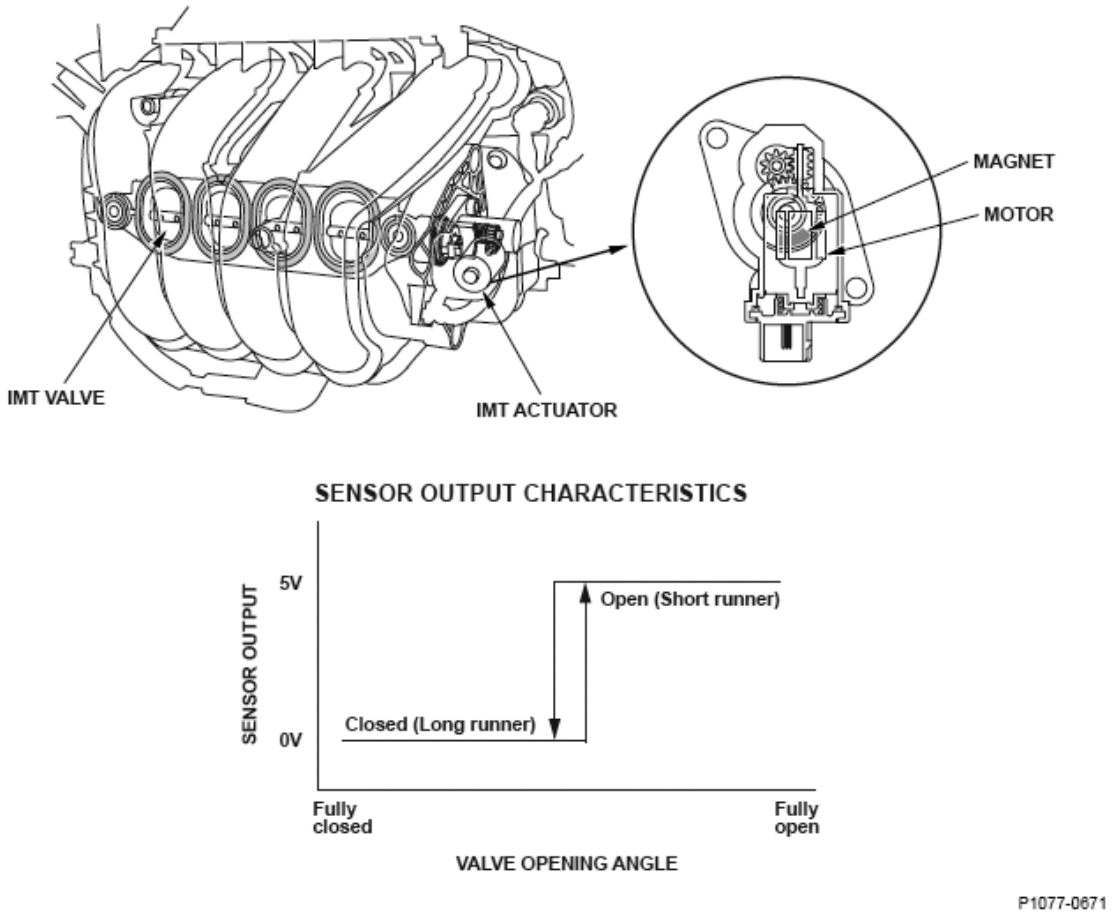


Fig. 488: Identifying IMT Valve And IMT Actuator Location

General Description (R18A4 Engine)

The intake manifold tuning (IMT) system controls engine output by selecting either long or short intake runner lengths. The system consists of the IMT valve, the IMT actuator, and the powertrain control module (PCM). The IMT actuator is attached to the intake manifold and it includes the motor and the Hall-effect-IC position sensing unit. The PCM actuates the motor, which operates the IMT valve. When the IMT valve is closed, the long runner is selected, increasing torque at low engine speed. When the IMT valve is open, the short runner is selected, increasing torque at high engine speed. A Hall-effect-IC position sensing unit is integrated with the motor to provide precise open/close feedback to the PCM. The IMT actuator sends a long runner return signal to the PCM when the IMT valve is closed, and it sends a short runner return signal when the IMT valve is open.

If the PCM receives no closed return signal when it sends a close command, or if it receives no open return signal when sending an open command to the IMT actuator, for a specified time, it detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more

DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Intake air temperature	32°F (0°C)	-
Engine speed	5,200 rpm	-
Battery voltage	10.5 V	-
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0563, P1109, P1128, P1129, P2227, P2228, P2229	

Malfunction Threshold (R18A4 Engine)

When the PCM sends an open (short runner) command, no short runner return signal is received for at least 3 seconds.

Confirmation Procedure with the HDS (R18A4 Engine)

Do the IMT TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Hold the engine speed to 5,200 rpm or more for at least 3 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1109 (13): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1109: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT OUT OF RANGE-HIGH (K20Z3 ENGINE)

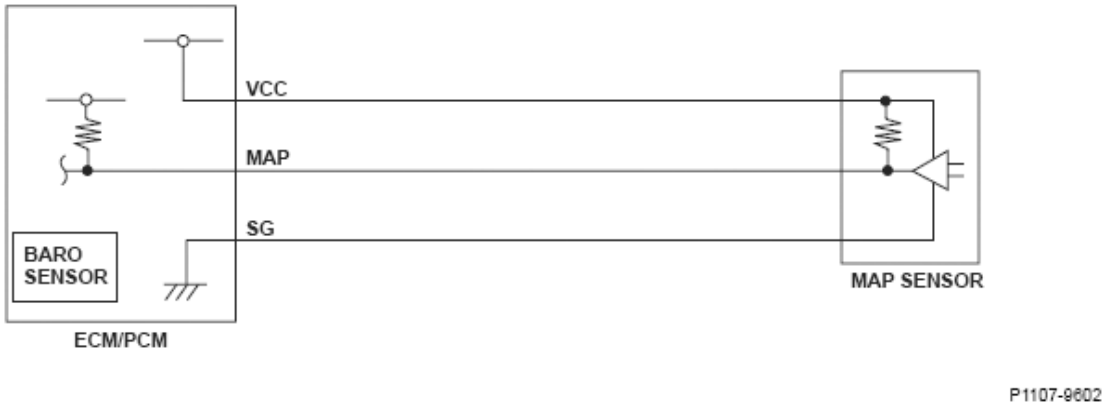


Fig. 489: Barometric Pressure (BARO) Sensor - Circuit Diagram

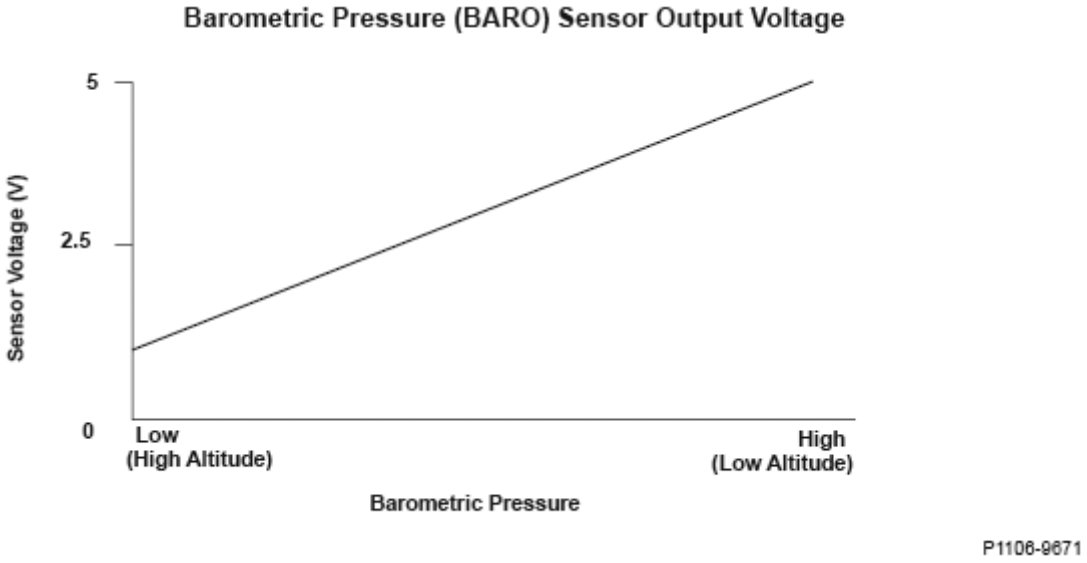


Fig. 490: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (K20Z3 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. When BARO sensor output voltage is within the specified range, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2228, P2229

Malfunction Threshold (K20Z3 Engine)

The BARO sensor output voltage is between 3.59 V to 4.49 V for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1109 (13): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1109: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT OUT OF RANGE-HIGH (R18A1 ENGINE)

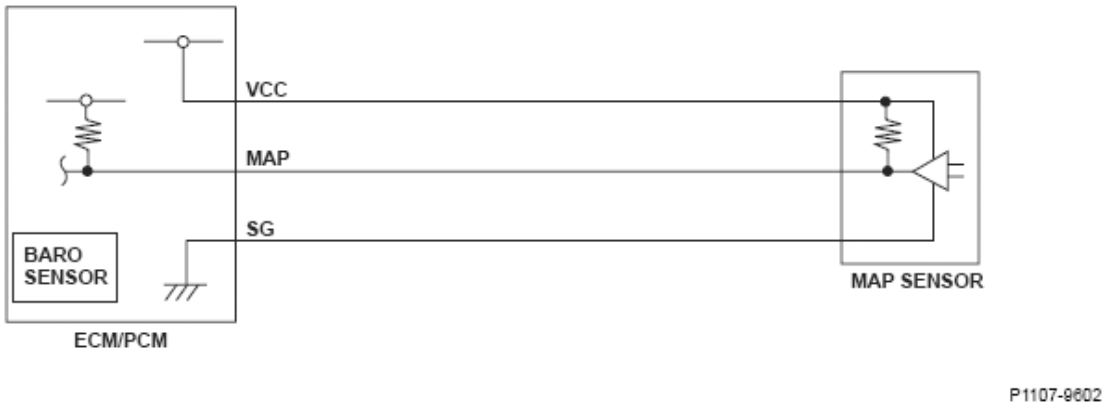


Fig. 491: Barometric Pressure (BARO) Sensor - Circuit Diagram

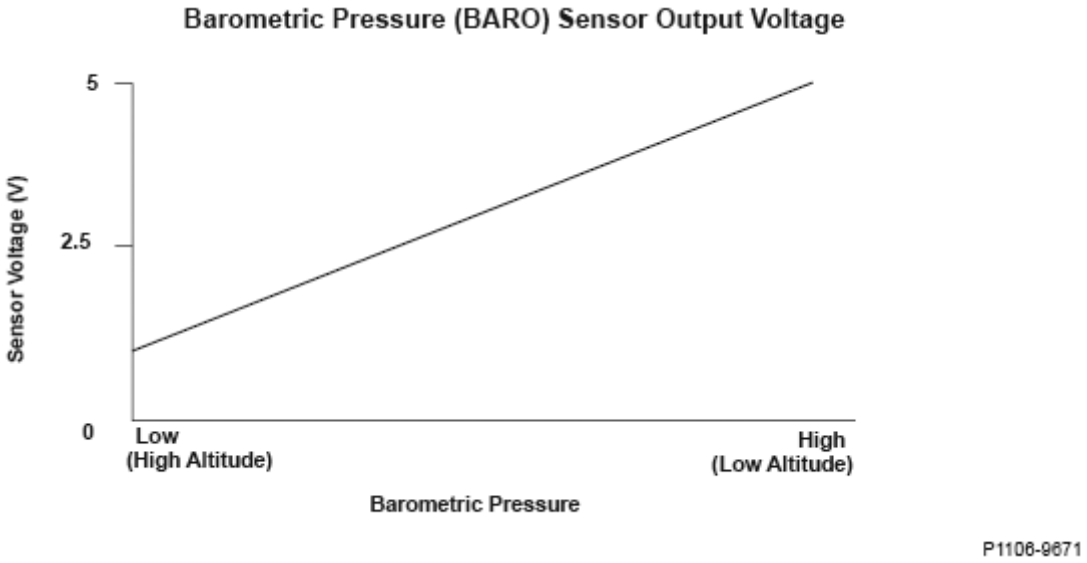


Fig. 492: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A1 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. When BARO sensor output voltage is within the specified range, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2228, P2229

Malfunction Threshold (R18A1 Engine)

The BARO sensor output voltage is between 3.59 V to 4.49 V for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1109 (13): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1109: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT OUT OF RANGE-HIGH (R18A4 ENGINE)

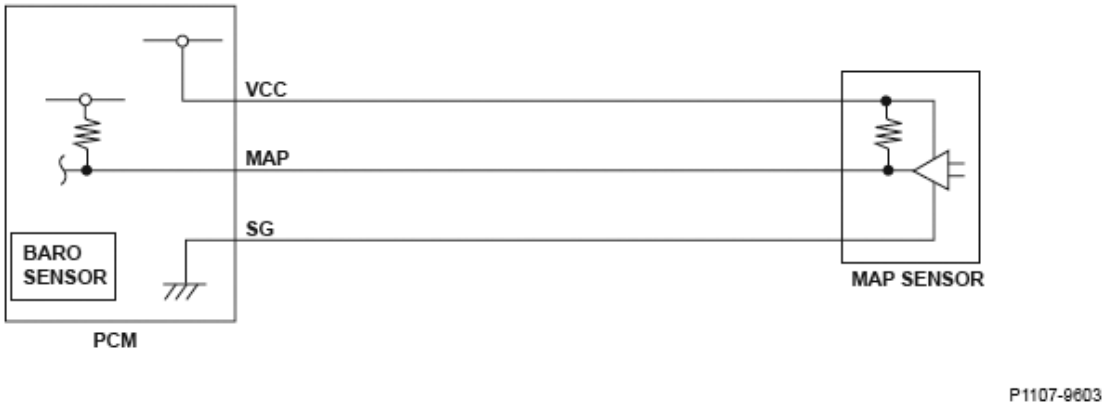


Fig. 493: Barometric Pressure (BARO) Sensor Circuit Diagram

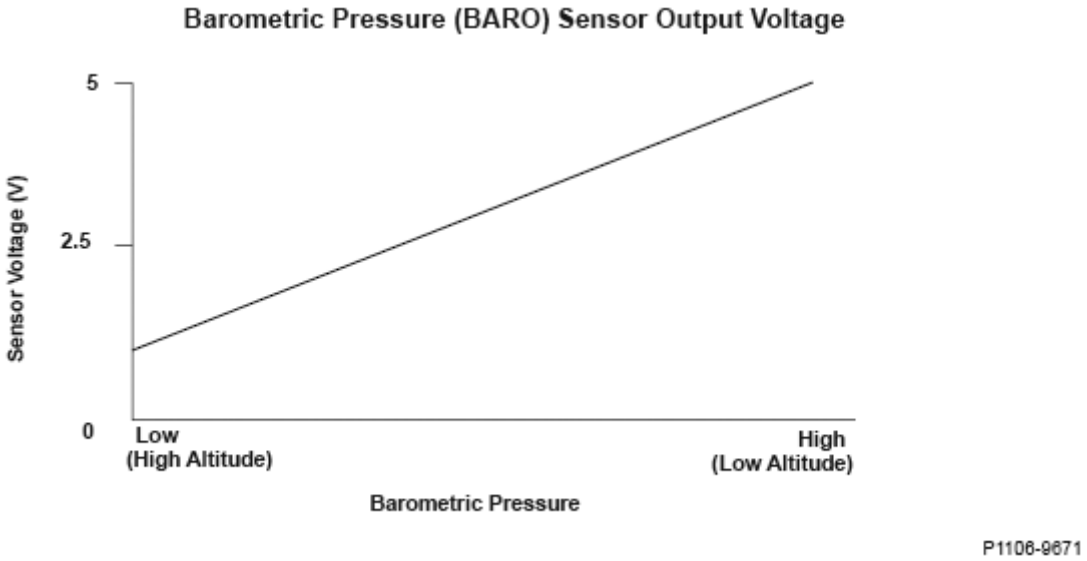


Fig. 494: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A4 Engine)

The barometric pressure (BARO) sensor is built into the powertrain control module (PCM) and monitors atmospheric pressure. The PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. When BARO sensor output voltage is within the specified range, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2228, P2229

Malfunction Threshold (R18A4 Engine)

The BARO sensor output voltage is between 3.59 V to 4.49 V for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1116 (86): ADVANCED DIAGNOSTICS (M/T)

DTC P1116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT RANGE / PERFORMANCE PROBLEM (M/T)

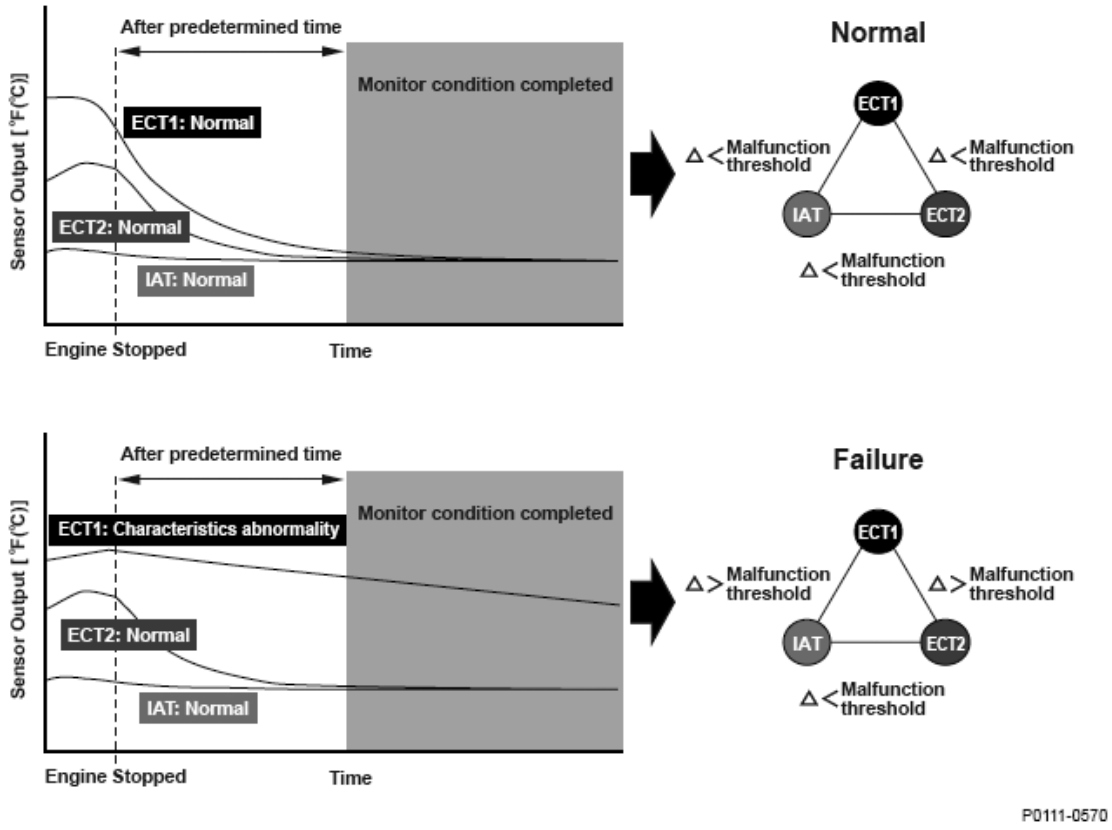


Fig. 495: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (M/T)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P2183, P2184, P2185, P2610	

Malfunction Threshold (M/T)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)*1, 59°F (33°C)*2 or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)*1, 36°F (20°C)*2 or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)*1, 66°F (37°C)*2 or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (M/T)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1116 (86): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

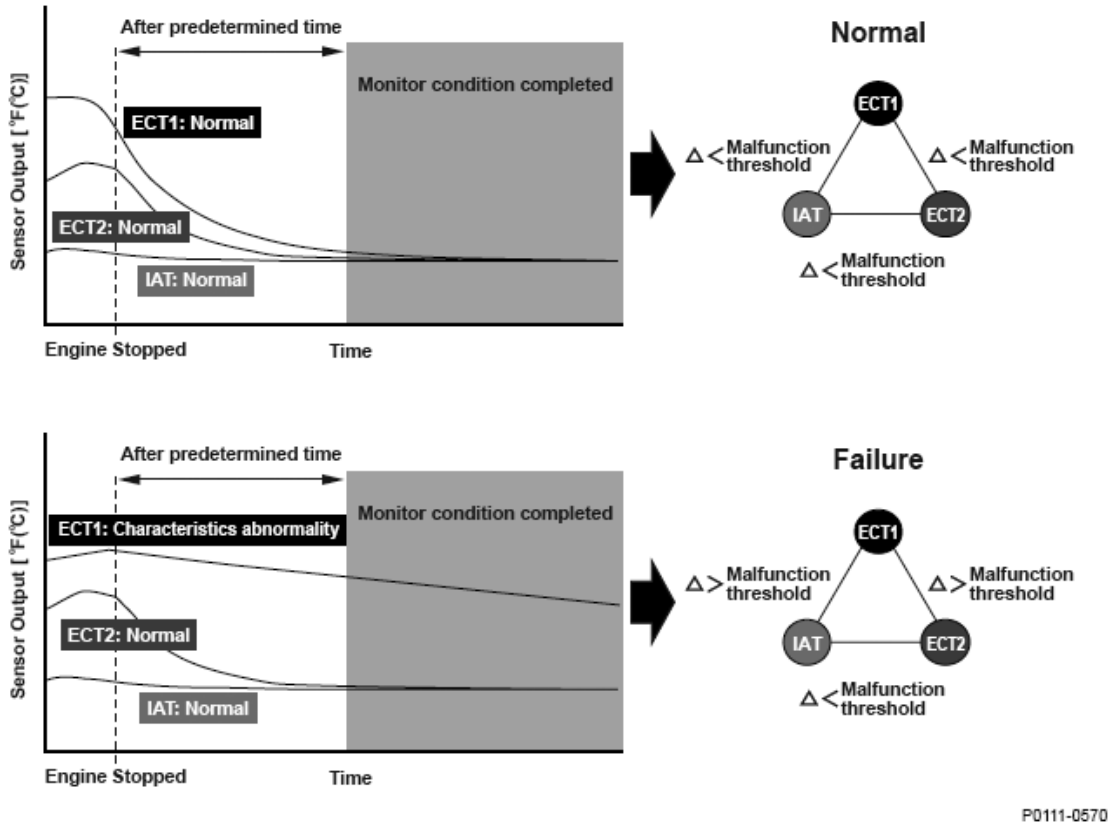


Fig. 496: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A1 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A1 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)*1, 59°F (33°C)*2 or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)*1, 36°F (20°C)*2 or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)*1, 66°F (37°C)*2 or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (R18A1 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1116 (86): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1116: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 PERFORMANCE PROBLEM (R18A4 ENGINE)

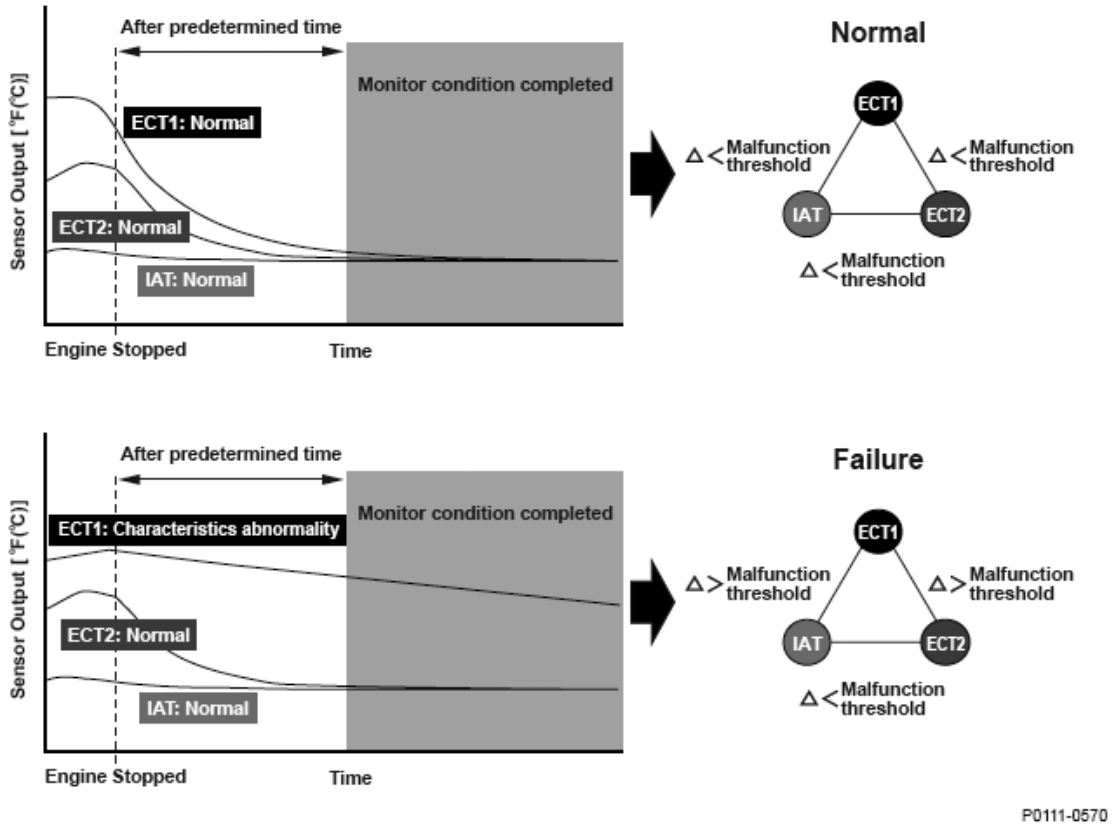


Fig. 497: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A4 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature. When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine off time	6 hours	-
No active DTCs	P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A4 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours before restarting the engine.

- When the temperature difference between the IAT and ECT1 is 81°F (45°C) or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C) or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C) or more.

Driving Pattern (R18A4 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1128 (5): ADVANCED DIAGNOSTICS (M/T)

DTC P1128: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL LOWER THAN EXPECTED (M/T)

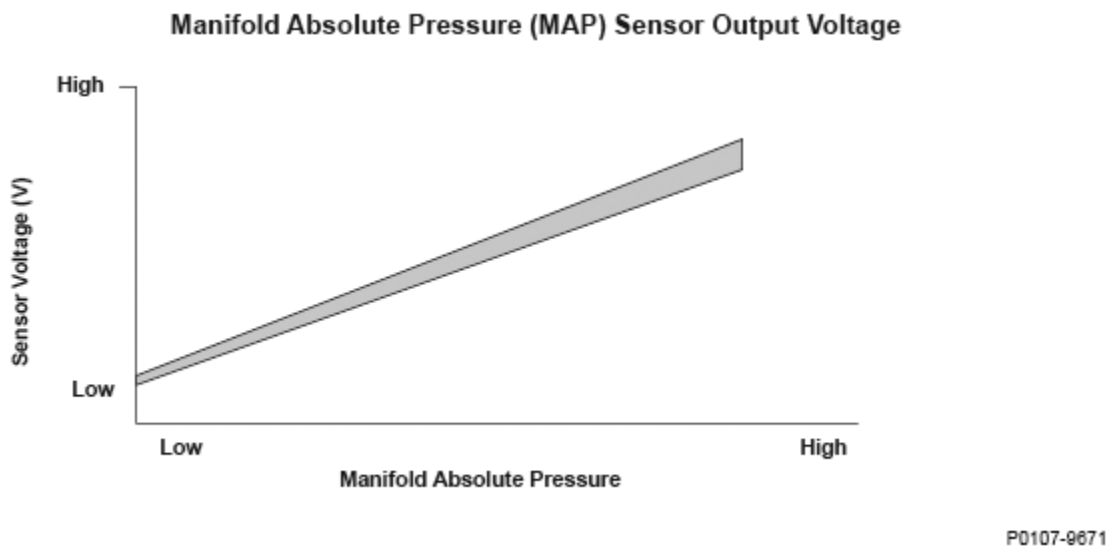


Fig. 498: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

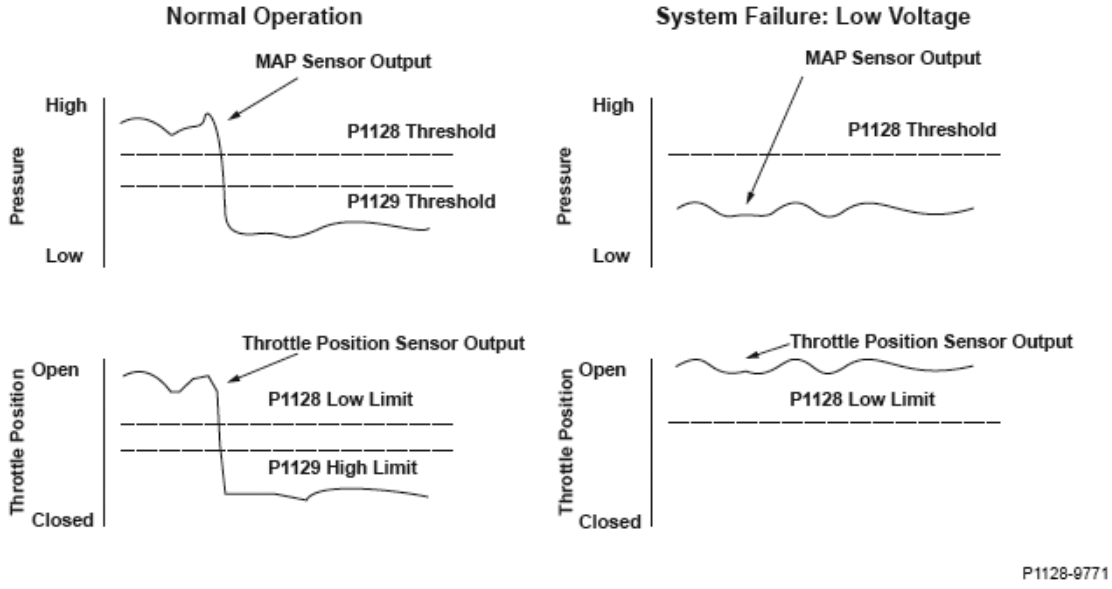


Fig. 499: Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected - Graph

General Description (M/T)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (idling) and high signal voltage at low-vacuum (throttle valve wide open).

The engine control module (ECM)/powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs lower voltage than expected, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time after the VTEC system changes(1)		3 seconds	-
Engine coolant temperature		156°F (69°C)	-
Engine speed		1,200 rpm(1)	5,400 rpm(1)
		1,300 rpm(2)	-(2)
Vehicle speed		15 mph (24 km/h)	-
Throttle position	1,000 rpm	7.9°(4)	-
		11.4°(2)	
		12.1°(3)	-
	3,000 rpm	20.8°(4)	-
		21.0°(2)	-
	4,000 rpm	30.1°(3)	-
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0506, P0507, P1077(1), P1078(1), P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649	

(1) R18A1 engine

(2) K20Z3 engine

(3) R18A1 engine rocker arm oil control solenoid: ON

(4) R18A1 engine rocker arm oil control solenoid: OFF

Malfunction Threshold (M/T)

- The MAP sensor output is 36 kPa (10.9 in.Hg, 277 mmHg)* or less for at least 2 seconds.
- The MAP sensor output is 54 kPa (15.9 in.Hg, 406 mmHg)* or less for at least 2 seconds.

*: Depending on atmospheric pressure.

Driving Pattern (M/T)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed of 15 mph (24 km/h) or more with a throttle position as specified under Enable Conditions for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1128 (5): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1128: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL LOWER THAN EXPECTED (R18A1 ENGINE)

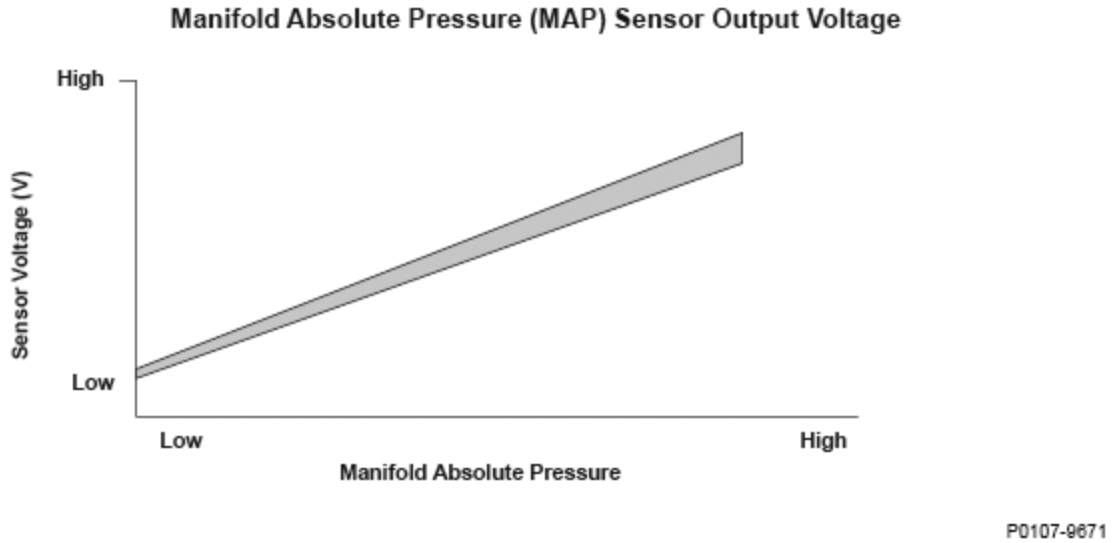


Fig. 500: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

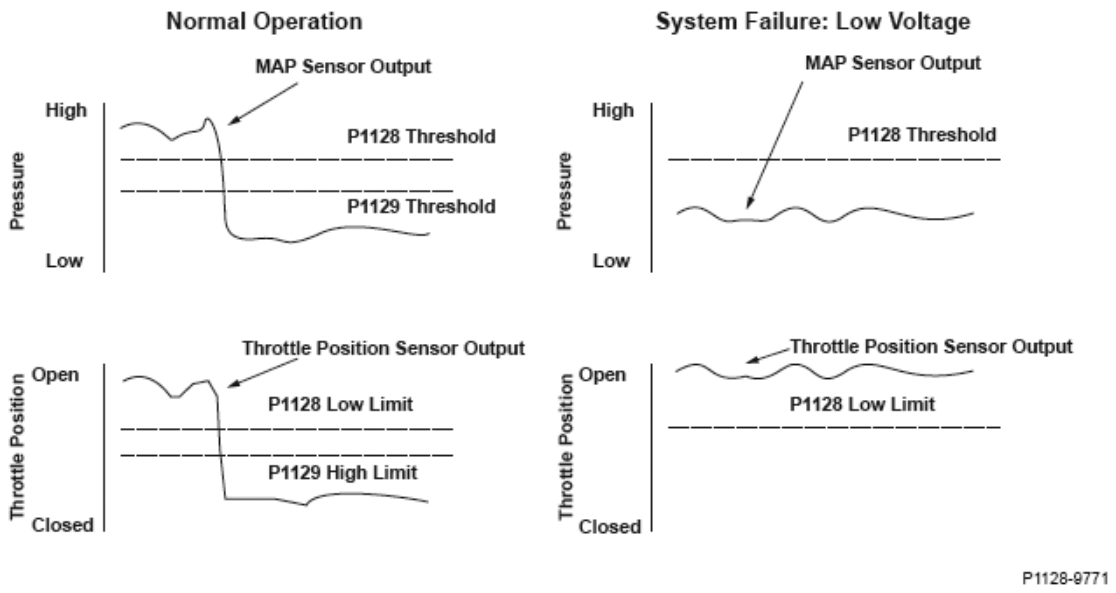


Fig. 501: Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (idling) and high signal voltage at low-vacuum (throttle valve wide open).

The engine control module (ECM)/powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs lower voltage than expected, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after the VTEC system changes(1)	3 seconds	-
Engine coolant temperature	156°F (69°C)	-
Engine speed	1,200 rpm(1)	5,400 rpm(1)
	1,300 rpm(2)	-(2)

Vehicle speed		15 mph (24 km/h)	-
Throttle position	1,000 rpm	7.9°(4)	-
		11.4°(2)	
		12.1°(3)	-
	3,000 rpm	20.8°(4)	-
		21.0°(2)	-
	4,000 rpm	30.1°(3)	-
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0401(1), P0404(1), P0506, P0507, P1077(1), P1078(1), P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2413(1), P2646, P2647, P2648, P2649	

(1) R18A1 engine

(2) K20Z3 engine

(3) R18A1 engine rocker arm oil control solenoid: ON

(4) R18A1 engine rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A1 Engine)

- The MAP sensor output is 36 kPa (10.9 in.Hg, 277 mmHg)* or less for at least 2 seconds.
- The MAP sensor output is 54 kPa (15.9 in.Hg, 406 mmHg)* or less for at least 2 seconds.

*: Depending on atmospheric pressure.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed of 15 mph (24 km/h) or more with a throttle position as specified under Enable Conditions for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1128 (5): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1128: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL LOWER THAN EXPECTED (R18A4 ENGINE)

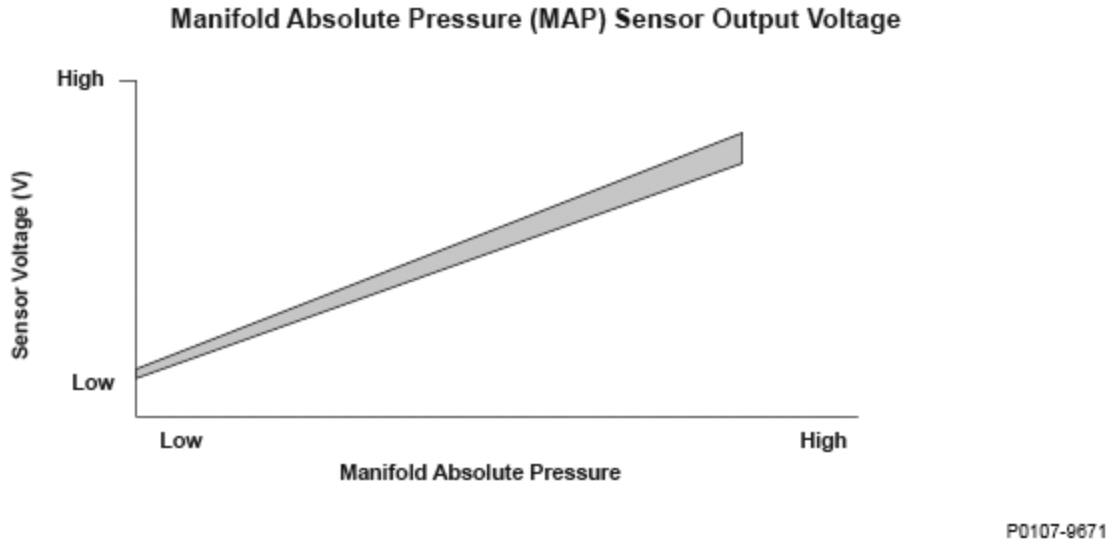


Fig. 502: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

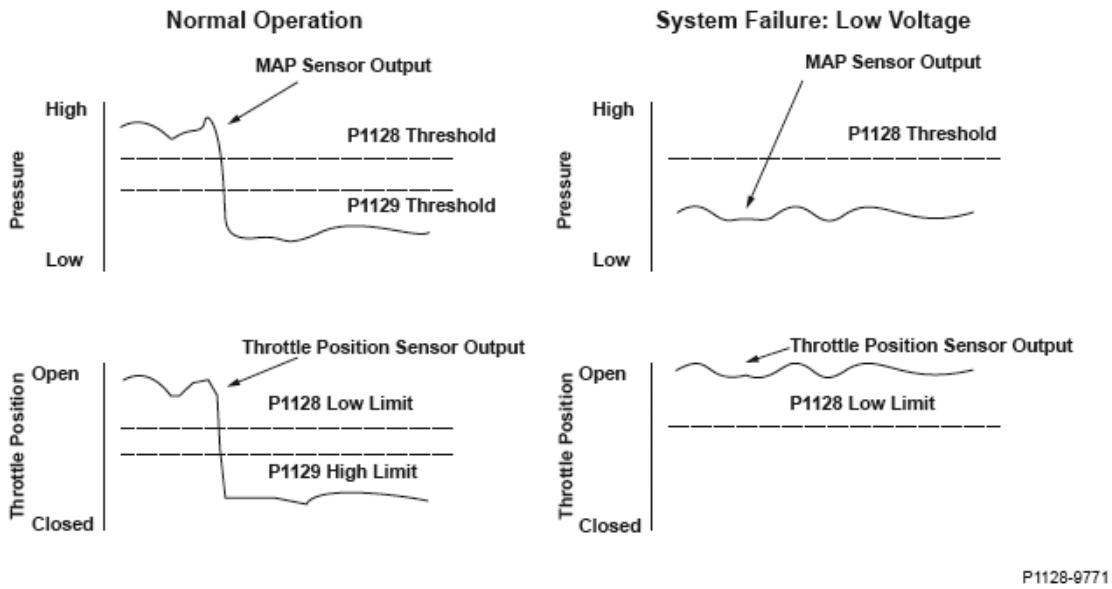


Fig. 503: Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it

into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (idling) and high signal voltage at low-vacuum (throttle valve wide open).

The powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs lower voltage than expected, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time after the VTEC system changes		3 seconds	-
Engine coolant temperature		156°F (69°C)	-
Engine speed		1,200 rpm	4,900 rpm
Vehicle speed		15 mph (24 km/h)	-
Throttle position	1,000 rpm	9.2°(2)	-
		12.3°(1)	
	3,000 rpm	22.5°(2)	-
	4,000 rpm	29.3°(1)	-
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0506, P0507, P1077, P1078, P1109, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2227, P2228, P2229, P2646, P2647, P2648, P2649	

(1) Rocker arm oil control solenoid: ON

(2) Rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A4 Engine)

- The MAP sensor output is 36 kPa (10.9 in.Hg, 277 mmHg)* or less for at least 2 seconds.
- The MAP sensor output is 54 kPa (15.9 in.Hg, 406 mmHg)* or less for at least 2 seconds.

*: Depending on atmospheric pressure.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed of 15 mph (24 km/h) or more with a throttle position as specified under Enable Conditions for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1129 (5): ADVANCED DIAGNOSTICS (M/T)

DTC P1129: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL HIGHER THAN EXPECTED (M/T)

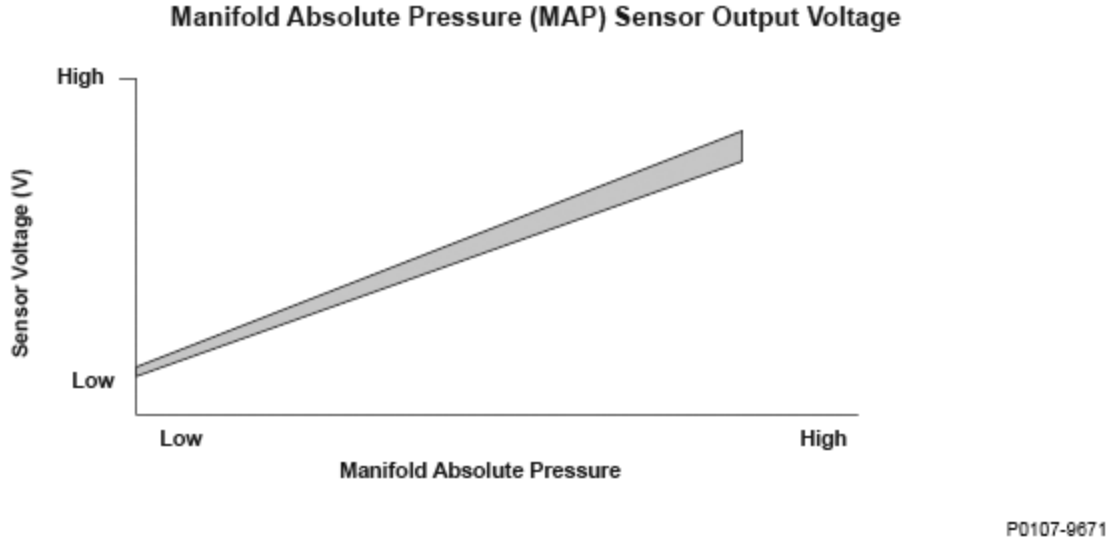


Fig. 504: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

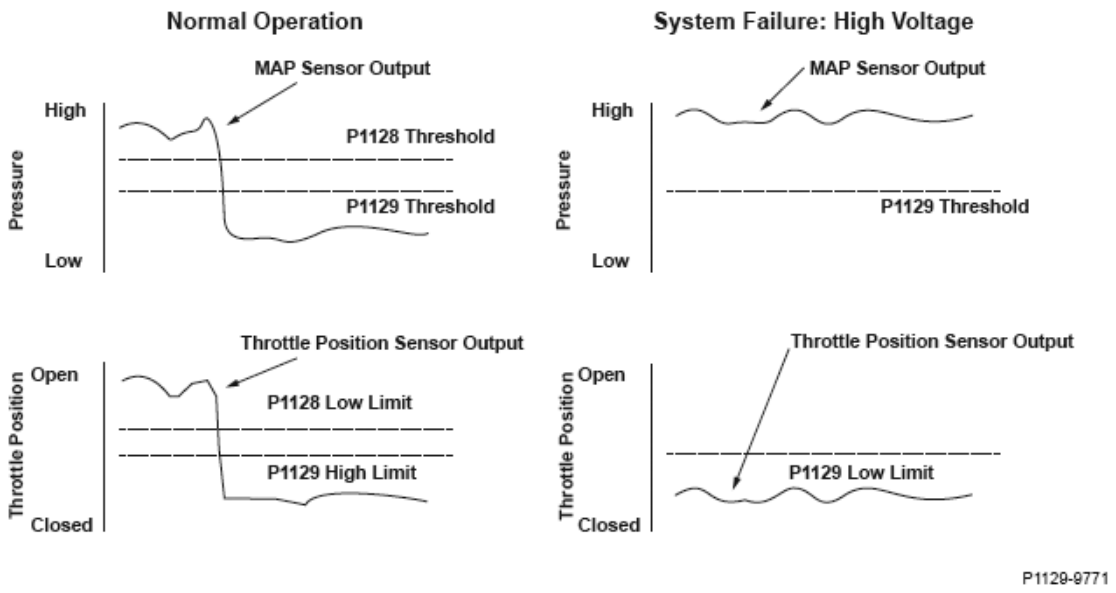


Fig. 505: Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected - Graph

General Description (M/T)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

The engine control module (ECM)/powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs high voltage during fuel cut-off operation for deceleration with the throttle valve fully closed, which should make the manifold absolute pressure lower, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after the VTEC system changes(1)	3 seconds	-
Engine coolant temperature	156°F (69°C)	-
Engine speed	1,200 rpm(1)	5,400 rpm(1)

	1,300 rpm(2)	7,700 rpm(2)
Vehicle speed	15 mph (24 km/h)	-
Fuel feedback	During deceleration	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351,(1) P0352(1), P0353(1), P0354(1), P0401(1), P0404(1), P0443, P0496, P0497, P0506, P0507, P1077(1), P1078(1), P1128, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (M/T)

The MAP sensor output is 37 kPa (10.9 in.Hg, 277 mmHg) or more for at least 2 seconds.

Driving Pattern (M/T)

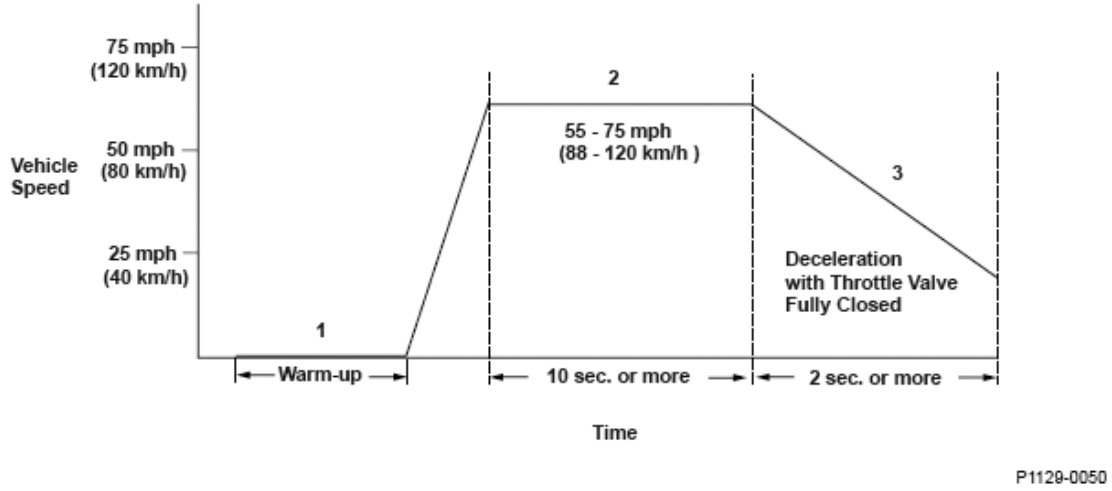


Fig. 506: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
3. Then, decelerate with the throttle valve fully closed for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM

memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1129 (5): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1129: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL HIGHER THAN EXPECTED (R18A1 ENGINE)

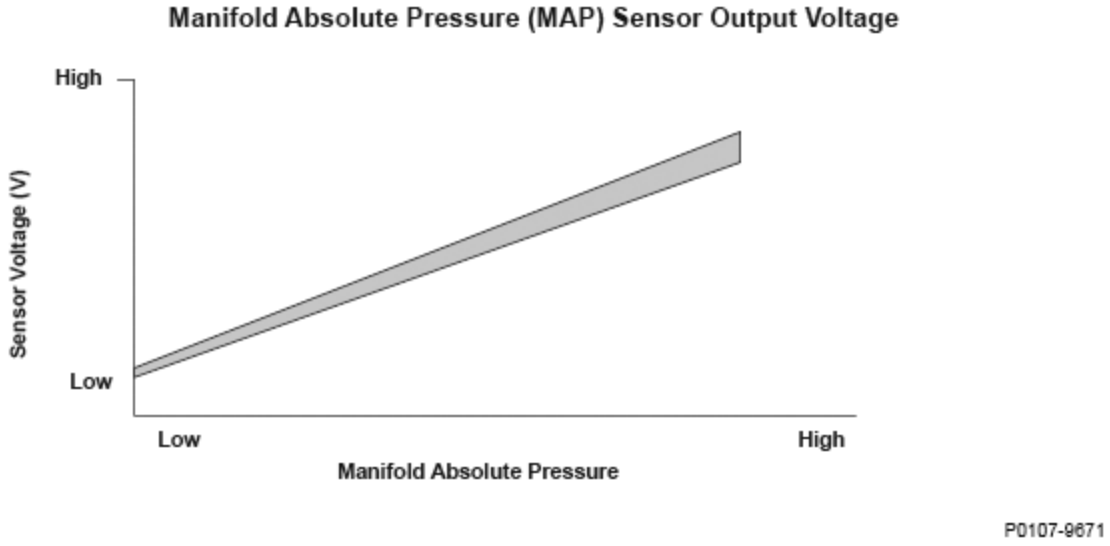


Fig. 507: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

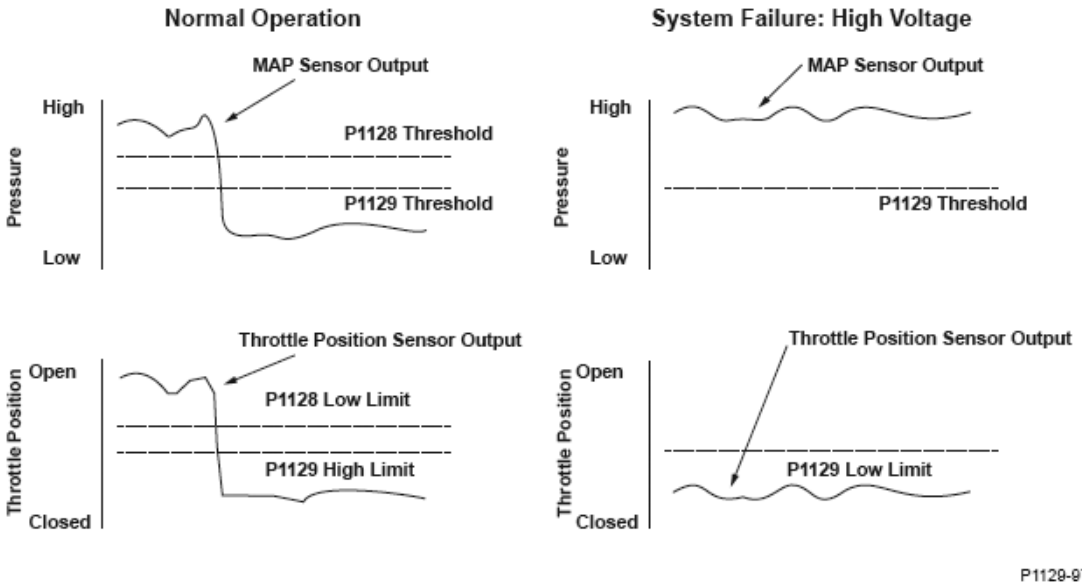


Fig. 508: Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected - Graph

General Description (R18A1 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

The engine control module (ECM)/powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs high voltage during fuel cut-off operation for deceleration with the throttle valve fully closed, which should make the manifold absolute pressure lower, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after the VTEC system changes(1)	3 seconds	-
Engine coolant temperature	156 °F (69 °C)	-
Engine speed	1,200 rpm(1)	5,400 rpm(1)
	1,300 rpm(2)	7,700 rpm(2)
Vehicle speed	15 mph (24 km/h)	-
Fuel feedback	During deceleration	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0112, P0113, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351,(1) P0352(1), P0353(1), P0354(1), P0401(1), P0404(1), P0443, P0496, P0497, P0506, P0507, P1077(1), P1078(1), P1128, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2413(1), P2646, P2647, P2648, P2649	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

The MAP sensor output is 37 kPa (10.9 in.Hg, 277 mmHg) or more for at least 2 seconds.

Driving Pattern (R18A1 Engine)

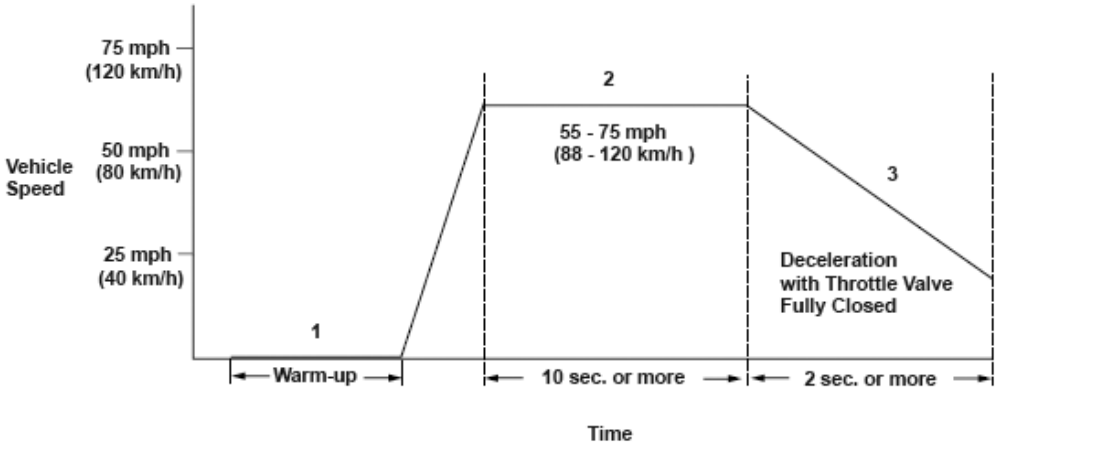


Fig. 509: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
3. Then, decelerate with the throttle valve fully closed for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1129 (5): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1129: MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR SIGNAL HIGHER THAN EXPECTED (R18A4 ENGINE)

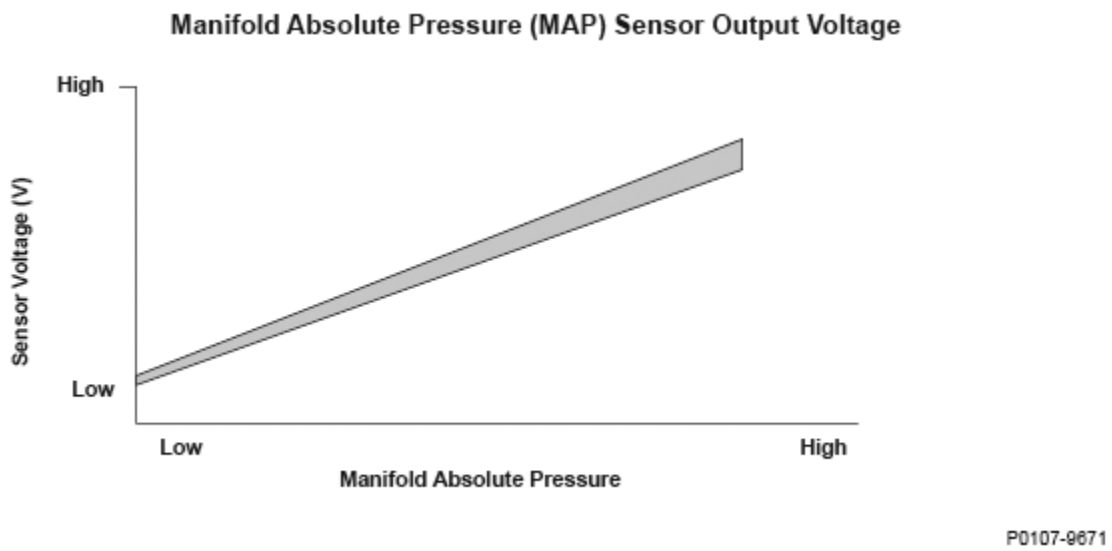


Fig. 510: Manifold Absolute Pressure (MAP) Sensor Output Voltage - Graph

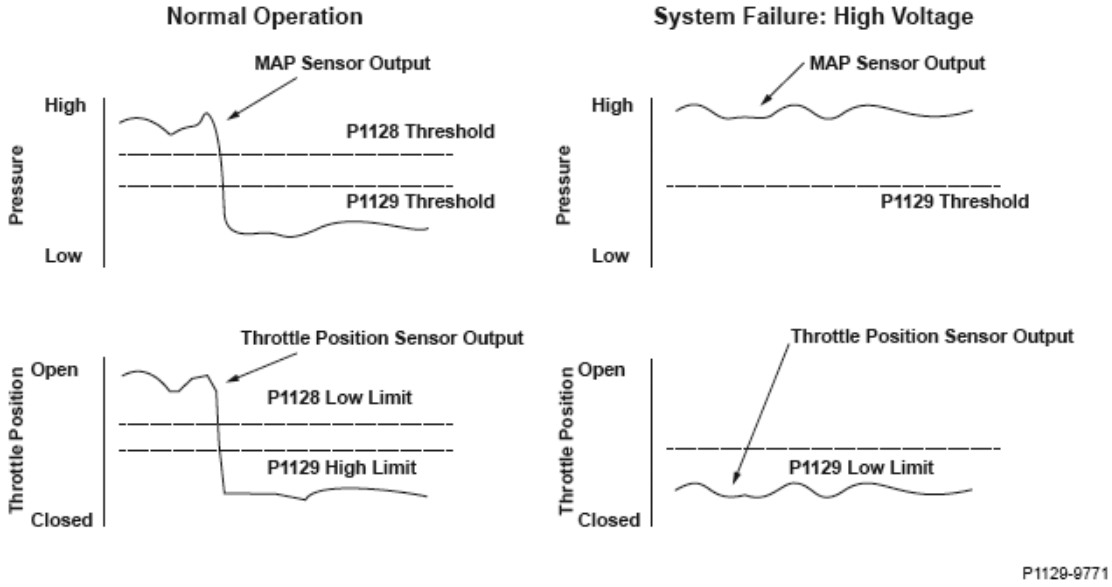


Fig. 511: Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected - Graph

General Description (R18A4 Engine)

The manifold absolute pressure (MAP) sensor senses manifold absolute pressure (vacuum) and converts it into electrical signals. The MAP sensor outputs low signal voltage at high-vacuum (throttle valve closed) and high signal voltage at low-vacuum (throttle valve wide open).

The powertrain control module (PCM) compares a predetermined MAP value at a given throttle position and manifold absolute pressure to the output voltage value of the MAP sensor.

If the MAP sensor outputs high voltage during fuel cut-off operation for deceleration with the throttle valve fully closed, which should make the manifold absolute pressure lower, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after the VTEC system changes	3 seconds	-
Engine coolant temperature	156°F (69°C)	-
Engine speed	1,200 rpm	4,900 rpm
Vehicle speed	15 mph (24 km/h)	-
Fuel feedback	During deceleration	
Throttle position	Fully closed	
No active DTCs	P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0506, P0507, P1077, P1078, P1128, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2646, P2647, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

The MAP sensor output is 37 kPa (10.9 in.Hg, 277 mmHg) or more for at least 2 seconds.

Driving Pattern (R18A4 Engine)

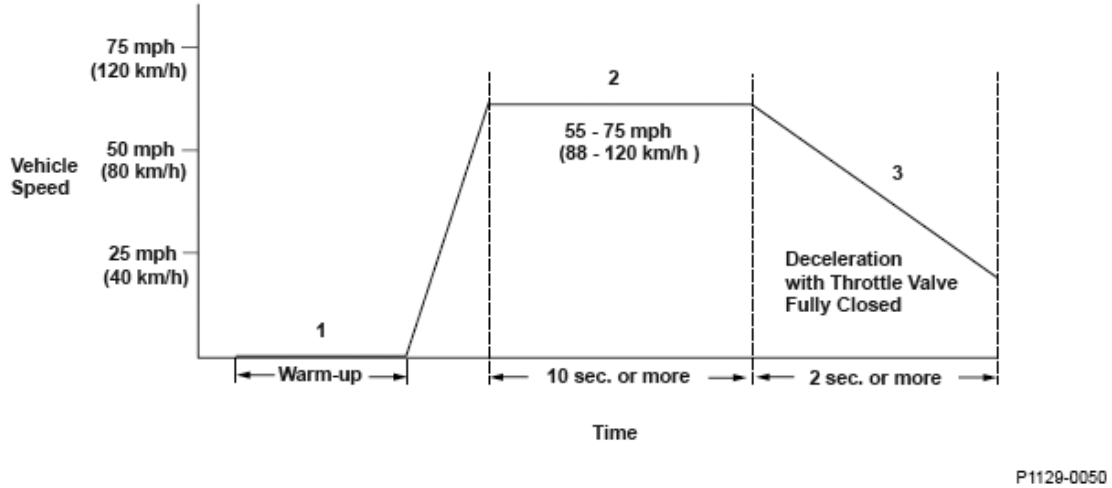


Fig. 512: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.

2. Drive the vehicle at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
3. Then, decelerate with the throttle valve fully closed for at least 2 seconds.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1157 (48): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1157: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION (K20Z3 ENGINE)

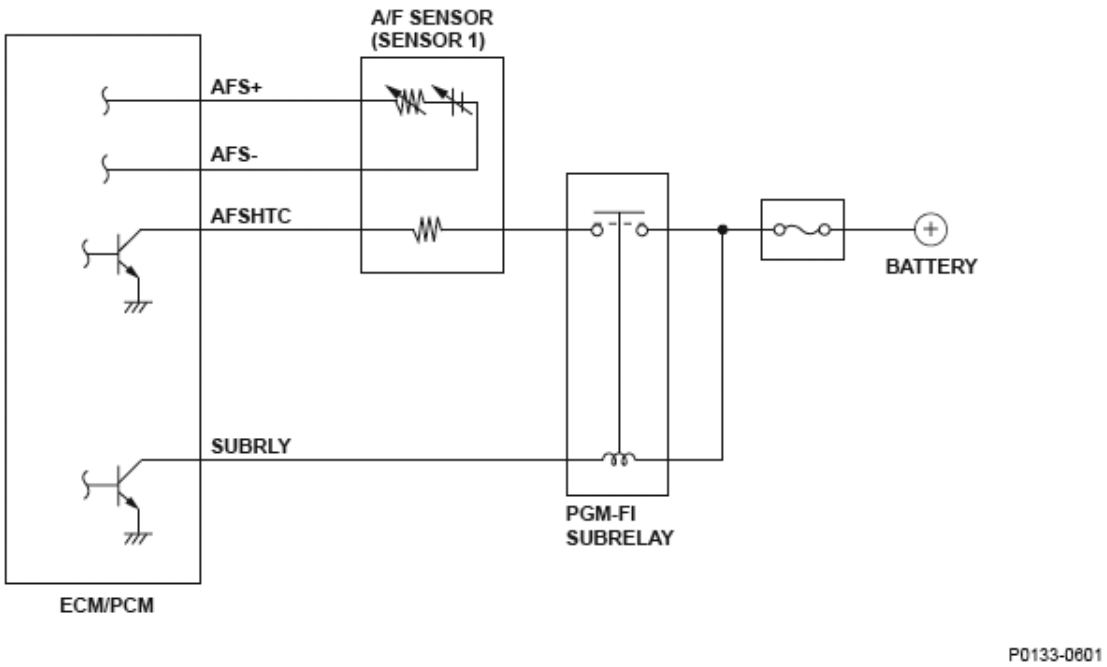


Fig. 513: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the

exhaust gas. The A/F sensor outputs voltage to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content by controlling current flow through the heater. The current diminishes as the voltage applied to the element reaches a certain range because the amount of oxygen that passes through the diffusion layer is limited. The current is proportional to the oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares the set target air/fuel ratio to the detected air/fuel ratio and adjusts the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated for a set time when power is drawn by the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68 °F (20 °C)	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P2195, P2238, P2252	
Others	At least 17.5 seconds after applying current to the air/fuel ratio sensor (sensor 1) heater.	

Malfunction Threshold (K20Z3 Engine)

The A/F sensor (sensor 1) heater element resistance is 250 ohms or more for at least 5 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1157 (48): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1157: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION (R18A1 ENGINE)

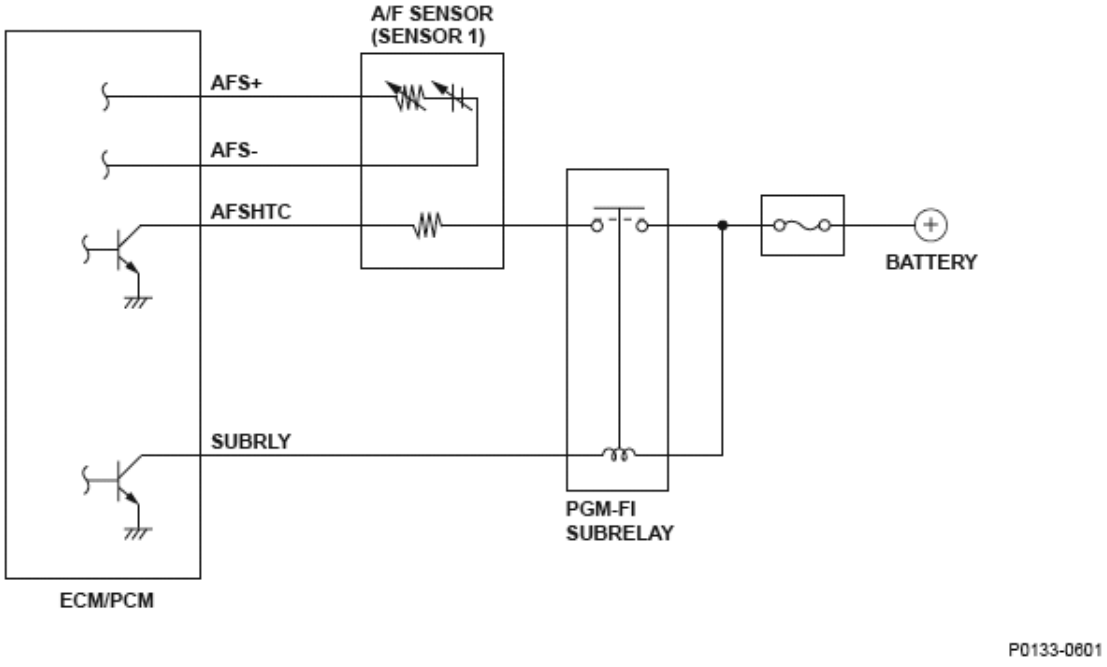


Fig. 514: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor outputs voltage to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content by controlling current flow through the heater. The current diminishes as the voltage applied to the element reaches a certain range because the amount of oxygen that passes through the diffusion layer is limited. The current is proportional to the oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares the set target air/fuel ratio to the detected air/fuel ratio and adjusts the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback

control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated for a set time when power is drawn by the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68°F (20°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P2195, P2238, P2252	
Others	At least 17.5 seconds after applying current to the air/fuel ratio sensor (sensor 1) heater.	

Malfunction Threshold (R18A1 Engine)

The A/F sensor (sensor 1) heater element resistance is 250 ohms or more for at least 5 seconds.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1157 (48): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1157: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT MALFUNCTION (R18A4 ENGINE)

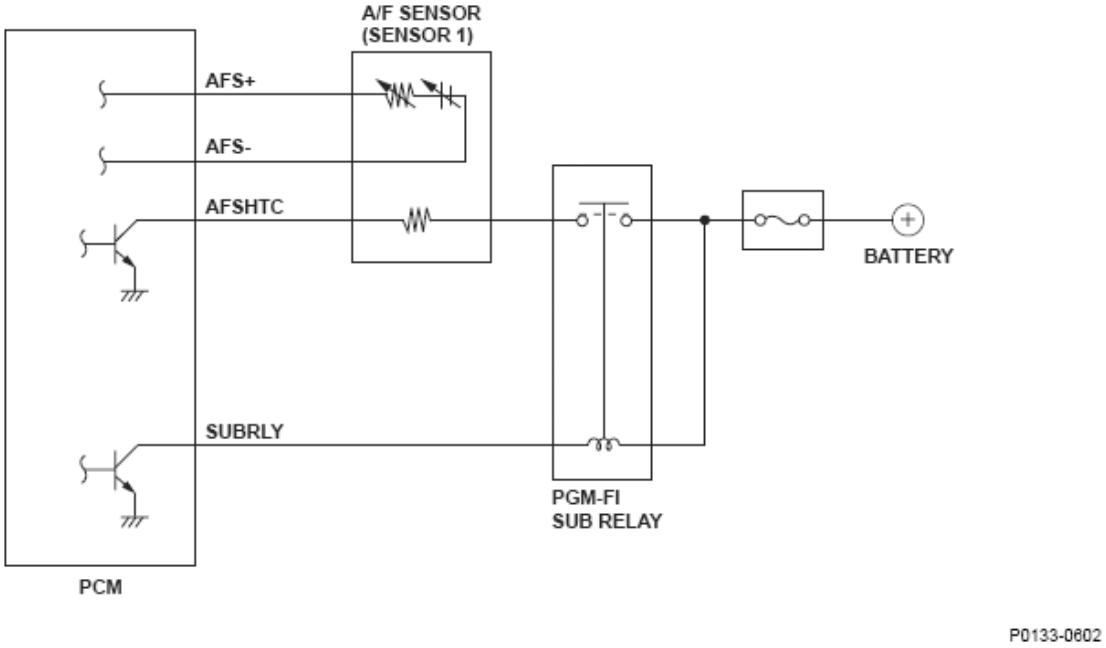


Fig. 515: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Diagram

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor outputs voltage to the powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). When activated, it heats the sensor to stabilize and speed up the detection of oxygen content by controlling current flow through the heater. The current diminishes as the voltage applied to the element reaches a certain range because the amount of oxygen that passes through the diffusion layer is limited. The current is proportional to the oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The PCM compares the set target air/fuel ratio to the detected air/fuel ratio and adjusts the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the PCM uses A/F feedback control to issue a Lean command.

If the element is not activated for a set time when power is drawn by the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more

DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
Engine coolant temperature	68°F(20°C)	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P2195, P2238, P2252	
Others	At least 17.5 seconds after applying current to the A/F sensor (sensor 1) heater.	

Malfunction Threshold (R18A4 Engine)

The A/F sensor (sensor 1) heater element resistance is 250 ohms or more for at least 5 seconds.

Driving Pattern (R18A4 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1172 (61): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1172: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH (K20Z3)

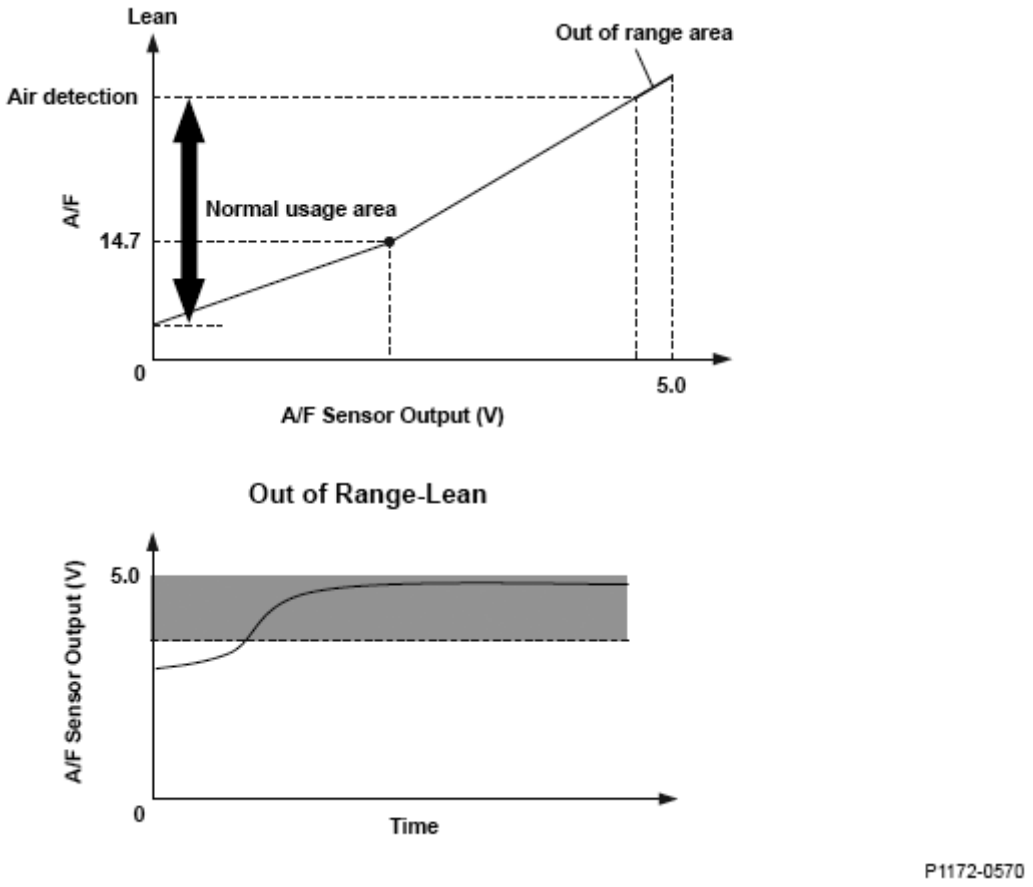


Fig. 516: Air/Fuel Ratio (A/F) Sensor Voltage - Graph

General Description (K20Z3 Engine)

If a malfunction causes the air/fuel sensor value sent to the engine control module (ECM) to deviate from the normal control area, the air/fuel (A/F) sensor may still become active after the engine starts, but the air/fuel feedback does not start normally and the emissions deteriorate. When the A/F sensor output is out of the normal area, and this condition continues after the A/F sensor is active, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	7 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
No active	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172,

DTCs	P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0496, P0497, P1128, P1129, P1157, P2195, P2238, P2252

Malfunction Threshold (K20Z3 Engine)

A malfunction is detected when the A/F sensor output voltage is 4.9 V or more.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1172 (61): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1172: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH (R18A1)

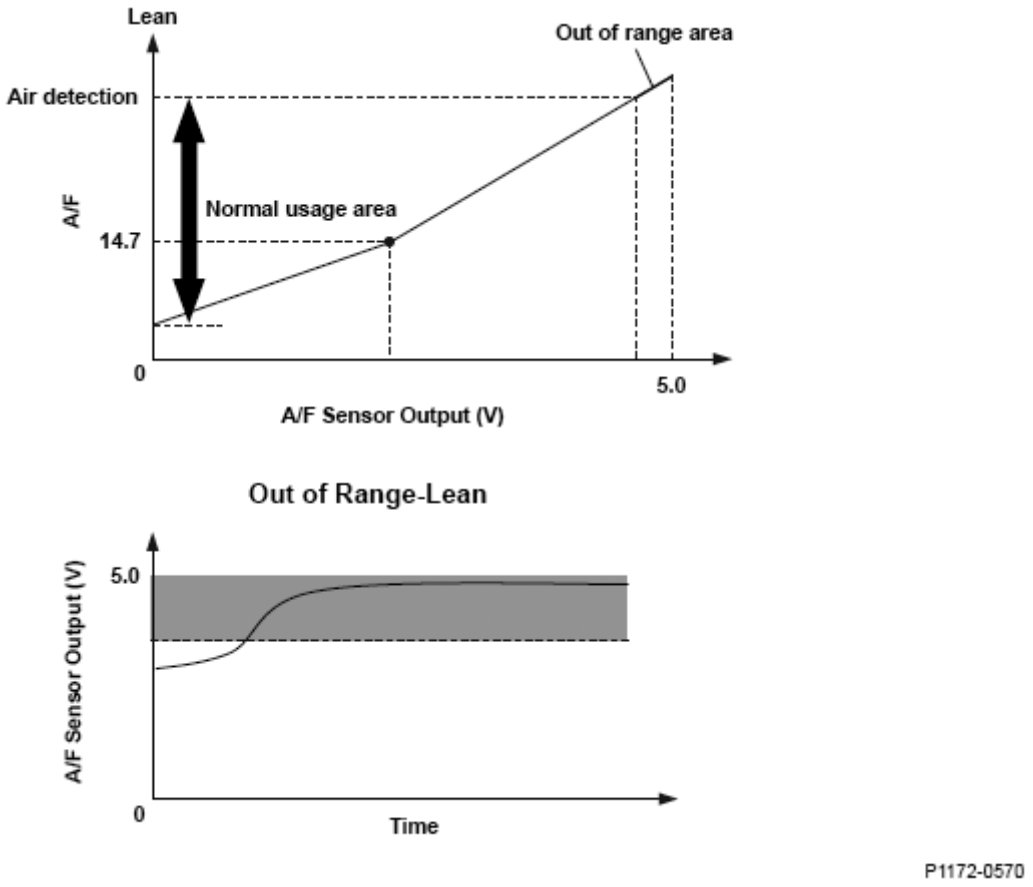


Fig. 517: Air/Fuel Ratio (A/F) Sensor Voltage - Graph

General Description (R18A1 Engine)

If a malfunction causes the air/fuel sensor value sent to the engine control module (ECM)/powertrain control module (PCM) to deviate from the normal control area, the air/fuel (A/F) sensor may still become active after the engine starts, but the air/ fuel feedback does not start normally and the emissions deteriorate. When the A/F sensor output is out of the normal area, and this condition continues after the A/F sensor is active, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
No active	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172,

DTCs	P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0496, P0497, P1128, P1129, P1157, P2195, P2238, P2252

Malfunction Threshold (R18A1 Engine)

A malfunction is detected when the A/F sensor output voltage is 4.9 V or more.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1172 (61): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1172: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH (R18A4 ENGINE)

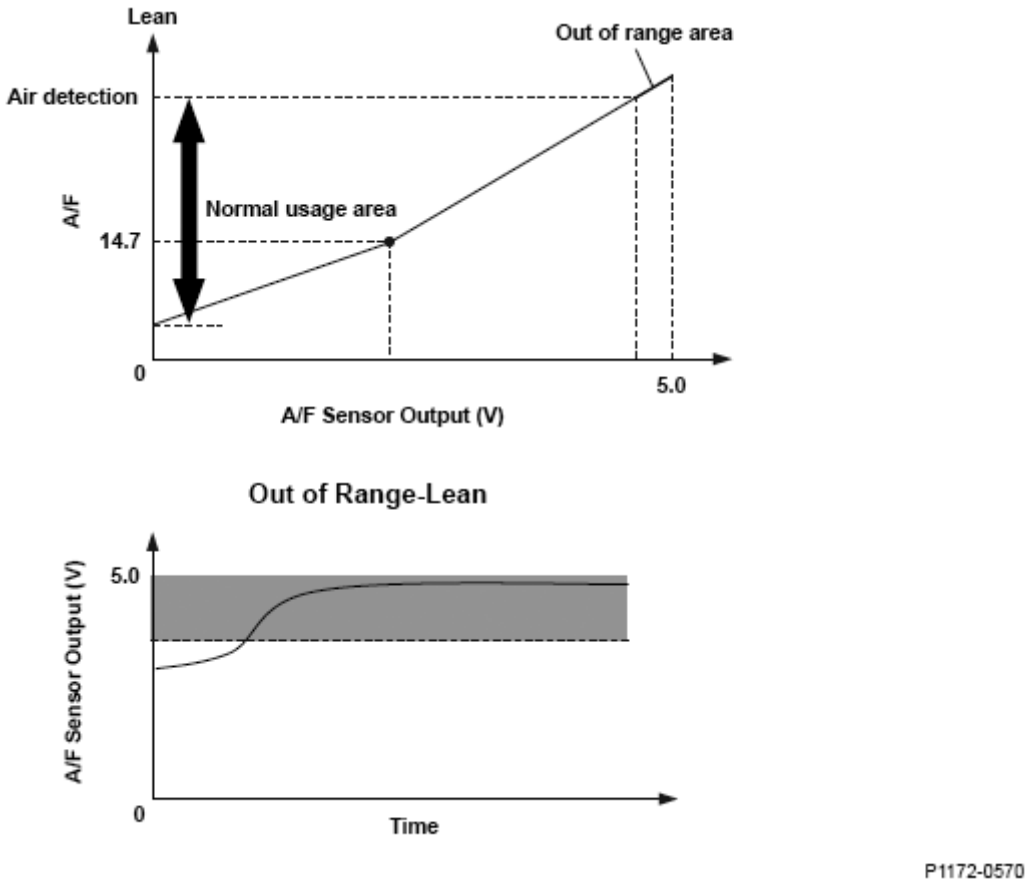


Fig. 518: Air/Fuel Ratio (A/F) Sensor Voltage - Graph

General Description (R18A4 Engine)

If a malfunction causes the air/fuel sensor value sent to the powertrain control module (PCM) to deviate from the normal control area, the air/fuel (A/F) sensor may still become active after the engine starts, but the air/fuel feedback does not start normally and the emissions deteriorate. When the A/F sensor output is out of the normal area, and this condition continues after the A/F sensor is active, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0171, P0172,

No active DTCs	P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1128, P1129, P1157, P2195, P2238, P2252

Malfunction Threshold (R18A4 Engine)

A malfunction is detected when the A/F sensor output voltage is 4.9 V or more.

Driving Pattern (R18A4 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1187 (98): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1187: FUEL TANK TEMPERATURE (FTT) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

Fig. 519: Fuel Tank Temperature (FTT) Sensor - Circuit Diagram

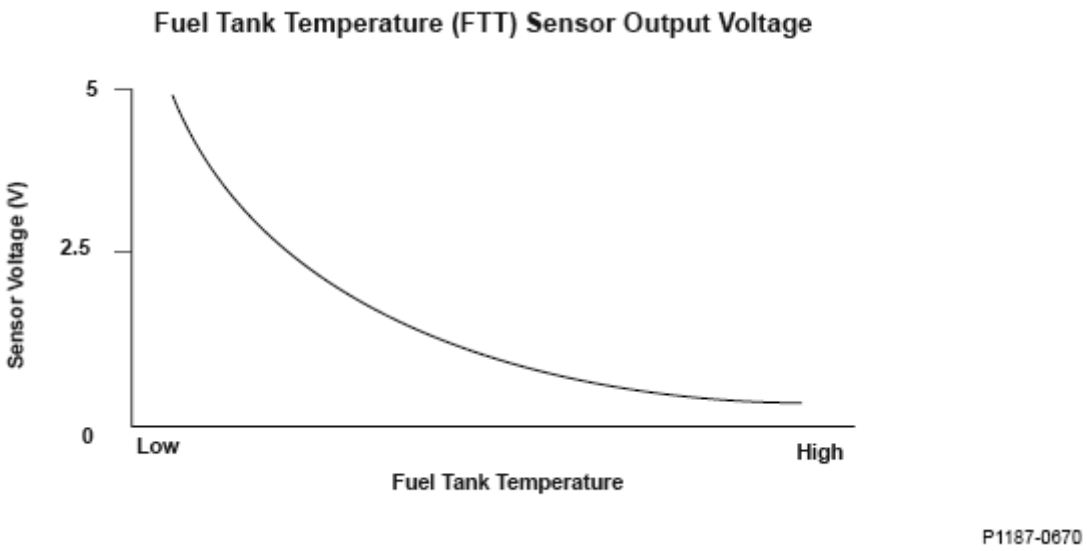


Fig. 520: Fuel Tank Temperature (FTT) Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel tank temperature (FTT) sensor is located on the fuel joint block and detects the temperature of the fuel. This signal is used to calculate injector duration.

The sensor's resistance varies depending on the fuel temperature sensed by its thermistor. As the fuel temperature falls, the sensor resistance increases, resulting in an increase of sensor output voltage. As the fuel temperature rises, the sensor resistance decreases, resulting in a decrease of sensor output voltage.

If the fuel tank temperature (FTT) sensor output voltage is excessively low, the powertrain control module (PCM) detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1188

Malfunction Threshold (R18A4 Engine)

The fuel tank temperature (FTT) sensor output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1188 (98): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1188: FUEL TANK TEMPERATURE (FTT) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

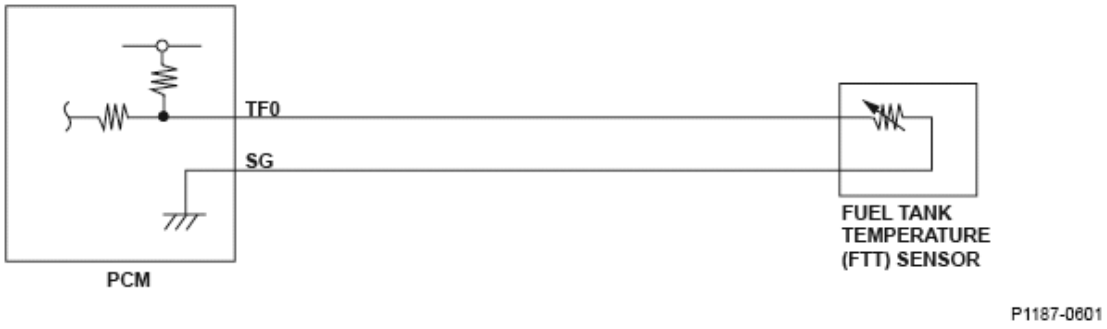


Fig. 521: Fuel Tank Temperature (FTT) Sensor - Circuit Diagram

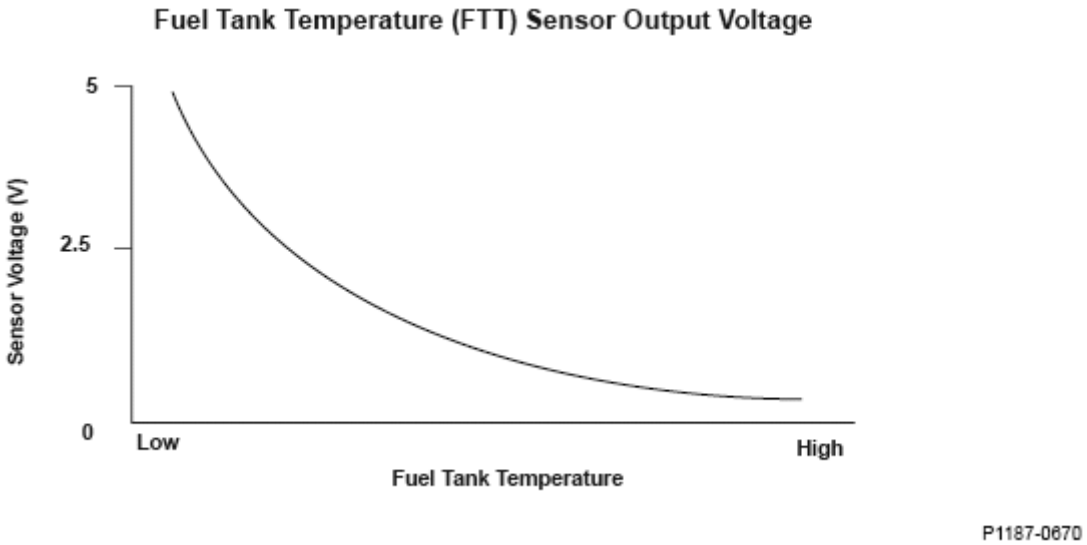


Fig. 522: Fuel Tank Temperature (FTT) Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel tank temperature (FTT) sensor is located on the fuel joint block and detects the temperature of the fuel. This signal is used to calculate injector duration.

The sensor's resistance varies depending on the fuel temperature sensed by its thermistor. As the fuel temperature falls, the sensor resistance increases, resulting in an increase of sensor output voltage. As the fuel temperature rises, the sensor resistance decreases, resulting in a decrease of sensor output voltage.

If the fuel tank temperature (FTT) sensor output voltage is excessively high, the powertrain control module (PCM) detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1187

Malfunction Threshold (R18A4 Engine)

The fuel tank temperature (FTT) sensor output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1192 (97): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1192: FUEL TANK PRESSURE (FTP) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

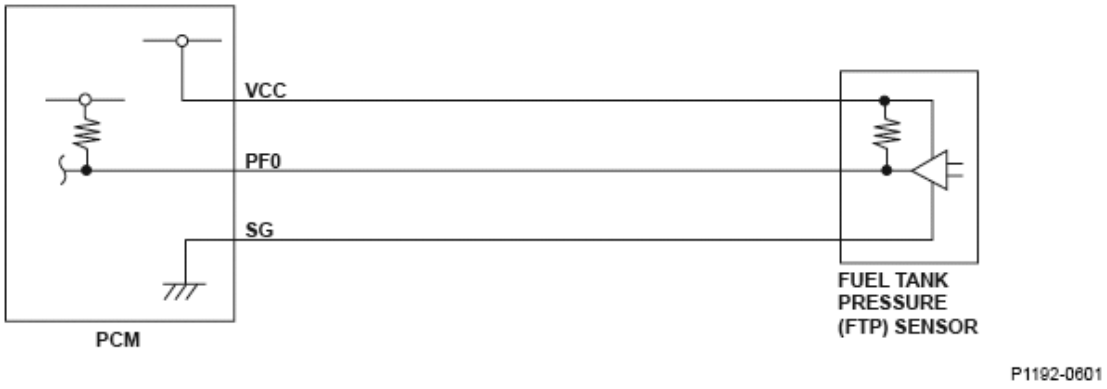


Fig. 523: Fuel Tank Pressure (FTP) Sensor - Circuit Diagram

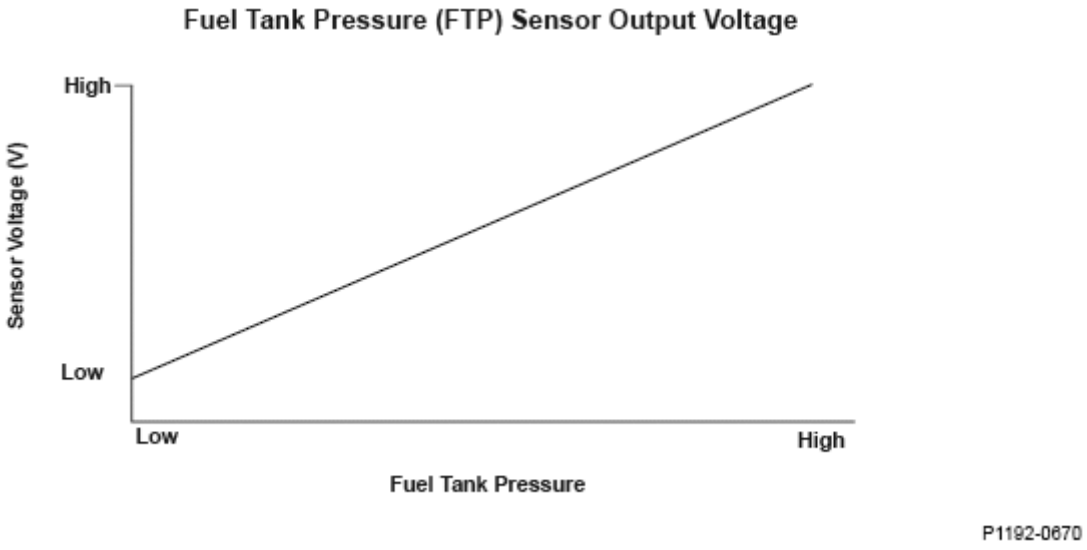


Fig. 524: Fuel Tank Pressure (FTP) Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel tank pressure (FTP) sensor senses fuel tank absolute pressure and converts it into electrical signals. The fuel tank pressure (FTP) sensor outputs low signal voltage at low-fuel pressure and high signal voltage at high-fuel pressure.

If the fuel tank pressure (FTP) sensor output voltage is a set value or less, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1193

Malfunction Threshold (R18A4 Engine)

The fuel tank pressure (FTP) sensor output voltage is 0.23 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1193 (97): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1193: FUEL TANK PRESSURE (FTP) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

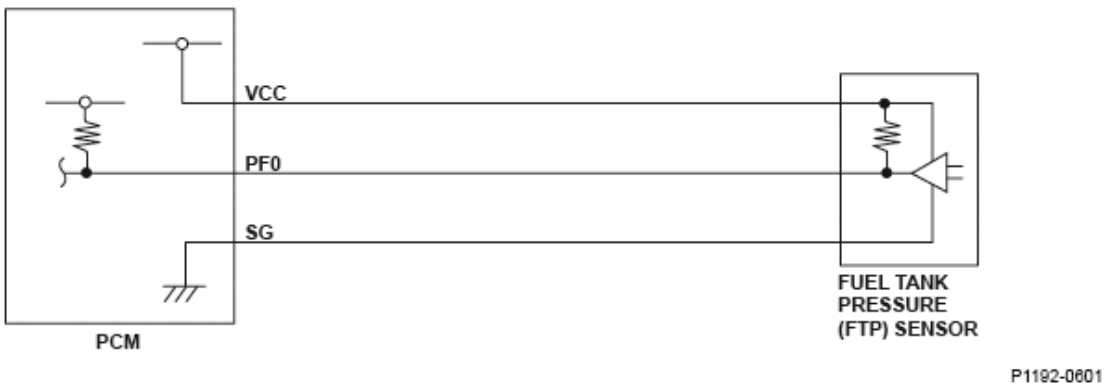


Fig. 525: Fuel Tank Pressure (FTP) Sensor - Circuit Diagram

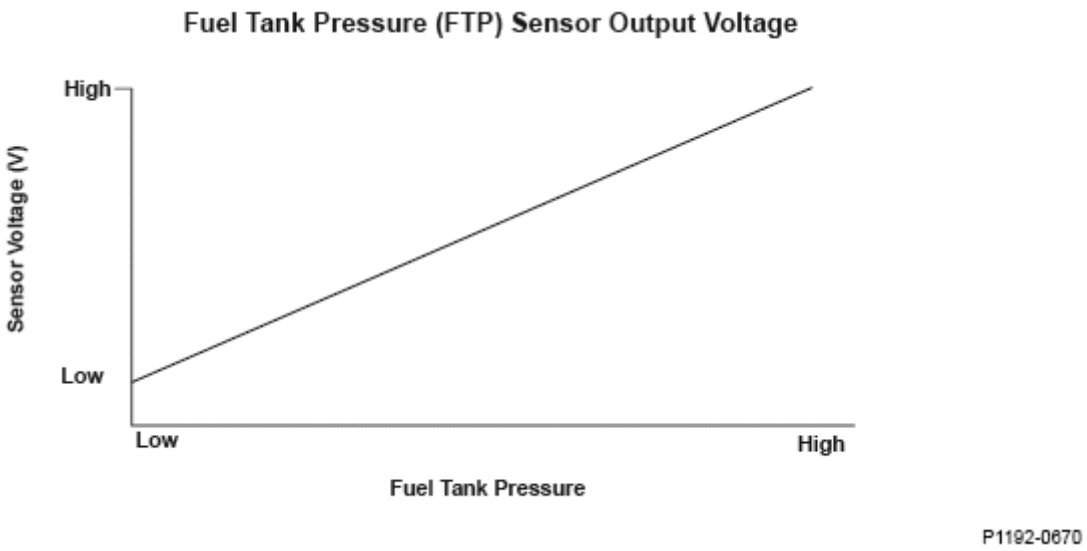


Fig. 526: Fuel Tank Pressure (FTP) Sensor Output Voltage Graph

General Description (R18A4 Engine)

The fuel tank pressure (FTP) sensor senses fuel tank absolute pressure and converts it into electrical signals. The fuel tank pressure (FTP) sensor outputs low signal voltage at low-fuel pressure and high signal voltage at high-fuel pressure.

If the fuel tank pressure (FTP) sensor output voltage is a set value or more, the powertrain control module (PCM) detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1192

Malfunction Threshold (R18A4 Engine)

The fuel tank pressure (FTP) sensor output voltage is 4.61 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1297 (20): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1297: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

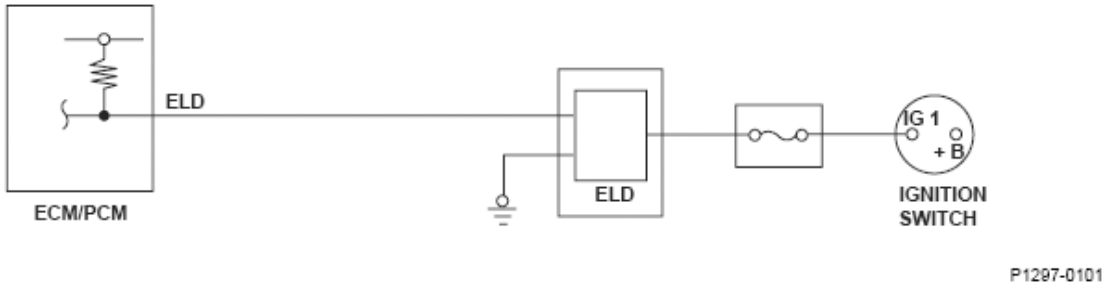


Fig. 527: Electrical Load Detector (ELD) Low Voltage - Circuit Diagram

General Description (K20Z3 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the engine control module (ECM)/powertrain control module (PCM). If the ELD output voltage is extremely low, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P1298	

Malfunction Threshold (K20Z3 Engine)

The ELD output voltage is 0.27 V or less for at least 5 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1297 (20): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1297: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

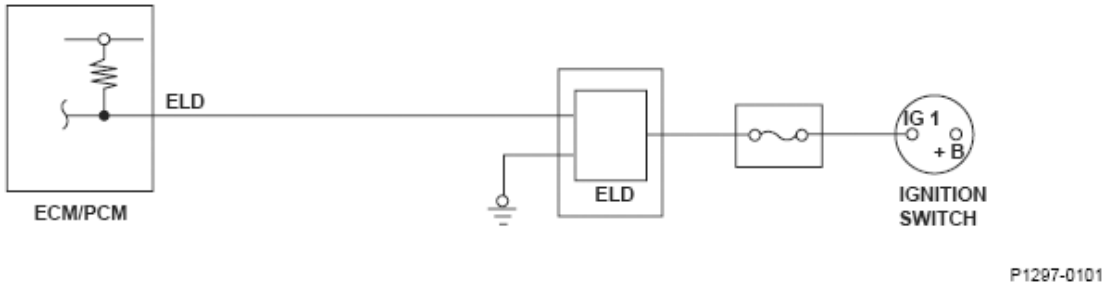


Fig. 528: Electrical Load Detector (ELD) Low Voltage - Circuit Diagram

General Description (R18A1 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the engine control module (ECM)/powertrain control module (PCM). If the ELD output voltage is extremely low, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-

Ignition switch	ON
No active DTCs	P1298

Malfunction Threshold (R18A1 Engine)

The ELD output voltage is 0.27 V or less for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1297 (20): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1297: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

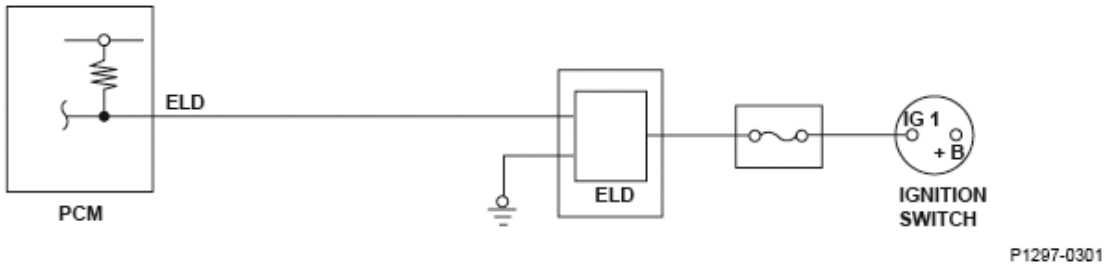


Fig. 529: Electrical Load Detector (ELD) Circuit Diagram

General Description (R18A4 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the powertrain control module (PCM). If the ELD output voltage is extremely low, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P1298	

Malfunction Threshold (R18A4 Engine)

The ELD output voltage is 0.27 V or less for at least 5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1298 (20): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1298: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

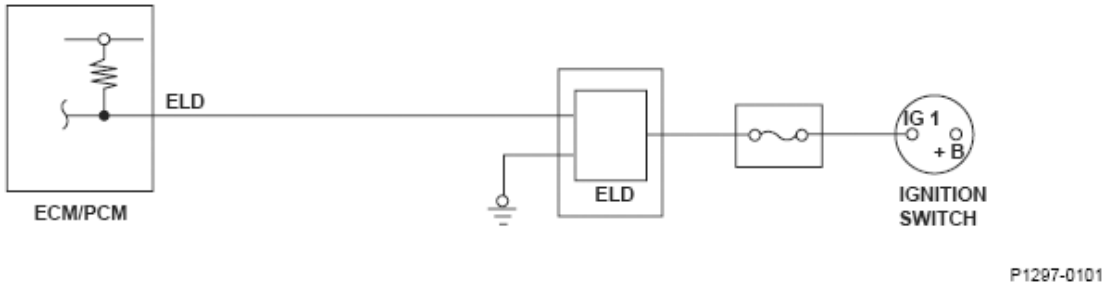


Fig. 530: Electrical Load Detector (ELD) Low Voltage - Circuit Diagram

General Description (K20Z3 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the engine control module (ECM)/powertrain control module (PCM). If the ELD output voltage is extremely high, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P1297	

Malfunction Threshold (K20Z3 Engine)

The ELD output voltage is 4.57 V or more for at least 5 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1298 (20): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1298: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

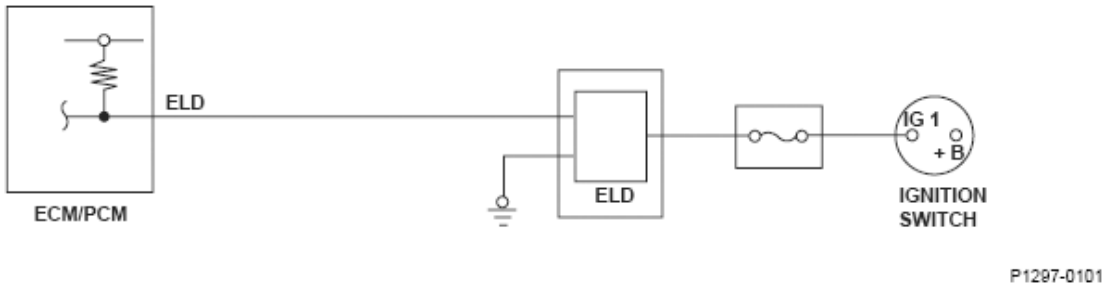


Fig. 531: Electrical Load Detector (ELD) Low Voltage - Circuit Diagram

General Description (R18A1 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the engine control module (ECM)/powertrain control module (PCM). If the ELD output voltage is extremely high, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P1297	

Malfunction Threshold (R18A1 Engine)

The ELD output voltage is 4.57 V or more for at least 5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1298 (20): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1298: ELECTRICAL LOAD DETECTOR (ELD) CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

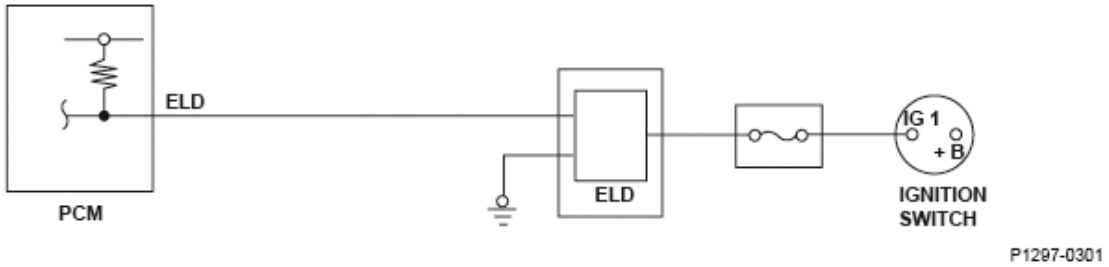


Fig. 532: Electrical Load Detector (ELD) Circuit Diagram

General Description (R18A4 Engine)

The electrical load detector (ELD) is built into the under-hood fuse/relay box. It monitors the current fed to the ignition switch and sends a signal to the powertrain control module (PCM). If the ELD output voltage is extremely high, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	5 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P1297	

Malfunction Threshold (R18A4 Engine)

The ELD output voltage is 4.57 V or more for at least 5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1454 (91): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1454: FUEL TANK PRESSURE (FTP) SENSOR RANGE/PERFORMANCE PROBLEM (K20Z3)

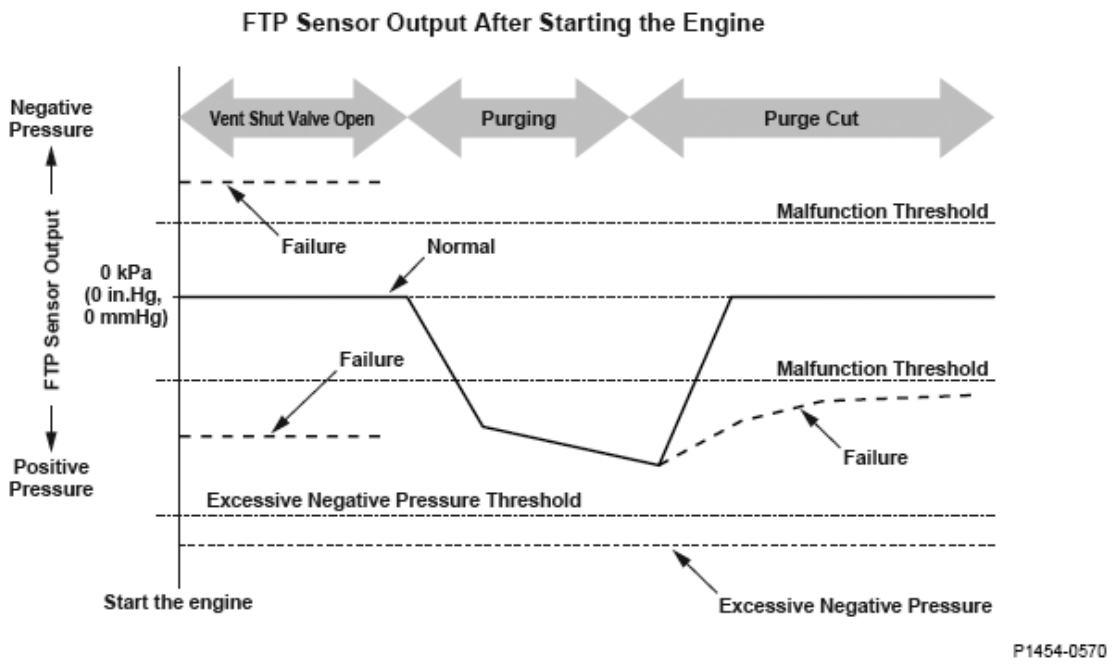


Fig. 533: Fuel Tank Pressure (FTP) - Graph

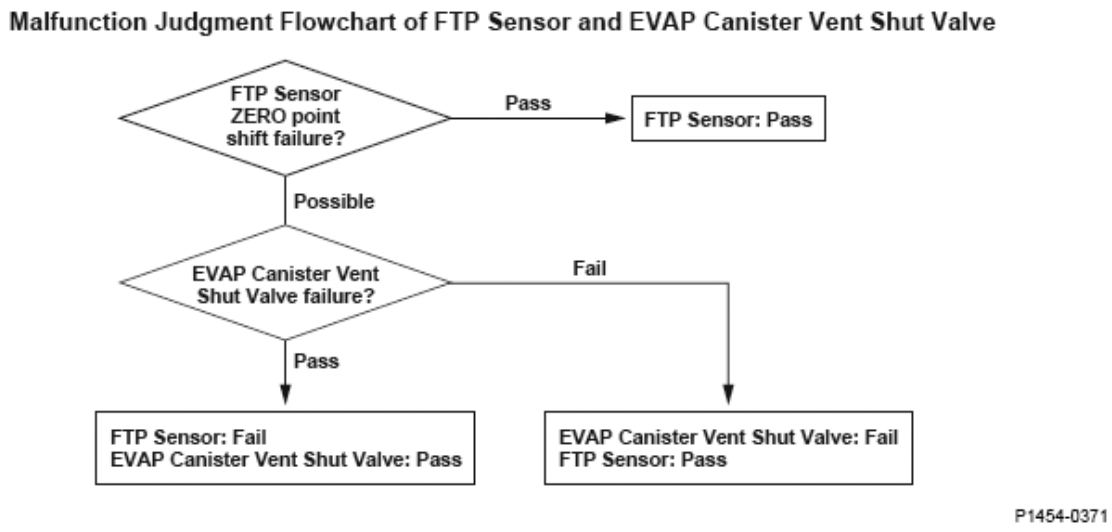


Fig. 534: Flow Chart

General Description (K20Z3 Engine)

The fuel tank pressure is about 0 kPa (0 in.Hg, 0 mmHg) when starting a cold engine. When the fuel tank pressure (FTP) sensor output value is out of a specified range and the engine control module (ECM) judges that there's no other cause [no evaporative emission (EVAP) canister vent shut valve failure, etc.] of the FTP sensor zero point shift, the ECM detects an FTP sensor malfunction.

However, if the FTP sensor output when starting the engine is a prescribed negative value or less (excessive negative pressure is detected), the malfunction judgment should be done as follows because it is difficult to distinguish the FTP sensor zero point shift (P1454) from the EVAP canister vent shut valve failure (P2422).

1. If either Temporary DTC P1454 or P2422 is not stored, the ECM stores both DTCs.

2. If both P1454 and P2422 Temporary DTCs are stored and an excessive negative pressure is detected, both P1454 and P2422 DTCs are stored.
3. If either Temporary DTC P1454 or P2422 is stored and an excessive negative pressure is detected, the ECM stores the DTC of the temporary DTC that was stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P0452, P0453 are judged as OK
Duration	8 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	10 seconds	-
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2422	
Others	The EVAP canister vent shut valve has not been closing	
	Stopping the purge control	

Malfunction Threshold (K20Z3 Engine)

- The FTP sensor output fluctuates by 0.7 kPa (0.2 in.Hg, 5 mmHg) or more, or -0.7 kPa (-0.2 in.Hg, -5 mmHg) or less, for at least 8 seconds.
- The FTP sensor output value is -1.3 kPa (-0.3 in.Hg, -10 mmHg) or less for at least 8 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

Start the engine, and let it idle until the radiator fan comes on.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1454 (91): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1454: FUEL TANK PRESSURE (FTP) SENSOR RANGE/PERFORMANCE PROBLEM (R18A1)

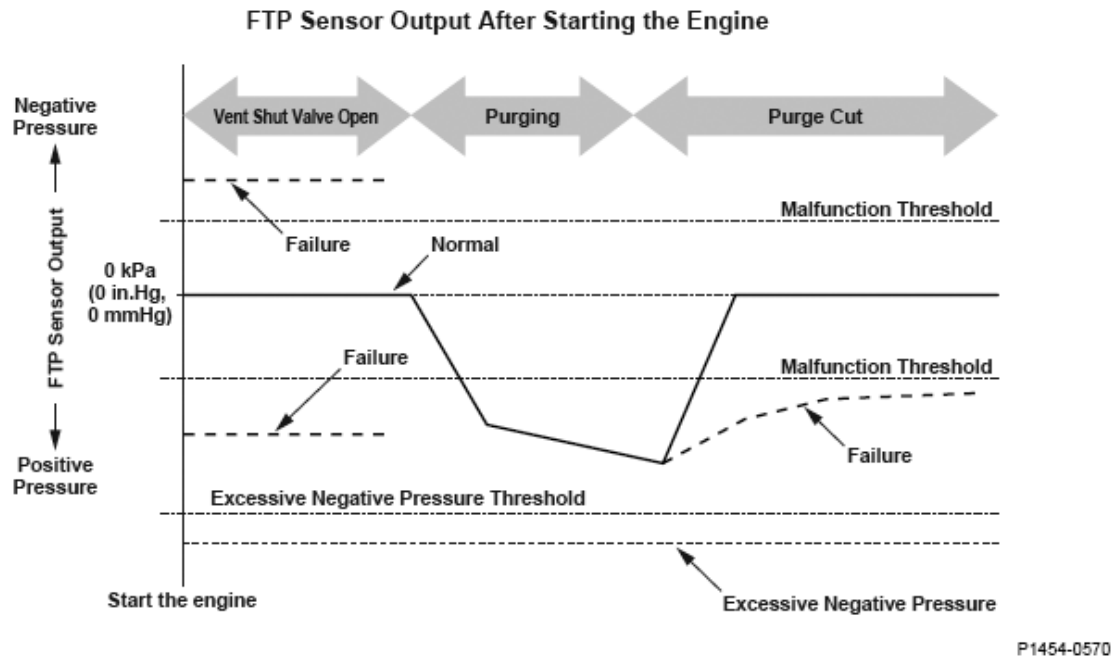


Fig. 535: Fuel Tank Pressure (FTP) - Graph

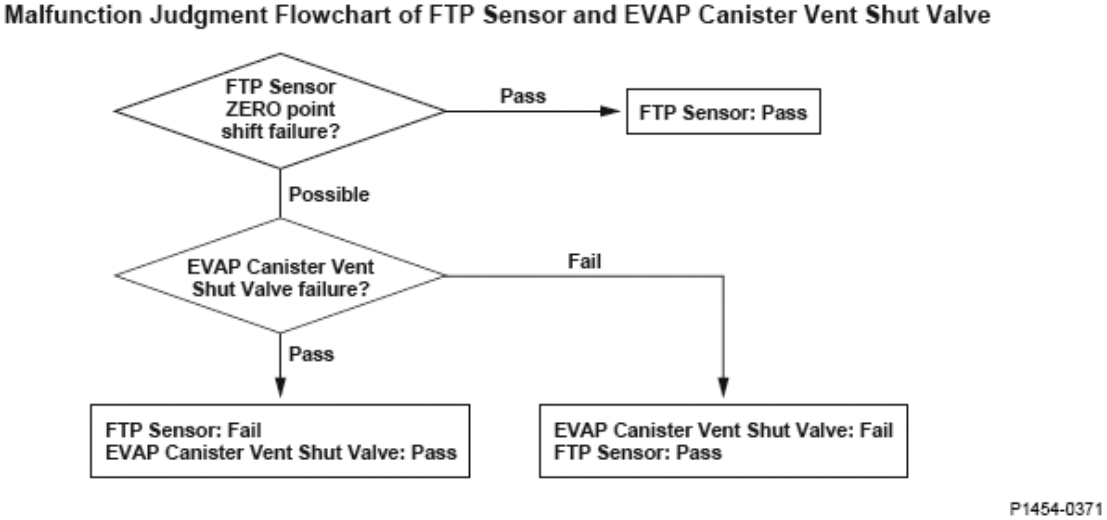


Fig. 536: FTP Sensor And EVAP Canister Vent Shut Valve Chart

General Description (R18A1 Engine)

The fuel tank pressure is about 0 kPa (0 in.Hg, 0 mmHg) when starting a cold engine. When the fuel tank pressure (FTP) sensor output value is out of a specified range and the engine control module (ECM)/powertrain control module (PCM) judges that there's no other cause [no evaporative emission (EVAP) canister vent shut valve failure, etc.] of the FTP sensor zero point shift, the ECM/PCM detects an FTP sensor malfunction.

However, if the FTP sensor output when starting the engine is a prescribed negative value or less (excessive negative pressure is detected), the malfunction judgment should be done as follows because it is difficult to distinguish the FTP sensor zero point shift (P1454) from the EVAP canister vent shut valve failure (P2422).

1. If either Temporary DTC P1454 or P2422 is not stored, the ECM/PCM stores both DTCs.
2. If both P1454 and P2422 Temporary DTCs are stored and an excessive negative pressure is detected, both P1454 and P2422 DTCs are stored.
3. If either Temporary DTC P1454 or P2422 is stored and an excessive negative pressure is detected, the ECM/PCM stores the DTC of the temporary DTC that was stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	10 seconds	-
Elapsed time after stopping the purge control	5 seconds	-
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0451, P0452, P0453, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252, P2422	

Malfunction Threshold (R18A1 Engine)

- The FTP sensor output fluctuates by 0.7 kPa (0.2 in.Hg, 5 mmHg) or more, or -0.7 kPa (-0.2 in.Hg, -5 mmHg) or less, for at least 3 seconds.
- The FTP sensor output value is -1.3 kPa (-0.3 in.Hg, -10 mmHg) or less for at least 3 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

Start the engine, and let it idle until the radiator fan comes on.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P145C (90): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P145C: EVAPORATIVE EMISSION (EVAP) SYSTEM PURGE FLOW MALFUNCTION (K20Z3)

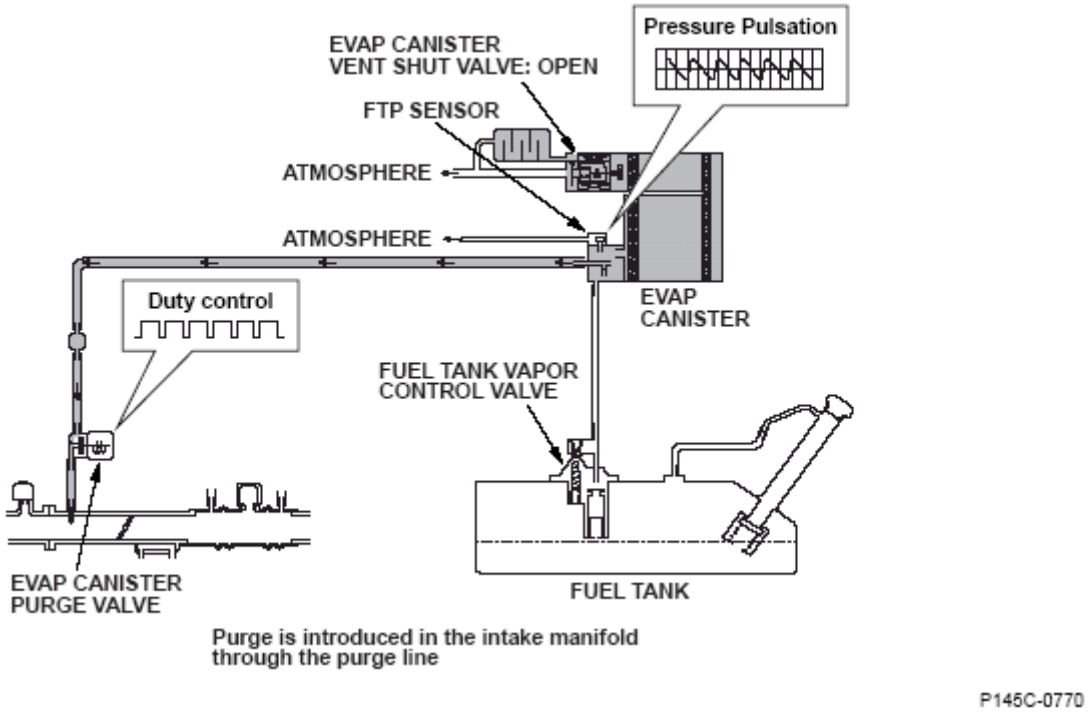


Fig. 537: Evaporative Emission System Purge Flow Diagram (Vacuum Line)

General Description (K20Z3 Engine)

The fuel (vapor) vaporized in the fuel tank is stored in the canister temporarily and introduced in the engine through the evaporative emission (EVAP) canister purge valve. The engine control module (ECM) controls the amount of vapor introduced in the engine by repeatedly switching the power of the EVAP canister purge valve at a constant frequency according to the condition of the engine.

< STEP 1 >

The EVAP canister purge valve opens normally (EVAP canister purge valve OPEN OK) and detects that the purge flow is normal when the pulse of the EVAP canister purge valve drive cycle is transmitted to fuel tank pressure (FTP) sensor by the purge flow (pulse method).

OK determination: Pulse exists (P145C OK)

- P0497 Purge flow OK
- P0496 EVAP canister purge valve stuck Open OK

NG determination: No pulse (P145C NG)

- Either purge flow P0497 abnormality or P0496 EVAP canister purge valve OPEN failure.
- In this case, classify the failure part according to < STEP 2 >.

< STEP 2 >

If there is no pulse, it is determined as either no purge flow or the EVAP canister purge valve is stuck OPEN:

When the FTP sensor fluctuates from negative pressure to atmospheric pressure after the ignition is turned off: P0496 EVAP canister purge valve stuck OPEN

When there is no fluctuation of the FTP sensor: P0497 purge flow NG

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	31 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Low load duration time	10 seconds	-
Engine coolant temperature before EVAP purge control starts	140°F (60°C)	-
MAP value	-	54 kPa (16.1 in.Hg, 410 mmHg)

Battery voltage	10.5 V	-
EVAP canister purge valve Duty	30 %	80 %
Fuel trim	0.69	1.47
Fuel feedback	Closed loop at stoichiometric	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0443, P0451, P0452, P0453, P0496, P0498, P0499, P0685, P1128, P1129, P1157, P1172, P1454, P2195, P2227, P2228, P2229, P2238, P2252, P2422	

Malfunction Threshold (K20Z3 Engine)

The pulse method from the fuel tank pressure sensor is 0.30 % or less for at least 31 seconds.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Let the engine idle for at least 77 seconds.
3. Turn off the ignition for at least 10 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1549 (34): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1549: CHARGING SYSTEM HIGH VOLTAGE (K20Z3)

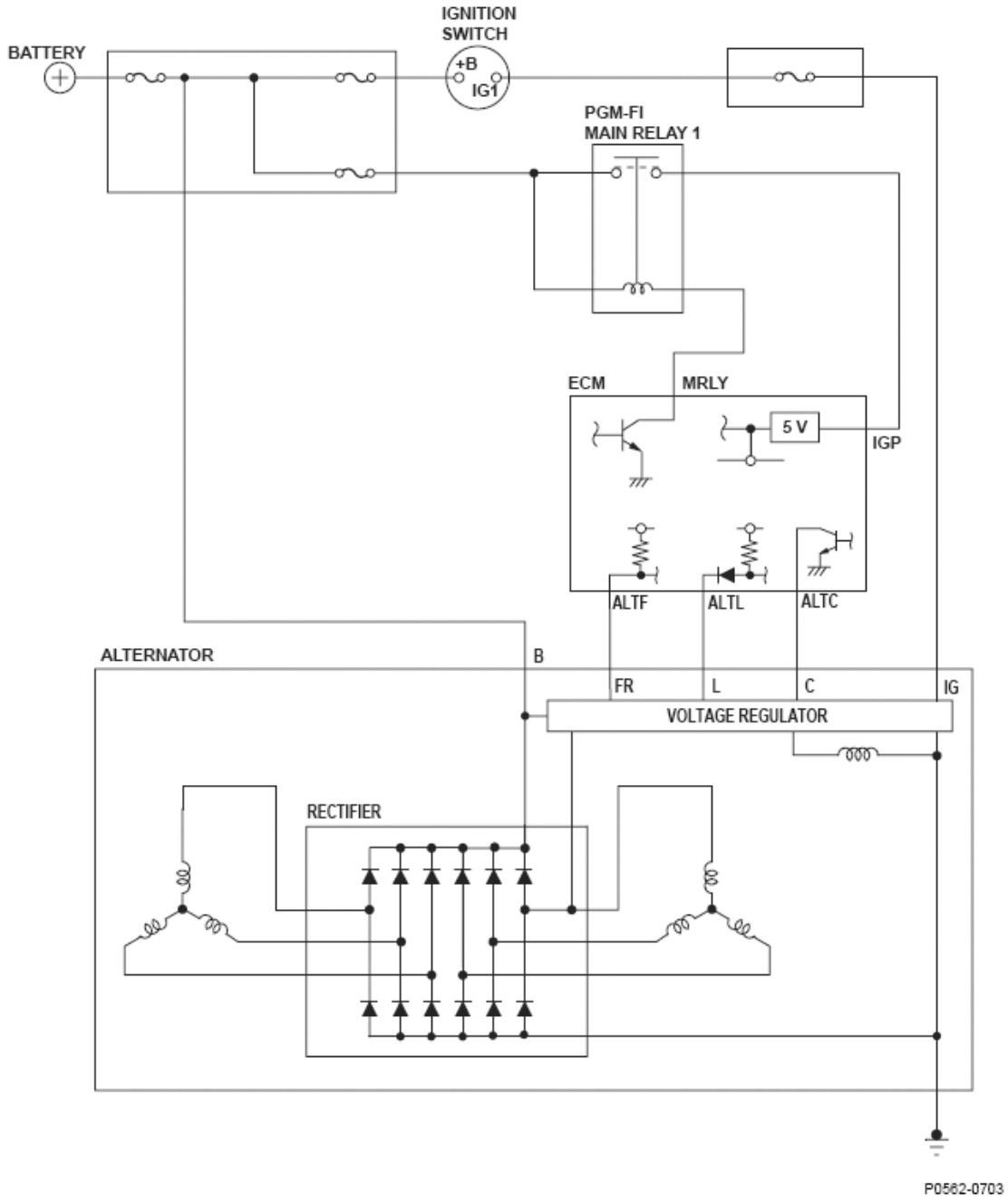


Fig. 538: Charging System Circuit Diagram

General Description (K20Z3 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)). The alternator output signal is sent to the ECM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the IGP terminal voltage of the ECM is a set value or more for a set time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (K20Z3 Engine)

The IGP terminal voltage is 16.0 V or more for at least 60 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1549 (34): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1549: CHARGING SYSTEM HIGH VOLTAGE (R18A1)

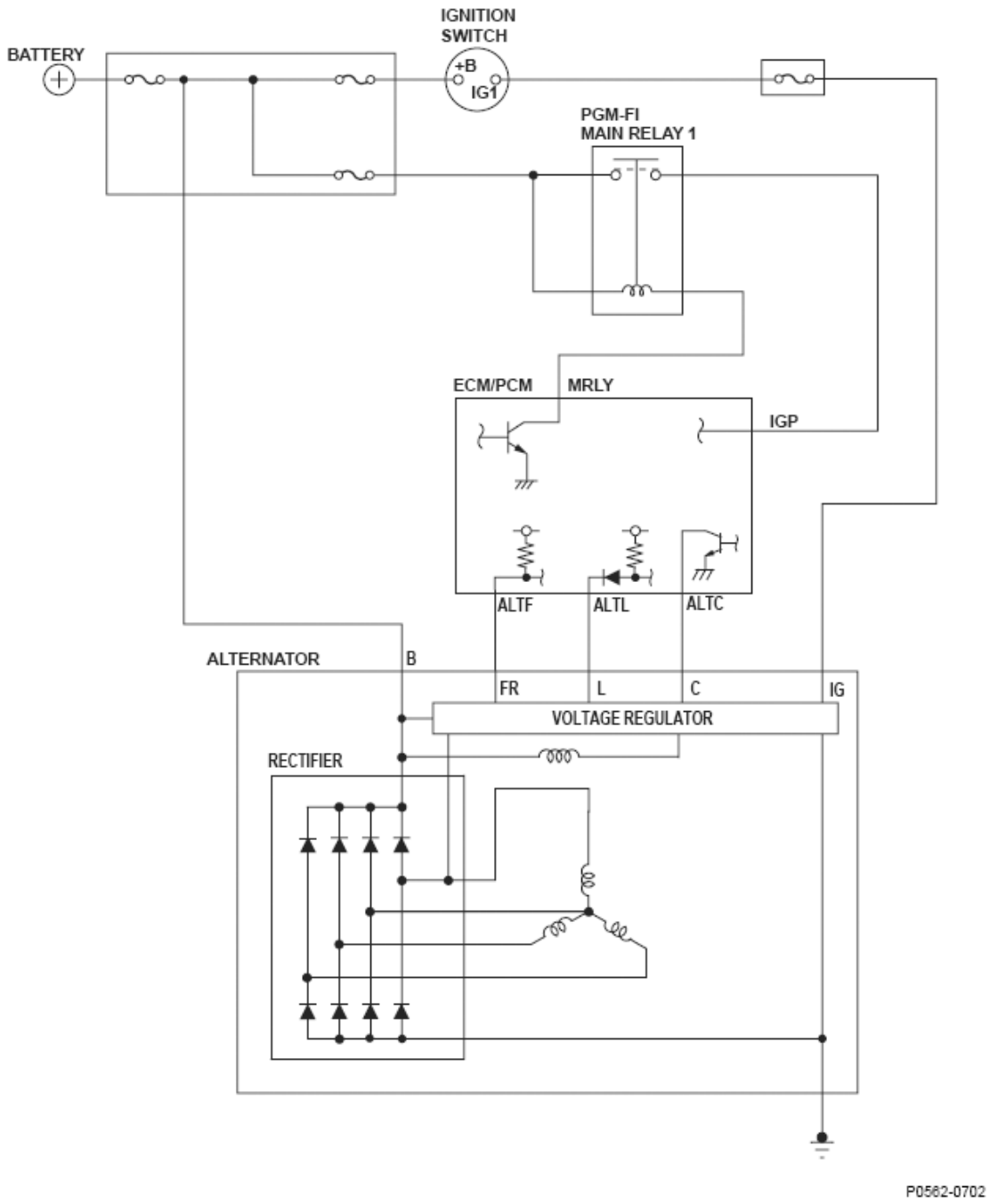


Fig. 539: Charging System Circuit Diagram

General Description (R18A1 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)/powertrain control module (PCM)). The alternator output signal is sent to the ECM/PCM, and it varies according to the battery's state of charge, the electrical load, and the engine speed. When the IGP terminal voltage of the ECM/PCM is a set value or more for a set time, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (R18A1 Engine)

The IGP terminal voltage is 16.0 V or more for at least 60 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1549 (34): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1549: CHARGING SYSTEM HIGH VOLTAGE (R18A4 ENGINE)

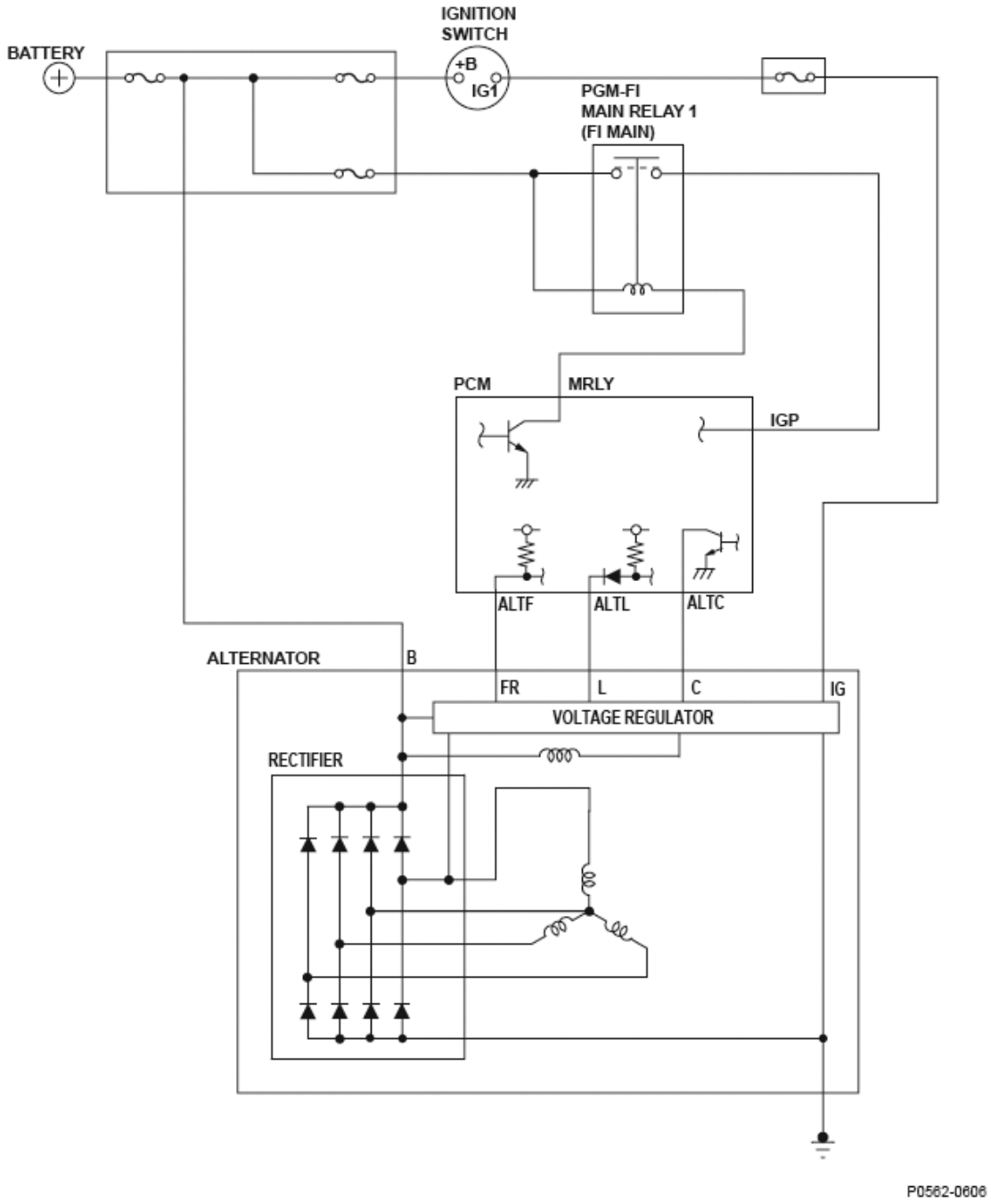


Fig. 540: Charging System - Circuit Diagram

General Description (R18A4 Engine)

The alternator is driven by the engine and generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the powertrain control module (PCM)). The alternator output signal is sent to the PCM, and it varies according to the battery's state of charge, the electrical load, and engine speed.

When the IGP (power source) terminal voltage is a set value or less for a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	-

Malfunction Threshold (R18A4 Engine)

The IGP terminal voltage is 16.0 V or more for at least 60 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1658 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION (K20Z3 ENGINE)

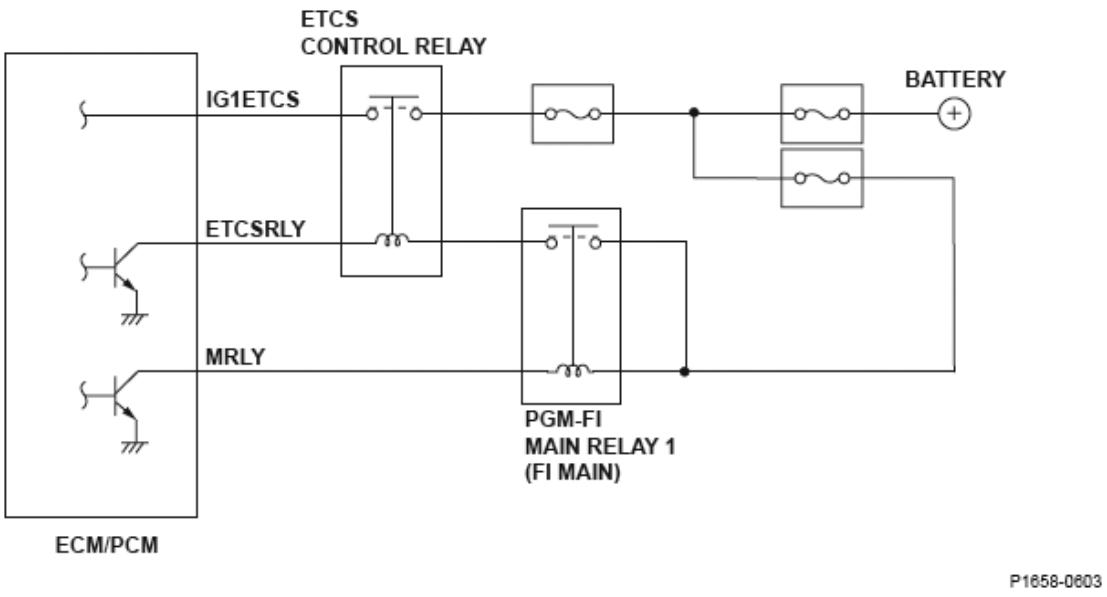


Fig. 541: Electronic Throttle Control System (ETCS) Control Relay - Circuit Diagram

General Description (K20Z3 Engine)

The engine control module (ECM)/powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A, installed in the throttle body.

When the voltage is applied from the ETCS control relay to the IG1ETCS terminal for a set time after the ETCS control relay is turned off, the ECM/PCM detects a malfunction in the ETCS control relay power switch and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	8.0 V	-
Ignition switch	OFF	
No active DTCs	P1659, P2101, P2118, P2135, P2176	

Malfunction Threshold (K20Z3 Engine)

The communication signal is input from the ECM/PCM for at least 2 seconds after the ETCS control relay is turned off.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1658 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION (R18A1 ENGINE)

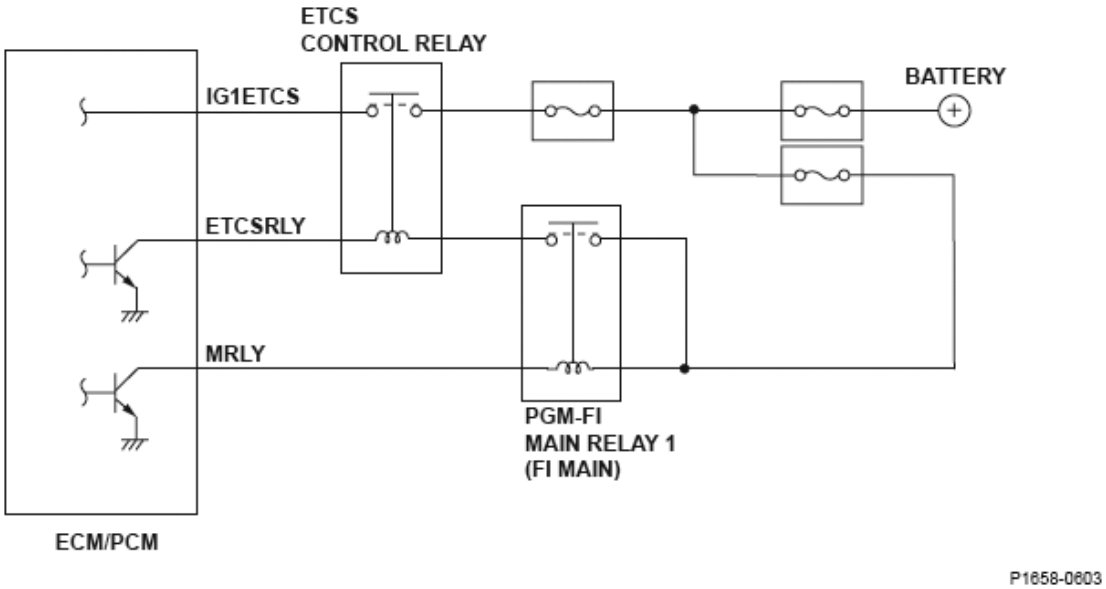


Fig. 542: Electronic Throttle Control System (ETCS) Control Relay - Circuit Diagram

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A, installed in the throttle body.

When the voltage is applied from the ETCS control relay to the IG1ETCS terminal for a set time after the ETCS control relay is turned off, the ECM/PCM detects a malfunction in the ETCS control relay power switch and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	8.0 V	-
Ignition switch	OFF	
No active DTCs	P1659, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

The communication signal is input from the ECM/PCM for at least 2 seconds after the ETCS control relay is turned off.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1658 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION (R18A4 ENGINE)

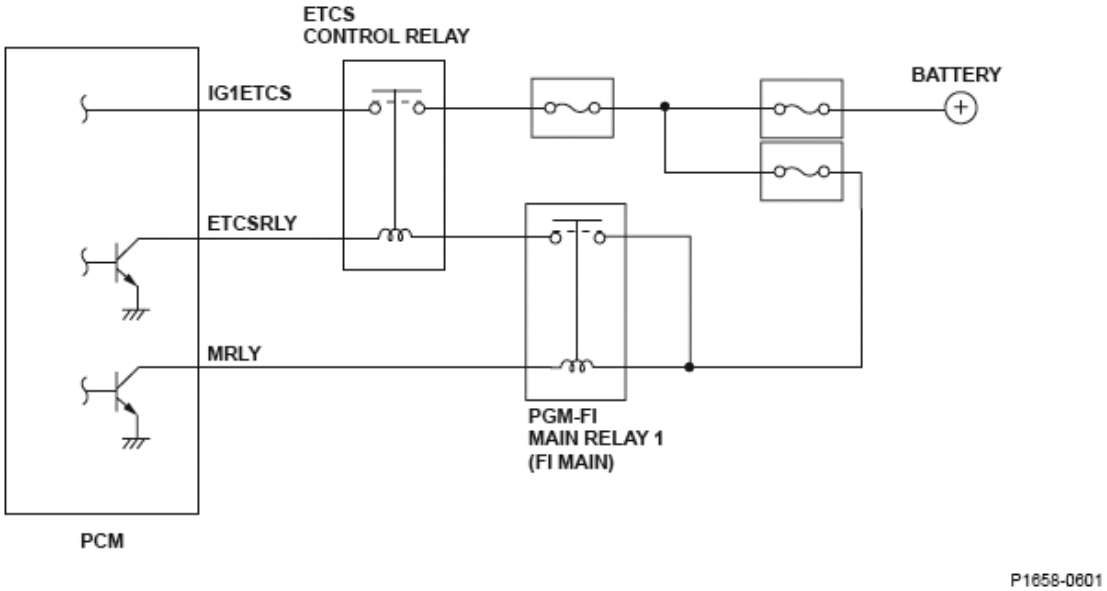


Fig. 543: Electronic Throttle Control System Control Relay - Circuit Diagram

General Description (R18A4 Engine)

The powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position.

The PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

When the voltage is applied from the ETCS control relay to the IG1ETCS terminal for a set time after the ETCS control relay is turned off, the PCM detects a malfunction in the ETCS control relay power switch and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None

Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	8.0 V	-
Ignition switch	OFF	
No active DTCs	P1659, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

The communication signal is input from the PCM for at least 2 seconds after the ETCS control relay is turned off.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1659 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION (K20Z3 ENGINE)

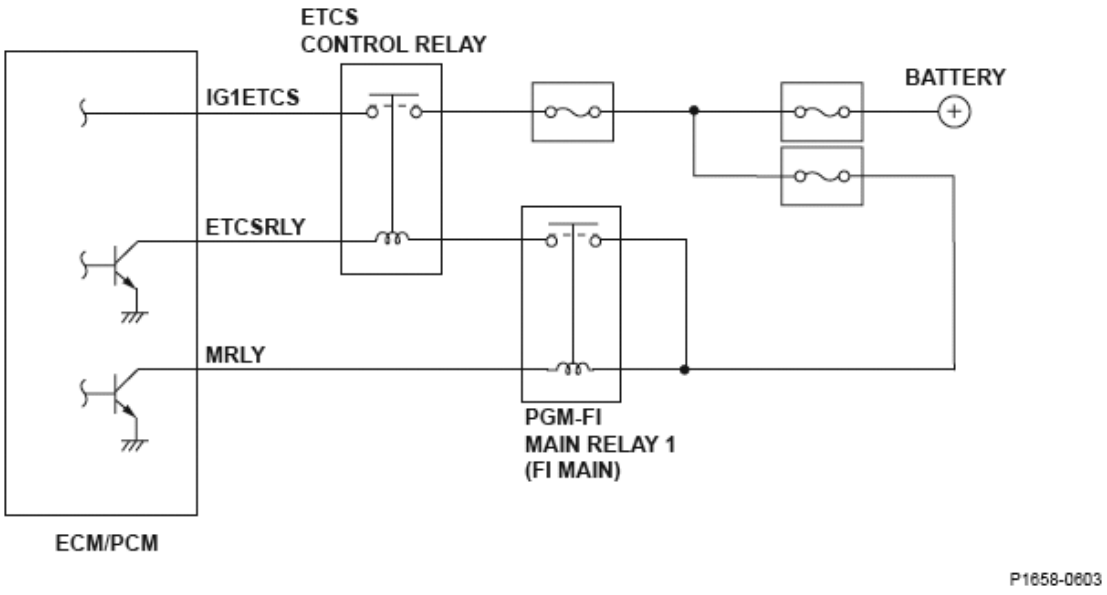


Fig. 544: Electronic Throttle Control System (ETCS) Control Relay - Circuit Diagram

General Description (K20Z3 Engine)

The engine control module (ECM)/powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A, installed in the throttle body.

When the voltage from the ETCS control relay is not input for a set time after the ETCS control relay is turned on when the ignition is turned on, or when voltage is not applied for a set time when the throttle actuator is operating, a malfunction in the ETCS control relay power switch is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P2101, P2118, P2135, P2176	

Malfunction Threshold (K20Z3 Engine)

The voltage is not applied from the ETCS control relay for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1659 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION (R18A1 ENGINE)

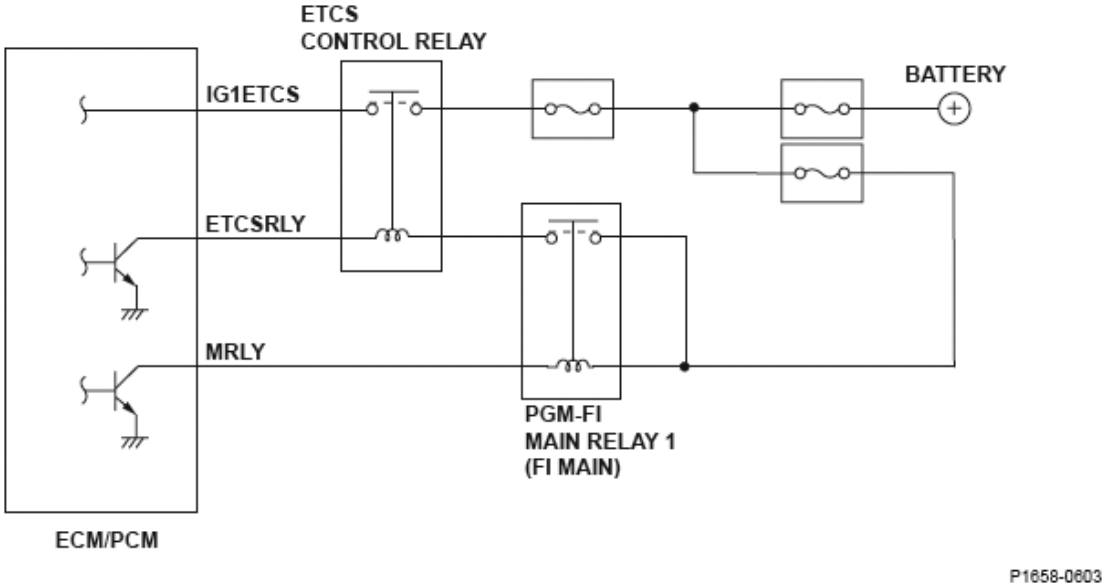


Fig. 545: Electronic Throttle Control System (ETCS) Control Relay - Circuit Diagram

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A, installed in the throttle body.

When the voltage from the ETCS control relay is not input for a set time after the ETCS control relay is turned on when the ignition is turned on, or when voltage is not applied for a set time when the throttle actuator is operating, a malfunction in the ETCS control relay power switch is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

The voltage is not applied from the ETCS control relay for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1659 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION (R18A4 ENGINE)

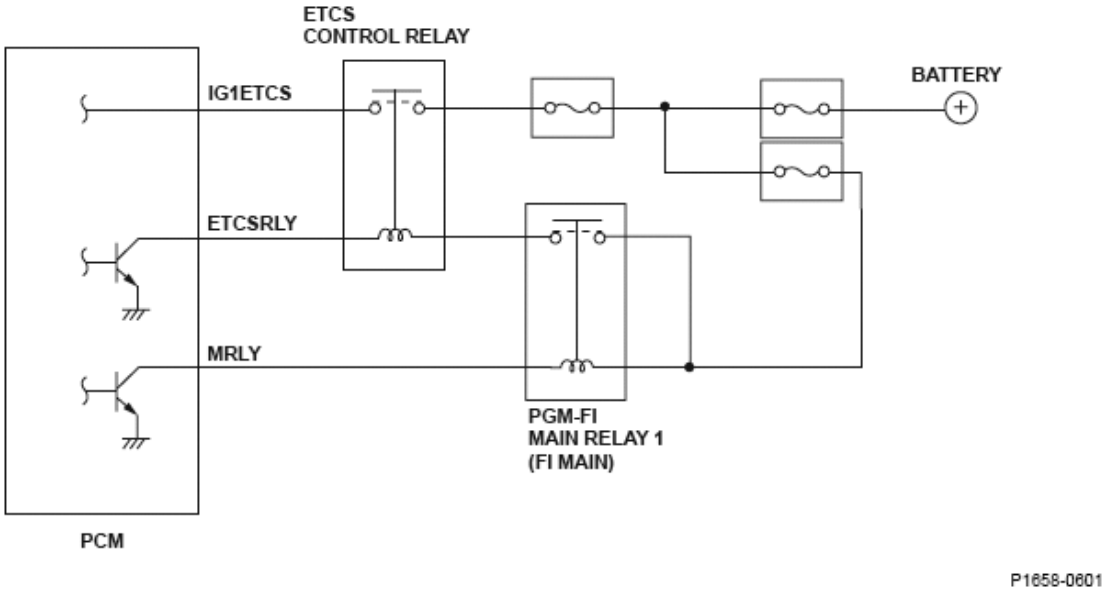


Fig. 546: Electronic Throttle Control System Control Relay - Circuit Diagram

General Description (R18A4 Engine)

The powertrain control module (PCM) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, the electronic throttle control system (ETCS) control relay, and the PCM.

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position.

The PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

When the voltage from the ETCS control relay is not input for a set time after the ETCS control relay is turned on when the ignition is turned on, or when voltage is not applied for a set time when the throttle actuator is operating, a malfunction in the ETCS control relay power switch is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None

Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
Ignition switch	ON	
No active DTCs	P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

The voltage is not applied from the ETCS control relay for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1683 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM (K20Z3 ENGINE)

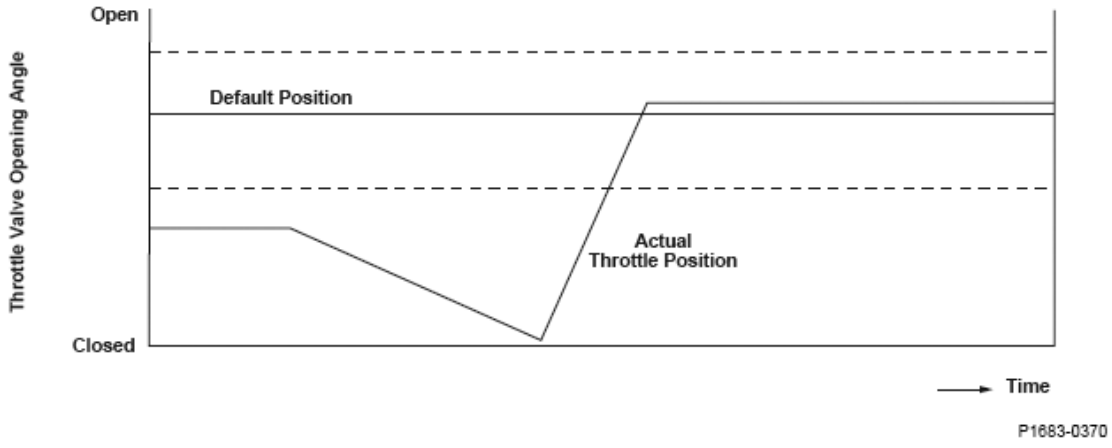


Fig. 547: Throttle Valve Default Position - Graph

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The throttle valve default position spring is attached to the throttle valve gear. It opens the throttle valve to improve starting performance in cold conditions, or to retain minimum running performance in case of an electronic throttle control system failure.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the fully closed position, a malfunction is detected and the malfunction data is transmitted to the ECM/PCM. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle valve default position spring, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (K20Z3 Engine)

The throttle valve is at a position greater than +5° from the fully closed position, or at a position lower than +3 ° from the fully closed position, for at least 2.5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1683 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM (R18A1 ENGINE)

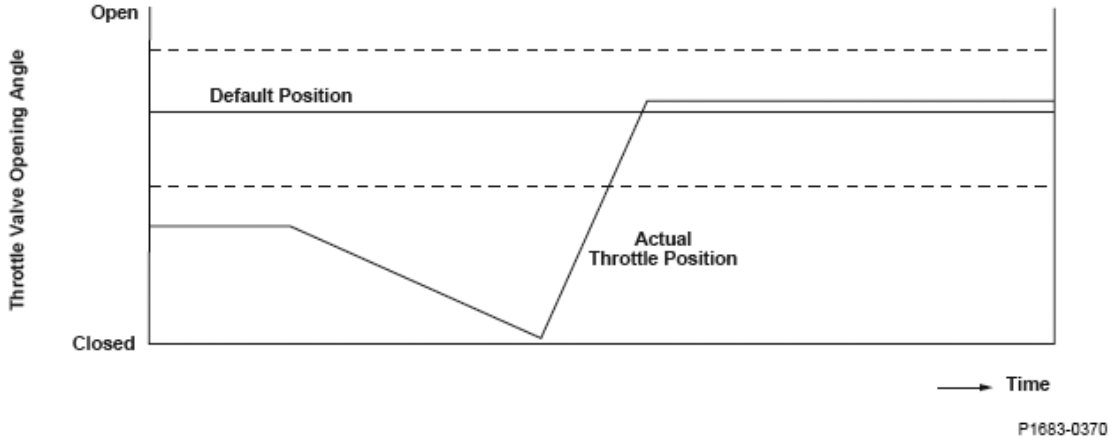


Fig. 548: Throttle Valve Default Position - Graph

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The throttle valve default position spring is attached to the throttle valve gear. It opens the throttle valve to improve starting performance in cold conditions, or to retain minimum running performance in case of an electronic throttle control system failure.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the fully closed position, a malfunction is detected and the malfunction data is transmitted to the ECM/PCM. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle valve default position spring, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

The throttle valve is at a position greater than +5 ° from the fully closed position, or at a position lower than +3 ° from the fully closed position, for at least 2.5 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1683 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM (R18A4 ENGINE)

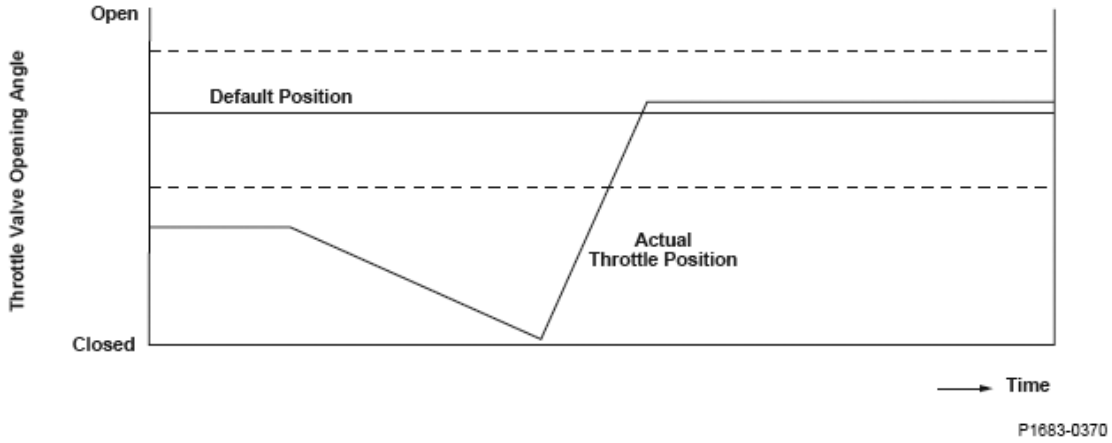


Fig. 549: Throttle Valve Default Position - Graph

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The throttle valve default position spring is attached to the throttle valve gear. It opens the throttle valve to improve starting performance in cold conditions, or to retain minimum running performance in case of an electronic throttle control system failure.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the fully closed position, a malfunction is detected and the malfunction data is transmitted to the PCM. When the PCM receives the malfunction data from the throttle actuator control module, the PCM detects the malfunction of the throttle valve default position spring and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

The throttle valve is at a position greater than +5 ° from the fully closed position, or at a position lower than +3° from the fully closed position, for at least 2.5 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1684 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM (K20Z3 ENGINE)

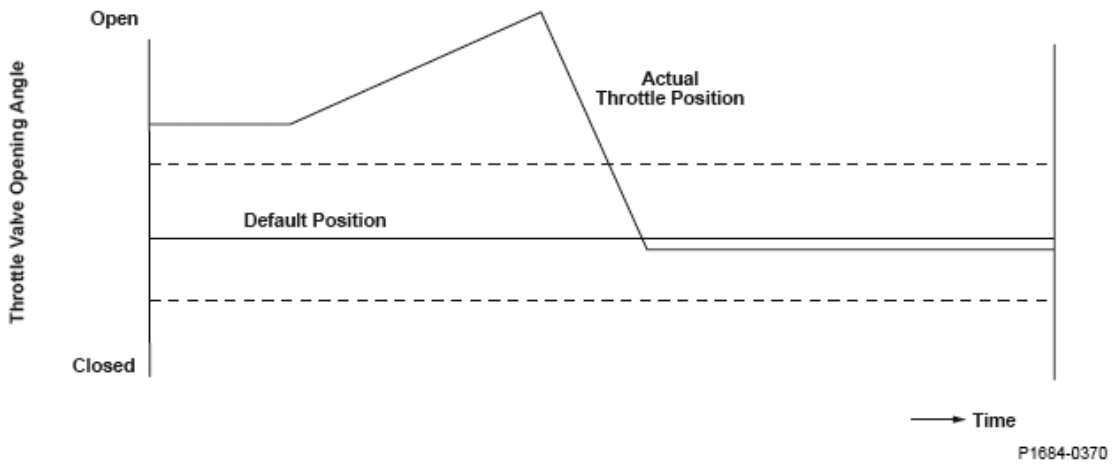


Fig. 550: Throttle Valve Default Position - Graph

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed

of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The throttle valve return spring is attached to the throttle valve gear to return the throttle valve to the default position.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the middle position, a malfunction is detected and the malfunction data is transmitted to the ECM/PCM. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle valve return spring and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (K20Z3 Engine)

The throttle valve opening angle is 17 ° or more, or 11 ° or less, for at least 2.5 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1684 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM (R18A1 ENGINE)

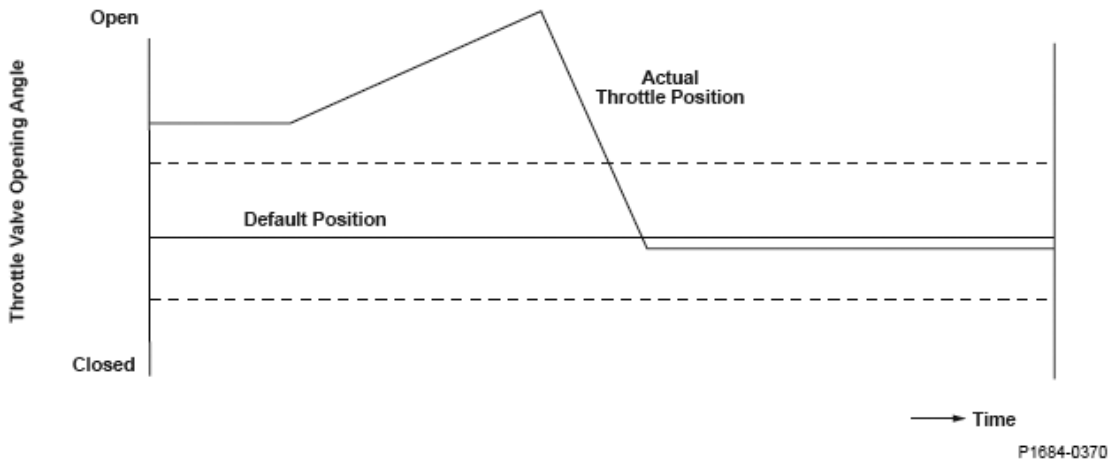


Fig. 551: Throttle Valve Default Position - Graph

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The throttle valve return spring is attached to the throttle valve gear to return the throttle valve to the default position.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the middle position, a malfunction is detected and the malfunction data is transmitted to the ECM/PCM. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle valve return spring and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

The throttle valve opening angle is 17 ° or more, or 11 ° or less, for at least 2.5 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTD P1684 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM (R18A4 ENGINE)

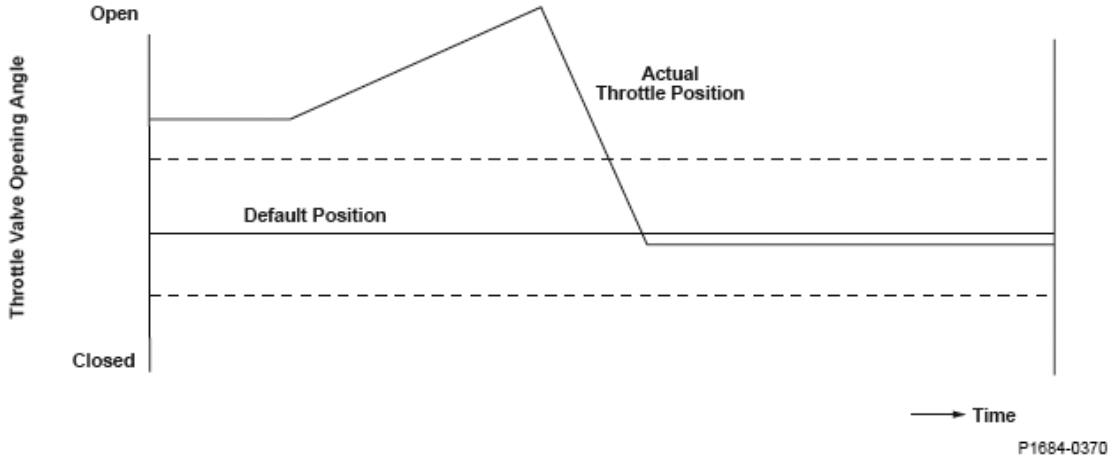


Fig. 552: Throttle Valve Default Position - Graph

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The throttle valve return spring is attached to the throttle valve gear to return the throttle valve to the default position.

If the throttle valve does not return to the default position when the throttle actuator control module moves the throttle actuator to the default position from the middle position, a malfunction is detected and the malfunction data is transmitted to the PCM. When the PCM receives the malfunction data from the throttle actuator control module, the PCM detects the malfunction of the throttle valve return spring and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Engine coolant temperature	158°F (70°C)	-
Ignition switch	OFF	
No active DTCs	P0117, P0118, P2101, P2118, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

The throttle valve opening angle is 17 ° or more, or 11 ° or less, for at least 2.5 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BB (116): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE (K20Z3)

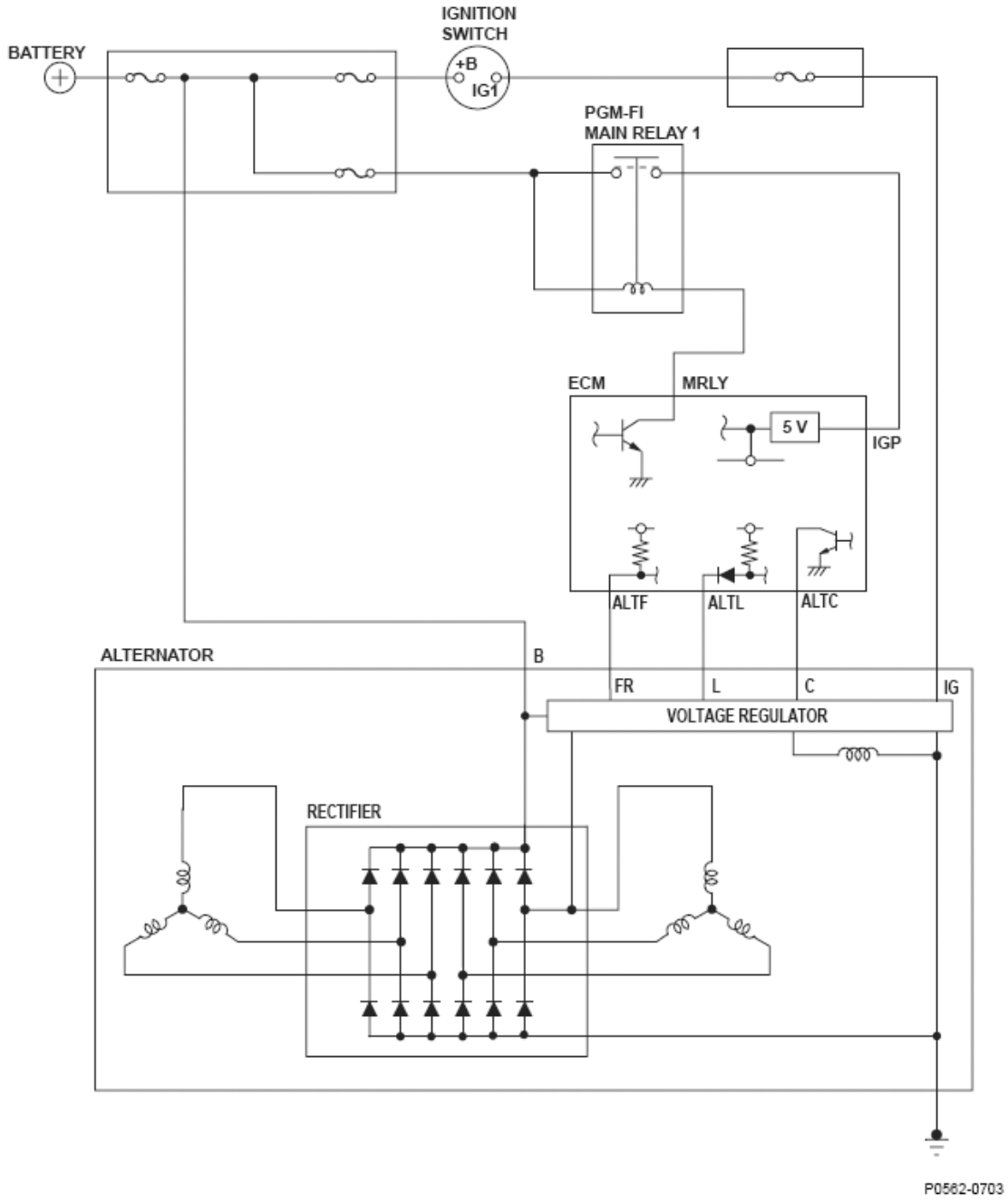


Fig. 553: Charging System Circuit Diagram

General Description (K20Z3 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)). The alternator output signal is sent to the ECM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value and the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is within the set range, and this condition continues more than set time, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (K20Z3 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is within 1.0 % to 60.0 %, for at least 60 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine.
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BB (116): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE (R18A1)

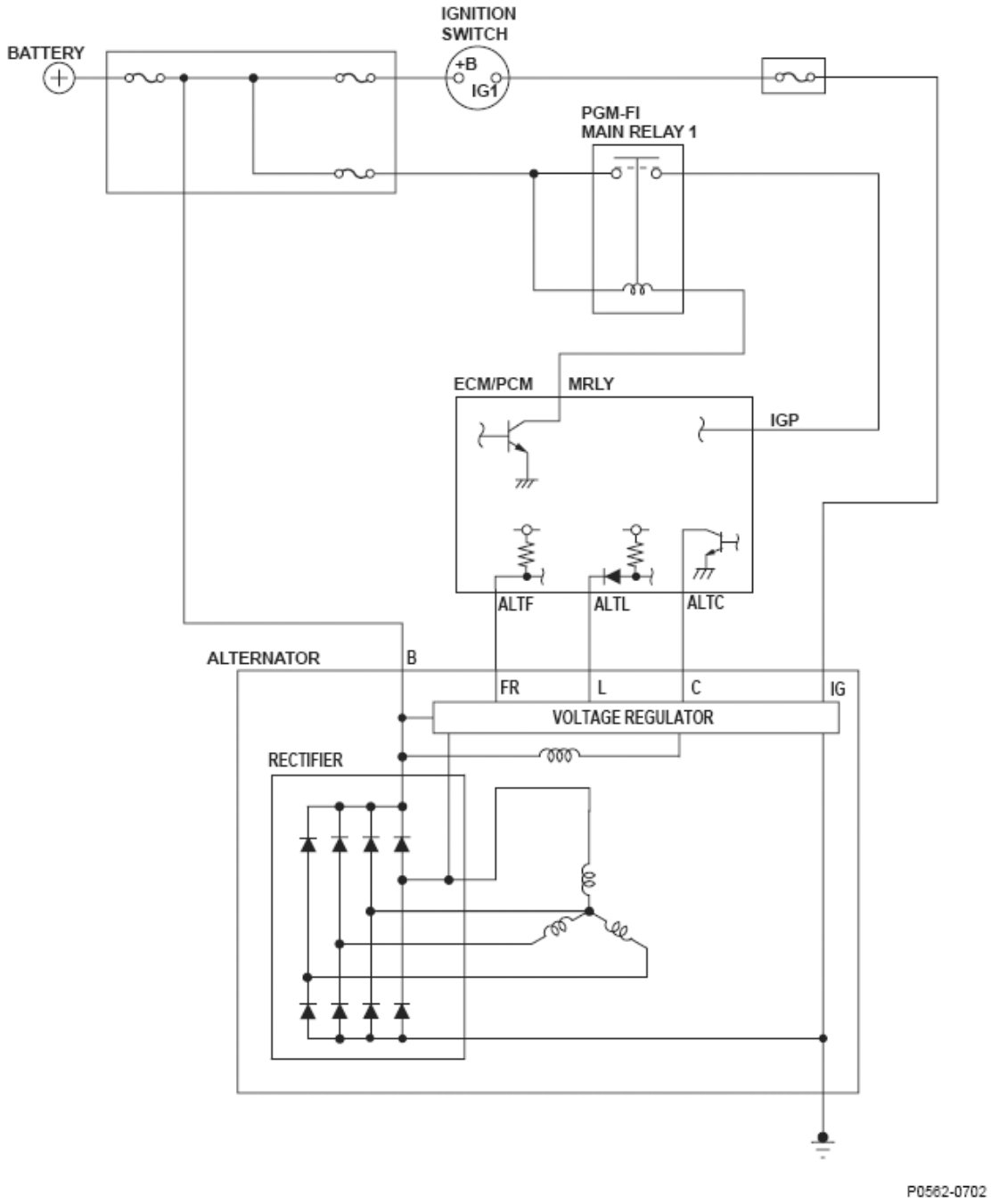


Fig. 554: Charging System Circuit Diagram

General Description (R18A1 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)/powertrain control module (PCM)). The alternator output signal is sent to the ECM/PCM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value and the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is within the set range, and this condition continues more than a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (R18A1 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is within 1.0 % to 50.0 %, for at least 60 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine.
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BB (116): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

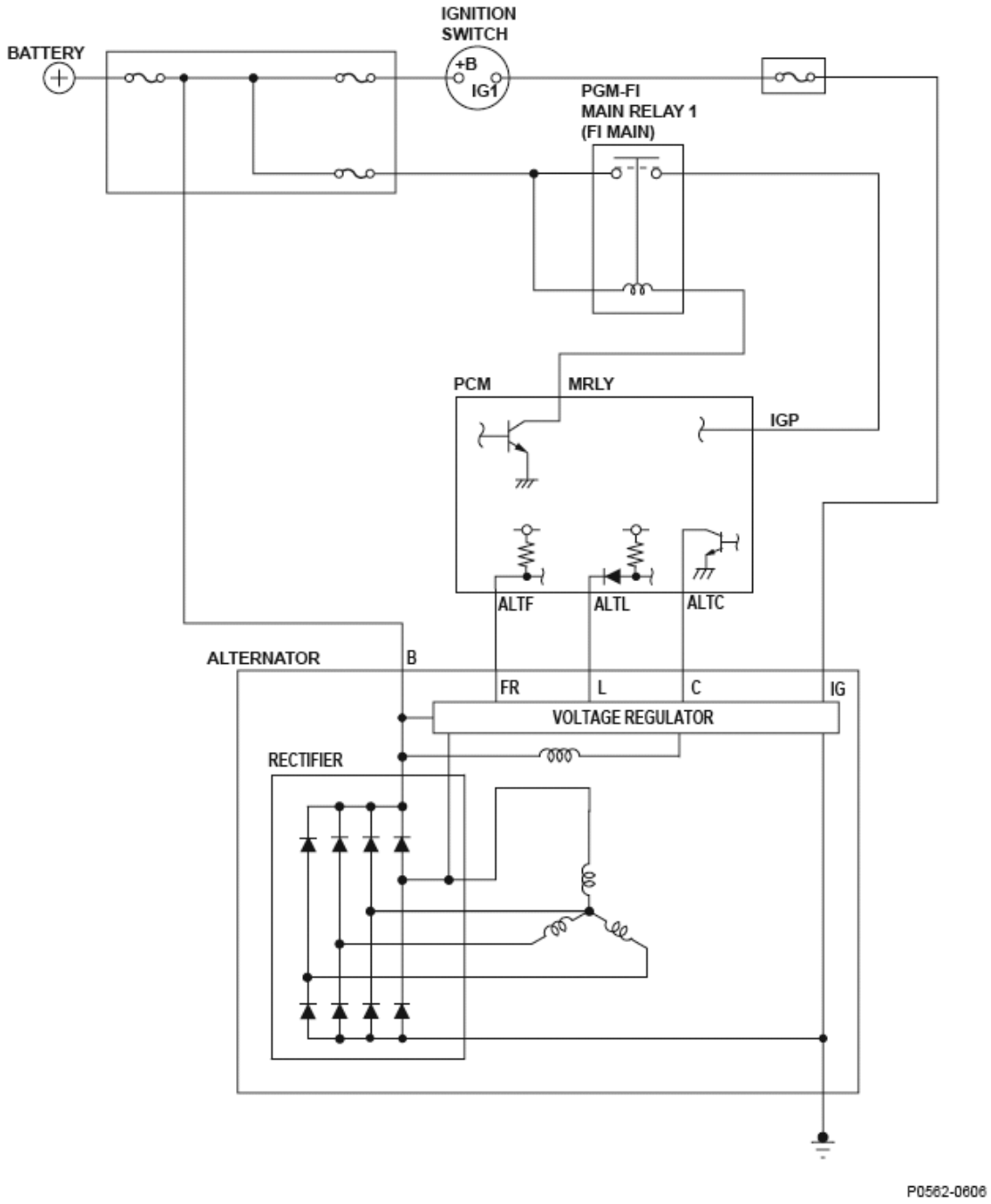


Fig. 555: Charging System - Circuit Diagram

General Description (R18A4 Engine)

The alternator is driven by the engine and generates electricity to supply the necessary power to the electrical system and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the powertrain control module (PCM)). The alternator output signal is sent to the PCM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value and the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is within the set range for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (R18A4 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is within 1.0 % to 50.0 %, for at least 60 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BC (116): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE (K20Z3)

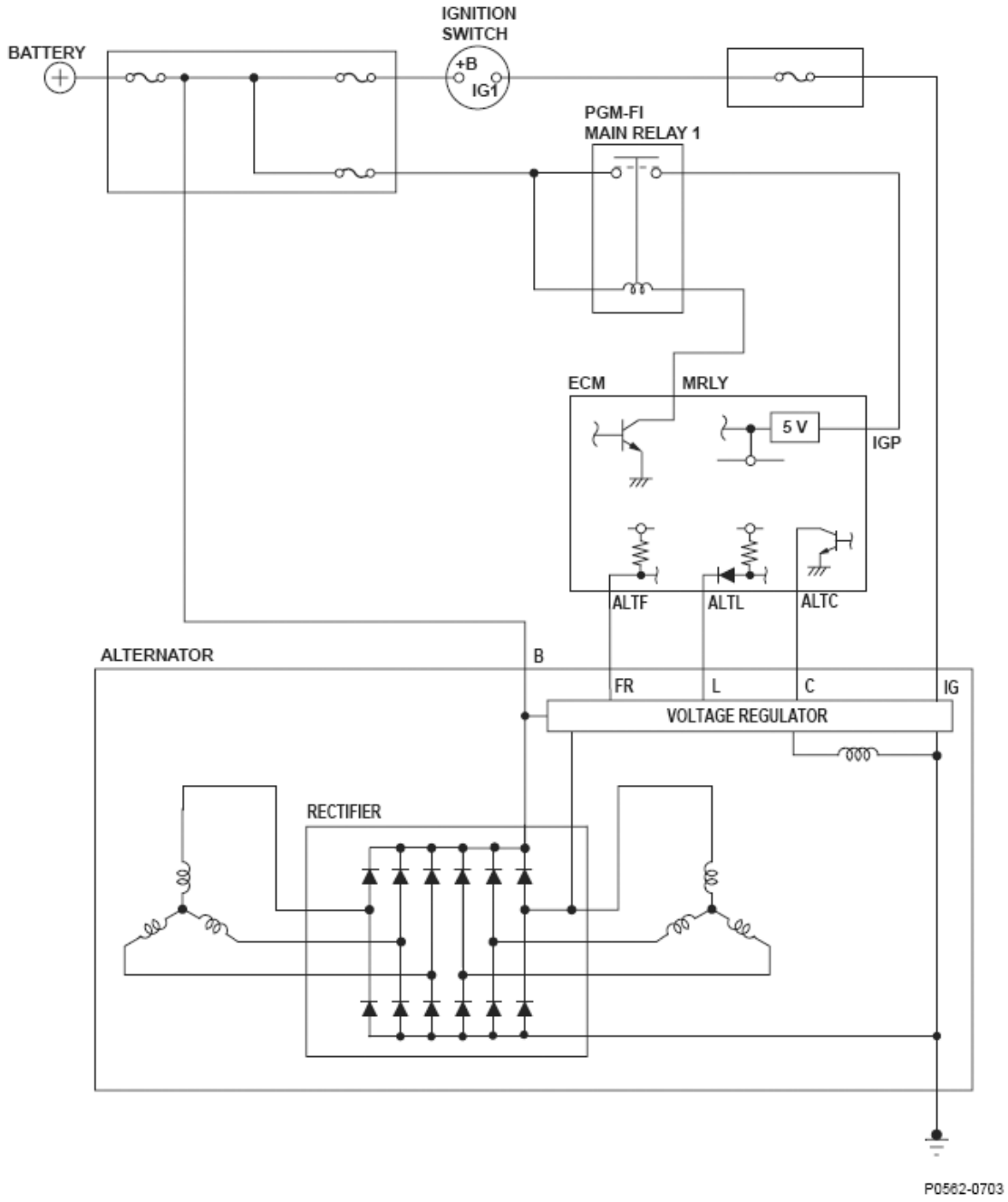


Fig. 556: Charging System Circuit Diagram

General Description (K20Z3 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical load and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)). The alternator output signal is sent to the ECM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value and the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is a set range or less, and this condition continues more than a set time, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (K20Z3 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is 0.5 % or less, for at least 60 seconds.

Driving Pattern (K20Z3 Engine)

1. Start the engine.
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BC (116): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE (R18A1)

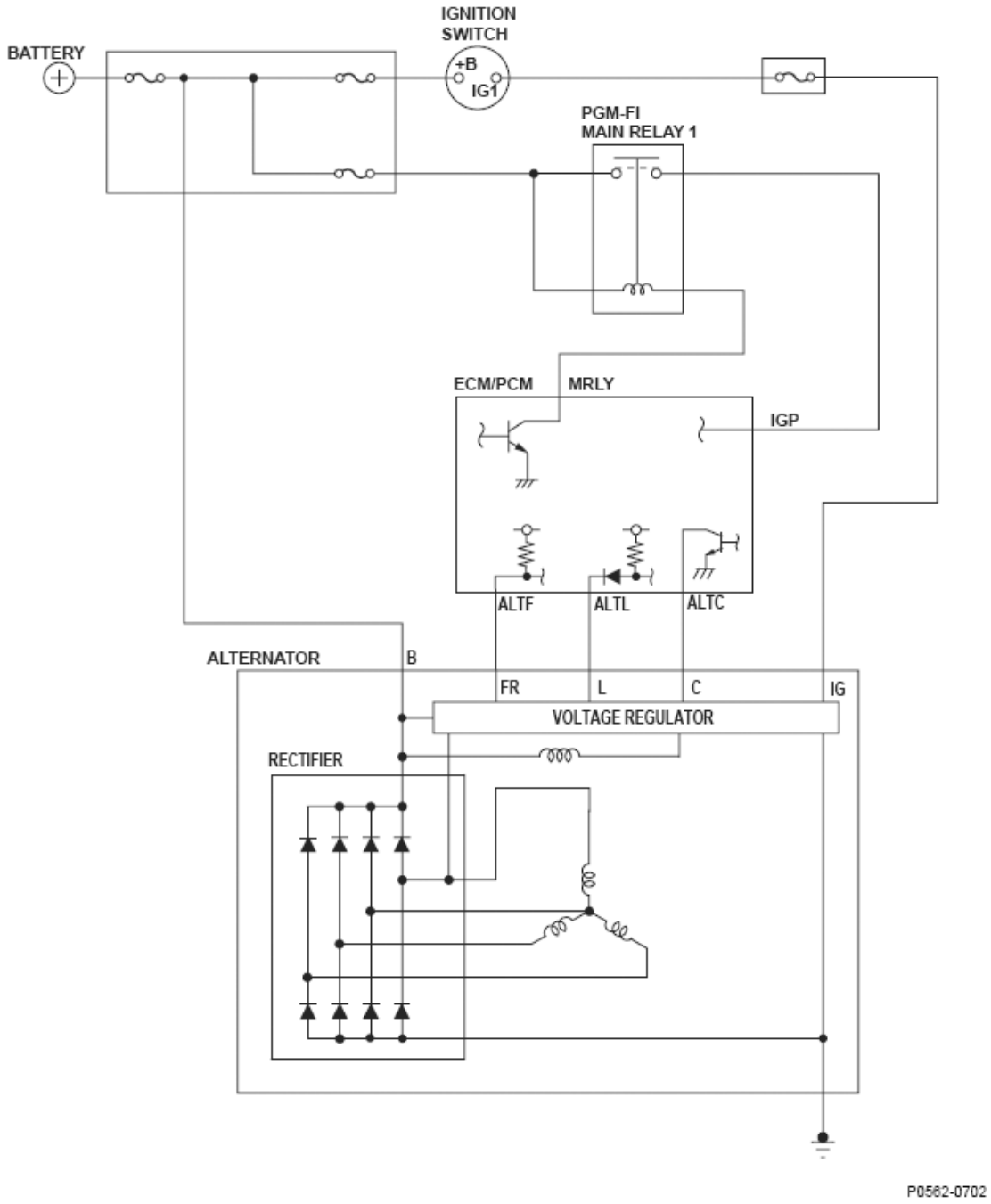


Fig. 557: Charging System (Engine Type R18A1) Circuit Diagram

General Description (R18A1 Engine)

The alternator is driven by the engine, and it generates electricity to supply the necessary power to the electrical load and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the engine control module (ECM)/powertrain control module (PCM)). The alternator output signal is sent to the ECM/PCM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value, the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is a set range or less, and this condition continues more than a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (R18A1 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is 0.5 % or less, for at least 60 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine.
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM/PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16BC (116): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

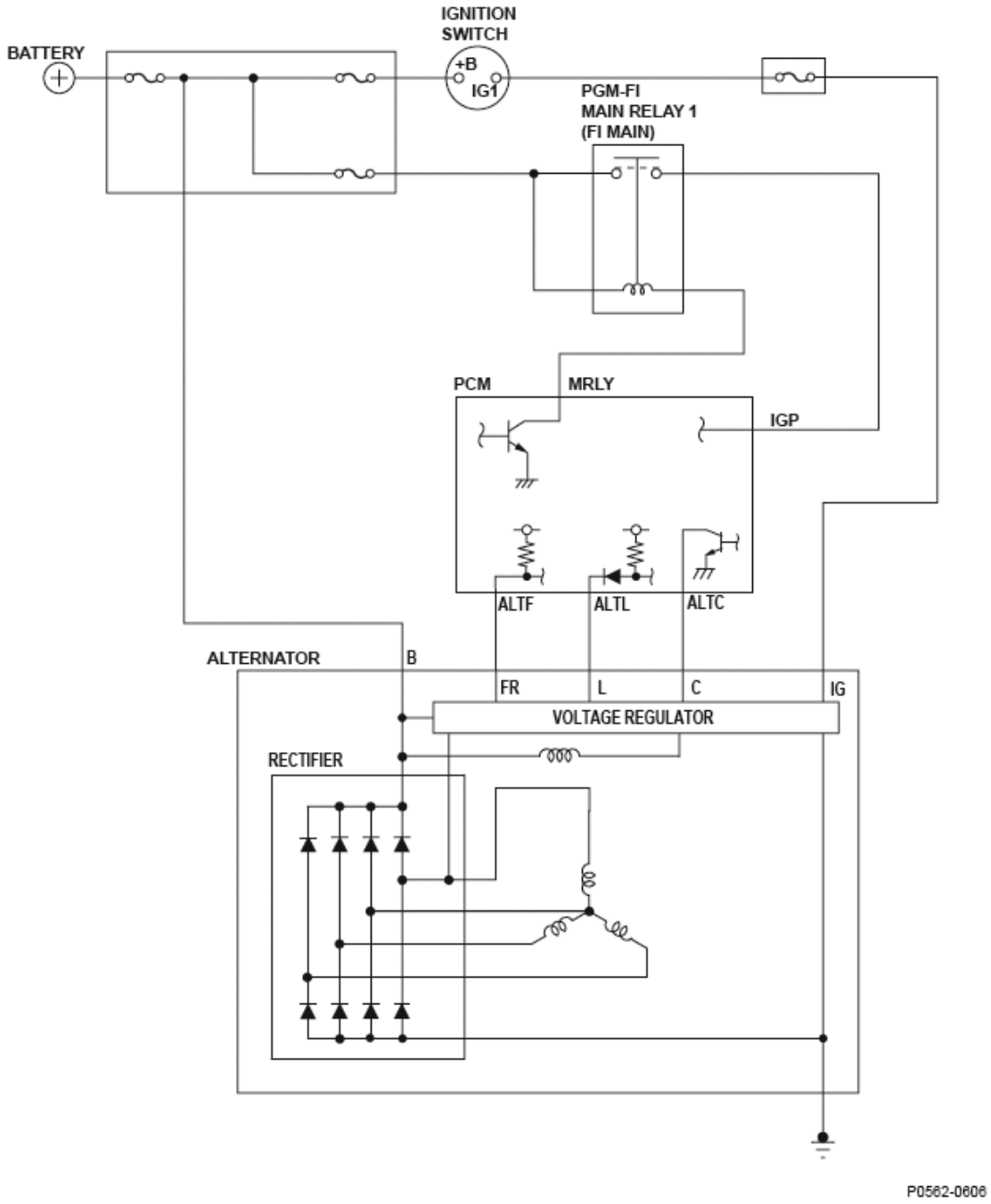


Fig. 558: Charging System - Circuit Diagram

General Description (R18A4 Engine)

The alternator is driven by the engine and generates electricity to supply the necessary power to the electrical load and to charge the battery. The alternator voltage target values of 14.5 V and 12.5 V are achieved by switching the alternator control mode (controlled by the powertrain control module (PCM)). The alternator output signal is sent to the PCM, and it varies according to the battery's state of charge, the electrical load, and the engine speed.

When the engine speed is a specified value and the IGP terminal voltage is below a set value when the alternator is in the 14.5 V mode, and the alternator power generation amount is a set range or less for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	60 seconds or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	500 rpm	3,000 rpm
Alternator control mode	14.5 V mode	

Malfunction Threshold (R18A4 Engine)

The IGP terminal voltage is 12.0 V or less, and the alternator power generation amount is 0.5 % or less, for at least 60 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine.
2. Maintain an engine speed of 500 rpm to 3,000 rpm.
3. Turn on the headlights (high beam) and rear window defogger.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16C0 (99): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P16C0: PCM A/T CONTROL SYSTEM INCOMPLETE UPDATE (R18A1 ENGINE)

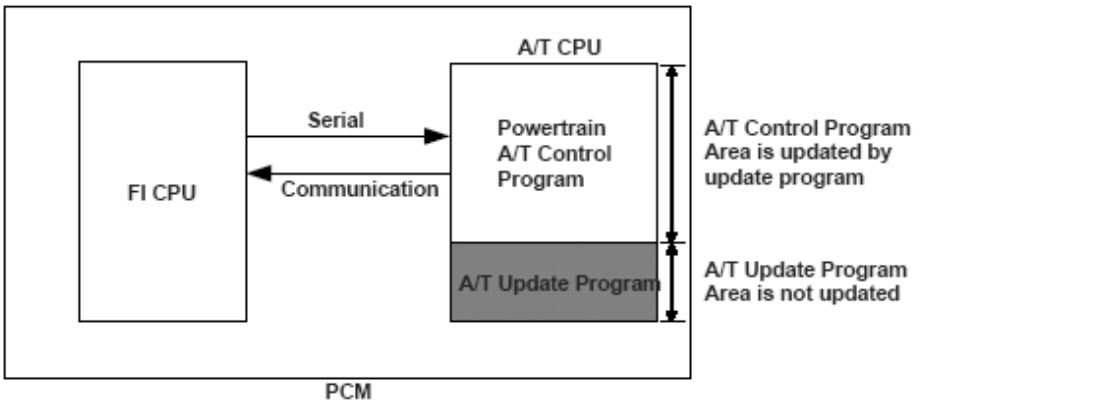


Fig. 559: Communication Diagram Between FI CPU And A/T CPU

General Description (R18A1 Engine)

The control program in the powertrain control module (PCM) has a rewriting function that can be done in the field. The program in the CPU is classified into a powertrain control program (re-writable program) and a program for the rewrite function (non-re-writable program), and the program rewrite function only rewrites the powertrain control program.

When the program rewriting process is not finished normally due to an irregular process, such as turning off the PCM power during the A/T CPU re-writing process, and the ignition switch is turned on again, the A/T CPU starts according to the rewriting function program, and this DTC is sent to the FI CPU via serial communication and stored in the PCM.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON, D indicator OFF
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A1 Engine)

The program rewriting process does not finish normally due to an irregular process, such as turning off the PCM power during the A/T CPU rewriting process, and the ignition switch is turned on again.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P16C0 (99): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P16C0: PCM A/T CONTROL SYSTEM INCOMPLETE UPDATE (R18A4 ENGINE)

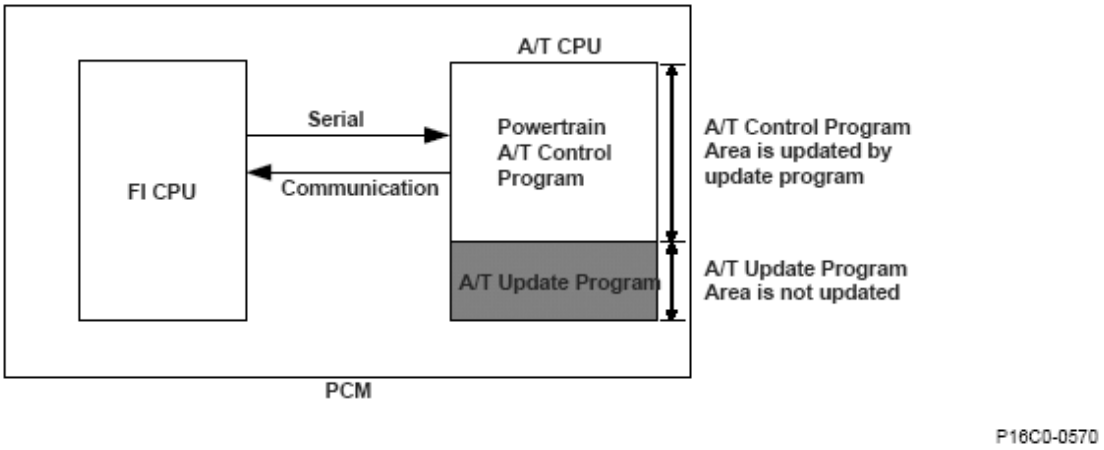


Fig. 560: Communication Diagram Between FI CPU And A/T CPU

General Description (R18A4 Engine)

The control program in the powertrain control module (PCM) has a rewriting function that can be done in the field. The program in the CPU is classified into a powertrain control program (re-writable program) and a program for the rewrite function (non-re-writable program), and the program rewrite function only rewrites the powertrain control program.

When the program rewriting process is not finished normally due to an irregular process, such as turning off the PCM power during the A/T CPU re-writing process, and the ignition switch is turned on again, the A/T CPU starts according to the rewriting function program, and this DTC is sent to the FI CPU via serial communication and stored in the PCM.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or less
DTC Type	One drive cycle, MIL ON, D indicator OFF

OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A4 Engine)

The program rewriting process does not finish normally due to an irregular process, such as turning off the PCM power during the A/T CPU rewriting process, and the ignition switch is turned on again.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1717 (62): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1717: OPEN IN TRANSMISSION RANGE SWITCH ATP RVS SWITCH CIRCUIT (R18A1 ENGINE)

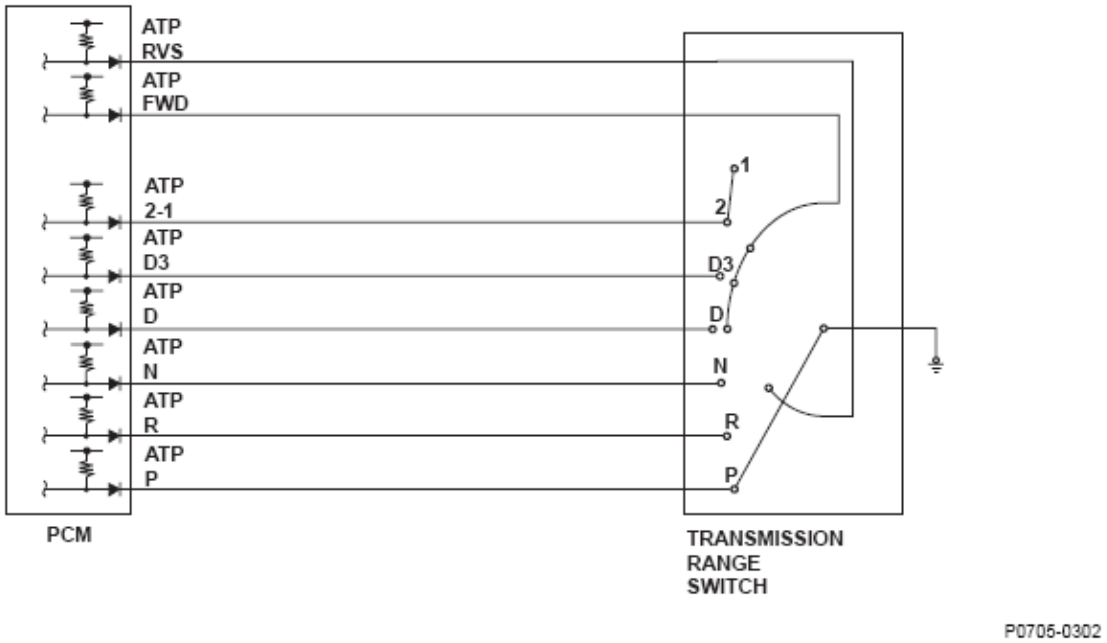


Fig. 561: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2 / 1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A1 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the RVS switch is OPEN with the shift lever in R position, the PCM detects a RVS switch OPEN failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Shift lever position	R	
No active DTCs	P0705, P0716, P0717, P0721, P0722, P0812	

Malfunction Threshold (R18A1 Engine)

No RVS signal is detected with the shift lever in the R position.

Driving Pattern (R18A1 Engine)

1. Start the engine.
2. Drive the vehicle at a speed of 3 mph (5 km/h) or less in the R position for at least 2 seconds.
3. Drive the vehicle at a speed of 3 mph (5 km/h) or more in the R position for at least 2 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1717 (62): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1717: OPEN IN TRANSMISSION RANGE SWITCH ATP RVS SWITCH CIRCUIT (R18A4 ENGINE)

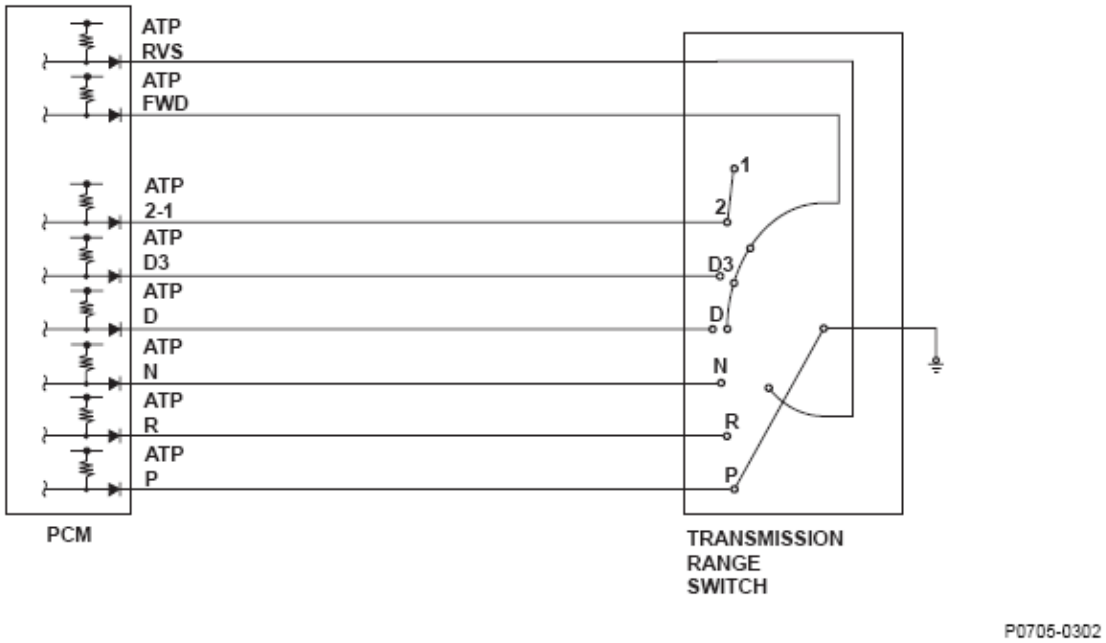


Fig. 562: Transmission Range Switch Circuit Diagram

TRANSMISSION RANGE SWITCH CONTACT POINT INPUT MATRIX

Shift lever position	Input per switch							
	P	R	RVS	N	D	D3	2 / 1	FWD
P	o	X	X	X	X	X	X	X
R	X	o	o	X	X	X	X	X
N	X	X	X	o	X	X	X	X
D	X	X	X	X	o	X	X	o
D3	X	X	X	X	X	o	X	o
2	X	X	X	X	X	X	o	o
1	X	X	X	X	X	X	o	X
o: Closed X: Open								

General Description (R18A4 Engine)

The transmission range switch is attached to the control shaft. Operating the shift lever makes the control shaft rotate via the shift cable. The A/T gear position indicator indicates which position is selected according to the Low/High signal combinations which vary based on shift lever position. The control shaft changes the position of the transmission range switch, activates the manual valve, and switches hydraulic pressure to shift the transmission through forward/neutral/reverse. The transmission range switch signal is used to determine the shift schedule. The voltage is 12 V (High) at the powertrain control module (PCM) input terminal when each transmission range switch position is open, and it is 0 V (Low) when each switch is closed. If the RVS switch is OPEN with the shift lever in R position, the PCM detects a RVS switch OPEN failure and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Engine speed	1,000 rpm	-
Shift lever position	R	
No active DTCs	P0705, P0716, P0717, P0721, P0722, P0812	

Malfunction Threshold (R18A4 Engine)

No RVS signal is detected with the shift lever in the R position.

Driving Pattern (R18A4 Engine)

1. Start the engine.
2. Drive the vehicle at a speed of 3 mph (5 km/h) or less in the R position for at least 2 seconds.
3. Drive the vehicle at a speed of 3 mph (5 km/h) or more in the R position for at least 2 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1746 (45): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1746: PROBLEM IN SHIFT CONTROL SYSTEM; CUT VALVE A STUCK OFF, OR CUT VALVE B STUCK ON (R18A1 ENGINE)

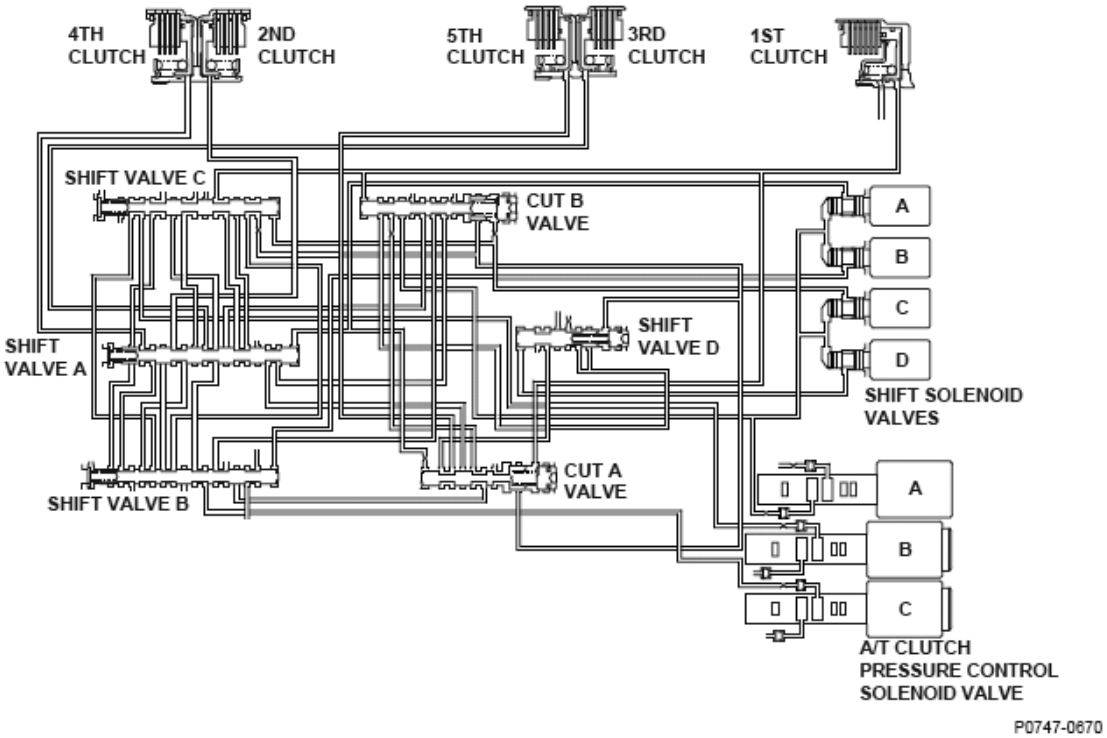


Fig. 563: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 564: Hydraulic Pressure Supply To Clutch By Shift Solenoid Valve Output Position Table

General Description (R18A1 Engine)

The cut A valve and the cut B valve is installed in the hydraulic control circuit in the transmission. The cut A valve and the cut B valve supplies line pressure and clutch pressure control pressure to the 1st clutch or the 5th clutch according to the combination of the solenoid signal.

When the signal to the shift solenoid valve A from the powertrain control module (PCM) is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive.

When the cut A valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut A valve is switch to inactive side due to pressure supplied to the 1st clutch.

When the pressure is supplied to the 1st clutch, the cut B valve operates against the spring. When the pressure is not supplied to the 1st clutch, the cut B valve is inactive.

When the cut B valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut B valve is switched to inactive side when the signal to the shift solenoid C from the PCM is ON. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change which is decided according to the shift schedule.

When an improper gear ratio is output compared to the predetermined gear change mode, the cut A valve OFF failure or the cut B valve ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	5 mph (9 km/h)(2), (3), (4)	-
Accelerator pedal position	2.0 %(2), (3), (4)	-
Shift status	5th(1)	
	1st --> 2nd(2)	
	2nd --> 3rd(3)	
	3rd --> 4th(4)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1747	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 1-C

(4) Symptom 1-D

Malfunction Threshold (R18A1 Engine)

Symptom 1 occurs.

Symptom 1 (Symptom 1-B, symptom 1-C, and symptom 1-D occur after symptom 1-A occurs.)

SYMPTOM CHART

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 5th gear	Neutral
1-B	1st --> 2nd gear upshift	1st --> 2nd gear upshift
1-C	2nd --> 3rd gear upshift	2nd --> 3rd gear upshift
1-D	3rd --> 4th gear upshift	3rd --> 4th gear upshift

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1746 (45): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1746: PROBLEM IN SHIFT CONTROL SYSTEM; CUT VALVE A STUCK OFF, OR CUT VALVE B STUCK ON (R18A4 ENGINE)

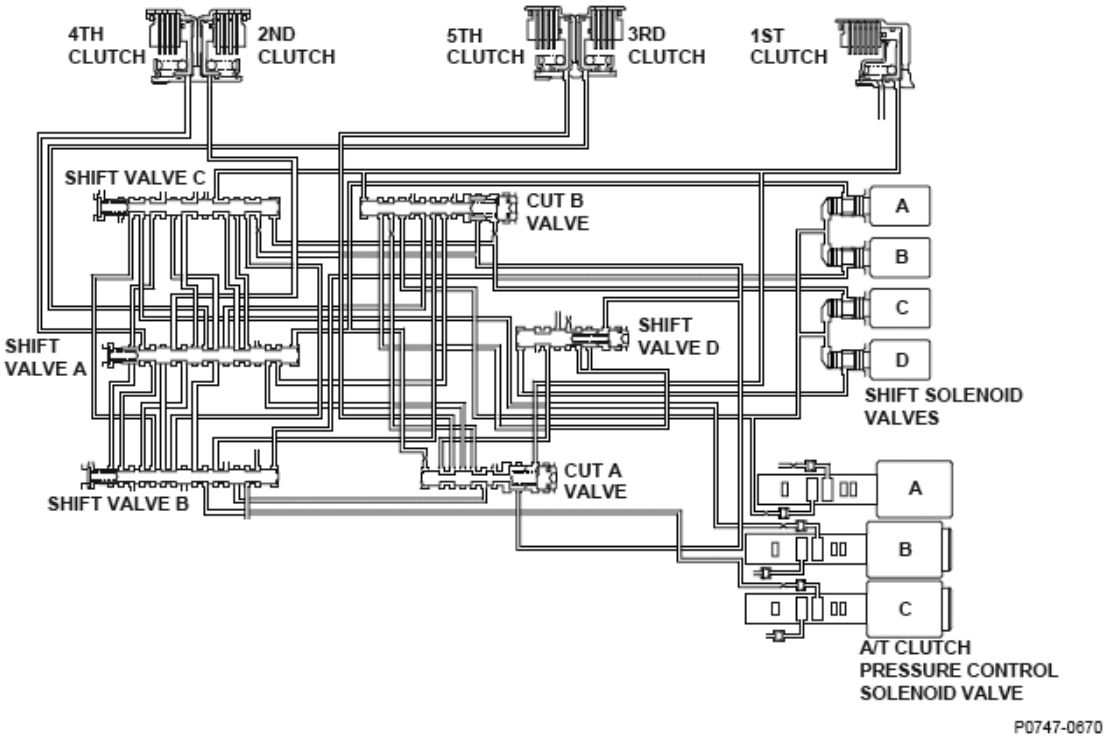


Fig. 565: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 566: Hydraulic Pressure Supply To Clutch By Shift Solenoid Valve Output Position Table

General Description (R18A4 Engine)

The cut A valve and the cut B valve is installed in the hydraulic control circuit in the transmission. The cut A valve and the cut B valve supplies line pressure and clutch pressure control pressure to the 1st clutch or the 5th clutch according to the combination of the solenoid signal.

When the signal to the shift solenoid valve A from the powertrain control module (PCM) is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive.

When the cut A valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut A valve is switch to inactive side due to pressure supplied to the 1st clutch.

When the pressure is supplied to the 1st clutch, the cut B valve operates against the spring. When the pressure is not supplied to the 1st clutch, the cut B valve is inactive.

When the cut B valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut B valve is switched to inactive side when the signal to the shift solenoid C from the PCM is ON. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change which is decided according to the shift schedule.

When an improper gear ratio is output compared to the predetermined gear change mode, the cut A valve OFF failure or the cut B valve ON failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	5 mph (9 km/h)(2), (3), (4)	-
Accelerator pedal position	2.0 %(2), (3), (4)	-
Shift status	5th(1)	
	1st --> 2nd(2)	
	2nd --> 3rd(3)	
	3rd --> 4th(4)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1747	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 1-C

(4) Symptom 1-D

Malfunction Threshold (R18A4 Engine)

Symptom 1 occurs.

Symptom 1 (Symptom 1-B, symptom 1-C, and symptom 1-D occur after symptom 1-A occurs.)

SYMPTOM CHART

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	Driving in 5th gear	Neutral
1-B	1st --> 2nd gear upshift	1st --> 2nd gear upshift
1-C	2nd --> 3rd gear upshift	2nd --> 3rd gear upshift
1-D	3rd --> 4th gear upshift	3rd --> 4th gear upshift

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1747 (45): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1747: PROBLEM IN SHIFT CONTROL SYSTEM; CUT VALVE A STUCK ON, OR CUT VALVE B STUCK OFF (R18A1 ENGINE)

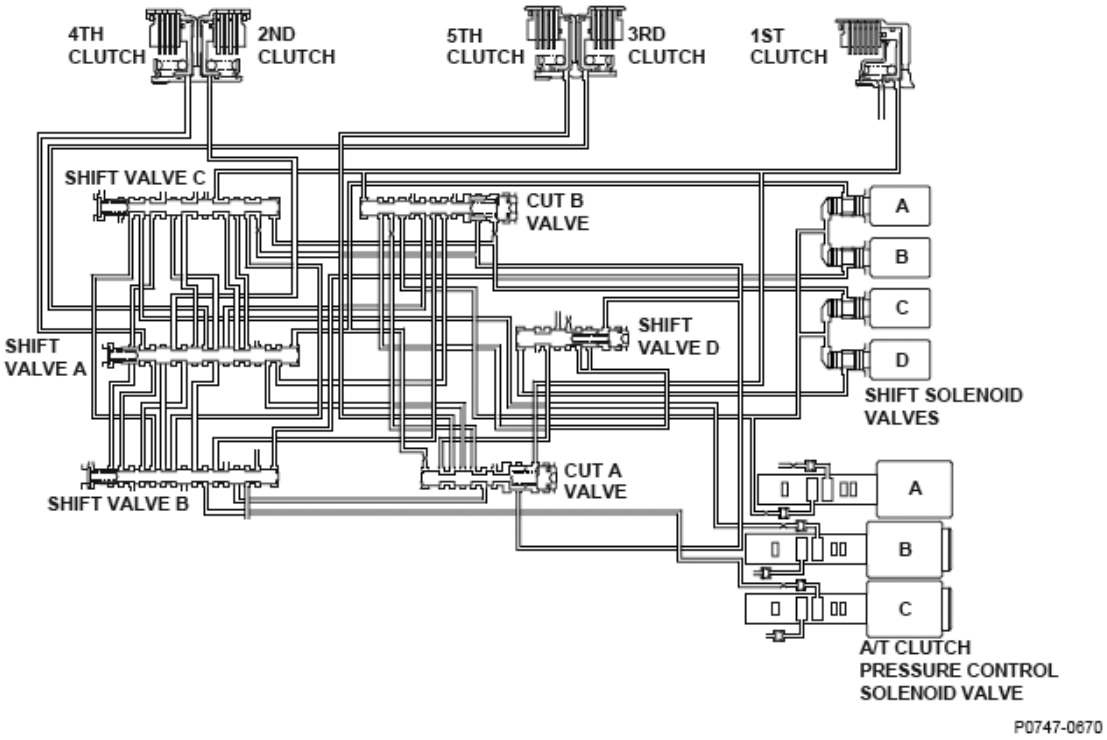


Fig. 567: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 568: Hydraulic Pressure Supply To Clutch By Shift Solenoid Valve Output Position Table

General Description (R18A1 Engine)

The cut A valve and the cut B valve is installed in the hydraulic control circuit in the transmission. The cut A valve and the cut B valve supplies line pressure and clutch pressure control pressure to the 1st clutch or the 5th clutch according to the combination of the solenoid signal.

When the signal to the shift solenoid valve A from the powertrain control module (PCM) is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive.

When the cut A valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut A valve is switch to inactive side due to pressure supplied to the 1st clutch.

When the pressure is supplied to the 1st clutch, the cut B valve operates against the spring. When the pressure is not supplied to the 1st clutch, the cut B valve is inactive.

When the cut B valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut B valve is switched to inactive side when the signal to the shift solenoid C from the PCM is ON. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change which is decided according to the shift schedule.

When an improper gear ratio is output compared to the predetermined gear change mode, the cut A valve ON failure or the cut B valve OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(1)
ATF temperature	-	248 °F (120 °C)
Shift status	N --> D(1)	
	1st(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A1 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the PCM	Actual gear position
1-A	N --> D	Driving in 1st gear
1-B	Driving in 1st gear	Neutral

SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Neutral

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A1 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1747 (45): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1747: PROBLEM IN SHIFT CONTROL SYSTEM; CUT VALVE A STUCK ON, OR CUT VALVE B STUCK OFF (R18A4 ENGINE)

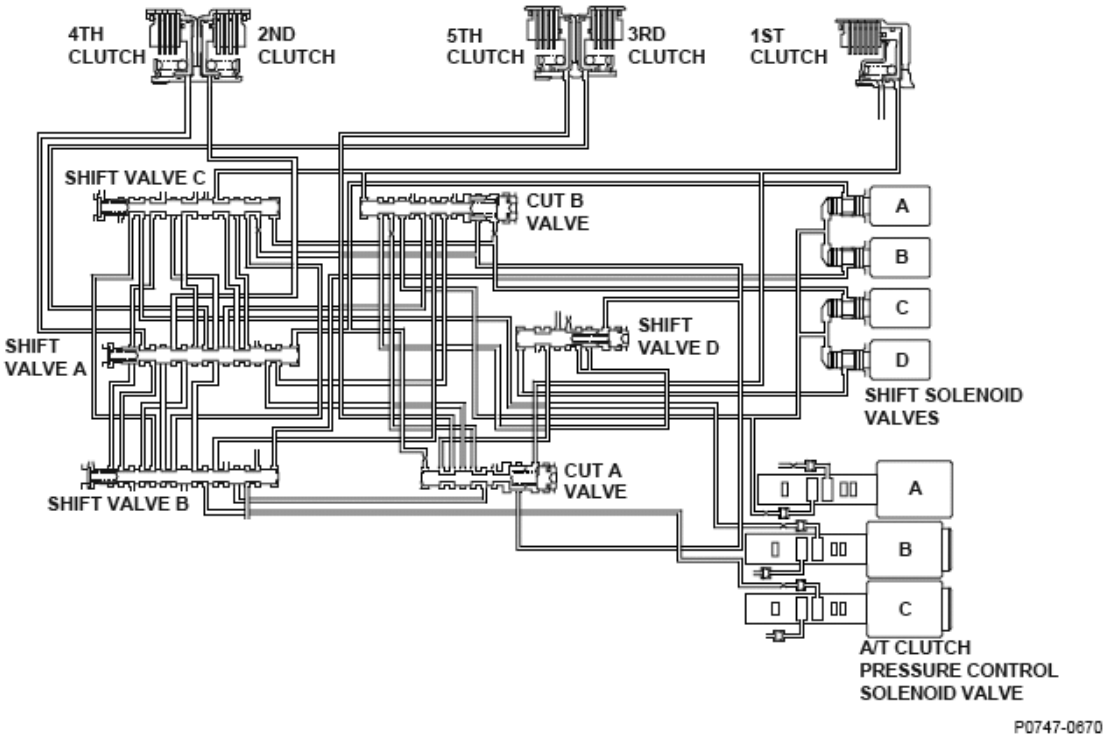


Fig. 569: A/T Clutch Pressure Control Solenoid Valve - System Diagram

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 570: Hydraulic Pressure Supply To Clutch By Shift Solenoid Valve Output (D Position) Chart

General Description (R18A4 Engine)

The cut A valve and the cut B valve is installed in the hydraulic control circuit in the transmission. The cut A valve and the cut B valve supplies line pressure and clutch pressure control pressure to the 1st clutch or the 5th clutch according to the combination of the solenoid signal.

When the signal to the shift solenoid valve A from the powertrain control module (PCM) is ON, and line pressure is applied to shift valve A, it operates against the shift valve A spring. When the signal to shift solenoid valve A from the PCM is OFF, and line pressure is discharged, shift valve A is inactive.

When the cut A valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut A valve is switch to inactive side due to pressure supplied to the 1st clutch.

When the pressure is supplied to the 1st clutch, the cut B valve operates against the spring. When the pressure is not supplied to the 1st clutch, the cut B valve is inactive.

When the cut B valve is once active, it is self-locked by the line pressure which is supplied only in case of the D position. The cut B valve is switched to inactive side when the signal to the shift solenoid C from the PCM is ON. The signal from the PCM is output to apply clutch pressure control pressure to the proper gear change clutch according to the gear change schedule. The PCM monitors the input shaft (mainshaft) speed and the output shaft (countershaft) speed at the gear change which is decided according to the shift schedule.

When an improper gear ratio is output compared to the predetermined gear change mode, the cut A valve ON failure or the cut B valve OFF failure is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL OFF, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
Vehicle speed	-	6 mph (9 km/h)(1)
ATF temperature	-	248 °F (120 °C)
Shift status	N --> D(1)	
	1st(2), (3)	
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983, P1746	

(1) Symptom 1-A

(2) Symptom 1-B

(3) Symptom 2-A

Malfunction Threshold (R18A4 Engine)

One of these symptoms occurs.

SYMPTOM 1 (SYMPTOM 1-B OCCURS AFTER SYMPTOM 1-A OCCURS)

Symptom	Gear position commanded by the	PCM Actual gear position
1-A	N --> D	Driving in 1st gear
1-B	Driving in 1st gear	Neutral

SYMPTOM 2

Symptom	Gear position commanded by the PCM	Actual gear position
2-A	Driving in 1st gear	Neutral

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the DTC and the freeze frame data are stored. The MIL does not come on.

Conditions for clearing the MIL (R18A4 Engine)

The DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear

command or by disconnecting the battery.

DTC P1780 (49): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P1780: PROBLEM IN SHIFT CONTROL SYSTEM (R18A1 ENGINE)

General Description (R18A1 Engine)

When the powertrain control module (PCM) detects a mechanical malfunction in the automatic transmission, the transmission switches to a default mode according to the malfunction, and this DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	

Malfunction Threshold (R18A1 Engine)

The A/T control switches to the default mode due to a mechanical malfunction.

Driving Pattern (R18A1 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P1780 (49): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P1780: PROBLEM IN SHIFT CONTROL SYSTEM (R18A4 ENGINE)

General Description (R18A4 Engine)

When the powertrain control module (PCM) detects a mechanical malfunction in the automatic transmission, the transmission switches to a default mode according to the malfunction, and this DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	Depending on the driving pattern
DTC Type	Two drive cycles, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	11.0 V	-
No active DTCs	P0122, P0123, P0222, P0223, P0705, P0716, P0717, P0718, P0721, P0722, P0723, P0746, P0747, P0751, P0752, P0756, P0757, P0761, P0762, P0766, P0767, P0776, P0777, P0796, P0797, P0842, P0843, P0847, P0848, P0962, P0963, P0966, P0967, P0970, P0971, P0973, P0974, P0976, P0977, P0979, P0980, P0982, P0983	

Malfunction Threshold (R18A4 Engine)

The A/T control switches to the default mode due to a mechanical malfunction.

Driving Pattern (R18A4 Engine)

Start the engine, and accelerate the vehicle until the transmission shifts into 5th gear in the D position.

- Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2101 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION (K20Z3 ENGINE)

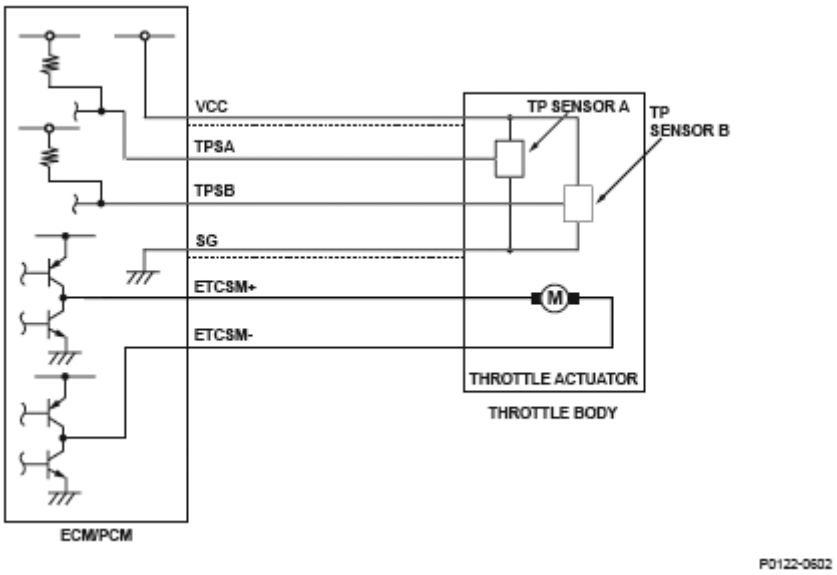


Fig. 571: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The ECM/PCM compares the throttle valve target opening angle and the actual throttle valve opening angle from TP sensor A, and when the difference exceeds the specification, the ECM/PCM detects the malfunction of the throttle actuator system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.25 seconds or more(1), 0.5 seconds or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A
(1) Throttle valve closed direction (2) Throttle valve open direction	

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P2118, P2135, P2176	

Malfunction Threshold (K20Z3 Engine)

One of the conditions in this table must be met for at least 0.25 seconds* (0.5 seconds**).

MALFUNCTION THRESHOLD

Throttle valve target position	Difference between the throttle valve target position and the actual throttle valve position
2°	4° or more
6°	5.4° or more
10°	5.7° or more
15°	6° or more
90°	6° or more

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2101 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION (R18A1 ENGINE)

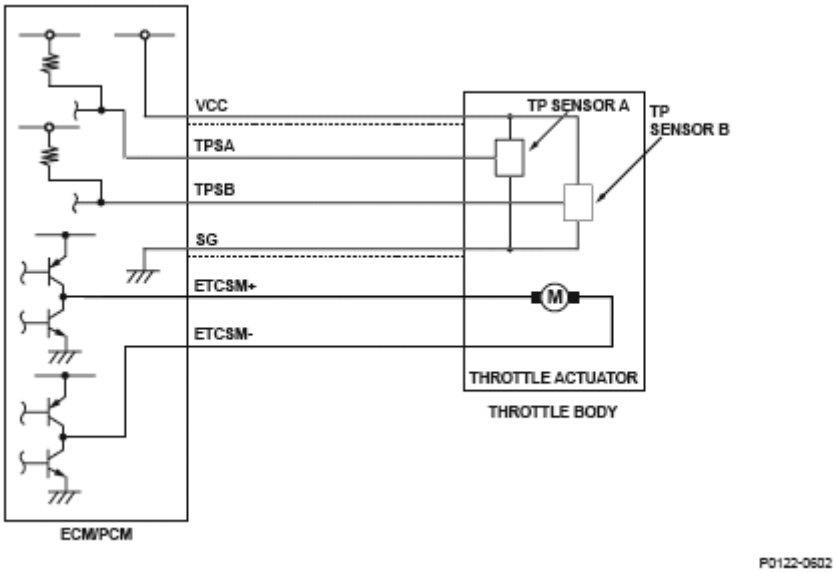


Fig. 572: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The ECM/PCM compares the throttle valve target opening angle and the actual throttle valve opening angle from TP sensor A, and when the difference exceeds the specification, the ECM/PCM detects the malfunction of the throttle actuator system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None

Duration	0.25 seconds or more(1), 0.5 seconds or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A
(1) Throttle valve closed direction (2) Throttle valve open direction	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P2118, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

One of the conditions in this table must be met for at least 0.25 seconds* (0.5 seconds**).

MALFUNCTION THRESHOLD

Throttle valve target position	Difference between the throttle valve target position and the actual throttle valve position
2°	4° or more
6°	5.4° or more
10°	5.7° or more
15°	6° or more
90°	6° or more

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2101 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION (R18A4 ENGINE)

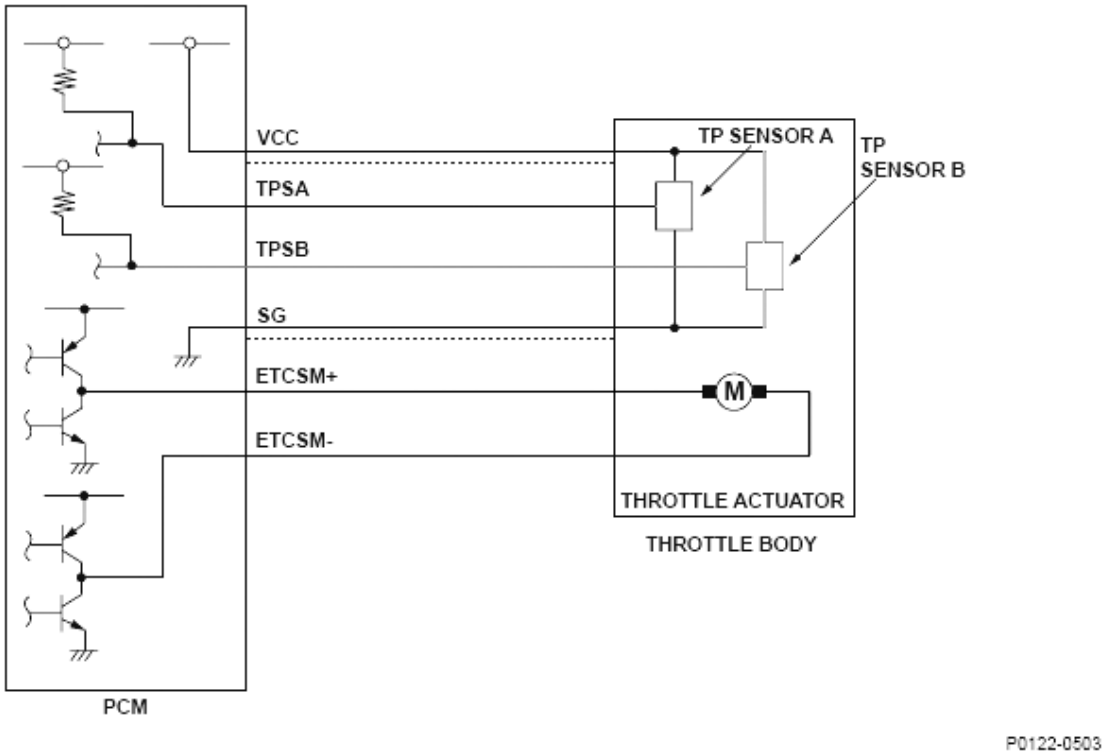


Fig. 573: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position.

The PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The PCM compares the throttle valve target opening angle and the actual throttle valve opening angle from TP sensor A, and when the difference exceeds the specification, the PCM detects the malfunction of the throttle actuator system and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.25 seconds or more(1), 0.5 seconds or more(2)
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

(1) Throttle valve closed direction

(2) Throttle valve open direction

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P2118, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

One of the conditions in this table must be met for at least 0.25 seconds* (0.5 seconds**).

MALFUNCTION THRESHOLD

Throttle valve target position	Difference between the throttle valve target position and the actual throttle valve position
2 °	4 ° or more
6 °	5.4 ° or more
10 °	5.7 ° or more
15 °	6 ° or more
90 °	6 ° or more

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2118 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM (K20Z3 ENGINE)

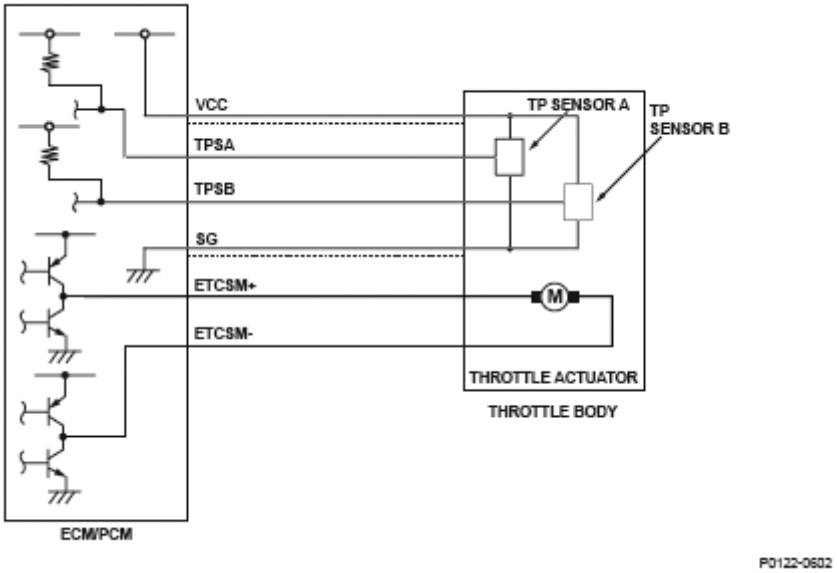


Fig. 574: Throttle Position (TP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

When the output voltage to the throttle actuator exceeds the specification for a set time, the ECM/PCM detects a malfunction of the throttle actuator system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-

Ignition switch	ON
No active DTCs	P2101, P2135, P2176

Malfunction Threshold (K20Z3 Engine)

The current flow to the throttle actuator is 11 A or more for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2118 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

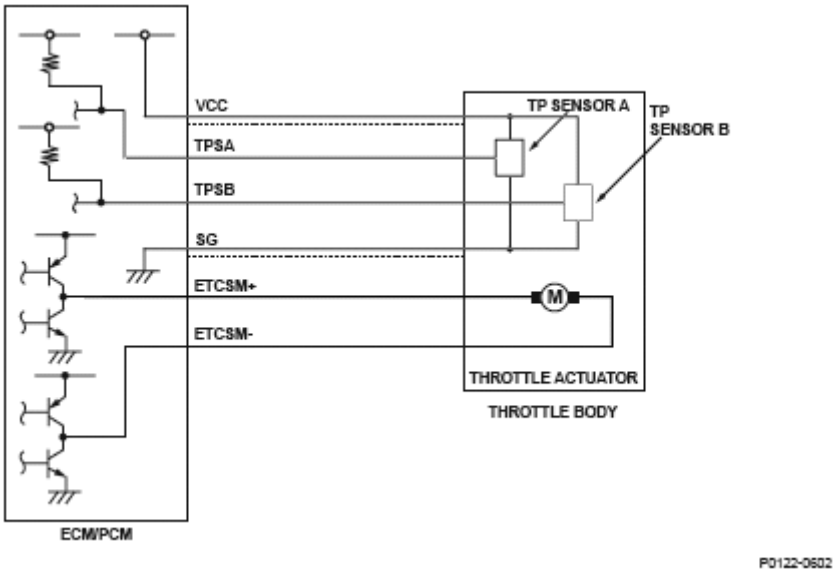


Fig. 575: Throttle Position (TP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

When the output voltage to the throttle actuator exceeds the specification for a set time, the ECM/PCM detects a malfunction of the throttle actuator system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P2101, P2135, P2176	

Malfunction Threshold (R18A1 Engine)

The current flow to the throttle actuator is 11 A or more for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2118 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

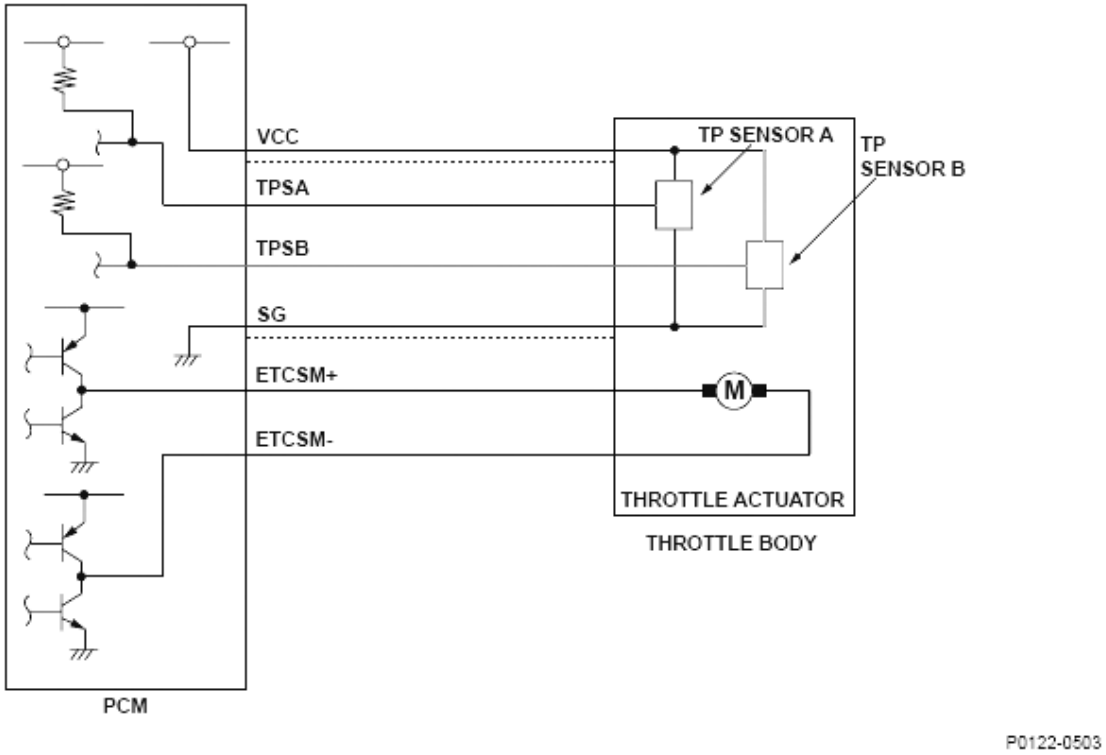


Fig. 576: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position.

The PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

When the output voltage to the throttle actuator exceeds the specification for a set time, the PCM detects a malfunction of the throttle actuator system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P2101, P2135, P2176	

Malfunction Threshold (R18A4 Engine)

The current flow to the throttle actuator is 11 A or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2122 (20): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2122: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE INPUT (R18A1 ENGINE)

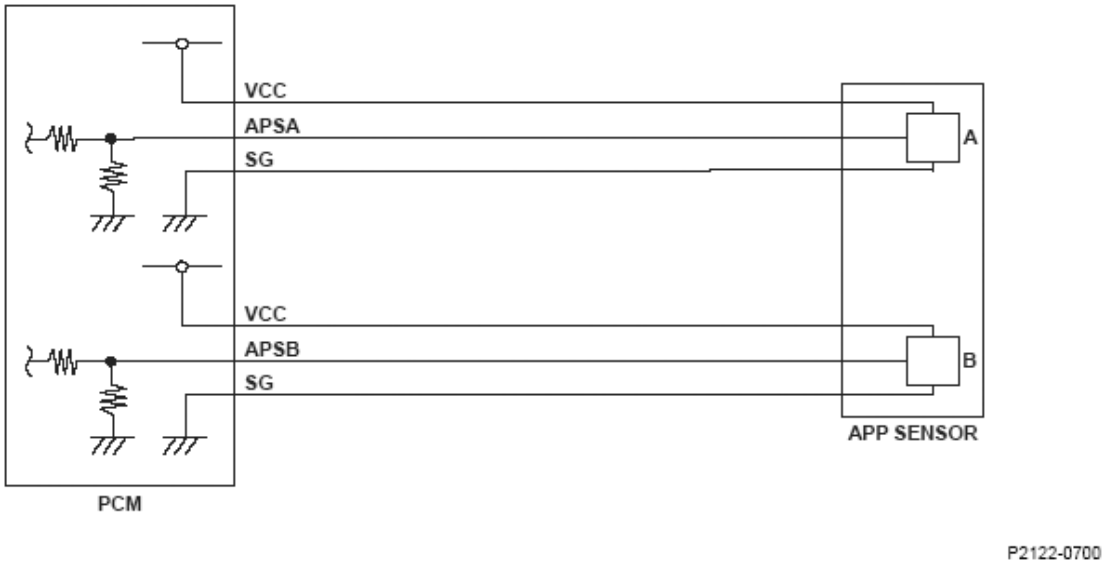


Fig. 577: Accelerator Pedal Position Sensor A - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or less, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2123

Malfunction Threshold (R18A1 Engine)

The APP sensor A output voltage is 0.2 V or less for at least 0.2 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2122 (20): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2122: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE INPUT (R18A4 ENGINE)

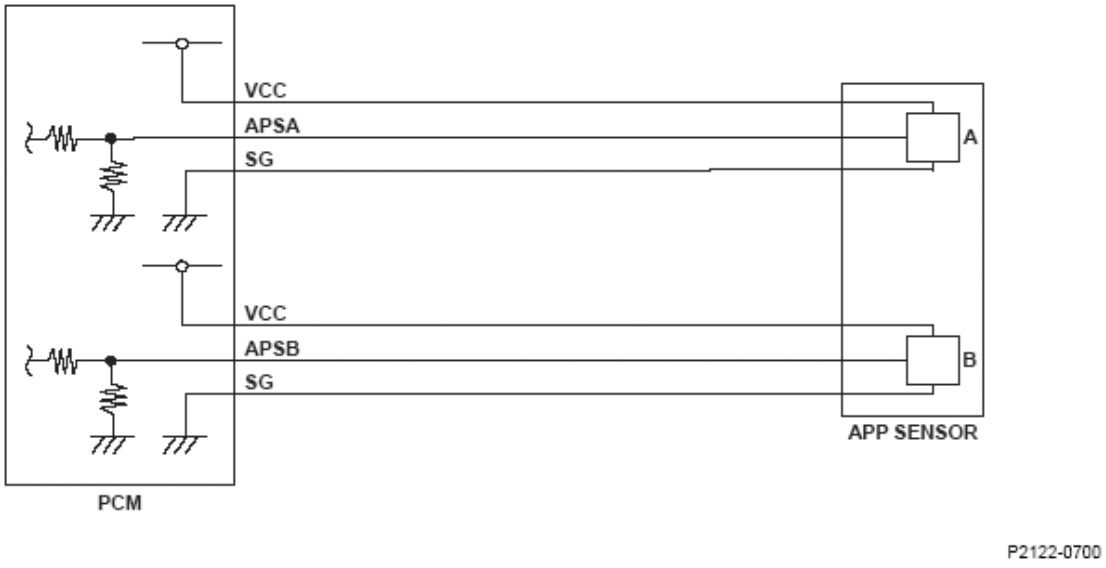


Fig. 578: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or less, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2123

Malfunction Threshold (R18A4 Engine)

The APP sensor A output voltage is 0.2 V or less for at least 0.2 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2122 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2122: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION (TP) SENSOR D) CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

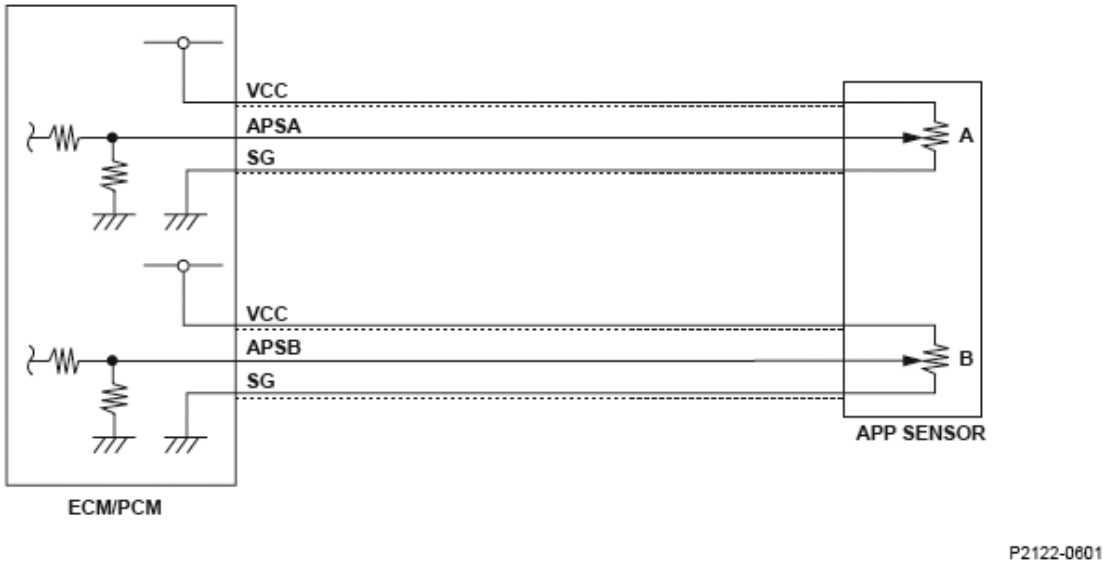


Fig. 579: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/power-train control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or less, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2123

Malfunction Threshold (K20Z3 Engine)

The APP sensor A output voltage is 0.2 V or less for at least 0.2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2122 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2122: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION (TP) SENSOR D) CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

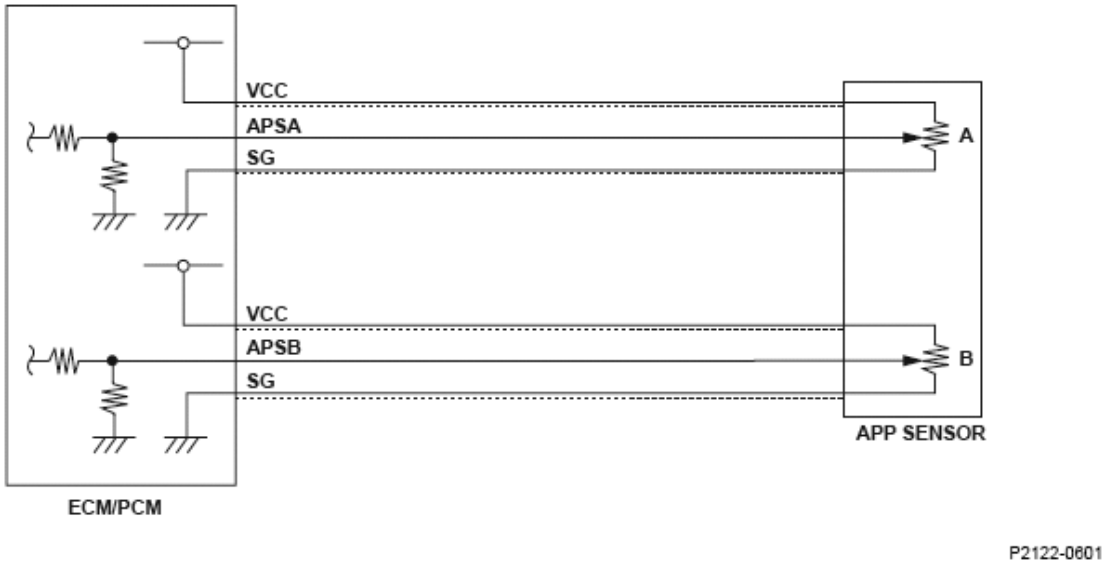


Fig. 580: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or less, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more

DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2123

Malfunction Threshold (R18A1 Engine)

The APP sensor A output voltage is 0.2 V or less for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2122 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2122: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION (TP) SENSOR D) CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

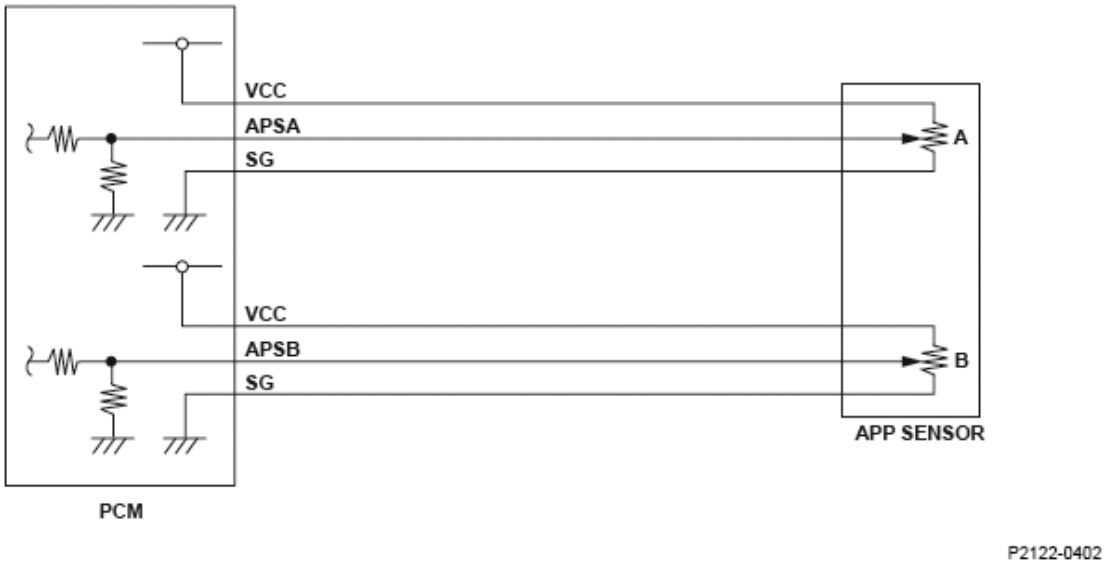


Fig. 581: Accelerator Pedal Position (APP) Sensor A Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or less, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2123

Malfunction Threshold (R18A4 Engine)

The APP sensor A output voltage is 0.2 V or less for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2123 (20): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2123: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE INPUT (R18A1 ENGINE)

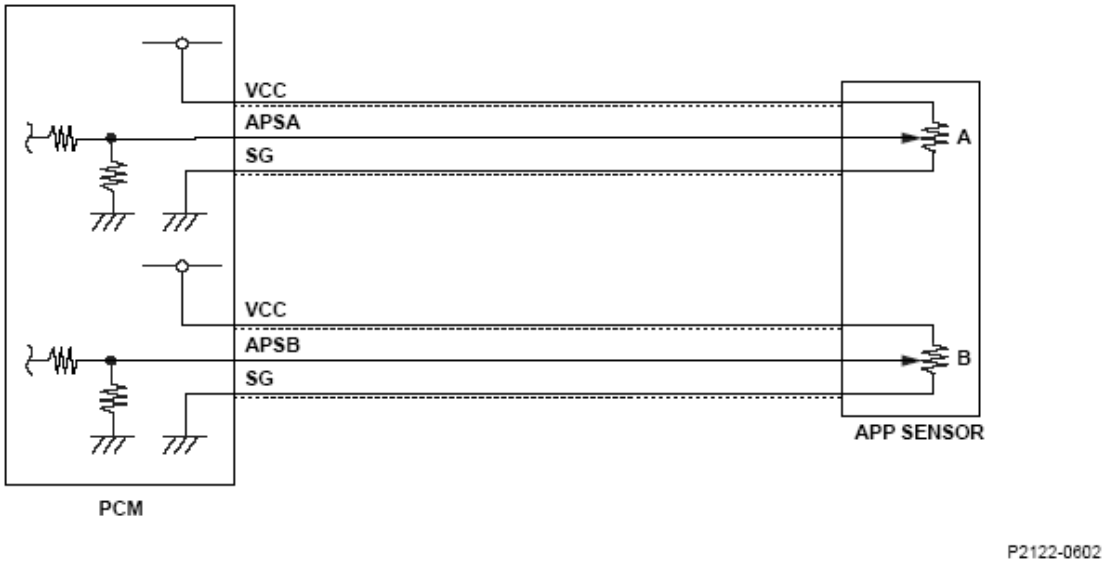


Fig. 582: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or more, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks

OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2122

Malfunction Threshold (R18A1 Engine)

The APP sensor A output voltage is 4.9 V or more for at least 0.2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2123 (20): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2123: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE INPUT (R18A4 ENGINE)

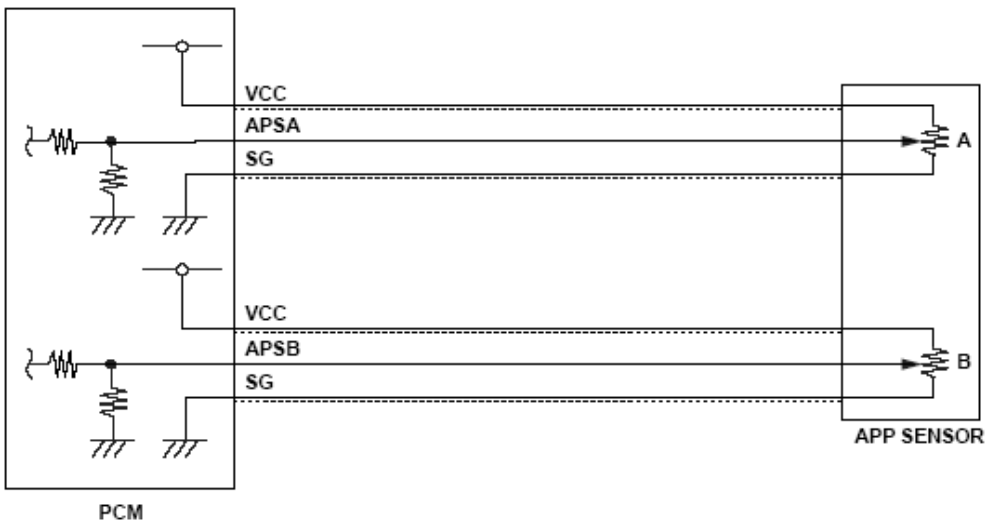


Fig. 583: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or more, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON, D indicator blinks
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2122

Malfunction Threshold (R18A4 Engine)

The APP sensor A output voltage is 4.9 V or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2123 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2123: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION

(TP) SENSOR D) CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

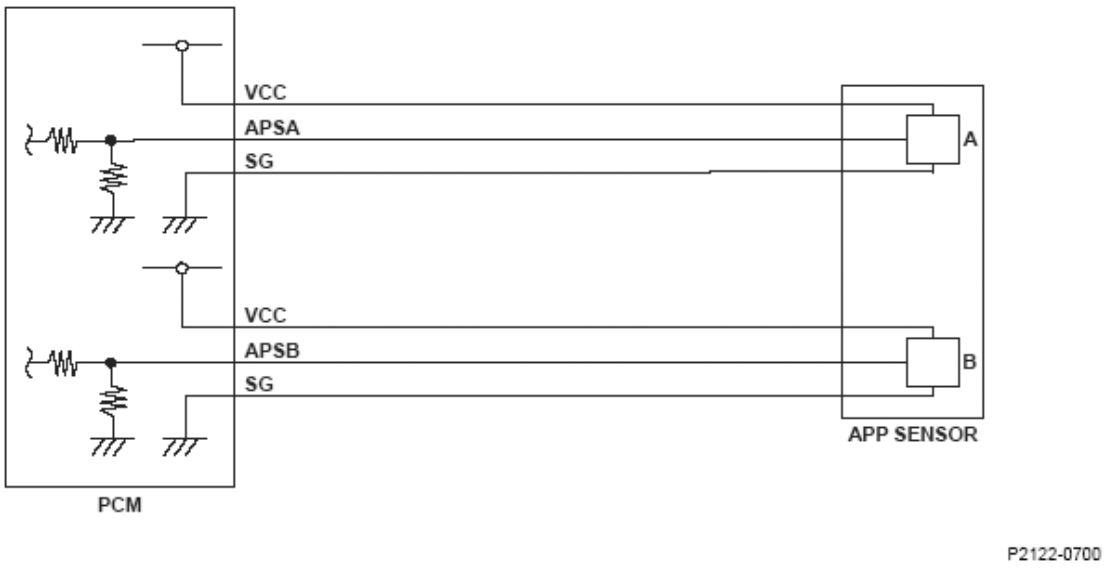


Fig. 584: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or more, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2122

Malfunction Threshold (K20Z3 Engine)

The APP sensor A output voltage is 4.9 V or more for at least 0.2 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2123 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2123: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION (TP) SENSOR D) CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

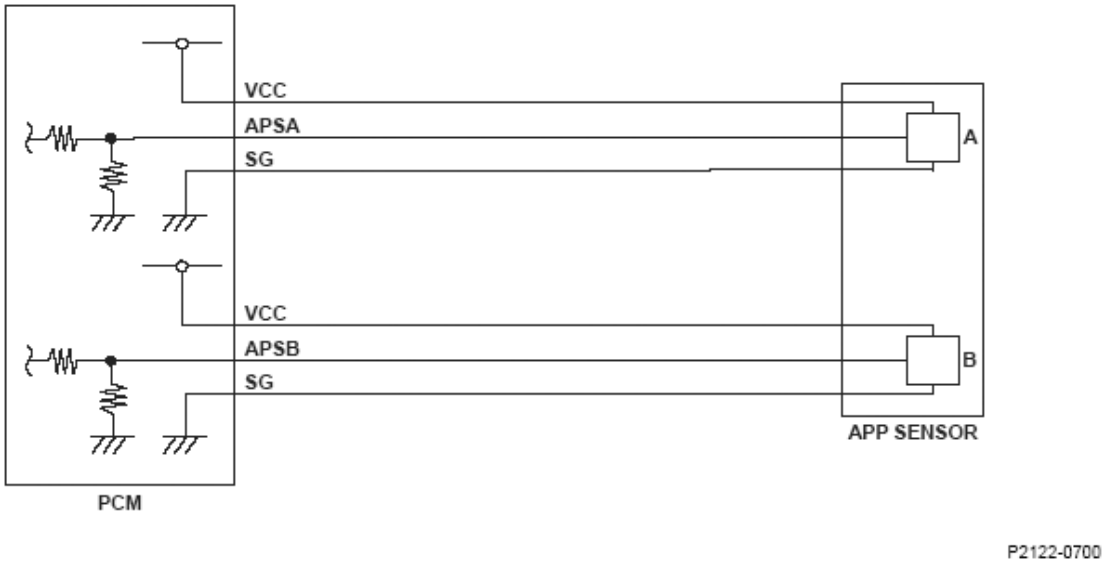


Fig. 585: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or more, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None

Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2122

Malfunction Threshold (R18A1 Engine)

The APP sensor A output voltage is 4.9 V or more for at least 0.2 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2123 (37) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2123: ACCELERATOR PEDAL POSITION (APP) SENSOR A (THROTTLE POSITION (TP) SENSOR D) CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

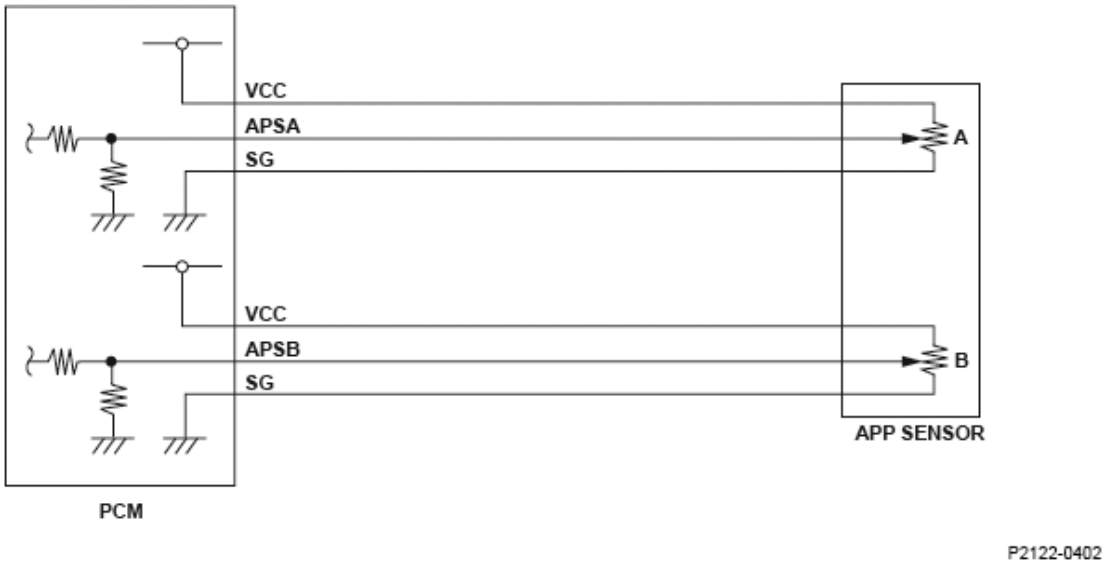


Fig. 586: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor A is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor A is a set value or more, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2122

Malfunction Threshold (R18A4 Engine)

The APP sensor A output voltage is 4.9 V or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2127 (37): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2127: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

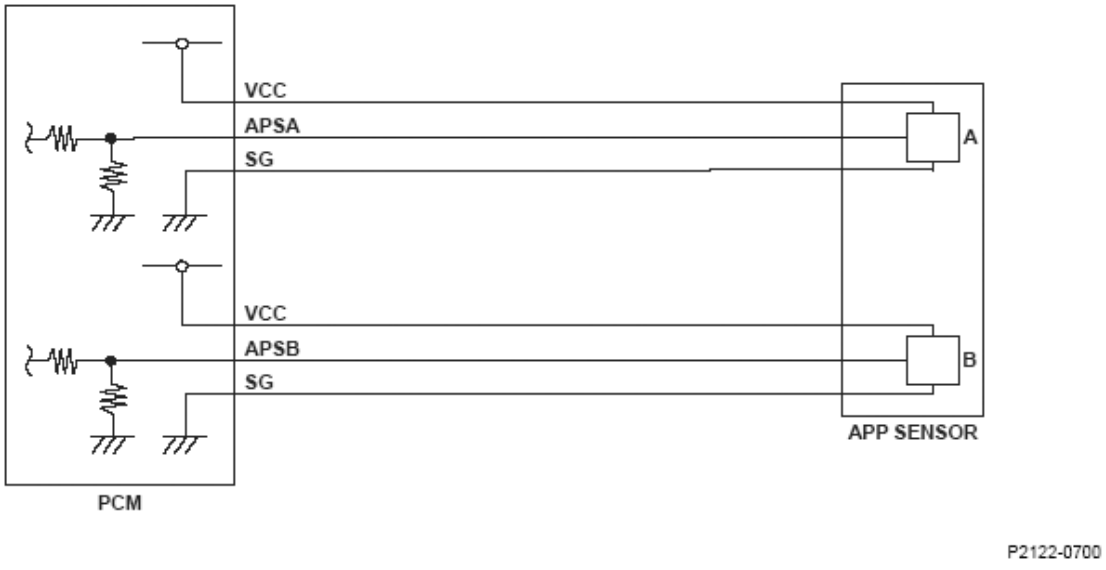


Fig. 587: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or less, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON

OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2128

Malfunction Threshold (K20Z3 Engine)

The APP sensor B output voltage is 0.2 V or less for at least 0.2 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2127 (37): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2127: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

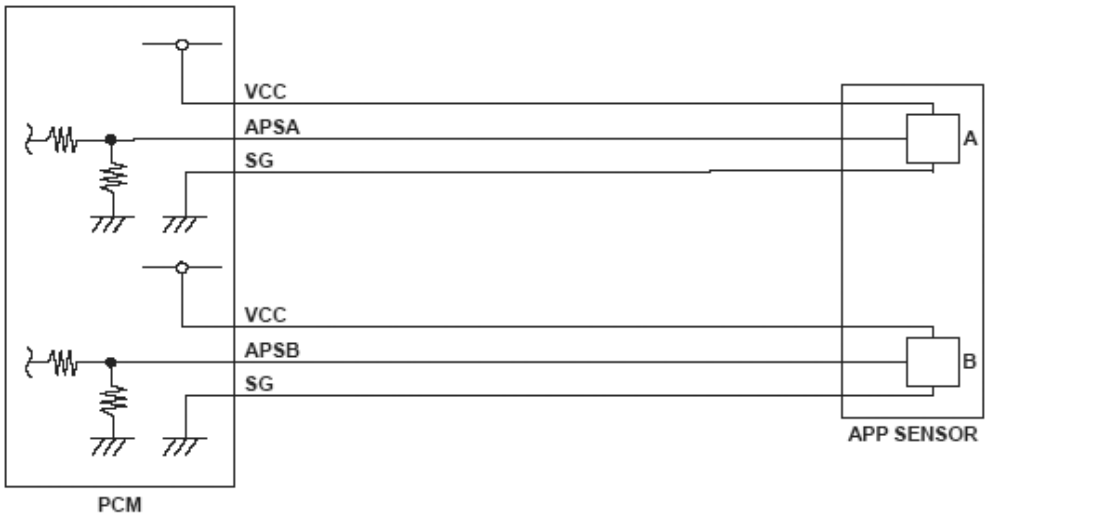


Fig. 588: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or less, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2128

Malfunction Threshold (R18A1 Engine)

The APP sensor B output voltage is 0.2 V or less for at least 0.2 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2127 (37): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2127: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

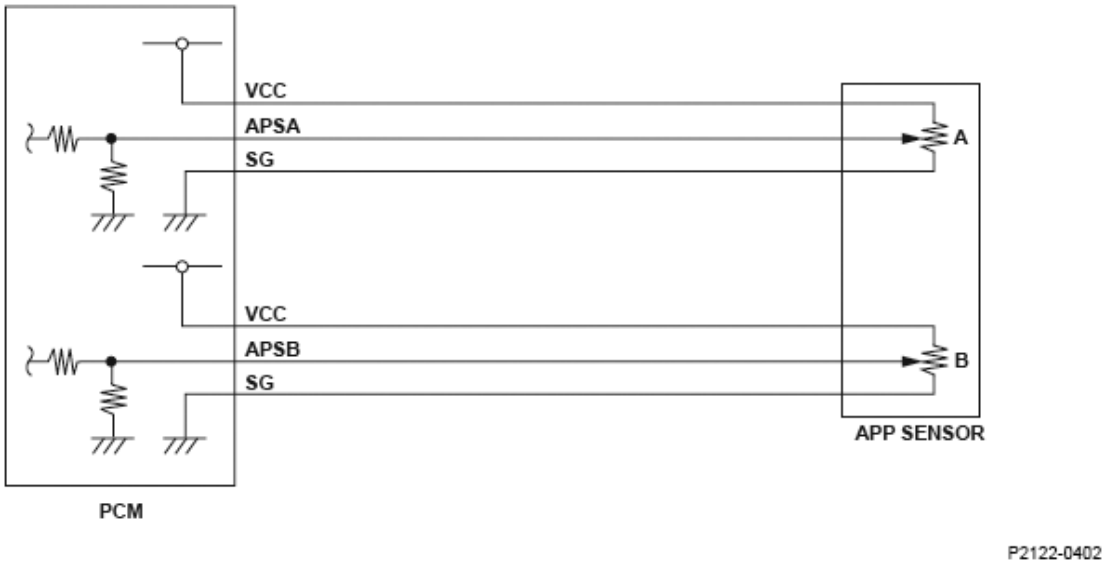


Fig. 589: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or less, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2128

Malfunction Threshold (R18A4 Engine)

The APP sensor B output voltage is 0.2 V or less for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2128 (37): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2128: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

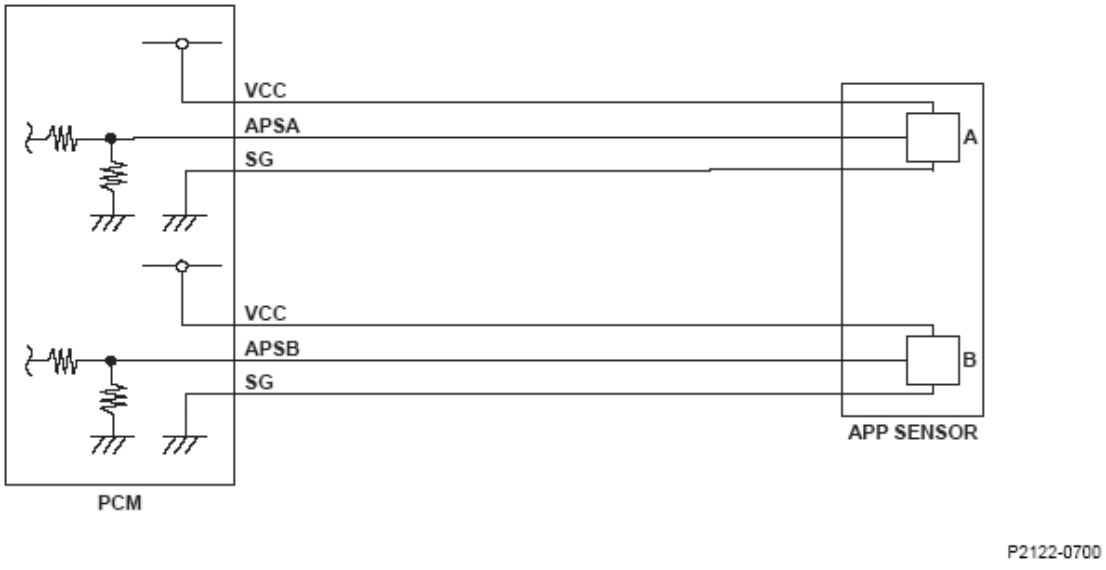


Fig. 590: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (K20Z3 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or more, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON

OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2127

Malfunction Threshold (K20Z3 Engine)

The APP sensor B output voltage is 4.0 V or more for at least 0.2 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2128 (37): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2128: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

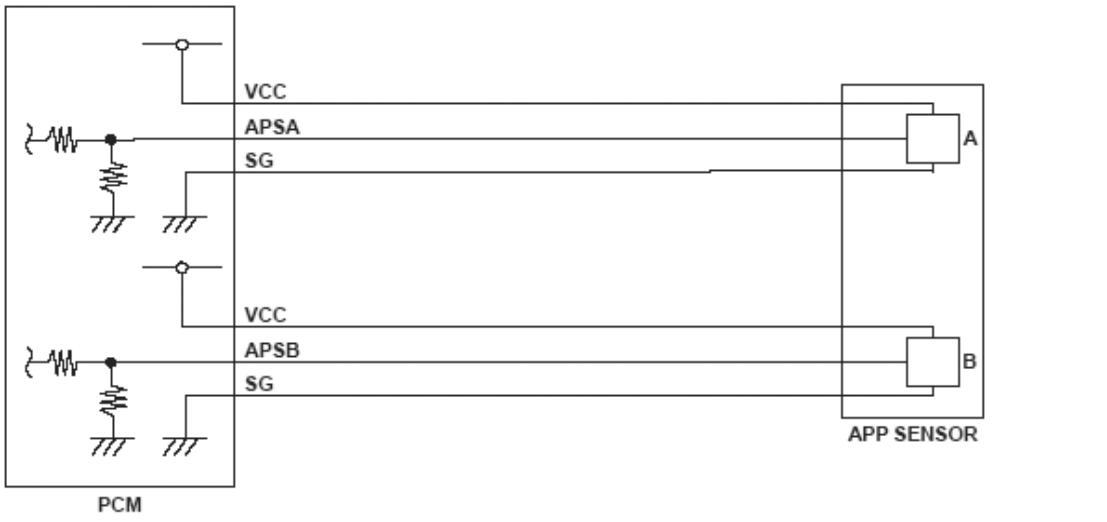


Fig. 591: Accelerator Pedal Position Sensor - Circuit Diagram

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the engine control module (ECM)/powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or more, the ECM/PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2127

Malfunction Threshold (R18A1 Engine)

The APP sensor B output voltage is 4.0 V or more for at least 0.2 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2128 (37): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2128: ACCELERATOR PEDAL POSITION (APP) SENSOR B (THROTTLE POSITION (TP) SENSOR E) CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

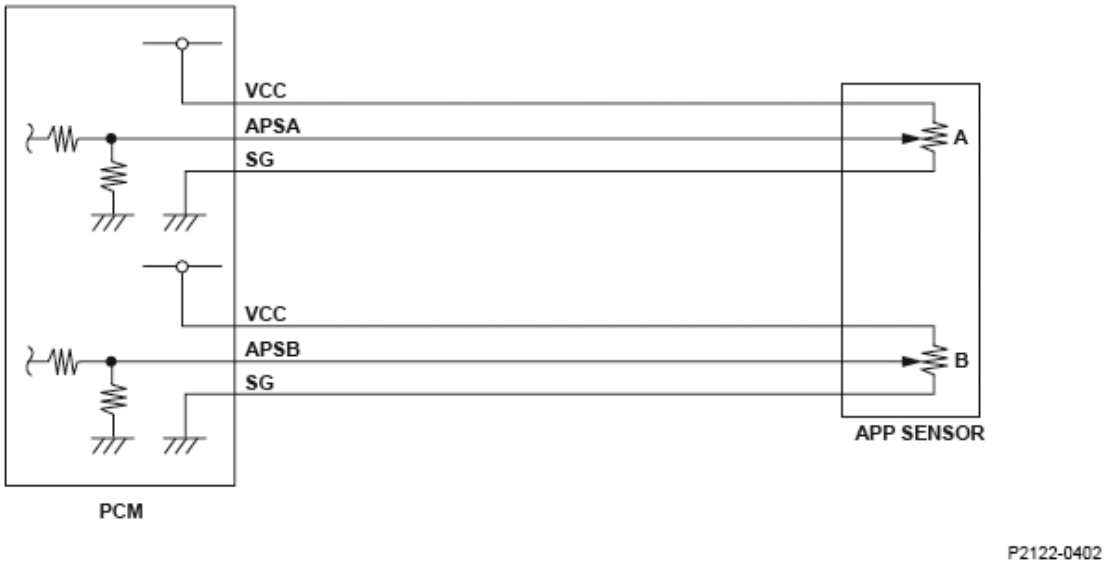


Fig. 592: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor B is a part of the electronic throttle control system (ETCS), and it is used to convert the position of the accelerator pedal into electrical signals. Based on these signals, the powertrain control module (PCM) controls the throttle actuator so that the throttle position agrees with the accelerator pedal position. If the signal voltage from APP sensor B is a set value or more, the PCM detects a malfunction and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
State of the engine	Running
No active DTCs	P2127

Malfunction Threshold (R18A4 Engine)

The APP sensor B output voltage is 4.0 V or more for at least 0.2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2135 (7): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2135: THROTTLE POSITION (TP) SENSOR A/B VOLTAGE INCORRECT CORRELATION (K20Z3 ENGINE)

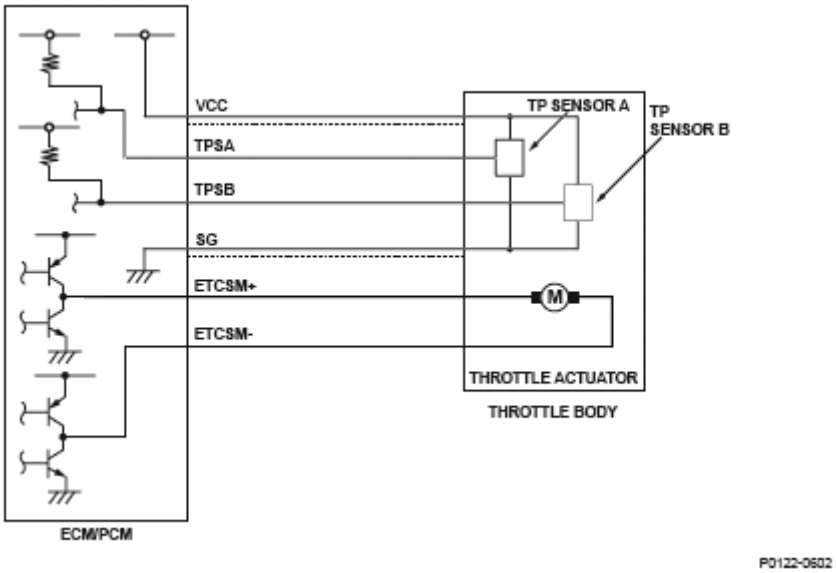


Fig. 593: Throttle Position (TP) Sensor - Circuit Diagram

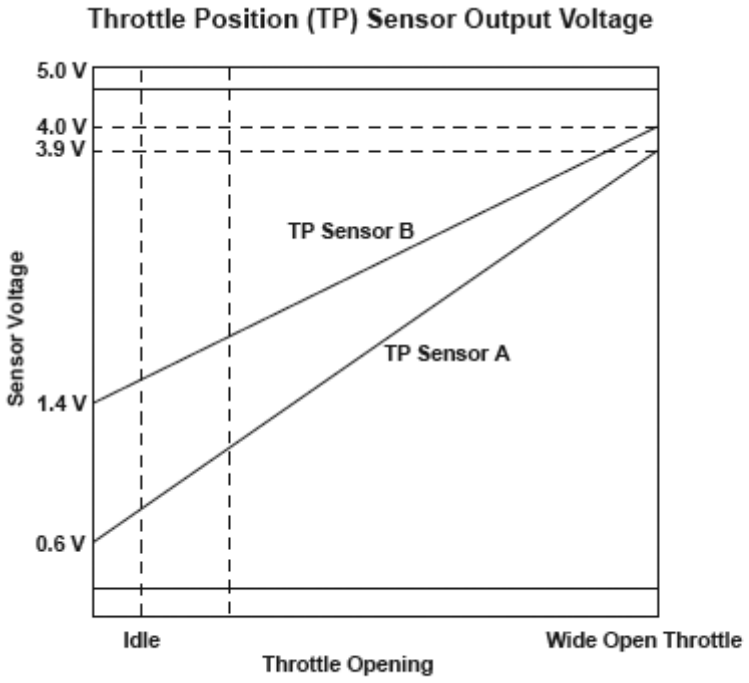


Fig. 594: Throttle Position (TP) Sensor Voltage - Graph

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The ECM/PCM compares the voltages and the throttle valve positions of TP sensor A and TP sensor B. If the difference of the voltages or the throttle valve positions is a certain value or less for a set time, the ECM/PCM detects a malfunction in the relationship between TP sensor A and TP sensor B, and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
TP sensor B voltage	-	2.3 V
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2176	
Other	After the throttle valve fully closed position registration is completed	

Malfunction Threshold (K20Z3 Engine)

One of these conditions must be met for at least 0.2 seconds.

- The difference between the TP sensor A voltage and the TP sensor B voltage is 200 mV (5°) or less.
- The difference between the throttle valve positions that TP sensor A and TP sensor B determined exceeds the value shown in this table.

MALFUNCTION THRESHOLD

Throttle valve position determined by TP sensor A	Difference between TP sensor A and TP sensor B
0°	1.8° or more
83.3°	14.7° or more

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2135 (7): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2135: THROTTLE POSITION (TP) SENSOR A/B VOLTAGE INCORRECT CORRELATION (R18A1 ENGINE)

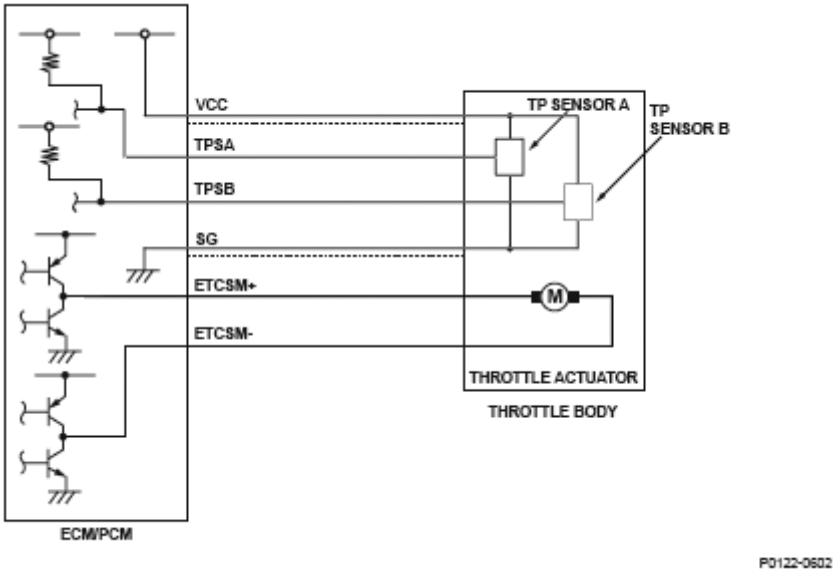


Fig. 595: Throttle Position (TP) Sensor - Circuit Diagram

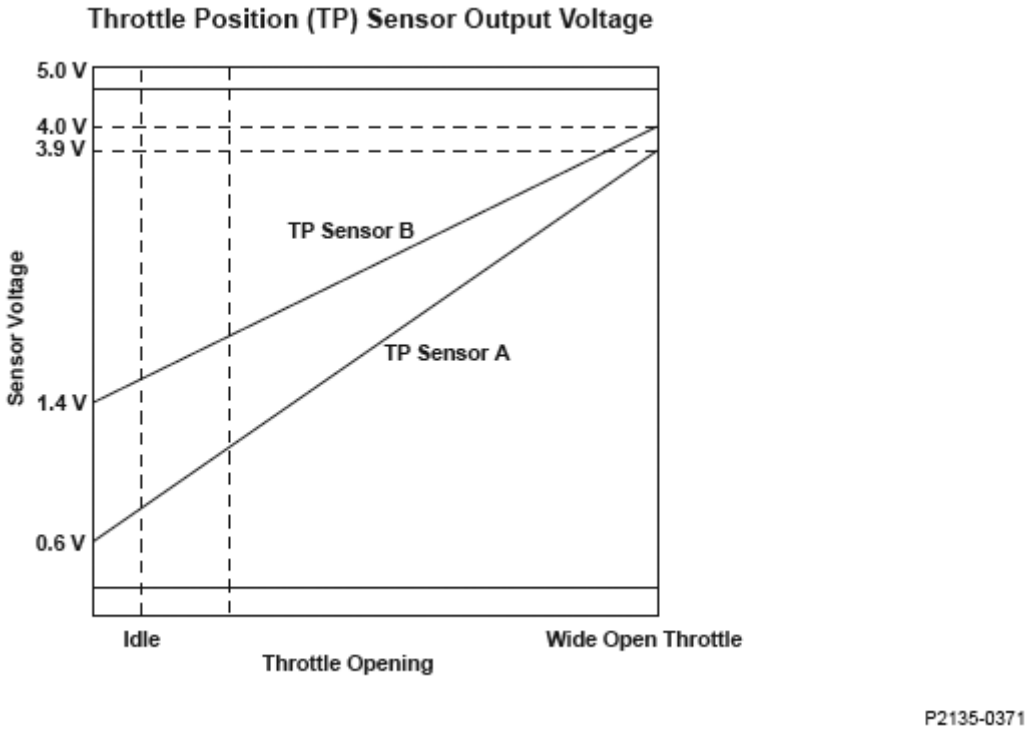


Fig. 596: Throttle Position (TP) Sensor Voltage - Graph

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position.

The ECM/PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The ECM/PCM compares the voltages and the throttle valve positions of TP sensor A and TP sensor B. If the difference of the voltages or the throttle valve positions is a certain value or less for a set time, the ECM/PCM detects a malfunction in the relationship between TP sensor A and TP sensor B, and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
TP sensor B voltage	-	2.3 V
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2176	
Other	After the throttle valve fully closed position registration is completed	

Malfunction Threshold (R18A1 Engine)

One of these conditions must be met for at least 0.2 seconds.

- The difference between the TP sensor A voltage and the TP sensor B voltage is 200 mV (5 °) or less.
- The difference between the throttle valve positions that TP sensor A and TP sensor B determined exceeds the value shown in this table.

MALFUNCTION THRESHOLD

Throttle valve position determined by TP sensor A	Difference between TP sensor A and TP sensor B
0°	1.8° or more
83.3°	14.7° or more

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2135 (7): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2135: THROTTLE POSITION (TP) SENSOR A/B VOLTAGE INCORRECT CORRELATION (R18A4 ENGINE)

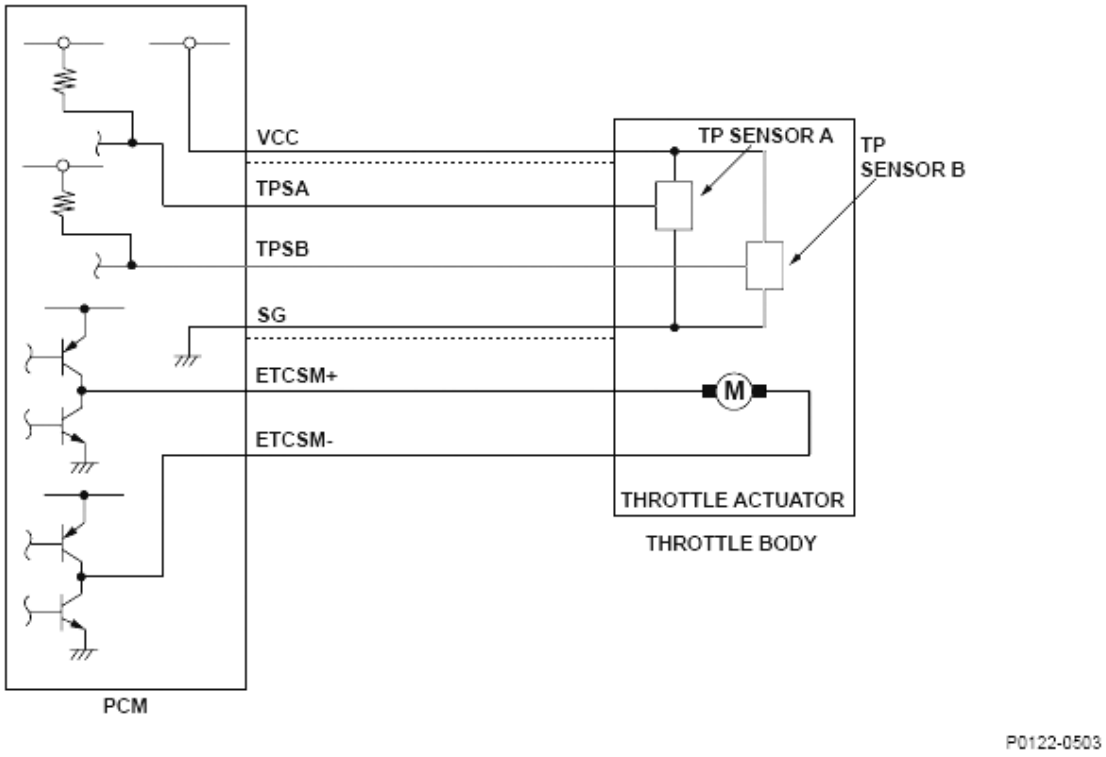


Fig. 597: Throttle Position (TP) Sensor A Circuit Low Voltage - Circuit Diagram

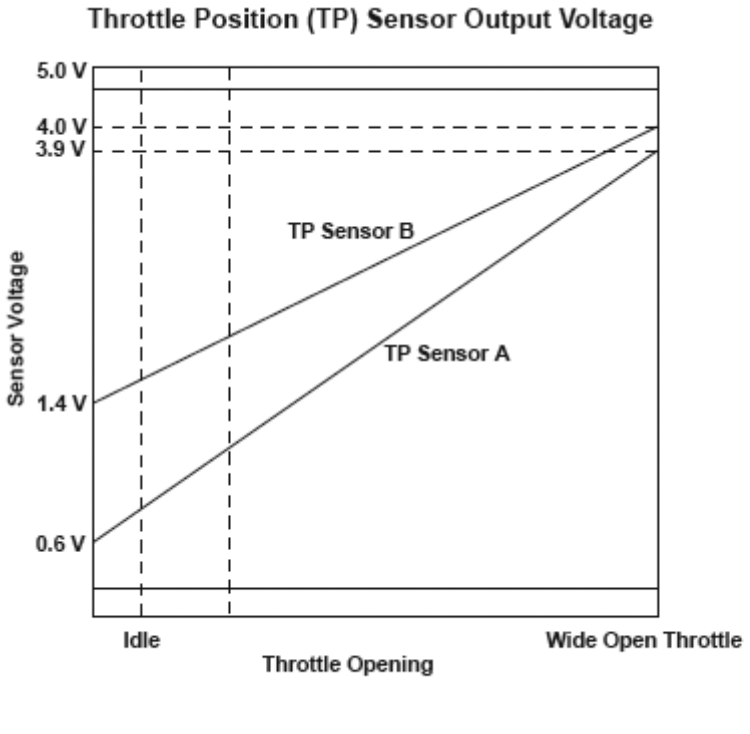


Fig. 598: Throttle Position (TP) Sensor Voltage - Graph

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position.

The PCM determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The PCM compares the voltages and the throttle valve positions of TP sensor A and TP sensor B. If the difference of the voltages or the throttle valve positions is a certain value or less for a set time, the PCM detects a malfunction in the relationship between TP sensor A and TP sensor B, and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
TP sensor B voltage	-	2.3 V
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2176	
Other	After the throttle valve fully closed position registration is completed	

Malfunction Threshold (R18A4 Engine)

One of these conditions must be met for at least 0.2 seconds.

- The difference between the TP sensor A voltage and the TP sensor B voltage is 200 mV (5°) or less.
- The difference between the throttle valve positions that TP sensor A and TP sensor B determined exceeds the value shown in this table.

MALFUNCTION THRESHOLD

Throttle valve position determined by TP sensor A	Difference between TP sensor A and TP sensor B
0°	1.8° or more
83.3°	14.7° or more

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2138 (37): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2138: ACCELERATOR PEDAL POSITION (APP) SENSOR A/B (THROTTLE POSITION (TP) SENSOR D/E) INCORRECT VOLTAGE CORRELATION (K20Z3 ENGINE)

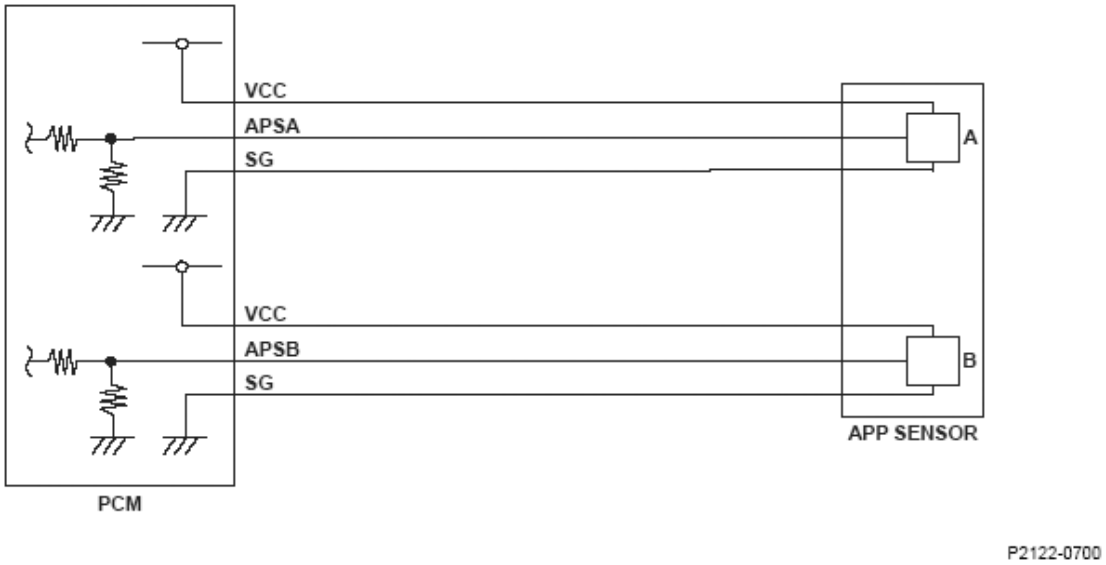


Fig. 599: Accelerator Pedal Position Sensor - Circuit Diagram

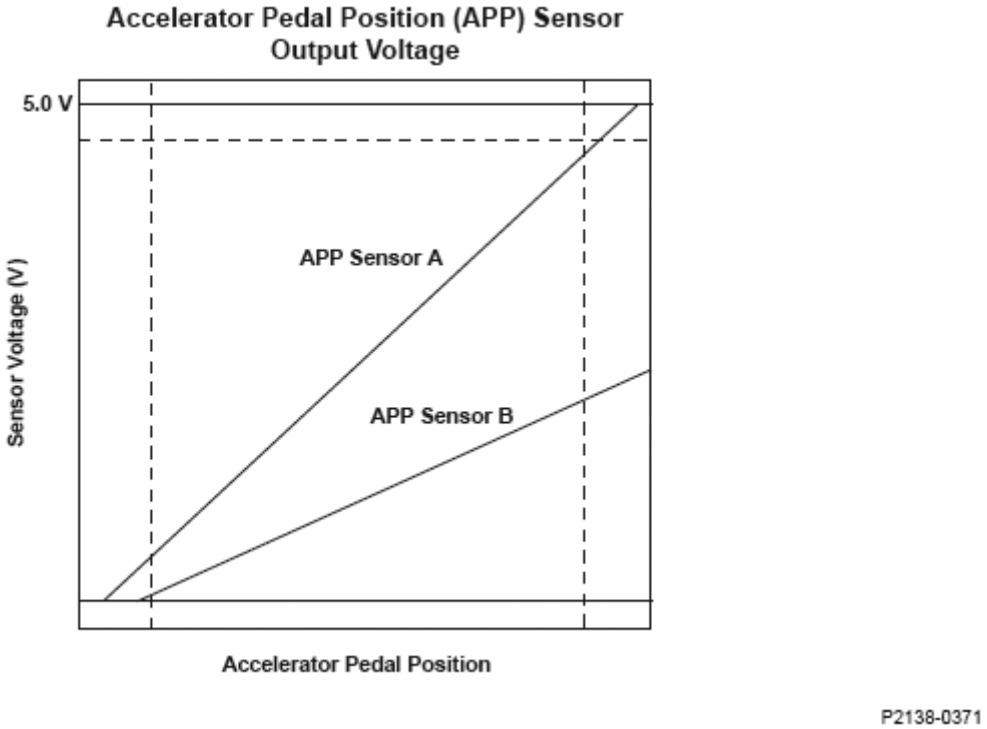


Fig. 600: Accelerator Pedal Position (APP) Sensor Voltage - Graph

General Description (K20Z3 Engine)

Accelerator pedal position (APP) sensor A and accelerator pedal position (APP) sensor B are potentiometers, and they are installed in the engine compartment.

APP sensors A and B are operated via the throttle linkage to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in APP sensors A and B and transmitted to the engine control module (ECM)/powertrain control module (PCM) to compute the target position. The target position signal is then transmitted to the throttle actuator control

module.

APP sensor A is for the primary control, and APP sensor B is a back-up of APP sensor A in case it malfunctions. Both sensors compare their output voltage to each other for malfunction detection.

When the voltage difference of APP sensor B is out of a fixed range for a set time, the ECM/PCM detects a malfunction, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.3 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2122, P2123, P2127, P2128

Malfunction Threshold (K20Z3 Engine)

One of these conditions must be met for at least 0.3 second.

- If the APP sensor B voltage exceeds the range from 0 V or less to 0.361 V or more when the APP sensor A voltage is 0.361 V.
- If the APP sensor B voltage exceeds the range from 2.319 V or less to 2.681 V or more when the APP sensor A voltage is 4.995 V.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2138 (37): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2138: ACCELERATOR PEDAL POSITION (APP) SENSOR A/B (THROTTLE POSITION (TP) SENSOR D/E) INCORRECT VOLTAGE CORRELATION (R18A1 ENGINE)

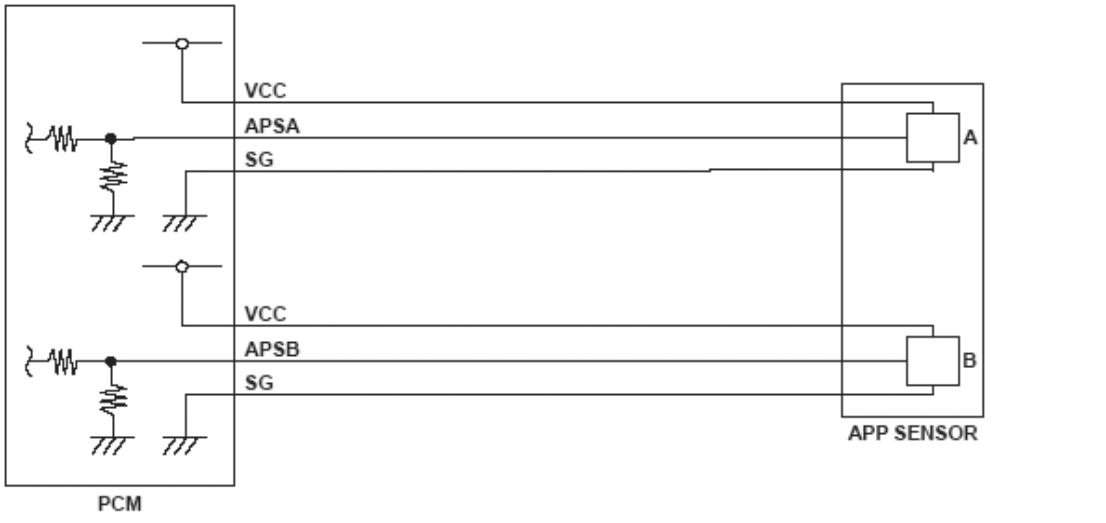


Fig. 601: Accelerator Pedal Position Sensor - Circuit Diagram

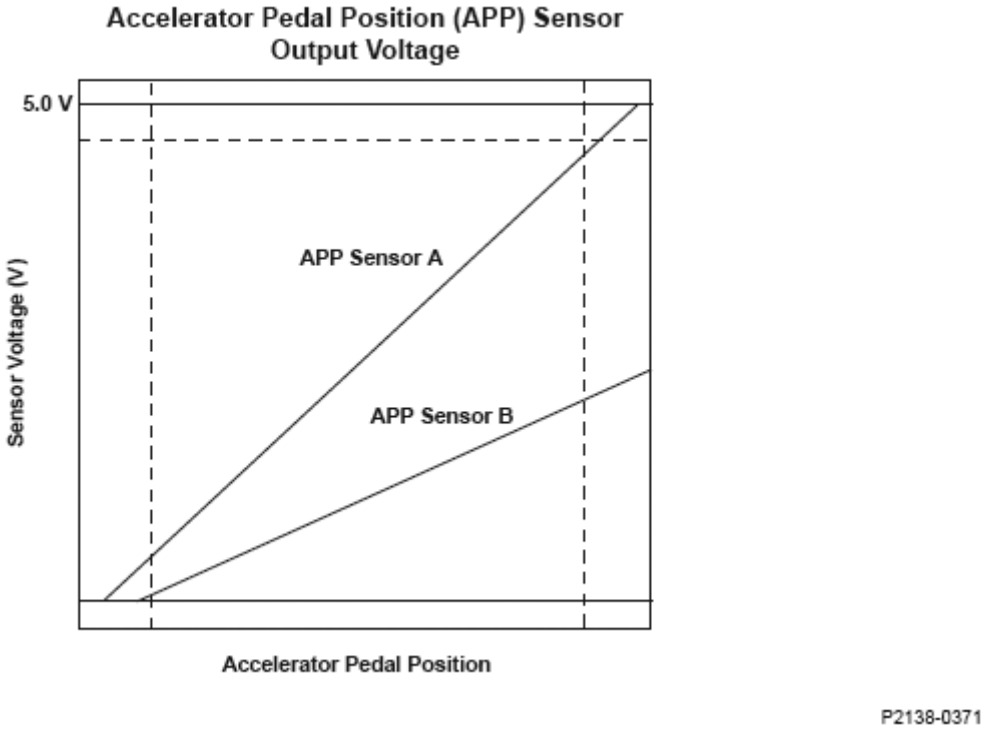


Fig. 602: Accelerator Pedal Position (APP) Sensor Voltage - Graph

General Description (R18A1 Engine)

Accelerator pedal position (APP) sensor A and accelerator pedal position (APP) sensor B are potentiometers, and they are installed in the engine compartment.

APP sensors A and B are operated via the throttle linkage to determine the accelerator opening value when

the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in APP sensors A and B and transmitted to the engine control module (ECM)/powertrain control module (PCM) to compute the target position. The target position signal is then transmitted to the throttle actuator control module.

APP sensor A is for the primary control, and APP sensor B is a back-up of APP sensor A in case it malfunctions. Both sensors compare their output voltage to each other for malfunction detection.

When the voltage difference of APP sensor B is out of a fixed range for a set time, the ECM/PCM detects a malfunction, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.3 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2122, P2123, P2127, P2128

Malfunction Threshold (R18A1 Engine)

One of these conditions must be met for at least 0.3 second.

- If the APP sensor B voltage exceeds the range from 0 V or less to 0.361 V or more when the APP sensor A voltage is 0.361 V.
- If the APP sensor B voltage exceeds the range from 2.319 V or less to 2.681 V or more when the APP sensor A voltage is 4.995 V.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2138 (37): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2138: ACCELERATOR PEDAL POSITION (APP) SENSOR A/B (THROTTLE POSITION (TP) SENSOR D/E) INCORRECT VOLTAGE CORRELATION (R18A4 ENGINE)

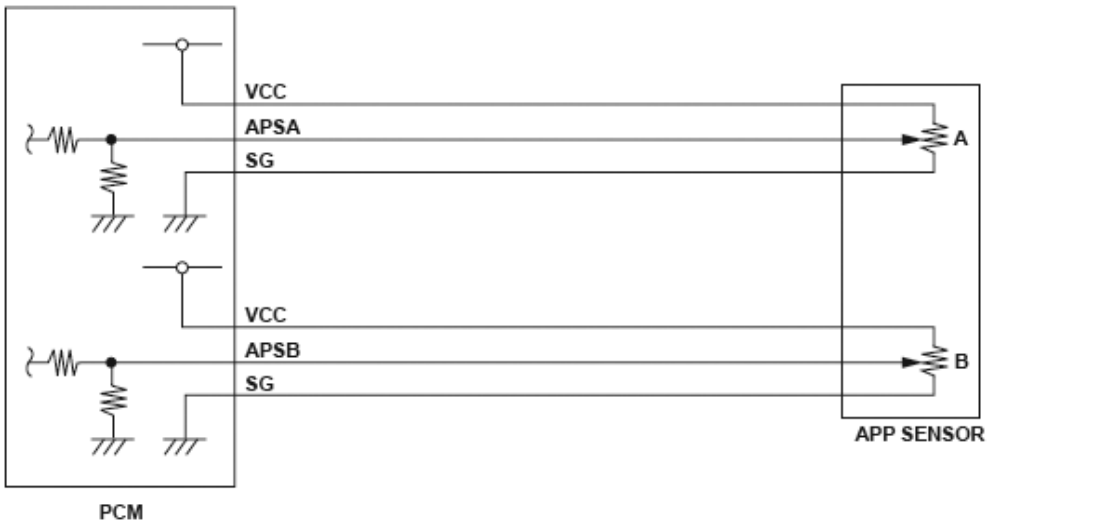


Fig. 603: Accelerator Pedal Position (APP) Sensor - Circuit Diagram

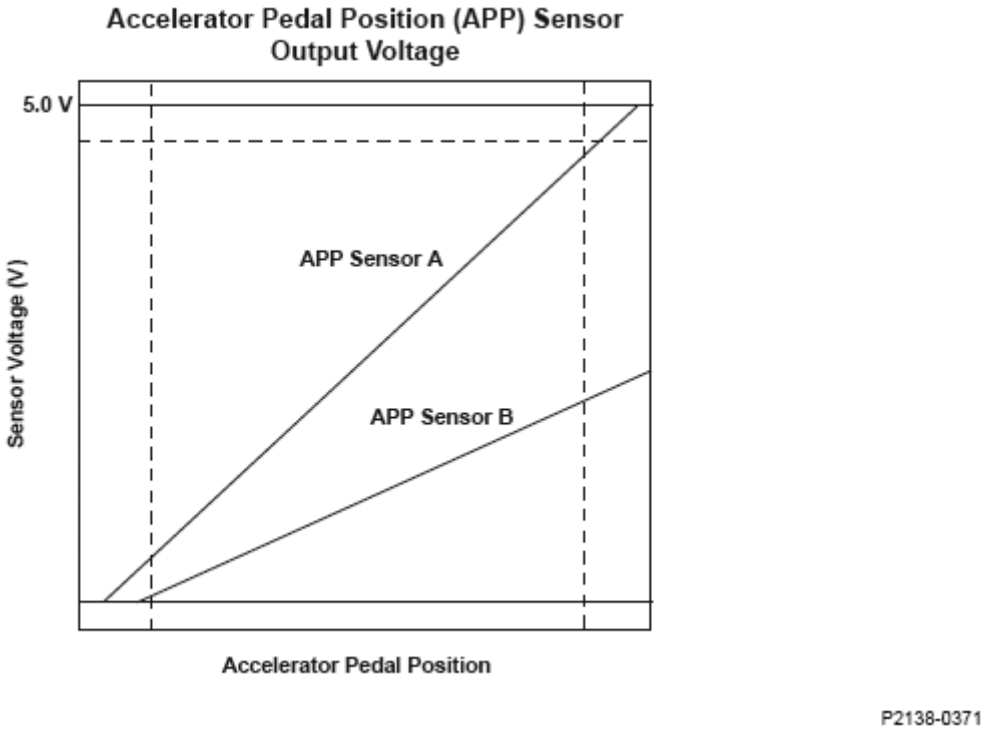


Fig. 604: Accelerator Pedal Position (APP) Sensor Voltage - Graph

General Description (R18A4 Engine)

Accelerator pedal position (APP) sensor A and accelerator pedal position (APP) sensor B are potentiometers, and they are installed in the engine compartment. These sensor output voltages differ from

each other.

APP sensors A and B are operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in APP sensors A and B and transmitted to the powertrain control module (PCM) to compute the target position. The target position signal is then transmitted to the throttle actuator control module.

APP sensor A is for the primary control, and APP sensor B is a back-up of APP sensor A in case it malfunctions. Both sensors compare their output voltage to each other for malfunction detection.

When the voltage difference of APP sensor B is out of a fixed range for a set time, the PCM detects a malfunction, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.3 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2122, P2123, P2127, P2128

Malfunction Threshold (R18A4 Engine)

One of these conditions must be met for at least 0.3 seconds.

- If the APP sensor B voltage exceeds the range from 0 V or less to 0.361 V or more when the APP sensor A voltage is 0.361 V.
- If the APP sensor B voltage exceeds the range from 2.319 V or less to 2.681 V or more when the APP sensor A voltage is 4.995 V.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2176 (40): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED (K20Z3 ENGINE)

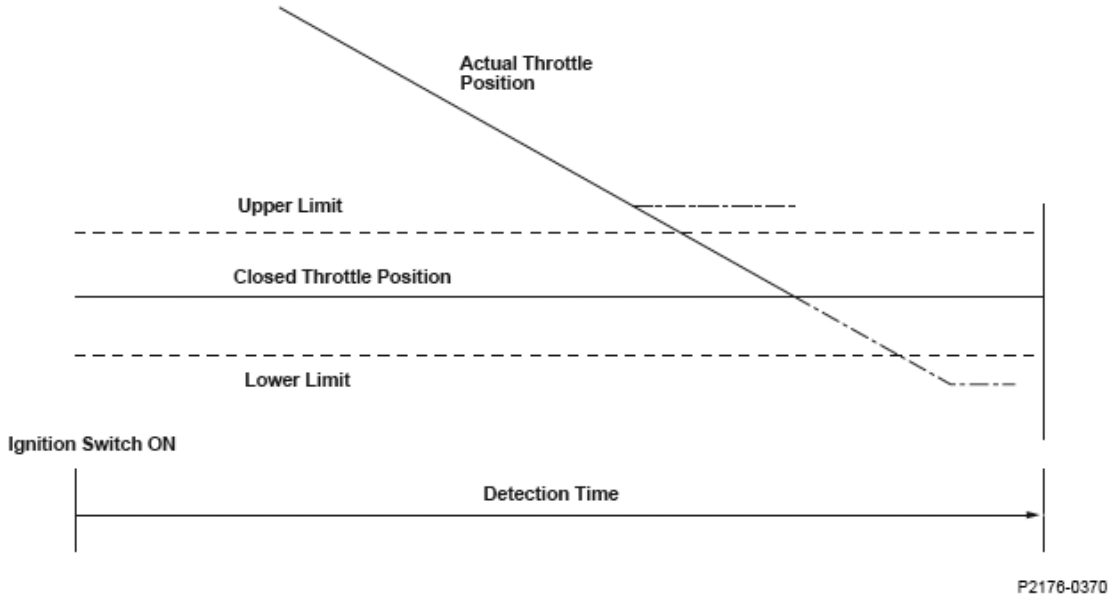


Fig. 605: Identifying Throttle Actuator Control System Idle Position

General Description (K20Z3 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position. The target position signal is then transmitted to the throttle actuator control module.

The throttle actuator control module determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The throttle actuator control module transmits a signal to the throttle actuator and moves the throttle valve to the fully closed position to register the throttle valve fully closed position after the ignition switch is turned ON.

The throttle actuator control module detects the malfunction of the throttle actuator control system, and it transmits a malfunction signal to the ECM/PCM when the registration of the throttle valve fully closed position is not completed within a predetermined time or the registered value is out of predetermined range

after the ignition switch is turned ON. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle actuator control system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	0.7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2135	
Other	Engine is stopped and ignition switch is not in the ON position	

Malfunction Threshold (K20Z3 Engine)

One of these conditions must be met for at least 0.7 seconds.

- The registration of the throttle valve fully closed position is not completed within a predetermined time after the ignition switch is turned ON.
- The registered value of the throttle valve fully closed position is 0.74 V*1 , 1.61 V*2 , or more, or 0.49 V*1 , 1.37 V*2 , or less.

*1: TP sensor A

*2: TP sensor B

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2176 (40): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED (R18A1 ENGINE)

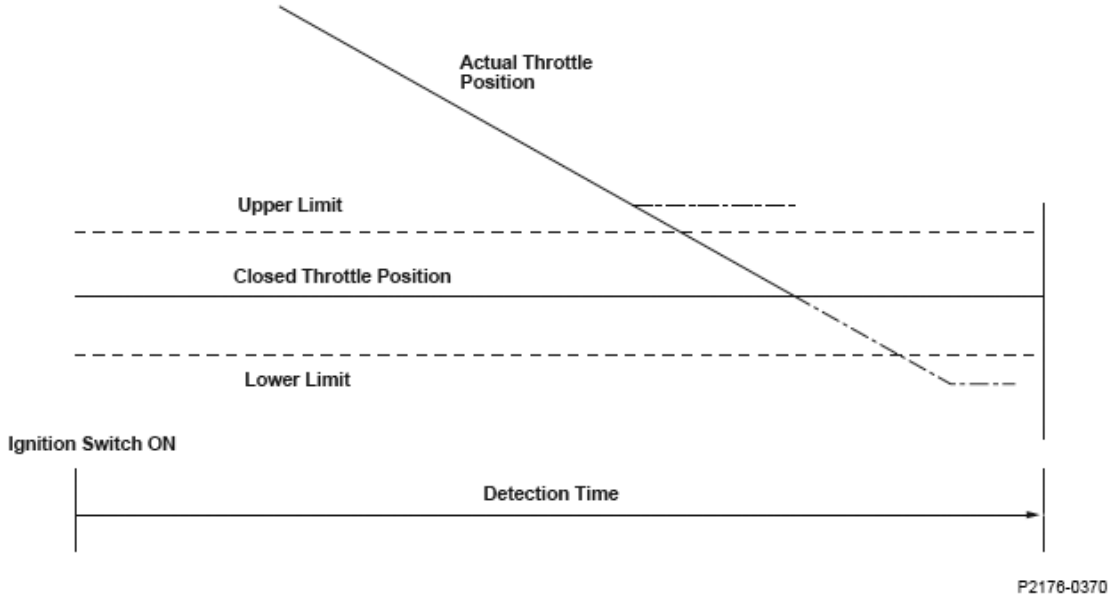


Fig. 606: Identifying Throttle Actuator Control System Idle Position

General Description (R18A1 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the engine control module (ECM)/powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the ECM/PCM to compute the target position. The target position signal is then transmitted to the throttle actuator control module.

The throttle actuator control module determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The throttle actuator control module transmits a signal to the throttle actuator and moves the throttle valve to the fully closed position to register the throttle valve fully closed position after the ignition switch is turned ON.

The throttle actuator control module detects the malfunction of the throttle actuator control system, and it transmits a malfunction signal to the ECM/PCM when the registration of the throttle valve fully closed position is not completed within a predetermined time or the registered value is out of predetermined range after the ignition switch is turned ON. When the ECM/PCM receives the malfunction data from the throttle actuator control module, the ECM/PCM detects a malfunction in the throttle actuator control system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	0.7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2135	
Other	Engine is stopped and ignition switch is not in the ON position	

Malfunction Threshold (R18A1 Engine)

One of these conditions must be met for at least 0.7 seconds.

- The registration of the throttle valve fully closed position is not completed within a predetermined time after the ignition switch is turned ON.
- The registered value of the throttle valve fully closed position is 0.74 V^{*1} , 1.61 V^{*2} , or more, or 0.49 V^{*1} , 1.37 V^{*2} , or less.

*1: TP sensor A

*2: TP sensor B

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2176 (40): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED (R18A4 ENGINE)

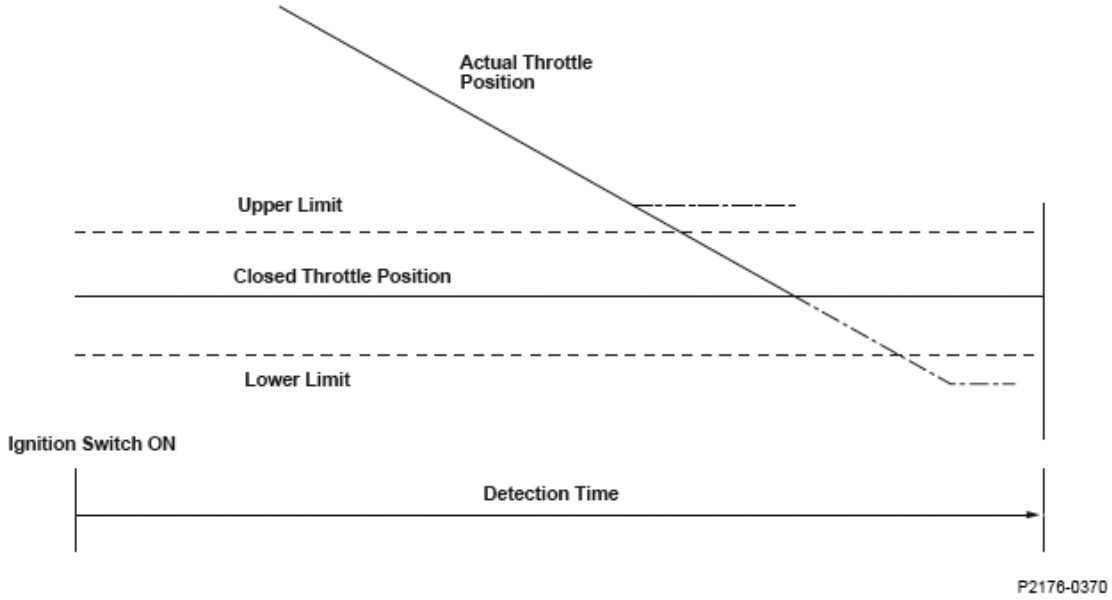


Fig. 607: Identifying Throttle Actuator Control System Idle Position

General Description (R18A4 Engine)

The electronic throttle control system (ETCS) controls the throttle valve opening. The system is composed of the throttle actuator, the throttle valve, throttle position (TP) sensors A and B, the throttle actuator control module, the throttle actuator control module relay, the accelerator pedal position (APP) sensor, and the powertrain control module (PCM).

The APP sensor is operated via the throttle cable to determine the accelerator opening value when the driver presses the accelerator pedal. The accelerator pedal opening value is converted to a signal in the APP sensor and transmitted to the PCM to compute the target position. The target position signal is then transmitted to the throttle actuator control module.

The throttle actuator control module determines the throttle valve target position according to the signal received and operates the throttle actuator to move the throttle valve to the target position. The actual throttle valve position is determined by TP sensor A installed in the throttle body.

The throttle actuator control module transmits a signal to the throttle actuator and moves the throttle valve to the fully closed position to register the throttle valve fully closed position after the ignition switch is turned ON.

The throttle actuator control module detects the malfunction of the throttle actuator control system, and it transmits a malfunction signal to the PCM when the registration of the throttle valve fully closed position is not completed within a predetermined time or the registered value is out of predetermined range after the ignition switch is turned ON. When the PCM receives the malfunction data from the throttle actuator control module, the PCM detects a malfunction in the throttle actuator control system and stores a DTC.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	0.7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	6.0 V	-
Ignition switch	ON	
No active DTCs	P0122, P0123, P0222, P0223, P2101, P2118, P2135	
Other	Engine is stopped and ignition switch is not in the ON position	

Malfunction Threshold (R18A4 Engine)

One of these conditions must be met for at least 0.7 seconds.

- The registration of the throttle valve fully closed position is not completed within a predetermined time after the ignition switch is turned ON.
- The registered value of the throttle valve fully closed position is 0.74 V^{*1} , 1.61 V^{*2} , or more, or 0.49 V^{*1} , 1.37 V^{*2} , or less.

*1: TP sensor A

*2: TP sensor B

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2183 (192): ADVANCED DIAGNOSTICS (M/T)

DTC P2183: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM (M/T)

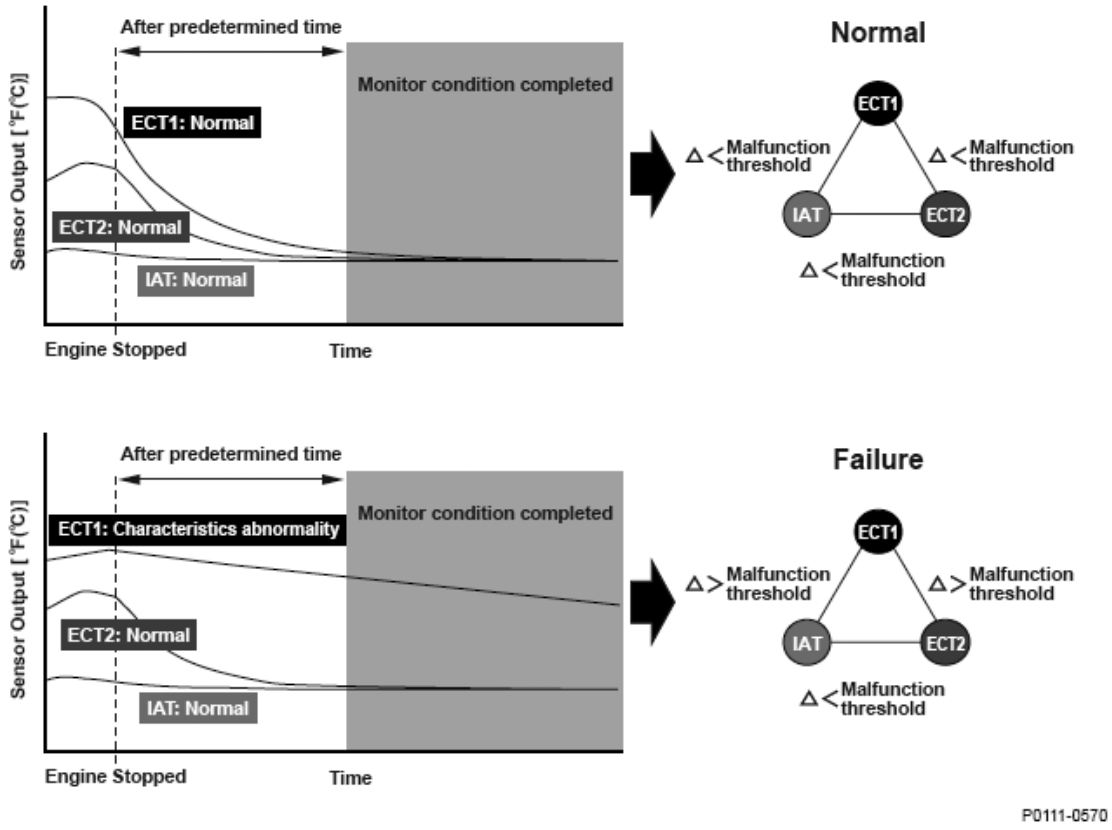


Fig. 608: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (M/T)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature.

When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine off time	6 hours	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2184, P2185, P2610	

Malfunction Threshold (M/T)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)*1 , 59°F (33°C)*2 or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)*1 , 36°F (20°C)*2 or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)*1 , 66°F (37°C)*2 or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (M/T)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2183 (192): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2183: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

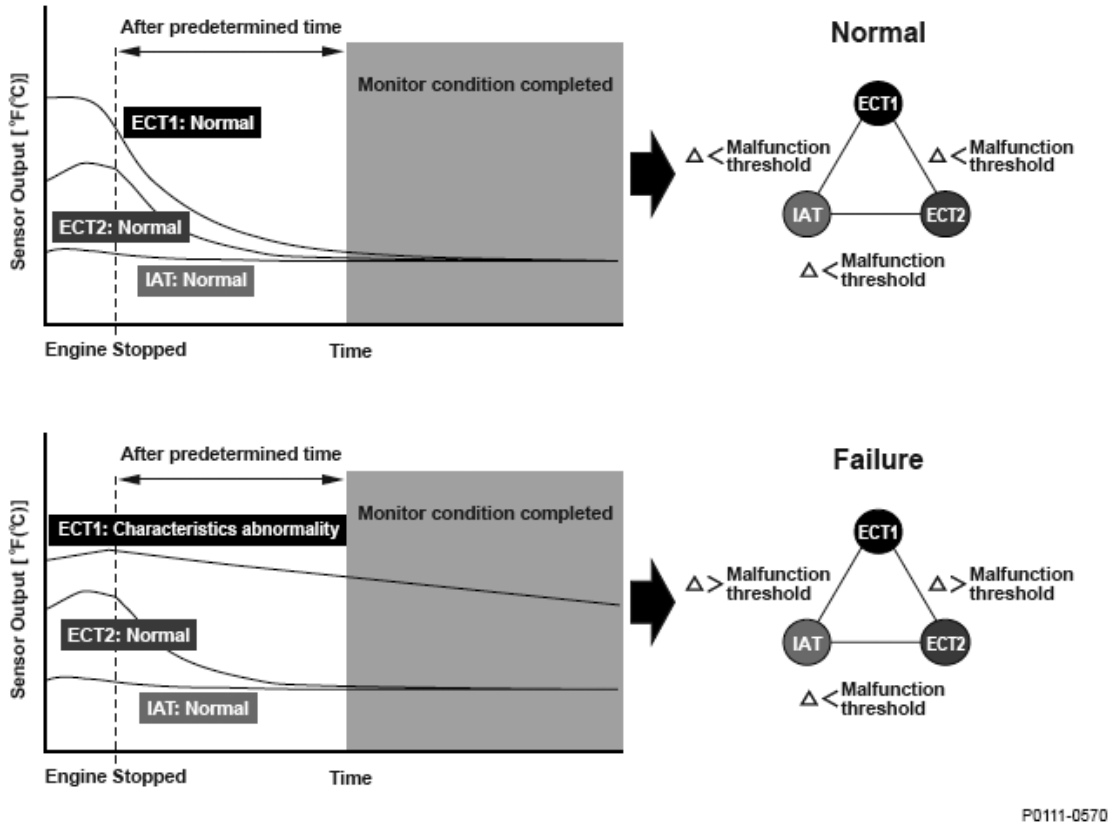


Fig. 609: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A1 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the engine control module (ECM)/powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature.

When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine off time	6 hours	-
No active DTCs	P0111, P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2184, P2185, P2610	

Malfunction Threshold (R18A1 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours:

- When the temperature difference between the IAT and ECT1 is 81°F (45°C)[*1] , 59°F (33°C)6[*2] or more.
- When the temperature difference between the IAT and ECT2 is 45°F (25°C)[*1] , 36°F (20°C)[*2] or more.
- When the temperature difference between the ECT2 and ECT1 is 90°F (50°C)[*1] , 66°F (37°C)[*2] or more.

*1: R18A1 engine

*2: K20Z3 engine

Driving Pattern (R18A1 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2183 (192): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2183: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

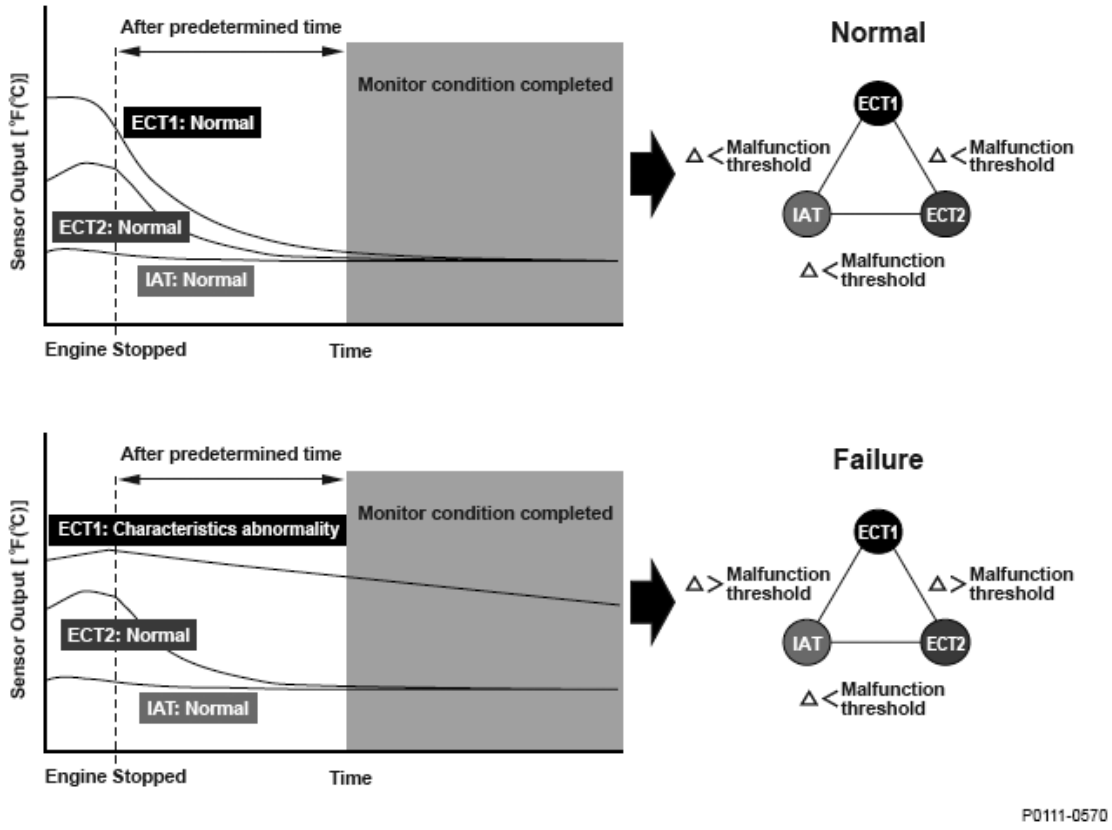


Fig. 610: Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem - Graph

General Description (R18A4 Engine)

Two engine coolant temperature sensors and one intake air temperature sensor are used by the powertrain control module (PCM).

When the engine is stopped and enough time has passed, the temperature of the engine will equal the ambient temperature.

When an inappropriate temperature is detected after comparing the temperature readings of each sensor, a malfunction in the corresponding sensor is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	10 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Engine off time	6 hours	-
No active DTCs	P0112, P0113, P0116, P0117, P0118, P0125, P1116, P2183, P2184, P2185, P2610	

Malfunction Threshold (R18A4 Engine)

A malfunction is detected if these three conditions are present after the engine and the ignition switch have been off for at least 6 hours before restarting the engine.

- When the temperature difference between the IAT and ECT1 is 81°F (45°C) or more.
- . When the temperature difference between the IAT and ECT2 is 45°F (25°C) or more.
- . When the temperature difference between the ECT2 and ECT1 is 90°F (50°C) or more.

Driving Pattern (R18A4 Engine)

1. Turn the ignition off, and wait at least 6 hours.
2. Start the engine, and let it idle for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2184 (192): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2184: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

Fig. 611: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

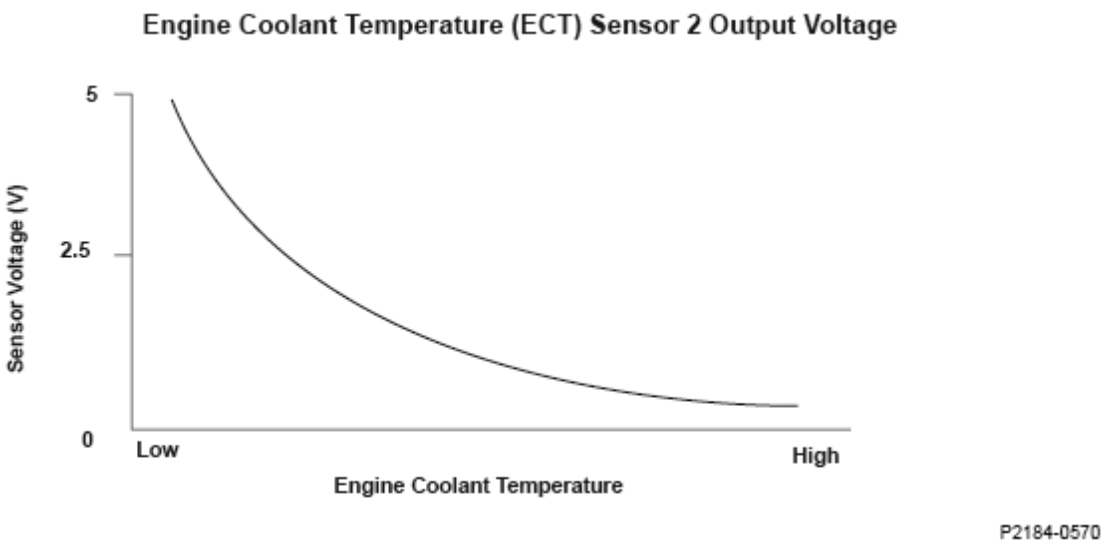


Fig. 612: Engine Coolant Temperature Sensor Voltage - Graph

General Description (K20Z3 Engine)

The engine coolant temperature (ECT) sensor 2 is a thermistor attached to the radiator. The ECM/PCM applies voltage (about 5 V) to the ECT2 signal circuit through a pull up resistor. As the engine coolant temperature cools, ECT sensor 2 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the ECM/PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is less than a set value when the engine coolant temperature is high, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2185

Malfunction Threshold (K20Z3 Engine)

The ECT sensor 2 output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2184 (192): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2184: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

Fig. 613: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

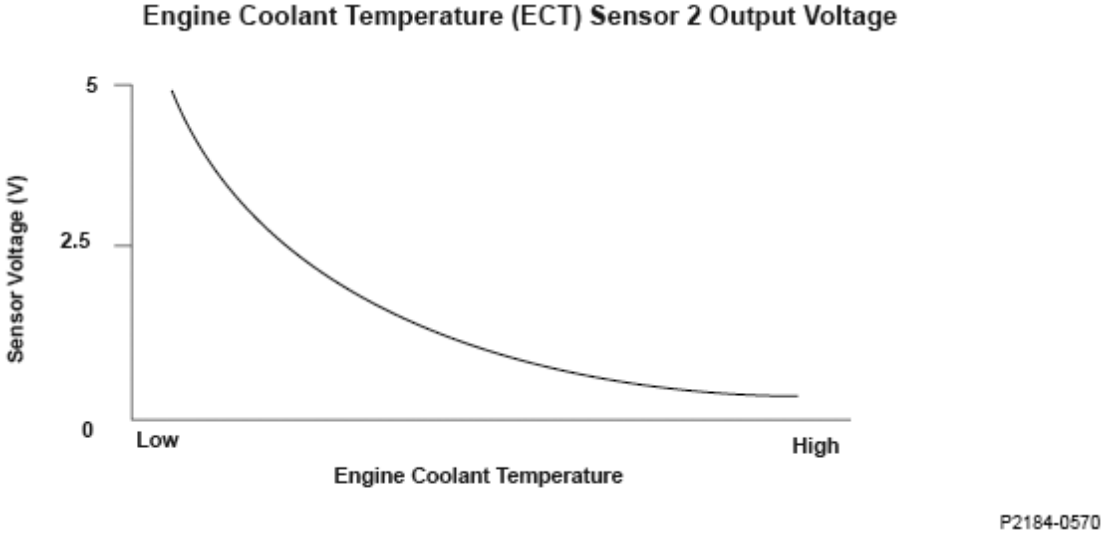


Fig. 614: Engine Coolant Temperature Sensor Voltage - Graph

General Description (R18A1 Engine)

The engine coolant temperature (ECT) sensor 2 is a thermistor attached to the radiator. The ECM/PCM applies voltage (about 5 V) to the ECT2 signal circuit through a pull up resistor. As the engine coolant

temperature cools, ECT sensor 2 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the ECM/PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is less than a set value when the engine coolant temperature is high, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2185

Malfunction Threshold (R18A1 Engine)

The ECT sensor 2 output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2184 (192): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2184: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

Fig. 615: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

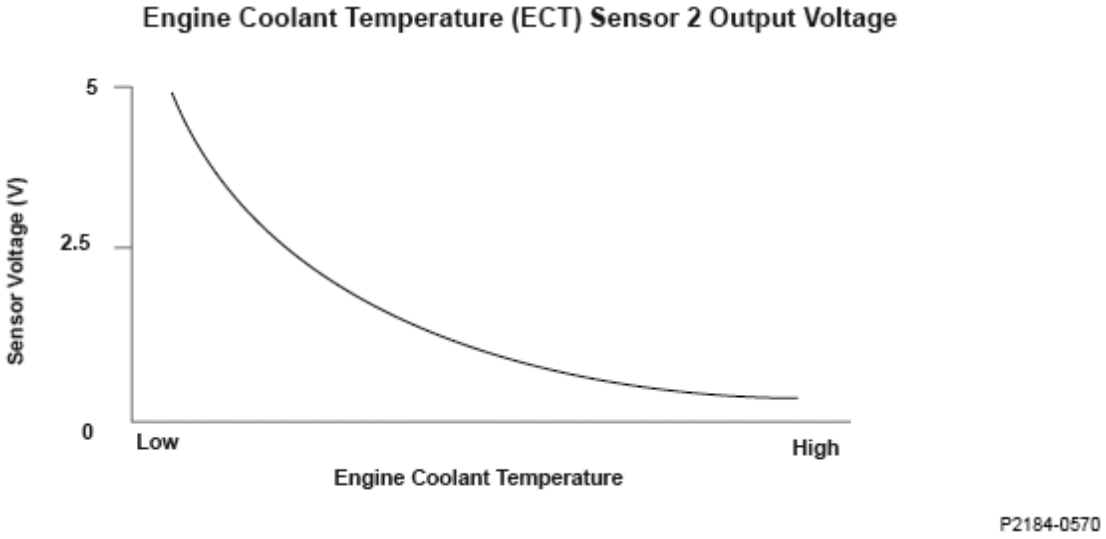


Fig. 616: Engine Coolant Temperature Sensor Voltage - Graph

General Description (R18A4 Engine)

Engine coolant temperature (ECT) sensor 2 is a thermistor attached to the water passage. The powertrain control module (PCM) applies voltage (about 5 V) to the ECT2 signal circuit through a pull-up resistor. As the engine coolant temperature cools, ECT sensor 2 resistance increases, and the PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is less than a set value when the engine coolant temperature is high, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2185

Malfunction Threshold (R18A4 Engine)

The ECT sensor 2 output voltage is 0.08 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2185 (192): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2185: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

Fig. 617: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

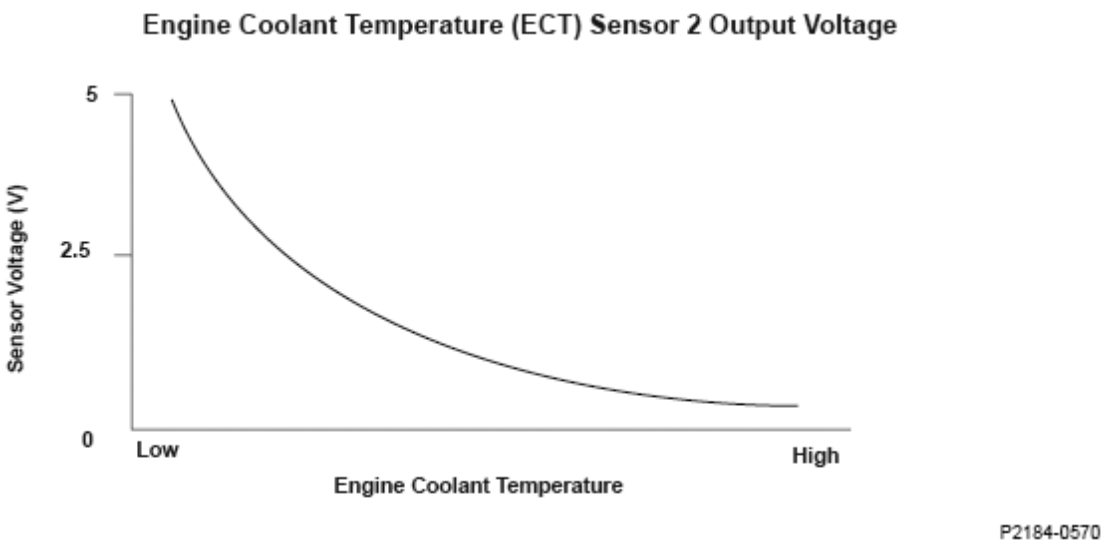


Fig. 618: Engine Coolant Temperature Sensor Voltage - Graph

General Description (K20Z3 Engine)

The engine coolant temperature (ECT) sensor 2 is a thermistor attached to the radiator. The ECM/PCM applies voltage (about 5 V) to the ECT2 signal circuit through a pull up resistor. As the engine coolant temperature cools, ECT sensor 2 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the ECM/PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is more than a set value when the engine coolant temperature is low, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2184

Malfunction Threshold (K20Z3 Engine)

The ECT sensor 2 output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2185 (192): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2185: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

Fig. 619: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

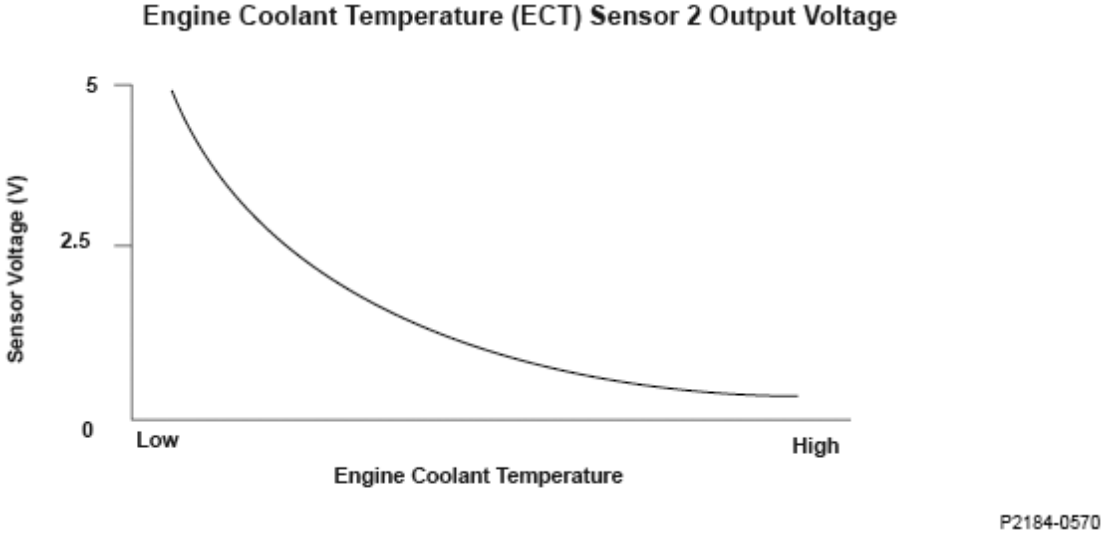


Fig. 620: Engine Coolant Temperature Sensor Voltage - Graph

General Description (R18A1 Engine)

The engine coolant temperature (ECT) sensor 2 is a thermistor attached to the radiator. The ECM/PCM applies voltage (about 5 V) to the ECT2 signal circuit through a pull up resistor. As the engine coolant

temperature cools, ECT sensor 2 resistance increases, and the ECM/PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the ECM/PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is more than a set value when the engine coolant temperature is low, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2184

Malfunction Threshold (R18A1 Engine)

The ECT sensor 2 output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2185 (192): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2185: ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

Fig. 621: Engine Coolant Temperature (ECT) Sensor 2 Circuit Diagram

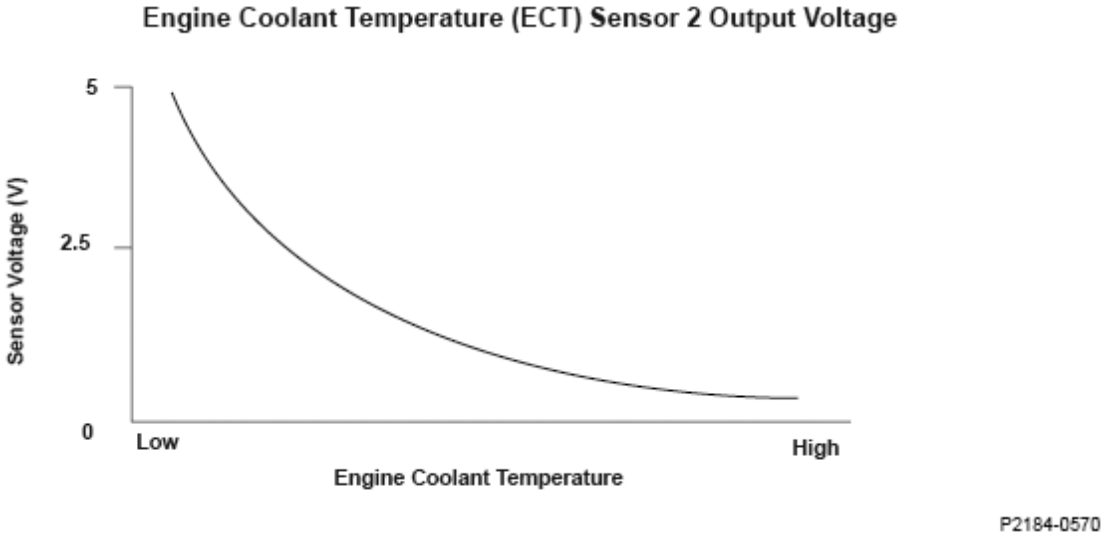


Fig. 622: Engine Coolant Temperature Sensor Voltage - Graph

General Description (R18A4 Engine)

Engine coolant temperature (ECT) sensor 2 is a thermistor attached to the water passage. The powertrain control module (PCM) applies voltage (about 5 V) to the ECT2 signal circuit through a pull-up resistor. As the engine coolant temperature cools, ECT sensor 2 resistance increases, and the PCM detects a high signal voltage. As the engine coolant warms, the sensor resistance decreases, and the PCM detects a low ECT2 signal voltage.

If the ECT sensor 2 output voltage is more than a set value when the engine coolant temperature is low, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P2184

Malfunction Threshold (R18A4 Engine)

The ECT sensor 2 output voltage is 4.92 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2195 (48): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2195: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) SIGNAL STUCK LEAN (K20Z3)

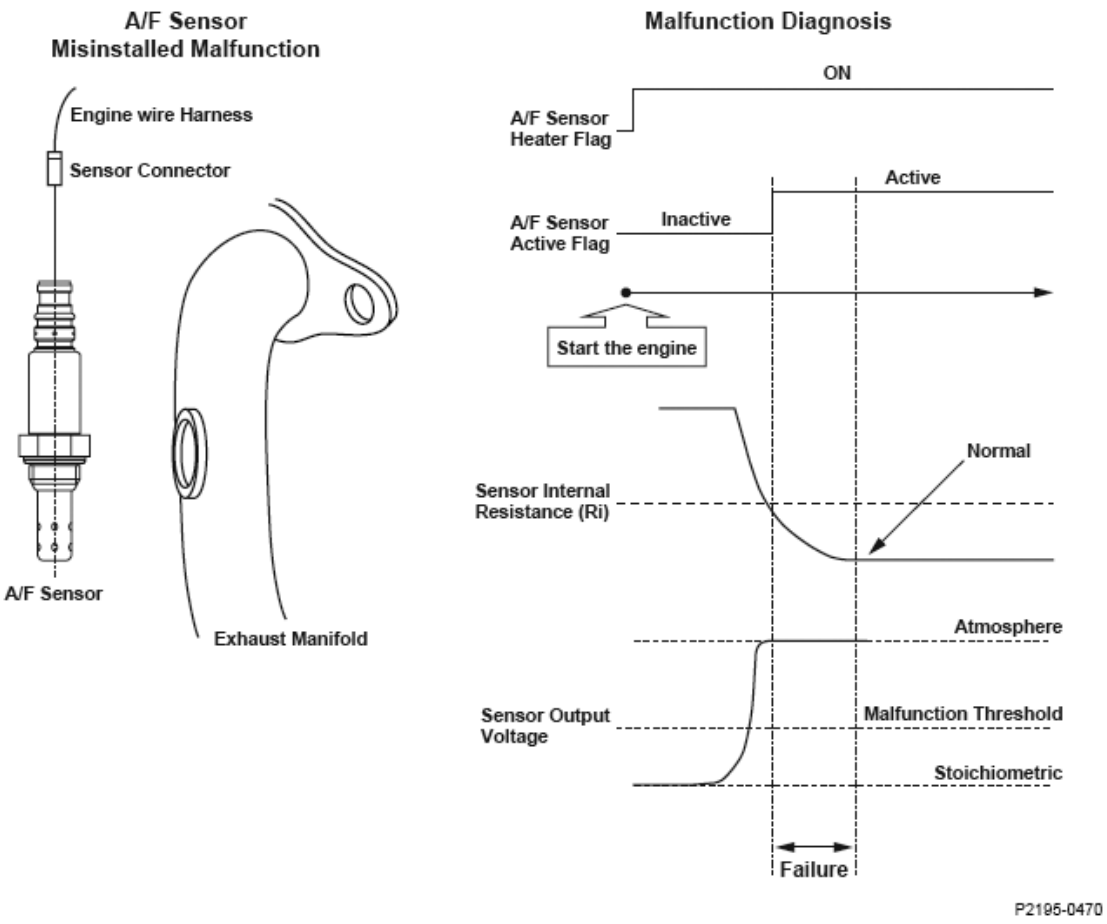


Fig. 623: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean Malfunction

General Description (K20Z3 Engine)

When the air/fuel ratio (A/F) sensor (sensor 1) is properly connected to the engine wire harness, but not installed in the exhaust pipe, the A/F feedback is not done properly even if the A/F sensor is active after starting the engine. Thus, the exhaust emissions increase.

When the A/F sensor output stays out of the normal range after the A/F sensor becomes active, the engine control module (ECM) detects that the A/F sensor is not properly installed and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	

Fuel feedback	Other than during fuel cut-off operation
No active DTCs	P0134, P0135, P0171, P0300, P0301, P0302, P0303, P0304, P1157, P1172, P2238, P2252

Malfunction Threshold (K20Z3 Engine)

A/F sensor output voltage is 3.67 V or more for at least 7 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine, then let it idle for at least 2 minutes.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2195 (48): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2195: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) SIGNAL STUCK LEAN (R18A1)

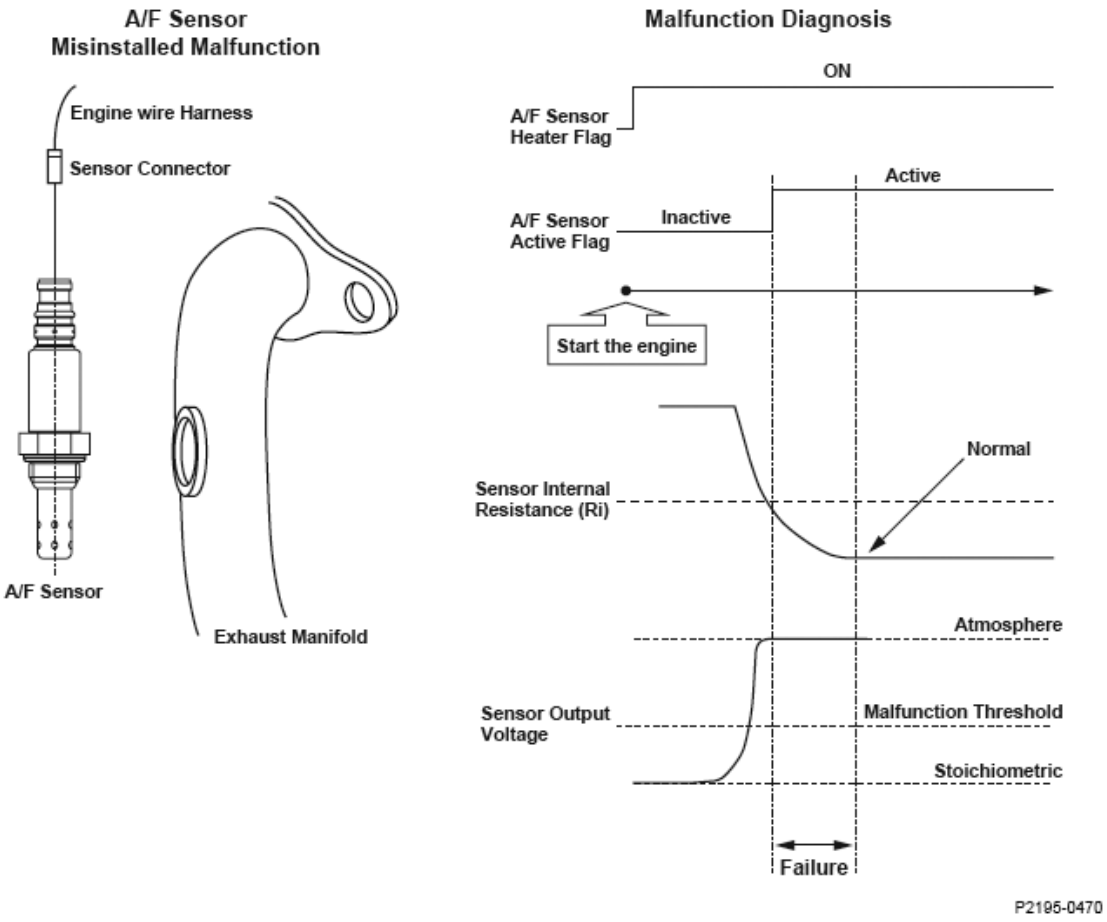


Fig. 624: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean Malfunction

General Description (R18A1 Engine)

When the air/fuel ratio (A/F) sensor (sensor 1) is properly connected to the engine wire harness, but not installed in the exhaust pipe, the A/F feedback is not done properly even if the A/F sensor is active after starting the engine. Thus, the exhaust emissions increase.

When the A/F sensor output stays out of the normal range after the A/F sensor becomes active, the engine control module (ECM)/powertrain control module (PCM) detects that the A/F sensor is not properly installed and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Fuel feedback	Other than during fuel cut-off operation
No active DTCs	P0134, P0135, P0171, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1157, P1172, P2238, P2252

Malfunction Threshold (R18A1 Engine)

A/F sensor output voltage is 3.67 V or more for at least 7 seconds.

Driving Pattern (R18A1 Engine)

Start the engine, then let it idle for at least 2 minutes.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2195 (48): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2195: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) SIGNAL STUCK LEAN (R18A4 ENGINE)

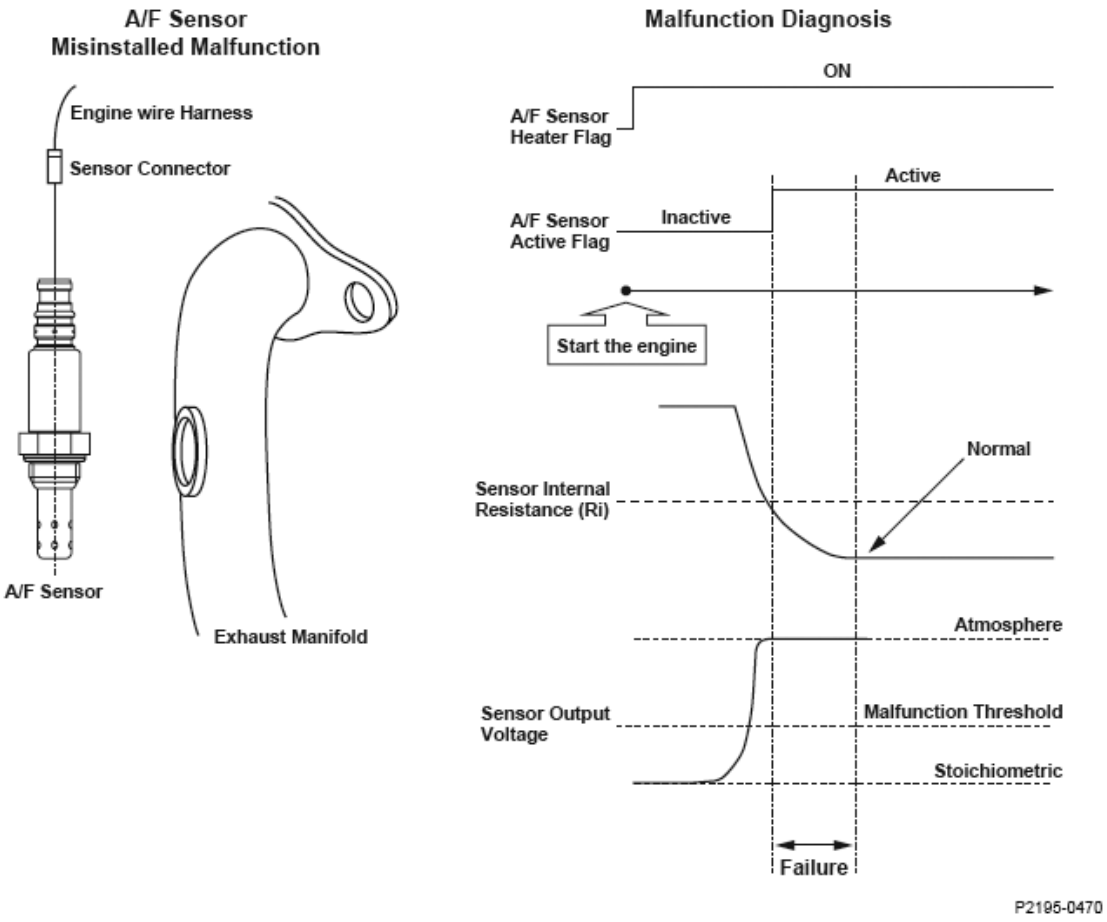


Fig. 625: Air/Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean Malfunction

General Description (R18A4 Engine)

When the air/fuel ratio (A/F) sensor (sensor 1) is properly connected to the engine wire harness, but not installed in the exhaust pipe, the A/F feedback is not performed properly even if the A/F sensor is active after starting the engine. Thus, the exhaust emissions increase.

When the A/F sensor output stays out of the normal range after the A/F sensor becomes active, the powertrain control module (PCM) detects that the A/F sensor is not properly installed and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	

Fuel feedback	Other than during fuel cut-off operation
No active DTCs	P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1157, P1172, P2238, P2252

Malfunction Threshold (R18A4 Engine)

A/F sensor output voltage is 3.67 V or more for at least 7 seconds.

Driving Pattern (R18A4 Engine)

Start the engine, then let it idle for at least 2 minutes.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2227 (13): ADVANCED DIAGNOSTICS (M/T)

DTC P2227: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (M/T)

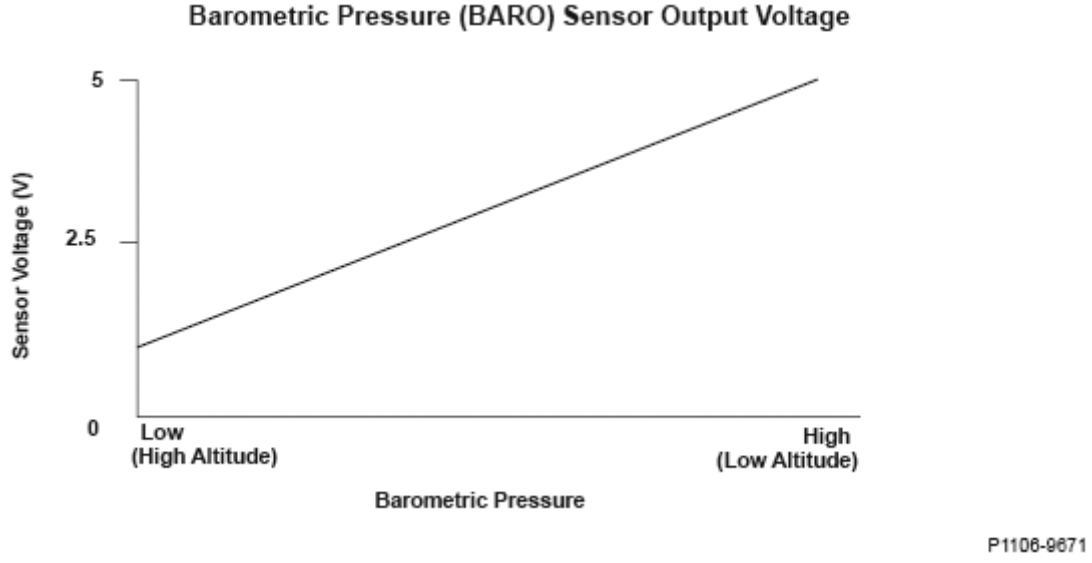


Fig. 626: Barometric Pressure (BARO) Sensor Voltage - Graph

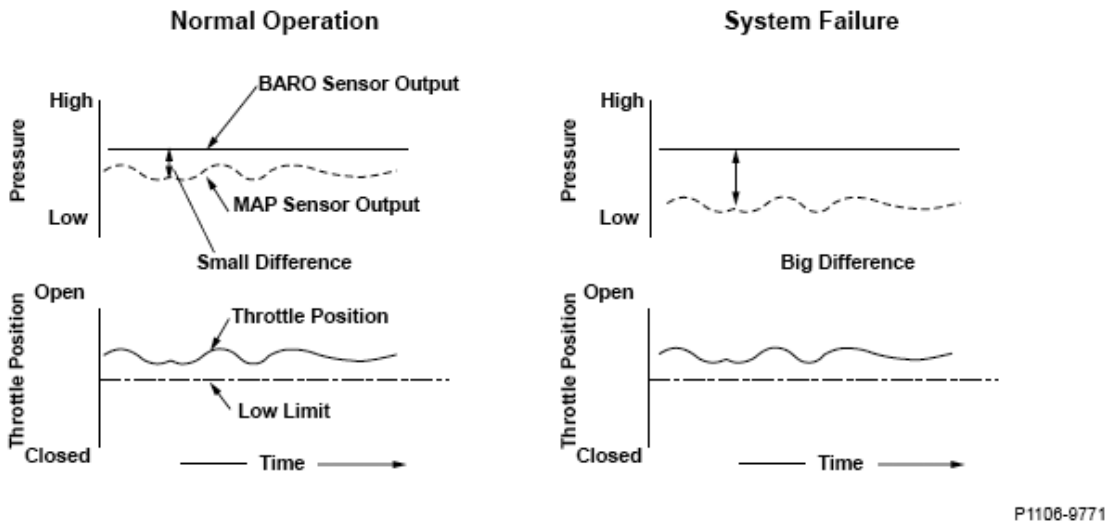


Fig. 627: Barometric Pressure (BARO) Sensor Throttle Position - Graph

General Description (M/T)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM) and monitors atmospheric pressure. When the throttle valve is wide open, the manifold absolute pressure (MAP) sensor output is nearly equal to the BARO sensor output. Making use of this characteristic, a malfunction can be detected in the BARO sensor output.

If the throttle position is beyond a value stored in the ECM/PCM that is used to detect "wide-open throttle," and if the difference between the MAP sensor output and the BARO sensor output is equal to or greater than a set value, a malfunction in the BARO sensor output is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2.5(2), 3(1) seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time after the VTEC system changes*1		3 seconds	-
	1,000 rpm	11.0°*2	-
		12.1°(1)	-
	1,500 rpm	11.9°(2)	-

Throttle position	3,000 rpm	20.8°(2)	-
		21.0°*2	-
	5,000 rpm	35.8°(1)	-
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351*1 , P0352*1 , P0353*1 , P0354*1 , P0401*1 , P0404*1 , P0506, P0507, P1077*1 , P1078*1 , P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2228, P2229, P2413*1 , P2646, P2647, P2648, P2649	
(1) R18A1 engine rocker arm oil control solenoid: ON (2) R18A1 engine rocker arm oil control solenoid: OFF			

Malfunction Threshold (M/T)

The difference between the BARO sensor output and the MAP sensor output is 28 kPa (8.1 in.Hg, 204 mmHg)*1 , 38 kPa (11.2 in.Hg, 284 mmHg)*1 or more for at least 2.5*2 , 3*1 seconds.

Driving Pattern (M/T)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle with the throttle position as specified under Enable Conditions for at least 2.5*2 , 3*1 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2227 (13): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2227: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

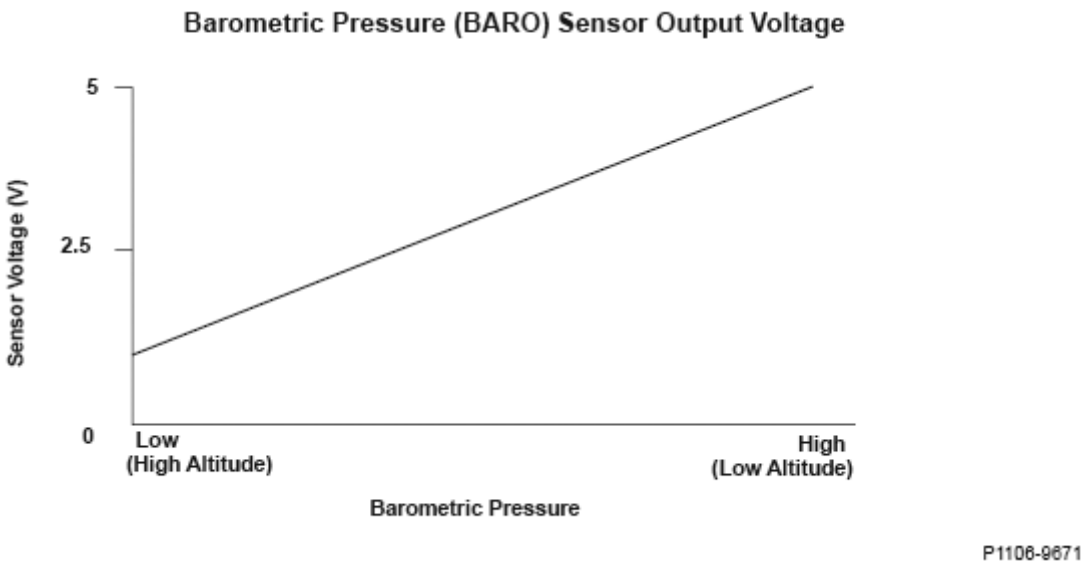


Fig. 628: Barometric Pressure (BARO) Sensor Voltage - Graph

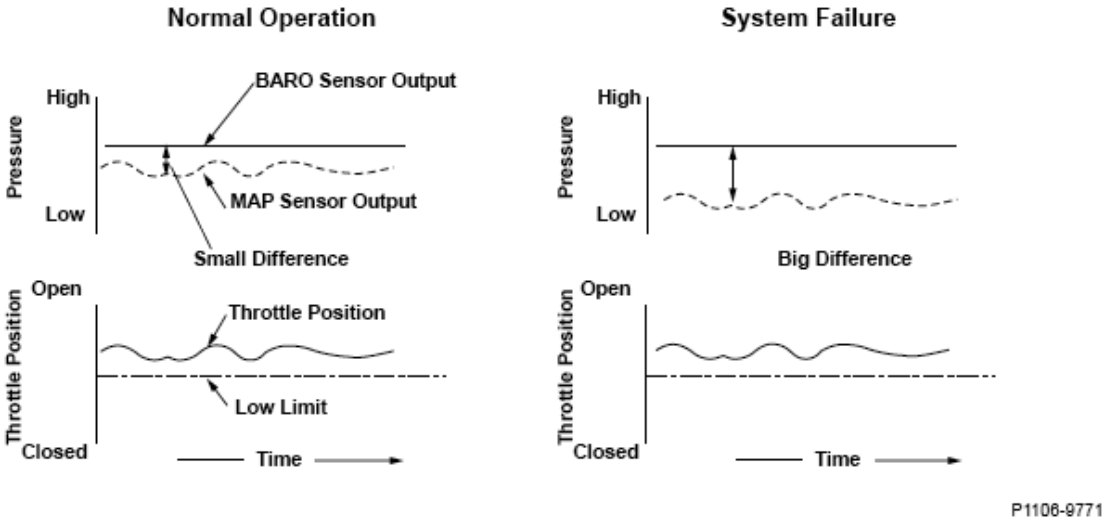


Fig. 629: Barometric Pressure (BARO) Sensor Throttle Position - Graph

General Description (R18A1 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM) and monitors atmospheric pressure. When the throttle valve is wide open, the manifold absolute pressure (MAP) sensor output is nearly equal to the BARO sensor output. Making use of this characteristic, a malfunction can be detected in the BARO sensor output.

If the throttle position is beyond a value stored in the ECM/PCM that is used to detect "wide-open throttle," and if the difference between the MAP sensor output and the BARO sensor output is equal to or greater than a set value, a malfunction in the BARO sensor output is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle

Sequence	None
Duration	2.5(2), 3(1) seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time after the VTEC system changes*1		3 seconds	-
Throttle position	1,000 rpm	11.0°*2	-
		12.1°(1)	-
	1,500 rpm	11.9°(2)	-
	3,000 rpm	20.8°(2)	-
		21.0°*2	-
	5,000 rpm	35.8°(1)	-
No active DTCs		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351*1 , P0352*1 , P0353*1 , P0354*1 , P0401*1 , P0404*1 , P0506, P0507, P1077*1 , P1078*1 , P1128, P1129, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2228, P2229, P2413*1 , P2646, P2647, P2648, P2649	
(1) R18A1 engine rocker arm oil control solenoid: ON (2) R18A1 engine rocker arm oil control solenoid: OFF			

Malfunction Threshold (R18A1 Engine)

The difference between the BARO sensor output and the MAP sensor output is 28 kPa (8.1 in.Hg, 204 mmHg)*1 , 38 kPa (11.2 in.Hg, 284 mmHg)*1 or more for at least 2.5*2 , 3*1 seconds.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle with the throttle position as specified under Enable Conditions for at least 2.5*2 , 3*1 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2227 (13): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2227: BAROMETRIC PRESSURE (BARO) SENSOR RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

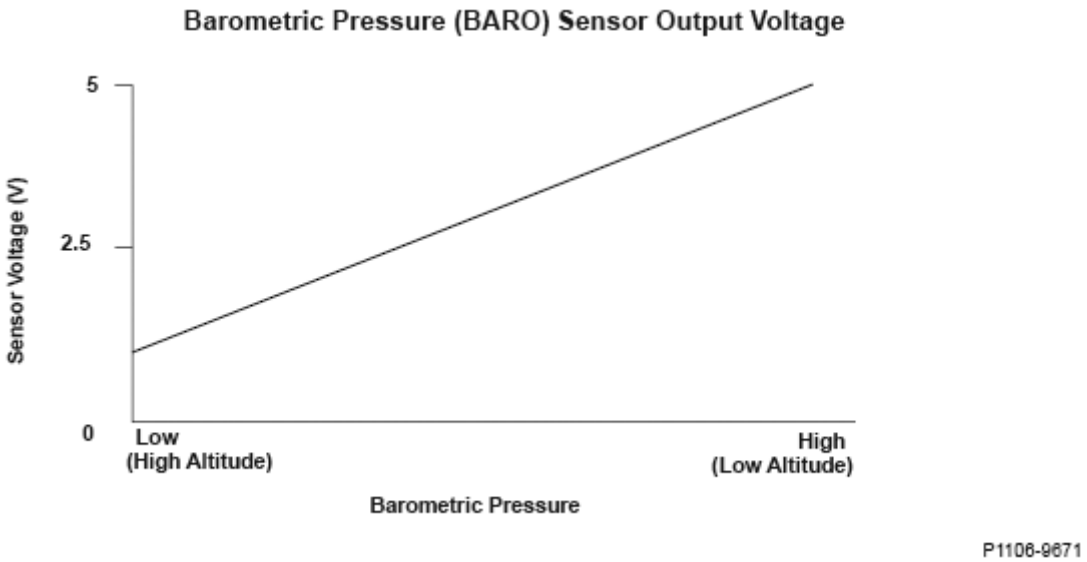


Fig. 630: Barometric Pressure (BARO) Sensor Voltage - Graph

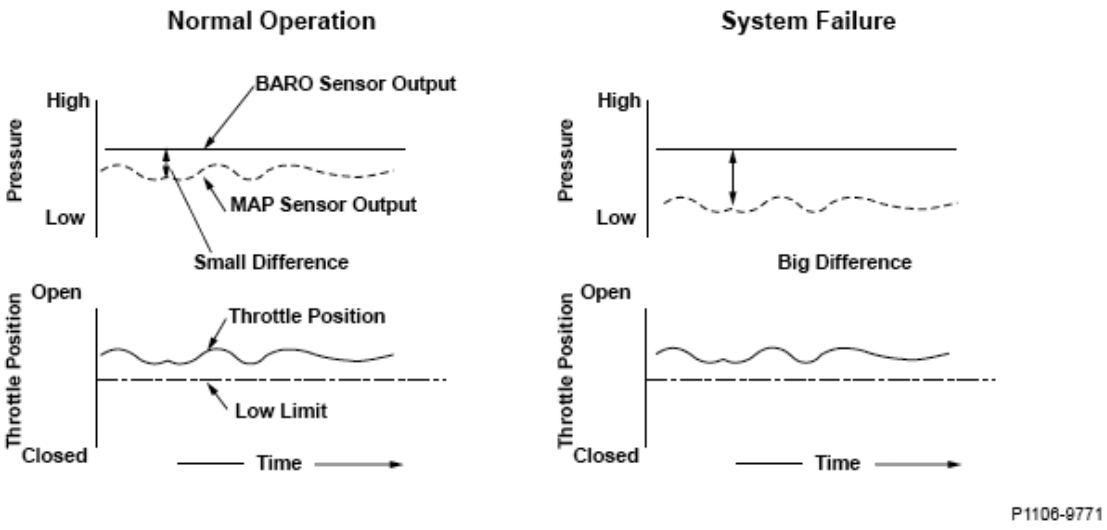


Fig. 631: Barometric Pressure (BARO) Sensor Throttle Position - Graph

General Description (R18A4 Engine)

The barometric pressure (BARO) sensor is built into the powertrain control module (PCM) and monitors atmospheric pressure. When the throttle valve is wide open, the manifold absolute pressure (MAP) sensor output is nearly equal to the BARO sensor output. Making use of this characteristic, a malfunction can be detected in the BARO sensor output.

If the throttle position is beyond a value stored in the PCM that is used to detect "wide-open throttle," and if the difference between the MAP sensor output and the BARO sensor output is equal to or greater than a set value, a malfunction in the BARO sensor output is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	2 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time after the VTEC system changes		3 seconds	-
Throttle position	1,000 rpm	9°(2)	-
		12°(1)	-
	3,000 rpm	23°(2)	-
	4,000 rpm	29°(1)	-
		P0107, P0108, P0117, P0118, P0122, P0123, P0171, P0172, P0222, P0223, P0300, P0301,	

No active DTCs	P0302, P0303, P0304, P0351, P0352, P0353, P0354, P0506, P0507, P1109, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2228, P2229, P2646, P2647, P2648, P2649
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF	

Malfunction Threshold (R18A4 Engine)

The difference between the BARO sensor output and the MAP sensor output is 28 kPa (8.1 in.Hg, 204 mmHg) or more for at least 2 seconds.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle with the throttle position as specified under Enable Conditions for at least 2 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2228 (13): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2228: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

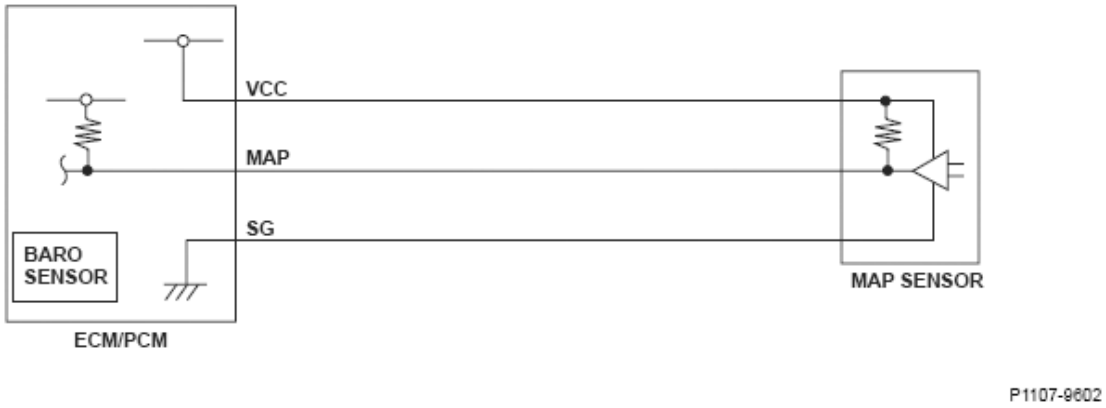


Fig. 632: Barometric Pressure (BARO) Sensor - Circuit Diagram

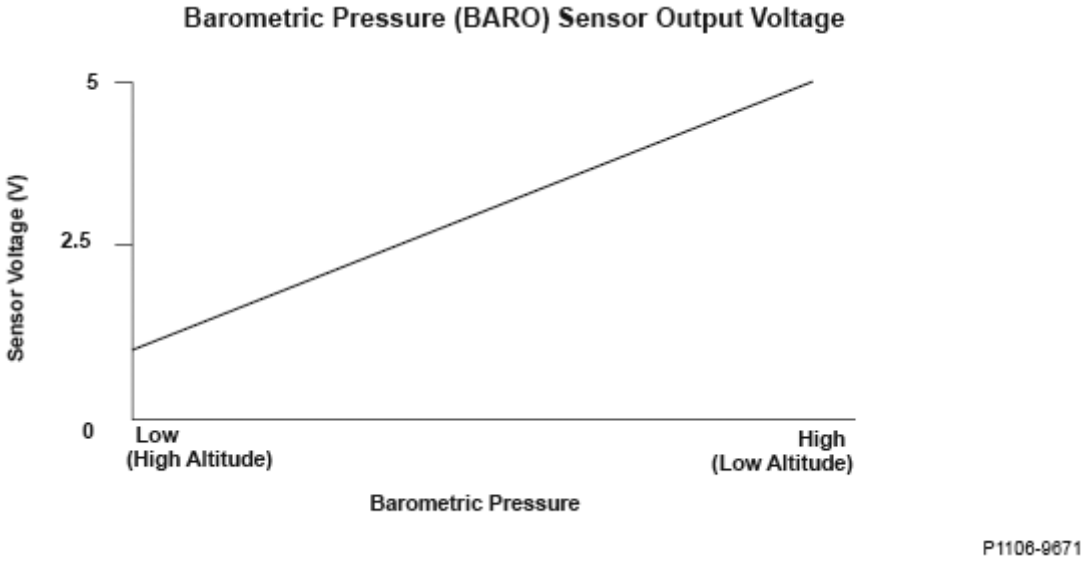


Fig. 633: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (K20Z3 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or less, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2229

Malfunction Threshold (K20Z3 Engine)

The BARO sensor output voltage is 1.31 V or less for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2228 (13): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2228: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

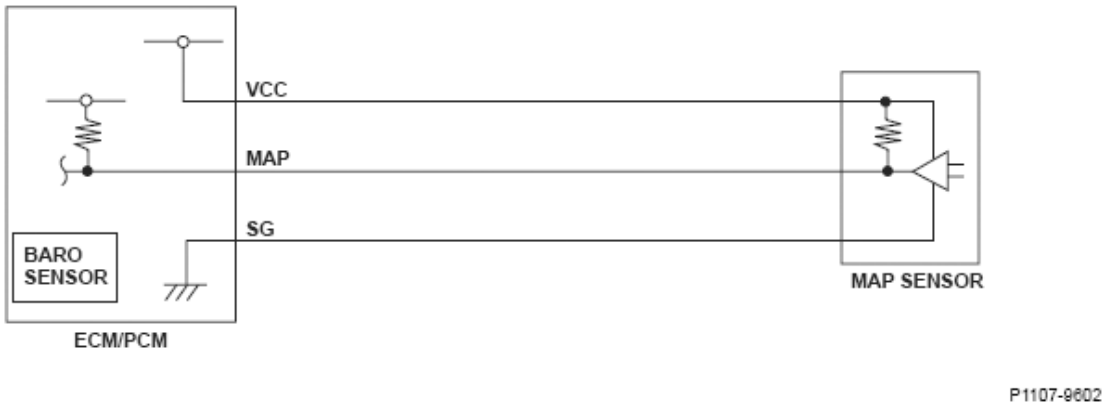


Fig. 634: Barometric Pressure (BARO) Sensor - Circuit Diagram

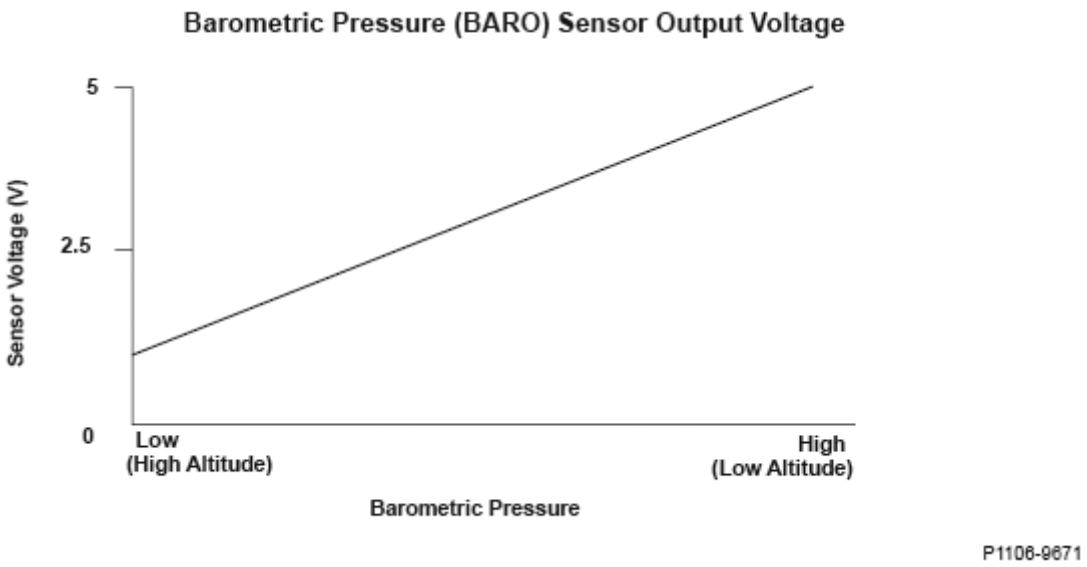


Fig. 635: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A1 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or less, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2229

Malfunction Threshold (R18A1 Engine)

The BARO sensor output voltage is 1.31 V or less for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2228 (13): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2228: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

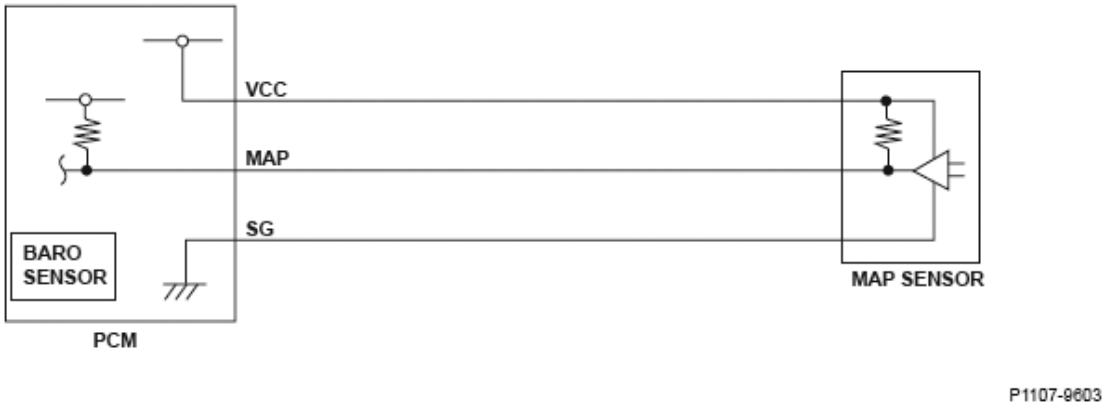


Fig. 636: Barometric Pressure (BARO) Sensor Circuit Diagram

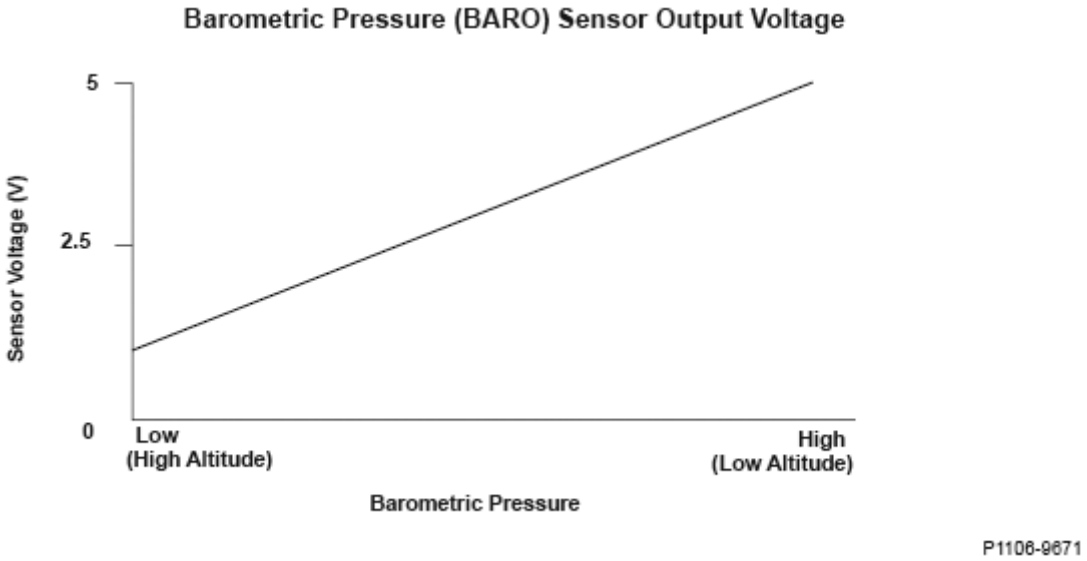


Fig. 637: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A4 Engine)

The barometric pressure (BARO) sensor is built into the powertrain control module (PCM) and monitors atmospheric pressure. The PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or less, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2229

Malfunction Threshold (R18A4 Engine)

The BARO sensor output voltage is 1.31 V or less for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2229 (13): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2229: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT HIGH VOLTAGE (K20Z3 ENGINE)

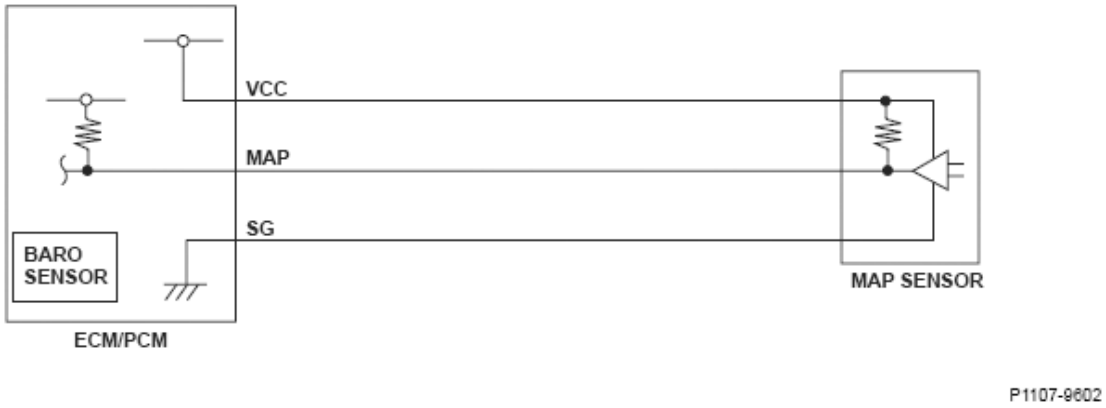


Fig. 638: Barometric Pressure (BARO) Sensor - Circuit Diagram

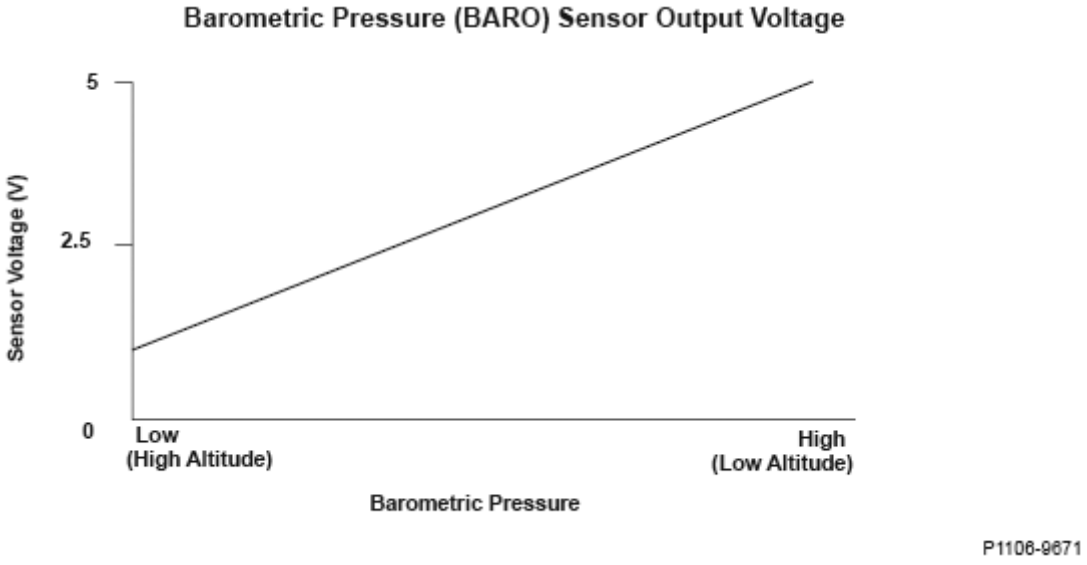


Fig. 639: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (K20Z3 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or more, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2228

Malfunction Threshold (K20Z3 Engine)

The BARO sensor output voltage value is 4.49 V or more for at least 2 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2229 (13): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2229: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT HIGH VOLTAGE (R18A1 ENGINE)

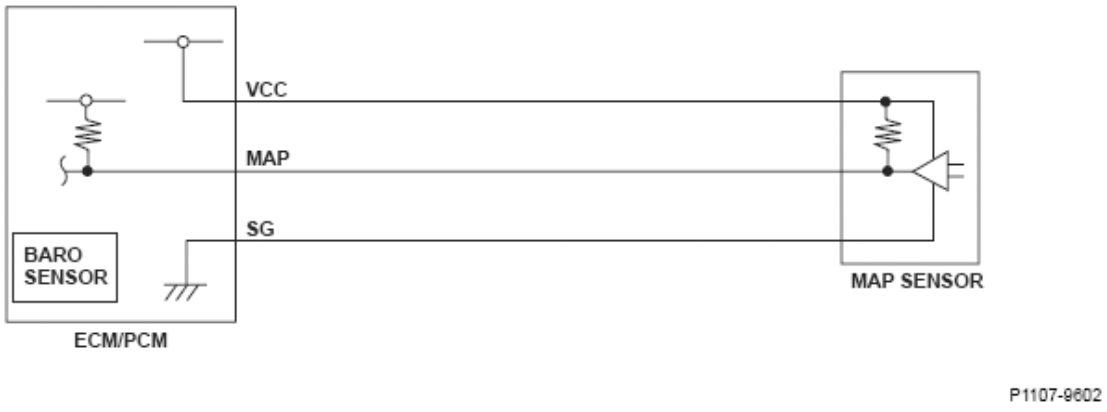


Fig. 640: Barometric Pressure (BARO) Sensor - Circuit Diagram

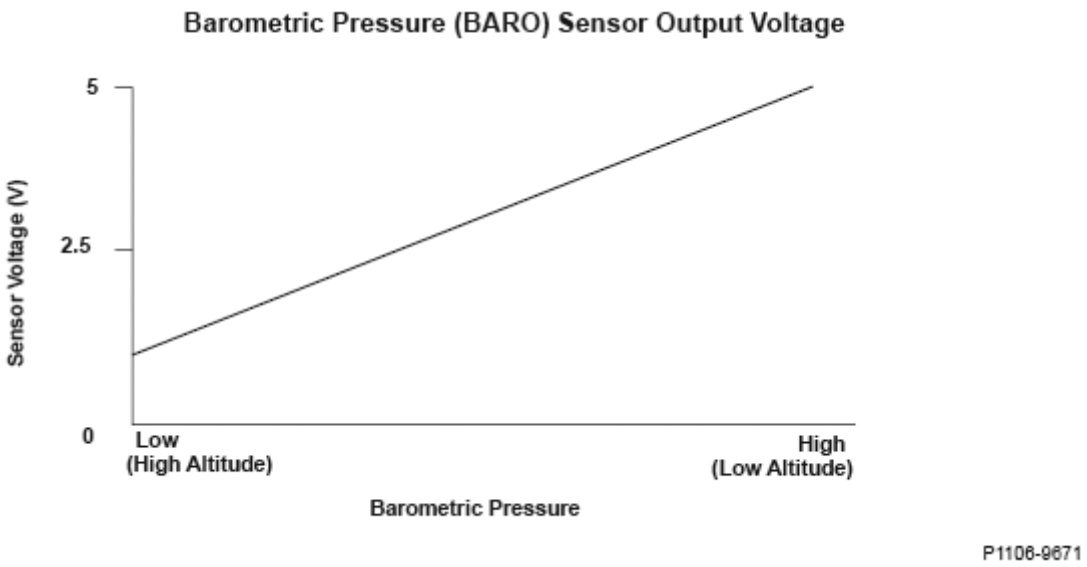


Fig. 641: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A1 Engine)

The barometric pressure (BARO) sensor is built into the engine control module (ECM)/powertrain control module (PCM), and it monitors atmospheric pressure. The ECM/PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or more, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2228

Malfunction Threshold (R18A1 Engine)

The BARO sensor output voltage value is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2229 (13): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2229: BAROMETRIC PRESSURE (BARO) SENSOR CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

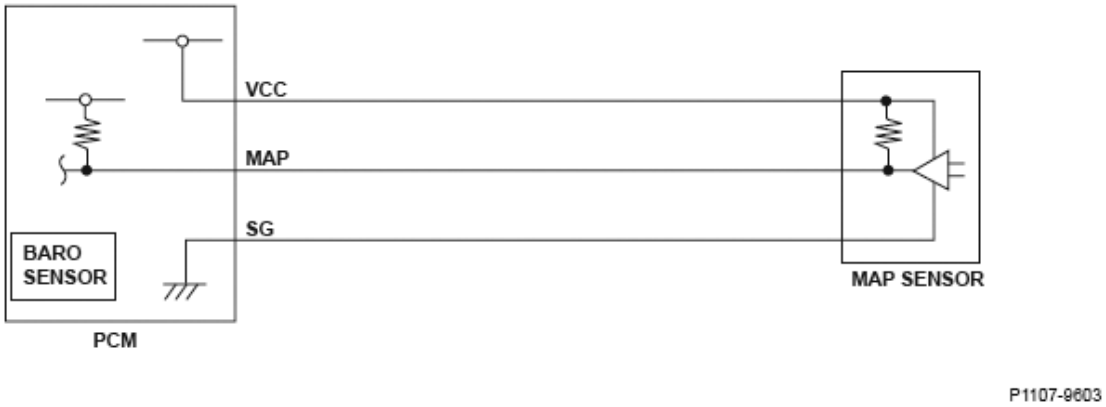


Fig. 642: Barometric Pressure (BARO) Sensor Circuit Diagram

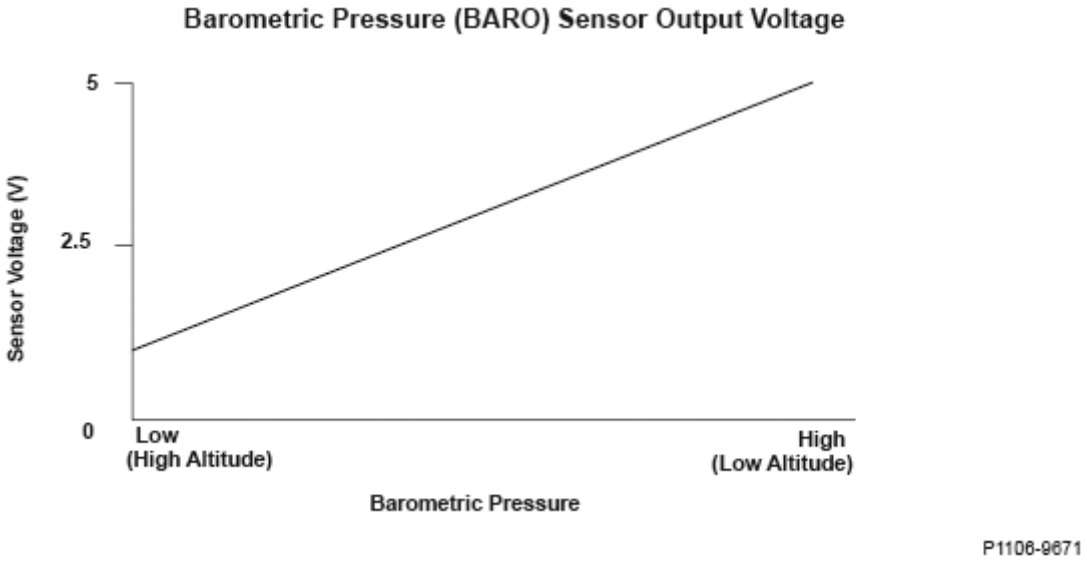


Fig. 643: Barometric Pressure (BARO) Sensor Voltage - Graph

General Description (R18A4 Engine)

The barometric pressure (BARO) sensor is built into the powertrain control module (PCM) and monitors atmospheric pressure. The PCM estimates appropriate intake airflow from the manifold absolute pressure (MAP) sensor output voltage and BARO sensor output voltage. If the BARO sensor output voltage is a specified value or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	2 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON
No active DTCs	P1109, P2228

Malfunction Threshold (R18A4 Engine)

The BARO sensor output voltage is 4.49 V or more for at least 2 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2238 (48): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2238: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

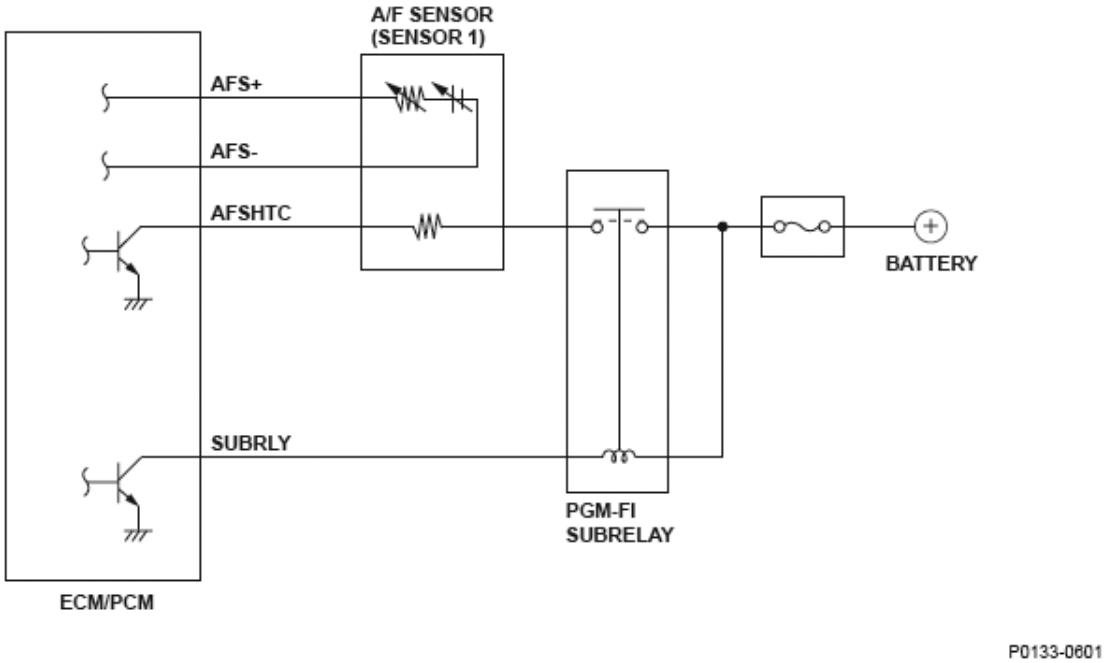


Fig. 644: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits a signal to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed up the detection of oxygen content. The increase in current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the ECM/PCM terminal voltage is a set value or less for a set time when power is applied to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2252	

Malfunction Threshold (K20Z3 Engine)

The AFS+ terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2238 (48): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2238: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

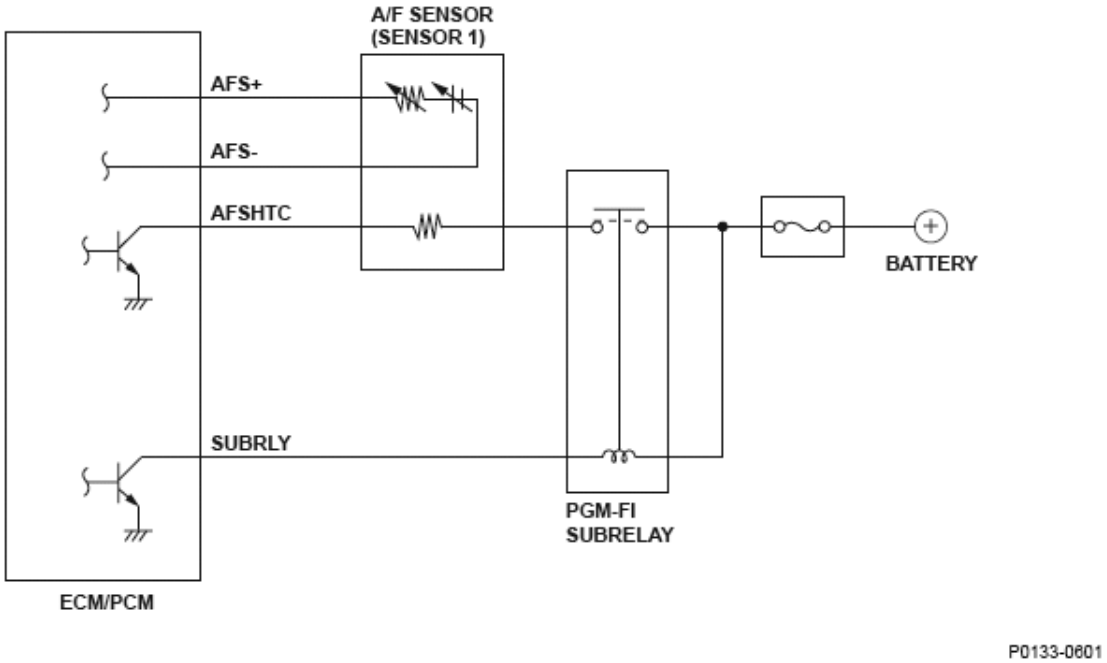


Fig. 645: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits a signal to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed up the detection of oxygen content. The increase in current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the ECM/PCM terminal voltage is a set value or less for a set time when power is applied to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2252	

Malfunction Threshold (R18A1 Engine)

The AFS+ terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2238 (48): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2238: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS+ LINE LOW VOLTAGE (R18A4 ENGINE)

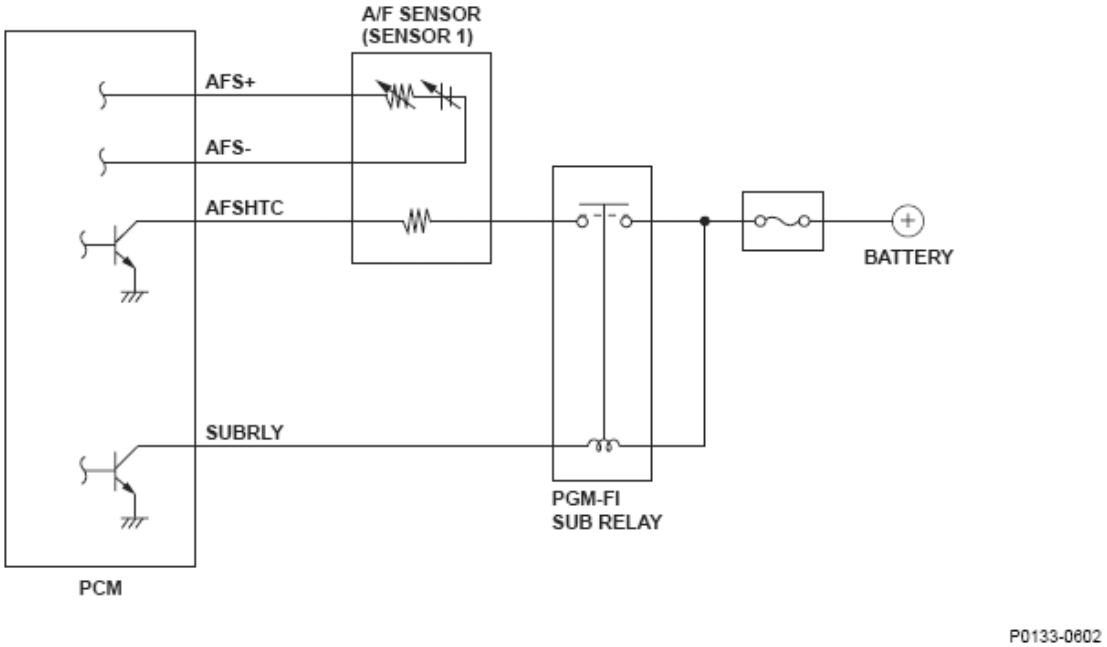


Fig. 646: Circuit Diagram - DTC P0135 - Air/Fuel Ratio (A/F) Sensor (Sensor 1)

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits output voltage to the powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed the detection of oxygen content. The increase in current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the PCM terminal voltage is a set value or less for a set time when power is drawn to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2252	

Malfunction Threshold (R18A4 Engine)

The AFS+ terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (R18A4 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2252 (48): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2252: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE (K20Z3 ENGINE)

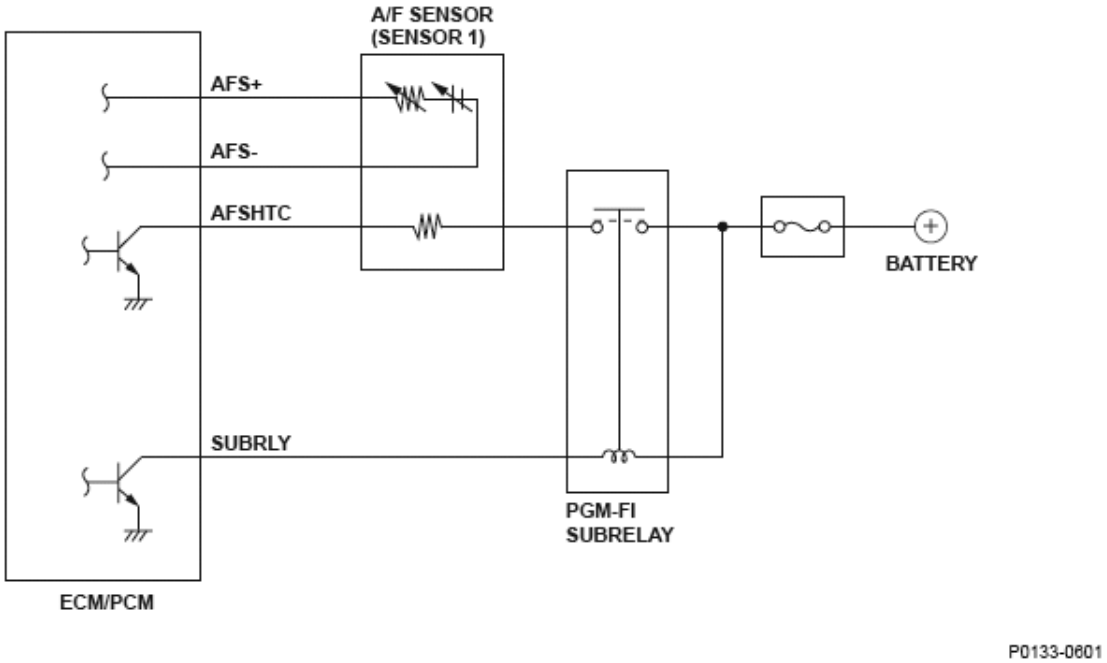


Fig. 647: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (K20Z3 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits a signal to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed up the detection of oxygen content. The increase in current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the ECM/PCM terminal voltage is a set value or less for a set time when power is applied to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2238	

Malfunction Threshold (K20Z3 Engine)

The AFS-terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2252 (48): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2252: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE (R18A1 ENGINE)

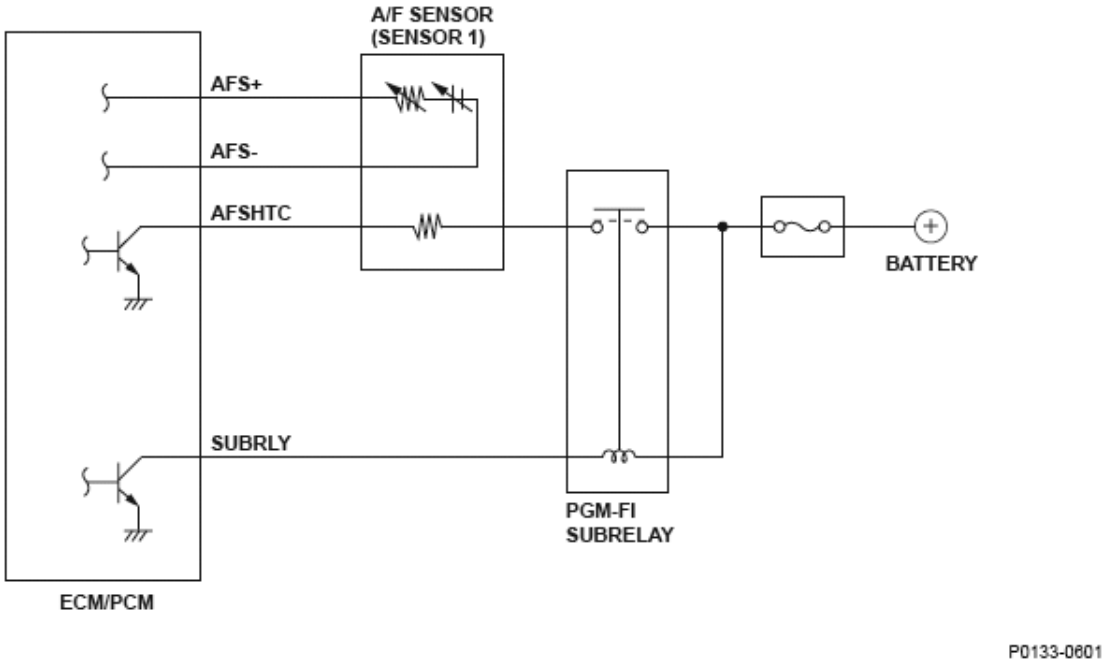


Fig. 648: Air/Fuel Ratio (A/F) Sensor - Circuit Diagram

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits a signal to the engine control module (ECM)/powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed up the detection of oxygen content. The increase in current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The ECM/PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the ECM/PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the ECM/PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the ECM/PCM terminal voltage is a set value or less for a set time when power is applied to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2238	

Malfunction Threshold (R18A1 Engine)

The AFS-terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2252 (48): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2252: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) AFS-LINE LOW VOLTAGE (R18A4 ENGINE)

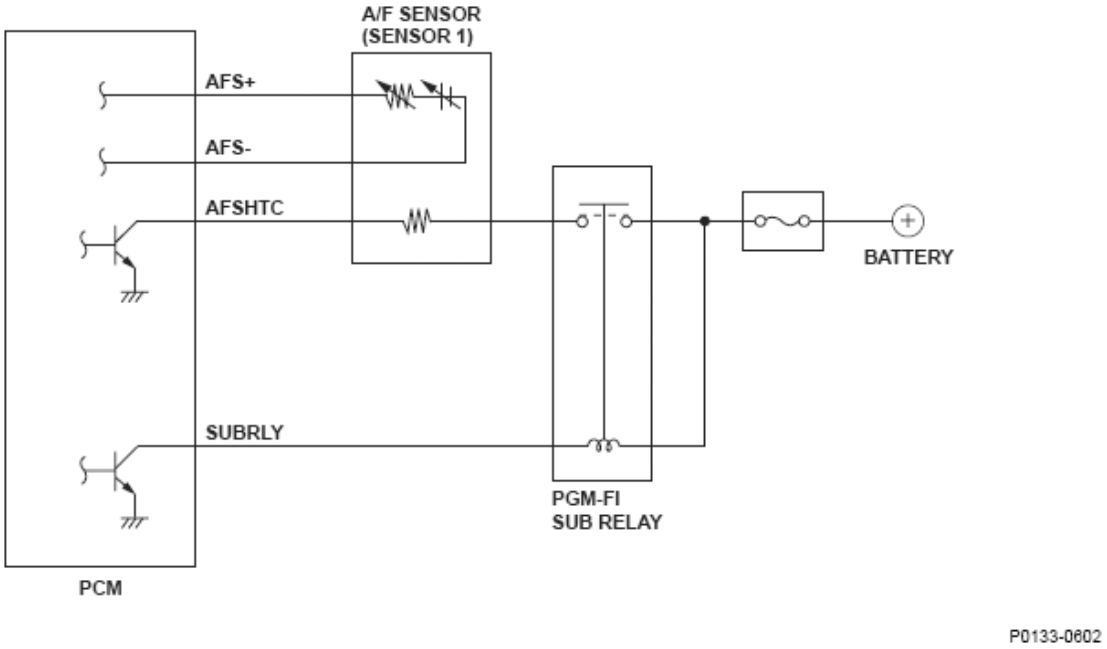


Fig. 649: Circuit Diagram - DTC P0135 - Air/Fuel Ratio (A/F) Sensor (Sensor 1)

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor (sensor 1) is installed in the exhaust system and detects oxygen content in the exhaust gas. The A/F sensor transmits output voltage to the powertrain control module (PCM). A heater for the sensor element is embedded in the A/F sensor (sensor 1). It heats the sensor to stabilize and speed the detection of oxygen content. The increase in the current through the heater levels off as the voltage applied to the electrode reaches a certain range because the amount of oxygen that goes through the diffusion layer is limited. The current is proportional to oxygen content in the exhaust gas, so the air/fuel ratio is detected by the measurement of the current. The PCM compares a set target air/fuel ratio with the detected air/fuel ratio and controls the fuel injection duration.

If the A/F sensor (sensor 1) voltage is low, the air/fuel ratio is lean, and the PCM uses A/F feedback control to issue a Rich command. If the A/F sensor (sensor 1) voltage is high, the air/fuel ratio is rich, and the PCM uses A/F feedback control to issue a Lean command.

If the element is not activated or the PCM terminal voltage is a set value or less for a set time when power is drawn to the A/F sensor (sensor 1) heater, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	4 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
State of the engine	Running	
No active DTCs	P0117, P0118, P0134, P0135, P1157, P2195, P2238	

Malfunction Threshold (R18A4 Engine)

The AFS-terminal voltage is 0.4 V or less for at least 4 seconds.

Driving Pattern (R18A4 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2270 (63): ADVANCED DIAGNOSTICS (M/T)

DTC P2270: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK LEAN (M/T)

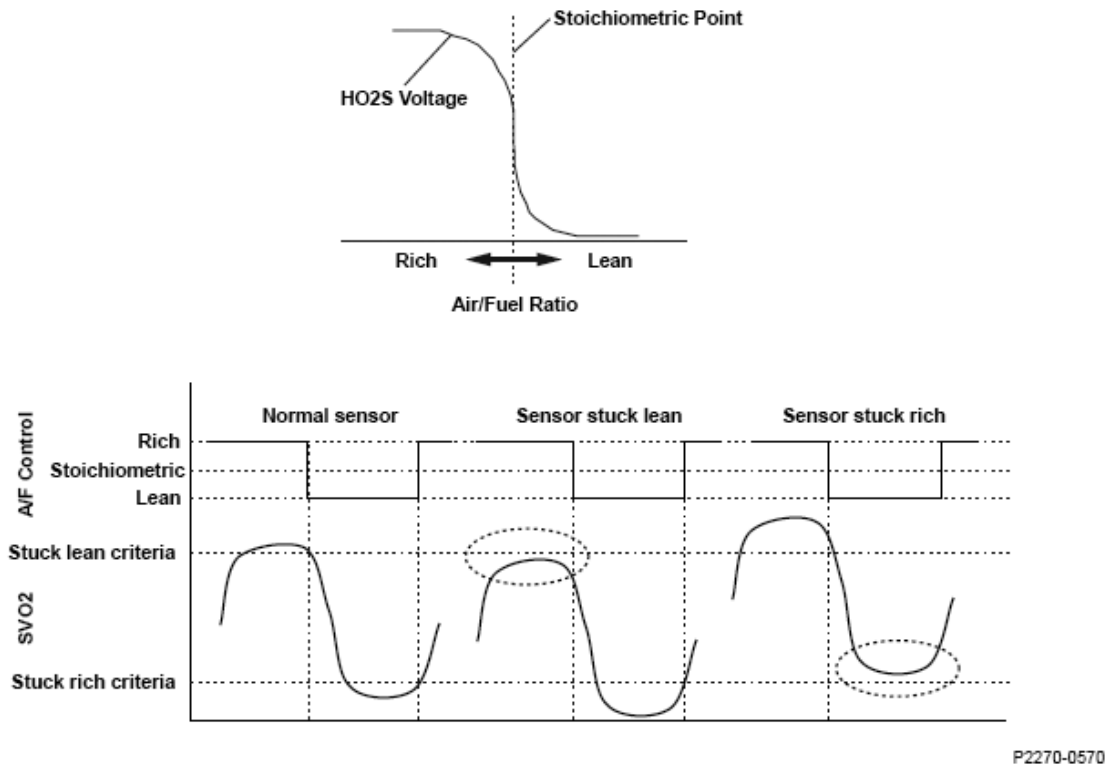


Fig. 650: Air Fuel Ratio - Graph

General Description (M/T)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC). The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	19(2), 21.1(1) seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Elapsed time that secondary HO2S activity is not monitored after starting the engine		15 seconds	-
Elapsed time after the fuel cut-off		-	150 seconds[*1]
			185 seconds[*2]
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed	A/T	1,300 rpm[*1]	2,450 rpm[*1]
	M/T		3,025 rpm[*2]
		1,825 rpm[*2]	3,300 rpm[*1]
MAP value		27 kPa (7.9 in.Hg, 200 mmHg)[*2]	79 kPa (23.6 in.Hg, 600 mmHg)[*2]
		27 kPa (7.9 in.Hg, 200 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)[*1]
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		30 mph (48 km/h)	-
Fuel trim		0.69[*2]	1.47
		0.73[*1]	
Fuel feedback		Closed loop	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351[*1] , P0352[*1] , P0353[*1] , P0354[*1] , P0401[*1] , P0404[*1] , P0443, P0496, P0497, P1077[*1] , P1078[*1] , P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2413[*1] , P2646, P2647, P2648, P2649, P2A00	
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF			

Malfunction Threshold (M/T)

The secondary HO2S output voltage is 0.650 V or less.

Driving Pattern (M/T)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 19[*2] , 21.1[*1] seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2270 (63): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2270: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK LEAN (R18A1 ENGINE)

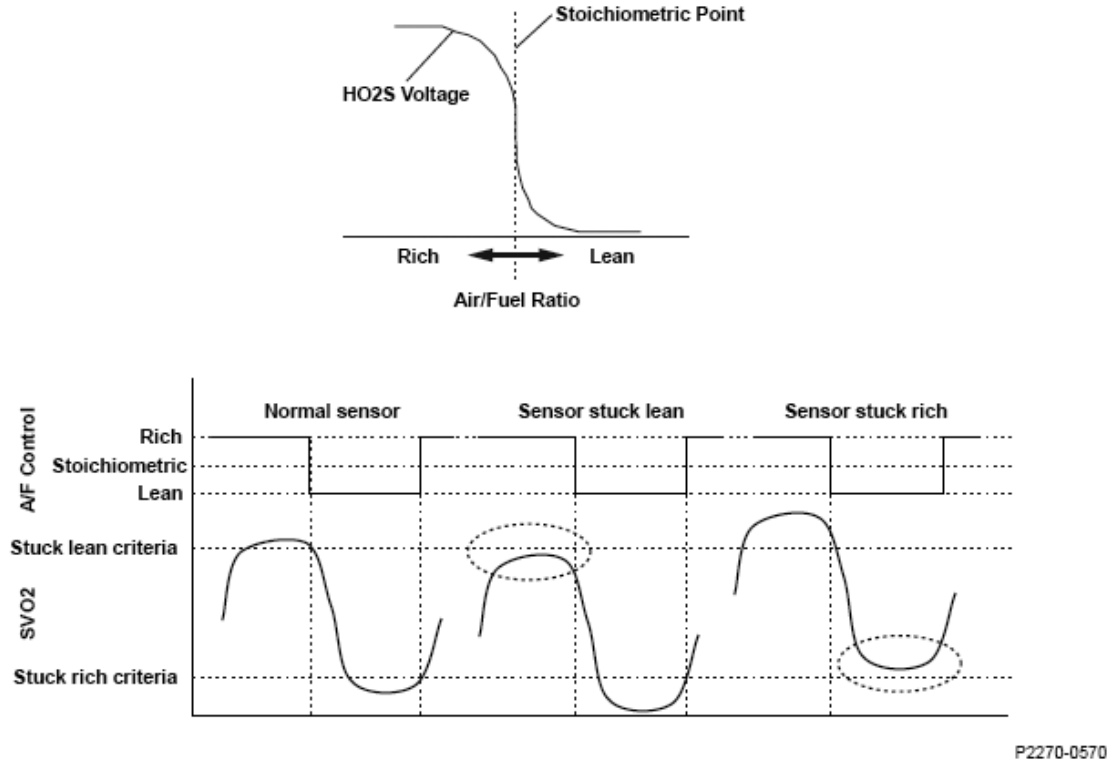


Fig. 651: Air Fuel Ratio - Graph

General Description (R18A1 Engine)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC).

The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	19(2), 21.1(1) seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine		15 seconds	-
Elapsed time after the fuel cut-off		-	150 seconds*1
			185 seconds*2
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed	A/T	1,300 rpm*1	2,450 rpm*1
	M/T		3,025 rpm*2
		1,825 rpm*2	3,300 rpm*1
MAP value		27 kPa (7.9 in.Hg, 200 mmHg)*2	79 kPa (23.6 in.Hg, 600 mmHg)*2
		27 kPa (7.9 in.Hg, 200 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)*1
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		30 mph (48 km/h)	-
Fuel trim		0.69*2	1.47
		0.73*1	
Fuel feedback		Closed loop	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351*1 , P0352*1 , P0353*1 , P0354*1 , P0401*1 , P0404*1 , P0443, P0496, P0497, P1077*1 , P1078*1 , P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2413*1 , P2646, P2647, P2648, P2649, P2A00	

(1) Rocker arm oil control solenoid: ON

(2) Rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A1 Engine)

The secondary HO2S output voltage is 0.650 V or less.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 19*2 , 21.1*1 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2270 (63): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2270: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK LEAN (R18A4 ENGINE)

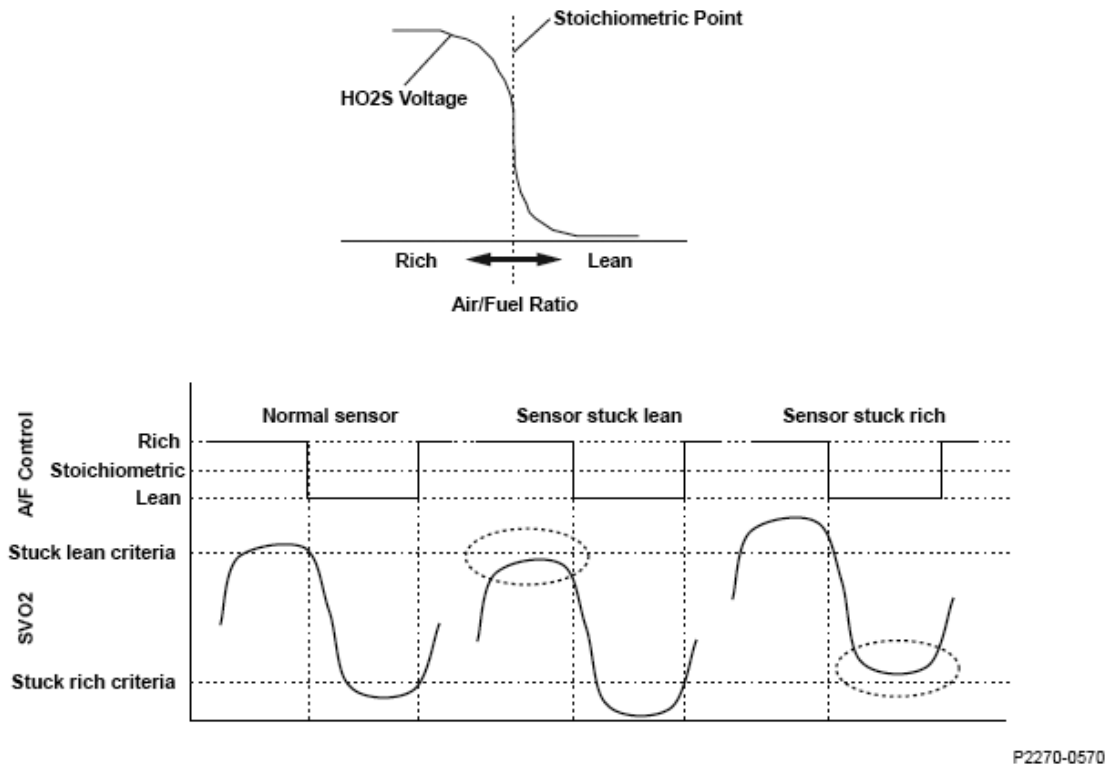


Fig. 652: Air Fuel Ratio - Graph

General Description (R18A4 Engine)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC). The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	25.4 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-

Elapsed time after the fuel cut-off	-	150 seconds
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,500 rpm	2,550 rpm
MAP value	40 kPa (11.9 in.Hg, 300 mmHg)	86 kPa (25.5 in.Hg, 650 mmHg)
Vehicle speed	30 mph (48 km/h)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2646, P2647, P2648, P2649, P2A00	
Other	Not during valve pausing	

Malfunction Threshold (R18A4 Engine)

The secondary HO2S output voltage is 0.720 V or less.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 25.4 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2271 (63): ADVANCED DIAGNOSTICS (M/T)

DTC P2271: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK RICH (M/T)

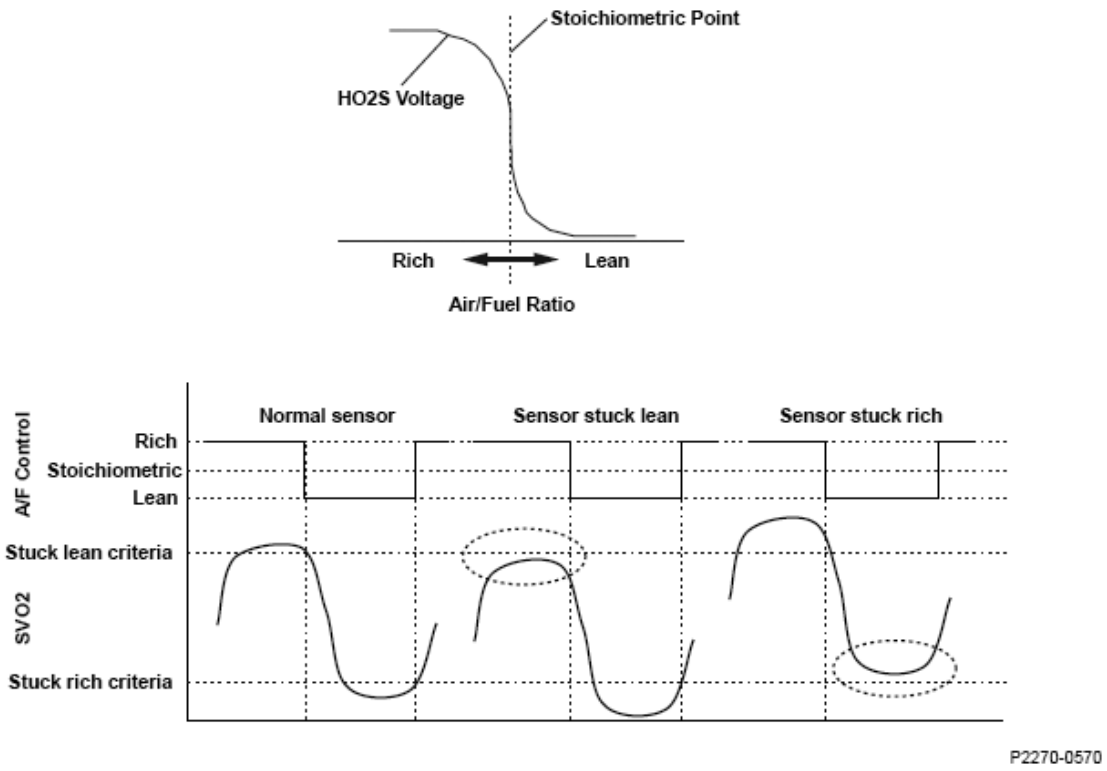


Fig. 653: Air Fuel Ratio - Graph

General Description (M/T)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC). The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	19(2), 21.1(1) seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Elapsed time that secondary HO2S activity is not monitored after starting the engine		15 seconds	-
Elapsed time after the fuel cut-off		-	150 seconds[*1]
			185 seconds[*2]
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed	A/T	1,300 rpm[*1]	2,450 rpm[*1]
	M/T		3,025 rpm[*2]
		1,825 rpm[*2]	3,300 rpm[*1]
MAP value		27 kPa (7.9 in.Hg, 200 mmHg)[*2]	79 kPa (23.6 in.Hg, 600 mmHg)[*2]
		27 kPa (7.9 in.Hg, 200 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)[*1]
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		30 mph (48 km/h)	-
Fuel trim		0.69[*2]	1.47
		0.73[*1]	
Fuel feedback		Closed loop	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351[*1] , P0352[*1] , P0353[*1] , P0354[*1] , P0400[*1] , P0401[*1] , P0404[*1] , P0443, P0496, P0497, P1077[*1] , P1078[*1] , P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2413[*1] , P2646, P2647, P2648, P2649, P2A00	
(1) Rocker arm oil control solenoid: ON (2) Rocker arm oil control solenoid: OFF			

Malfunction Threshold (M/T)

The secondary HO2S output voltage is 0.293 V or more.

Driving Pattern (M/T)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 19[*2] , 21.1[*1] seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2271 (63): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2271: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK RICH (R18A1 ENGINE)

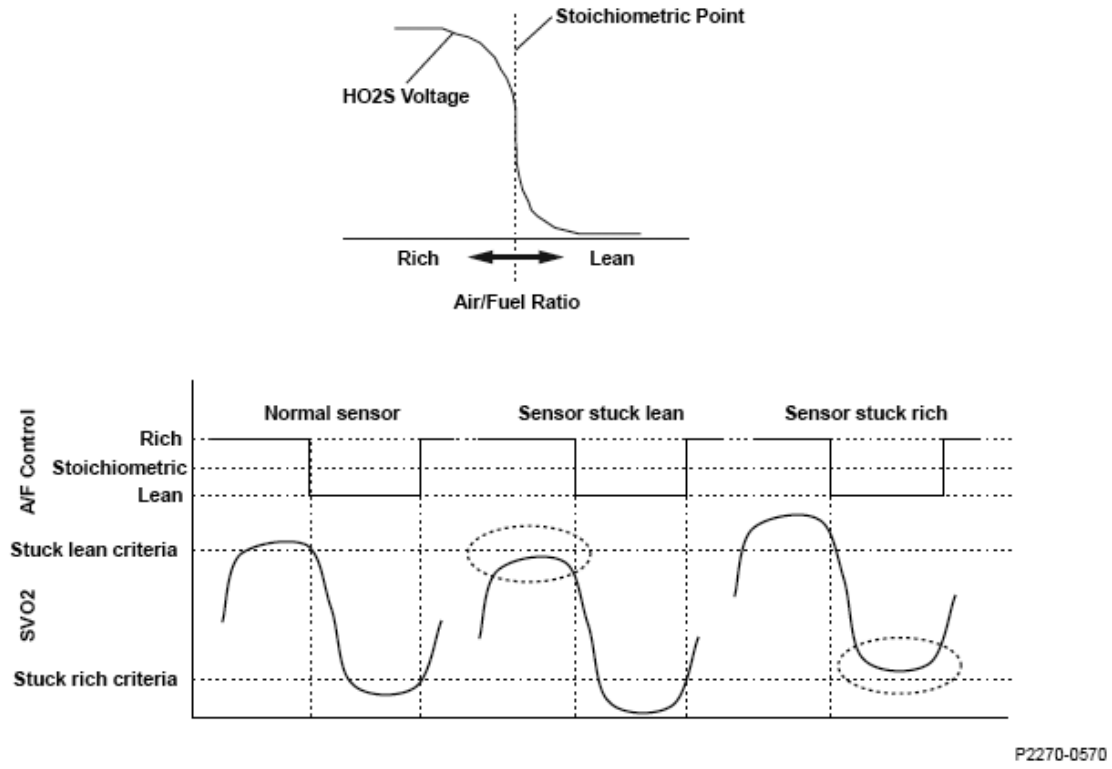


Fig. 654: Air Fuel Ratio - Graph

General Description (R18A1 Engine)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC). The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	19(2), 21.1(1) seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION
(1) R18A1 engine (2) K20Z3 engine	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition		Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine		15 seconds	-
Elapsed time after the fuel cut-off		-	150 seconds*1
			185 seconds*2
Engine coolant temperature		156°F (69°C)	-
Intake air temperature		-13°F (-25°C)	-
Engine speed	A/T	1,300 rpm*1	2,450 rpm*1
	M/T		3,025 rpm*2
		1,825 rpm*2	3,300 rpm*1
MAP value		27 kPa (7.9 in.Hg, 200 mmHg)*2	79 kPa (23.6 in.Hg, 600 mmHg)*2
		27 kPa (7.9 in.Hg, 200 mmHg)(1)	86 kPa (25.5 in.Hg, 650 mmHg)*1
		40 kPa (11.9 in.Hg, 300 mmHg)(2)	
Vehicle speed		30 mph (48 km/h)	-
Fuel trim		0.69*2	1.47
		0.73*1	
Fuel feedback		Closed loop	
No active DTCs		P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351*1 , P0352*1 , P0353*1 , P0354*1 , P0400*1 , P0401*1 , P0404*1 , P0443, P0496, P0497, P1077*1 , P1078*1 , P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2413*1 , P2646, P2647, P2648, P2649, P2A00	
(1) Rocker arm oil control solenoid: ON			

(2) Rocker arm oil control solenoid: OFF

Malfunction Threshold (R18A1 Engine)

The secondary HO2S output voltage is 0.293 V or more.

Driving Pattern (R18A1 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more for at least 19*2 , 21.1*1 seconds.
   - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2271 (63): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2271: SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S (SENSOR 2)) CIRCUIT SIGNAL STUCK RICH (R18A4 ENGINE)

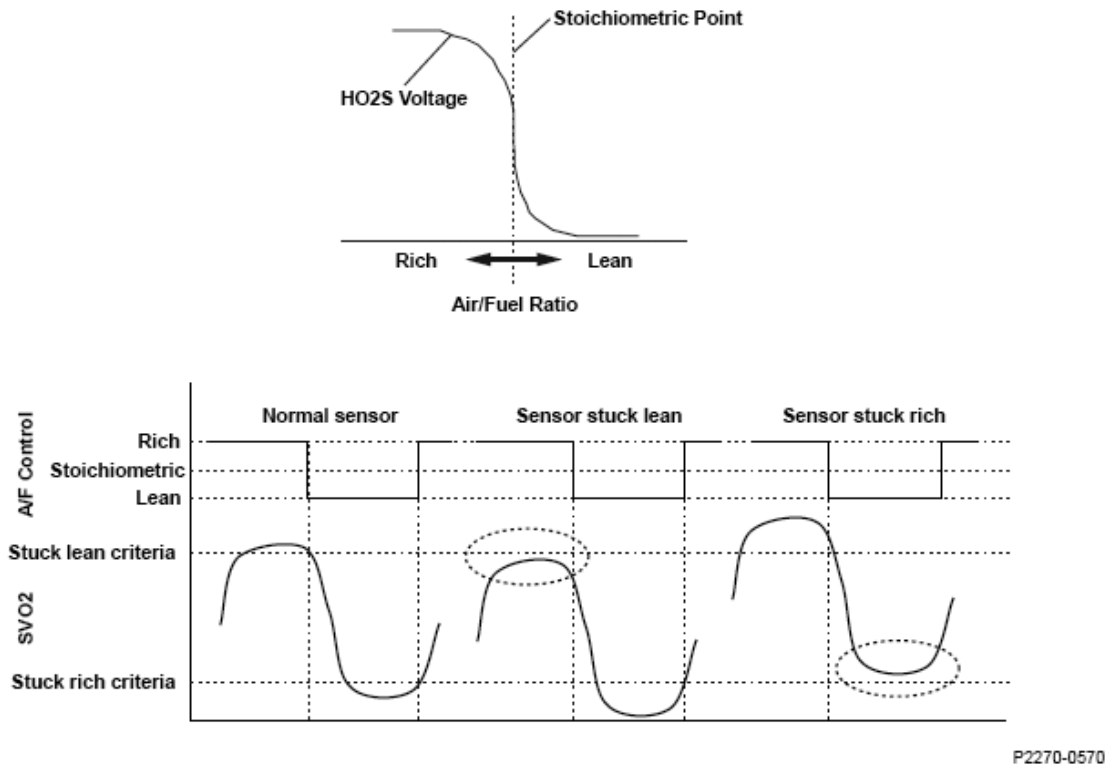


Fig. 655: Air Fuel Ratio - Graph

General Description (R18A4 Engine)

The secondary HO2S detects the oxygen concentration in the exhaust gas downstream of the three-way catalyst (TWC). The sensor output voltage characteristics are similar to the air/fuel ratio (A/F) sensor. The oxygen concentration is detected after the TWC during fuel feedback control using the A/F sensor, and it optimizes the fuel feedback control to maximize the effect of the TWC. If, after current is applied to the secondary HO2S heater, the secondary HO2S does not fluctuate and the output is stuck within the specified area, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	25.4 seconds or less
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time that secondary HO2S activity is not monitored after starting the engine	15 seconds	-

Elapsed time after the fuel cut-off	-	150 seconds
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	1,500 rpm	2,550 rpm
MAP value	40 kPa (11.9 in.Hg, 300 mmHg)	86 kPa (25.5 in.Hg, 650 mmHg)
Vehicle speed	30 mph (48 km/h)	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0111, P0112, P0113, P0117, P0118, P0133, P0134, P0135, P0137, P0138, P0141, P0171, P0172, P0181, P0182, P0183, P0191, P0192, P0193, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P1077, P1078, P1128, P1129, P1157, P1172, P2195, P2238, P2252, P2270, P2646, P2647, P2648, P2649, P2A00	
Other	Not during valve pausing	

Malfunction Threshold (R18A4 Engine)

The secondary HO2S output voltage is 0.293 V or more.

Driving Pattern (R18A4 Engine)

1. Start the engine. Let it idle until the radiator fan comes on.
2. Drive the vehicle at a steady speed of 35 mph (57 km/h) or more, for at least 25.4 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2413 (12): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2413: EXHAUST GAS RECIRCULATION (EGR) SYSTEM MALFUNCTION (R18A1)

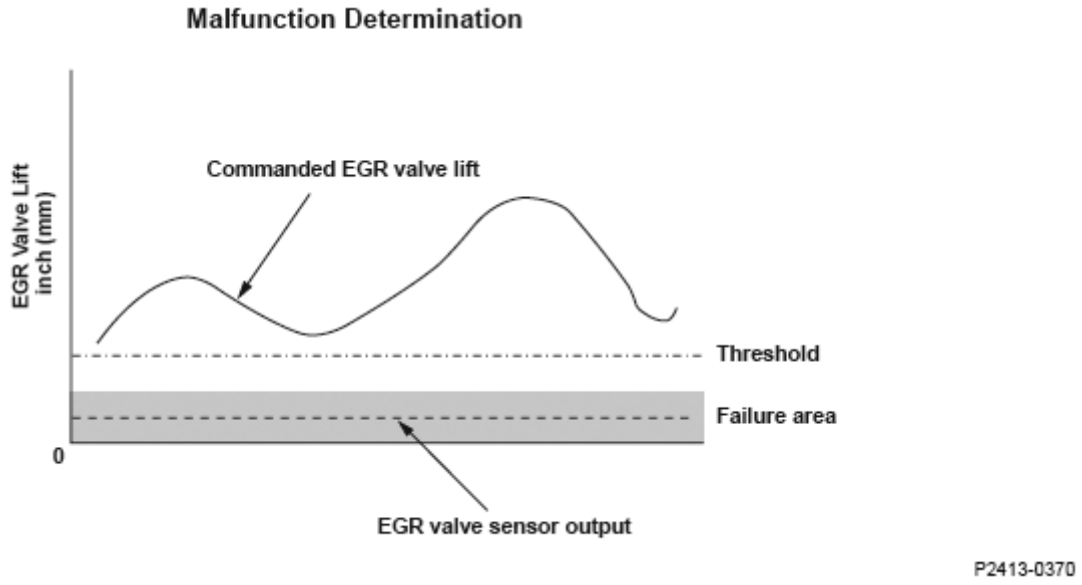


Fig. 656: EGR Valve Sensor Output And Valve Lifting Position Graph

General Description (R18A1 Engine)

The exhaust gas recirculation (EGR) valve, which is controlled by the engine control module (ECM)/powertrain control module (PCM), is opened and the exhaust gas flows from the exhaust manifold through the EGR valve and the intake manifold and the EGR passage. The exhaust gas is circulated into the air/fuel mixture and the mixture is drawn into the combustion chamber to lower the combustion temperatures, thus reducing oxides of nitrogen (NOx) emissions.

A sensor (lift sensor) is built into the EGR valve and detects the amount of valve lift. The command value for the target valve lift is stored in the ECM/PCM so that exhaust gas recirculation can be optimized according to driving conditions.

Comparing this command value with the lift sensor output signal value, the ECM/PCM controls the EGR valve to make the amount of actual valve lift equal to the command value.

If the valve sensor output is insufficient for the commanded valve lift, a malfunction is detected.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine speed	-	5,500 rpm

Battery voltage	10.5 V	-
Commanded EGR valve lift	0.040 in. (1.00 mm)	-
No active DTCs	P0101, P0101, P0102, P0103, P0107, P0108, P0112, P0113, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0400, P0401, P0406, P1128, P1129, P1157, P1172, P2195, P2238, P2252	

Malfunction Threshold (R18A1 Engine)

If the actual valve lift is 0.006 in. (0.15 mm) or less for at least 5 seconds, the valve is considered stuck closed.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EGR TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 15 - 75 mph (24 - 120 km/h) for at least 5 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2422 (117): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2422: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION (K20Z3)

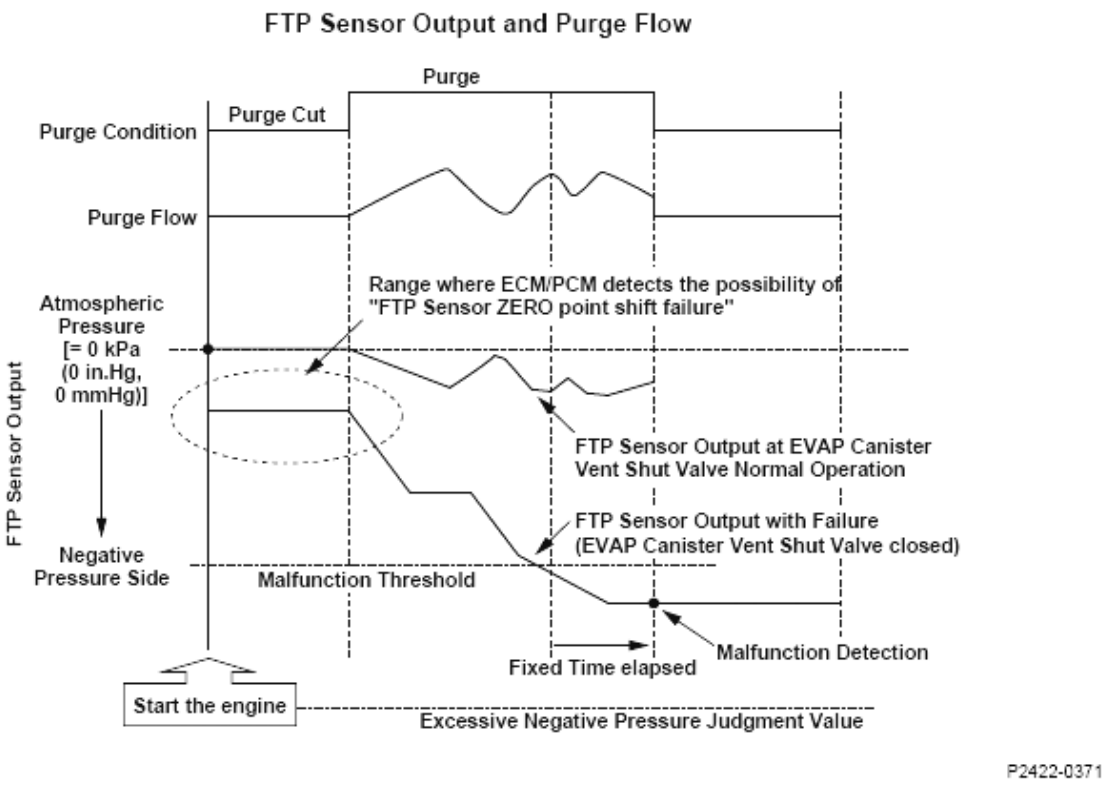


Fig. 657: FTP Sensor Output And Purge Flow Graph

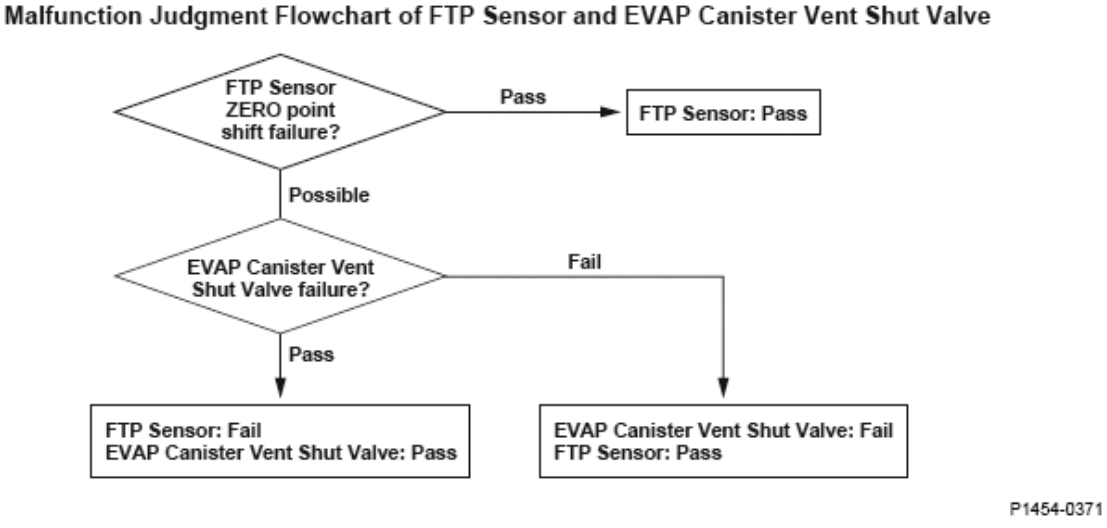


Fig. 658: Flow Chart

General Description (K20Z3 Engine)

The fuel tank pressure (FTP) sensor output indicates about atmospheric pressure 0 kPa (0 in.Hg, 0 mmHg) before purge starts since the evaporative emission (EVAP) canister vent shut valve is normally open (open to the atmosphere). The sensor indicates a negative pressure value (vacuum) during purging.

When the FTP sensor indicates vacuum after starting the engine, there is the possibility of an FTP sensor zero point shift failure or an EVAP canister vent shut valve stuck closed failure. So the engine control module (ECM) monitors the FTP sensor output after purge starts. The ECM detects a malfunction of the

EVAP canister vent shut valve if the output indicates excessive vacuum.

However, if the fuel tank internal pressure is below the specified value (excessive vacuum is detected) when starting the engine, the malfunction detection should be done as follows because it is difficult to distinguish the FTP sensor range problem (P1454) from the EVAP canister vent shut valve stuck closed (P2422).

1. If neither Temporary DTC (P1454 nor P2422) is stored, both DTCs are stored.
2. If both Temporary DTCs (P1454 and P2422) are stored and excessive vacuum is detected, both DTCs are stored.
3. If either Temporary DTC (P1454 or P2422) is stored and excessive vacuum is detected, the ECM stores the DTC of the Temporary DTC that was stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	P0452, P0453 are judged as OK
Duration	1.04(1), 8(2) seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) Elapsed time after the FTP sensor output exceeds the malfunction threshold. (2) Excessive negative pressure is detected.	

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine**	10 seconds	-
Engine coolant temperature(1)	140 °F (60 °C)	-
Battery voltage	10.5 V	-
Fuel feedback	Closed loop	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0443, P0451, P0452, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P145C, P2195, P2227, P2228, P2229, P2238, P2252	
Others	The EVAP canister vent shut valve has not been closing	
	Stopping the purge control	
(1) Condition to start the purge control.		

Malfunction Threshold (K20Z3 Engine)

The output from the fuel tank pressure sensor is -4 kPa (-1.0 in.Hg, -25 mmHg)*, -2 kPa (-0.4 in.Hg, -10 mmHg)** or less for at least 1.04*, 8** seconds.

*: Elapsed time after the FTP sensor output exceeds the malfunction threshold.

**: Excessive negative pressure is detected.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2422 (117): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2422: EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION (R18A1)

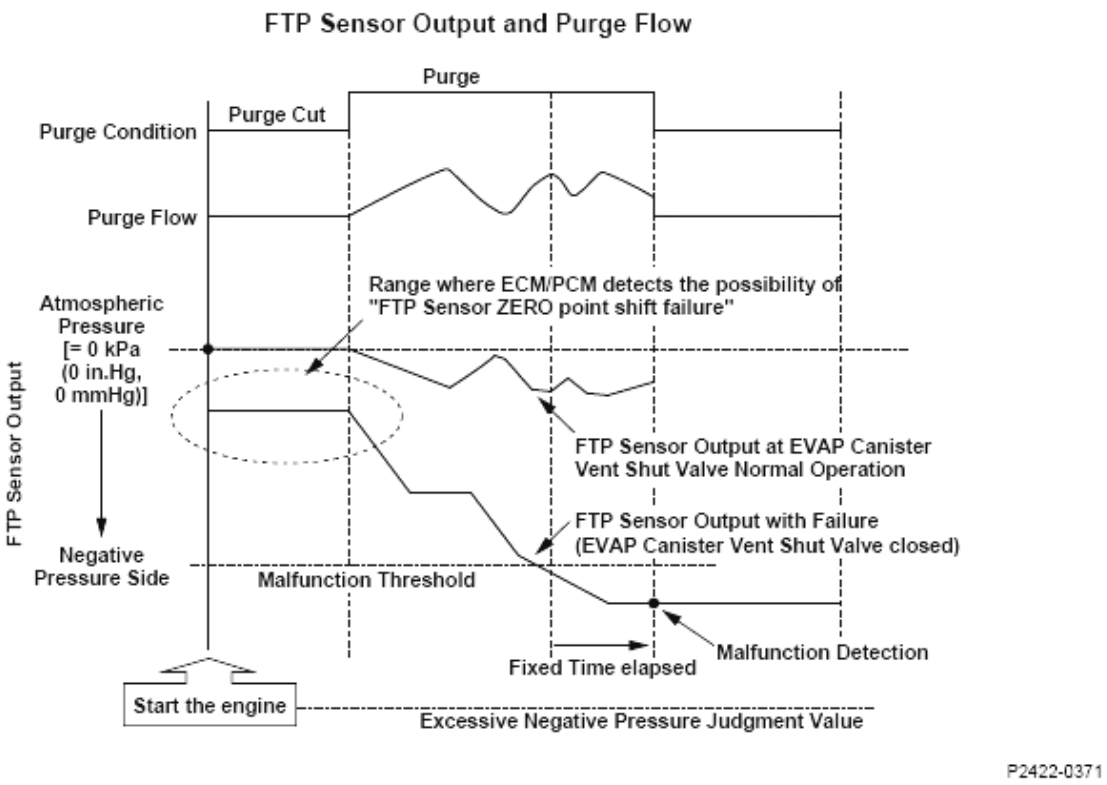


Fig. 659: FTP Sensor Output And Purge Flow Graph

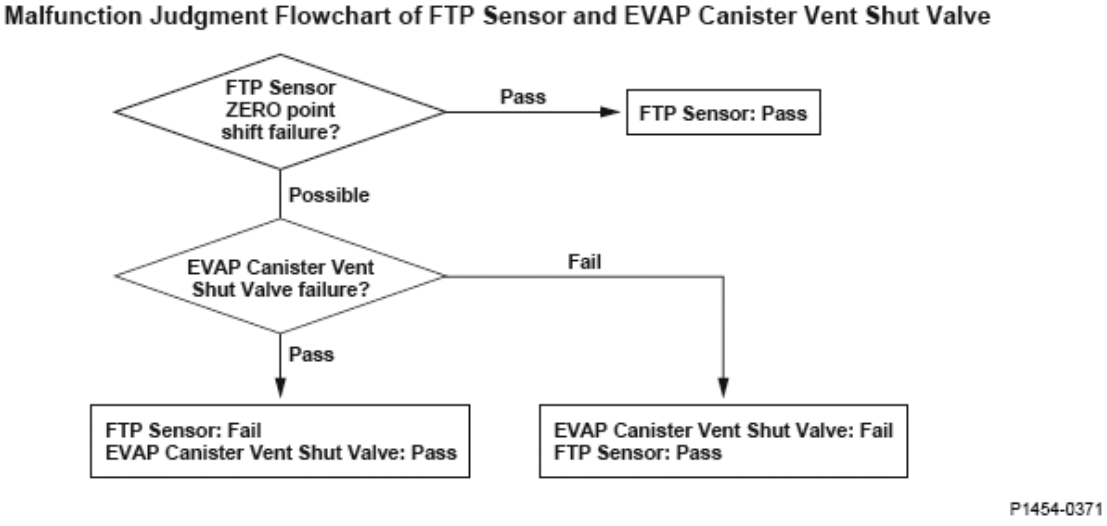


Fig. 660: Flow Chart

General Description (R18A1 Engine)

The fuel tank pressure (FTP) sensor output indicates about atmospheric pressure 0 kPa (0 in.Hg, 0 mmHg) before purge starts since the evaporative emission (EVAP) canister vent shut valve is normally open (open to the atmosphere). The sensor indicates a negative pressure value (vacuum) during purging.

When the FTP sensor indicates vacuum after starting the engine, there is the possibility of an FTP sensor zero point shift failure or an EVAP canister vent shut valve stuck closed failure. So the engine control module (ECM)/powertrain control module (PCM) monitors the FTP sensor output after purge starts. The

ECM/PCM detects a malfunction of the EVAP canister vent shut valve if the output indicates excessive vacuum.

However, if the fuel tank internal pressure is below the specified value (excessive vacuum is detected) when starting the engine, the malfunction detection should be done as follows because it is difficult to distinguish the FTP sensor range problem (P1454) from the EVAP canister vent shut valve stuck closed (P2422).

1. If neither Temporary DTC (P1454 nor P2422) is stored, both DTCs are stored.
2. If both Temporary DTCs (P1454 and P2422) are stored and excessive vacuum is detected, both DTCs are stored.
3. If either Temporary DTC (P1454 or P2422) is stored and excessive vacuum is detected, the ECM/PCM stores the DTC of the Temporary DTC that was stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3.04 seconds or more(1)
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)
(1) Elapsed time after the FTP sensor output exceeds the malfunction threshold.	

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine(1)	10 seconds	-
Time to judge excessive negative pressure(1)	3 seconds	-
Engine coolant temperature(2)	140°F (60°C)	-
Fuel tank pressure(1)	-	-2 kPa (-0.4 in.Hg, -10 mmHg)
Battery voltage	10.5 V	-
Fuel trim	0.73	1.47
Fuel feedback	Closed loop	
Monitoring priority	P0455, P0457, P0497	
No active DTCs	P0101, P0102, P0103, P0107, P0108, P0117, P0118, P0134, P0135, P0300, P0301, P0302, P0303, P0304, P0335, P0339, P0351, P0352, P0353, P0354, P0443, P0451, P0452, P0496, P0497, P0498, P0499, P1128, P1129, P1157, P1172, P2195, P2227, P2228, P2229, P2238, P2252	
(1) Excessive negative pressure is detected. (2) Condition to start the purge control.		

Malfunction Threshold (R18A1 Engine)

The output from the fuel tank pressure sensor is -4 kPa (-1.0 in.Hg, -25 mmHg) or less for at least 3.04 seconds.

Confirmation Procedure with the HDS (R18A1 Engine)

Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2610 (132): ADVANCED DIAGNOSTICS (M/T)

DTC P2610: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) IGNITION OFF INTERNAL TIMER MALFUNCTION (M/T)

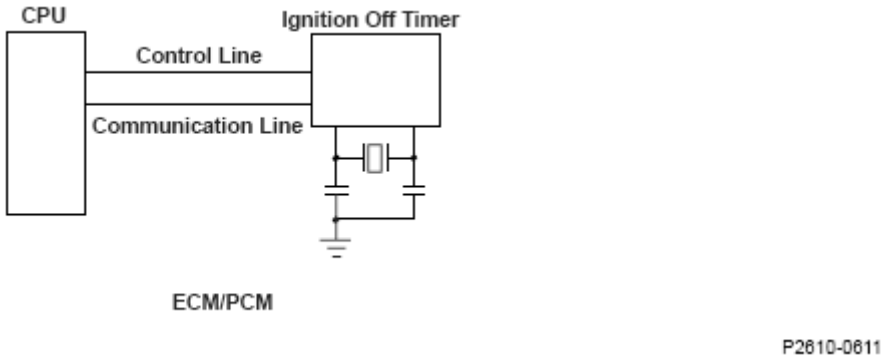


Fig. 661: Engine Control Module Ignition Off Internal Timer - Communication Diagram

General Description (M/T)

The engine control module (ECM)/powertrain control module (PCM) has a built-in ignition off timer that

measures the duration of time from ignition off to the next ignition on. The measured duration is used for evaporative emission (EVAP) leak detection and temperature assumption of the catalytic converter.

The CPU in the ECM/PCM accesses the ignition off timer when reading the measured duration. When the access process fails, a malfunction is detected and a DTC is stored. When an abnormality is found in the read data, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON(1)
(1) Ignition switch on when a battery is disconnected and connected again is excluded.	

Malfunction Threshold (M/T)

The access process to the ignition off timer fails, or a malfunction is found in the read data for at least 10 seconds.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2610 (132): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2610: ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM) IGNITION OFF INTERNAL TIMER MALFUNCTION (R18A1 ENGINE)

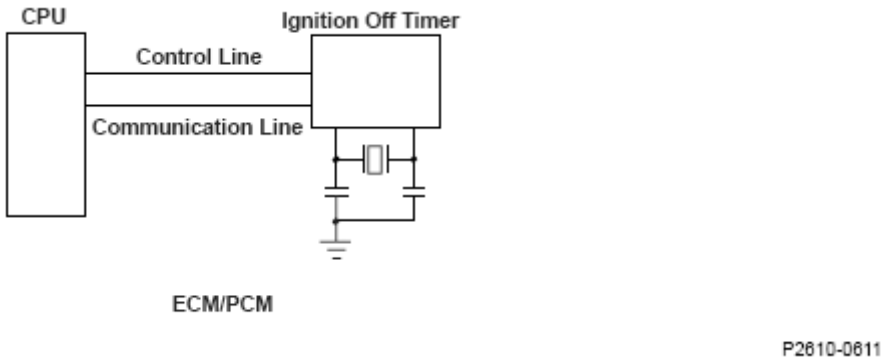


Fig. 662: Engine Control Module Ignition Off Internal Timer - Communication Diagram

General Description (R18A1 Engine)

The engine control module (ECM)/powertrain control module (PCM) has a built-in ignition off timer that measures the duration of time from ignition off to the next ignition on. The measured duration is used for evaporative emission (EVAP) leak detection and temperature assumption of the catalytic converter.

The CPU in the ECM/PCM accesses the ignition off timer when reading the measured duration. When the access process fails, a malfunction is detected and a DTC is stored. When an abnormality is found in the read data, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON(1)
(1) Ignition switch on when a battery is disconnected and connected again is excluded.	

Malfunction Threshold (R18A1 Engine)

The access process to the ignition off timer fails, or a malfunction is found in the read data for at least 10 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the

ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2610 (132): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2610: POWERTRAIN CONTROL MODULE (PCM) IGNITION OFF INTERNAL TIMER PERFORMANCE PROBLEM (R18A4 ENGINE)

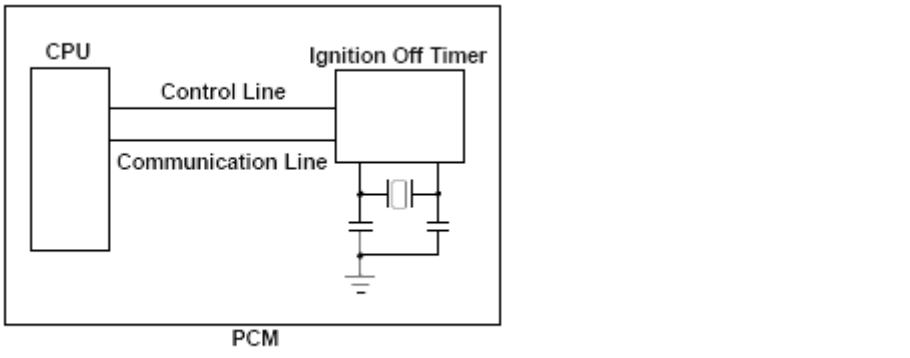


Fig. 663: Powertrain Control Module (PCM) - Communication Diagram

General Description (R18A4 Engine)

The powertrain control module (PCM) has a built-in ignition off timer that measures the time the ignition switch is off. This measurement is used for evaporative emission (EVAP) leak detection and temperature assumption of the catalytic converter. The CPU in the PCM accesses the ignition off timer when reading the measured time. When the access process fails, a malfunction is detected and a DTC is stored. When an abnormality is found in the read data, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	10 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	

Ignition switch	ON(1)
(1) Ignition switch on when a battery is disconnected and connected again is excluded.	

Malfunction Threshold (R18A4 Engine)

The access process to the ignition off timer fails, or a malfunction is found in the read data for at least 10 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2646 (22): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2646: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT LOW VOLTAGE (K20Z3)

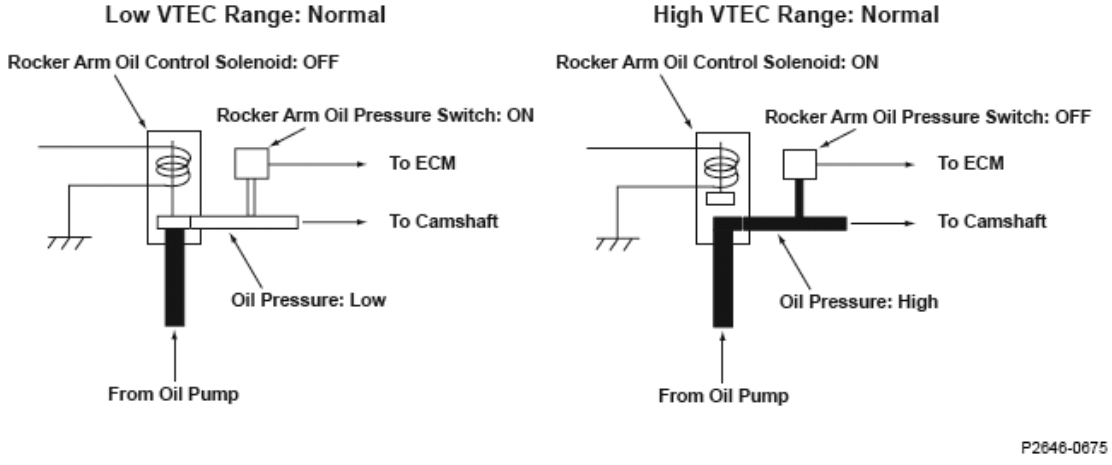


Fig. 664: Rocker Arm Oil Pressure Switch - Circuit Diagram

ROCKER ARM OIL PRESSURE SWITCH

Logic Decision	Rocker Arm Oil Pressure Switch	
	'ON'	'OFF'
Rocker Arm Oil Control Solenoid Command 'ON'	Failure	Normal
Rocker Arm Oil Control Solenoid Command 'OFF'	Normal	Failure

General Description (K20Z3 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The ECM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch down-stream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic circuit that is determined by the ECM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	140 °F (60 °C)	-
Engine speed (High lift cam operation)	4,000 rpm	-
Vehicle speed	7 mph (10 km/h)	-
Battery voltage	10.5 V	-
Gear position	Other than N, P position	
No active DTCs	P2648, P2649	

Malfunction Threshold (K20Z3 Engine)

When the rocker arm oil control solenoid is ON, the rocker arm oil pressure switch remains ON.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle in a lower gear at 4,000 rpm or more with a MAP value of 12 kPa (3.6 in.Hg, 90 mmHg) or more for at least 7 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

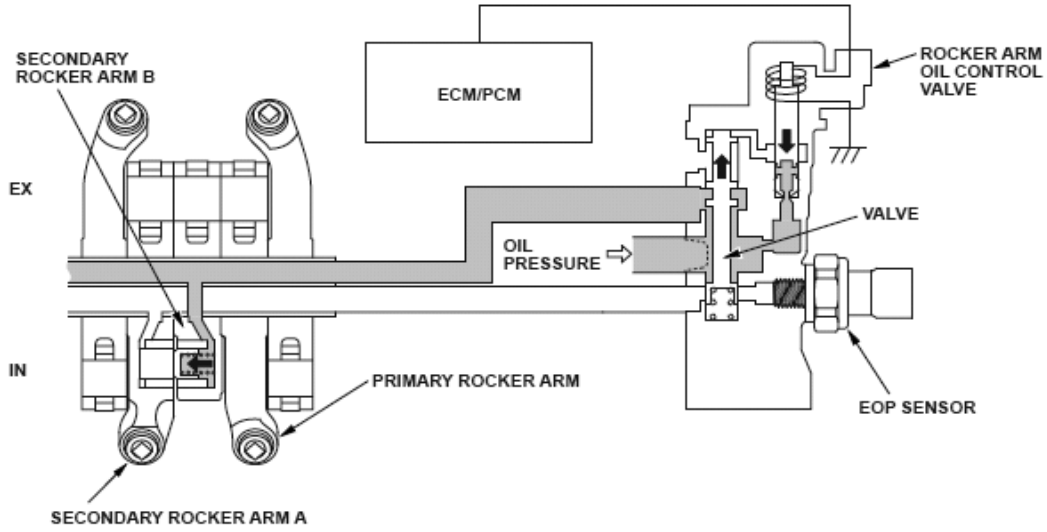
The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

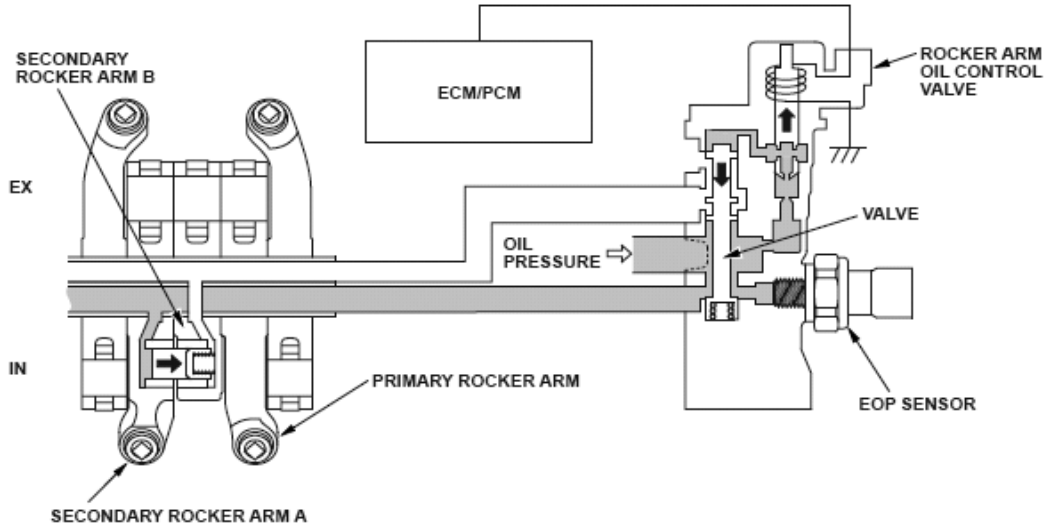
DTC P2646 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2646: VTEC SYSTEM STUCK OFF (R18A1)

At engine start and high load (Rocker Arm Oil Control Solenoid: ON)



At cruise (Rocker Arm Oil Control Solenoid: OFF)



P2646-0674

Fig. 665: Rocker Arm Oil Pressure Flow Diagram

EOP SENSOR REFERENCE

	EOP sensor	
	'High'	'Low'
Rocker Arm Oil Control Solenoid: ON	Failure	Normal
Rocker Arm Oil Control Solenoid: OFF	Normal	Failure

General Description (R18A1 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM)/powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The ECM/PCM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch downstream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic circuit that is determined by the ECM/PCM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	15.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	140 °F (60 °C)	-
Engine speed	1,100 rpm	3,300 rpm
Vehicle speed	9 mph (14 km/h)	-
Battery voltage	10.5 V	-
Fuel feedback	Other than wide open throttle	
Gear position	3rd gear or more	
No active DTCs	P0522, P0523, P2648, P2649	

Malfunction Threshold (R18A1 Engine)

When the rocker arm oil control solenoid is ON, the EOP sensor output remains high (49 kPa (14.5 in.Hg, 368 mmHg) or more).

Confirmation Procedure with the HDS (R18A1 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Hold the engine speed between 1,100 rpm and 3,300 rpm for at least 15.5 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2646 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2646: VTEC SYSTEM STUCK OFF (R18A4 ENGINE)

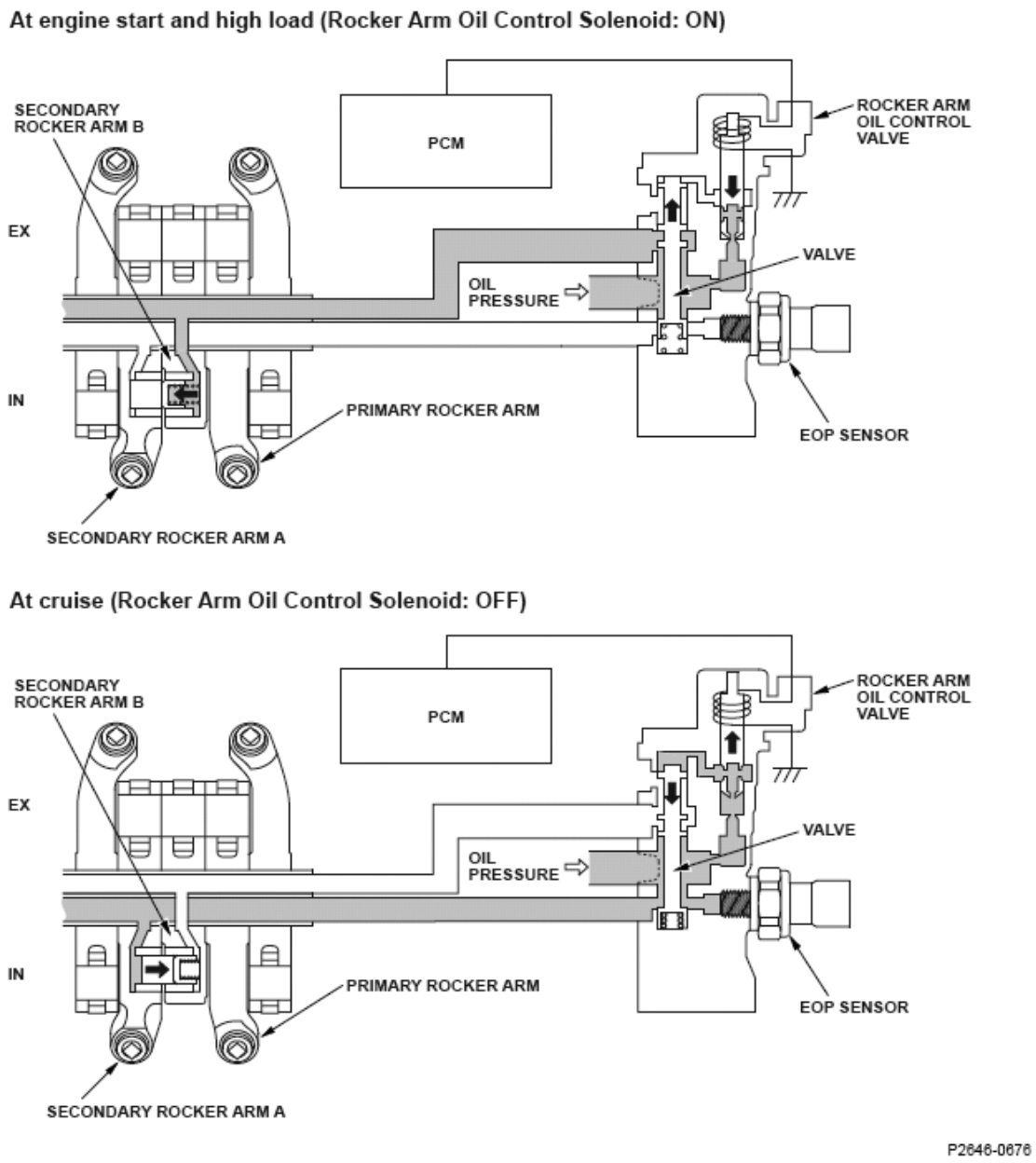


Fig. 666: VTEC System Diagram

EOP SENSOR REFERENCE

	EOP sensor	
	'High'	'Low'
Rocker Arm Oil Control Solenoid: ON	Failure	Normal
Rocker Arm Oil Control Solenoid: OFF	Normal	Failure

General Description (R18A4 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The PCM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch down-stream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic circuit that is determined by the

PCM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	15.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Engine coolant temperature	140°F (60°C)	-
Engine speed	1,100 rpm	3,300 rpm
Vehicle speed	9 mph (14 km/h)	-
Battery voltage	10.5 V	-
Fuel feedback	Other than wide open throttle	
No active DTCs	P0522, P0523, P1109, P2227, P2228, P2229, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

When the rocker arm oil control solenoid is ON, the EOP sensor output remains high (49 kPa (14.5 in.Hg, 368 mmHg) or more).

Confirmation Procedure with the HDS (R18A4 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Hold the engine speed between 1,100 rpm and 3,300 rpm for at least 15.5 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2647 (22): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2647: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT HIGH VOLTAGE (K20Z3)

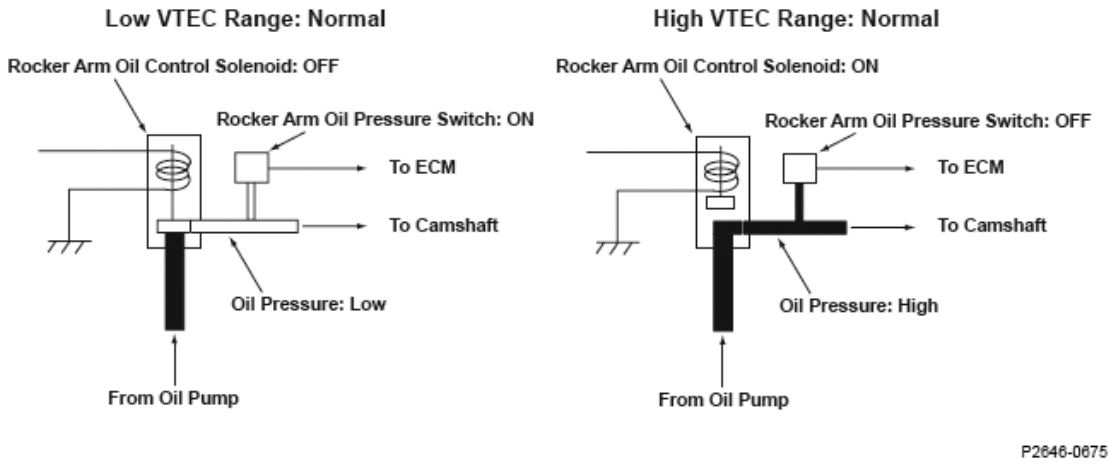


Fig. 667: Rocker Arm Oil Pressure Switch - Circuit Diagram

ROCKER ARM OIL PRESSURE SWITCH

Logic Decision	Rocker Arm Oil Pressure Switch	
	'ON'	'OFF'
Rocker Arm Oil Control Solenoid Command 'ON'	Failure	Normal
Rocker Arm Oil Control Solenoid Command 'OFF'	Normal	Failure

General Description (K20Z3 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The ECM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch down-stream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic circuit that is determined by the ECM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	7 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
No active DTCs	P2648, P2649	
Other	At idle	

Malfunction Threshold (K20Z3 Engine)

Low lift cam operation

When the rocker arm oil control solenoid is OFF, the rocker arm oil pressure switch remains OFF.

Confirmation Procedure with the HDS (K20Z3 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (K20Z3 Engine)

Start the engine, and let it idle for at least 7 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2647 (22): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2647: VTEC SYSTEM STUCK ON (R18A1)

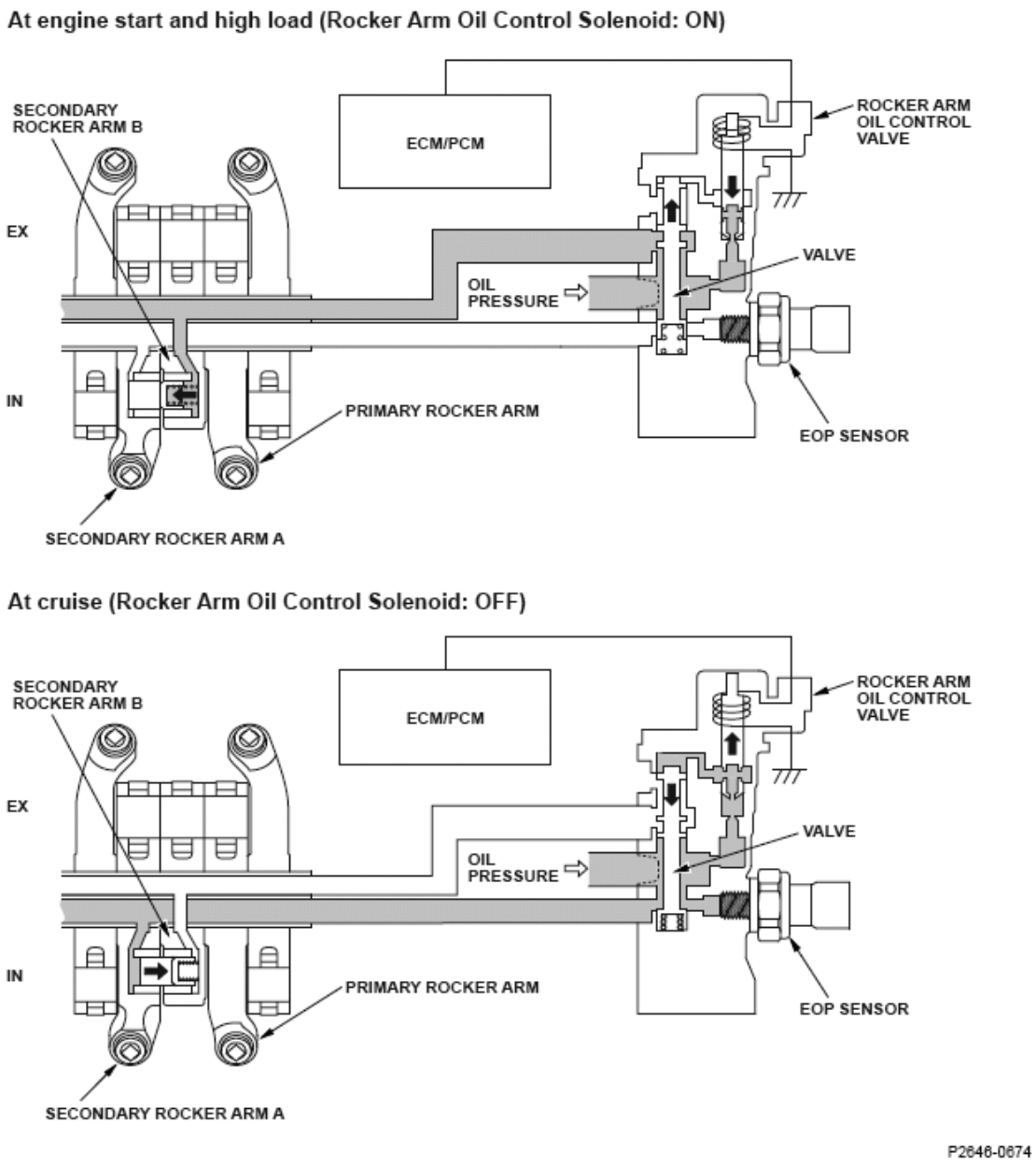


Fig. 668: Rocker Arm Oil Pressure Flow Diagram

EOP SENSOR REFERENCE

	EOP sensor	
	'High'	'Low'
Rocker Arm Oil Control Solenoid: ON	Failure	Normal
Rocker Arm Oil Control Solenoid: OFF	Normal	Failure

General Description (R18A1 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM)/powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The ECM/PCM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch downstream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic

circuit that is determined by the ECM/PCM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	One per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
No active	DTCs P0522, P0523, P2648, P2649	

Malfunction Threshold (R18A1 Engine)

When the rocker arm oil control solenoid is OFF, the EOP sensor output remains low (49 kPa (14.4 in.Hg, 367 mmHg) or less).

Confirmation Procedure with the HDS (R18A1 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A1 Engine)

Start the engine, and let it idle for at least 2.5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2647 (22): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2647: VTEC SYSTEM STUCK ON (R18A4 ENGINE)

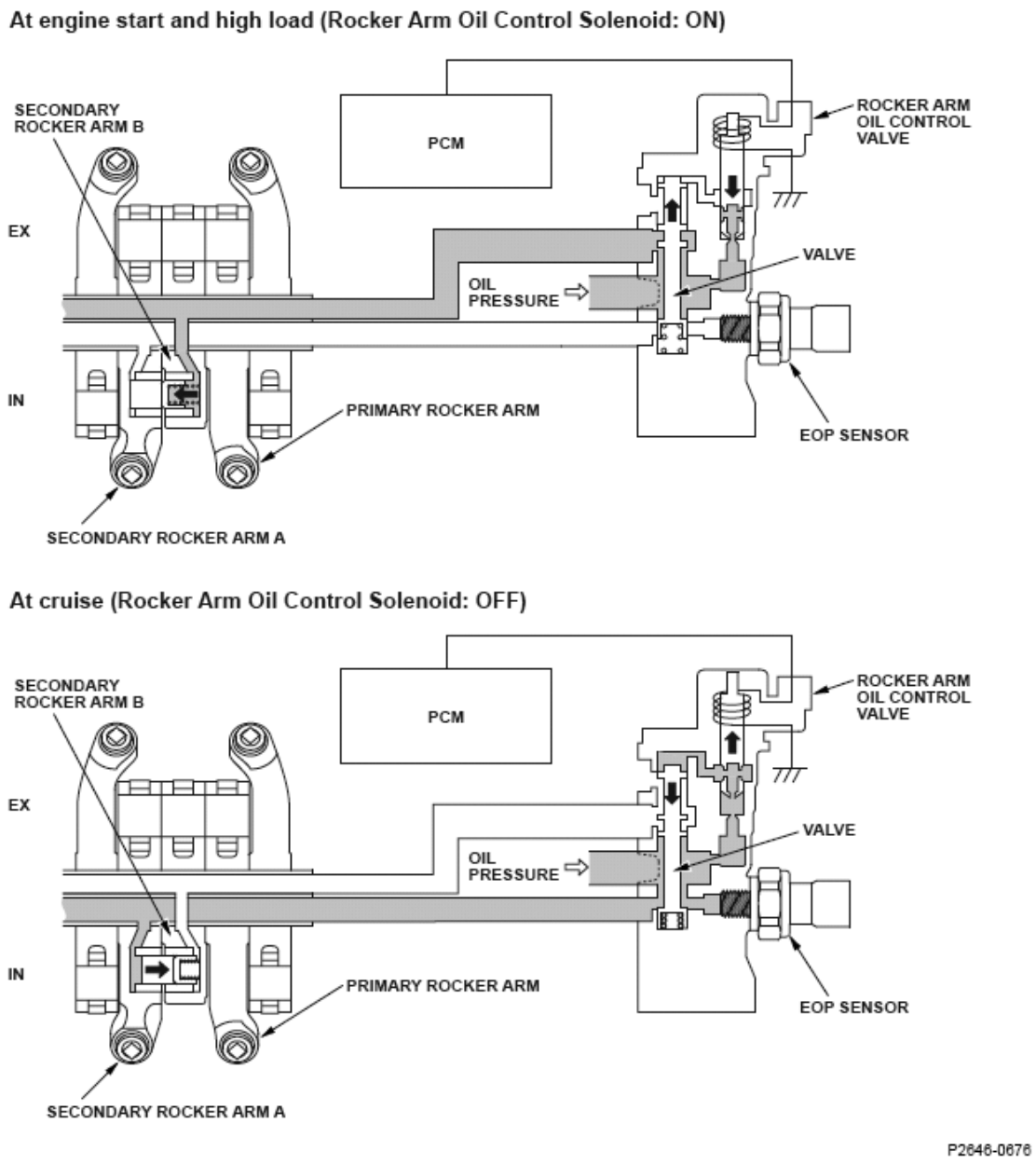


Fig. 669: VTEC System Diagram

EOP SENSOR REFERENCE

	EOP sensor	
	'High'	'Low'
Rocker Arm Oil Control Solenoid: ON	Failure	Normal
Rocker Arm Oil Control Solenoid: OFF	Normal	Failure

General Description (R18A4 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between Low and High. The PCM monitors oil pressure in the hydraulic circuit of the VTEC mechanism using the rocker arm oil pressure switch down-stream of the rocker arm oil control solenoid. If there is a difference between the oil pressure condition in the hydraulic circuit that is determined by the

PCM command and the oil pressure condition that is determined by the status of the rocker arm oil pressure switch, the system is considered faulty, and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	One per driving cycle
Sequence	None
Duration	2.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.5 V	-
No active DTCs	P0522, P0523, P1109, P2227, P2228, P2229, P2648, P2649	

Malfunction Threshold (R18A4 Engine)

When the rocker arm oil control solenoid is OFF, the EOP sensor output remains low (49 kPa (14.4 in.Hg, 367 mmHg) or less).

Confirmation Procedure with the HDS (R18A4 Engine)

Do the VTEC TEST in the INSPECTION MENU with the HDS.

Driving Pattern (R18A4 Engine)

Start the engine, and let it idle for at least 2.5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2648 (21): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE (K20Z3)

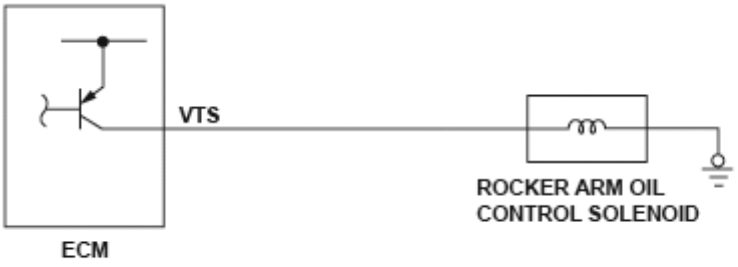


Fig. 670: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (K20Z3 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is OFF (low) when the ECM outputs the ON (high) signal to the rocker arm oil control solenoid, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	P2649	

Malfunction Threshold (K20Z3 Engine)

The return signal is OFF (low) for at least 1.1 seconds when the ECM outputs the ON (high) signal to the rocker arm oil control solenoid.

Driving Pattern (K20Z3 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Drive the vehicle in a lower gear at 4,000 rpm or more with a manifold absolute pressure (MAP) value of 12 kPa (3.5 in.Hg, 90 mmHg) or more for at least 7 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2648 (21): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE (R18A1)

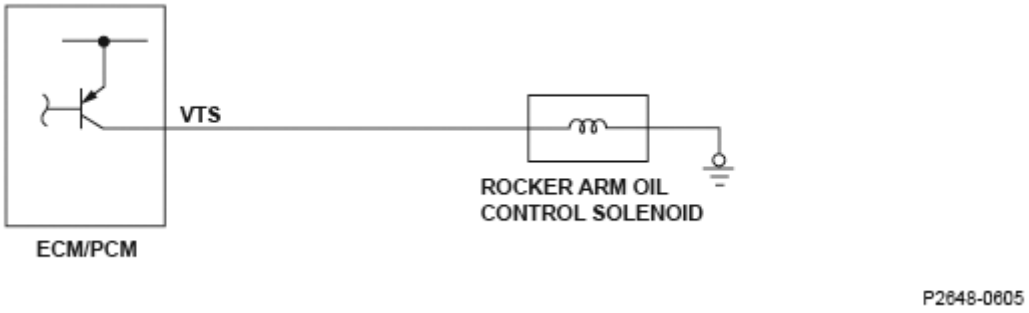


Fig. 671: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (R18A1 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM)/powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is OFF (low) when the ECM/PCM outputs the ON (high) signal to the rocker arm oil control solenoid, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Battery voltage	10.0 V	-
No active DTCs	P2649	

Malfunction Threshold (R18A1 Engine)

The return signal is OFF (low) for at least 1.1 seconds when the ECM/PCM outputs the ON (high) signal to the rocker arm oil control solenoid.

Driving Pattern (R18A1 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive immediately at a steady engine speed between 1,100 rpm and 3,300 rpm for at least 15.5 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2648 (21): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2648: ROCKER ARM OIL CONTROL VALVE CIRCUIT LOW VOLTAGE (R18A4 ENGINE)

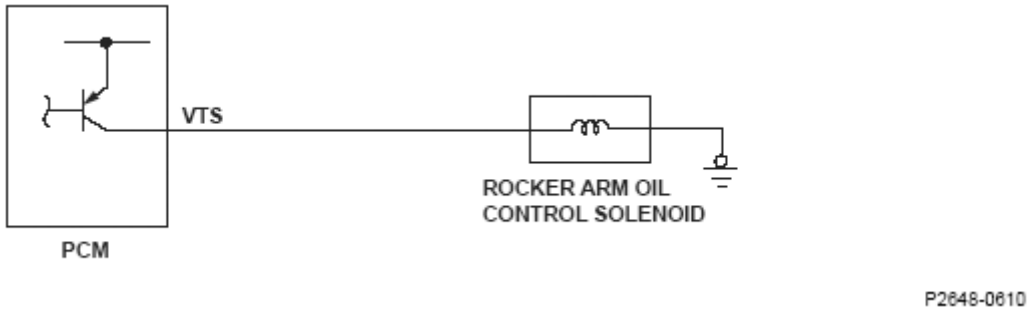


Fig. 672: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (R18A4 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is OFF (low) when the PCM outputs the ON (high) signal to the rocker arm oil control solenoid, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	P2649	

Malfunction Threshold (R18A4 Engine)

The return signal is OFF (low) for at least 1.1 seconds when the PCM outputs the ON (high) signal to the rocker arm oil control solenoid.

Driving Pattern (R18A4 Engine)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive immediately at a steady engine speed between 1,100 rpm and 3,300 rpm for at least 15.5 seconds.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2649 (21): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE (K20Z3)

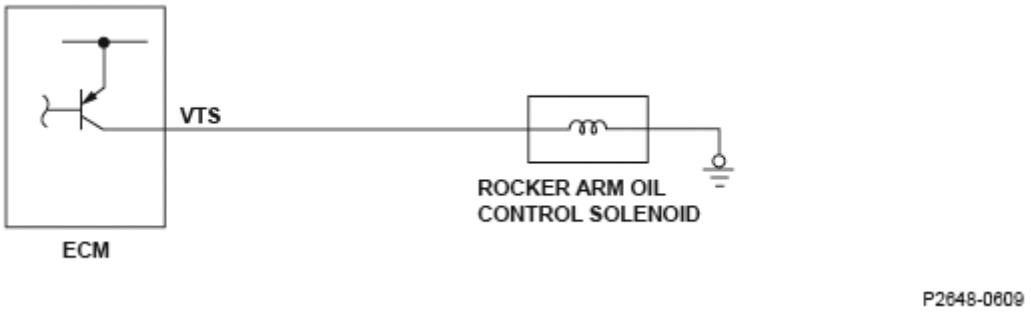


Fig. 673: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (K20Z3 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is ON (high) when the ECM outputs the OFF (low) signal to the rocker arm oil control solenoid, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P2648	

Malfunction Threshold (K20Z3 Engine)

The return signal is ON (high) for at least 1.1 seconds when the ECM outputs the OFF (low) signal to the rocker arm oil control solenoid.

Driving Pattern (K20Z3 Engine)

Start the engine, and let it idle for at least 7 seconds.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2649 (21): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE (R18A1)

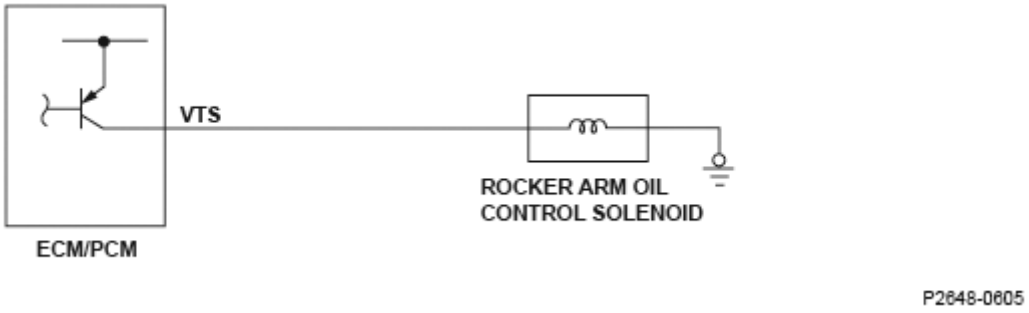


Fig. 674: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (R18A1 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the engine control module (ECM)/powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is ON (high) when the ECM/PCM outputs the OFF (low) signal to the rocker arm oil control solenoid, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum

Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P2648	

Malfunction Threshold (R18A1 Engine)

The return signal is ON (high) for at least 1.1 seconds when the ECM/PCM outputs the OFF (low) signal to the rocker arm oil control solenoid.

Driving Pattern (R18A1 Engine)

Start the engine, and let it idle for at least 2.5 seconds.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2649 (21): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2649: ROCKER ARM OIL CONTROL VALVE CIRCUIT HIGH VOLTAGE (R18A4 ENGINE)

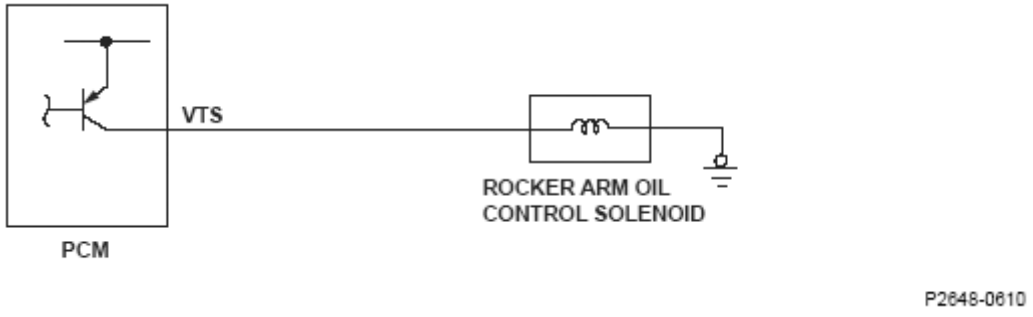


Fig. 675: Rocker Arm Oil Control Solenoid - Circuit Diagram

General Description (R18A4 Engine)

The VTEC system activates the rocker arm oil control solenoid by command from the powertrain control module (PCM), and it charges/discharges the hydraulic circuit of the VTEC mechanism that switches valve timing between low and high. If the return signal is ON (high) when the PCM outputs the OFF (low) signal to the rocker arm oil control solenoid, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1.1 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	PASSED/FAILED/NOT COMPLETED (STILL TESTING)

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
State of the engine	Running	
No active DTCs	P2648	

Malfunction Threshold (R18A4 Engine)

The return signal is ON (high) for at least 1.1 seconds when the PCM outputs the OFF (low) signal to the rocker arm oil control solenoid.

Driving Pattern (R18A4 Engine)

Start the engine, and let it idle for at least 2.5 seconds.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2A00 (61): ADVANCED DIAGNOSTICS (M/T)

DTC P2A00: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM (M/T)

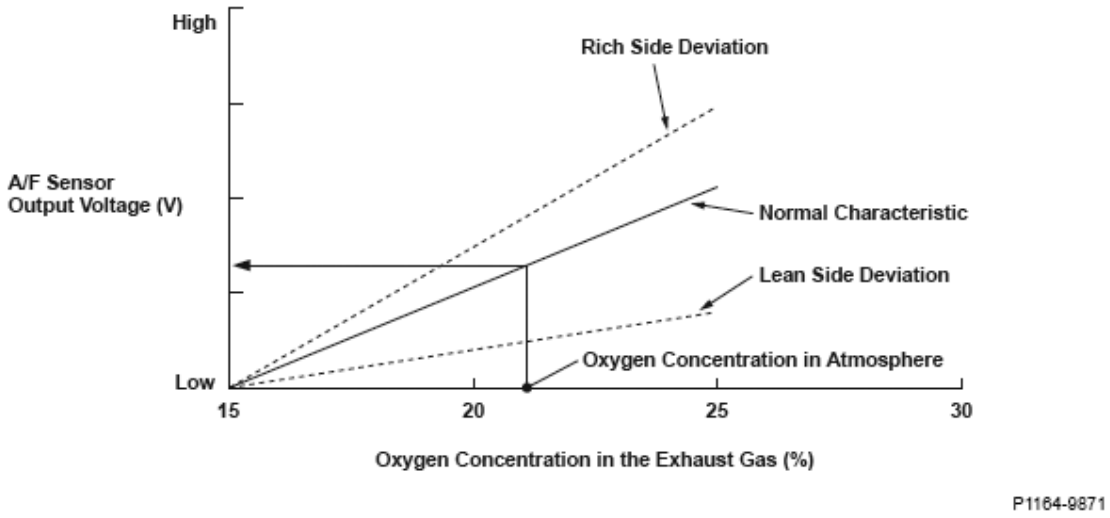


Fig. 676: A/F Sensor Voltage - Graph

General Description (M/T)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The engine control module (ECM)/powertrain control module (PCM) computes the air/fuel ratio from A/F sensor output voltage and uses the fuel feedback control to improve exhaust emissions. The ECM/PCM monitors A/F sensor output voltage during deceleration with the throttle fully closed, and if the output voltage deviates greatly from normal oxygen concentration levels, it detects a malfunction and stores a DTC.

* Output to the scan tool exhibits a relationship between the A/F sensor output and oxygen concentration, which is opposite to the characteristic shown in the graph. That is, a deviation toward the rich side increases the output voltage and one toward the lean side decreases the output voltage as the stoichiometric ratio is 0.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	60 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	-	3,600 rpm(1)
		4,000 rpm(2)

Vehicle speed	30 mph (48 km/h)	-
Fuel feedback	During deceleration	
No active DTCs	P0112, P0113, P0117, P0118, P0122, P0123, P0133, P0134, P0135, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351(1), P0352(1), P0353(1), P0354(1), P0443, P0496, P0497, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P2227, P2228, P2229, P2238, P2252	
(1) R18A1 engine (2) K20Z3 engine		

Malfunction Threshold (M/T)

The A/F sensor output voltage is 2.80*1 , 3.00*2 V or less, or 4.80 V or more.

Driving Pattern (M/T)

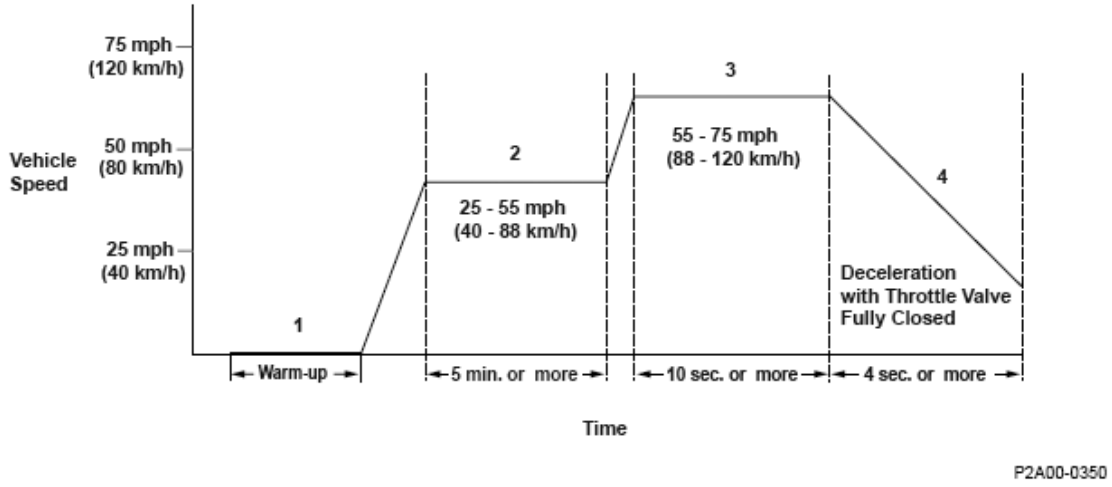


Fig. 677: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 25 - 55 mph (40 - 88 km/h) for at least 5 minutes.
3. Then, drive immediately at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed for at least 4 seconds.
   - If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
   - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2A00 (61): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC P2A00: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM (R18A1 ENGINE)

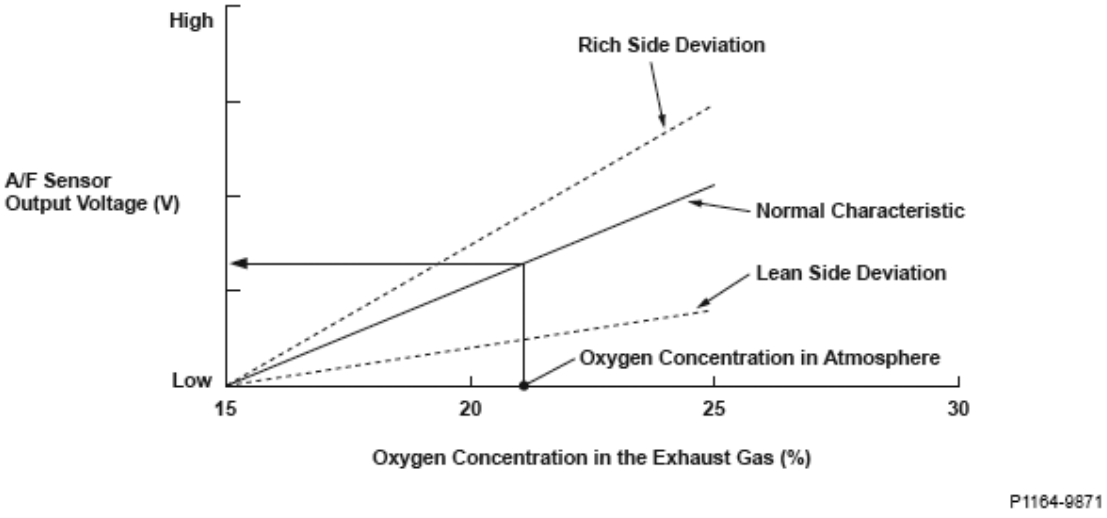


Fig. 678: A/F Sensor Voltage - Graph

General Description (R18A1 Engine)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The engine control module (ECM)/powertrain control module (PCM) computes the air/fuel ratio from A/F sensor output voltage and uses the fuel feedback control to improve exhaust emissions. The ECM/PCM monitors A/F sensor output voltage during deceleration with the throttle fully closed, and if the output voltage deviates greatly from normal oxygen concentration levels, it detects a malfunction and stores a DTC.

* Output to the scan tool exhibits a relationship between the A/F sensor output and oxygen concentration, which is opposite to the characteristic shown in the graph. That is, a deviation toward the rich side increases the output voltage and one toward the lean side decreases the output voltage as the stoichiometric ratio is 0.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle

Sequence	None
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	60 seconds	-
Engine coolant temperature	156 °F (69 °C)	-
Intake air temperature	-13 °F (-25 °C)	-
Engine speed	-	3,600 rpm(1)
		4,000 rpm(2)
Vehicle speed	30 mph (48 km/h)	-
Fuel feedback	During deceleration	
No active DTCs	P0112, P0113, P0117, P0118, P0122, P0123, P0133, P0134, P0135, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351(1), P0352(1), P0353(1), P0354(1), P0443, P0496, P0497, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P2227, P2228, P2229, P2238, P2252	

(1) R18A1 engine

(2) K20Z3 engine

Malfunction Threshold (R18A1 Engine)

The A/F sensor output voltage is 2.80*1 , 3.00*2 V or less, or 4.80 V or more.

Driving Pattern (R18A1 Engine)

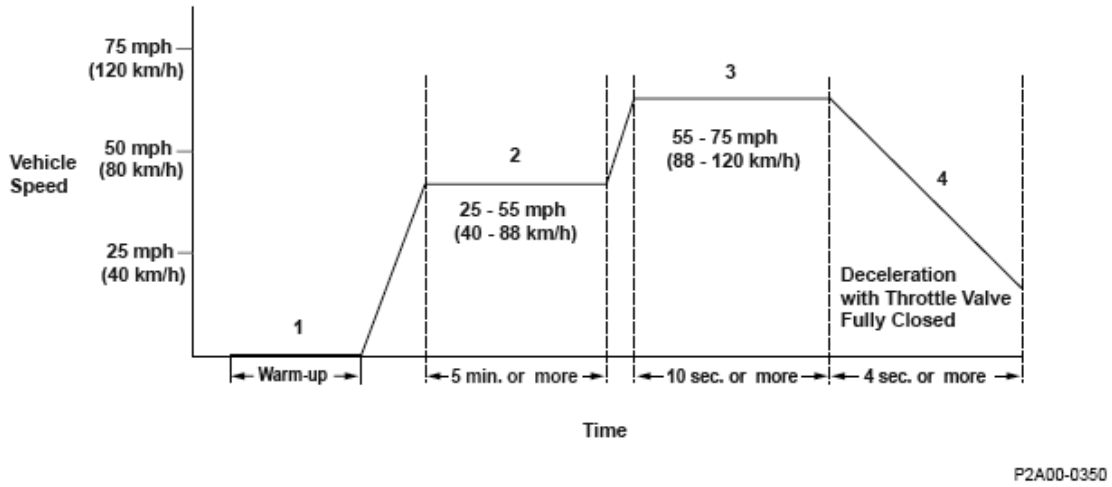


Fig. 679: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 25 - 55 mph (40 - 88 km/h) for at least 5 minutes.
3. Then, drive immediately at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed for at least 4 seconds.
    - If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM/PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC P2A00 (61): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC P2A00: AIR/FUEL RATIO (A/F) SENSOR (SENSOR 1) RANGE/PERFORMANCE PROBLEM (R18A4 ENGINE)

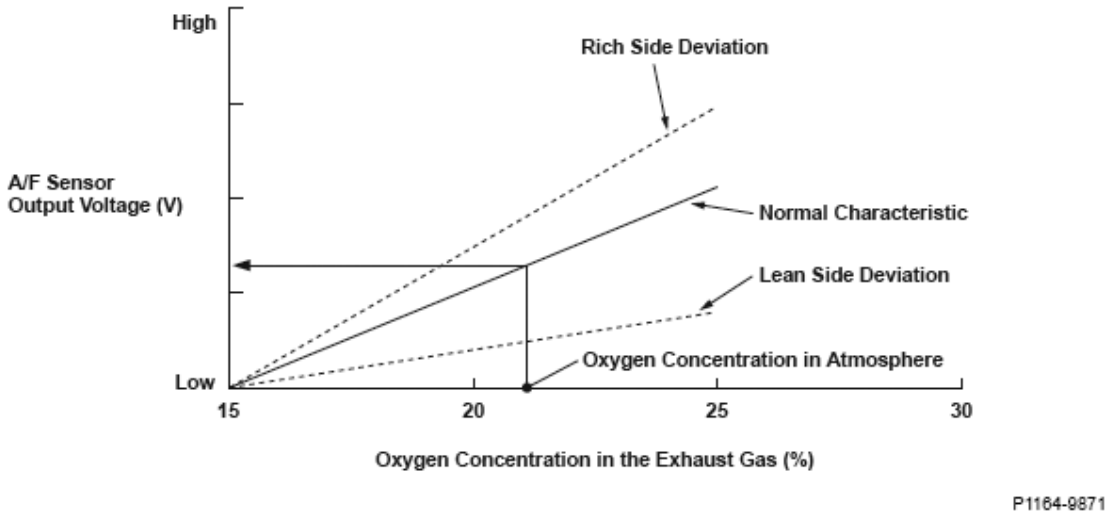


Fig. 680: A/F Sensor Voltage - Graph

General Description (R18A4 Engine)

The air/fuel ratio (A/F) sensor has a linear signal output in relation to the oxygen concentration. The powertrain control module (PCM) computes the air/fuel ratio from A/F sensor output voltage and uses the fuel feedback control to improve exhaust emissions. The PCM monitors A/F sensor output voltage during deceleration with the throttle fully closed, and if the output voltage deviates greatly from normal oxygen concentration levels, it detects a malfunction and stores a DTC.

* Output to the scan tool exhibits a relationship between the A/F sensor output and oxygen concentration, which is opposite to the characteristic shown in the graph. That is, a deviation toward the rich side increases the output voltage and one toward the lean side decreases the output voltage as the stoichiometric ratio is 0.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Once per driving cycle
Sequence	None
Duration	3.5 seconds or more
DTC Type	Two drive cycles, MIL ON
OBD Status	PASSED/FAILED/EXECUTING/OUT OF (TEST) CONDITION

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Elapsed time after starting the engine	60 seconds	-
Engine coolant temperature	156°F (69°C)	-
Intake air temperature	-13°F (-25°C)	-
Engine speed	-	3,600 rpm
Vehicle speed	30 mph (48 km/h)	-
Fuel feedback	During deceleration	

No active DTCs	P0112, P0113, P0117, P0118, P0122, P0123, P0133, P0134, P0135, P0171, P0172, P0222, P0223, P0300, P0301, P0302, P0303, P0304, P0351, P0352, P0353, P0354, P1109, P1157, P1172, P2101, P2118, P2122, P2123, P2127, P2128, P2135, P2138, P2176, P2195, P2227, P2228, P2229, P2238, P2252

Malfunction Threshold (R18A4 Engine)

The A/F sensor output voltage is 2.80 V or less, or 4.80 V or more.

Driving Pattern (R18A4 Engine)

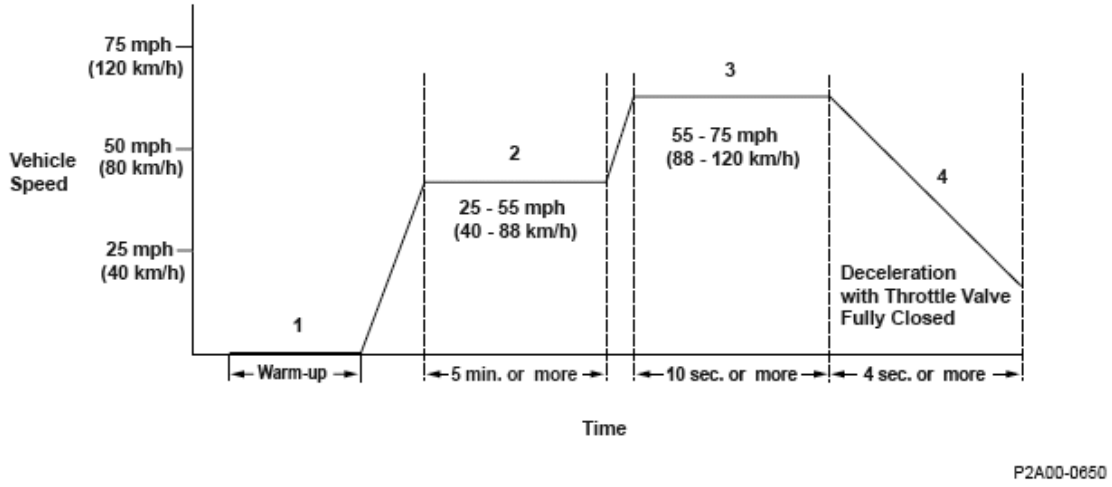


Fig. 681: Identifying Driving Pattern

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Drive the vehicle at a speed between 25 - 55 mph (40 - 88 km/h) for at least 5 minutes.
3. Then, drive immediately at a steady speed between 55 - 75 mph (88 - 120 km/h) for at least 10 seconds.
4. Decelerate with the throttle valve fully closed for at least 4 seconds.
    - If the EVAP monitor runs instead of the HO2S monitor, turn the engine off, then restart it, and the HO2S monitor will restart.
    - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the PCM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the

diagnostic runs.

The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0028 (107): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC U0028: F-CAN COMMUNICATION CIRCUIT ERROR (F-CAN BUS OFF)

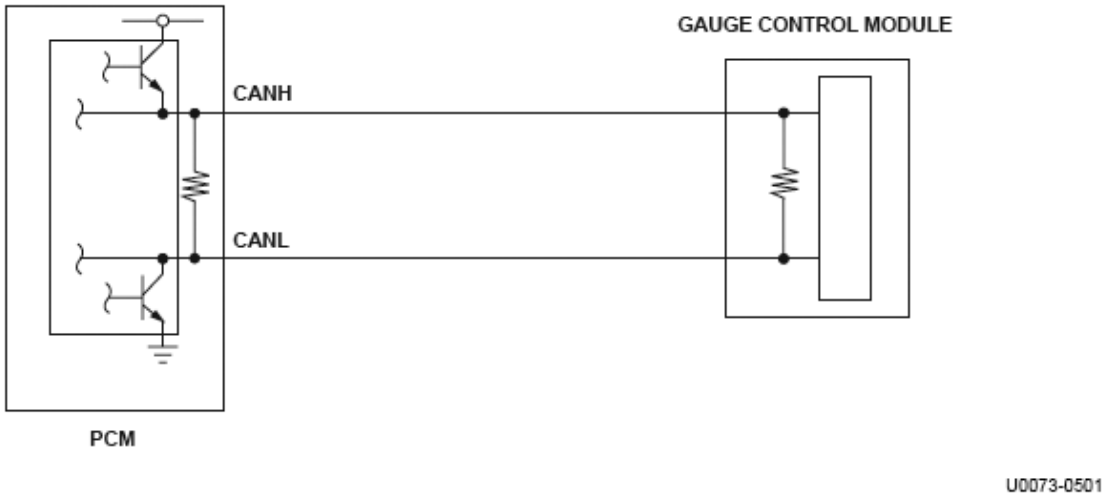


Fig. 682: F-CAN Malfunction Diagram

General Description (R18A1 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals via the CAN lines for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0121, U0155	

Malfunction Threshold (R18A1 Engine)

The PCM does not receive any signals for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0028 (107): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC U0028: F-CAN COMMUNICATION CIRCUIT ERROR (F-CAN BUS OFF)

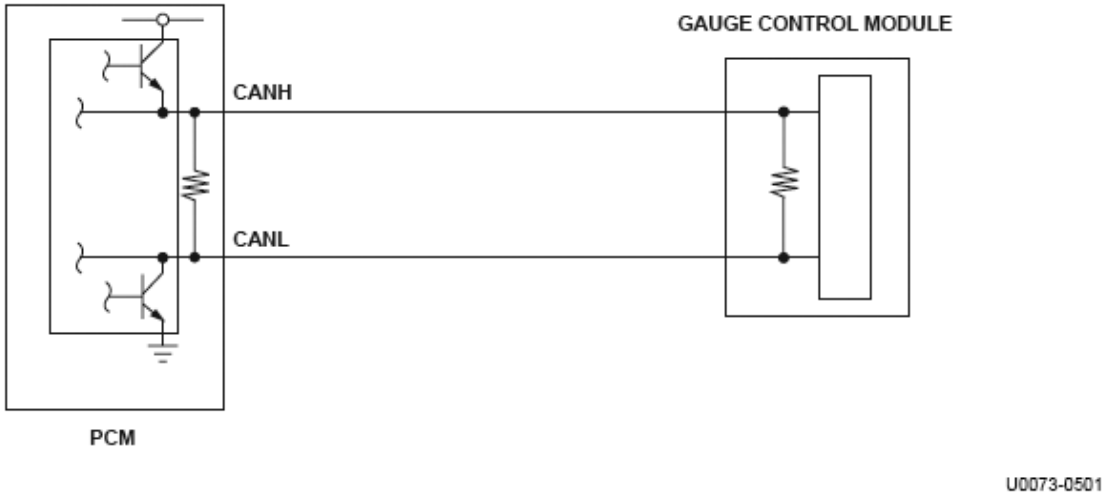


Fig. 683: F-CAN Malfunction Diagram

General Description (R18A4 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals via the CAN lines for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more

DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0121, U0155	

Malfunction Threshold (R18A4 Engine)

The PCM does not receive any signals for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0028 (126): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC U0028: F-CAN MALFUNCTION (BUS-OFF) (K20Z3)

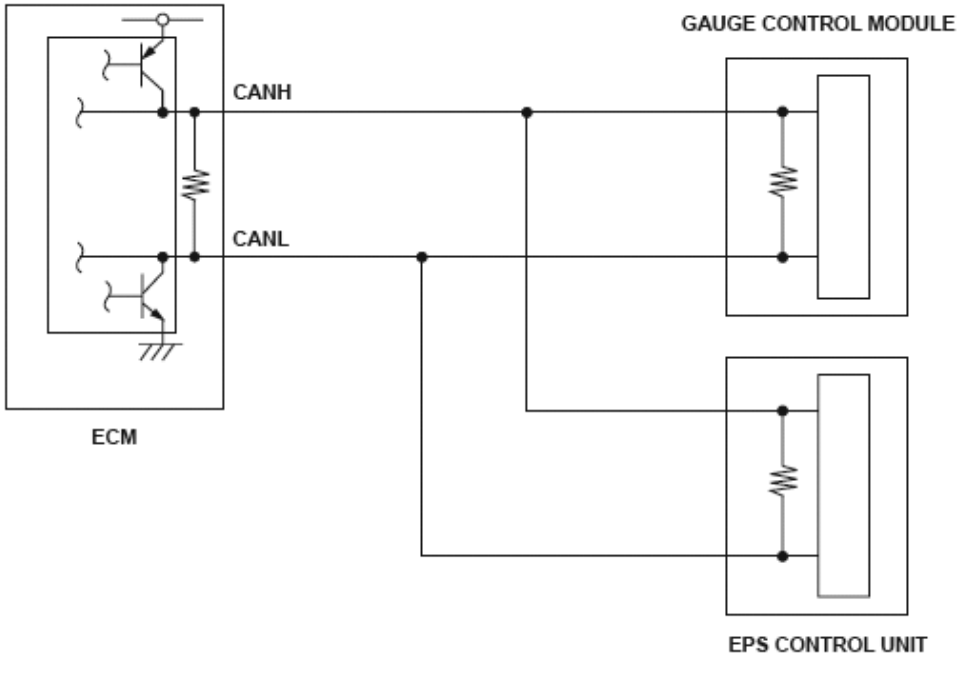


Fig. 684: F-CAN Malfunction Diagram

General Description (K20Z3 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the engine control module (ECM) does not receive the signals via the CAN lines for more than a set time, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-

Malfunction Threshold (K20Z3 Engine)

The ECM does not receive any signals for at least 1 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the MIL (K20Z3 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM memory.

Conditions for clearing the MIL (K20Z3 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0121 (107): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC U0121: LOST COMMUNICATION WITH ABS MODULATOR-CONTROL UNIT (R18A1 ENGINE)

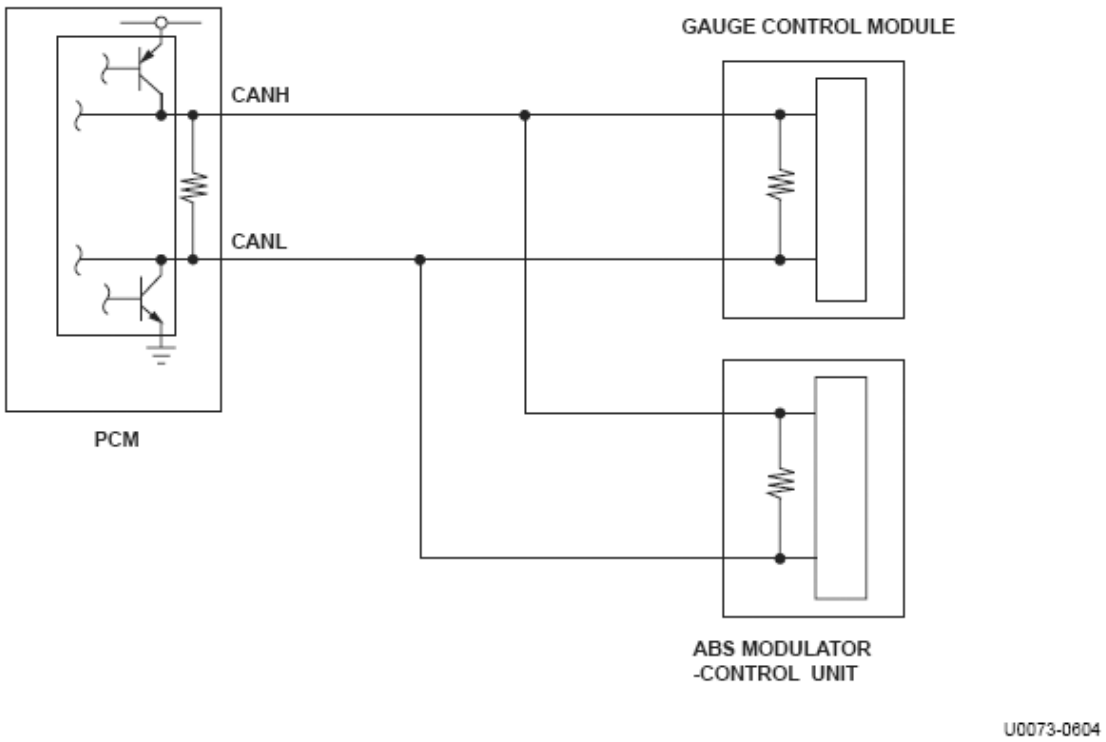


Fig. 685: ABS Modulator Control Unit Circuit Diagram

General Description (R18A1 Engine)

The controller area network (CAN) transmits/receives multiple signals to/from the multiple control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals from the ABS modulator-control unit via the CAN lines for more than a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	9.0 V	-
No active DTCs	U0028, U0155	

Malfunction Threshold (R18A1 Engine)

No signals from the ABS modulator-control unit via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0121 (107): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC U0121: LOST COMMUNICATION WITH ABS MODULATOR-CONTROL UNIT (R18A4 ENGINE)

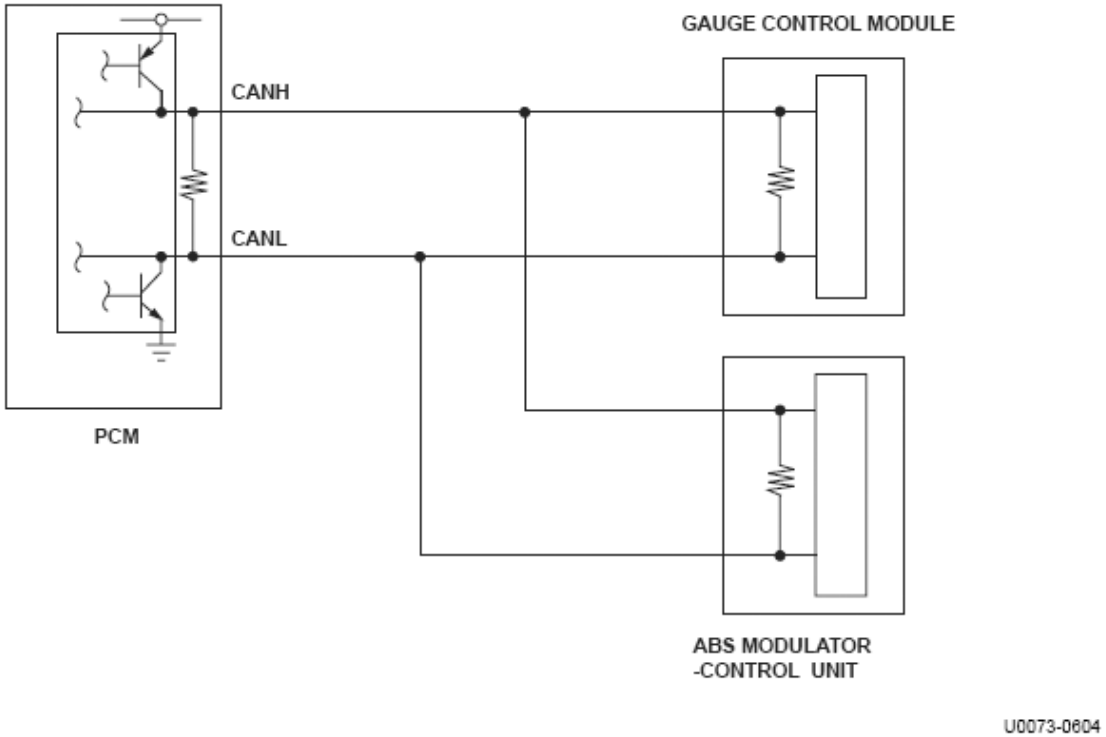


Fig. 686: ABS Modulator Control Unit Circuit Diagram

General Description (R18A4 Engine)

The controller area network (CAN) transmits/receives multiple signals to/from the multiple control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals from the ABS modulator-control unit via the CAN lines for more than a set time, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	9.0 V	-
No active DTCs	U0028, U0155	

Malfunction Threshold (R18A4 Engine)

No signals from the ABS modulator-control unit via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0122 (126): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC U0122: F-CAN MALFUNCTION (ENGINE CONTROL MODULE (ECM)-VSA MODULATOR-CONTROL UNIT) (K20Z3)

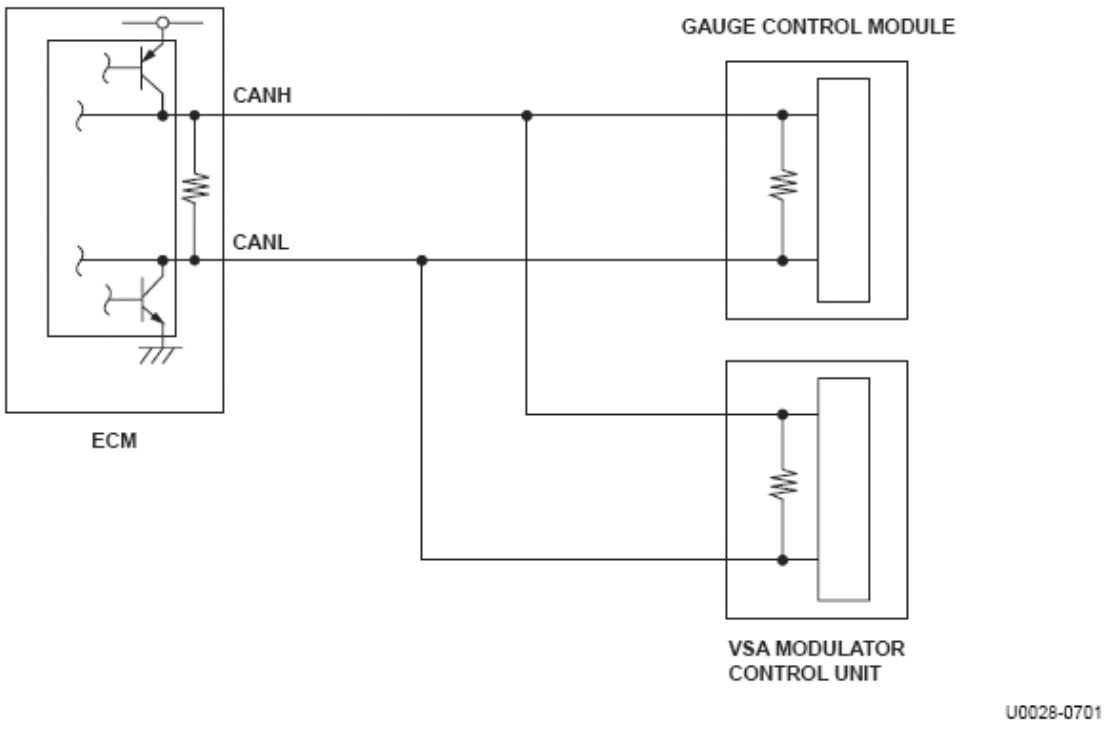


Fig. 687: Engine Control Module (ECM)-VSA Modulator-Control Unit Circuit Diagram

General Description (K20Z3 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the engine control module (ECM) does not receive the signals via the CAN lines for more than a set time, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-

Malfunction Threshold (K20Z3 Engine)

No signals from the VSA modulator-control unit via the CAN lines are received for at least 1 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0131 (126): ADVANCED DIAGNOSTICS (K20Z3 ENGINE)

DTC U0131: F-CAN MALFUNCTION (ENGINE CONTROL MODULE (ECM)-EPS CONTROL UNIT) (K20Z3)

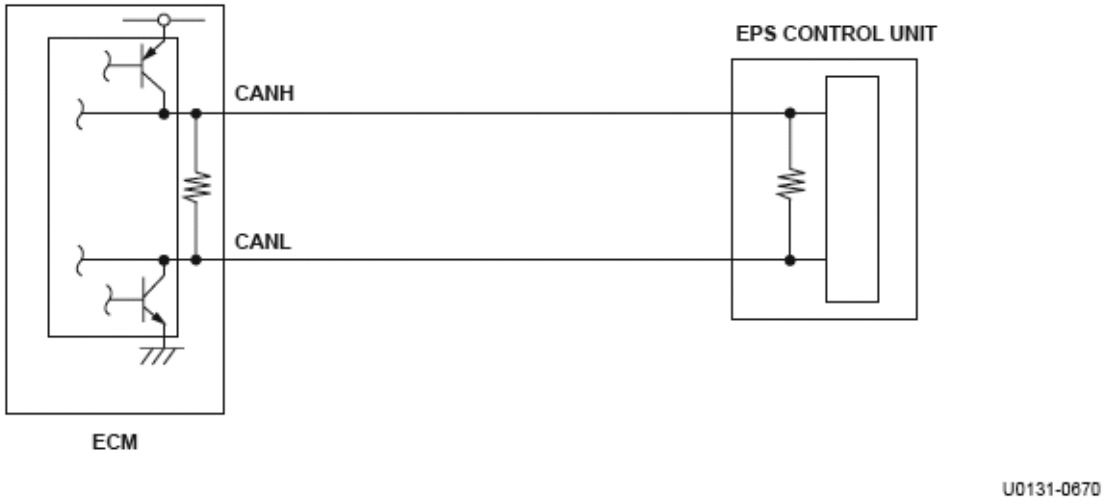


Fig. 688: EPS Control Unit-Engine Control Module - Circuit Diagram

General Description (K20Z3 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously using two signal lines (CANH and CANL).

When the engine control module (ECM) does not receive signals from the electrical power steering (EPS) control unit via the CAN lines for a set time or more, the ECM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (K20Z3 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF
OBD Status	N/A

Enable Conditions (K20Z3 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0028	

Malfunction Threshold (K20Z3 Engine)

The ECM does not receive any signals from the EPS control unit for at least 1 second.

Diagnosis Details (K20Z3 Engine)

Conditions for illuminating the indicator (K20Z3 Engine)

When a malfunction is detected, the DTC and the freeze frame data are stored in the ECM memory. The MIL does not come on.

Conditions for clearing the DTC (K20Z3 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0155 (107): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC U0155: LOST COMMUNICATION WITH GAUGE CONTROL MODULE (R18A1 ENGINE)

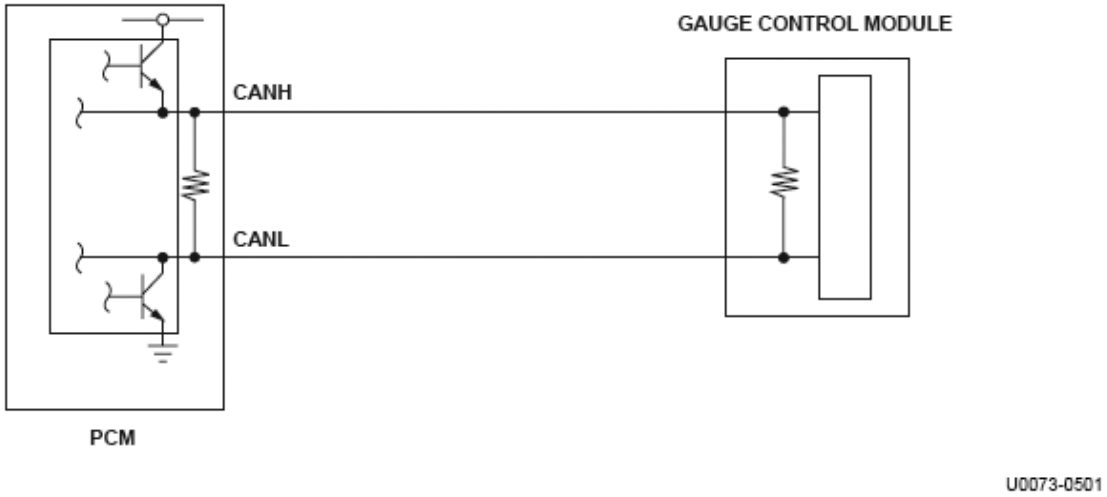


Fig. 689: F-CAN Malfunction Diagram

General Description (R18A1 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals from the gauge control module via the CAN lines for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0028, U0121	

Malfunction Threshold (R18A1 Engine)

No signals from the gauge control module via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the indicator (R18A1 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A1 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0155 (107): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC U0155: LOST COMMUNICATION WITH GAUGE CONTROL MODULE (R18A4 ENGINE)

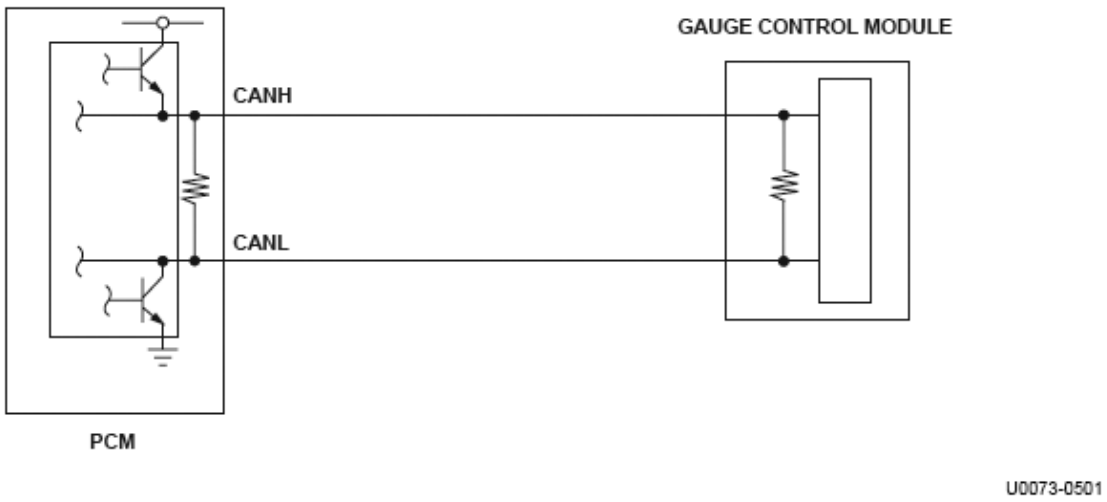


Fig. 690: F-CAN Malfunction Diagram

General Description (R18A4 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals from the gauge control module via the CAN lines for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL OFF, D indicator blinks
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0028, U0121	

Malfunction Threshold (R18A4 Engine)

No signals from the gauge control module via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the indicator (R18A4 Engine)

When a malfunction is detected, the D indicator blinks, and the DTC and the freeze frame data are stored in

the PCM memory. The MIL does not come on.

Conditions for clearing the DTC (R18A4 Engine)

The DTC and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0155 (126) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (M/T)

DTC U0155: F-CAN MALFUNCTION (ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM)-GAUGE CONTROL MODULE)

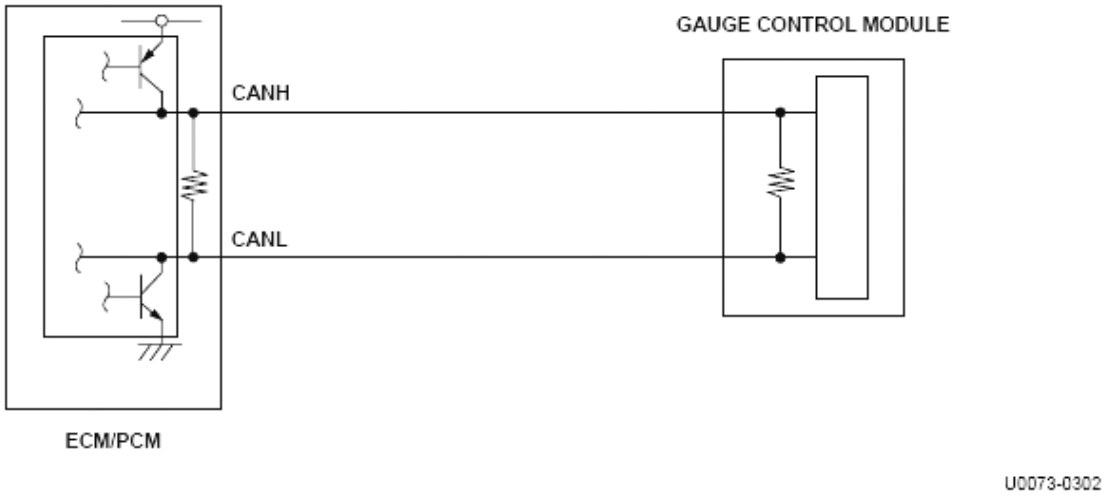


Fig. 691: Gauge Control Module Circuit Diagram

General Description (M/T)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the engine control module (ECM)/powertrain control module (PCM) does not receive the signals from the gauge control module via the CAN lines for more than a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (M/T)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (M/T)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0028(1)	
(1) K20Z3 engine		

Malfunction Threshold (M/T)

No signals from the gauge control module via the CAN lines are received for at least 1 second.

Diagnosis Details (M/T)

Conditions for illuminating the MIL (M/T)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (M/T)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0155 (126) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC U0155: F-CAN MALFUNCTION (ENGINE CONTROL MODULE (ECM)/POWERTRAIN CONTROL MODULE (PCM)-GAUGE CONTROL MODULE)

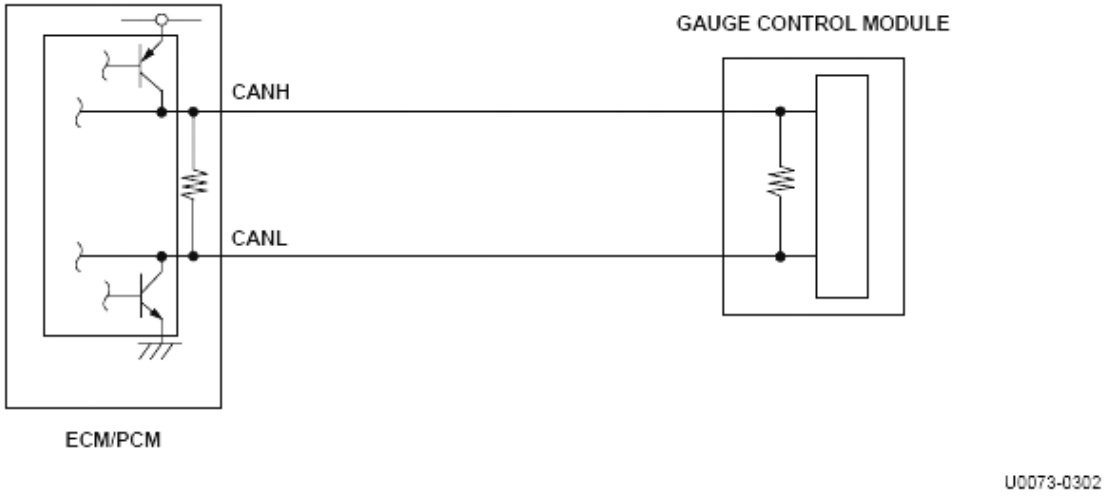


Fig. 692: Gauge Control Module Circuit Diagram

General Description (R18A1 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the engine control module (ECM)/powertrain control module (PCM) does not receive the signals from the gauge control module via the CAN lines for more than a set time, the ECM/PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-
No active DTCs	U0028(1)	
(1) K20Z3 engine		

Malfunction Threshold (R18A1 Engine)

No signals from the gauge control module via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the ECM/PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0155 (126) (PGM-FI SYSTEM): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC U0155: F-CAN MALFUNCTION (GAUGE CONTROL MODULE-POWERTRAIN CONTROL MODULE (PCM))

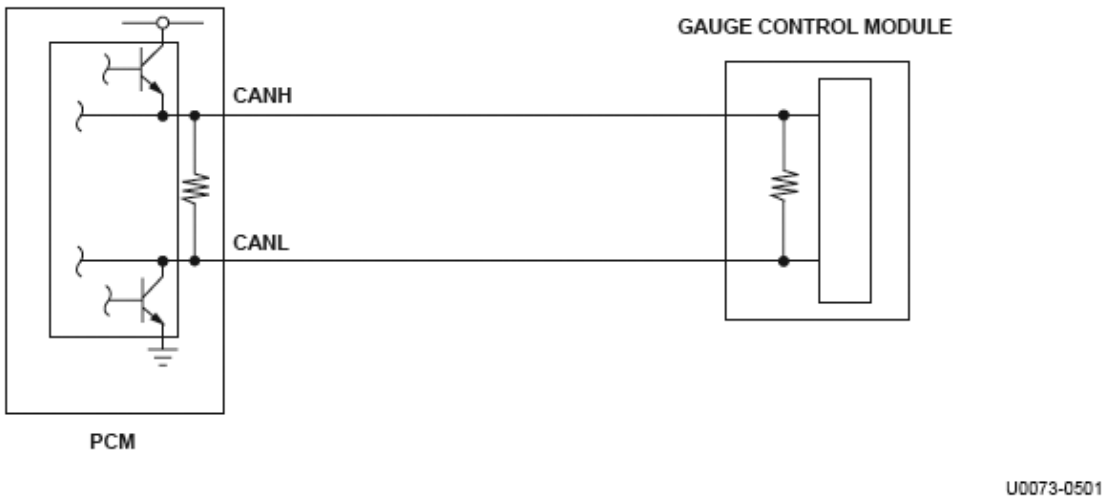


Fig. 693: F-CAN Malfunction Diagram

General Description (R18A4 Engine)

The controller area network (CAN) transmits/receives pulsing signals to/from the control modules simultaneously by using two signal lines (CANH and CANL).

When the powertrain control module (PCM) does not receive the signals from the gauge control module via the CAN lines for a set time or more, the PCM detects a malfunction and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	1 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	Minimum	Maximum
Battery voltage	10.0 V	-

Malfunction Threshold (R18A4 Engine)

No signals from the gauge control module via the CAN lines are received for at least 1 second.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0300 (131): ADVANCED DIAGNOSTICS (R18A1 ENGINE)

DTC U0300: PGM-FI SYSTEM AND A/T SYSTEM PROGRAM VERSION MISMATCH (R18A1)

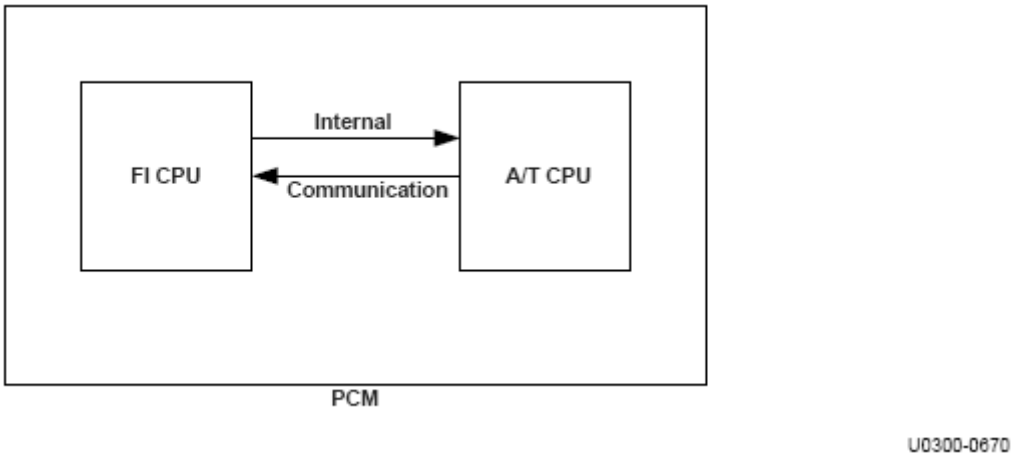


Fig. 694: Communication Diagram Between FI CPU And A/T CPU

General Description (R18A1 Engine)

An internal version check of the communication data set is done during communication between the FI CPU and the A/T CPU.

When the FI CPU or the A/T CPU is rewritten at the powertrain control module (PCM), and the internal communication data version is that rewritten does not match, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A1 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous
Sequence	None
Duration	0.5 second or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A1 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A1 Engine)

The FI CPU or the A/T CPU is rewritten at the PCM, but the internal communication data version that is rewritten does not match.

Diagnosis Details (R18A1 Engine)

Conditions for illuminating the MIL (R18A1 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A1 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

DTC U0300 (131): ADVANCED DIAGNOSTICS (R18A4 ENGINE)

DTC U0300: PGM-FI SYSTEM AND A/T SYSTEM PROGRAM VERSION MISMATCH (R18A4 ENGINE)

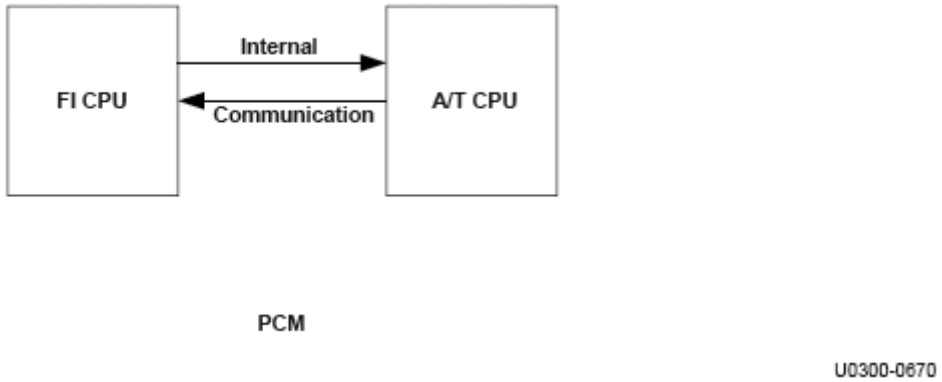


Fig. 695: PGM-FI System And A/T System - Communication Diagram

General Description (R18A4 Engine)

An internal version check of the communication data set is done during communication between the FI CPU and the A/T CPU.

When the FI CPU or the A/T CPU is rewritten at the powertrain control module (PCM), and the internal communication data version is that rewritten does not match, a malfunction is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type, OBD Status (R18A4 Engine)

MONITOR DESCRIPTION CHART

Execution	Continuous

Sequence	None
Duration	0.5 seconds or more
DTC Type	One drive cycle, MIL ON
OBD Status	N/A

Enable Conditions (R18A4 Engine)

ENABLE CONDITIONS REFERENCE CHART

Condition	
Ignition switch	ON

Malfunction Threshold (R18A4 Engine)

The FI CPU or the A/T CPU is rewritten at the PCM, but the internal communication data version that is rewritten does not match.

Diagnosis Details (R18A4 Engine)

Conditions for illuminating the MIL (R18A4 Engine)

When a malfunction is detected, the MIL comes on and the DTC and the freeze frame data are stored in the PCM memory.

Conditions for clearing the MIL (R18A4 Engine)

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs.

The MIL, the DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.

2006-08 ENGINE PERFORMANCE

EGR System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

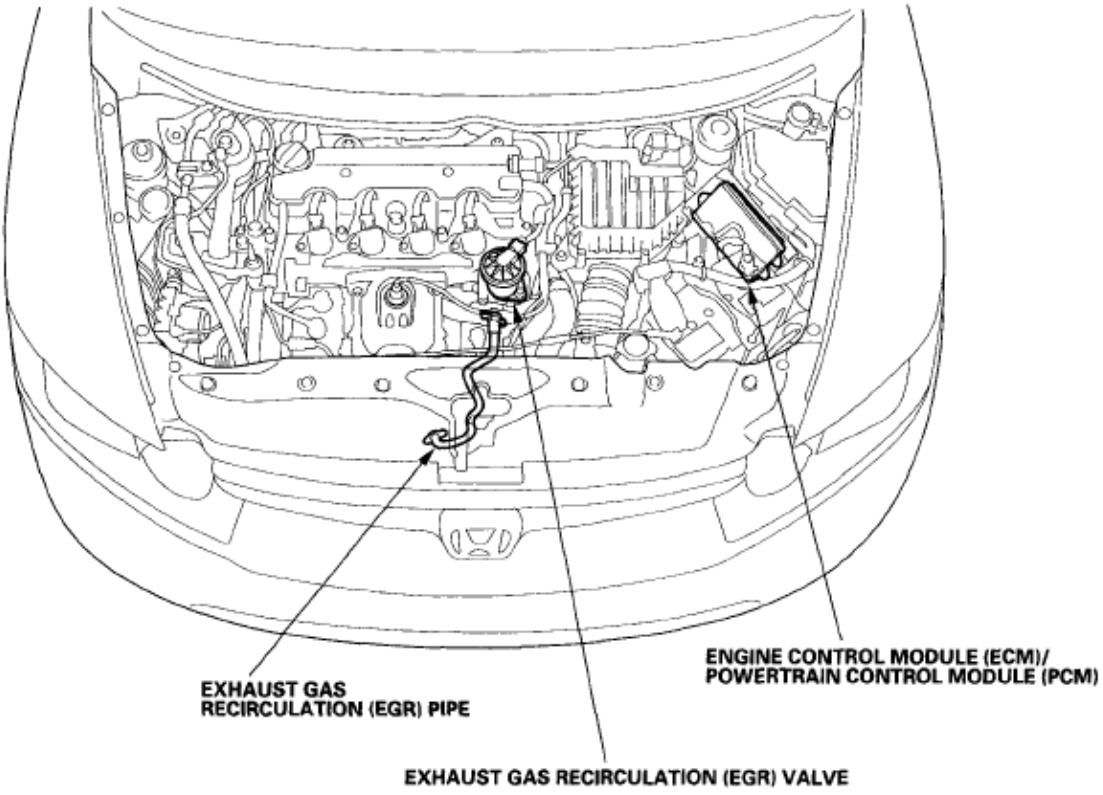


Fig. 1: Locating EGR System Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0400: EGR SYSTEM LEAK DETECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for a loose or damaged EGR pipe.

   Is the EGR pipe OK?

   YES - Go to step 2.

   NO - Reconnect or replace the EGR pipe, then go to step 7.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the

radiator fan comes on, then let it idle.

3. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - Vehicle speed at 25 mph (40 km/h) for 5 minutes or more
   - Maintain the vehicle speed at 32 mph (50 km/h) for 5 minutes or more with cruise control set
4. Monitor the OBD STATUS for DTC P0400 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 5.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the EGR valve (see **EGR VALVE REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Vehicle speed at 25 mph (40 km/h) for 5 minutes or more
    - Maintain the vehicle speed at 32 mph (50 km/h) for 5 minutes or more with cruise control set
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0400 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

    NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P0400 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 10.

DTC P0401: EGR INSUFFICIENT FLOW

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Go to step 5.

   NO - Go to step 7.

5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - Drive at a steady speed between 55-75 mph (88-120 km/h) for at least 10 seconds
   - During the drive, decelerate (with the throttle fully closed) for 5 seconds
6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Clean the intake manifold EGR port and EGR pipe (see **EGR VALVE REPLACEMENT**) with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner, then go to step 9.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the EGR valve (see **EGR VALVE REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Drive at a steady speed between 55-75 mph (88-120 km/h) for at least 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0401 indicated?

YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the connections are OK, go to step 15.

NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

15. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
16. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Drive at a steady speed between 55-75 mph (88-120 km/h) for at least 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0401 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 16. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 16. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.

DTC P0404: EGR VALVE CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate and induction cleaner.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the EGR valve 6P connector.
7. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

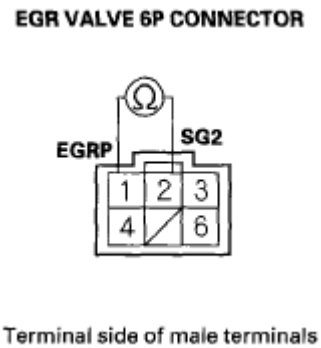


Fig. 2: Measuring Resistance Between EGR Valve 6P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 100 kohms or more?

YES - Go to step 25.

NO - Go to step 8.

8. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

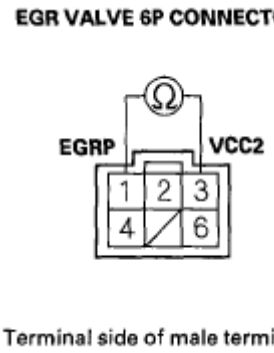


Fig. 3: Measuring Resistance Between EGR Valve 6P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 100 k ohms or more?

YES - Go to step 25.

NO - Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

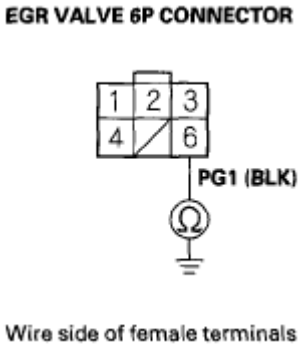


Fig. 4: Checking Continuity Between EGR Valve 6P Connector Terminal No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the EGR valve and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**), then go to step 26.

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (44P).
12. Check for continuity between ECM/PCM connector terminal B2 and body ground.

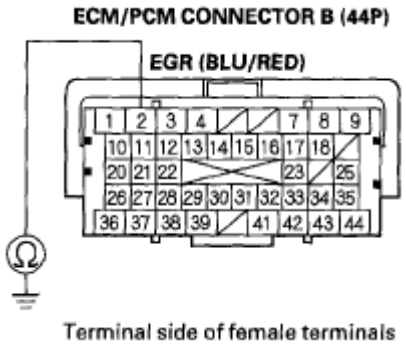


Fig. 5: Checking Continuity Between ECM/PCM Connector Terminal B2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

NO - Go to step 13.

13. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.

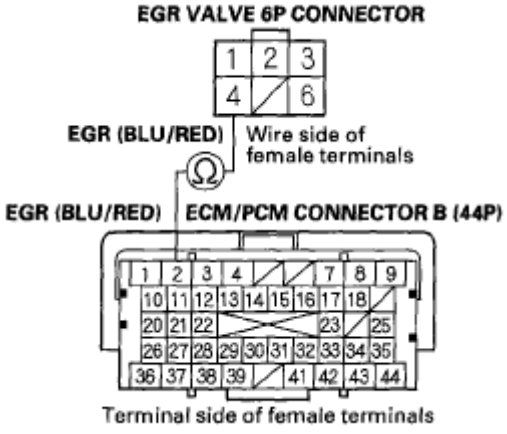


Fig. 6: Checking Continuity Between ECM/PCM Connector Terminal B2 And EGR Valve 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

14. Remove the EGR valve (see **EGR VALVE REPLACEMENT**).
15. Clean the intake manifold EGR port and the EGR pipe (see **EGR VALVE REPLACEMENT**) with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
16. Install the EGR valve (see **EGR VALVE REPLACEMENT**).

17. Reconnect the EGR valve 6P connector.
18. Reconnect ECM/PCM connector B (44P).
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
23. Do the EGR TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Go to step 32.

    NO - Go to step 24.

24. Turn the ignition switch OFF.
25. Replace the EGR valve (see **EGR VALVE REPLACEMENT**).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
31. Do the EGR TEST in the INSPECTION MENU with the HDS.
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the connections and terminals are OK, go to step 34.

    NO - Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

34. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
35. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the

radiator fan comes on, then let it idle.

36. Do the EGR TEST in the INSPECTION MENU with the HDS.
37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 35. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 38.

38. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 35. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 35.

DTC P0406: EGR VALVE POSITION SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check EGR VLS in the DATA LIST with the HDS. Is 4.88 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the EGR valve 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between EGR valve 6P connector terminals No. 2 and No. 3.

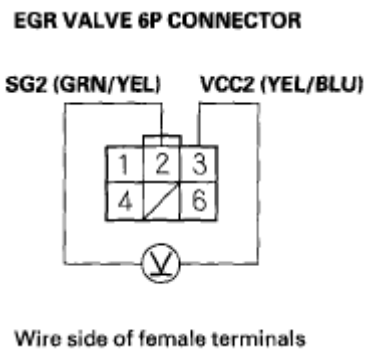


Fig. 7: Measuring Voltage Between EGR Valve 6P Connector Terminals No. 2 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 11.

NO - Go to step 7

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between EGR valve 6P connector terminal No. 2 and ECM/PCM connector terminal B33.

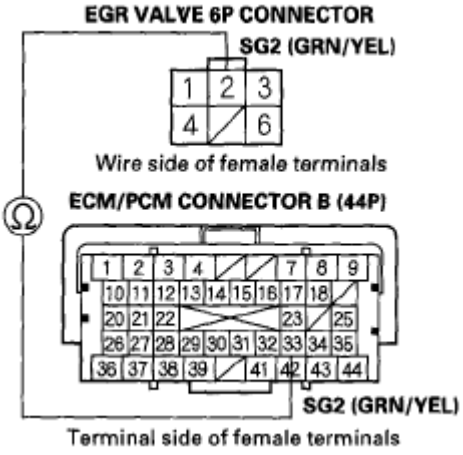


Fig. 8: Checking Continuity Between EGR Valve 6P Connector Terminal No. 2 And ECM/PCM Connector Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (B33) and the EGR valve, then go to step 13.

11. Turn the ignition switch OFF.

12. Replace the EGR valve (see **EGR VALVE REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2413: EGR SYSTEM MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM.

NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

Is about 0 V indicated?

YES - Go to step 8.

NO - Go to step 21.

8. Turn the ignition switch OFF.
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between EGR valve 6P connector terminal No. 3 and body ground.

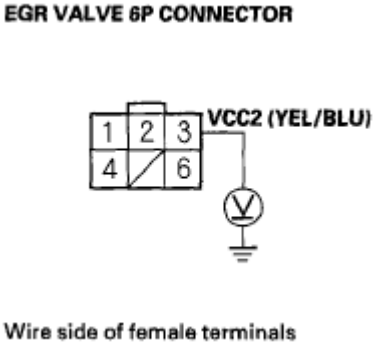


Fig. 9: Measuring Voltage Between EGR Valve 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between ECM/PCM connector terminal B18 and EGR valve 6P connector terminal No. 3.

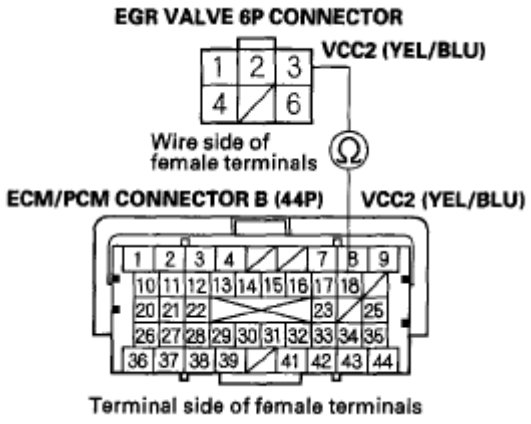


Fig. 10: Checking Continuity Between ECM/PCM Connector Terminal B18 And EGR Valve 6P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 51.

NO - Repair open in the wire between the EGR valve and the ECM/PCM (B18), then go to step 44.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECM/PCM connector terminal B29 and body ground.

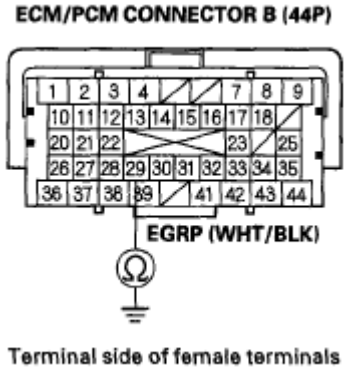


Fig. 11: Checking Continuity Between ECM/PCM Connector Terminal B29 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

NO - Go to step 20.

20. Check for continuity between ECM/PCM connector terminal B29 and EGR valve 6P connector terminal No. 1.

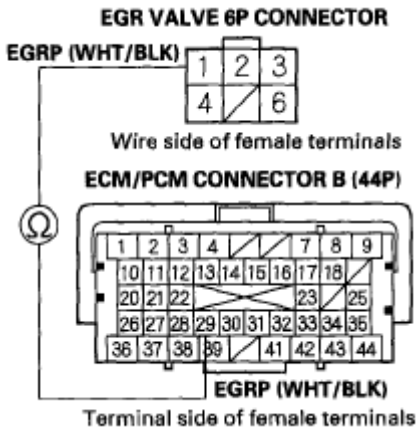


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal B29 And EGR Valve 6P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

21. Turn the ignition switch OFF.
22. If not already done, disconnect the EGR valve 6P connector.
23. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

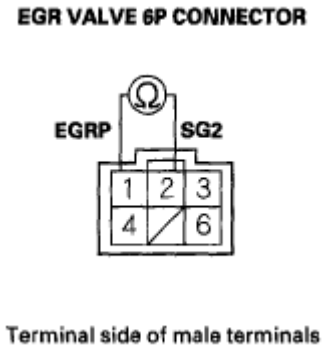


Fig. 13: Measuring Resistance Between EGR Valve 6P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 100 kohms or more?

YES - Go to step 43.

NO - Go to step 24.

24. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

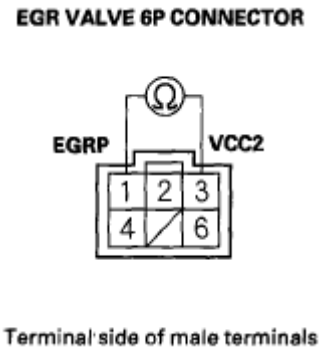


Fig. 14: Measuring Resistance Between EGR Valve 6P Connector Terminals No. 1 And No. 3.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 100 kohms or more?

YES - Go to step 43.

NO - Go to step 25.

25. If not already done, jump the SCS line with the HDS.
26. If not already done, disconnect ECM/PCM connector B (44P).
27. Check for continuity between ECM/PCM connector terminal B2 and body ground.

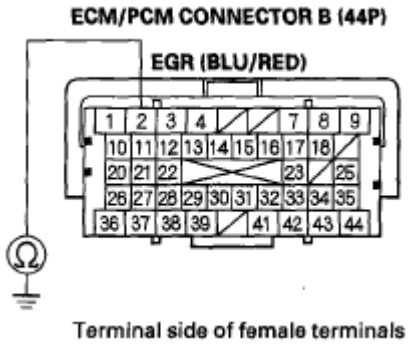


Fig. 15: Checking For Continuity Between ECM/PCM Connector Terminal B2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

NO - Go to step 28.

28. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.

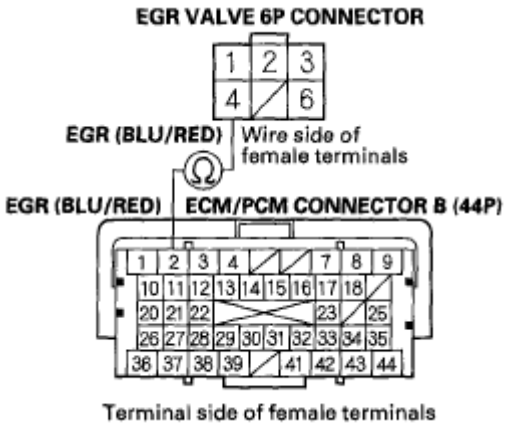


Fig. 16: Checking Continuity Between ECM/PCM Connector Terminal B2 And EGR Valve 6P Connector Terminal 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

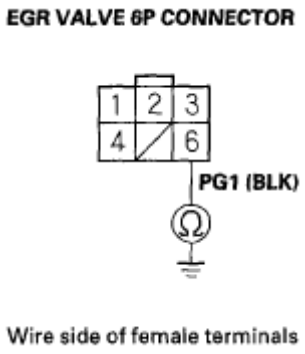


Fig. 17: Checking Continuity Between EGR Valve 6P Connector Terminal No. 6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the EGR valve and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**), then go to step 44.

30. Reconnect ECM/PCM connector B (44P).
31. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.

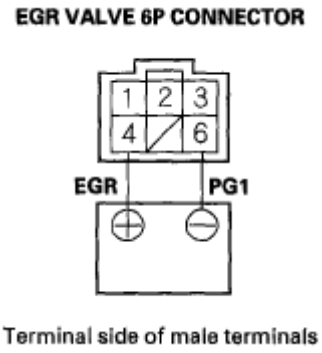


Fig. 18: Connecting Battery Positive Terminal To EGR Valve 6P Connector Terminal No. 4 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Start the engine, and let it idle. Then connect the battery negative terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

    Does the engine stall or run roughly?

    YES - Go to step 51.

    NO - Go to step 33.

33. Turn the ignition switch OFF.
34. Remove the EGR valve (see **EGR VALVE REPLACEMENT**).
35. Clean the intake manifold EGR port and the EGR pipe (see **EGR VALVE REPLACEMENT**) with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
36. Install the EGR valve (see **EGR VALVE REPLACEMENT**).
37. Reconnect all connectors.
38. Turn the ignition switch ON (II).
39. Reset the ECM/PCM with the HDS.
40. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
41. Do the EGR TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Go to step 49.

    NO - Go to step 42.

42. Turn the ignition switch OFF.
43. Replace the EGR valve (see **EGR VALVE REPLACEMENT**).
44. Reconnect all connectors.
45. Turn the ignition switch ON (II).
46. Reset the ECM/PCM with the HDS.
47. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

48. Do the EGR TEST in the INSPECTION MENU with the HDS.
49. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

    NO - Go to step 50.

50. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 49, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 47.

51. Turn the ignition switch OFF.
52. Reconnect all connectors.
53. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
54. Do the EGR TEST in the INSPECTION MENU with the HDS.
55. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES - Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 54. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 56.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 55, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 54. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 54.

EGR VALVE REPLACEMENT

1. Remove the injector cover (see step 8 in **ENGINE REMOVAL**).
2. Disconnect the EGR valve 6P connector (A).

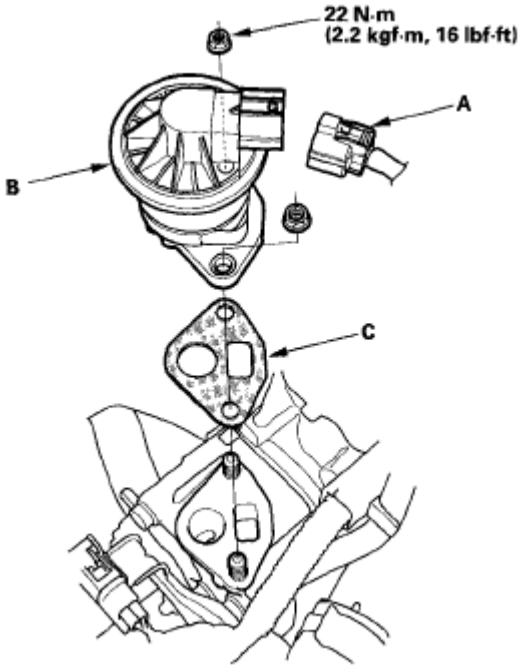


Fig. 19: Disconnecting EGR Valve 6P Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the EGR valve (B).
4. Install the parts in the reverse order of removal with a new gasket (C).
5. Install the injector cover (see step 48 in **ENGINE INSTALLATION**).

EGR PIPE REPLACEMENT

REMOVAL

1. Remove the bolts (A) and nuts (B).

Fig. 20: Removing EGR Pipe Bolts And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the EGR pipe (C).

INSTALLATION

1. Install the EGR pipe on the water passage side, and tighten the nuts (A) by hand with a new gasket (B).

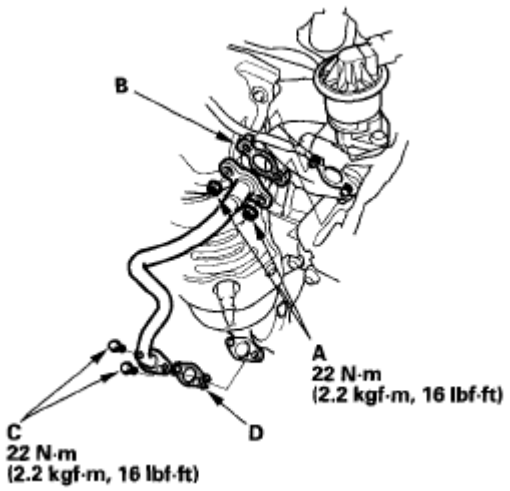


Fig. 21: Installing EGR Pipe On Water Passage Side (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the EGR pipe on the TWC side, and tighten the bolts (C) with a new gasket (D).
3. Tighten the nuts on the water passage side.

2006-08 ENGINE PERFORMANCE

Electronic Throttle Control System (K20Z3) - Civic (ALL Except Si)

COMPONENT LOCATION INDEX

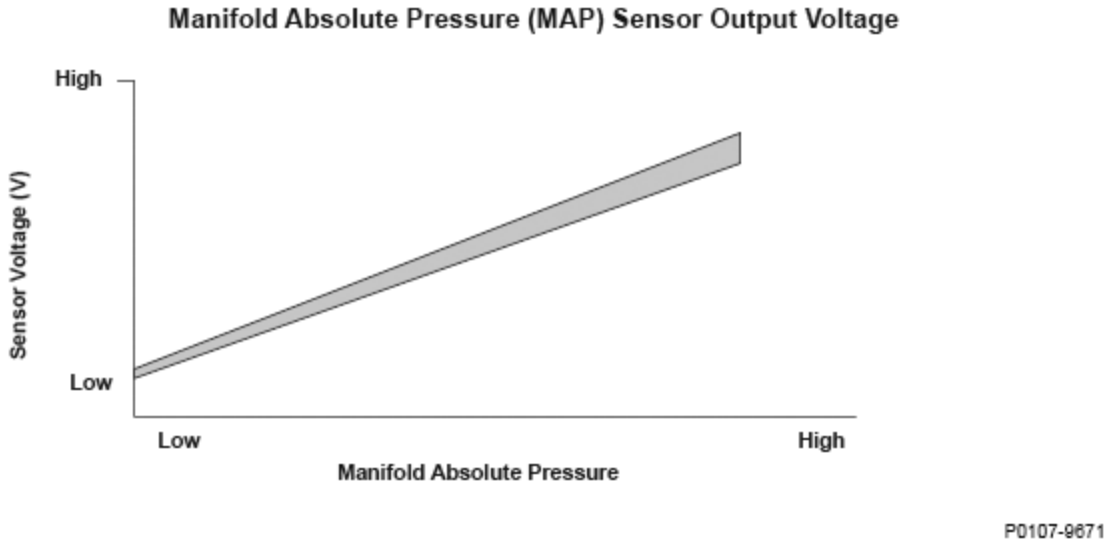


Fig. 1: Identifying Electronic Throttle Control System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

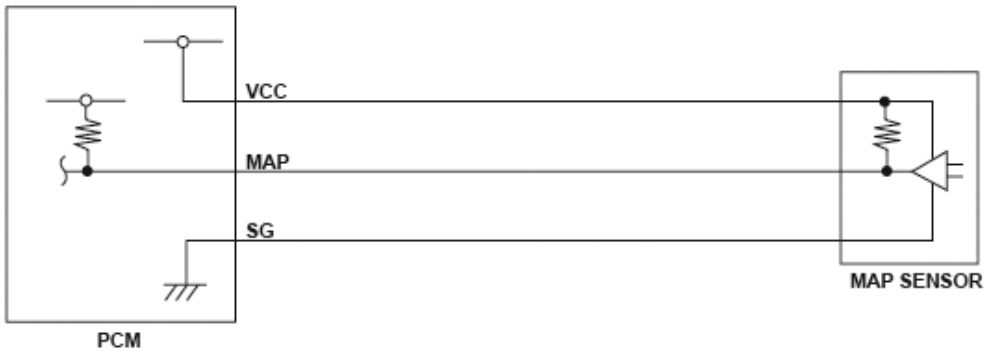


Fig. 2: Checking Continuity Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM (C20), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

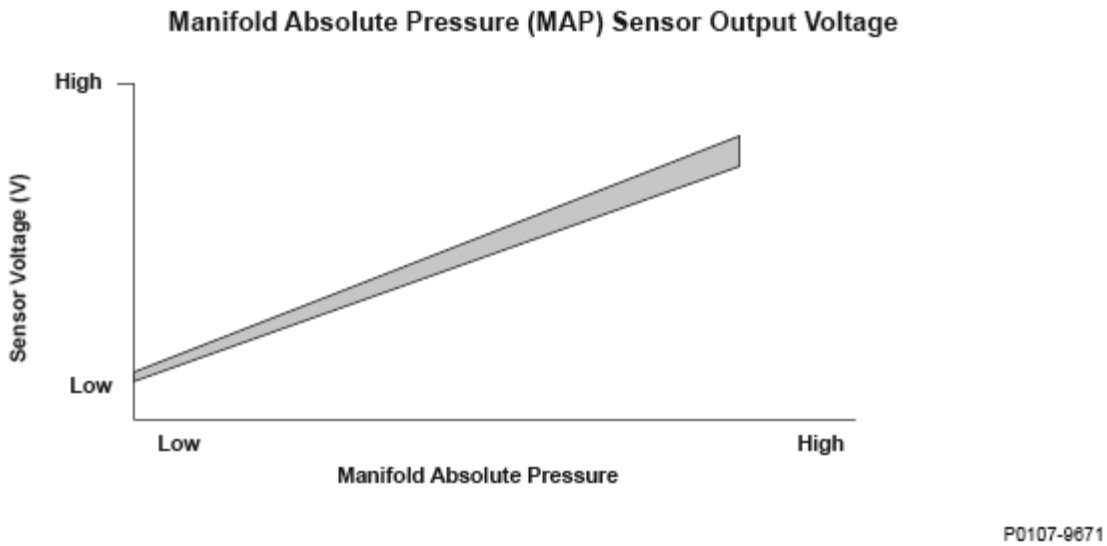


Fig. 3: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body

Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM connector terminal C12 and throttle body 6P connector terminal No. 2.

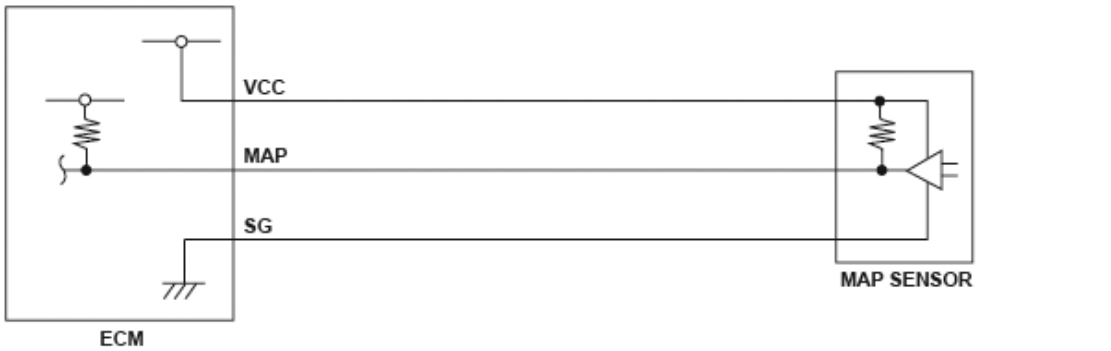


Fig. 4: Checking Continuity Between ECM Terminal C12 And Throttle Body 6P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step

1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

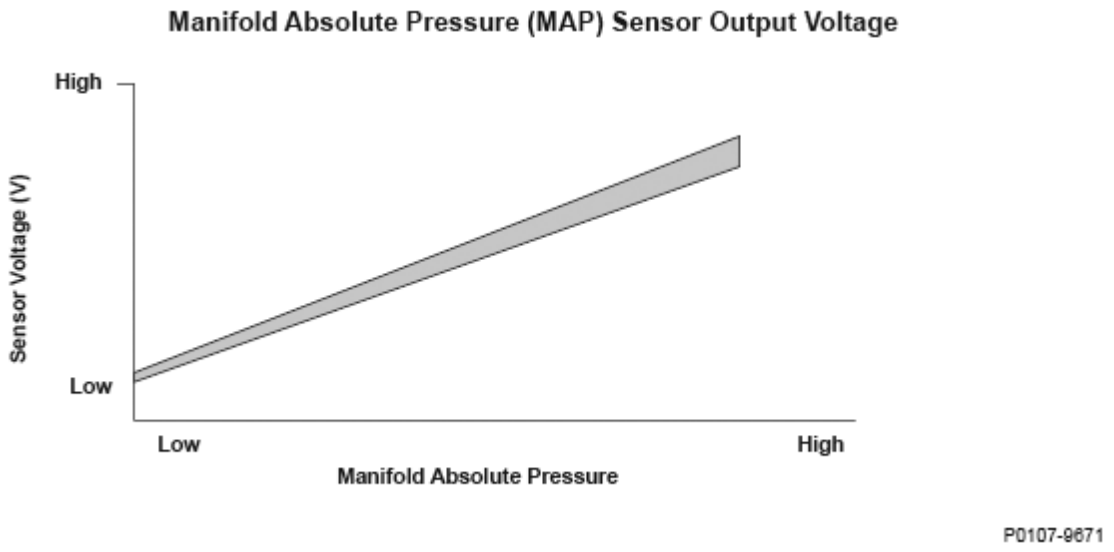


Fig. 5: Measuring Voltage Between Throttle Body 6P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminal C20 and throttle body 6P connector terminal No. 1.

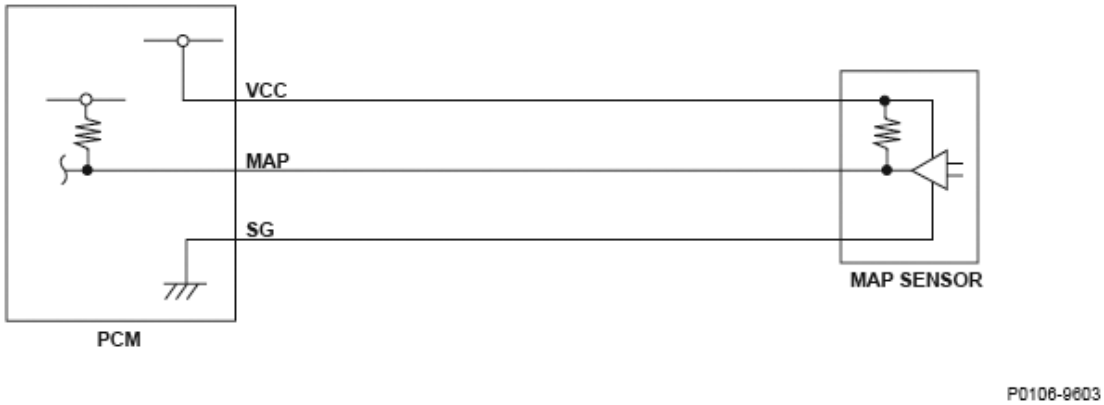


Fig. 6: Checking Continuity Between ECM Terminal C20 And Throttle Body 6P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C20), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Check for continuity between ECM connector terminal C39 and throttle body 6P connector terminal No. 4.

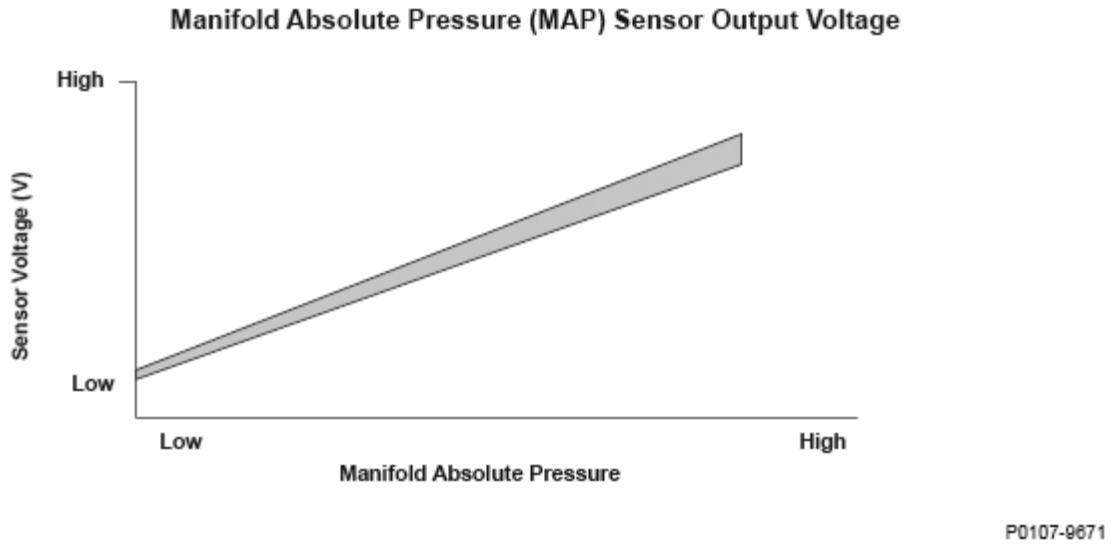


Fig. 7: Checking Continuity Between ECM Terminal C39 And Throttle Body 6P Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0123 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.

8. Disconnect ECM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

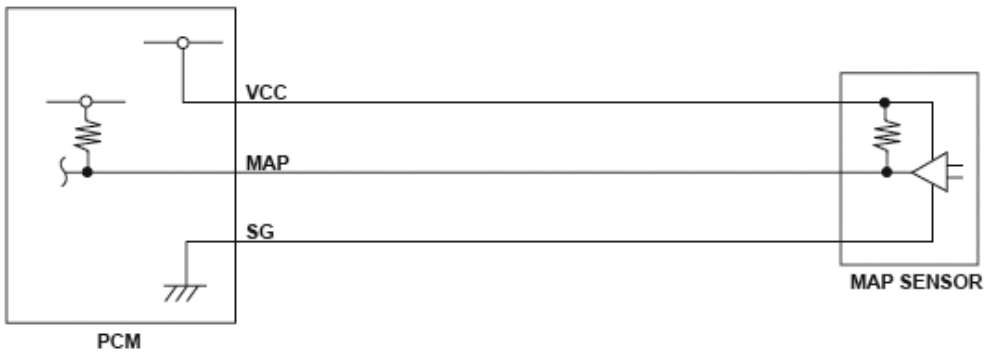


Fig. 8: Checking Continuity Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM (C21), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

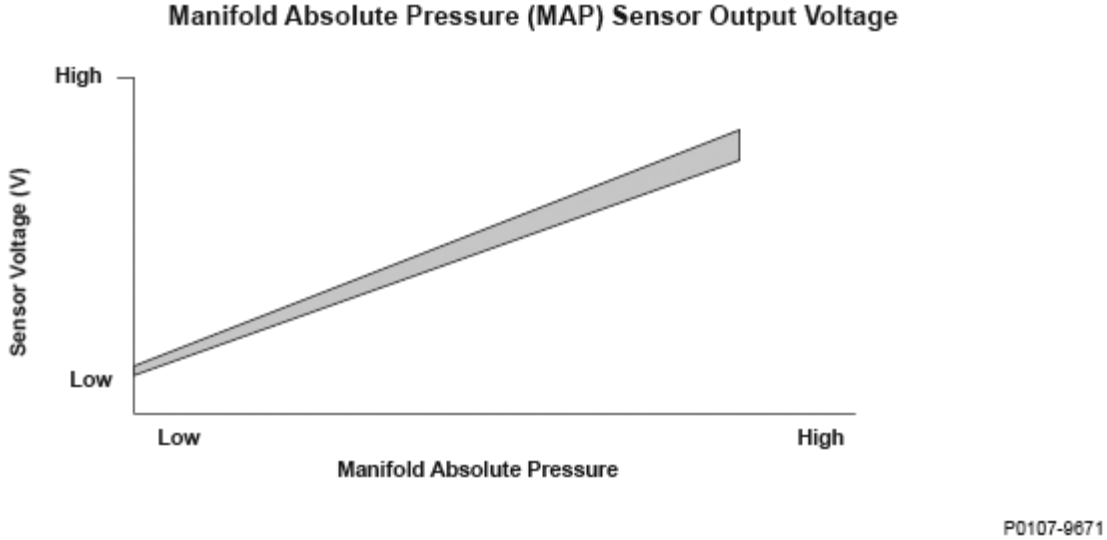


Fig. 9: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM connector terminal C12 and throttle body 6P connector terminal No. 2.

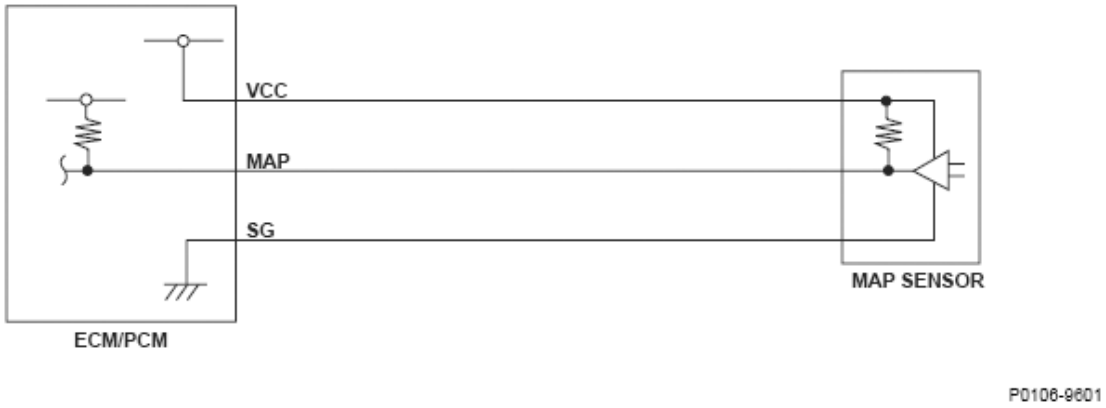


Fig. 10: Checking Continuity Between ECM Terminal C12 And Throttle Body 6P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.

24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0223-.TP SENSOR B CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

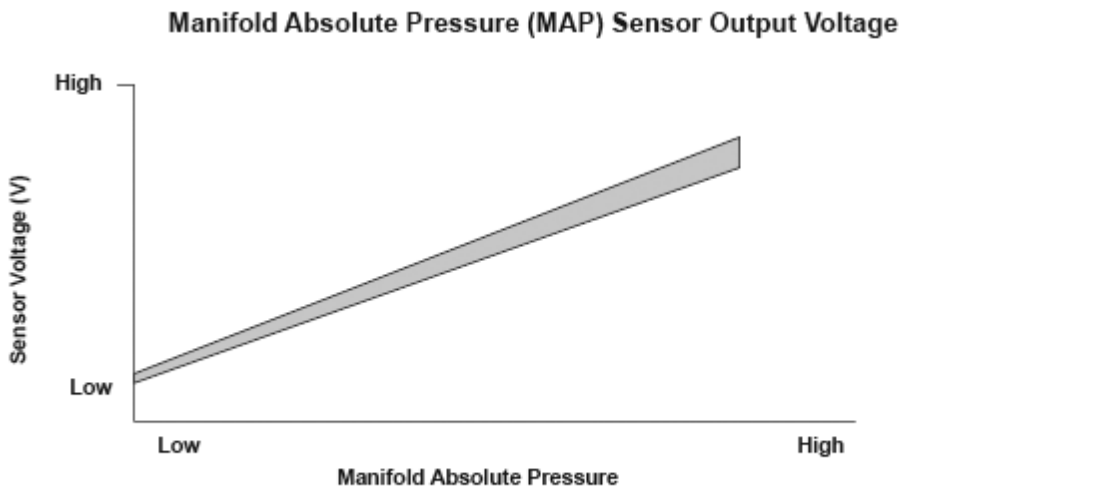


Fig. 11: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminal C21 and throttle body 6P connector terminal No. 3.

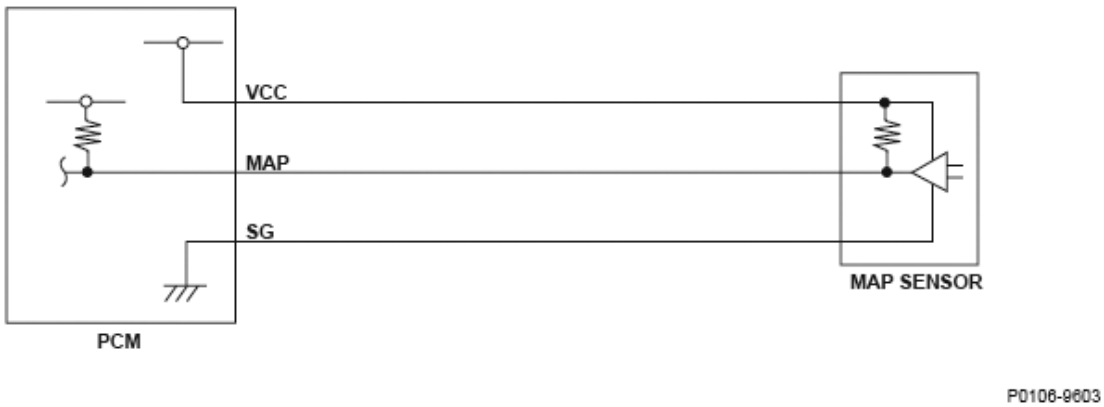


Fig. 12: Checking Continuity Between ECM Terminal C21 And Throttle Body 6P Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C21), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Check for continuity between ECM connector terminal C39 and throttle body 6P connector terminal No. 4.

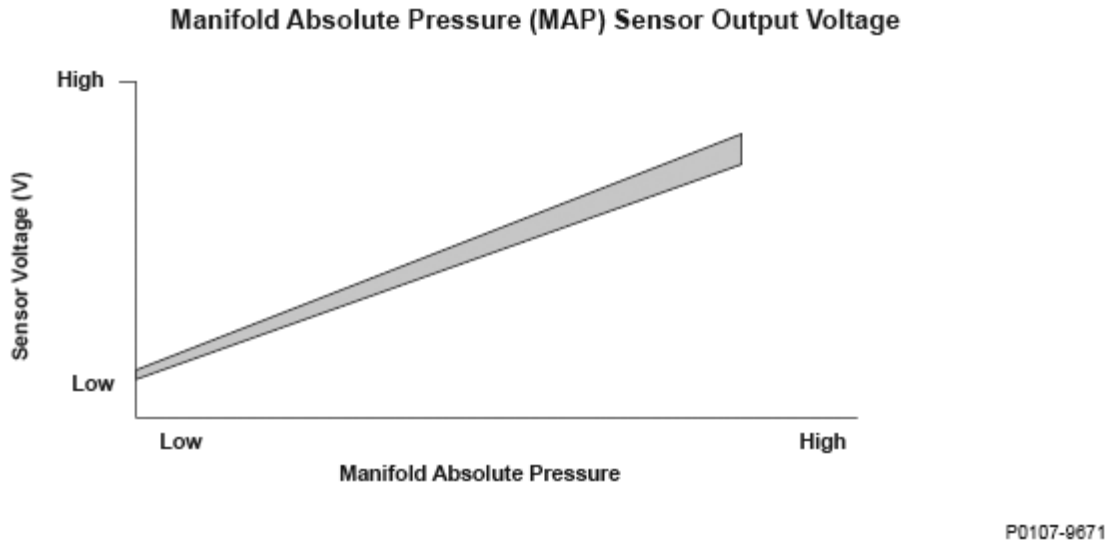


Fig. 13: Checking Continuity Between ECM Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0223 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step

1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0223 indicated?

YES - Check for poor connections or loose terminals at TP sensor Band the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the RELAY circuit OK?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM.

NO - Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

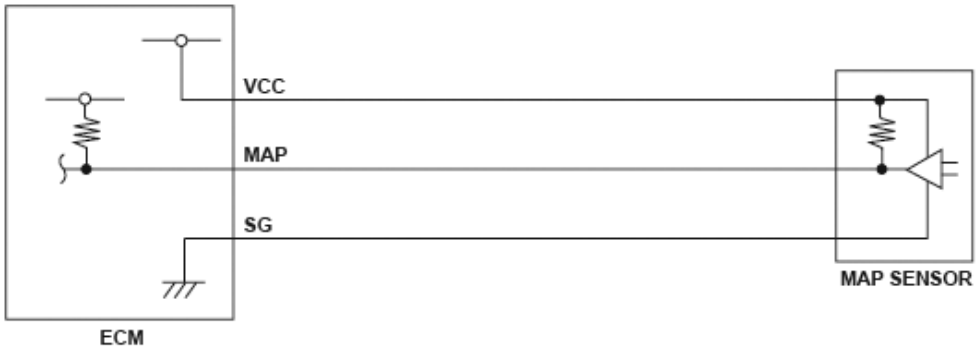


Fig. 14: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 6.

   NO - Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Check for continuity between ECM connector terminal A20 and body ground.

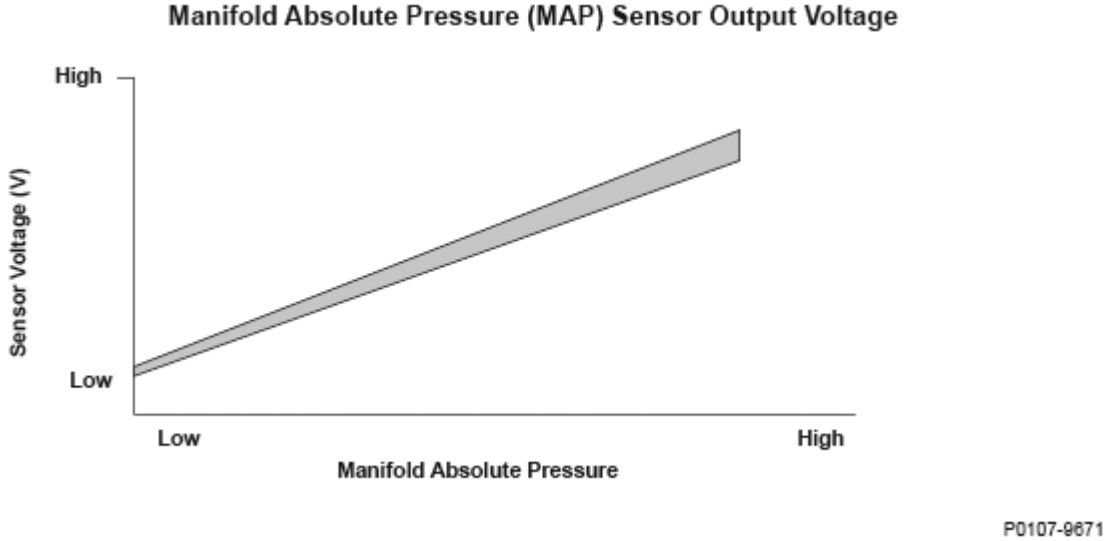


Fig. 15: Checking Continuity Between ECM Connector Terminal A20 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A20) and the ETCS control relay, then go to step 13.

NO - Go to step 9.

9. Disconnect ECM connector C (44P).
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM connector terminal C1 and body ground.

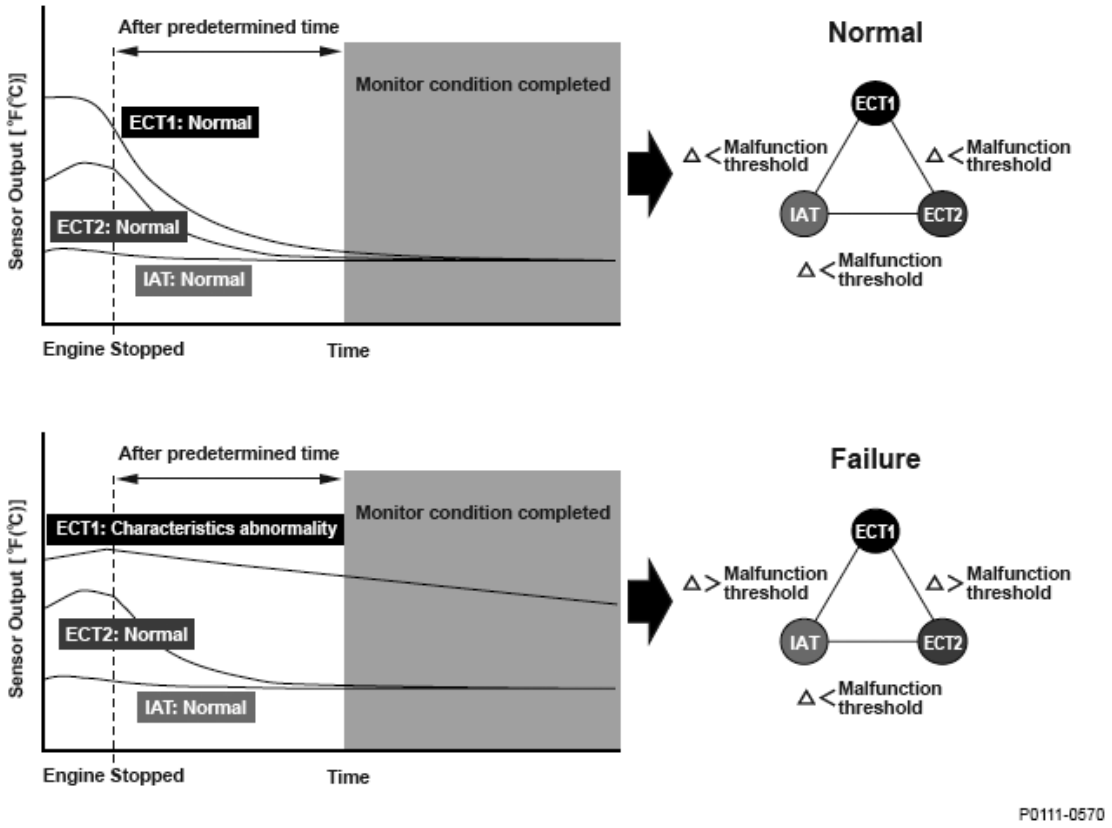


Fig. 16: Measuring Voltage Between ECM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM (C1) and the ETCS control relay, then go to step 12.

NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1659 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM.

4. Turn the ignition switch OFF.
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 6.

   NO - Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

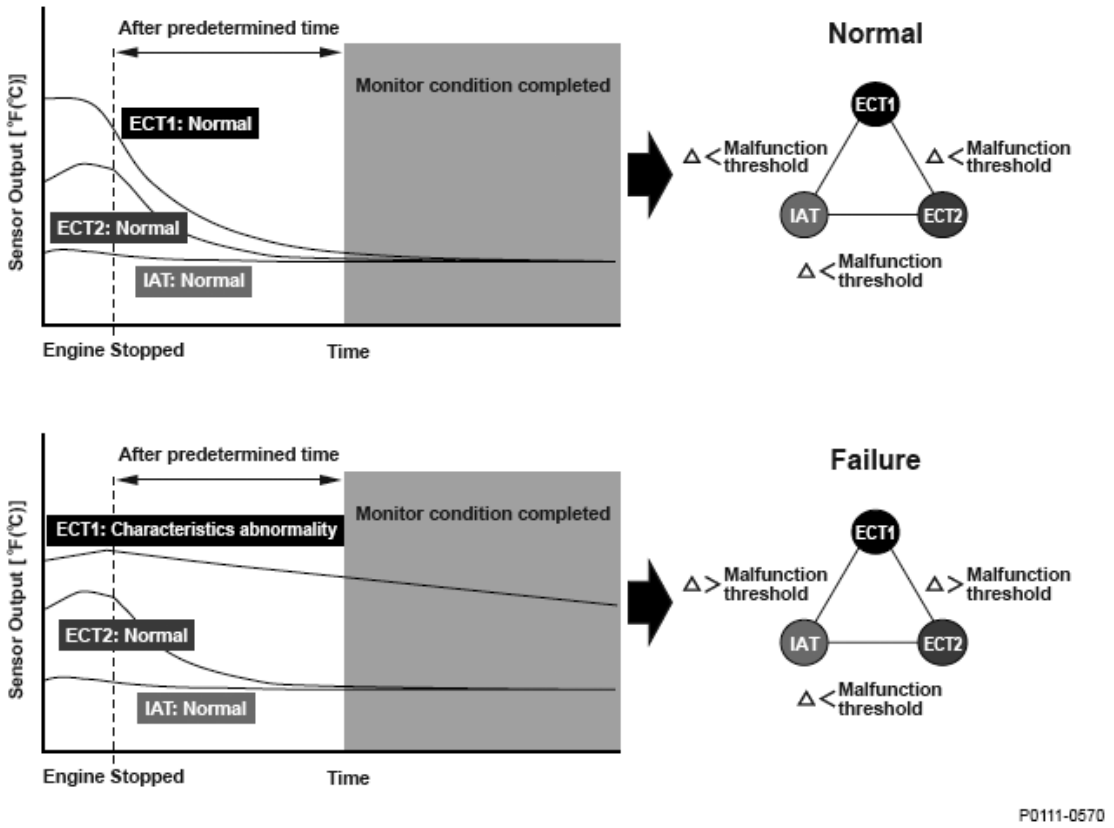


Fig. 17: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 8.

   NO - Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

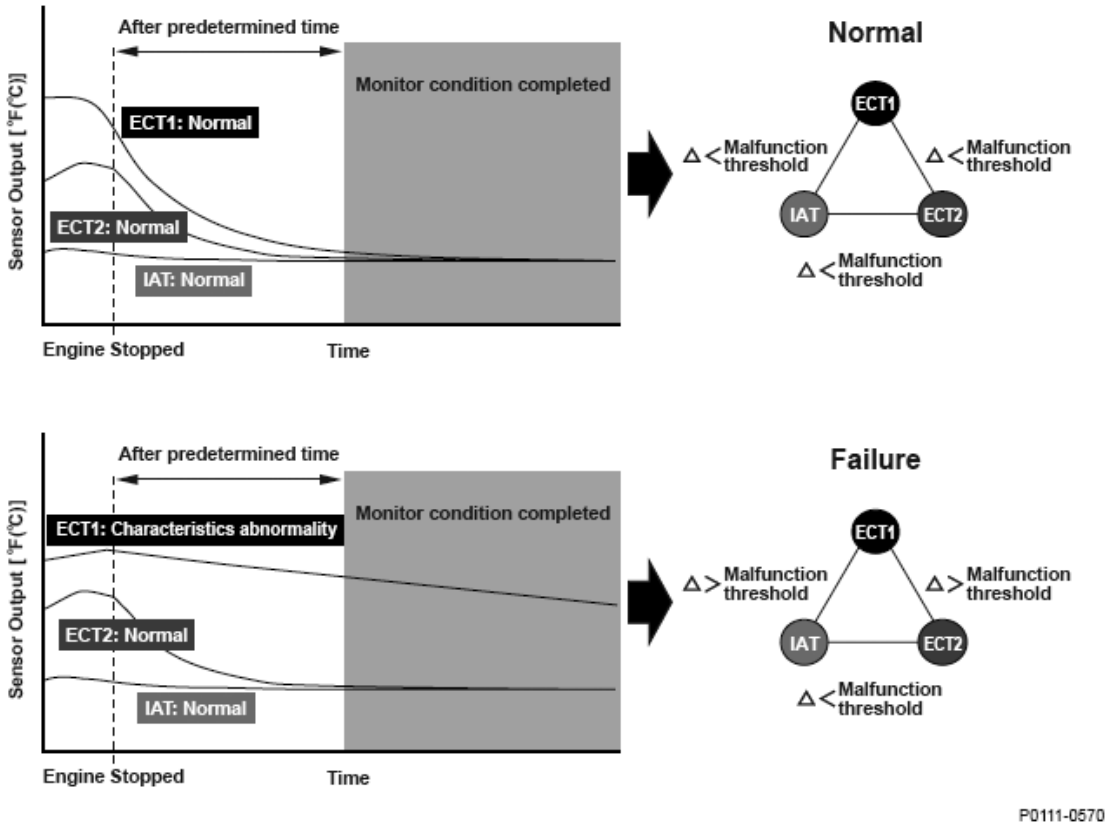


Fig. 18: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

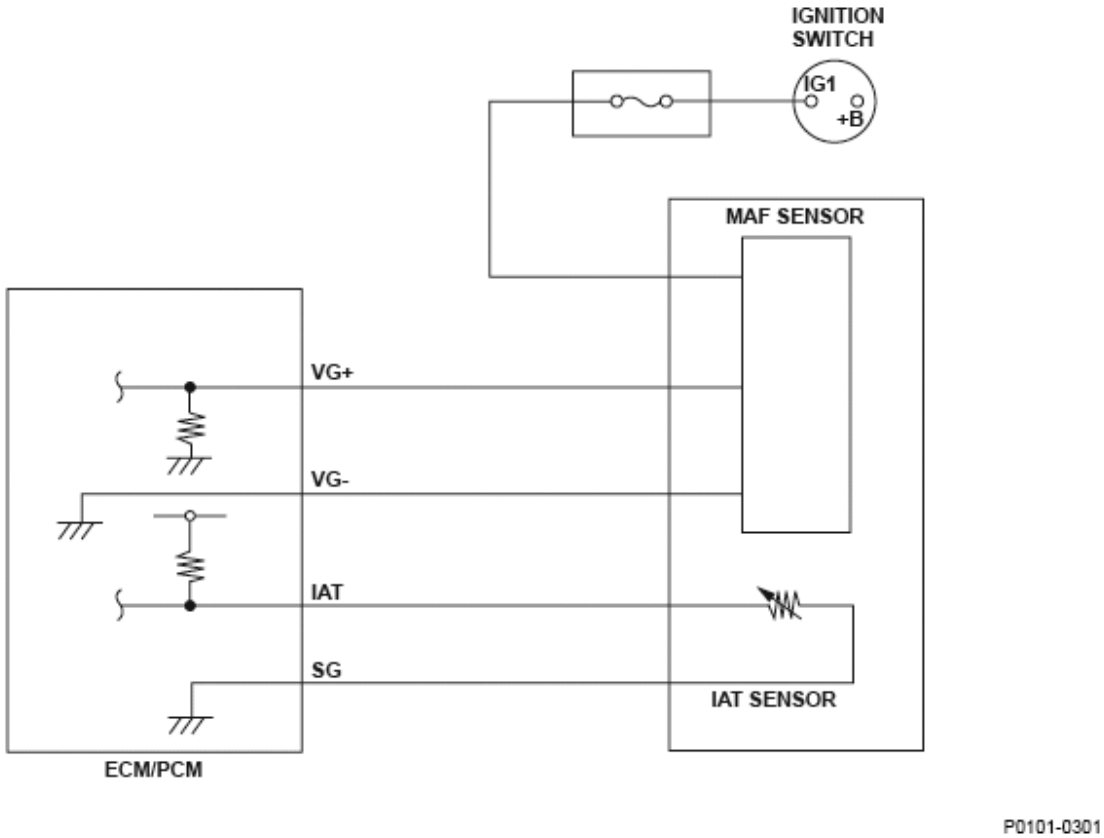


Fig. 19: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 11.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM connector terminal C1.

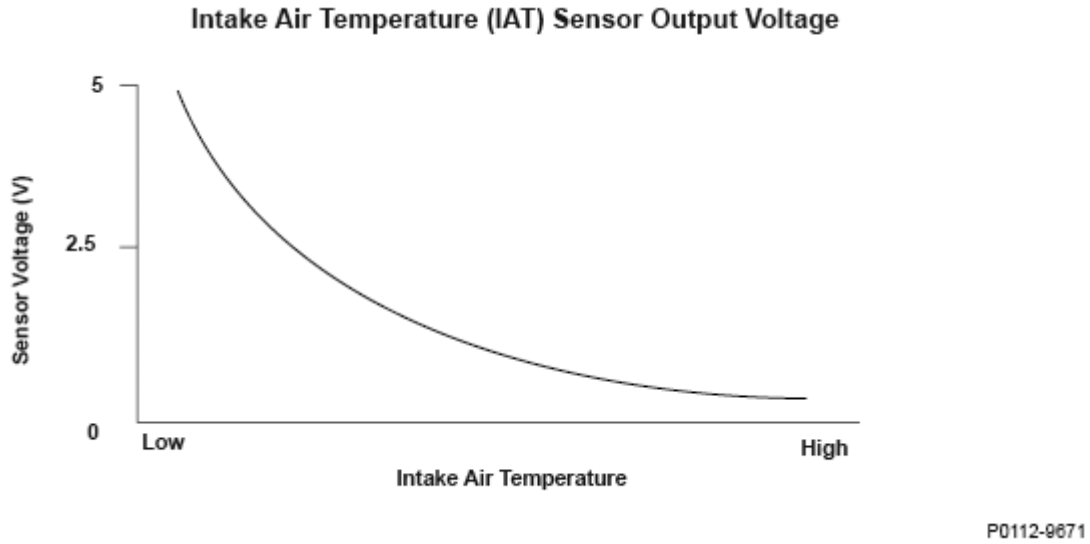


Fig. 20: Checking Continuity Between ETCS Control Relay 4P Terminal No 2 And ECM Terminal C1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM (CD and the ETCS control relay, then go to step 23.

15. Disconnect ECM connector A (44P).
16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM connector terminal A20.

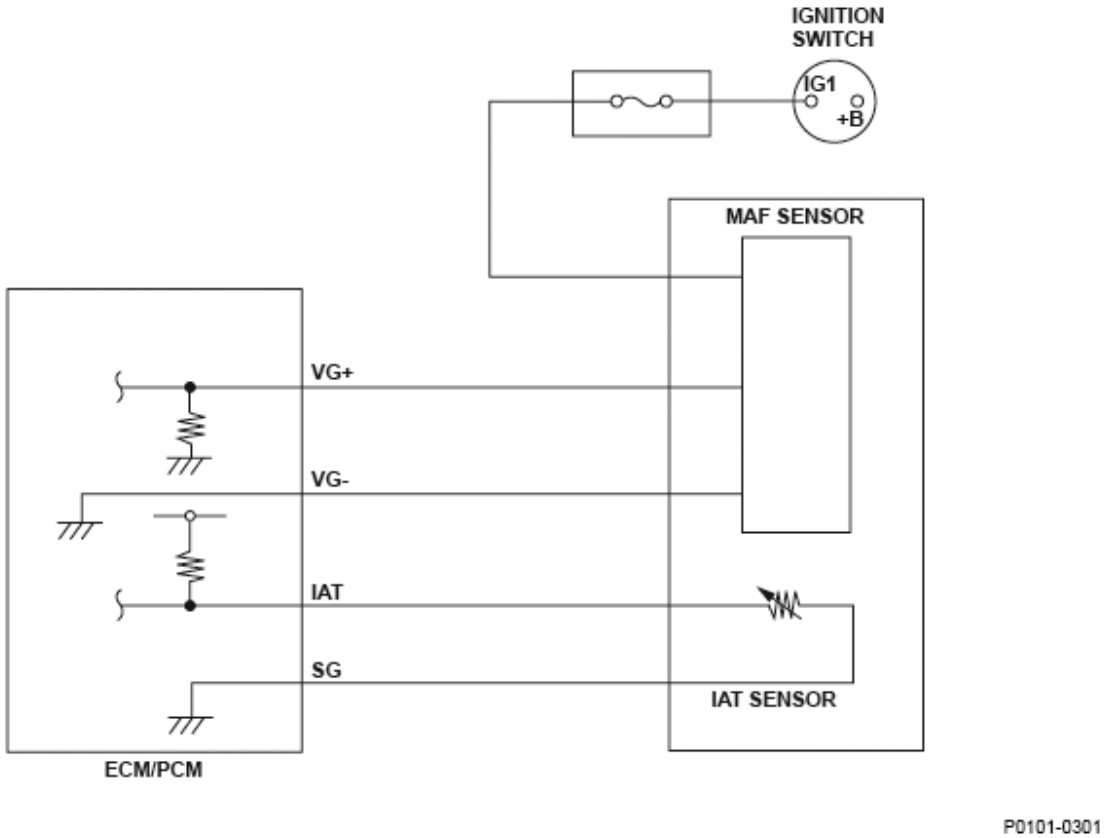


Fig. 21: Checking Continuity Between ETCS Control Relay 4P Terminal No. 3 And ECM Terminal A20
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM (A20) and the ETCS control relay, then go to step 23.

17. Remove the ETCS control relay (F) from the understood fuse/relay box.

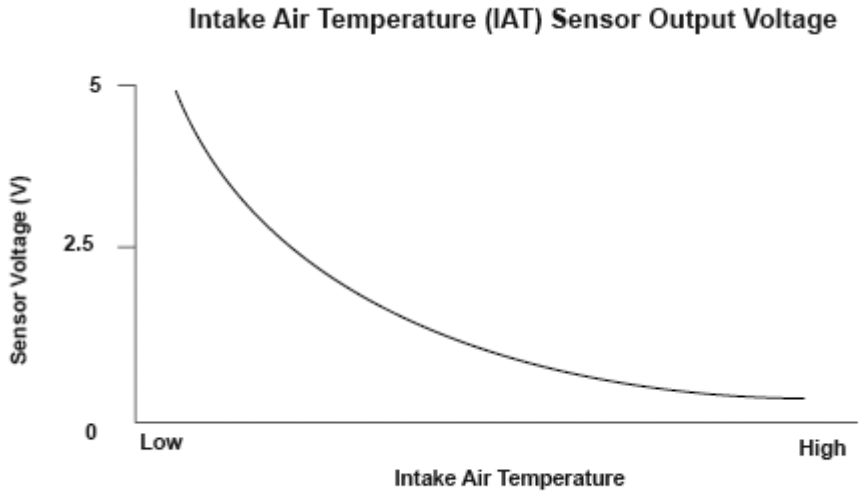


Fig. 22: Identifying ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Jump the SCS line with the HDS.
19. Disconnect ECM connector C (44P).
20. Check for continuity between ECM connector terminal C1 and body ground.

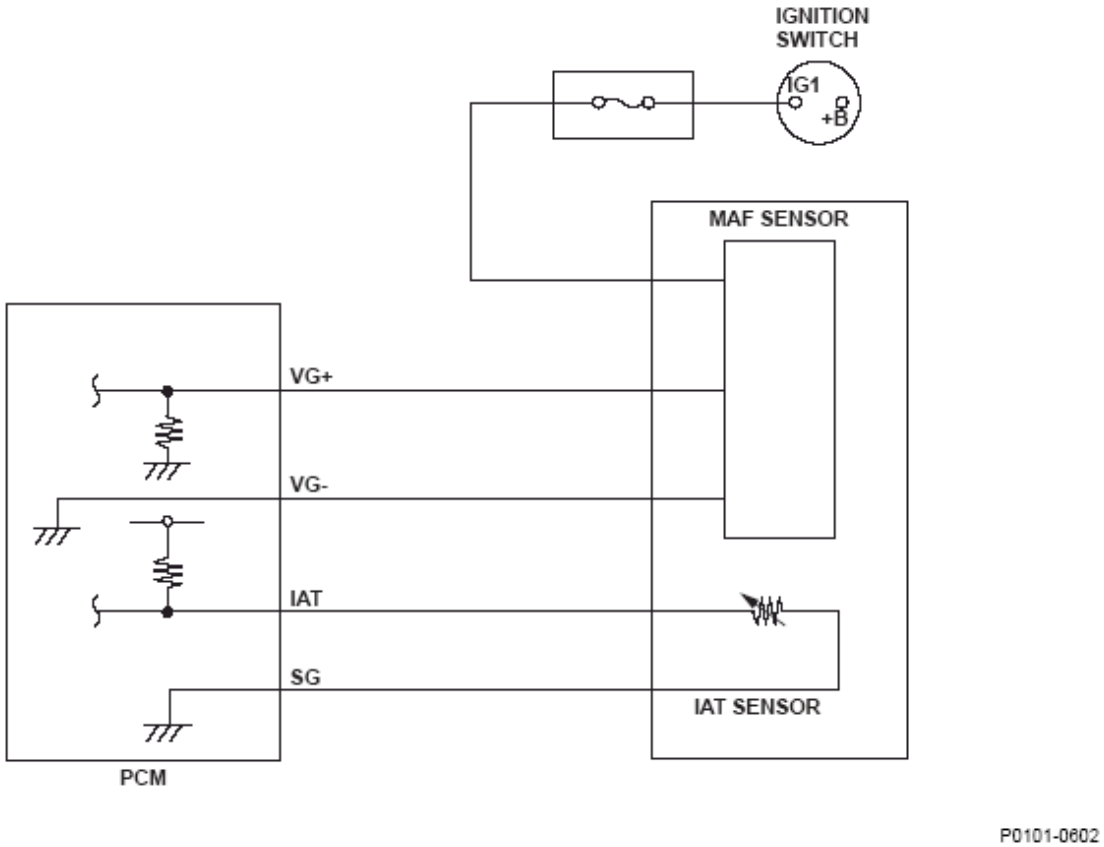


Fig. 23: Checking Continuity Between ECM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C1) and the ETCS control relay, then go to step 23.

NO - Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

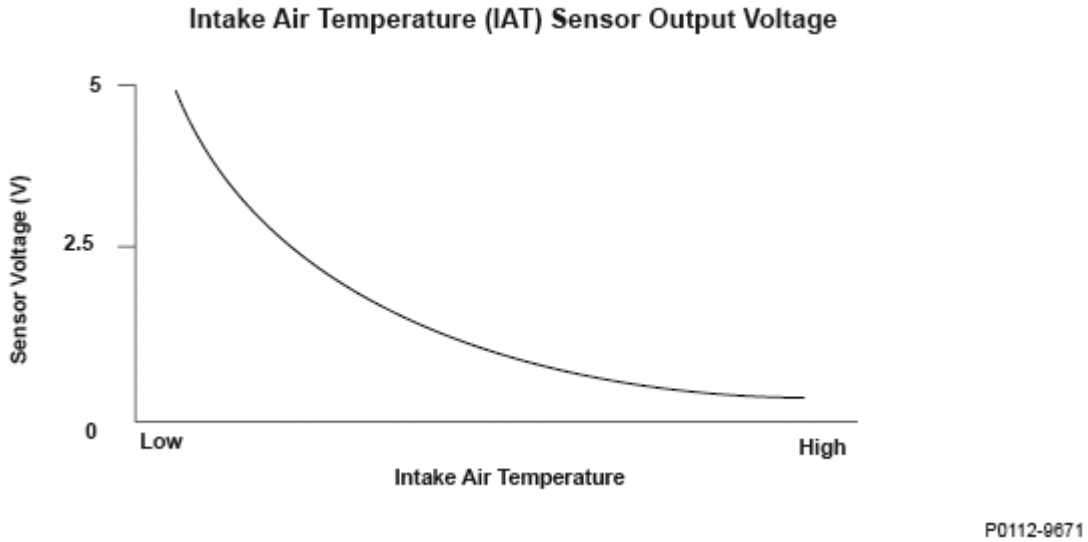


Fig. 24: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

NO - Go to step 28.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM with the HDS.
26. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES - Go to step 7.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve closed as shown.

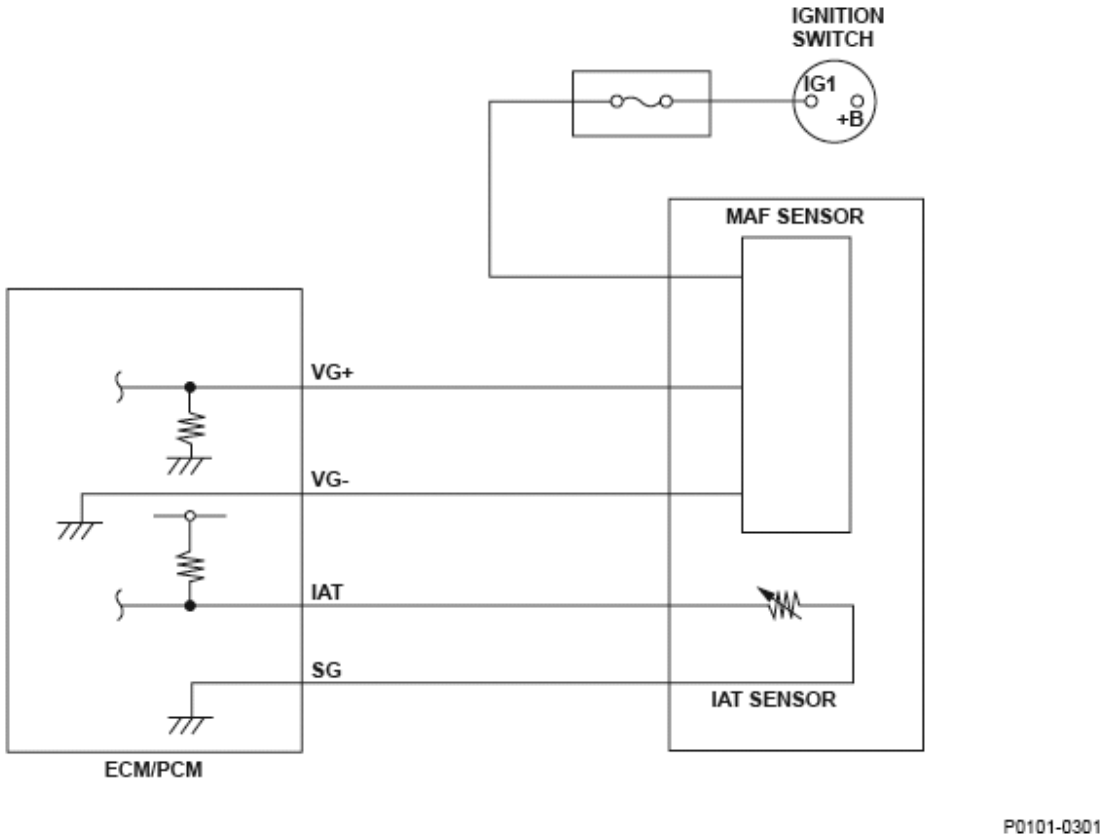


Fig. 25: Pushing Throttle Valve To Close Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1684 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve open as shown.

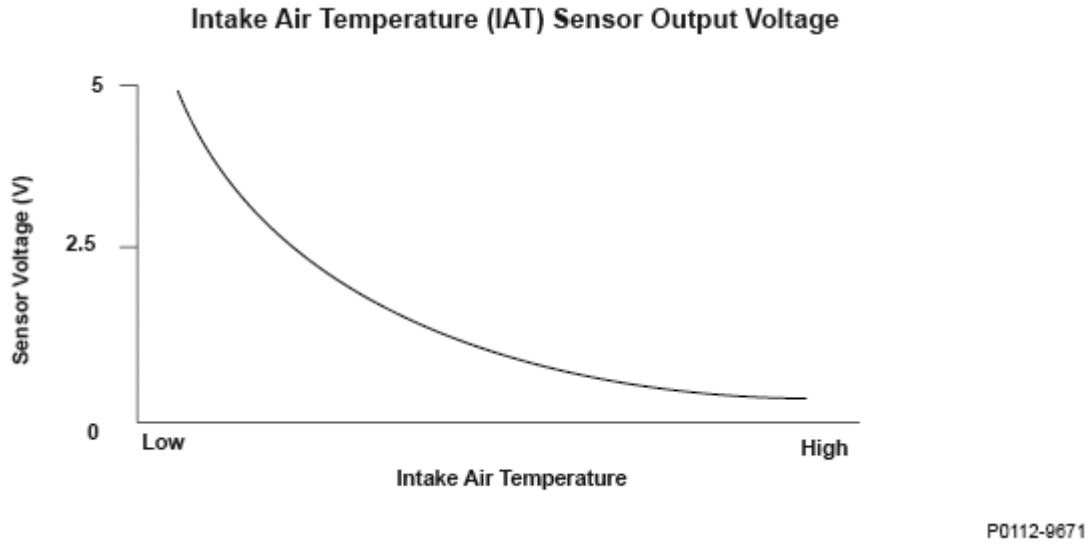


Fig. 26: Pushing Throttle Valve To Open Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is

activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - APP SENSOR
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

7. Turn the ignition switch OFF.
8. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

    NO - Go to step 13.

13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

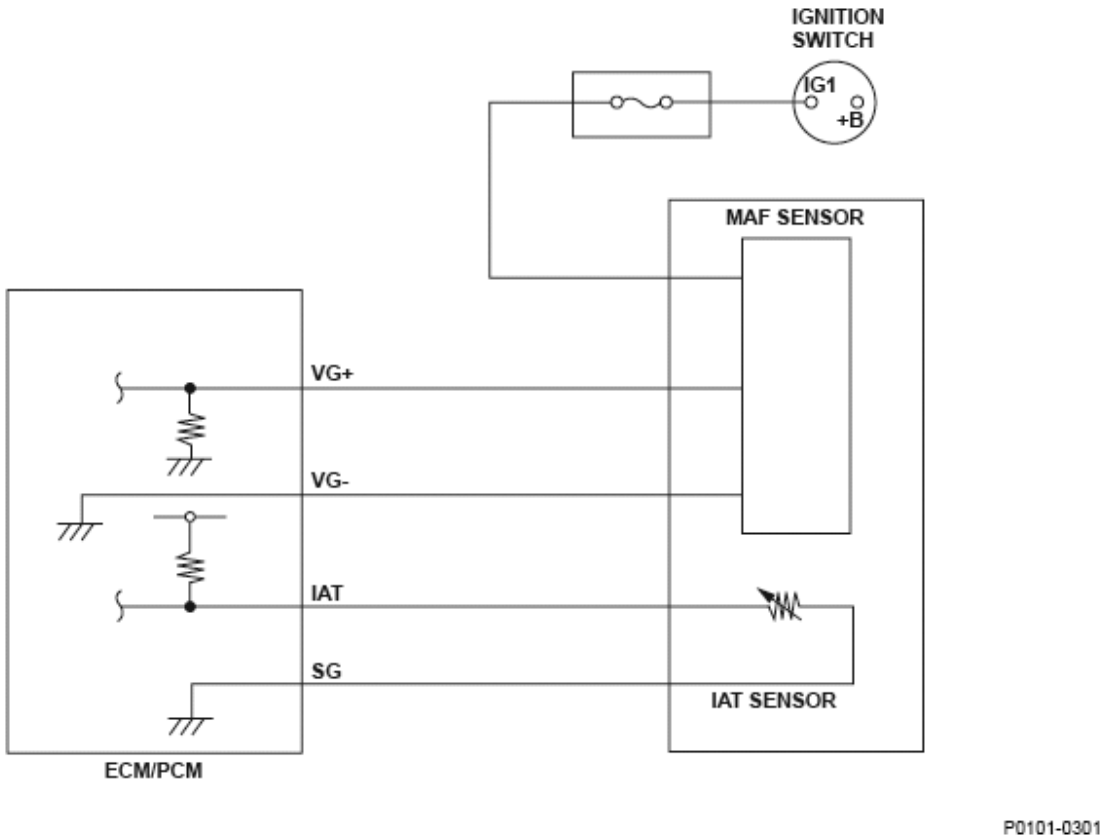


Fig. 27: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check for continuity between ECM connector terminals C3 and C4.

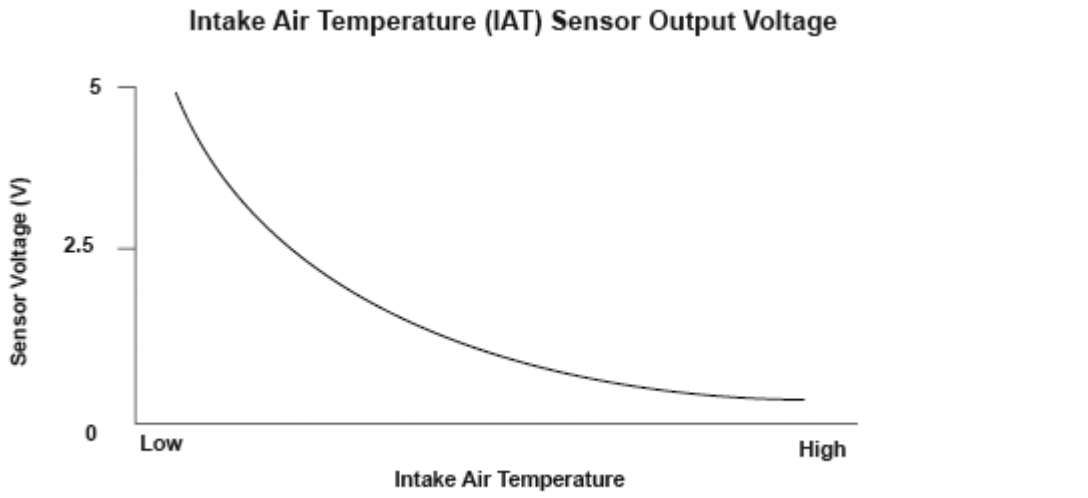


Fig. 28: Checking Continuity Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM (C3, C4), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM with the HDS.
24. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 29. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated,

go to the indicated DTCs troubleshooting.

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Jump the SCS line with the HDS.
2. Disconnect ECM connector C (44P).
3. Measure resistance between ECM connector terminals C3 and C4.

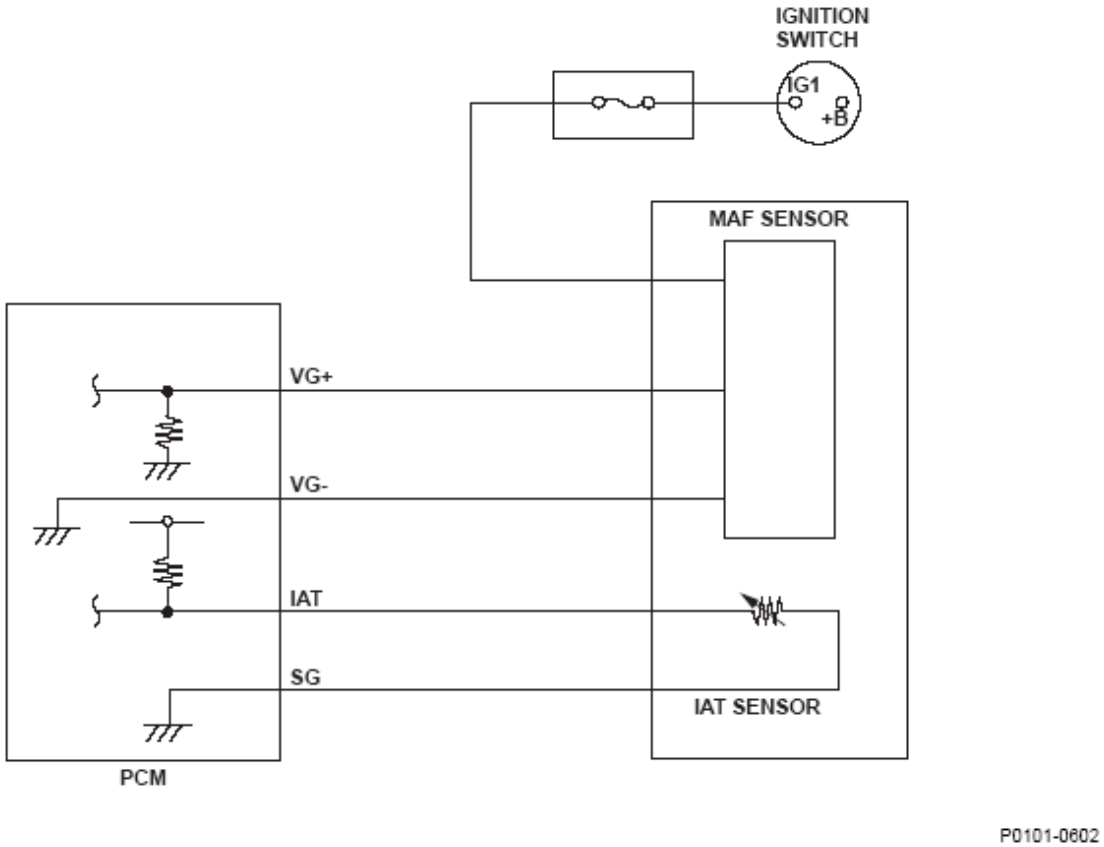


Fig. 29: Measuring Resistance Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 4.

NO - Go to step 15.

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

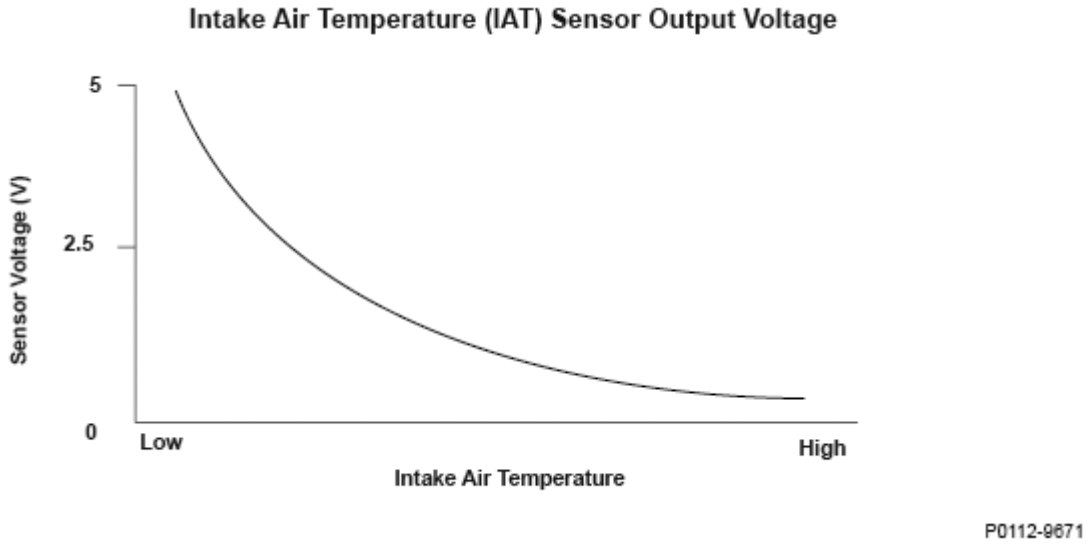


Fig. 30: Measuring Resistance Between Throttle Body 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms, or less?

YES - Go to step 6.

NO - Repair short in the wires between the ECM C3 (ETCSM-line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2118 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

15. Reconnect all connectors.
16. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
17. Turn the ignition switch OFF.

18. Turn the ignition switch ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2118 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 17. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

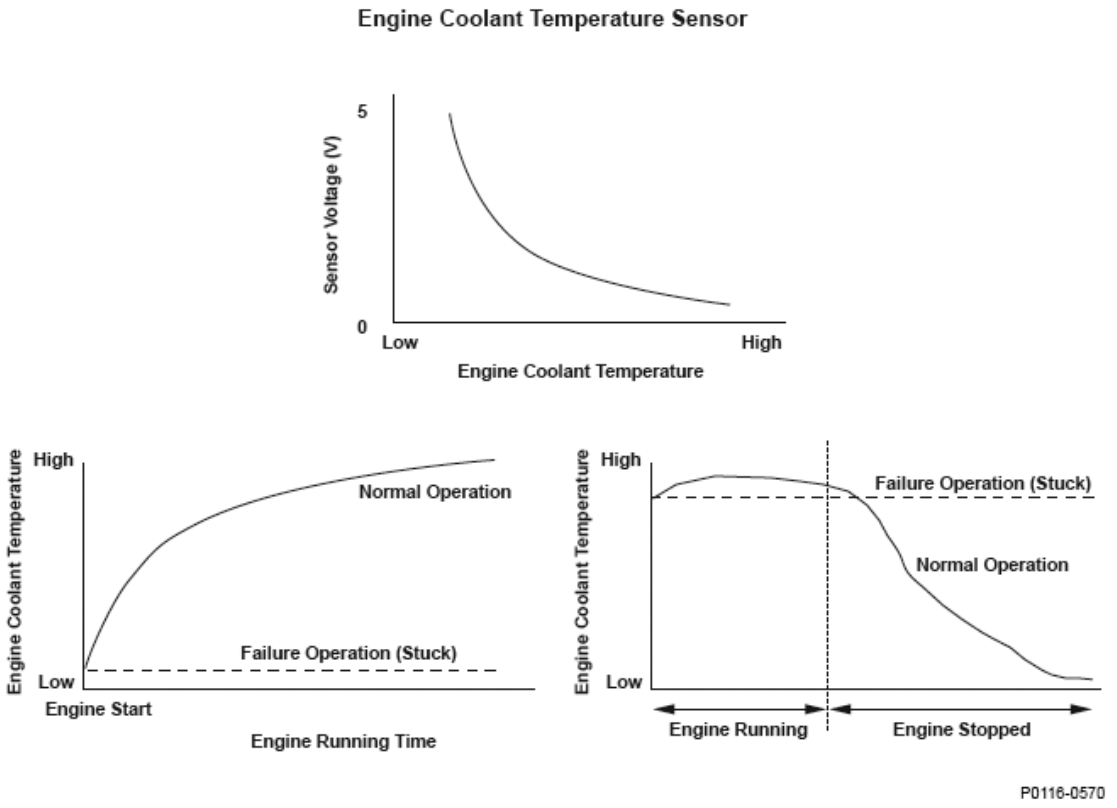


Fig. 31: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

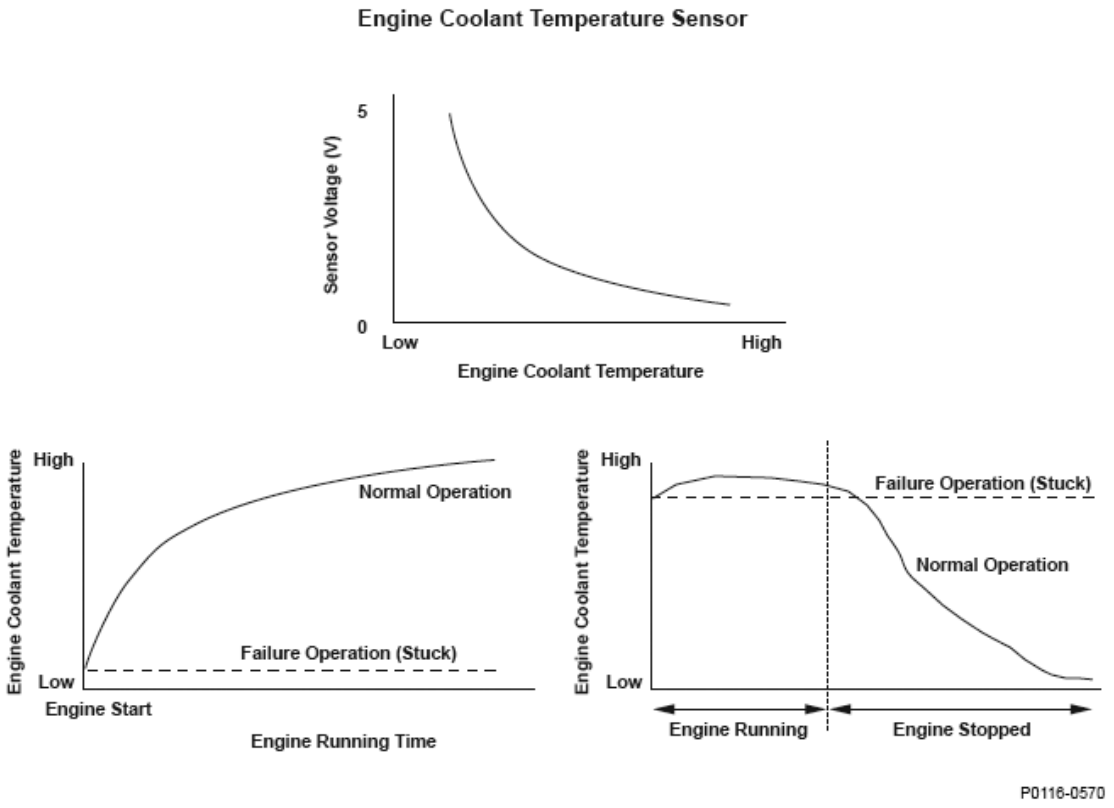


Fig. 32: Checking Continuity Between APP Sensor 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A17) and APP sensor A, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

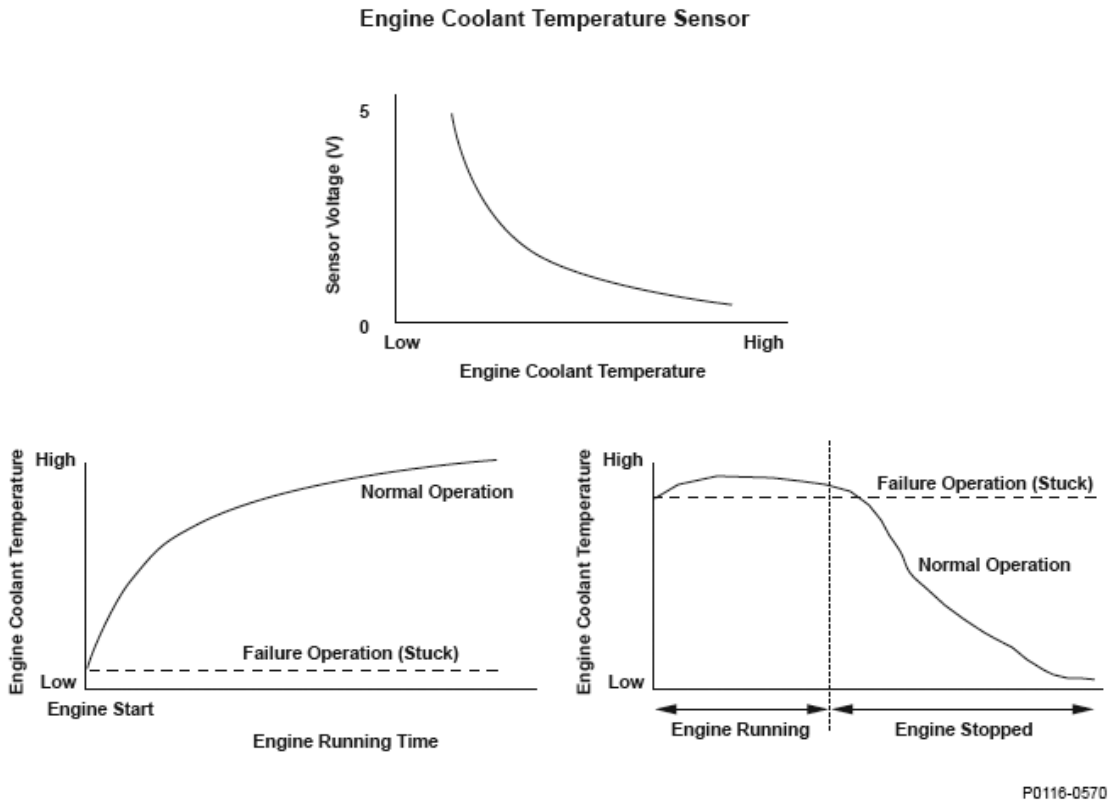


Fig. 33: Connecting APP Sensor 6P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal A17 and body ground.

Fig. 34: Checking Continuity Between ECM Connector Terminal A17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM (A17) and APP sensor A, then go to step 24.

13. Reconnect ECM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

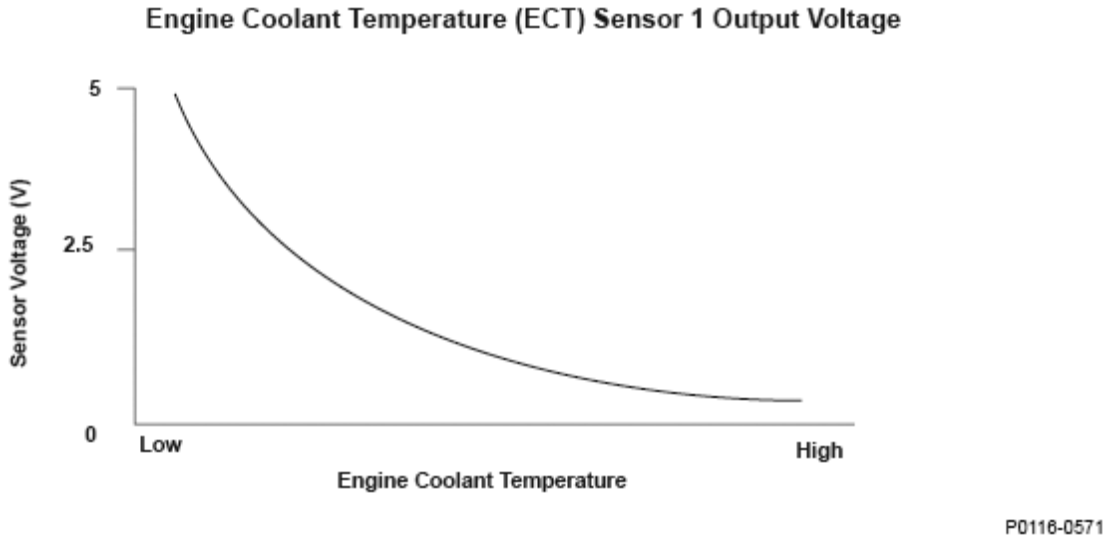


Fig. 35: Connecting APP Sensor 6P Connector Terminals No. 1 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR A in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES - Go to step 29.

    NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

Fig. 36: Connecting APP Sensor 6P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM connector terminal A25 and body ground.

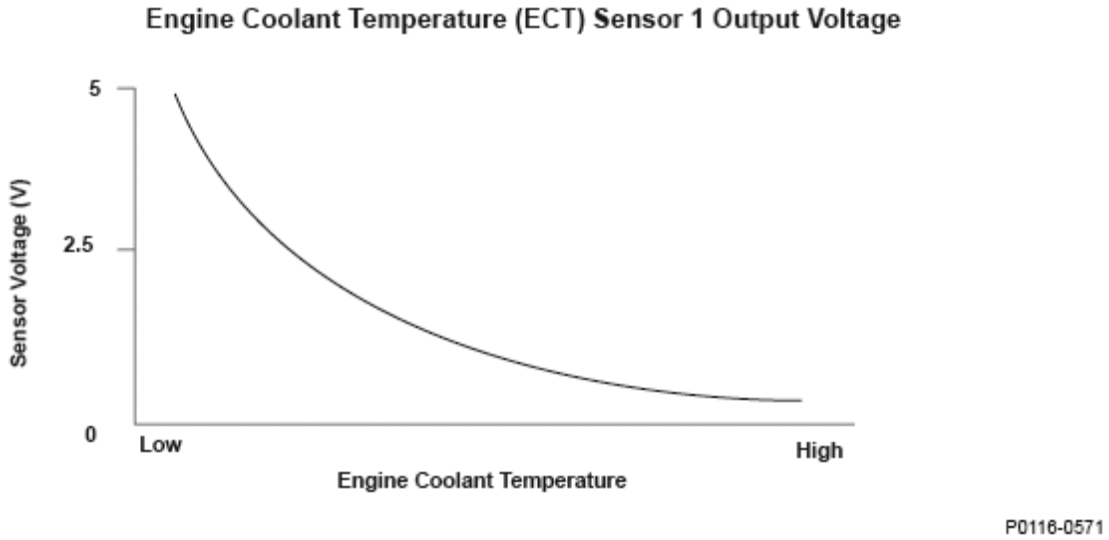


Fig. 37: Checking Continuity Between ECM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM (A25) and APP sensor A, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

YES - Check for poor connections or loose terminals at APP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

Fig. 38: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

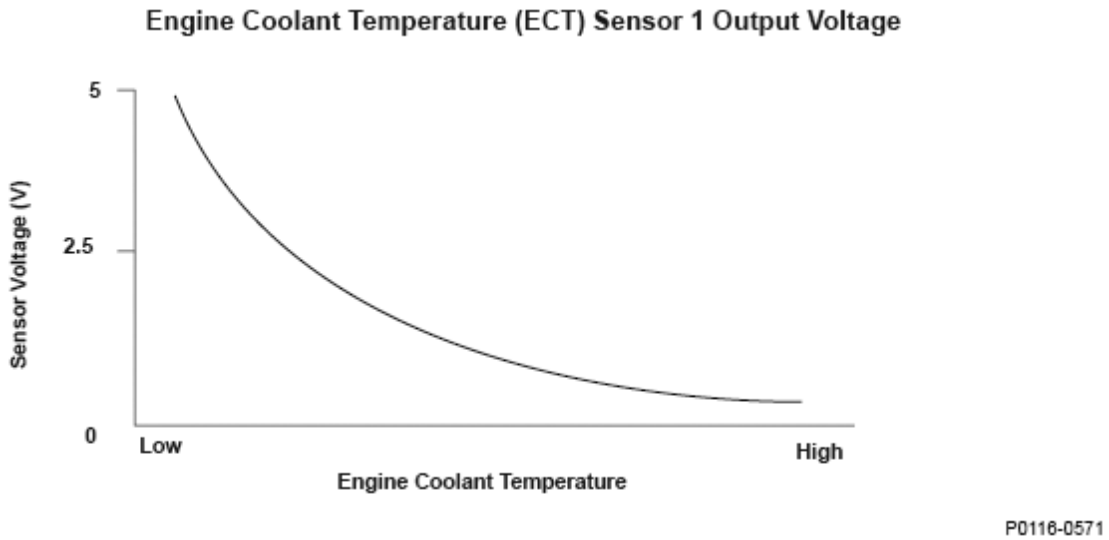


Fig. 39: Connecting APP Sensor 6P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM connector terminal A35 and body ground.

Fig. 40: Checking Continuity Between ECM Connector Terminal A35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (A35) and APP sensor A, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).

16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

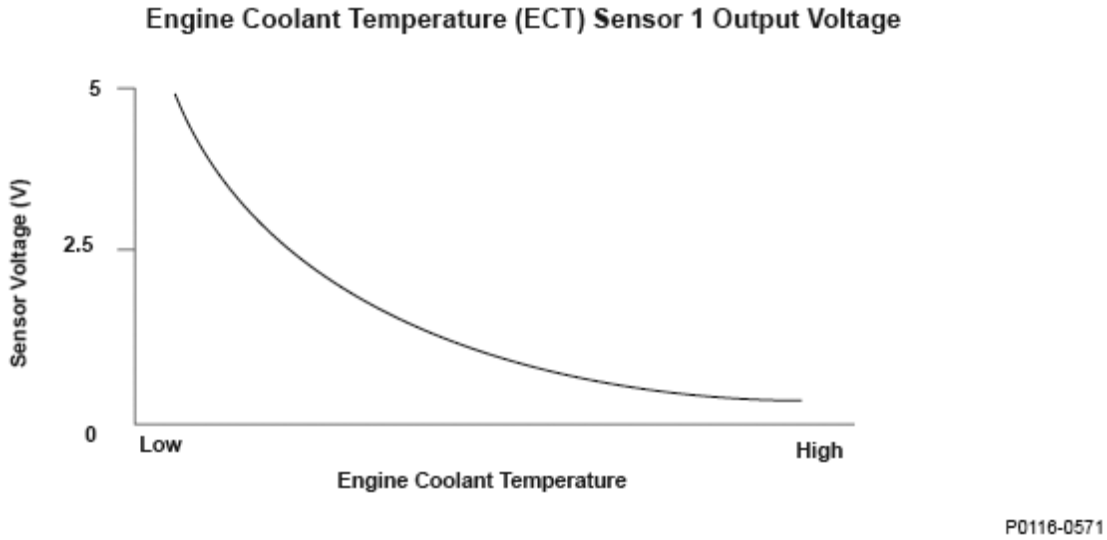


Fig. 41: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

Fig. 42: Checking Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A18) and APP sensor B, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

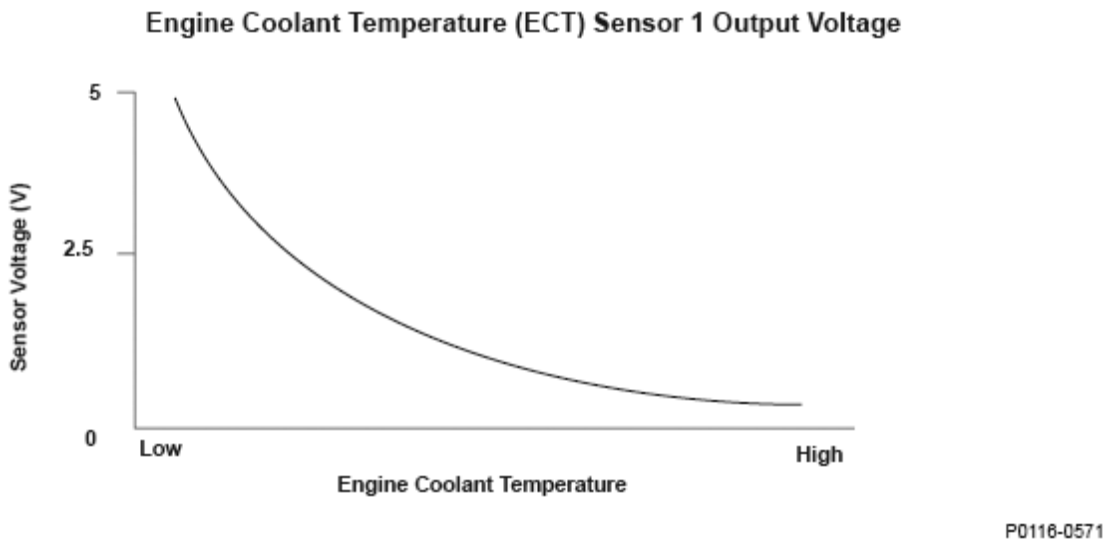


Fig. 43: Connecting APP Sensor 6P Connector Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal A18 and body ground.

Fig. 44: Checking Continuity Between ECM Connector Terminal A18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM (A18) and APP sensor B, then go to step 24.

13. Reconnect ECM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

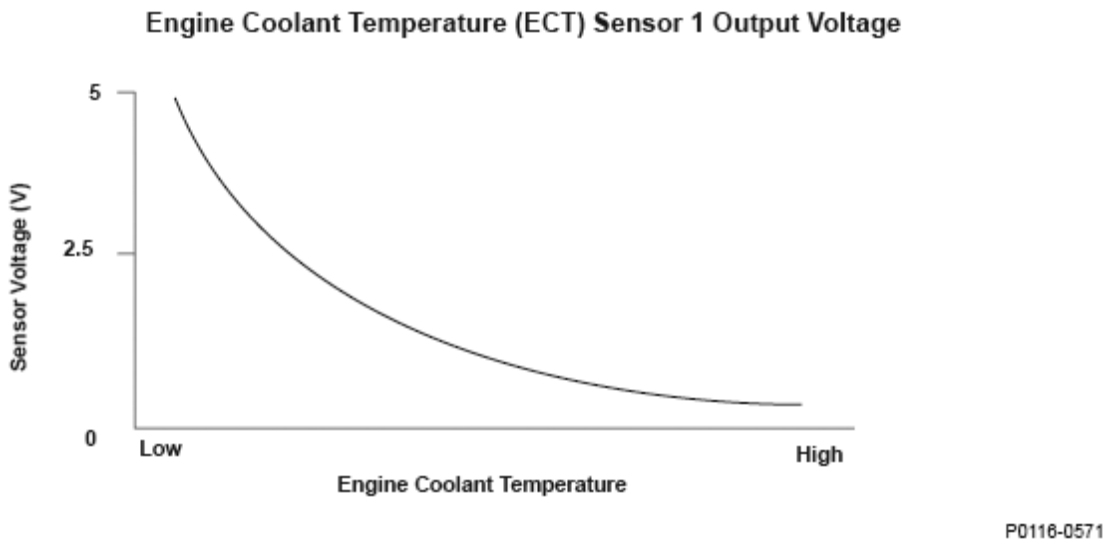


Fig. 45: Connecting APP Sensor 6P Connector Terminals No. 4 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR B in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES - Go to step 29.

    NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

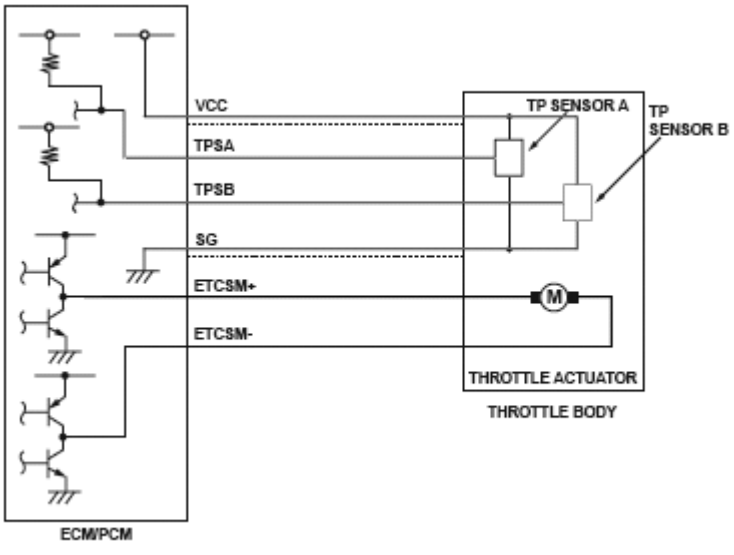


Fig. 46: Connecting APP Sensor 6P Connector Terminal No. 6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM connector terminal A24 and body ground.

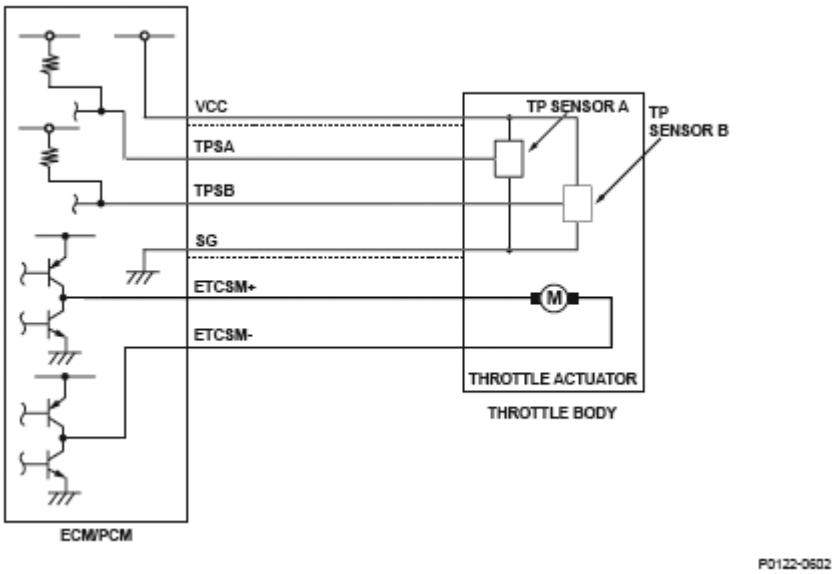


Fig. 47: Checking Continuity Between ECM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM (A24) and APP sensor B, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES - Check for poor connections or loose terminals at APP sensor B and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.

30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor Band the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

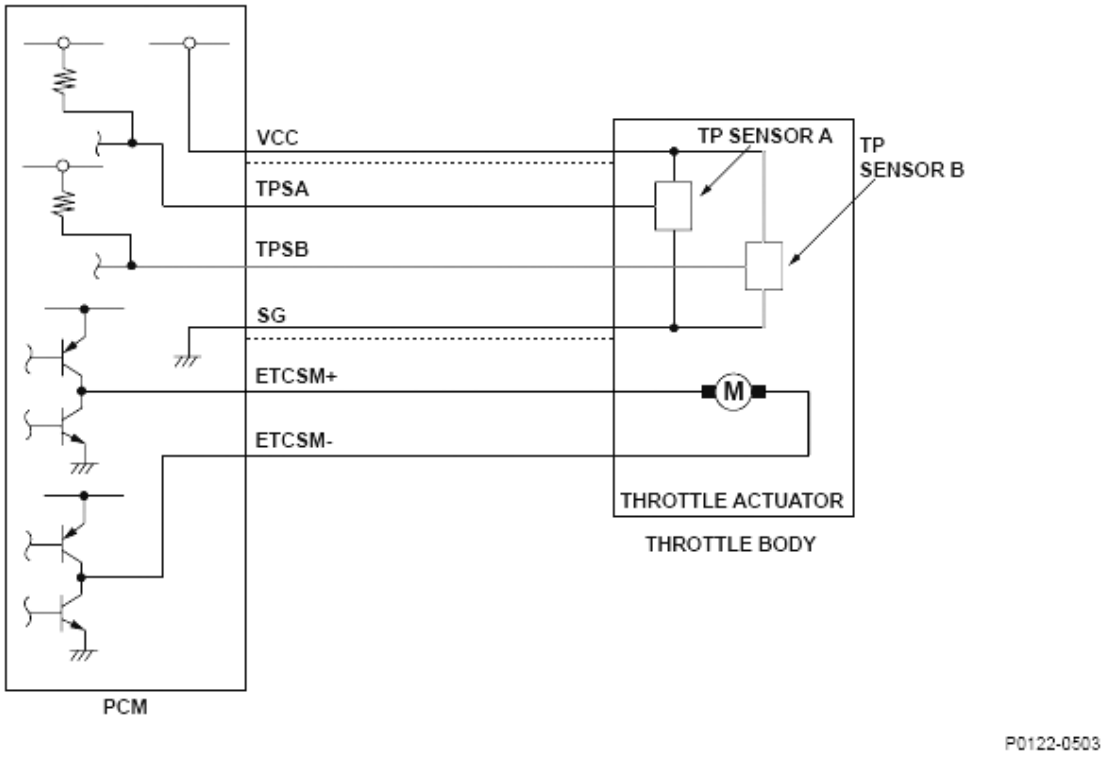


Fig. 48: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

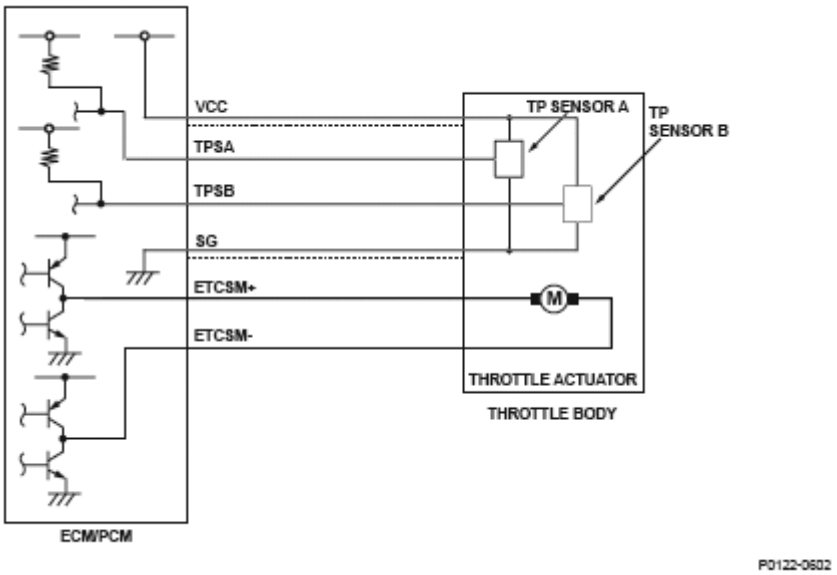


Fig. 49: Connecting APP Sensor 6P Connector Terminal No. 5 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM connector terminal A34 and body ground.

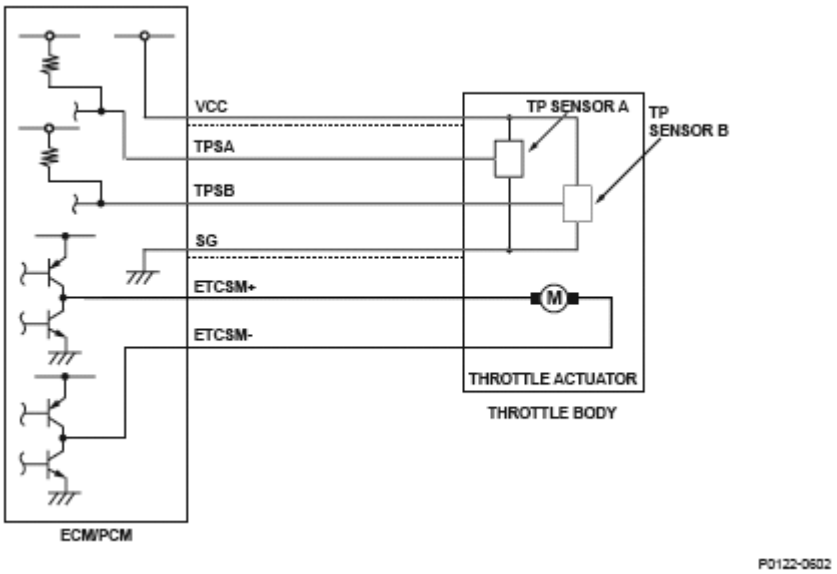


Fig. 50: Checking Continuity Between ECM Connector Terminal A34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (A34) and APP sensor B, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE**

REMOVAL/INSTALLATION).

14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2135 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

Does the valve temporarily move to its fully closed position?

YES - Go to step 15.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminals C20 and C21.

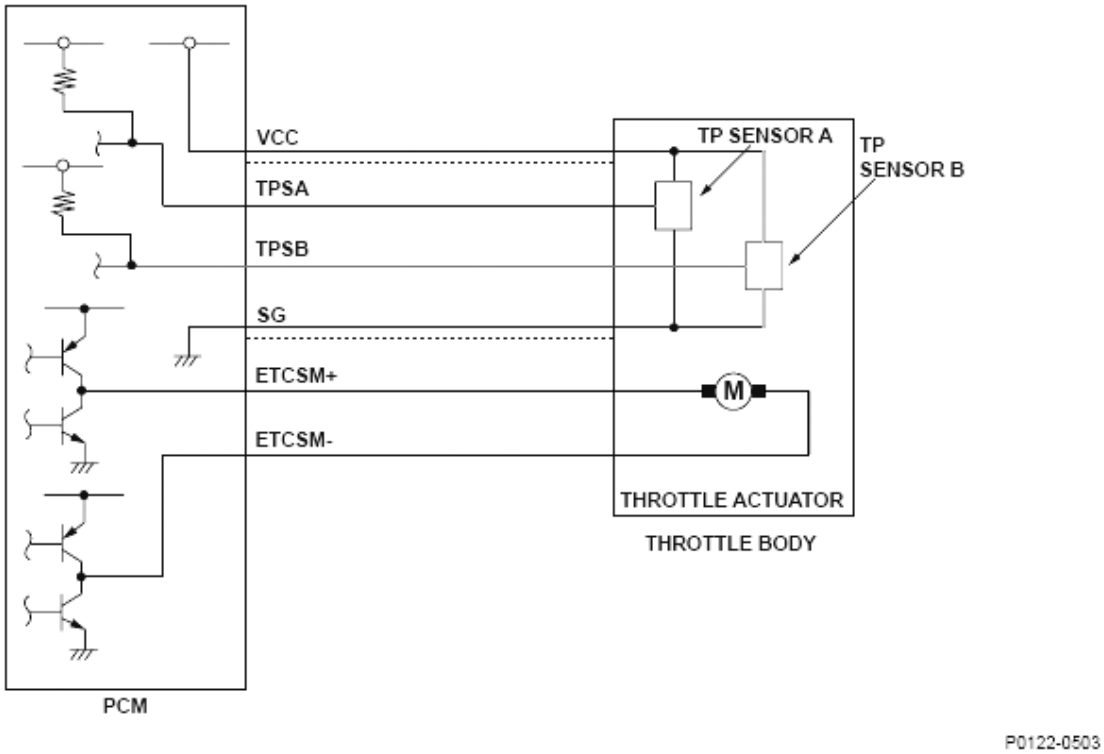


Fig. 51: Checking Continuity Between ECM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Go to step 22.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between ECM connector terminals C20 and C21.

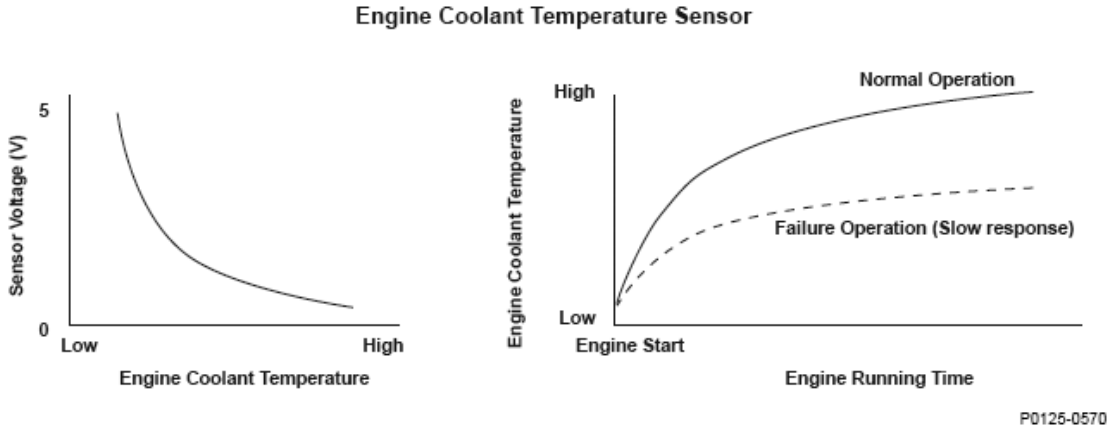


Fig. 52: Checking Continuity Between ECM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between the ECM C20 (TPSA line) and the C21 (TPSB line), then go to step 17.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the ECM with the HDS.
20. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM.

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

    Are they the same voltage?

    YES - Go to step 6.

    NO - Go to step 12.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect ECM connector A (44P).
9. Check for continuity between ECM connector terminals A17 and A18.

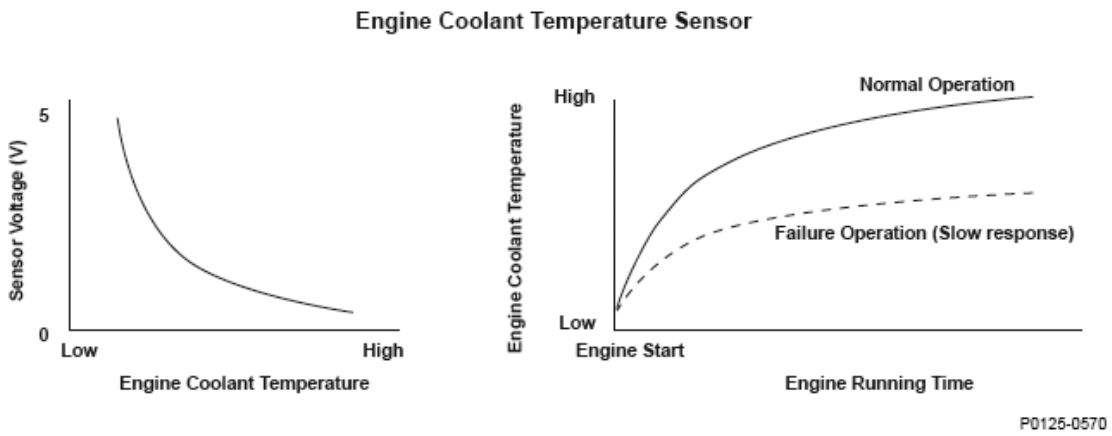


Fig. 53: Checking Continuity Between ECM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM connector terminals A17 and A18.

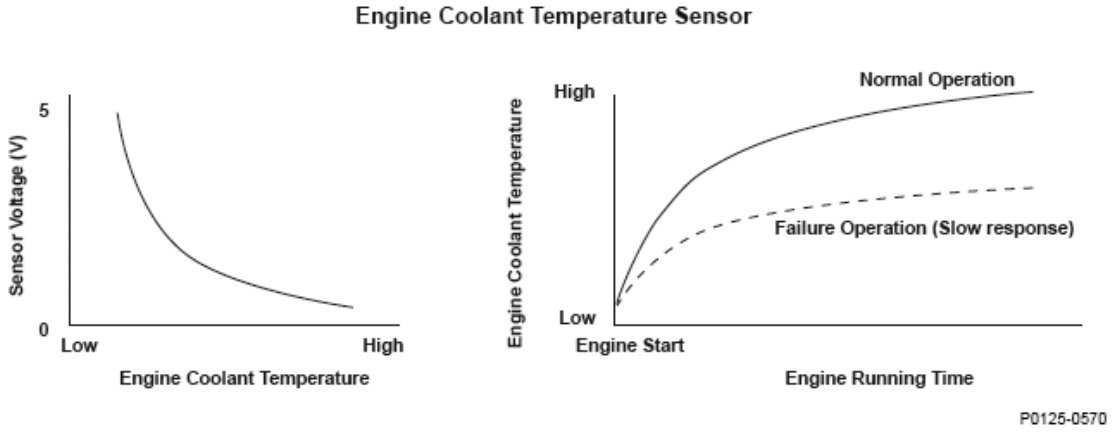


Fig. 54: Checking Continuity Between ECM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between ECM connector terminals A17 (APSA line) and A18 (APSB line), then go to step 14.

NO - Go to step 13.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Turn the ignition switch OFF.
19. Turn the ignition switch ON (II).
20. Press the accelerator pedal to the floor.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES - Check for poor connections or loose terminals at the APP sensor and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II).
26. Press the accelerator pedal to the floor.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2135 is stored at the same time as DTC P2176, troubleshoot**

DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

6. Turn the ignition switch OFF.
7. Disconnect the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while performing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES - Go to step 11.

    NO - Go to step 12.

11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 21 and recheck.

    NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

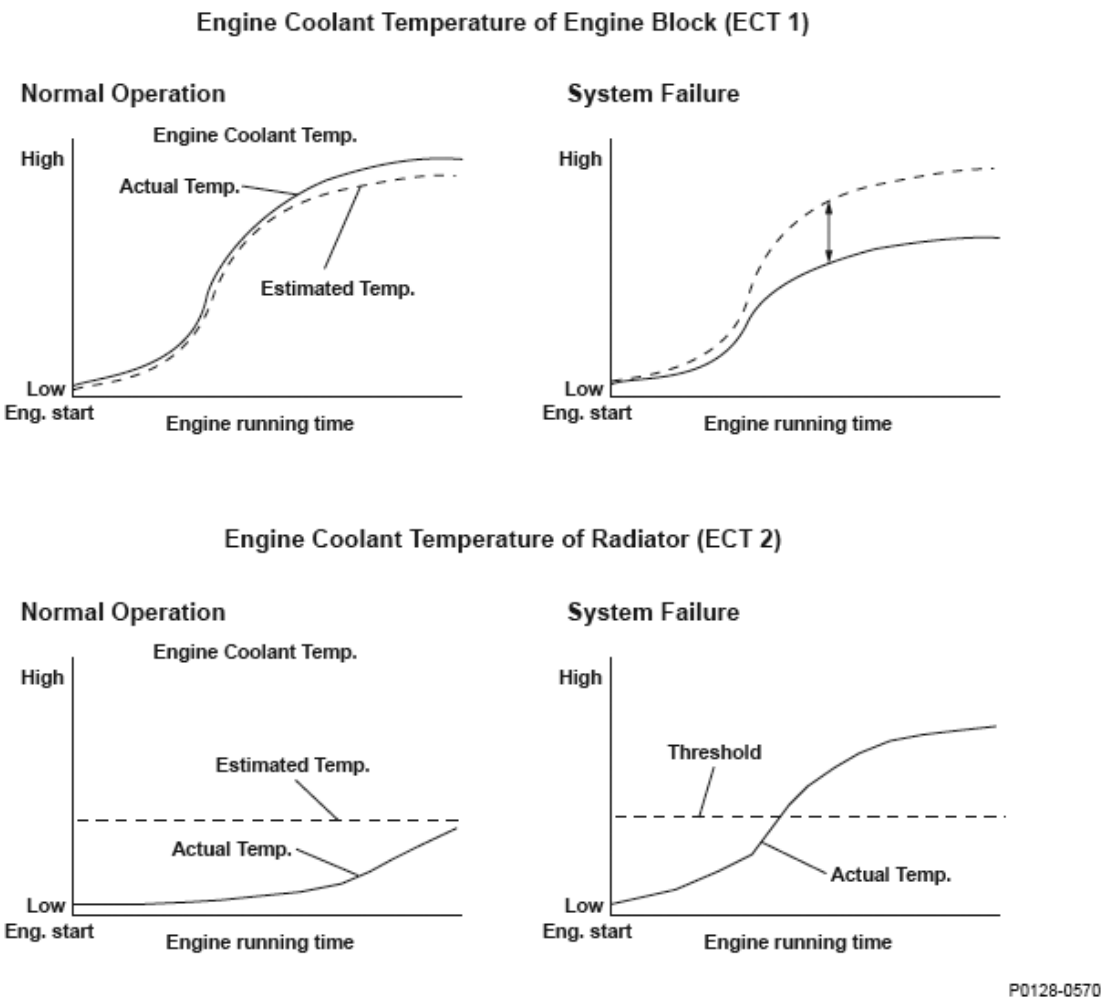


Fig. 55: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between ECM connector terminals C3 and C4.

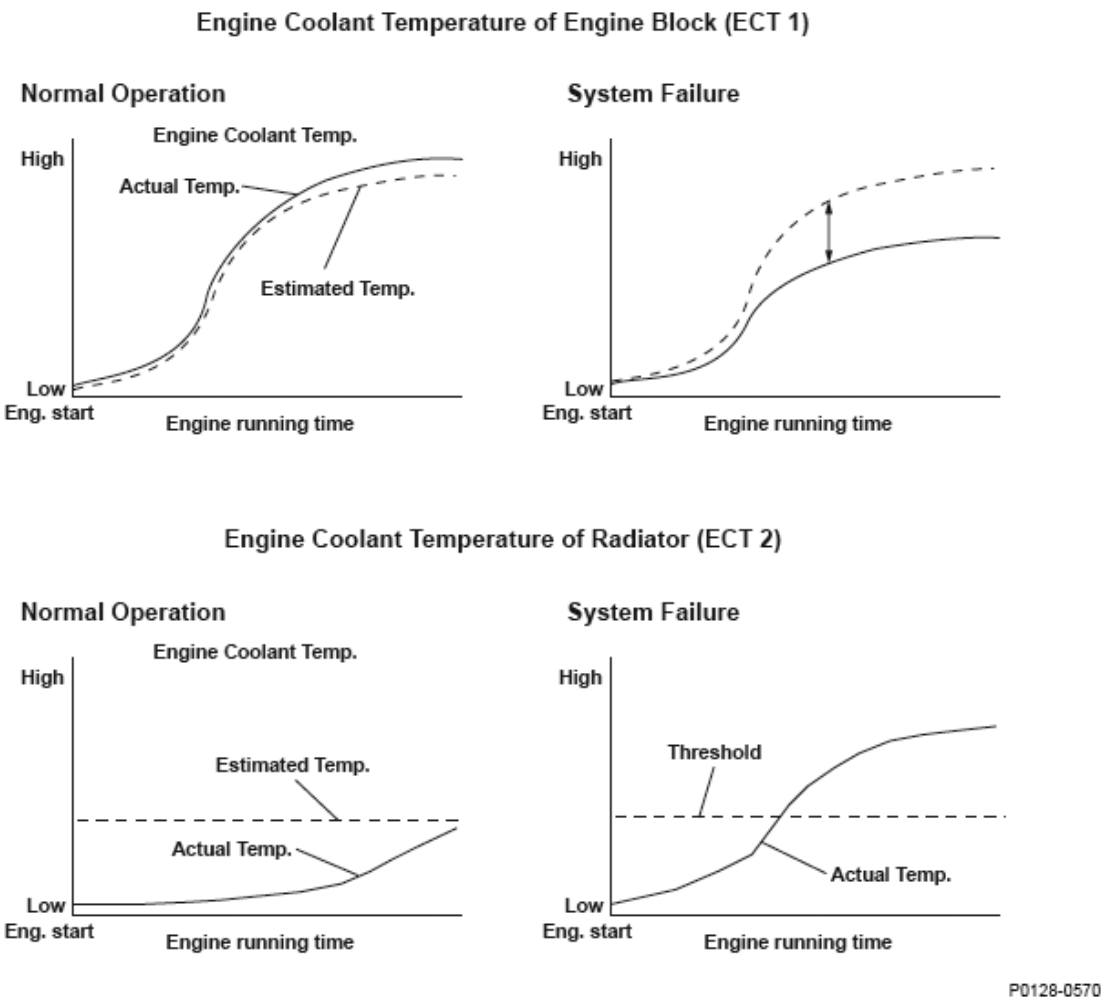


Fig. 56: Checking Continuity Between ECM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM (C3, C4), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

APP SENSOR SIGNAL INSPECTION

NOTE:

- **This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.**
- **Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.**
- **Press the accelerator pedal several times, to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION).**

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

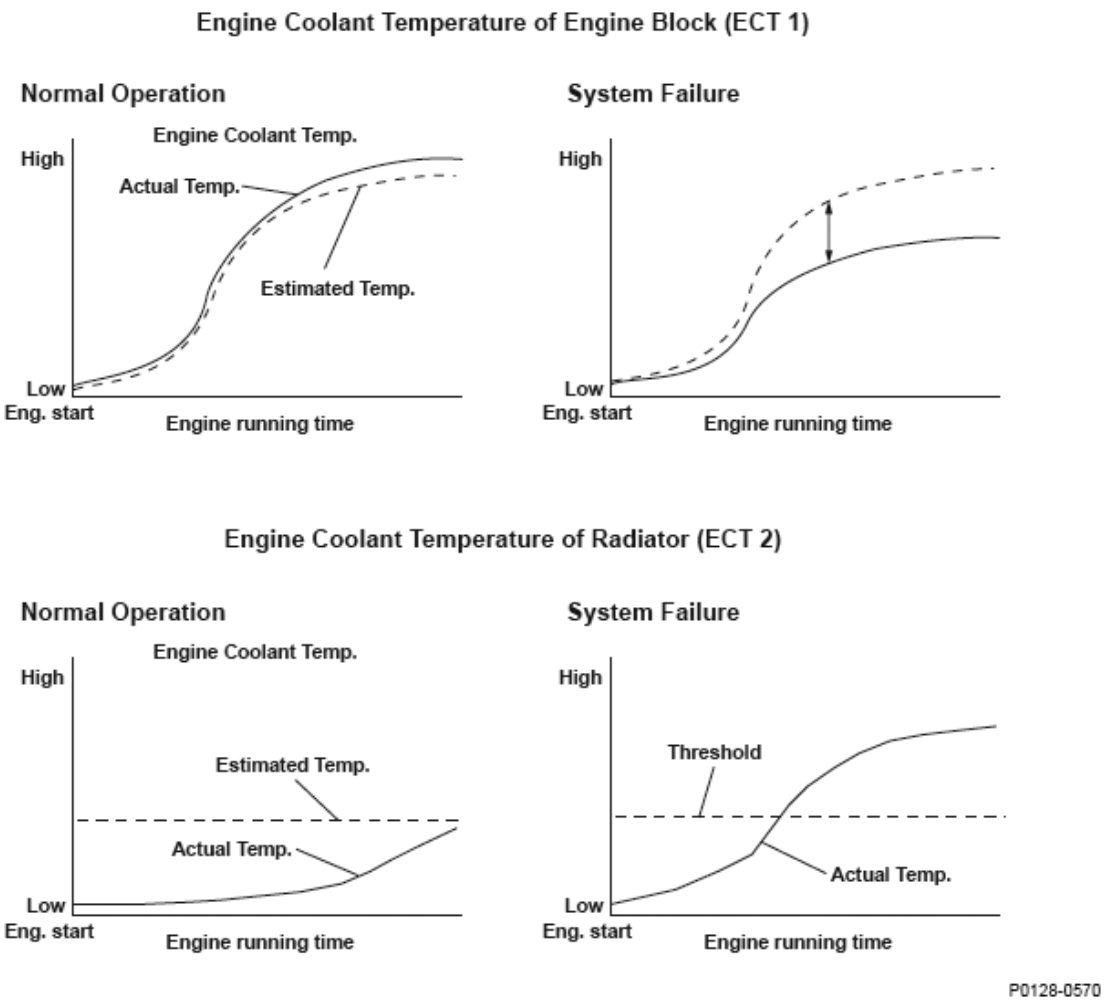


Fig. 57: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 5.
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**), then go to step 1.

ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION

REMOVAL

1. Disconnect the accelerator pedal module connector (A), then remove the nuts (B).

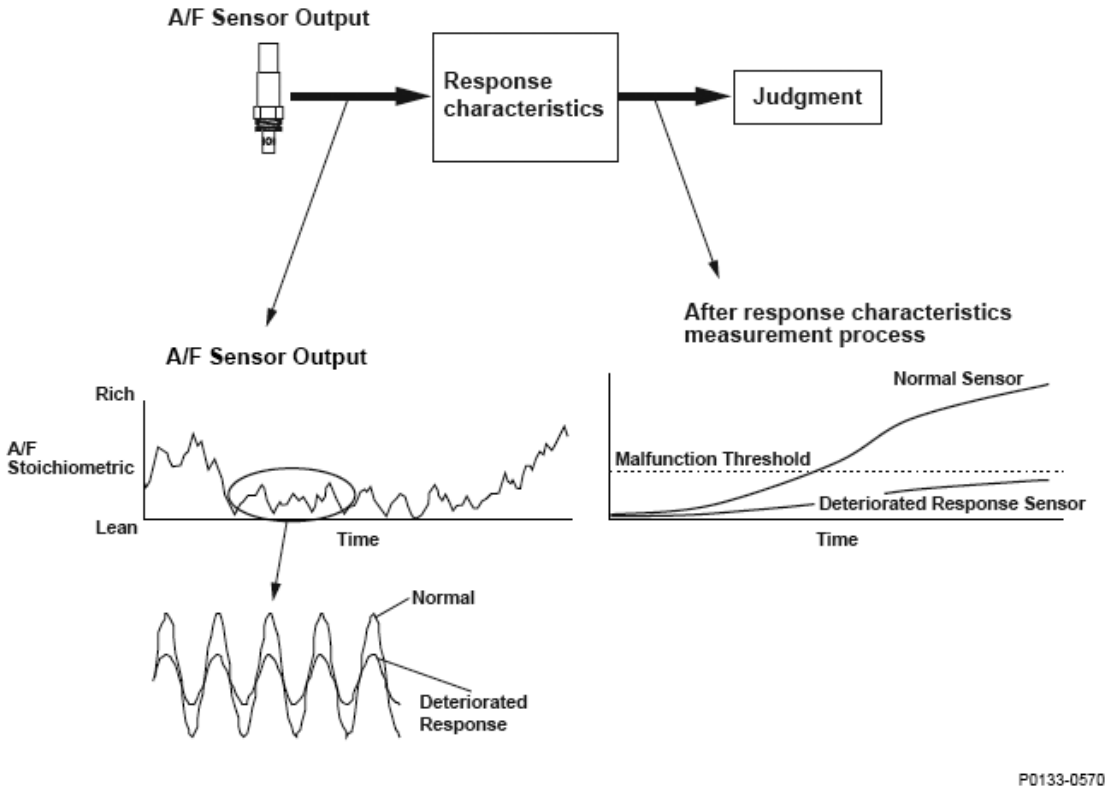


Fig. 58: Disconnecting Accelerator Pedal Module Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Push the tab (C).
3. Pry the accelerator pedal module to right and left, and remove the accelerator pedal module (D).

NOTE:

- **The APP sensor is not available separately.**

  Do not disassemble the accelerator pedal module.

- **If the tab or tab receivers (E) are damaged, pull back the carpet, remove the nut (F), and replace the pedal stop (G).**
- **If the tabs (H) of the accelerator pedal module are damaged, replace the accelerator pedal module.**

INSTALLATION

1. Install the accelerator pedal module.

NOTE: Make sure the tab (A) is secure.

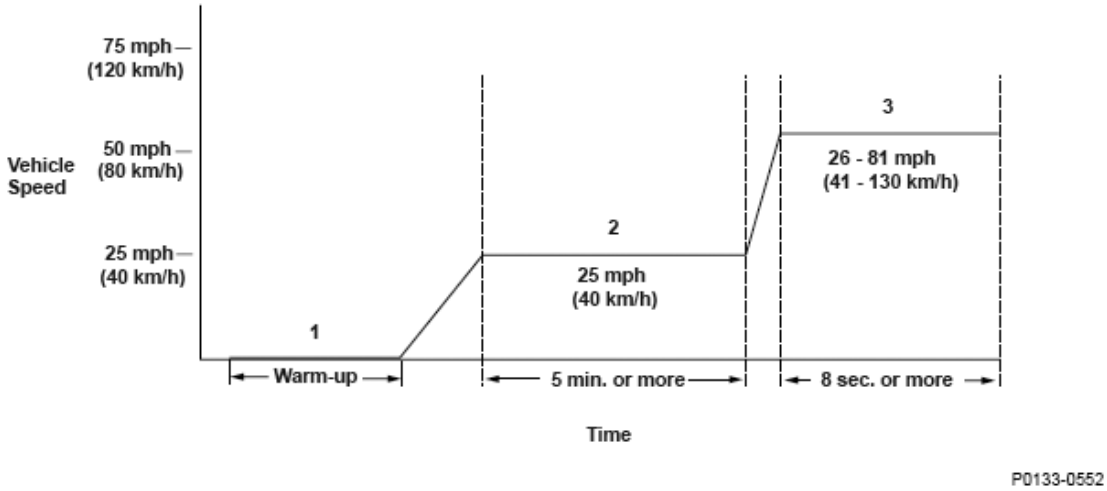


Fig. 59: Installing Accelerator Pedal Module
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the nuts (B), then connect the accelerator pedal module connector (C).

NOTE: Make sure that the accelerator pedal module is secure.

2006-08 ENGINE PERFORMANCE

Electronic Throttle Control System (R18A1) - Civic (Except Hybrid & Si)

COMPONENT LOCATION INDEX

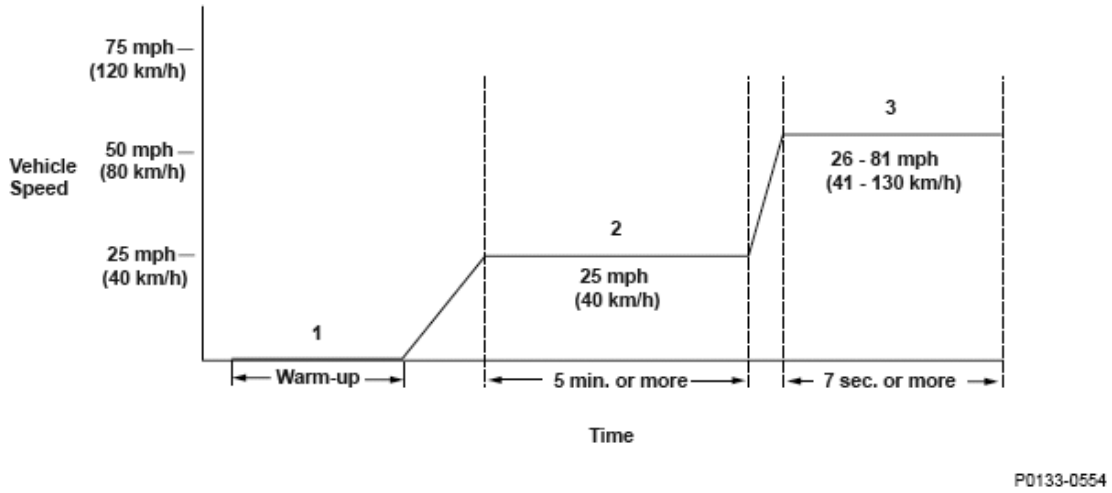


Fig. 1: Identifying Electronic Throttle Control System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

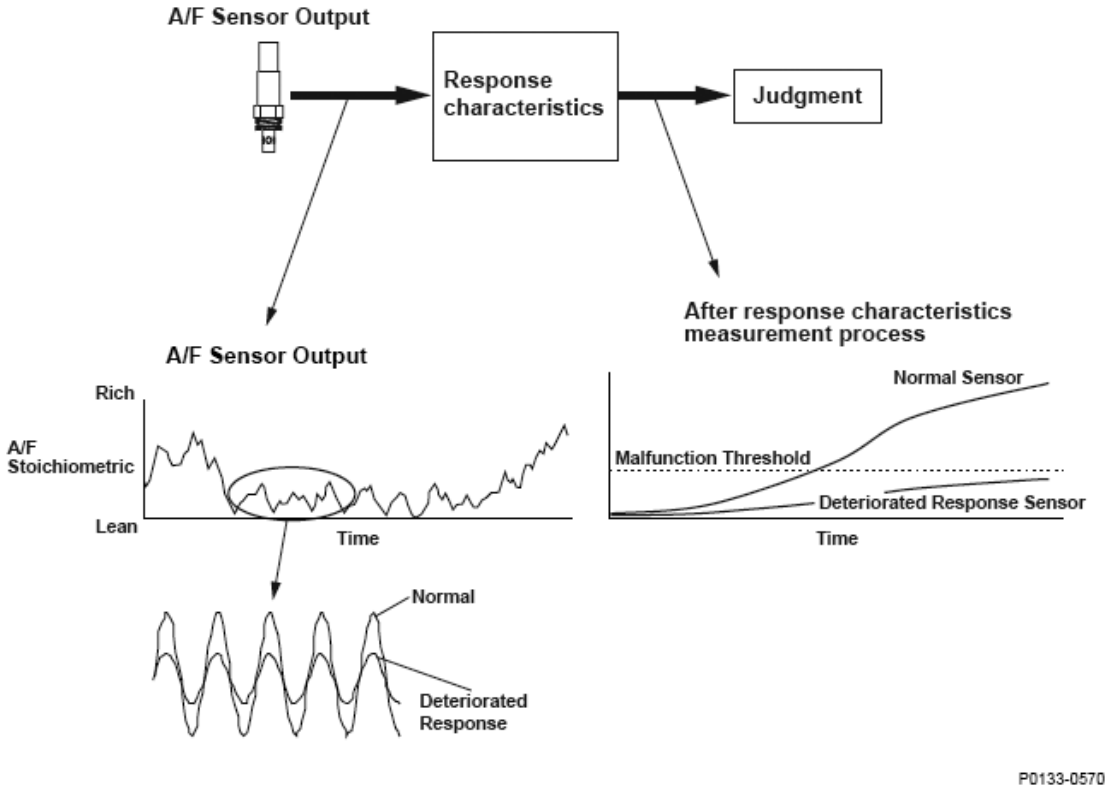


Fig. 2: Checking Continuity Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM/PCM (C20), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

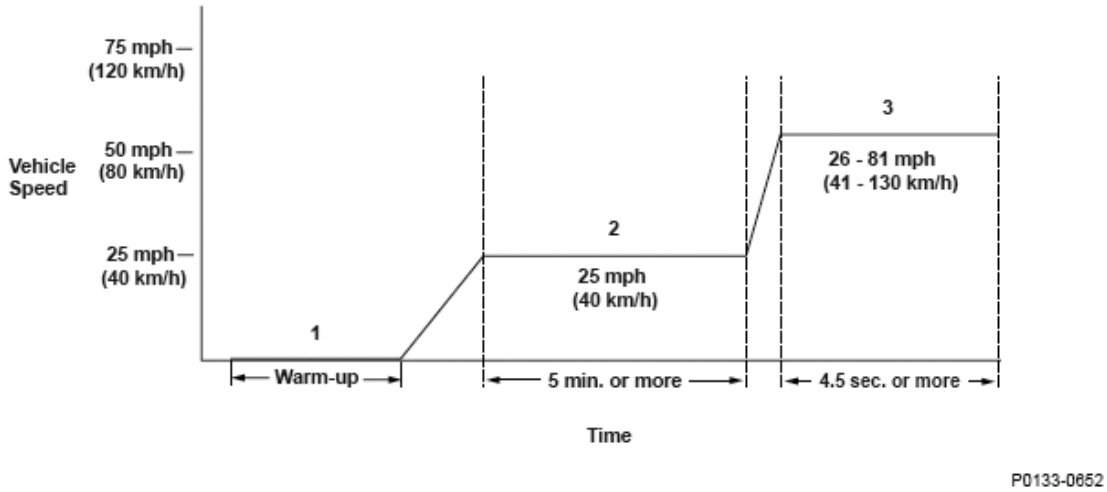


Fig. 3: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 23.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.

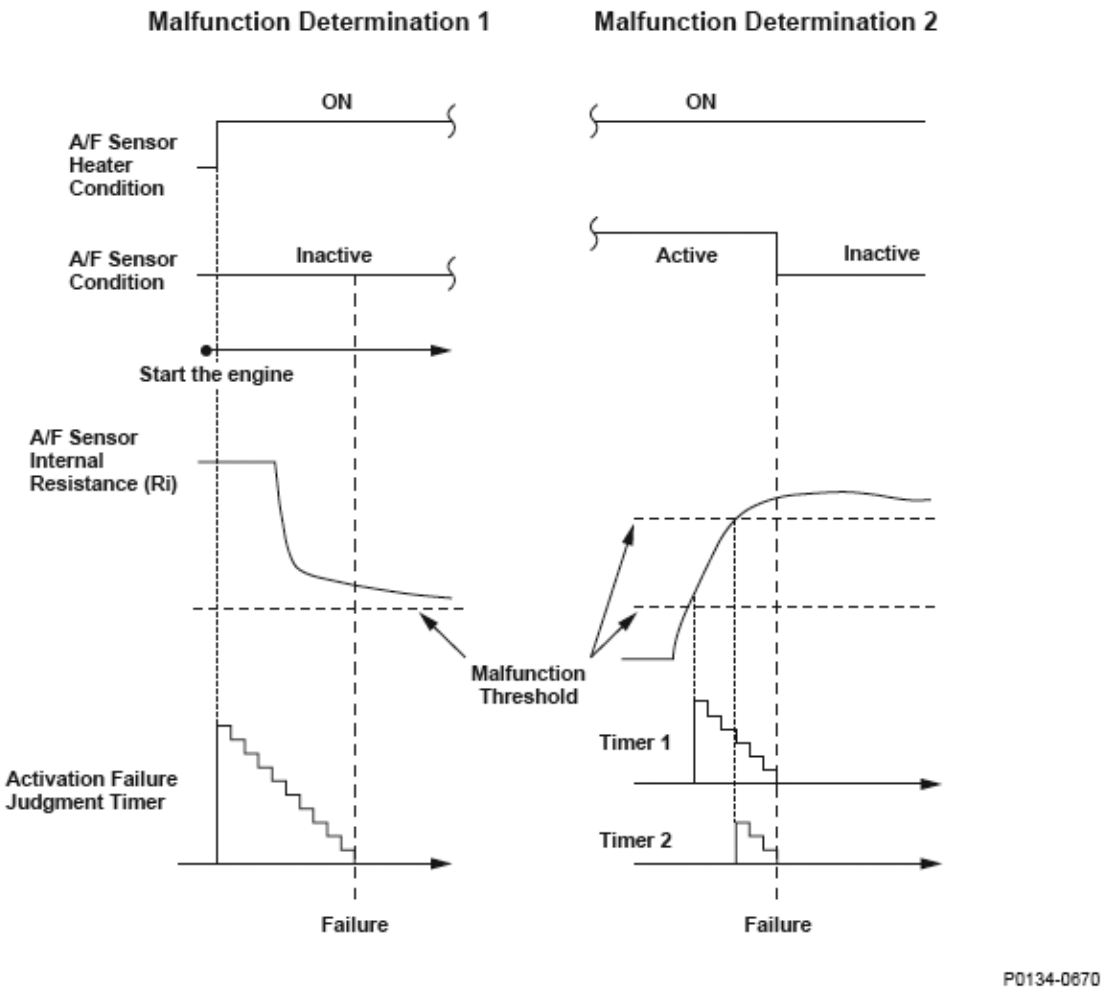


Fig. 4: Checking Continuity Between ECM/PCM Connector Terminals C12 And Throttle Body 6P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go

to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

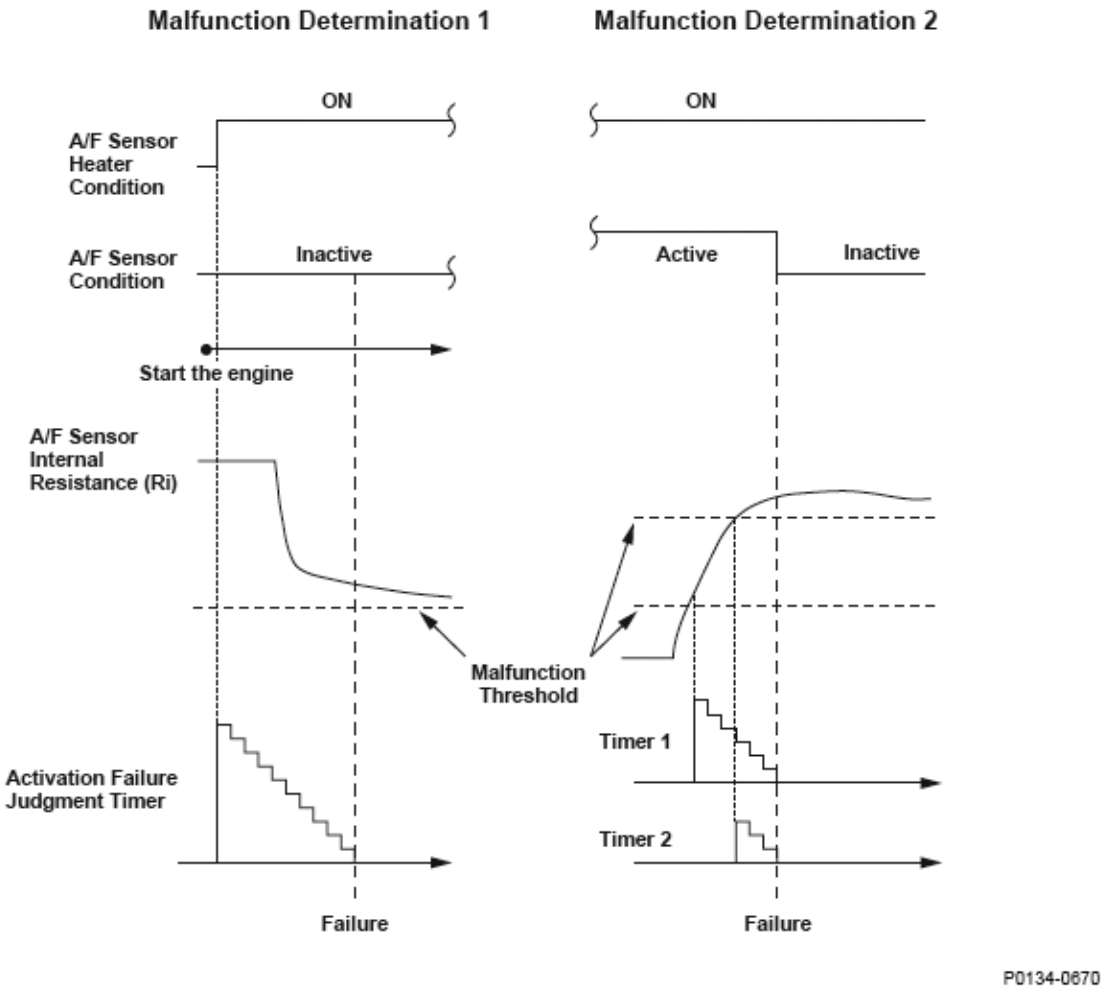


Fig. 5: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminal C20 and throttle body 6P connector terminal No. 1.

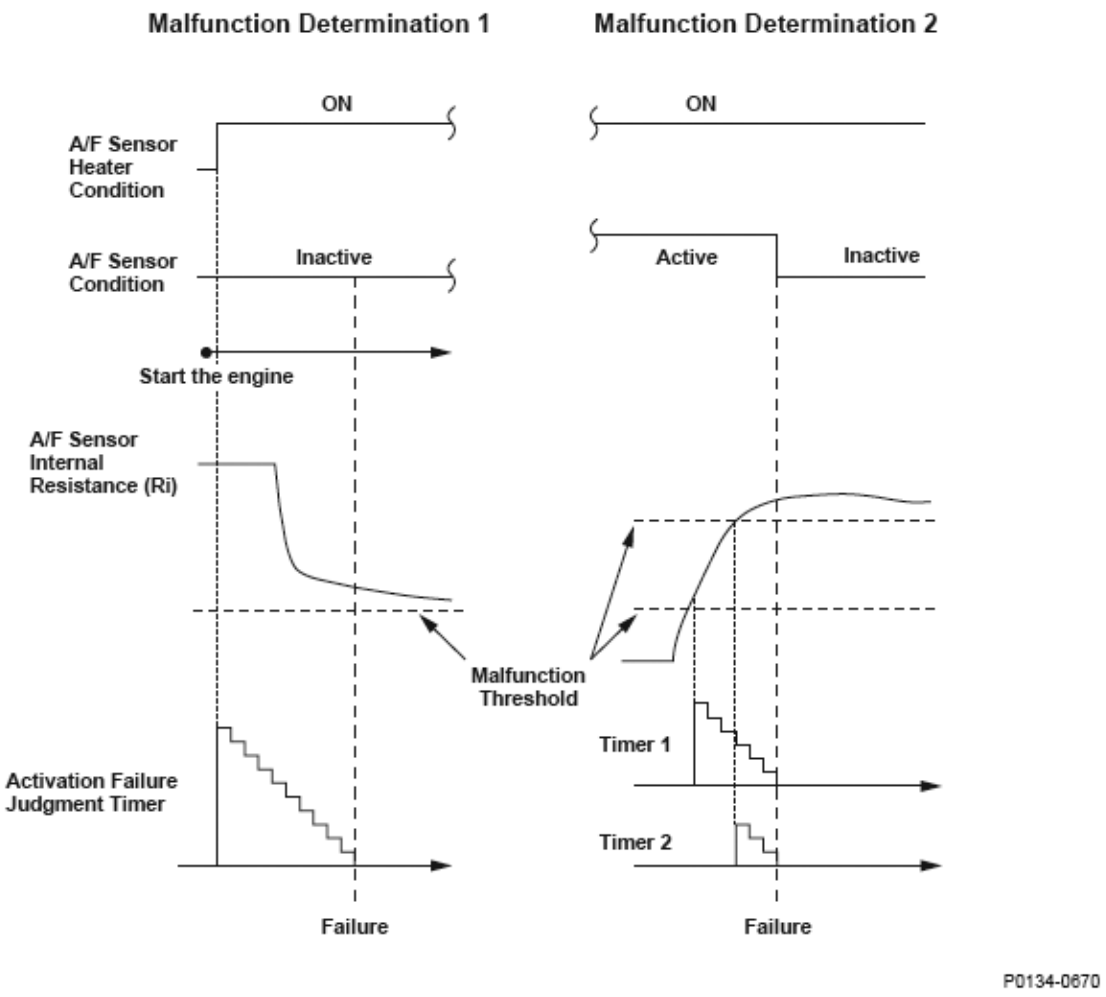


Fig. 6: Checking Continuity Between ECM/PCM Connector Terminal And Throttle Body 6P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C20), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.

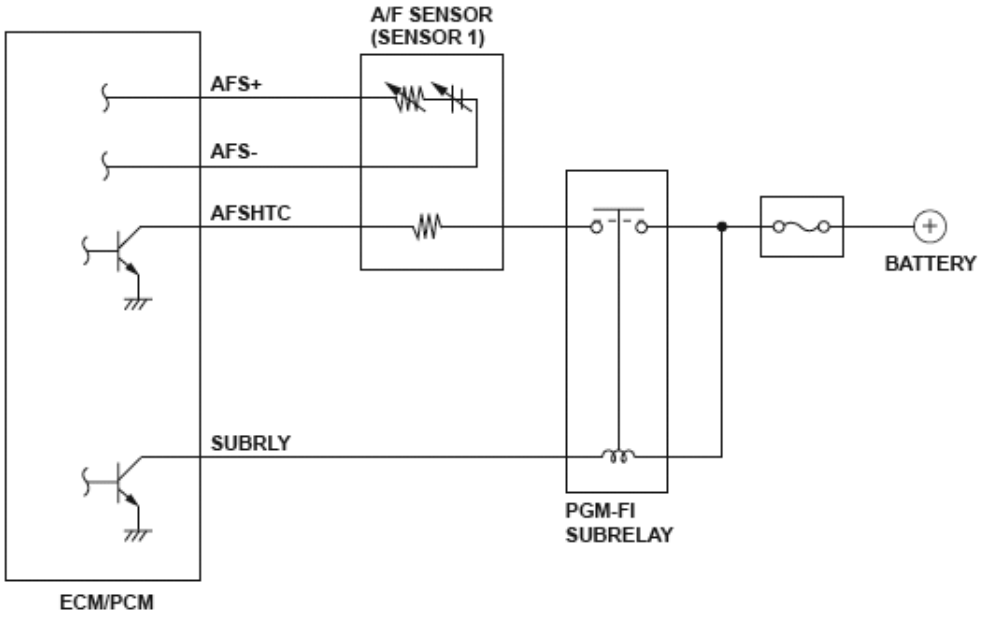


Fig. 7: Checking Continuity Between ECM/PCM Connector Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES - Go to step 10.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

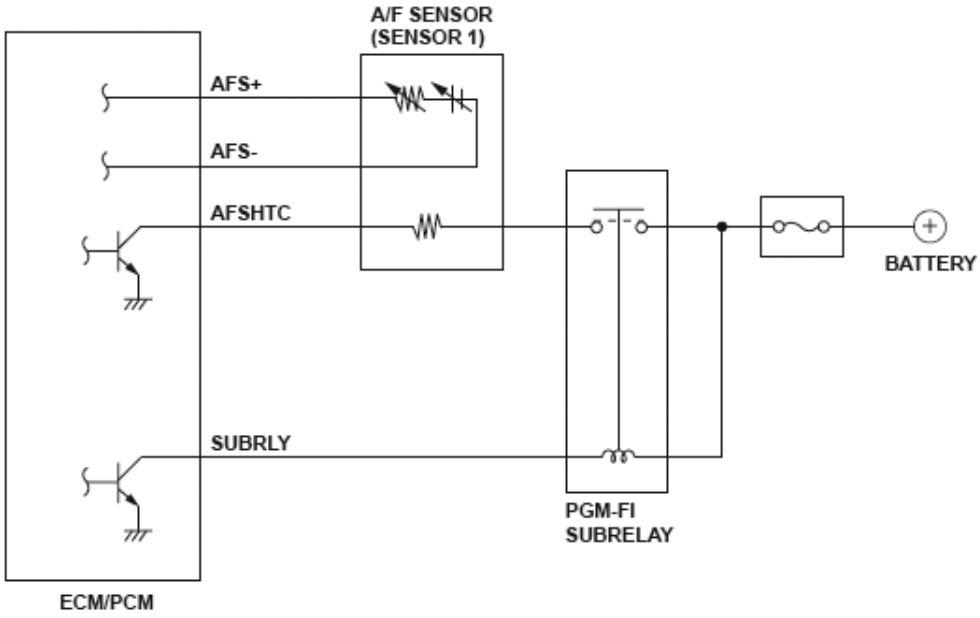


Fig. 8: Checking Continuity Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the throttle body and the ECM/PCM (C21), then go to step 18.

NO - Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

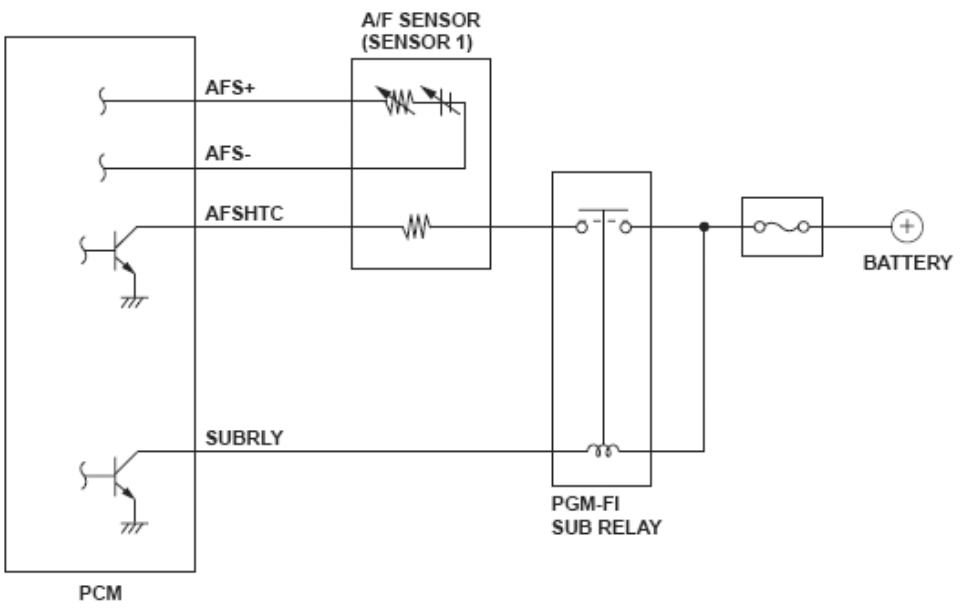


Fig. 9: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.

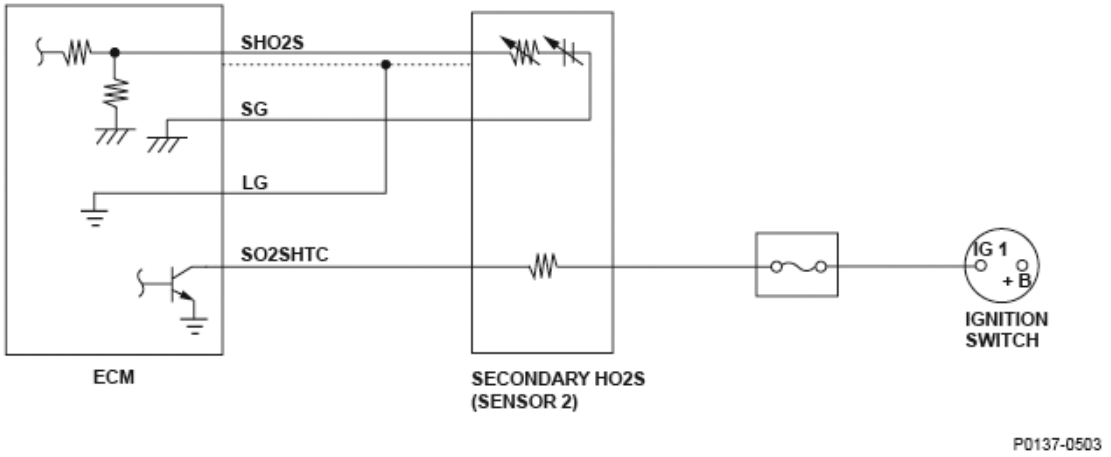


Fig. 10: Checking Continuity Between ECM/PCM Connector Terminal C12 And Throttle Body 6P Connector No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES - Check for poor connections or loose terminals at TP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0223: TP SENSOR B CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES - Go to step 4.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

4. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

YES - Go to step 13.

NO - Go to step 5.

5. Turn the ignition switch OFF.

6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

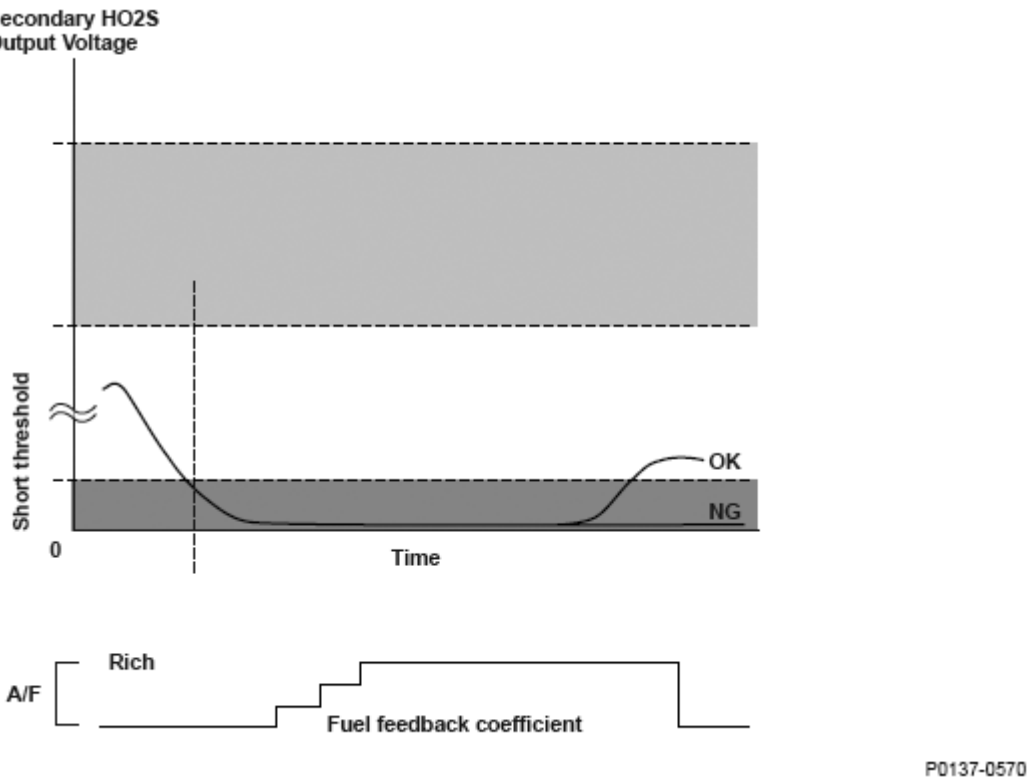


Fig. 11: Measuring Voltage Between Throttle Body 6P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminal C21 and throttle body 6P connector terminal No. 3.

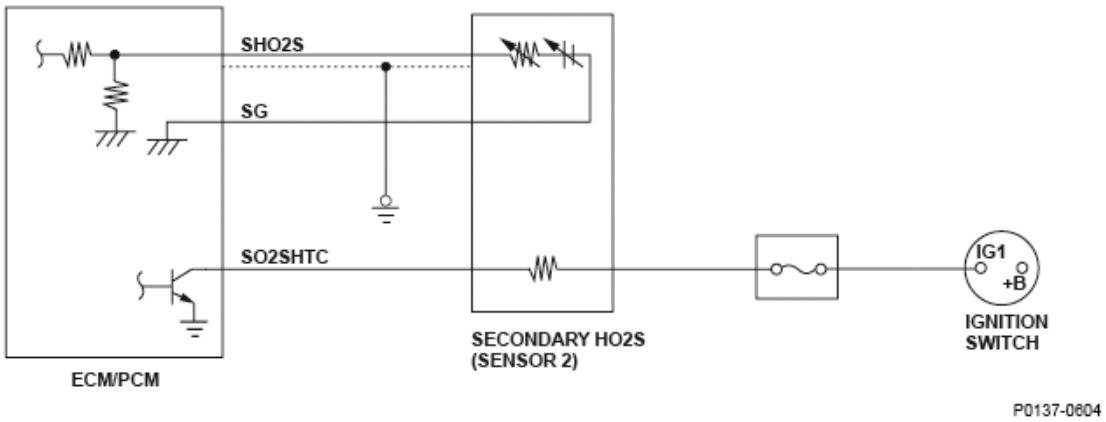


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal C21 And Throttle Body 6P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C21), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.

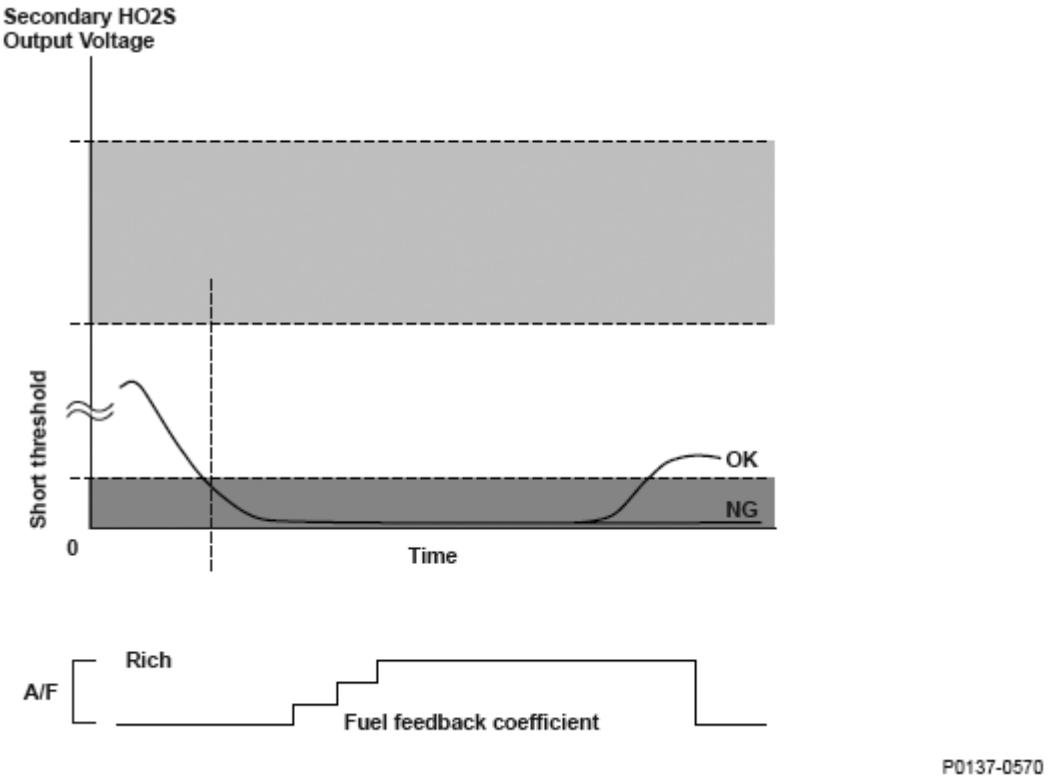


Fig. 13: Checking Continuity Between ECM/PCM Connector Terminal C39 And Throttle Body 6P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DIG P0223 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES - Check for poor connections or loose terminals at TP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the RELAY circuit OK?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM.

    NO - Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

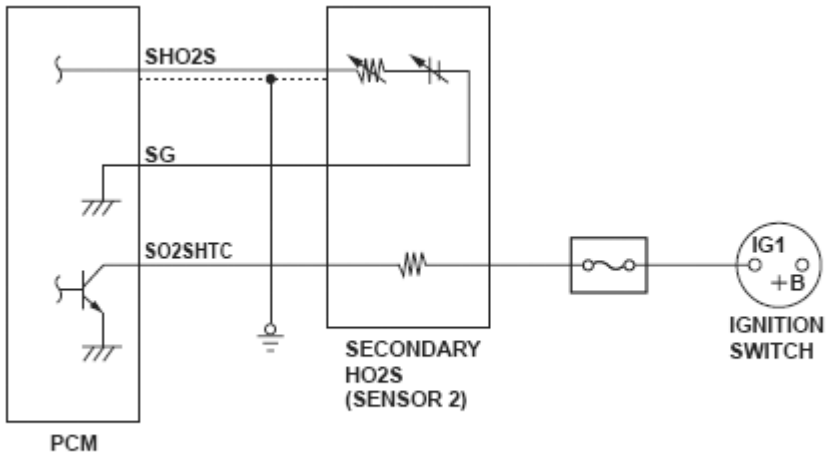


Fig. 14: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 6.

   NO - Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Check for continuity between ECM/PCM connector terminal A20 and body ground.

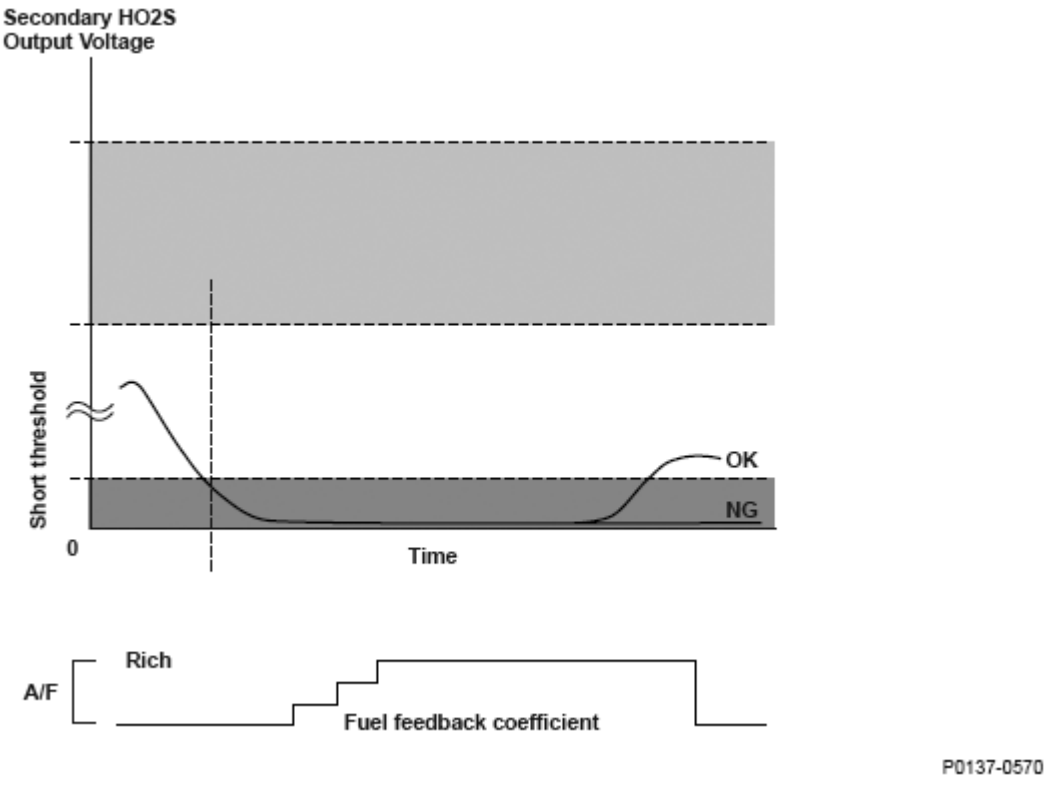


Fig. 15: Checking Continuity Between ECM/PCM Connector Terminal A20 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 13.

NO - Go to step 9.

9. Disconnect ECM/PCM connector C (44P).
10. Turn the ignition switch ON (II).

11. Measure voltage between ECM/PCM connector terminal C1 and body ground.

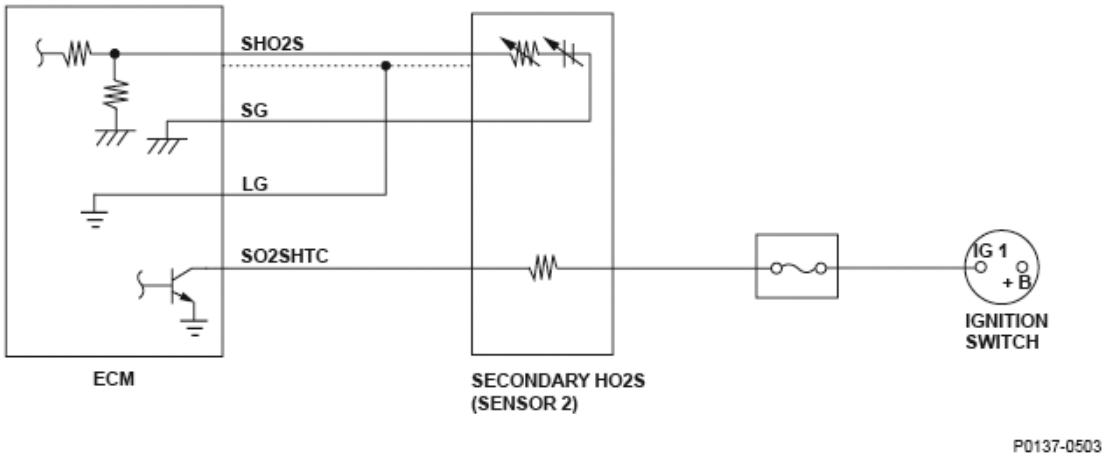


Fig. 16: Measuring Voltage Between ECM/PCM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 12.

NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1659 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM.

4. Turn the ignition switch OFF.
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 6.

   NO - Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

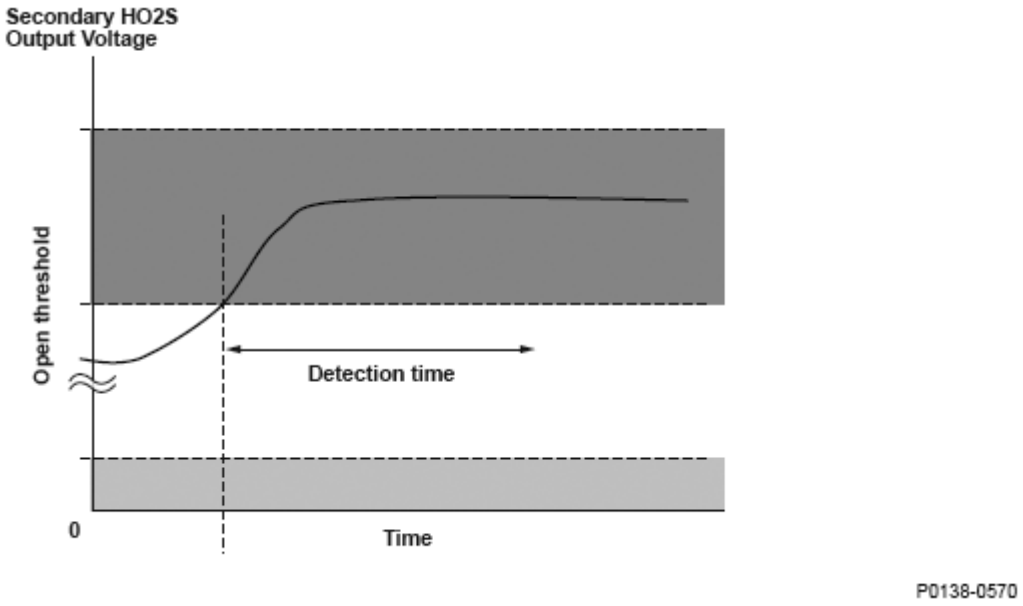


Fig. 17: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Test the ETCS control relay (see **POWER RELAY TEST**).

   Is the ETCS control relay OK?

   YES - Go to step 8.

   NO - Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

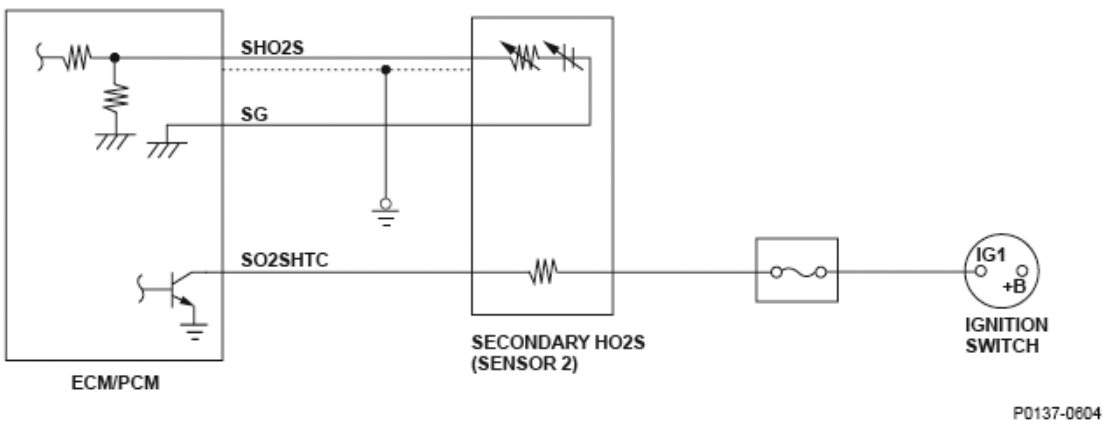


Fig. 18: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

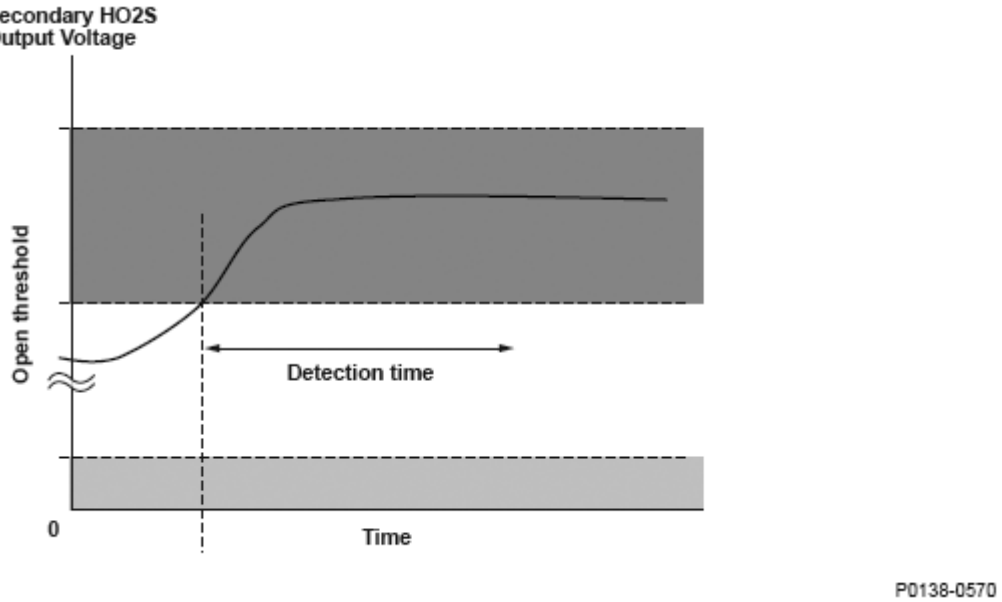


Fig. 19: Measuring Voltage Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 11.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 22.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM/PCM connector terminal C1.

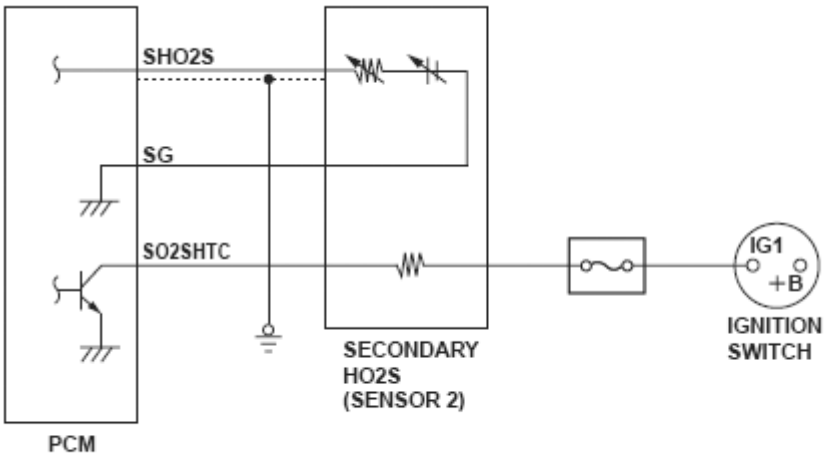


Fig. 20: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 2 And ECM/PCM Connector Terminal C1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 23.

15. Disconnect ECM/PCM connector A (44P).
16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM/PCM connector terminal A20.

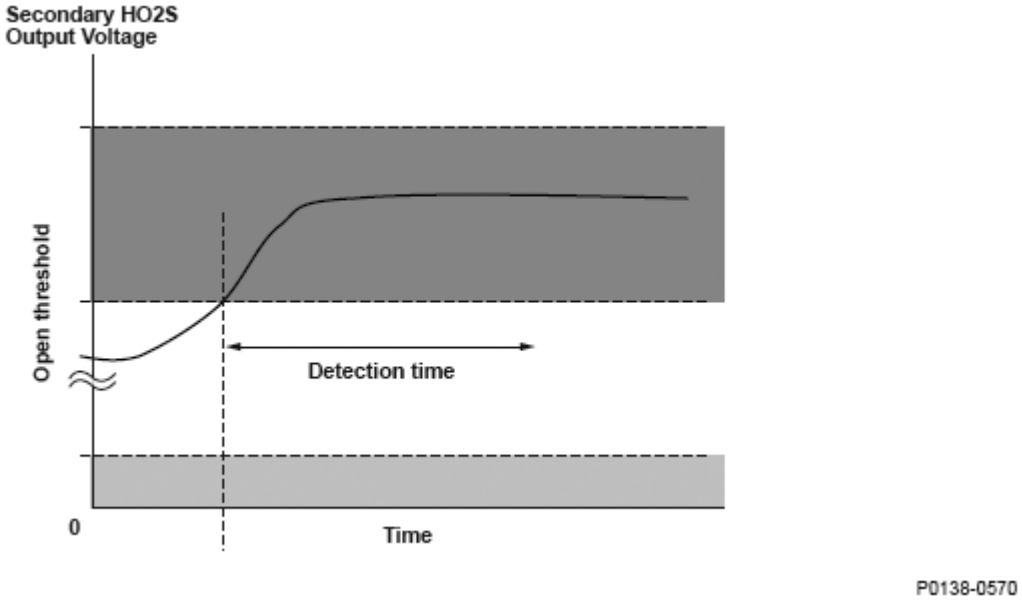


Fig. 21: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 3 And ECM/PCM Connector Terminal A20
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 23.

17. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

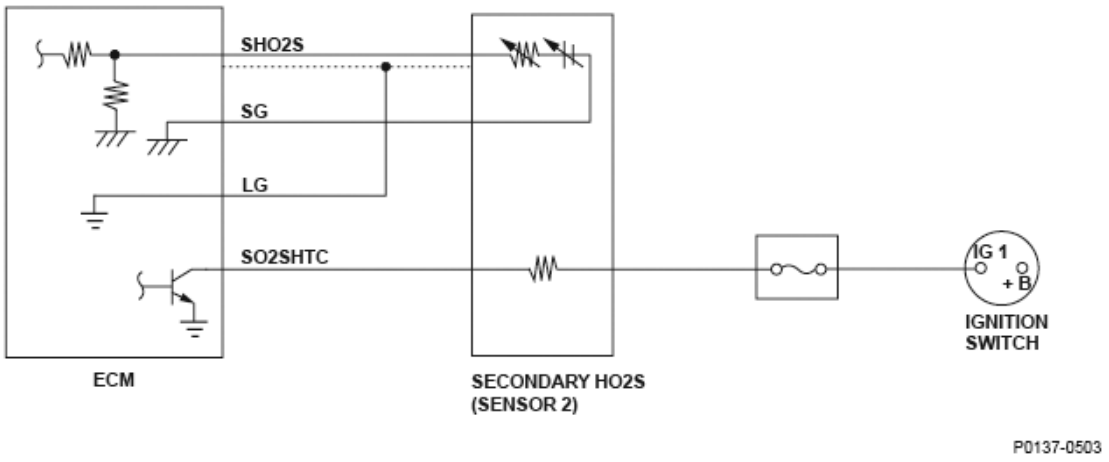


Fig. 22: Removing ETCS Control Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector C (44P).
20. Check for continuity between ECM/PCM connector terminal C1 and body ground.

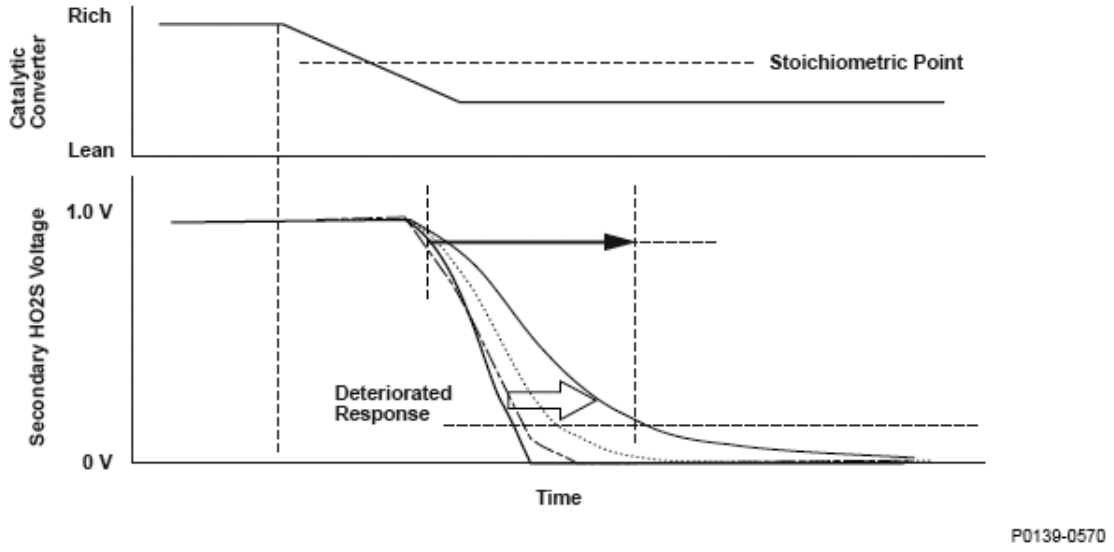


Fig. 23: Checking Continuity Between ECM/PCM Connector Terminal C1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (CD and the ETCS control relay, then go to step 23.

NO - Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

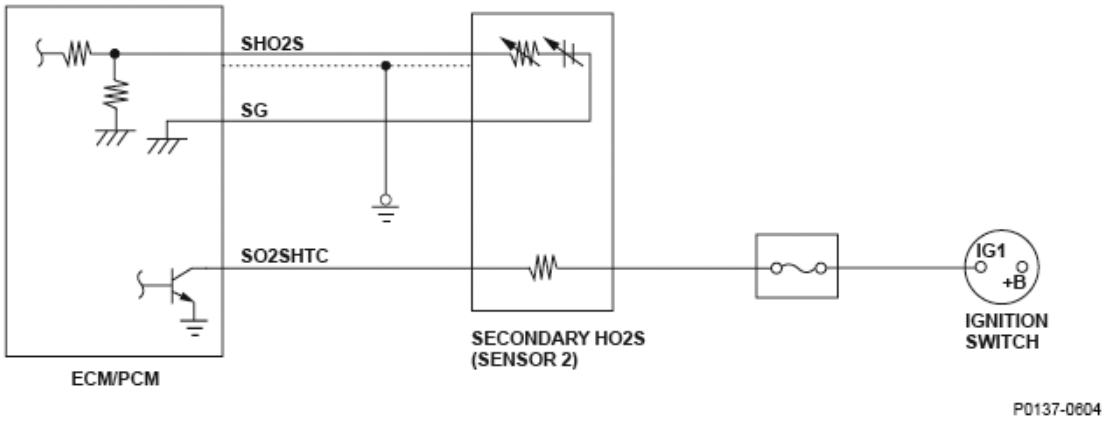


Fig. 24: Checking Continuity Between ETCS Control Relay 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

NO - Go to step 28.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES - Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1683 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve closed as shown.

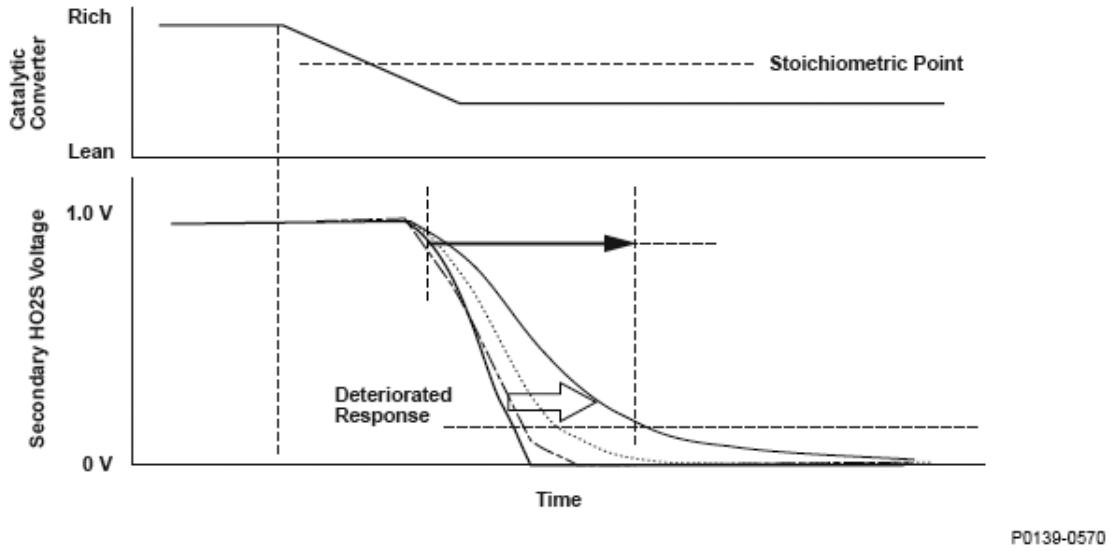


Fig. 25: Pushing Throttle Valve Closed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES - If the throttle body was cleaned, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), and recheck.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you

do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1684 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Push the throttle valve open as shown.

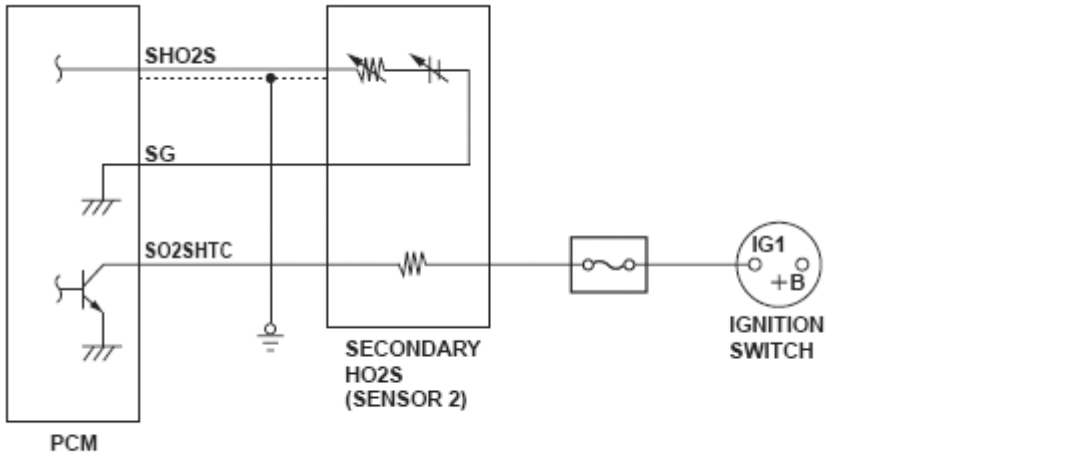


Fig. 26: Pushing Throttle Valve Open
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the throttle valve.

    Does the throttle valve return?

YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

NO - Go to step 11.

11. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1684 indicated?

YES - If the throttle body was cleaned, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), and recheck.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS

- APP SENSOR

6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body (see **THROTTLE BODY CLEANING**).
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

    NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

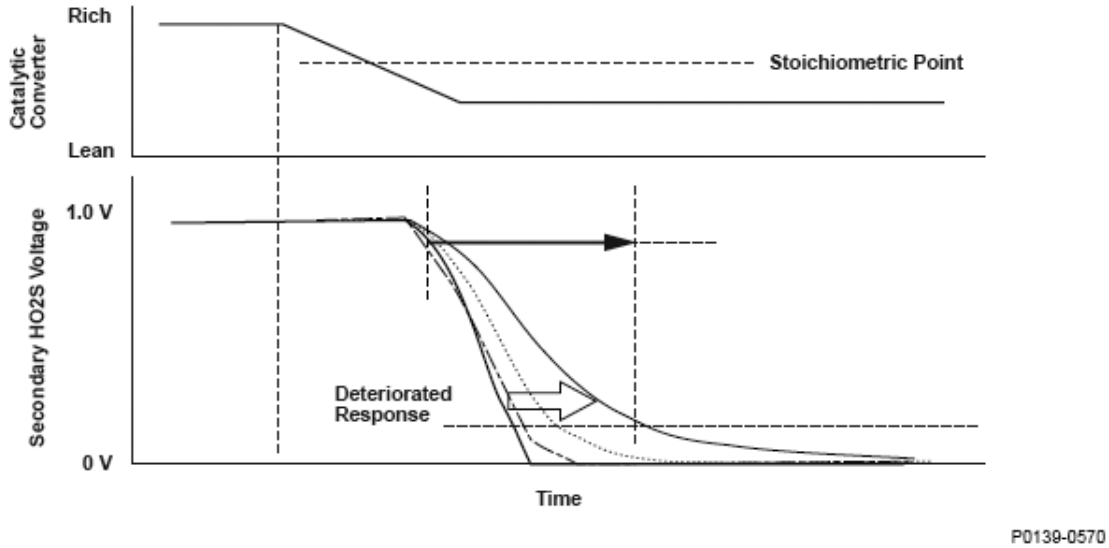


Fig. 27: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check for continuity between ECM/PCM connector terminals C3 and C4.

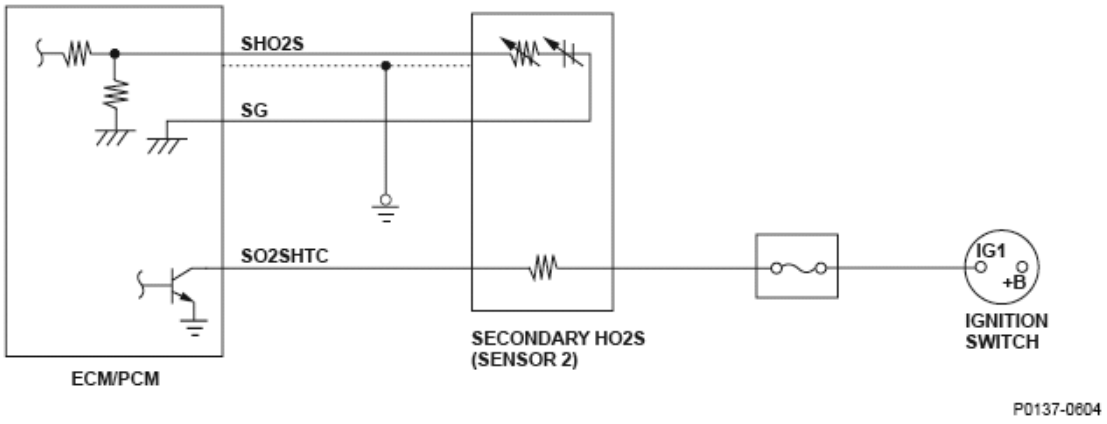


Fig. 28: Checking Continuity Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR A
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated ?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 28. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Jump the SCS line with the HDS.
2. Disconnect ECM/PCM connector C (44P).
3. Measure resistance between ECM/PCM connector terminals C3 and C4.

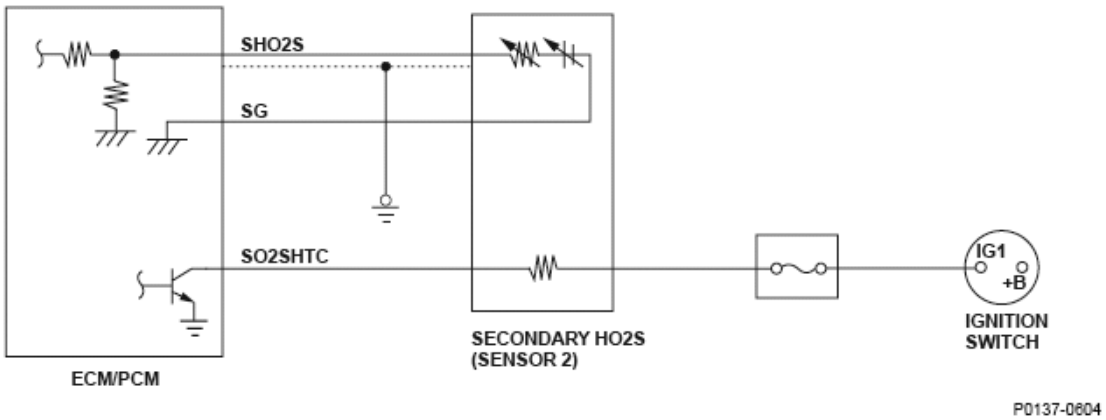


Fig. 29: Measuring Resistance Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 4.

NO - Go to step 15.

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

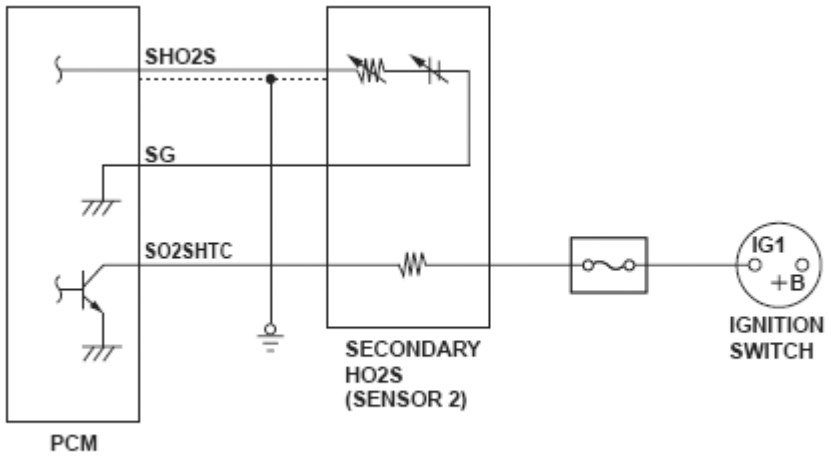


Fig. 30: Measuring Resistance Between Body 6P Connector Terminals No. 5 And 6 With Throttle Fully Closed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 1.0 ohms or less?

YES - Go to step 6.

NO - Repair short in the wires between ECM/PCM connector terminals C3 (ETCSM-line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2118 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

15. Reconnect all connectors.
16. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

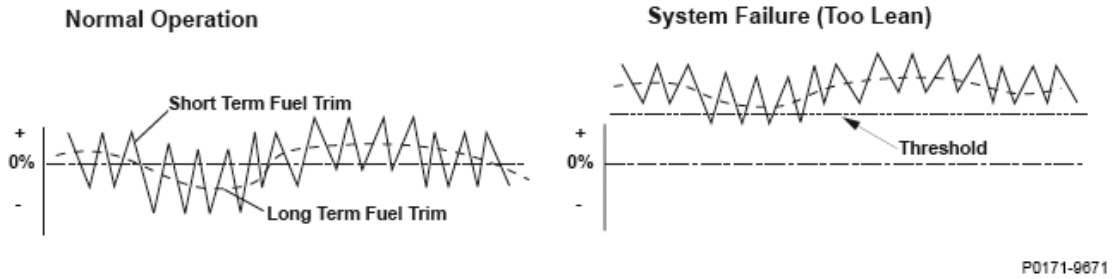


Fig. 31: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

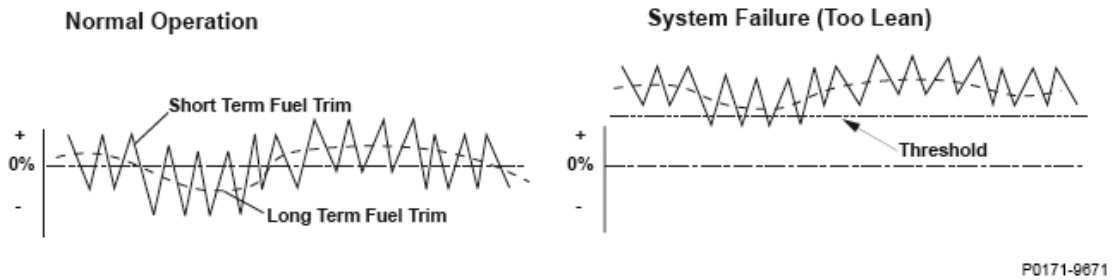


Fig. 32: Checking Continuity Between APP Sensor 6P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A17) and APP sensor A, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

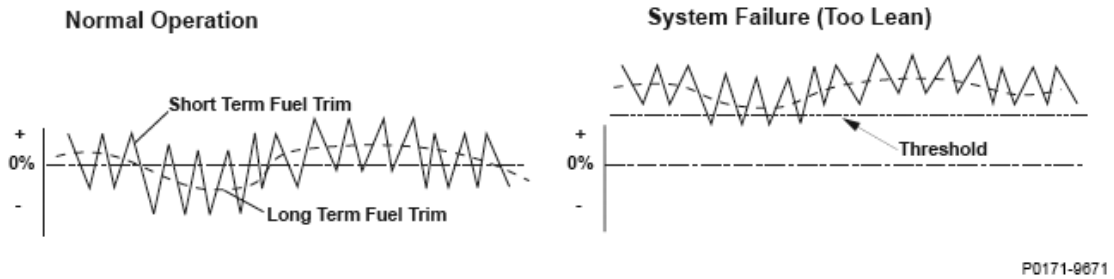


Fig. 33: Connecting APP Sensor 6P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A17 and body ground.

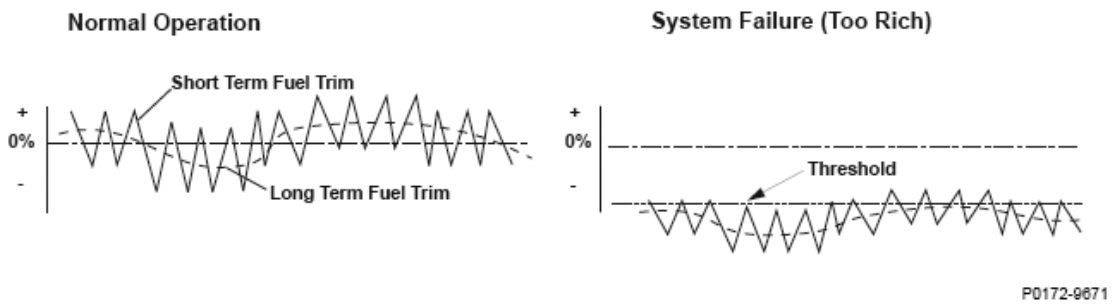


Fig. 34: Checking Continuity Between ECM/PCM Connector Terminal A17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (A17) and APP sensor A, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

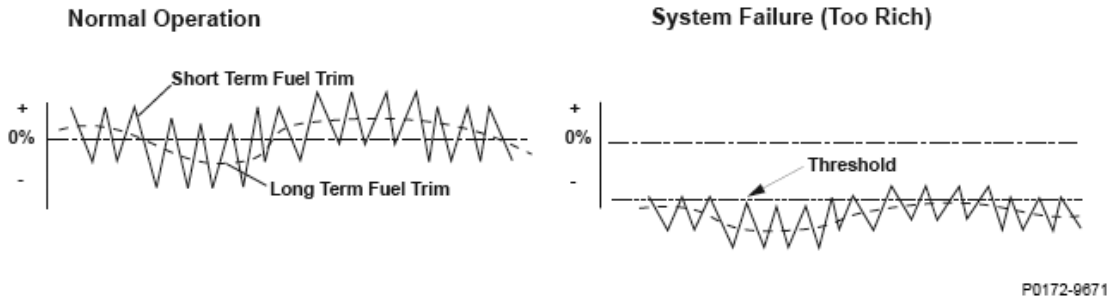


Fig. 35: Connecting APP Sensor 6P Connector Terminals No. 1 And No. 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR A in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES - Go to step 29.

NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

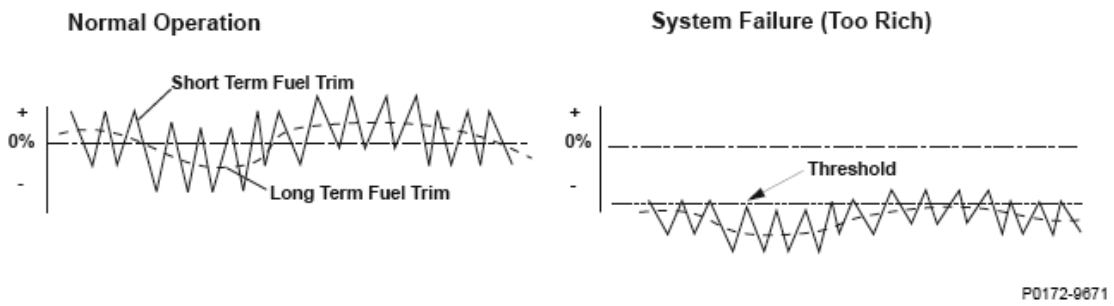


Fig. 36: Connecting APP Sensor 6P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM/PCM connector terminal A25 and body ground.

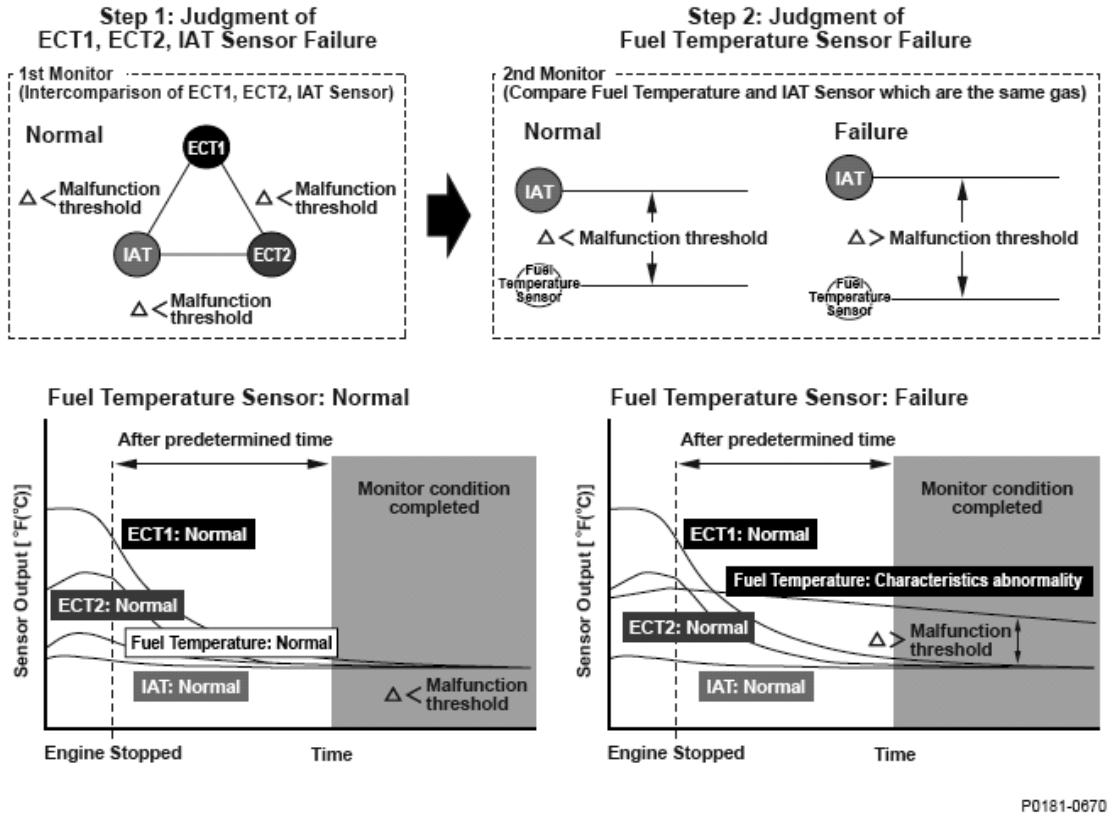


Fig. 37: Checking Continuity Between ECM/PCM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM/PCM (A25) and APP sensor A, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2122 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

    Is there about 4.9 V or more?

    YES - Go to step 3.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.

5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

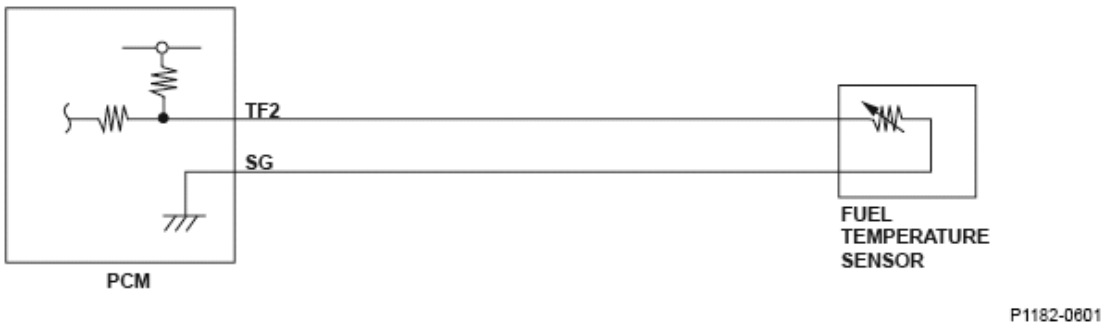


Fig. 38: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

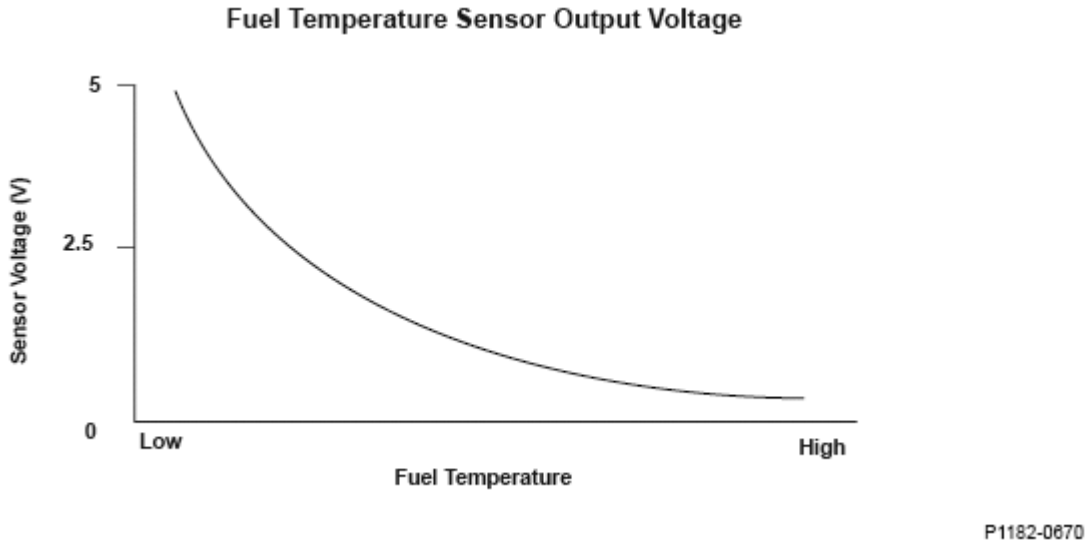


Fig. 39: Connecting APP Sensor 6P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM/PCM connector terminal A35 and body ground.

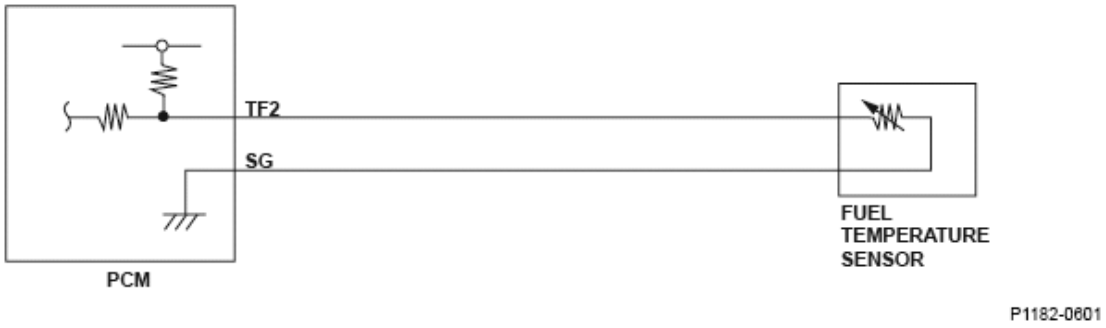


Fig. 40: Checking Continuity Between ECM/PCM Connector Terminal A35 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM/PCM (A35) and APP sensor A, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES - Check for poor connections or loose terminals at APP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs

or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

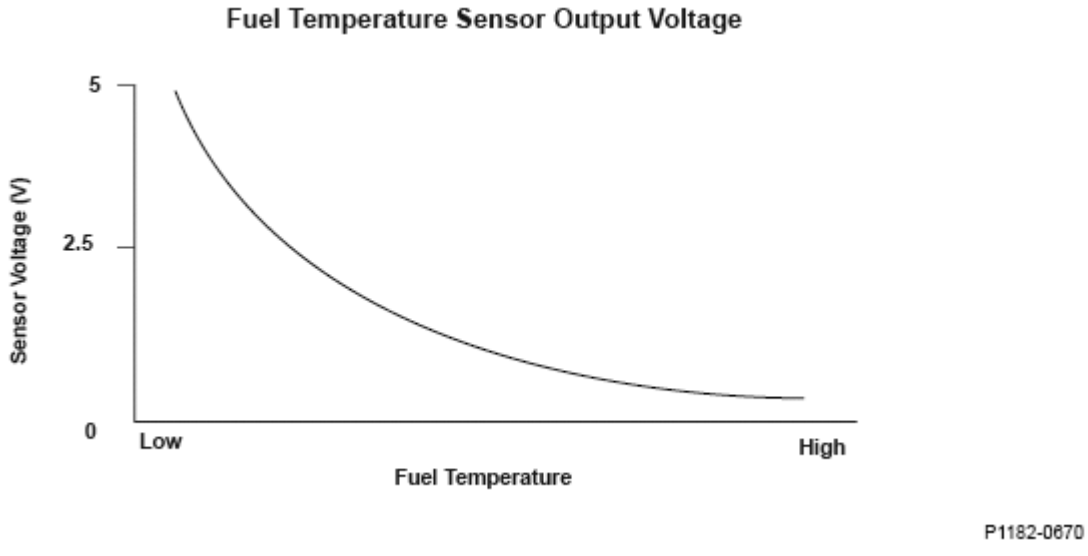


Fig. 41: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 7.

NO - Go to step 17.

7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

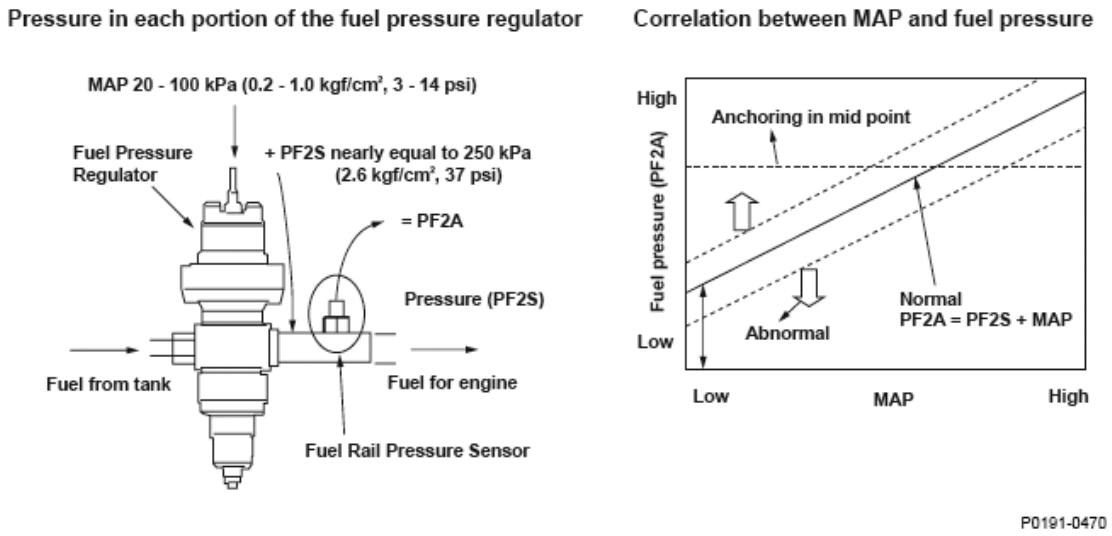


Fig. 42: Checking Continuity Between APP Sensor 6P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A18) and APP sensor B, then go to step 24.

NO - Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

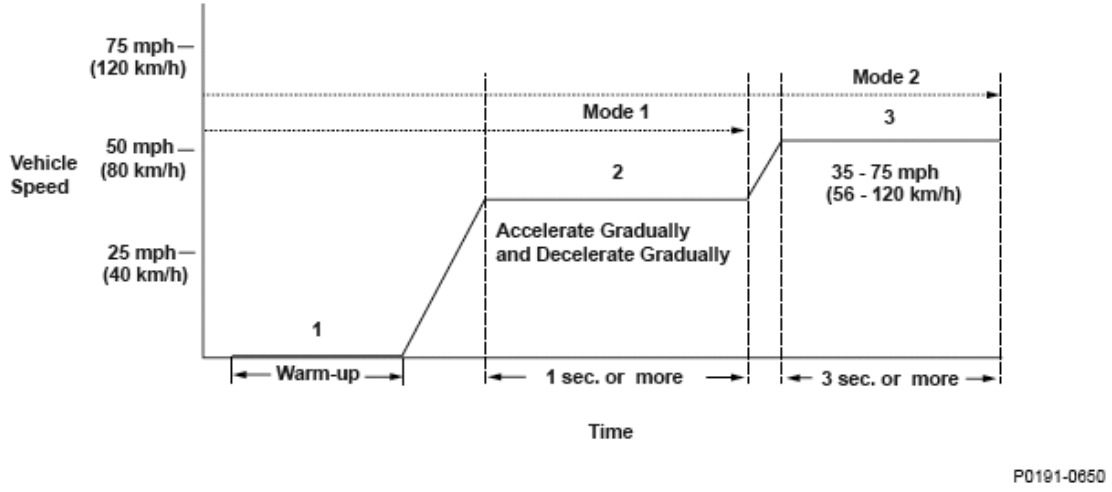


Fig. 43: Connecting APP Sensor 6P Connector Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A18 and body ground.

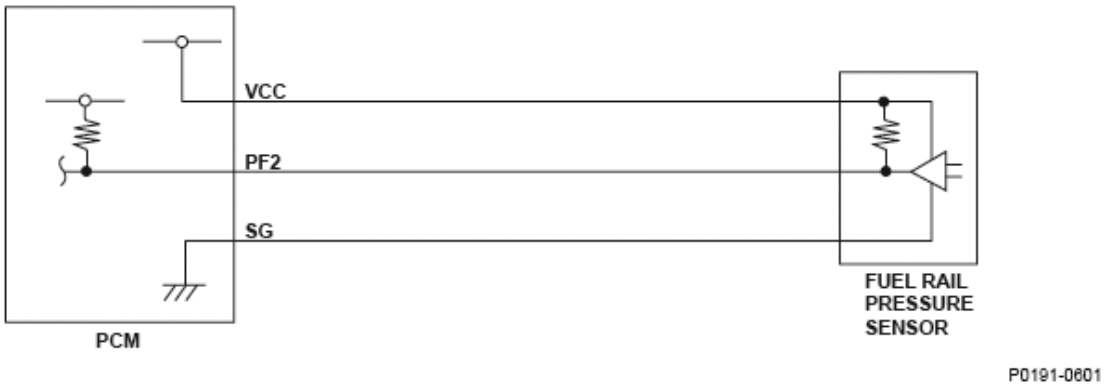


Fig. 44: Checking Continuity Between ECM/PCM Connector Terminal A18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (A18) and APP sensor B, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

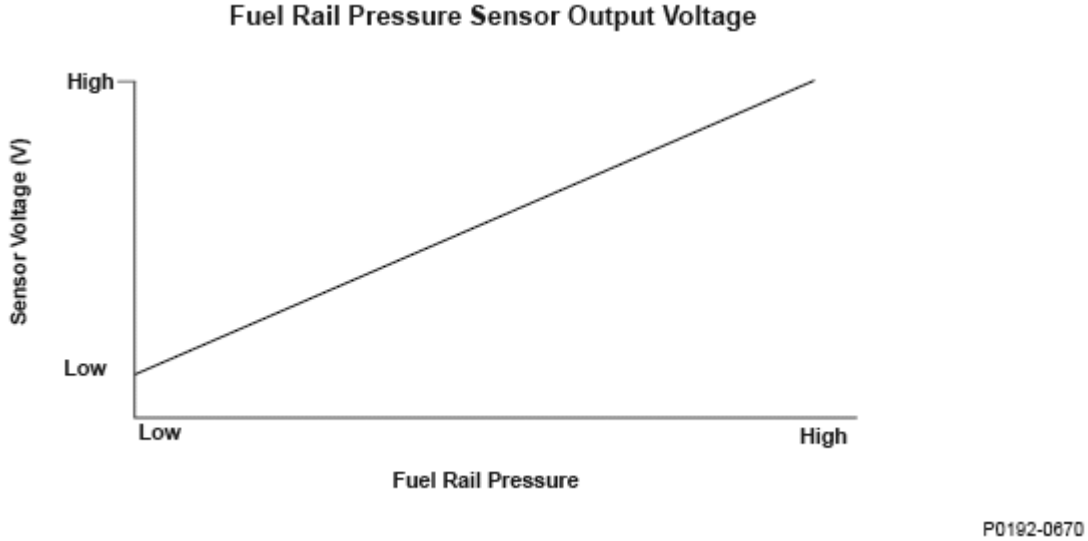


Fig. 45: Connecting APP Sensor 6P Connector Terminals No. 4 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Turn the ignition switch ON (II).
16. Check APP SENSOR B in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES - Go to step 29.

NO - Go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector A (44P).
20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

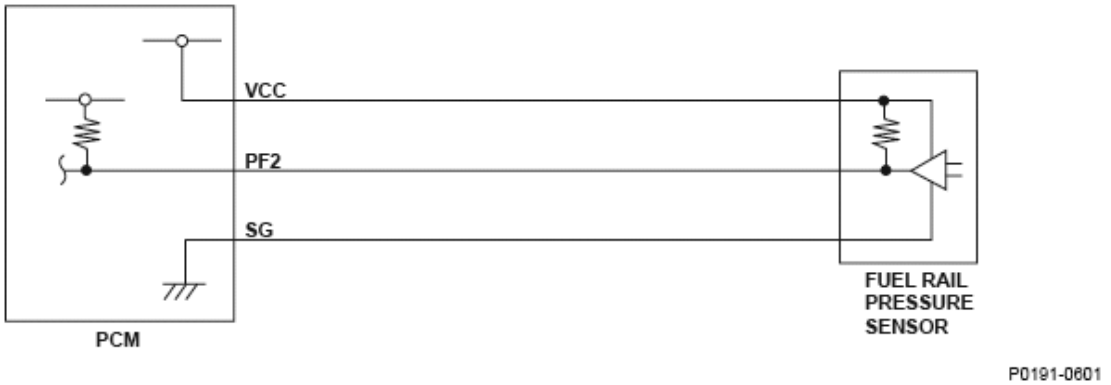


Fig. 46: Connecting APP Sensor 6P Connector Terminal No. 6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM/PCM connector terminal A24 and body ground.

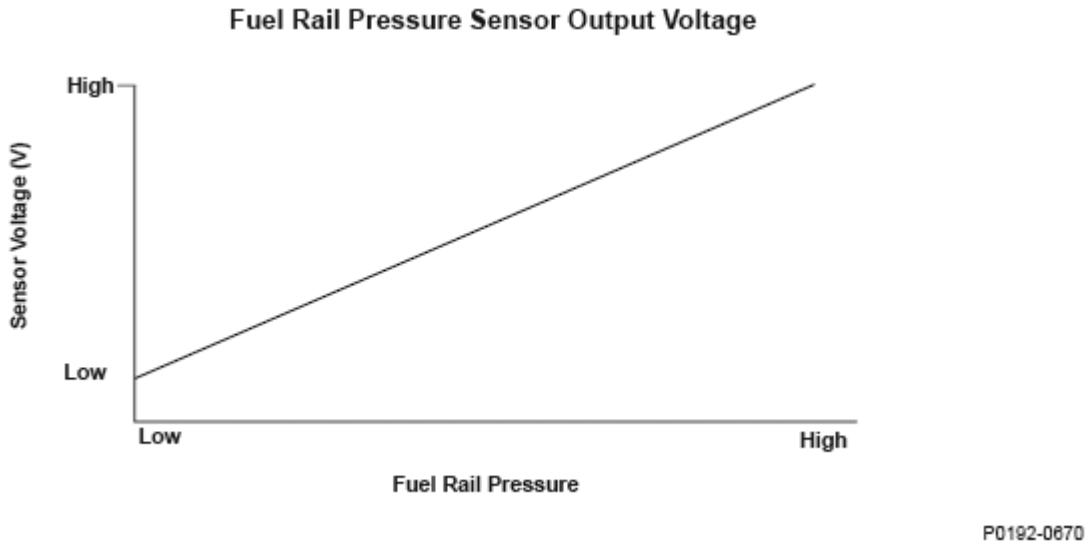


Fig. 47: Checking Continuity Between ECM/PCM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM/PCM (A24) and APP sensor B, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals APP sensor B and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

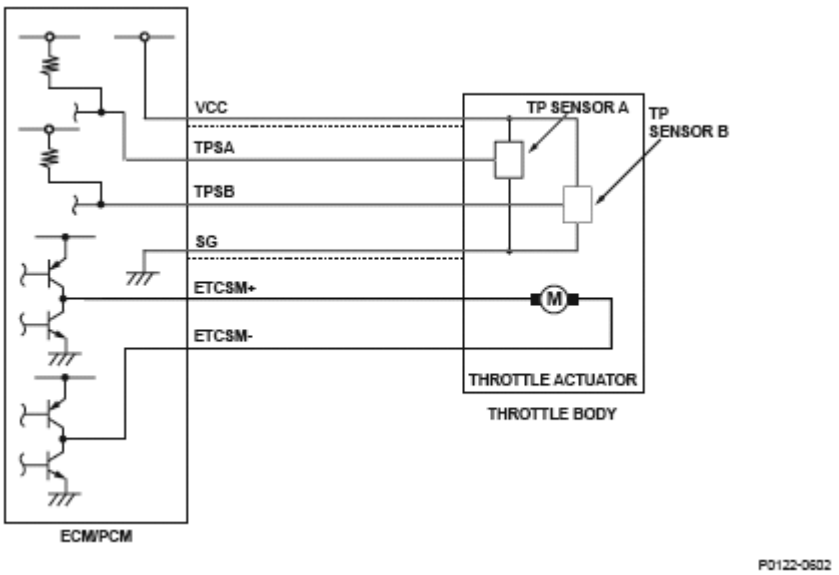


Fig. 48: Measuring Voltage Between APP Sensor 6P Connector Terminals No. 5 And 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

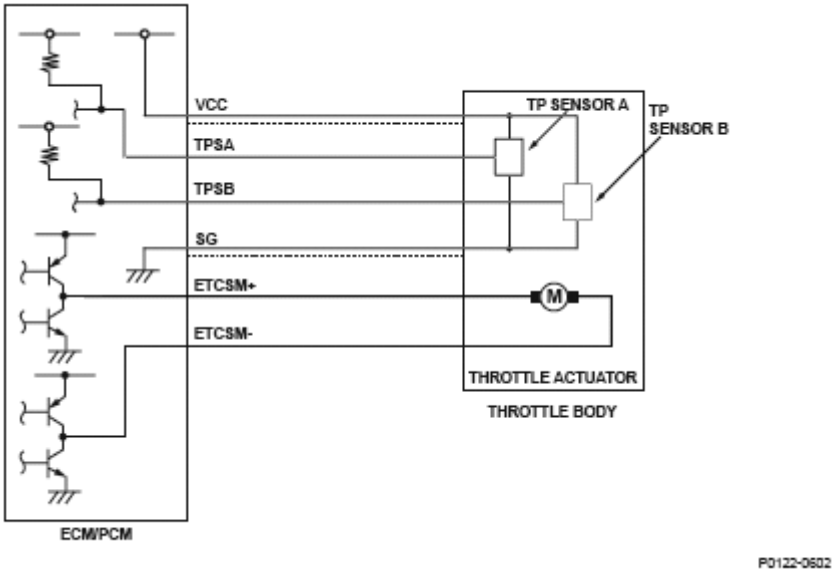


Fig. 49: Connecting APP Sensor 6P Connector Terminal No. 5 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM/PCM connector terminal A34 and body ground.

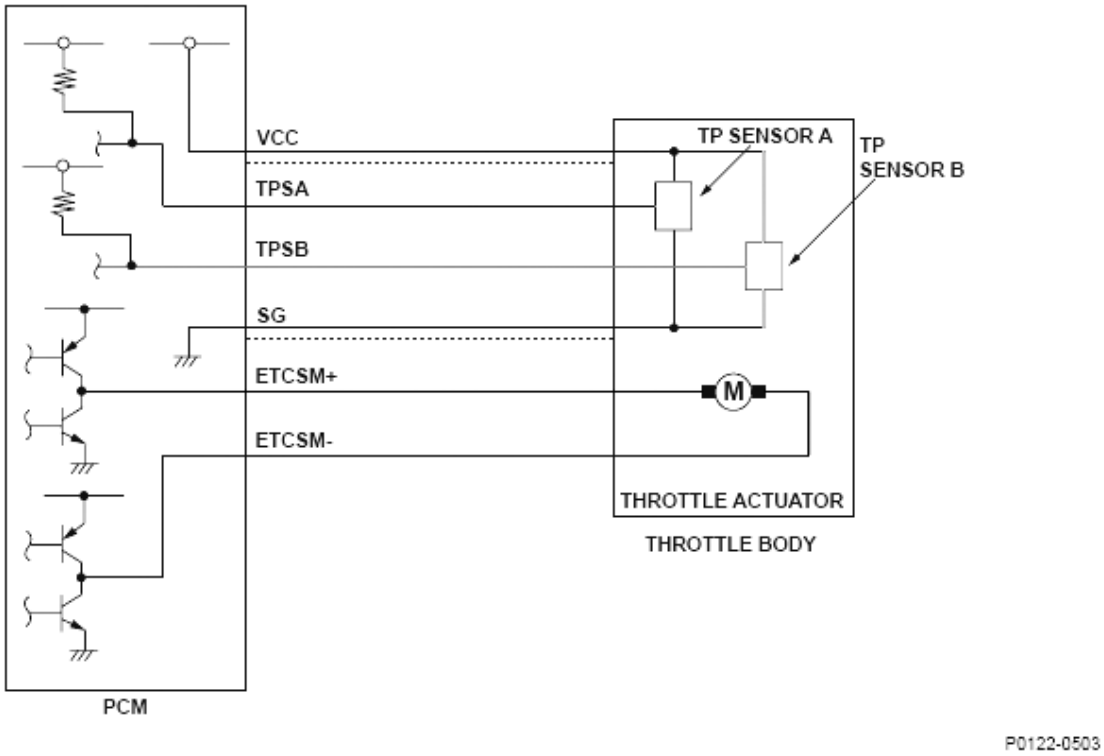


Fig. 50: Checking Continuity Between ECM/PCM Connector Terminal A34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM/PCM (A34) and APP sensor B, then go to step 14.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES - Check for poor connections or loose terminals at APP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2135 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

   Does the valve temporarily move to its fully closed position?

   YES - Go to step 15.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminals C20 and C21.

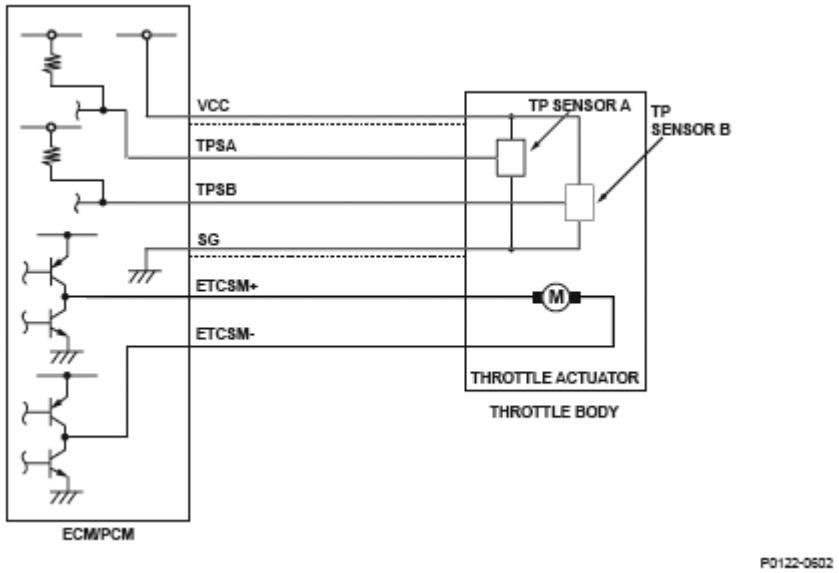


Fig. 51: Checking Continuity Between ECM/PCM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Go to step 22.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between ECM/PCM connector terminals C20 and C21.

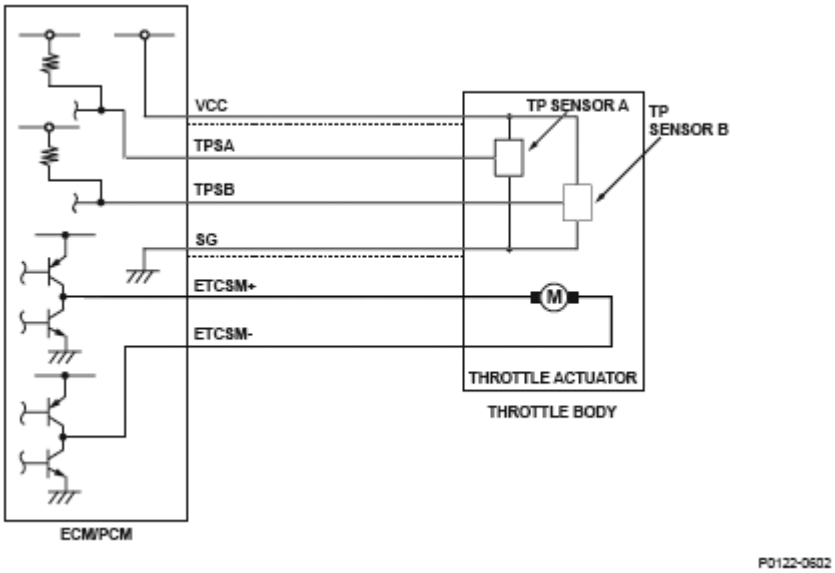


Fig. 52: Checking Continuity Between ECM/PCM Connector Terminals C20 And C21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM C20 (TPSA line) and the C21 (TPSB line), then go to step 17.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2135 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2138 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM.

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   Are they the same voltage?

   YES - Go to step 6.

   NO - Go to step 12.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Check for continuity between ECM/PCM connector terminals A17 and A18.

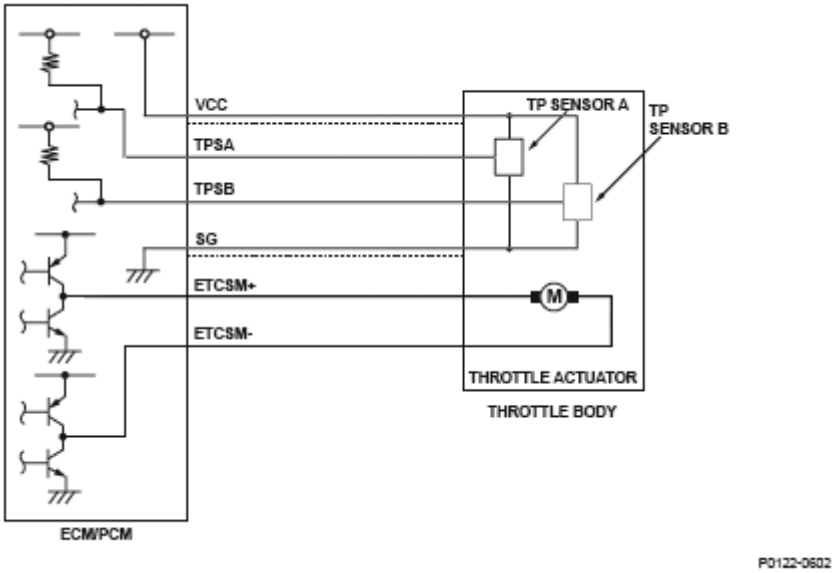


Fig. 53: Checking Continuity Between ECM/PCM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM/PCM connector terminals A17 and A18.

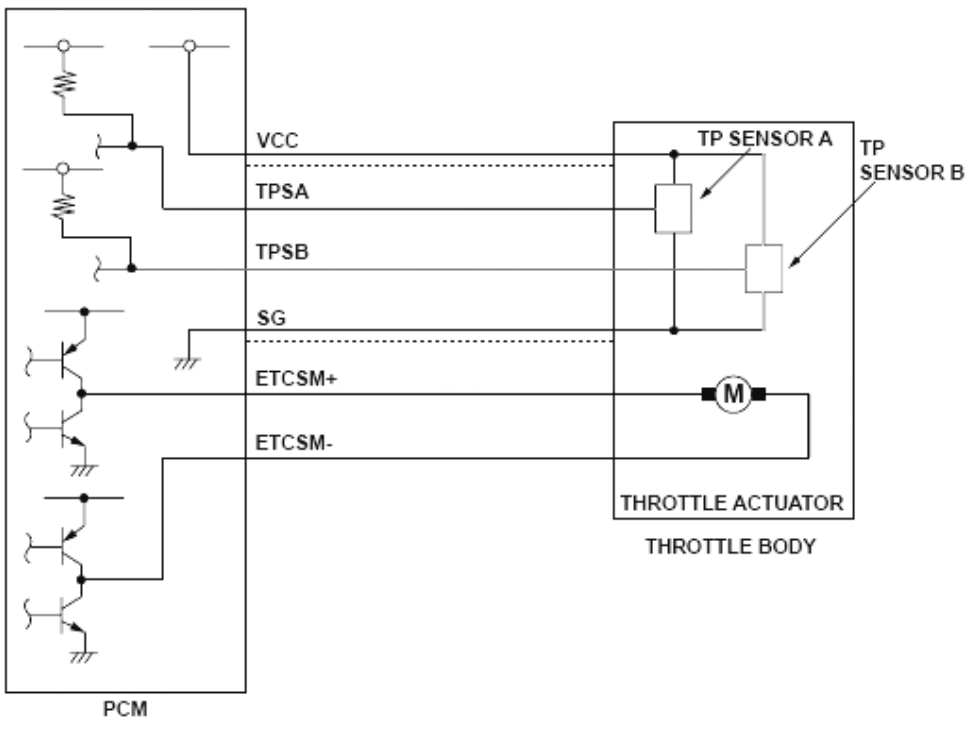


Fig. 54: Checking Continuity Between ECM/PCM Connector Terminals A17 And A18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM/PCM connector terminals A17 (APSA line) and A18 (APSB line), then go to step 14.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Turn the ignition switch OFF.
19. Turn the ignition switch ON (II).
20. Press the accelerator pedal to the floor.
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II).
26. Press the accelerator pedal to the floor.
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES - Check for poor connections or loose terminals at APP sensor A/B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 24. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**).

6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while performing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES - Go to step 11.

    NO - Go to step 12.

11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES - Clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 21.

    NO - Go to step 18.

12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

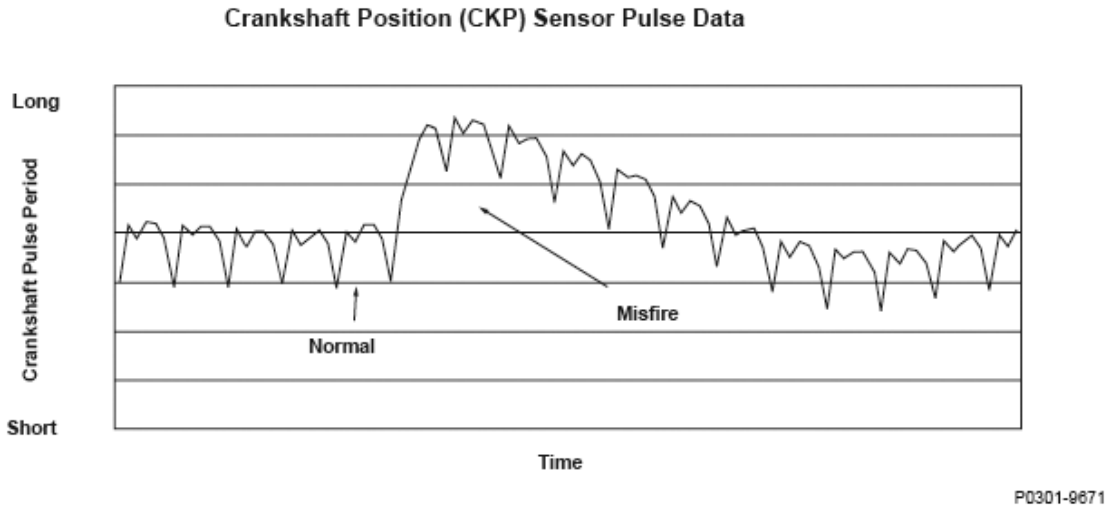


Fig. 55: Connecting Throttle Body 6P Connector Terminals No. 5 And 6 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between ECM/PCM connector terminals C3 and C4.

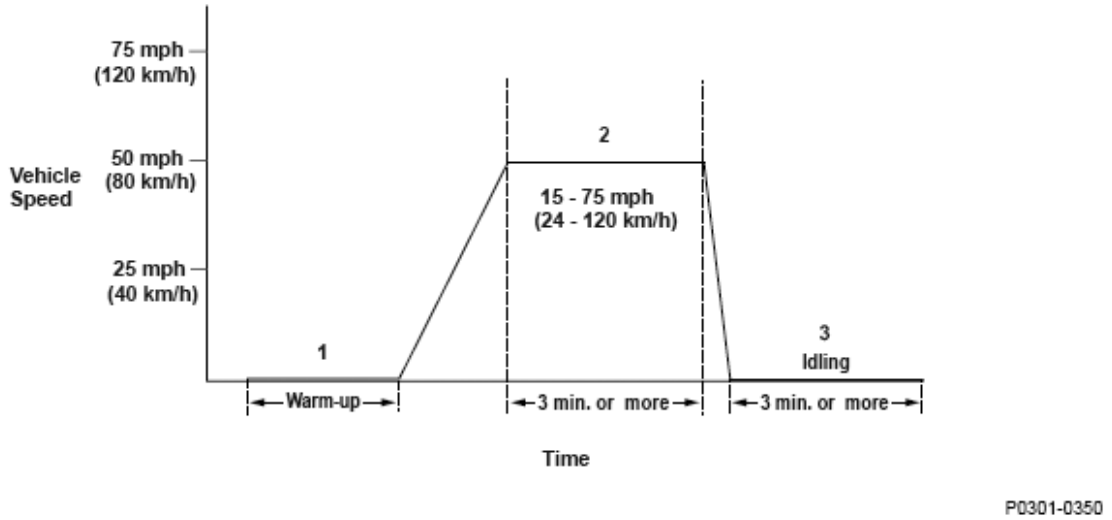


Fig. 56: Checking Continuity Between ECM/PCM Connector Terminals C3 And C4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step

20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2176 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see **THROTTLE BODY CLEANING**), and go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Turn the ignition switch to LOCK (0).
30. Turn the ignition switch to ON (11), and wait 10 seconds.
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2176 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

APP SENSOR SIGNAL INSPECTION

NOTE:

- **This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.**
- **Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.**
- **Press the accelerator pedal several times to check its operation. If it**

does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

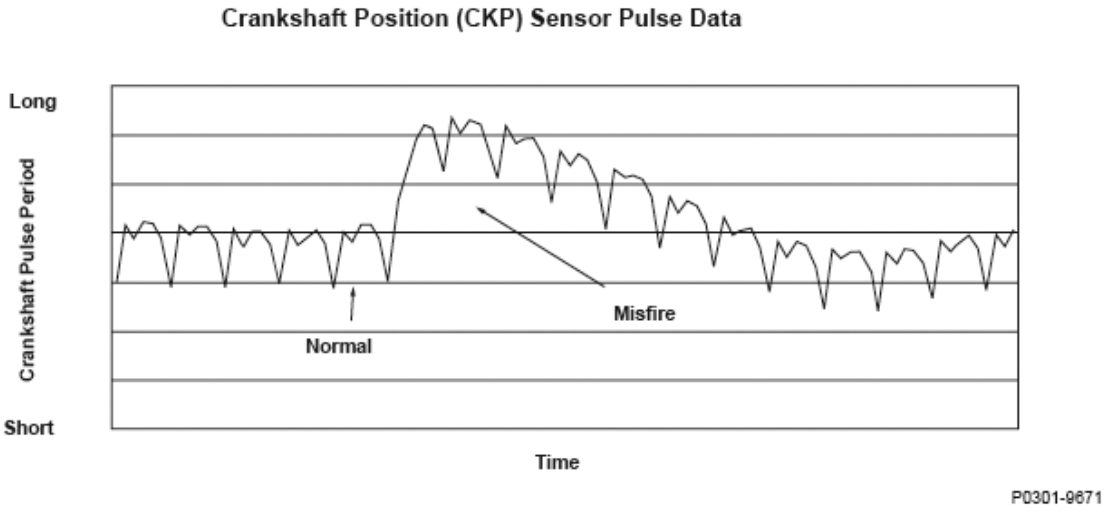


Fig. 57: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 5.
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
   - If it is 0%, the APP sensor is OK.
   - If it is not 0%, replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**), then go to step 1.

ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION

'06-08 models

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).

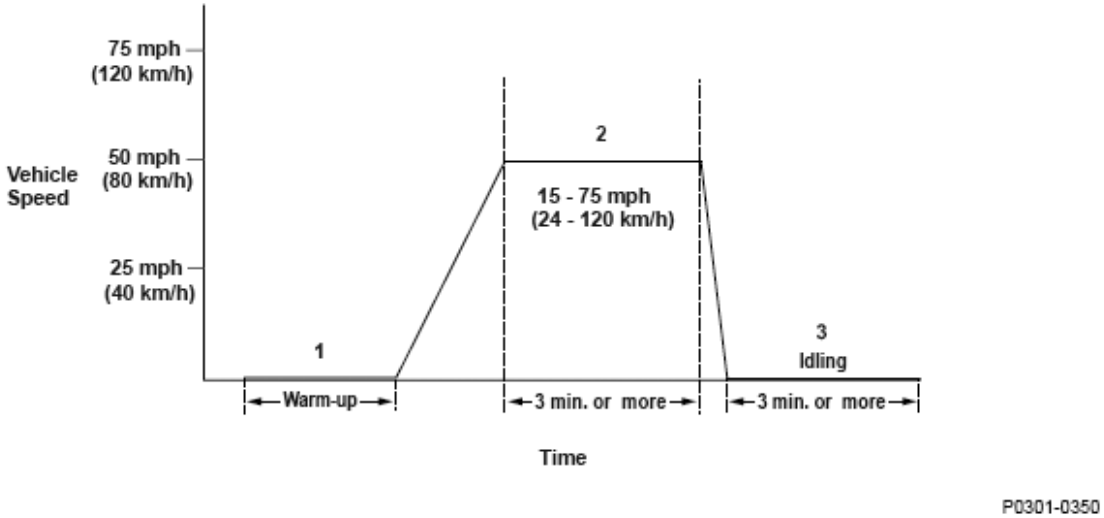


Fig. 58: Disconnecting Accelerator Pedal Module Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the accelerator pedal module (B).

NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

3. Install the parts in the reverse order of removal.

'09 model

1. Disconnect the APP sensor 6P connector (A).

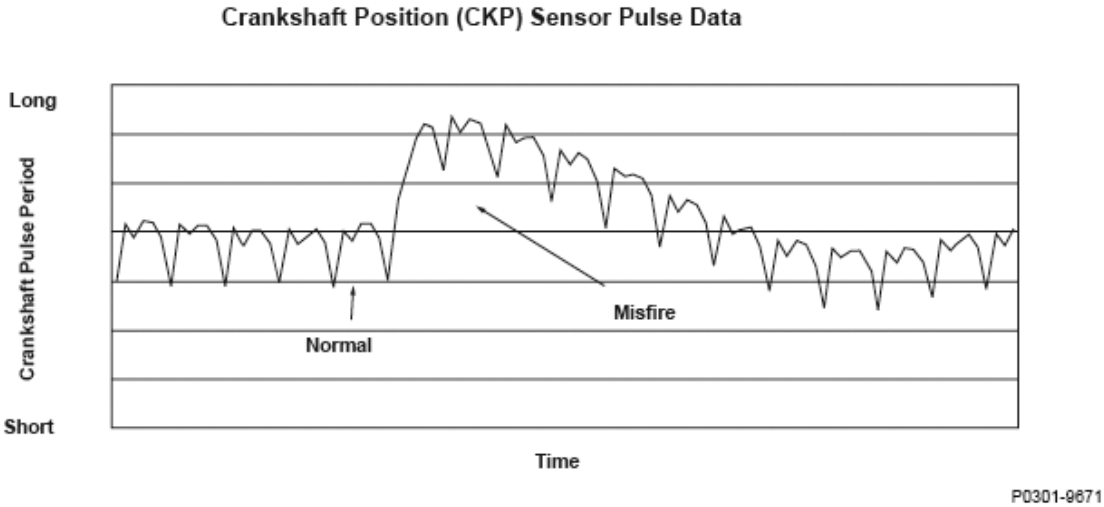


Fig. 59: Disconnecting Accelerator Pedal Module Connector
Courtesy of TOYOTA

2. Remove the clip (B).

NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).
4. Remove the accelerator pedal module (F).

NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

5. Set the accelerator pedal pad (A) to the pedal stop (B).

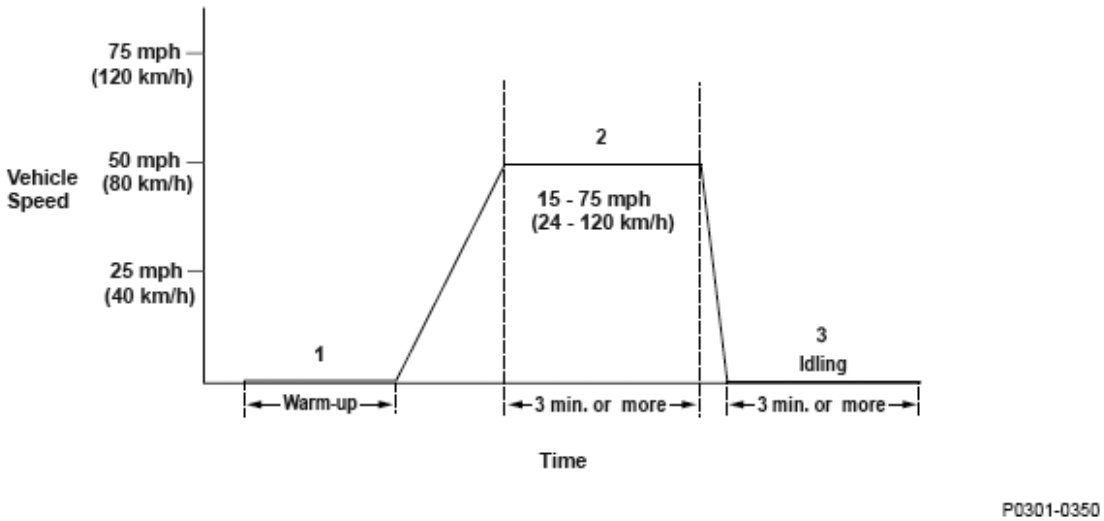


Fig. 60: Disconnecting Accelerator Pedal Module Connector
Courtesy of TOYOTA

6. Install the accelerator pedal module (C) with a new clip (D).
7. Reconnect the APP sensor 6P connector (E).

2006-08 ENGINE PERFORMANCE

EVAP System (K20Z3) - Civic (Except GX & Si)

COMPONENT LOCATION INDEX

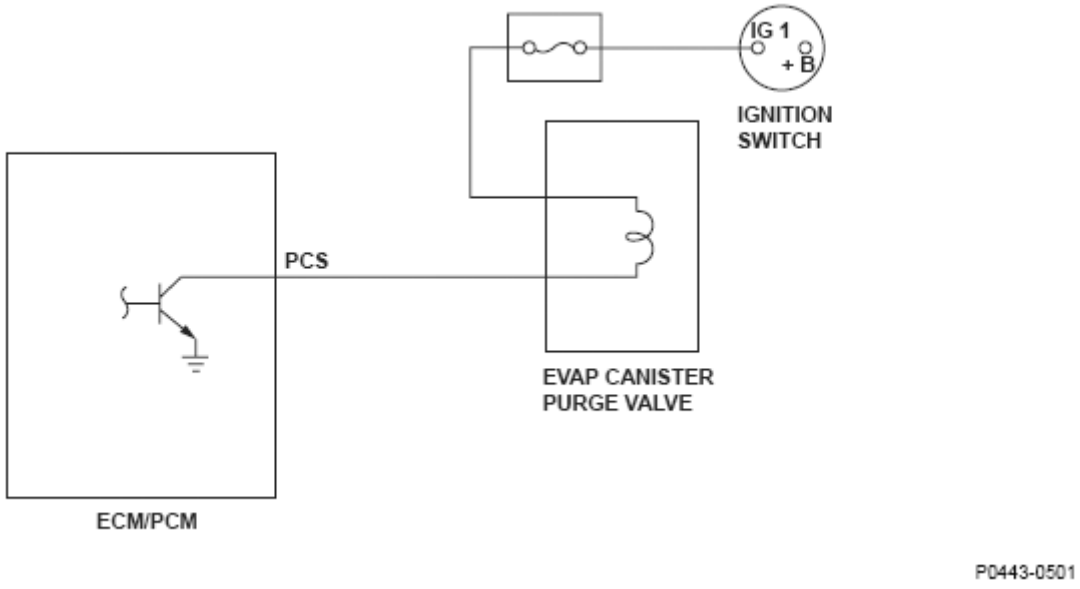


Fig. 1: Identifying EVAP System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0443 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals

at the EVAP canister purge valve and the ECM.

5. Turn the ignition switch OFF, and allow the engine to cool below 140°F (60°C).
6. Disconnect the vacuum hose (A) from the purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0-30 in.Hg, to the hose.

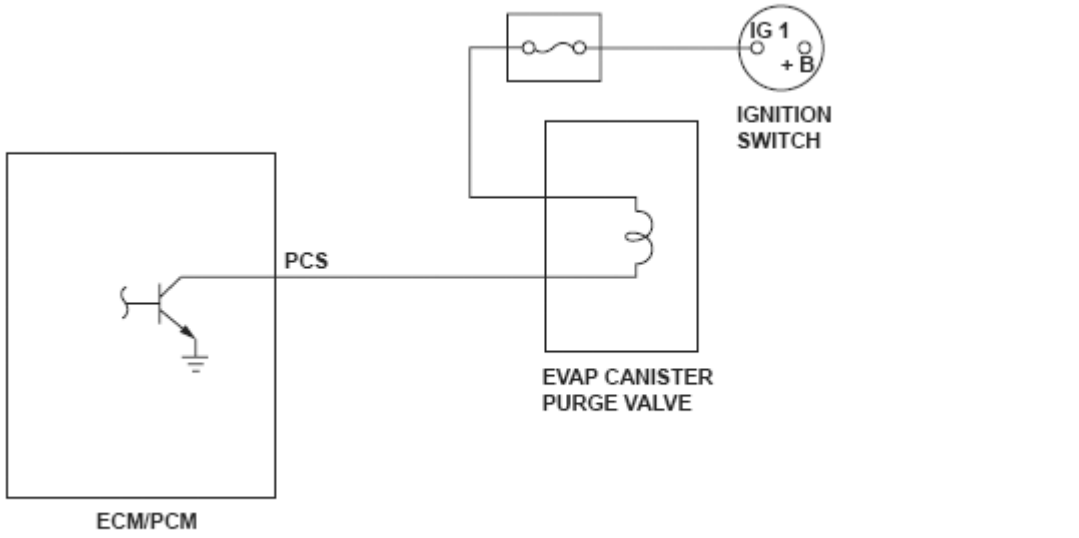


Fig. 2: Disconnecting Vacuum Hose From Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Start the engine, and let it idle.

   Is there vacuum?

   YES - Go to step 8.

   NO - Go to step 14.

8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

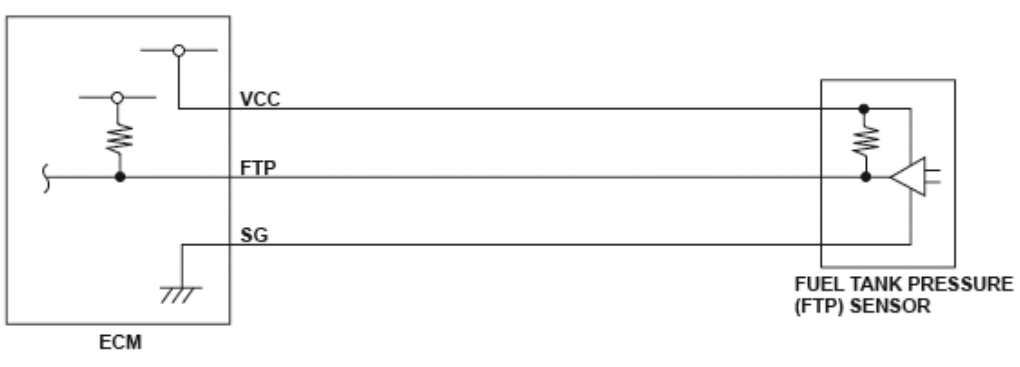


Fig. 3: Checking Continuity Between EVAP Canister Purge Valve 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Go to step 23.

11. Jump the SCS line with the HDS.
12. Disconnect ECM connector B (44P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

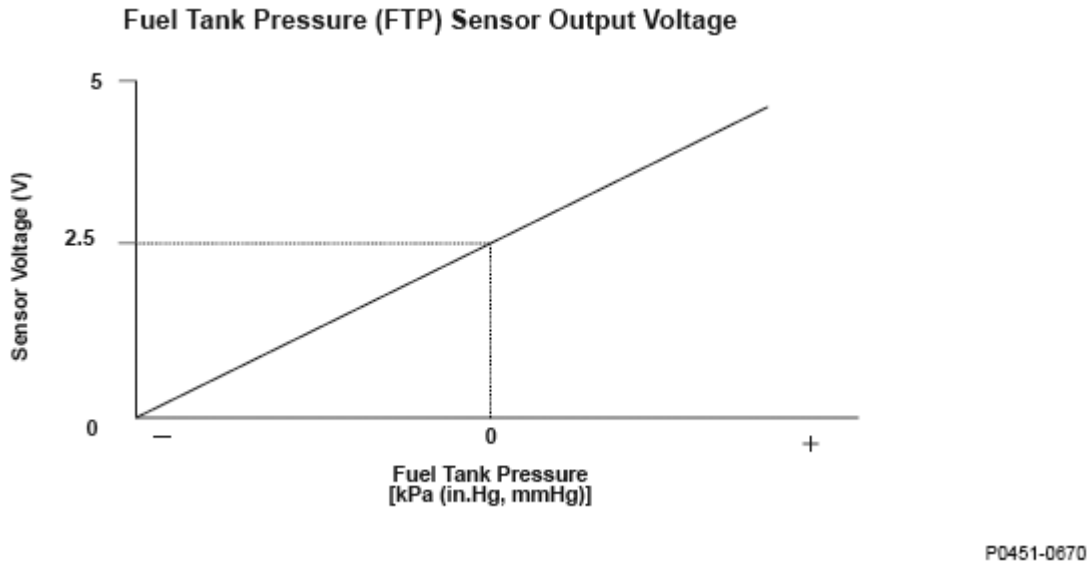


Fig. 4: Checking Continuity Between EVAP Canister Purge Valve 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the EVAP canister purge valve and the ECM (B3), then go to step 24.

NO - Go to step 30.

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

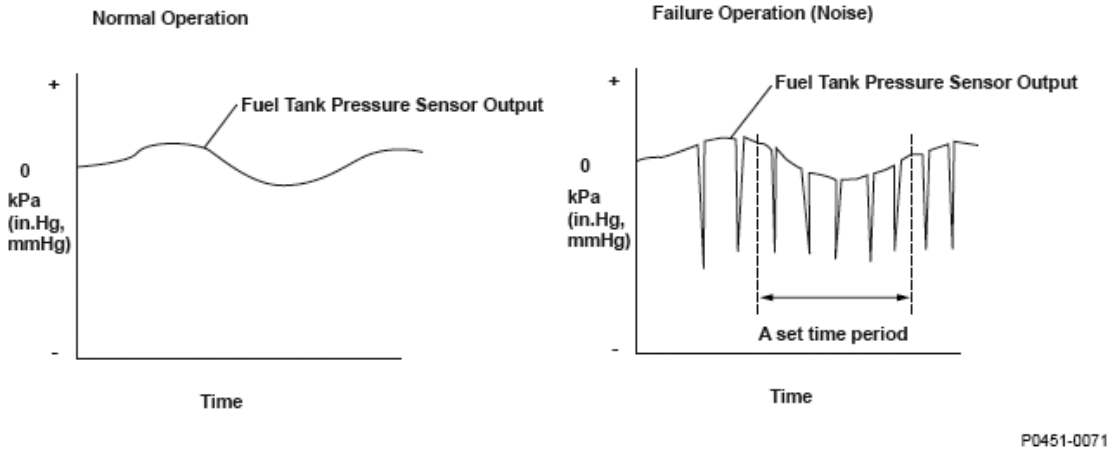


Fig. 5: Measuring Voltage Between EVAP Canister Purge Valve 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 18.

NO - Repair open in the wire between the EVAP canister purge valve and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect ECM connector B (44P).
21. Check for continuity between ECM connector terminal B3 and EVAP canister purge valve 2P connector terminal No. 2.

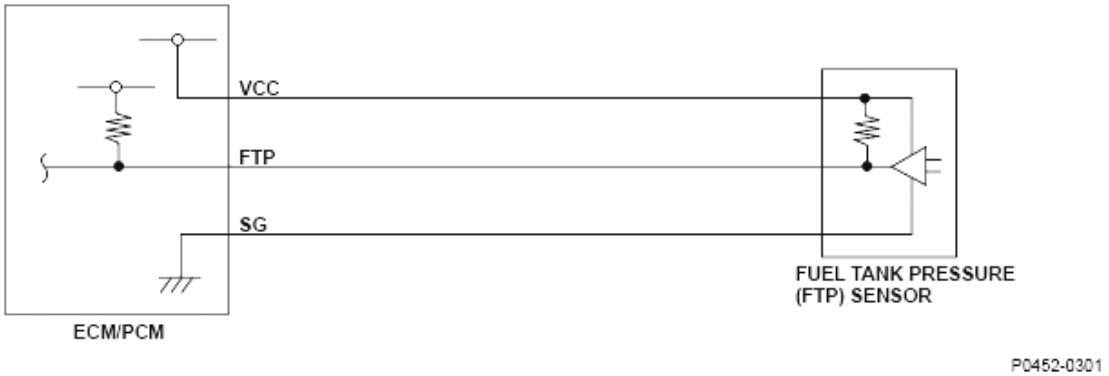


Fig. 6: Checking Continuity Between ECM Terminal B3 And EVAP Canister Purge Valve 2P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the EVAP canister purge valve and the ECM (B3), then go to step 24.

22. At the valve side, measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

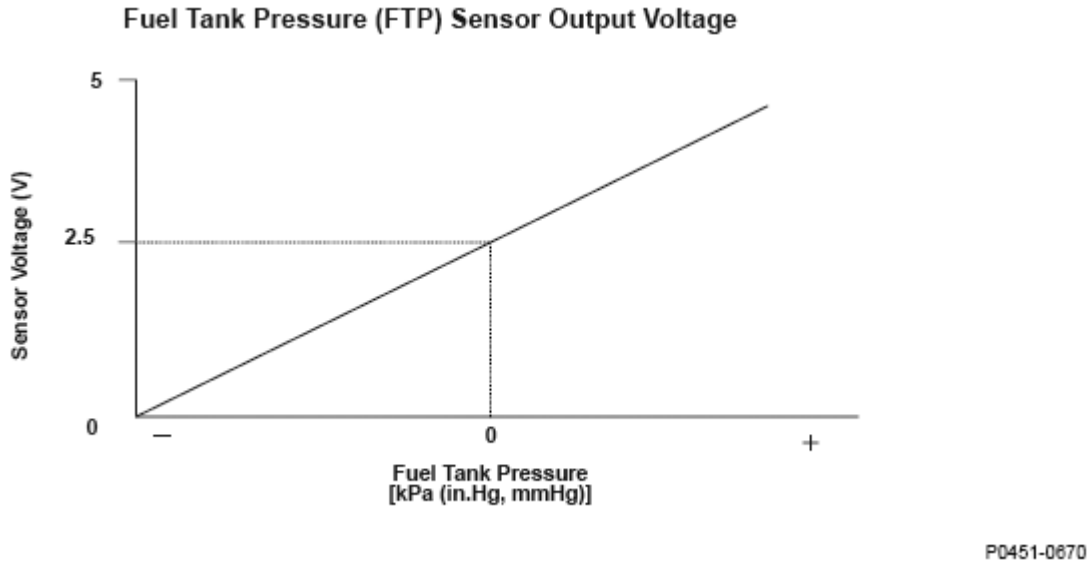


Fig. 7: Measuring Resistance Between EVAP Canister Purge Valve 2P Connector Terminals No. 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 25 ohms at room temperature?

YES - Go to step 30.

NO - Go to step 23.

23. Replace the EVAP canister purge valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES - Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM, then go to step 1.

NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Start the engine, and let it idle.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES - Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 32. If the ECM was substituted, go to step 1.

NO - Go to step 34.

34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 32. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC P0451: FTP SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 5.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Start the engine, and let it idle 1 minute.
11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0451 indicated?

YES - Check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1.

NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0452: FTP SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about - 7.3 kPa (-2.16 in.Hg, - 55 mmHg), or 0.3 V or less indicated?

YES - Go to step 10.

NO - Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 10.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.15 in.Hg, 54.7 mmHg) or 4.90 V or more indicated?

YES - Go to step 24.

NO - Go to step 14.

14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

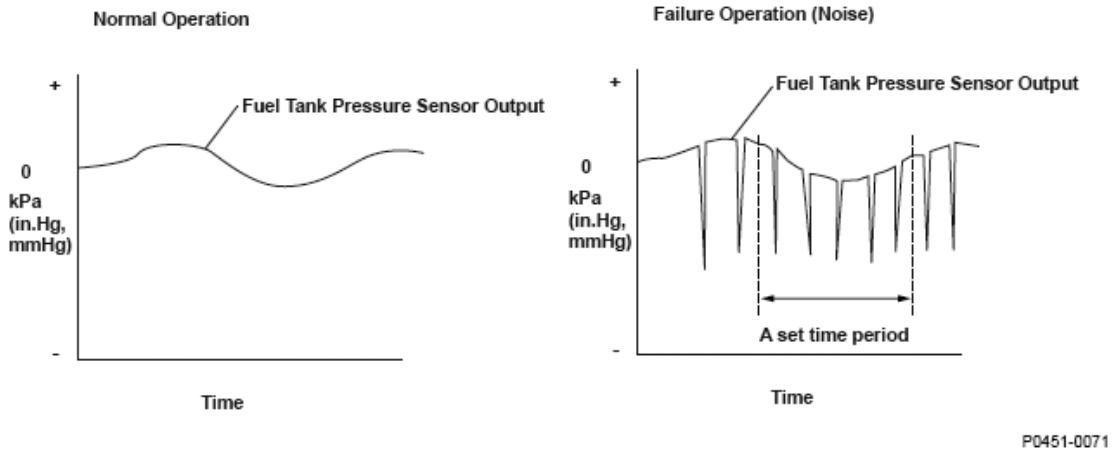


Fig. 8: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 20.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect ECM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

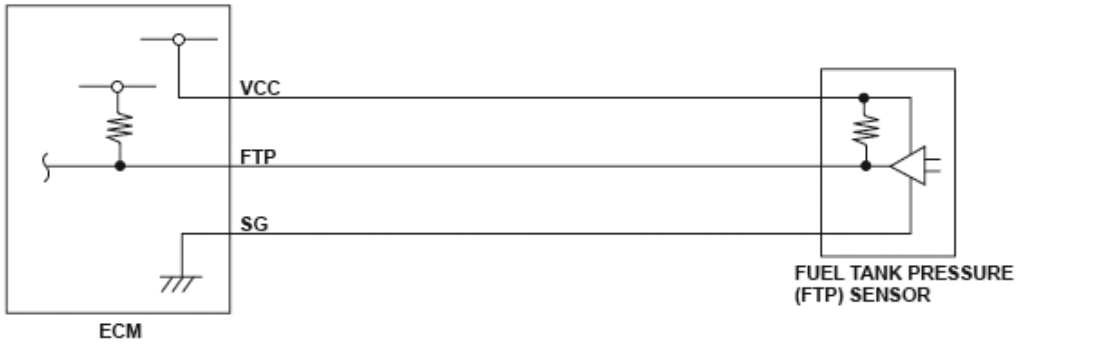


Fig. 9: Connecting FTP Sensor 3P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Check for continuity between ECM connector terminal A19 and body ground.

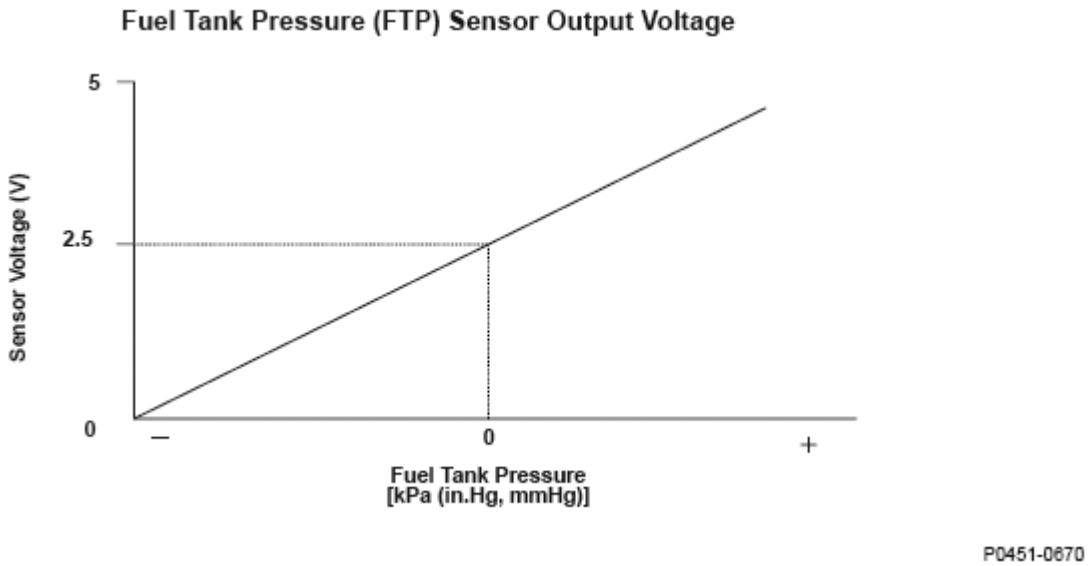


Fig. 10: Checking Continuity Between ECM Connector Terminal A19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 32.

NO - Repair open in the wire between the ECM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch OFF.
21. Jump the SCS line with the HDS.
22. Disconnect ECM connector A (44P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

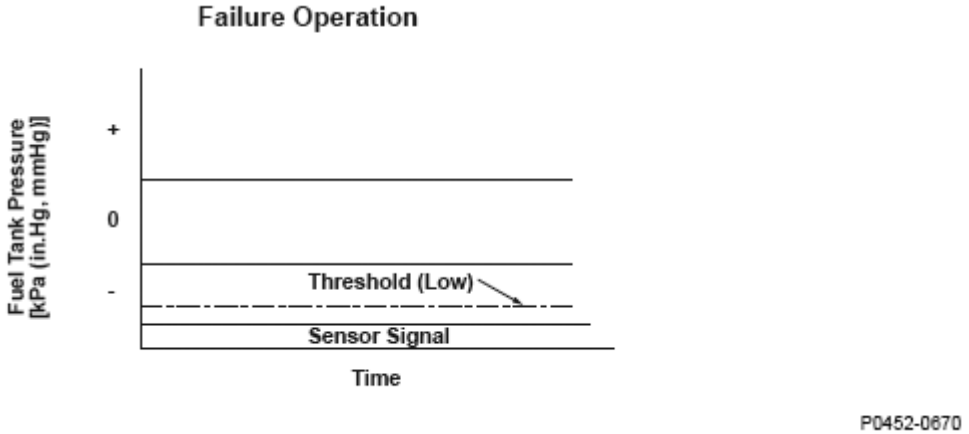


Fig. 11: Checking Continuity Between FTP Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A26) and the FTP sensor, then go to step 26.

NO - Go to step 32.

24. Turn the ignition switch OFF.
25. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the ECM with the HDS.
29. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0452 indicated?

YES - Check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1.

NO - Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
34. Start the engine and let it idle.
35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 34. If the ECM was substituted, go to step 1.

    NO - Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 34. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES - Go to step 10.

NO - Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

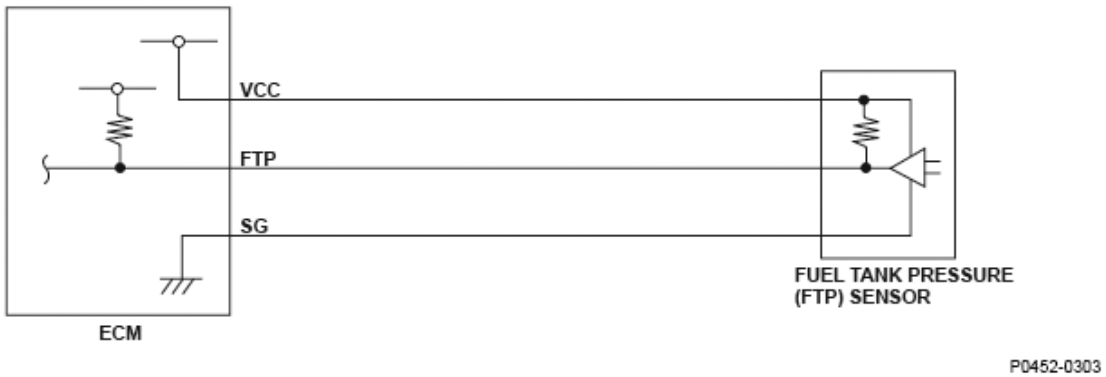


Fig. 12: Connecting FTP Sensor 3P Connector Terminals No. 2 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

    YES - Go to step 15.

    NO - Go to step 26.

15. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

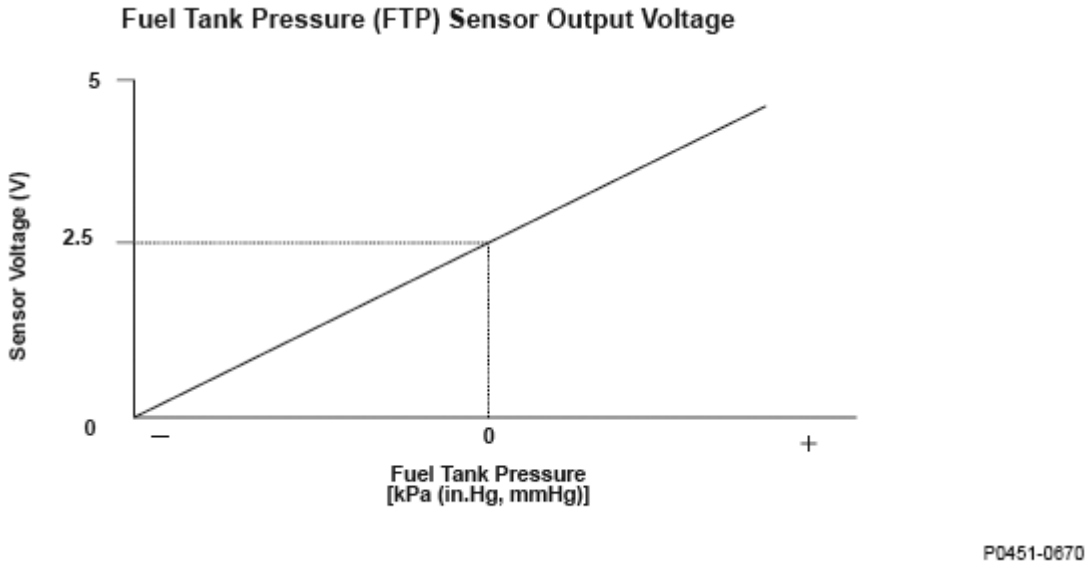


Fig. 13: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 21.

NO - Go to step 16.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

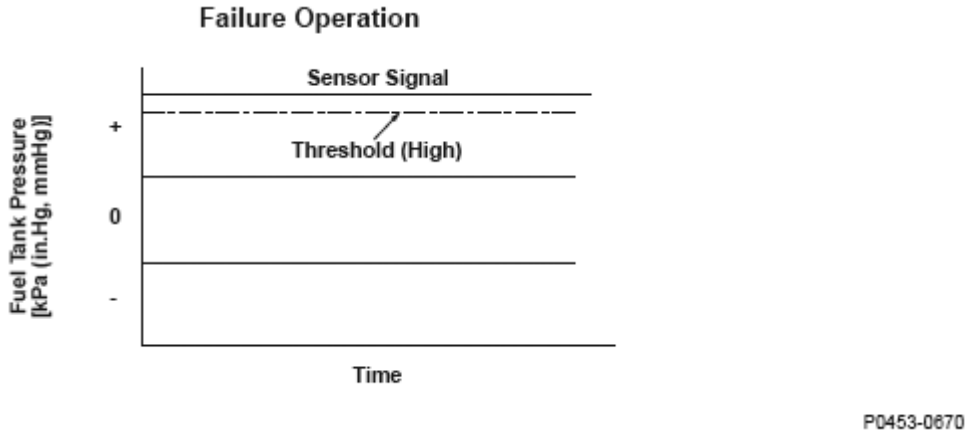


Fig. 14: Connecting FTP Sensor 3P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Check for continuity between ECM connector terminal A9 and body ground.

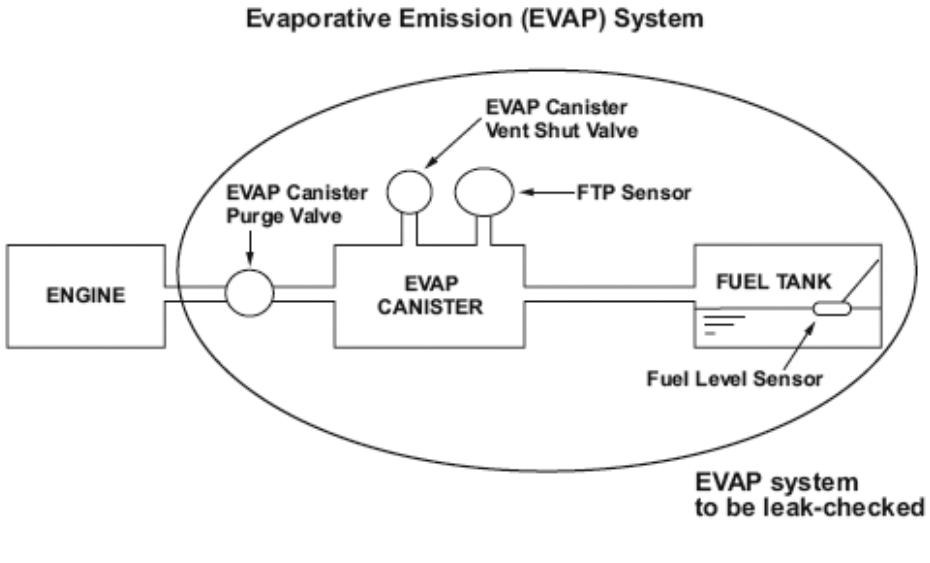


Fig. 15: Checking Continuity Between ECM Connector Terminal A9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 34.

NO - Repair open in the wire between the ECM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect ECM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

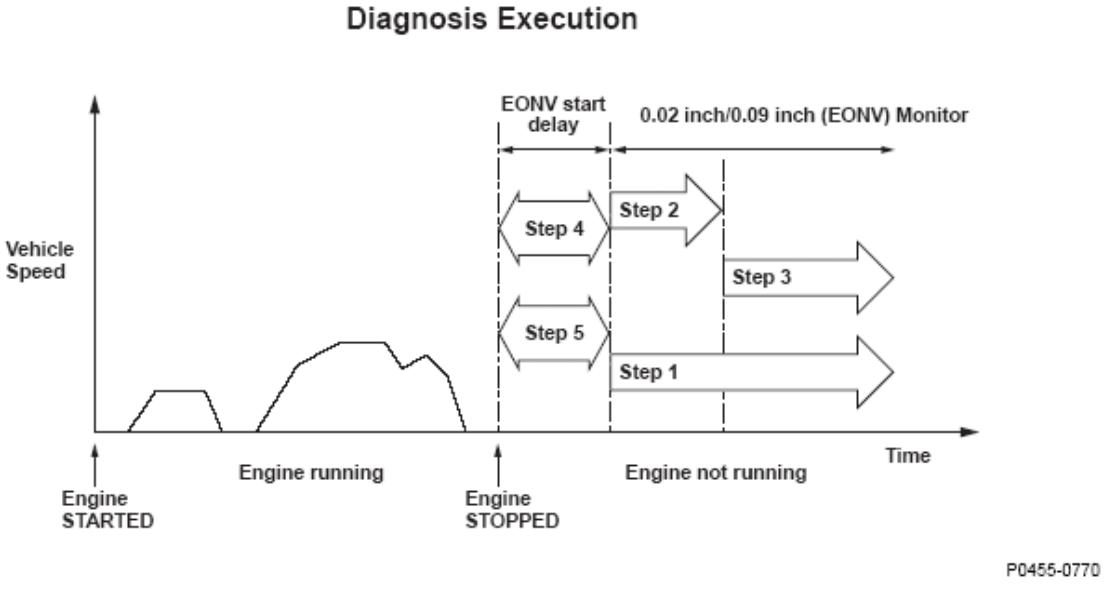


Fig. 16: Connecting FTP Sensor 3P Connector Terminal No. 2 To Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Check for continuity between ECM connector terminal A26 and body ground.

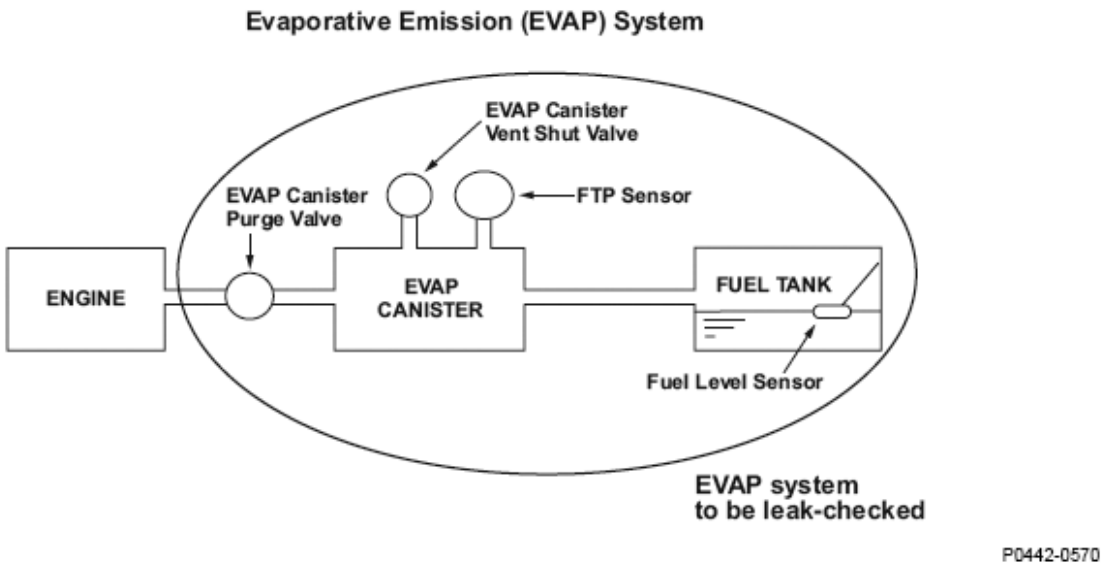


Fig. 17: Checking Continuity Between ECM Connector Terminal A26 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 34.

NO - Repair open in the wire between the ECM (A26) and the FTP sensor, then go to step 28.

26. Turn the ignition switch OFF.
27. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
28. Reconnect all connectors.
29. Turn the ignition switch ON (II).
30. Reset the ECM with the HDS.
31. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0453 indicated?

YES - Check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1.

NO - Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.
35. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
36. Start the engine, and let it idle.
37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 36. If the ECM was substituted, go to step 1.

    NO - Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 36. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0455: EVAP SYSTEM LARGE LEAK DETECTED; DTC P0456: EVAP SYSTEM VERY SMALL LEAK DETECTED

NOTE: **The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.**

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**

- **Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.**

1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Replace or tighten the cap, then go to step 30.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

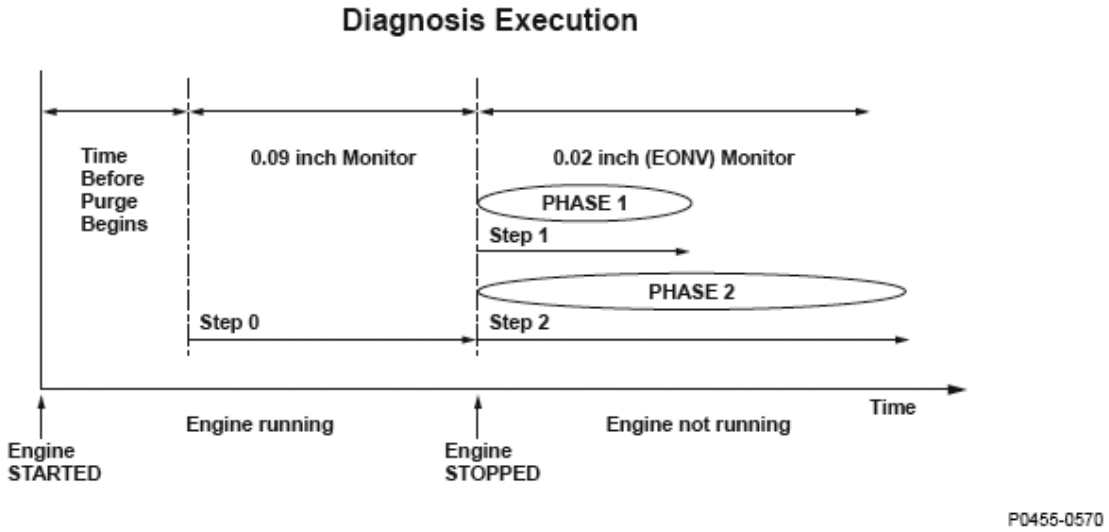


Fig. 18: Checking Fill Cap Seal And Fuel Fill Pipe Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES - Replace the fuel fill cap or the fuel fill pipe, then go to step 30.

NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

   YES - Go to step 8.

   NO -

   - Replace the fuel tank vapor recirculation tube, then go to step 30.
   - If necessary, replace the fuel tank (see **FUEL TANK REPLACEMENT**), then go to step 30.
8. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).

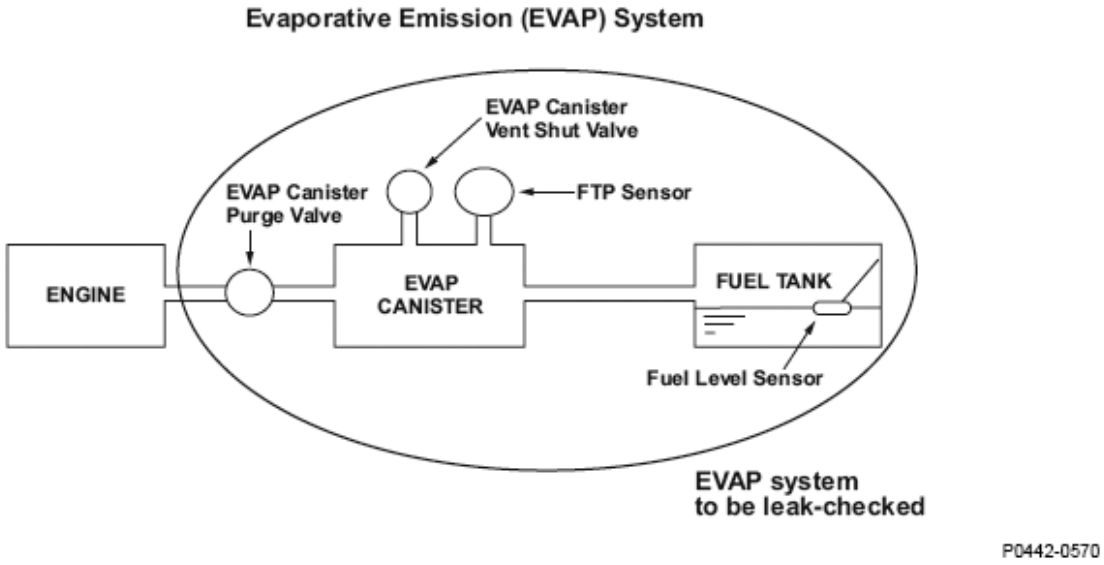


Fig. 19: Disconnecting Fuel Tank Vapor Recirculation Tube From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0-30 in.Hg, to the vacuum hose as shown.

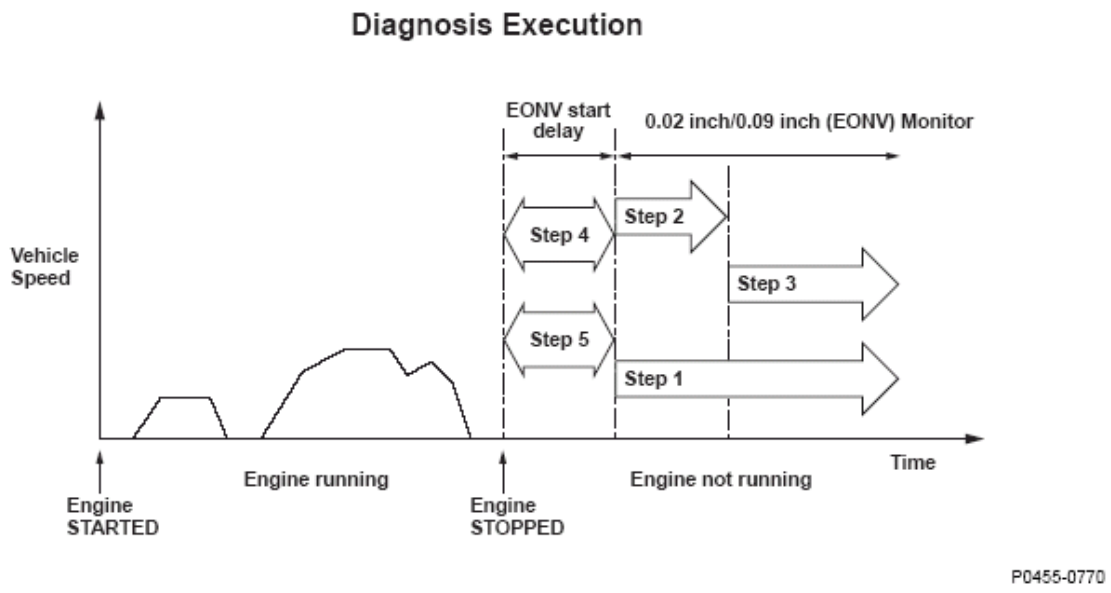


Fig. 20: Disconnecting Vacuum Hose (Purge Line)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch ON (II).
11. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
12. Apply vacuum to the hose until the FTP reads 1.90 V (-0.59 in.Hg, -15.1 mmHg).

NOTE: Be careful not to exceed the pressure. If you exceed the pressure, the FTP sensor can be damaged.

13. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.
14. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

YES - Go to step 14.

NO - Go to step 22.

15. Turn the ignition switch to LOCK (0).
16. Disconnect the vacuum pump/gauge from the EVAP canister purge valve.
17. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge, 0-30 inHg, to the vacuum hose as shown.
18. Turn the ignition switch to ON (II).

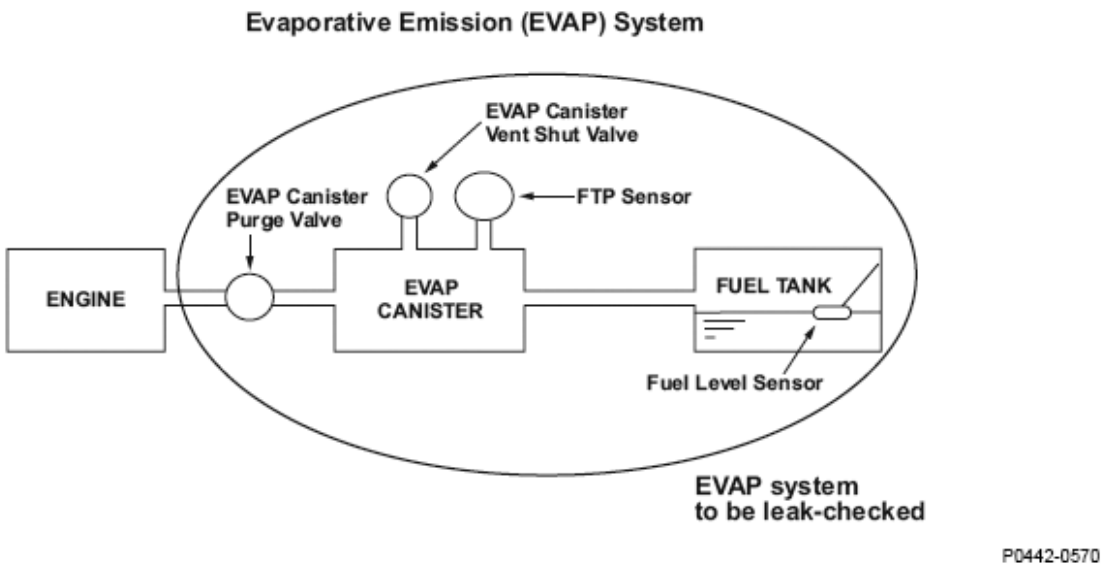


Fig. 21: Disconnecting Fresh Air Hose From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Apply vacuum to the hose until the FTP reads 1.90 V (-0.59 inHg, -15.1 mmHg).

NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

20. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

YES - Go to step 18.

NO - Replace the EVAP canister vent shut valve, then go to step 29.

21. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

Are the line and the EVAP canister OK?

YES - Replace these parts, then go to step 29:

- FTP sensor O-ring
- EVAP canister vent shut valve case and O-ring
- EVAP canister

NO - Reconnect or repair the EVAP canister purge hose, then go to step 29.

22. Reconnect the fresh air hose (A) to the EVAP canister (B).
23. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge, 0-30 inHg, to the vacuum hose as shown.

24. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
25. Apply vacuum to the EVAP system until the FTP reads 1.90 V (-0.59 inHg, -15.1 mmHg).

NOTE: Be careful not to exceed the vacuum. If you exceed the vacuum, the FTP sensor can be damaged.

26. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 inHg, 2.5 mmHg)?

YES - Replace the EVAP canister vent shut valve, then go to step 29.

NO - Go to step 26.

27. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.
28. Check these parts for looseness or damage:
    - Fuel fill pipe
    - Fuel vapor return pipe

Are the parts OK?

YES - Check the fuel tank unit base gasket (see **FUEL TANK REPLACEMENT**), and check the fuel tank, then go to step 21.

NO - Repair or replace the damaged parts, then go to step 21.

29. Reconnect all hoses and connectors.
30. Turn the ignition switch ON (II).
31. Reset the ECM with the HDS.
32. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
33. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM, then go to step 1.

DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES - Go to step 2.

NO - Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

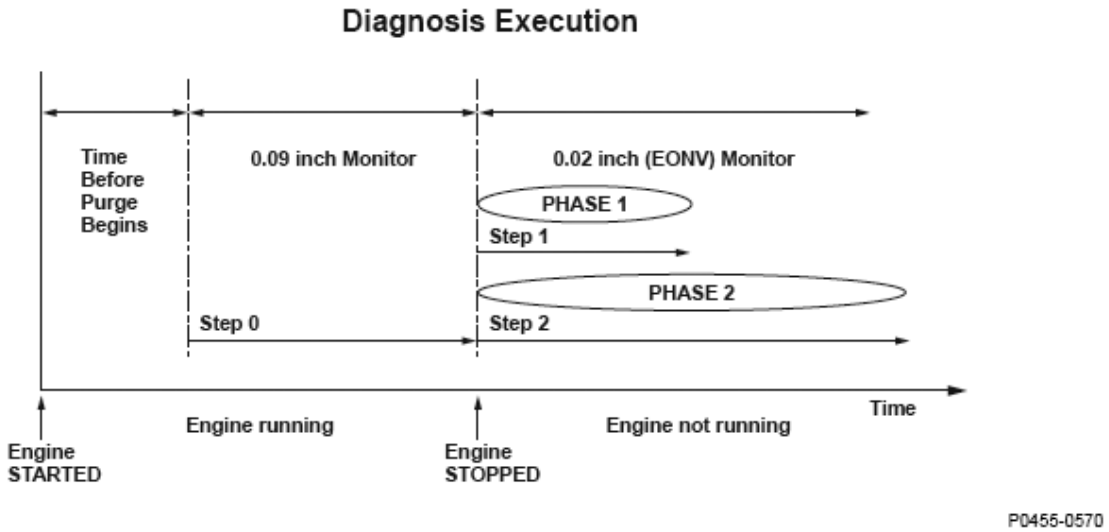


Fig. 22: Checking Fuel Fill Cap Seal And Fuel Fill Pipe Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES - Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve, and the ECM.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.

9. Turn the ignition switch ON (II).
10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
11. Check the EVAP canister vent shut valve (A) operation.

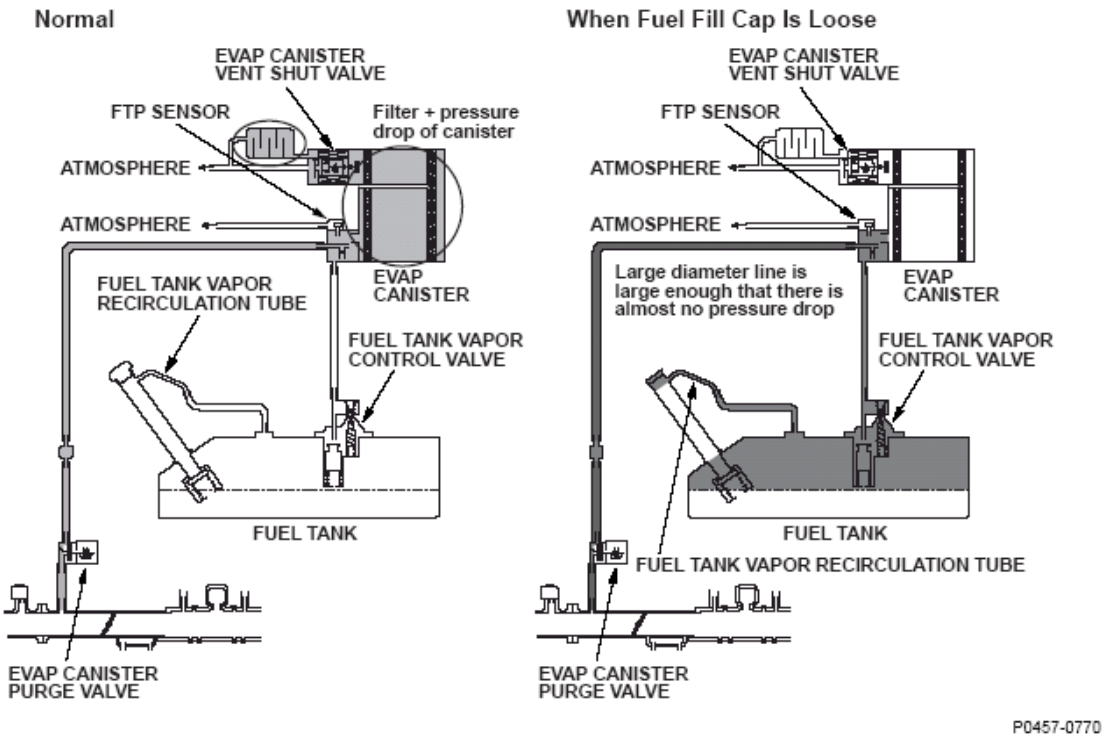


Fig. 23: Checking EVAP Canister Vent Shut Valve Operation
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the valve operate?

YES - Check the routing of the EVAP canister vent tube, then go to step 18.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM, then go to step 1.

DTC P0496: EVAP SYSTEM HIGH PURGE FLOW DETECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM.

NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
6. Turn the ignition switch ON (II).
7. Reset the ECM with the HDS.
8. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM, then go to step 1.

DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED ('06 MODEL)

Special Tools Required

- Vacuum/pressure gauge, 0-4 in.Hg, 07JAZ-001000B
- Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the fuel fill cap installation (The cap must say "TIGHTEN TO CLICK". The cap should tighten 1/4 turn after it is tight.).

   Is the fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Properly install the fuel fill cap, then go to step 23.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM.

   NO - Go to step 5.

5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

   Is the line OK?

   YES - Go to step 6.

   NO - Reconnect or repair the EVAP canister purge line, then go to step 23.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the vacuum hose as shown.

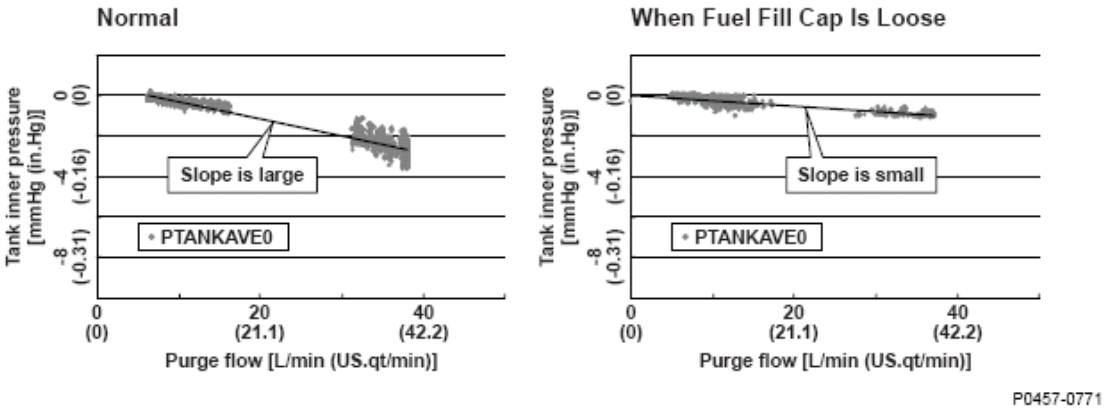


Fig. 24: Disconnecting Vacuum Hose From EVAP Canister Purge Valve In Engine Compartment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
8. Slowly apply about 0.6 in.Hg (15 mmHg) of vacuum to the hose.

   Does it hold vacuum?

   YES - Replace the EVAP canister purge valve, then go to step 22.

   NO - Go to step 9.

9. Reconnect the vacuum hose to the EVAP canister purge valve.
10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the hose as shown.

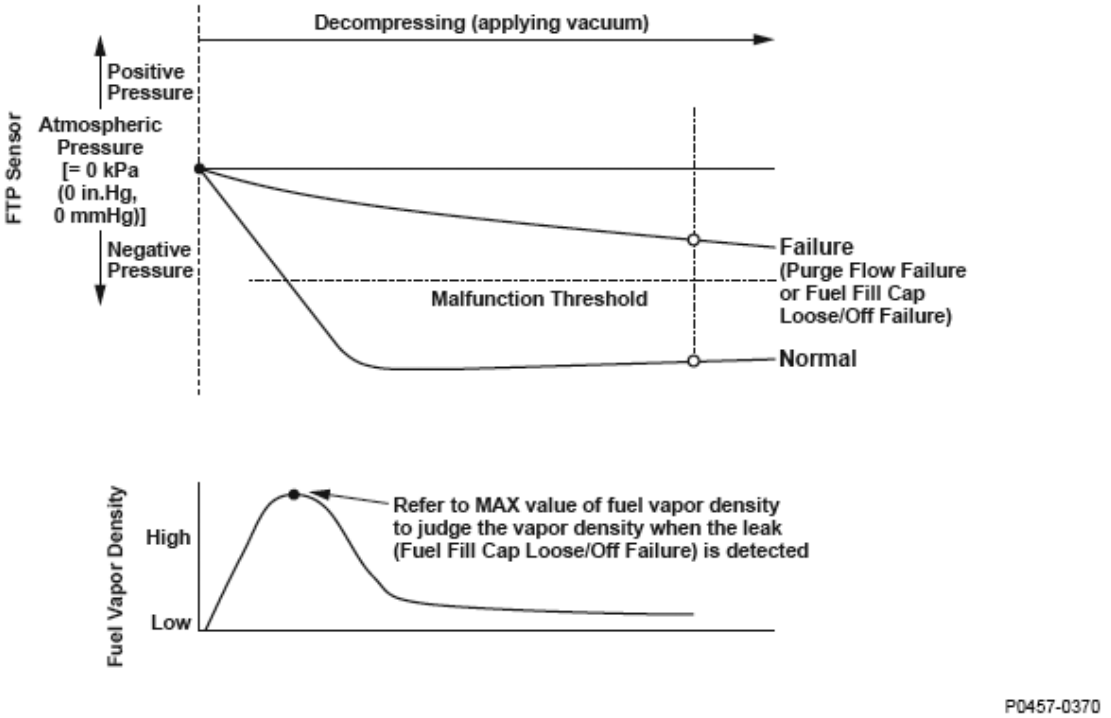


Fig. 25: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge To Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
12. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

Does it hold vacuum?

YES - Check for a restrictied EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 22.

NO - Go to step 13.

13. Remove the FTP sensor with its connector connected (see **FTP SENSOR REPLACEMENT**).
14. Connect a T-fitting (A) from the vacuum pump/gauge, 0-30 in.Hg, and the vacuum pump to the FTP sensor (B) as shown.

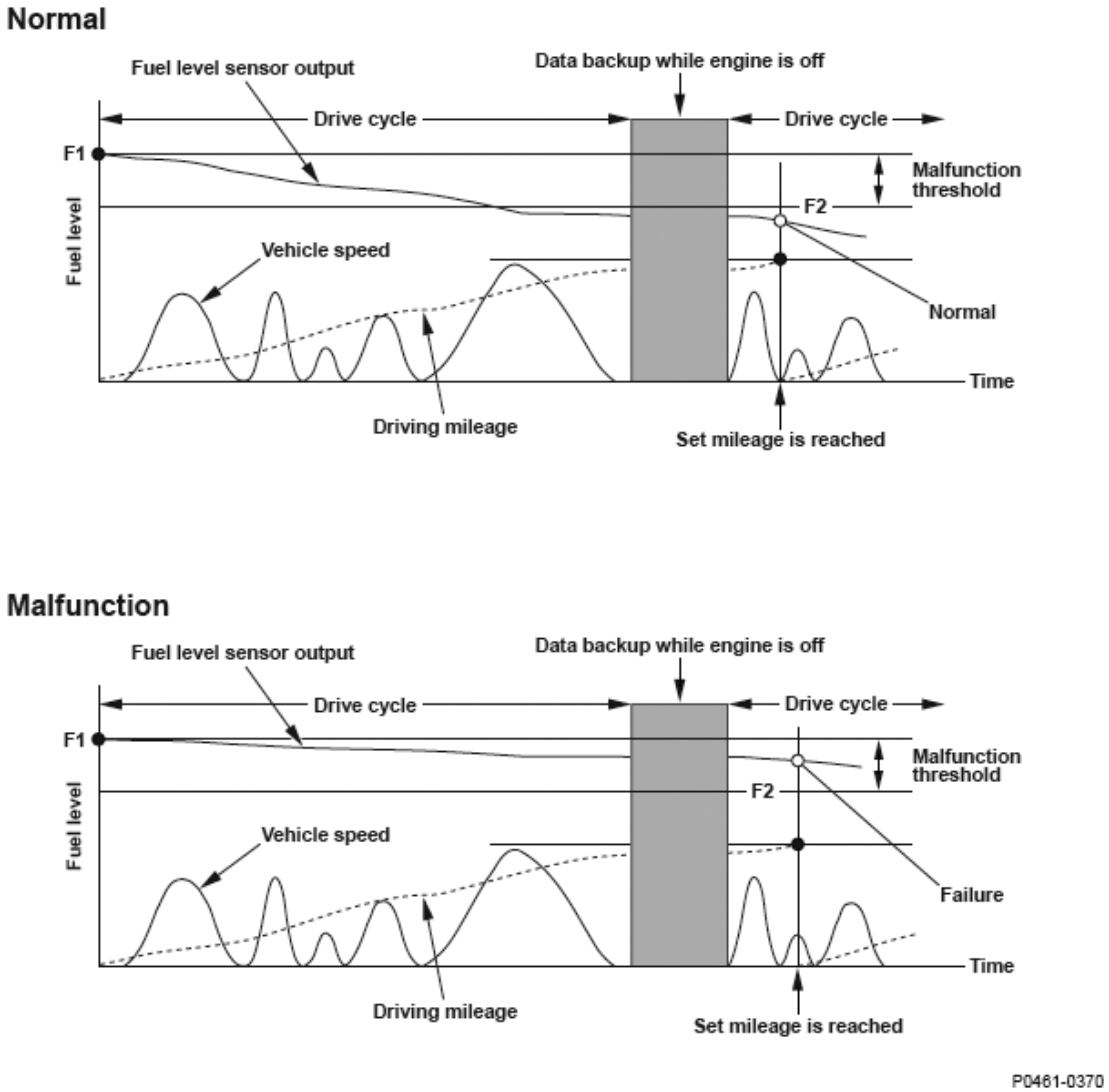


Fig. 26: Connecting T-Fitting From Vacuum Pump/Gauge And Vacuum Pump To FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
16. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.
17. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is the difference more than 1.1 kPa (0.31 in.Hg, 8 mmHg) before and after applying vacuum?

    YES - Go to step 18.

    NO - Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.
19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the hose as shown.

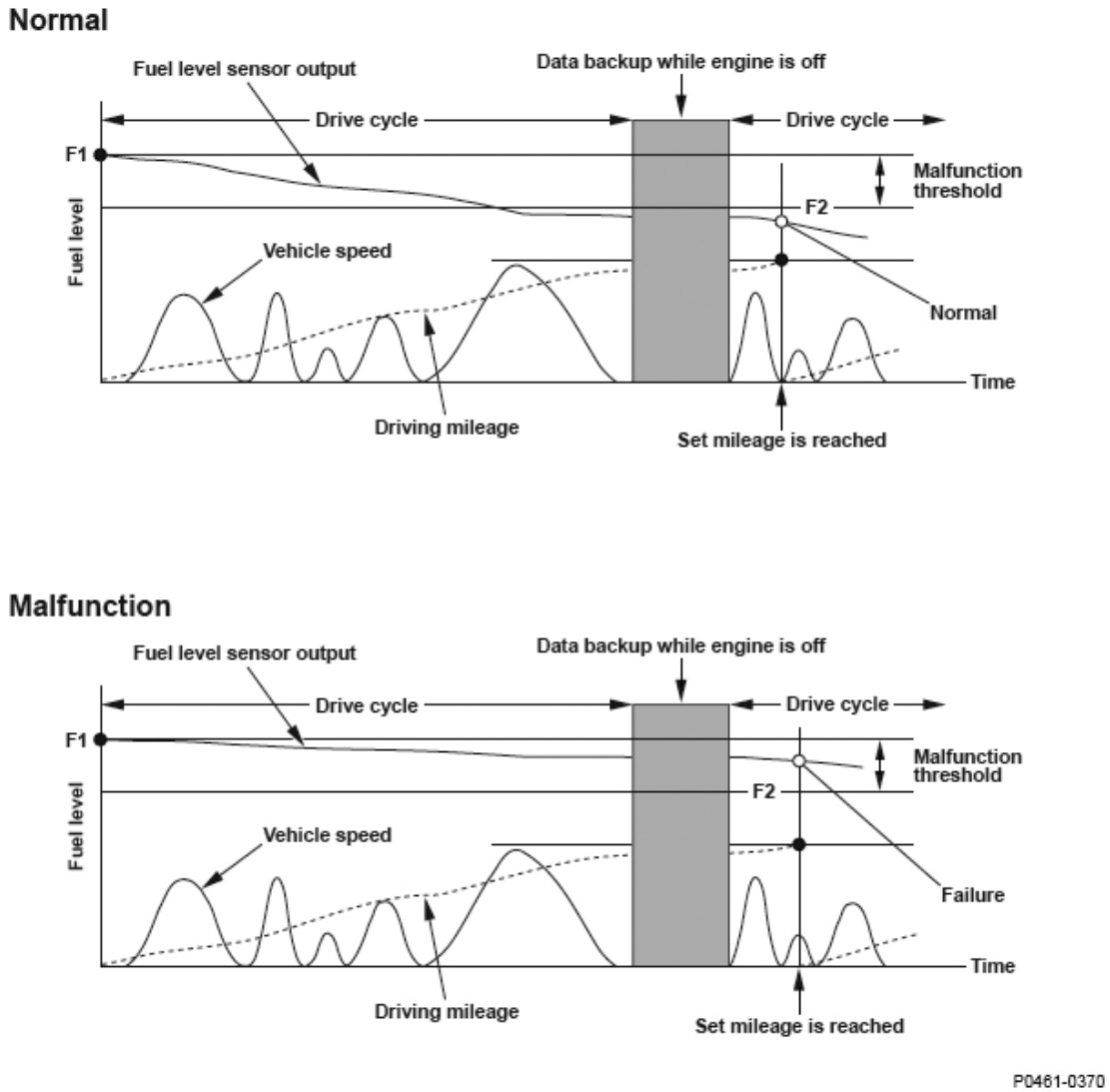


Fig. 27: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge To Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
21. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES - Check for blockage at the EVAP canister port, then go to step 22.

    NO - Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 22.

22. Reconnect all hoses.
23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Troubleshooting is complete.

    NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM, then go to step 1.

DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED ('07 MODEL)

Special Tools Required

- Vacuum/pressure gauge, 0-4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM.

    NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Check for poor connection, blockage, or damage at the EVAP canister purge line between the throttle

body and the EVAP canister.

Is the line OK?

YES - Go to step 5.

NO - Reconnect or repair the EVAP canister purge line, then go to step 25.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).

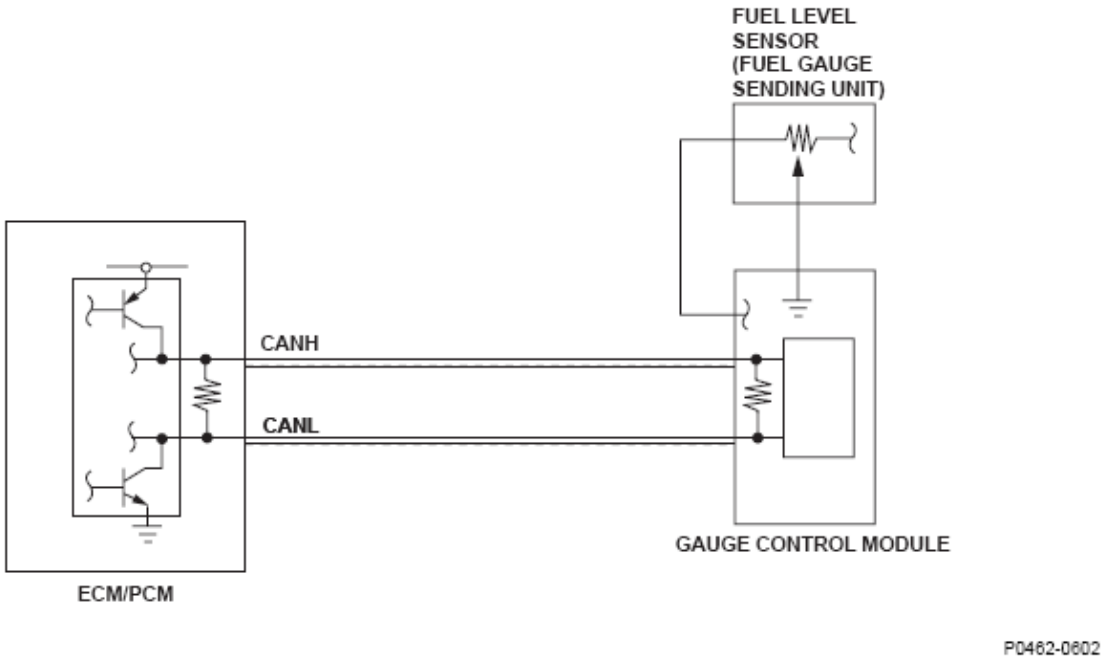


Fig. 28: Disconnecting Vacuum Hose From EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the hose as shown.

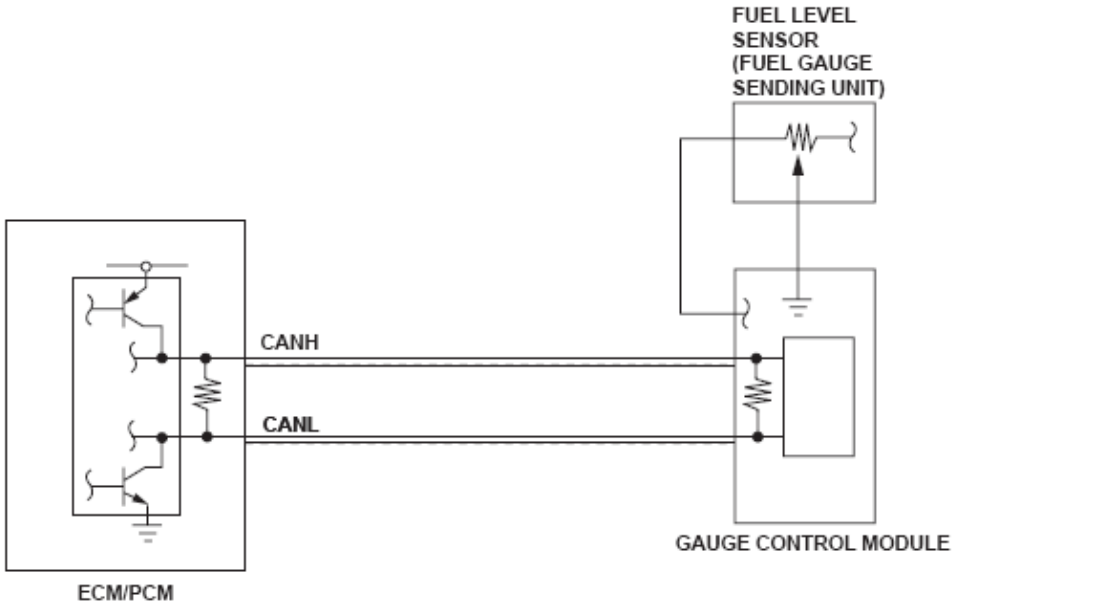


Fig. 29: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge To Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.
9. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

   Does the vacuum release momentary?

   YES - Go to step 15.

   NO - Go to step 10.

10. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.
11. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, and the EVAP canister purge valve as shown.

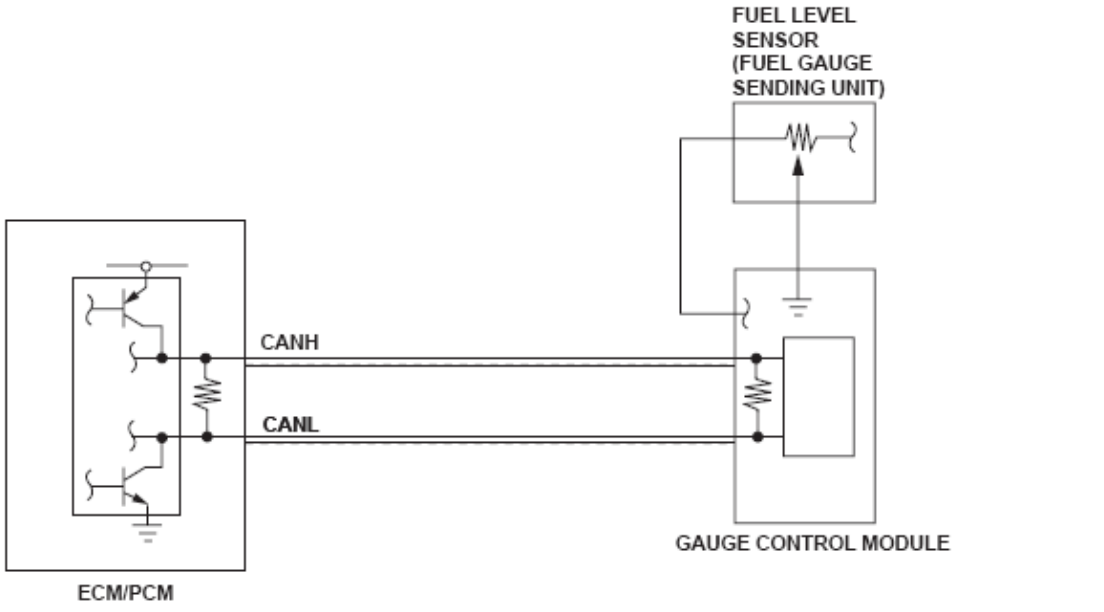


Fig. 30: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge And EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.
13. Turn the ignition switch to ON (II).
14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release momentary?

    YES - Check for blockage in the EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 25.

    NO - Replace the EVAP canister purge valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 25.

15. Connect the vacuum pump/gauge, 0-30 in.Hg, to the vacuum hose (A) as shown.

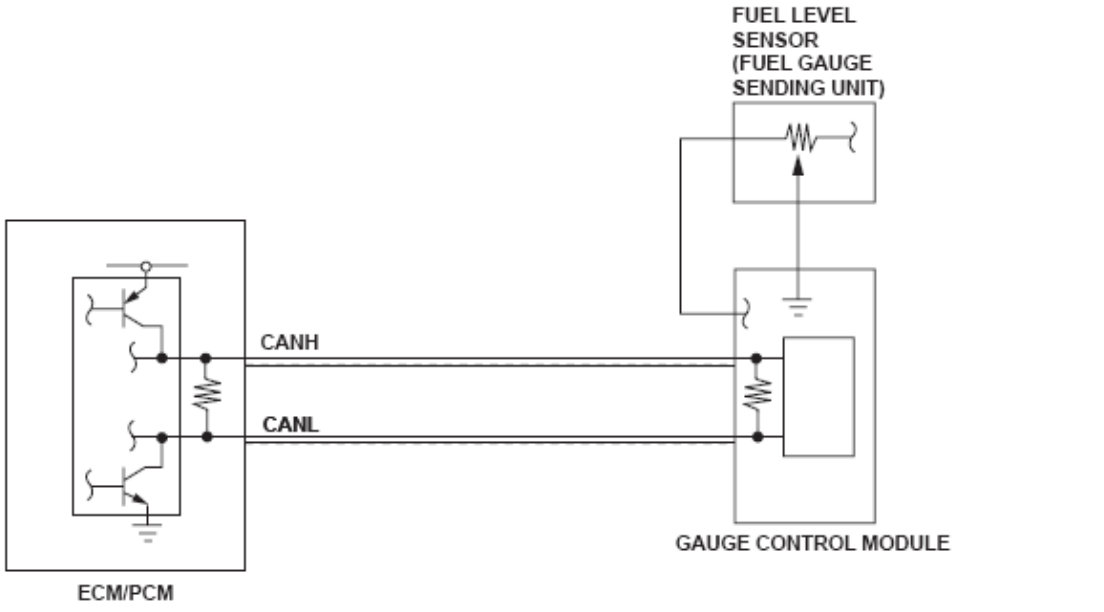


Fig. 31: Connecting Vacuum Pump/Gauge To Vacuum Hose Turn The Ignition Switch To On (Ii).
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Start the engine, and let it idle.

    Is there vacuum?

    YES - Go to step 16.

    NO - Check for blockage at the EVAP purge line between the throttle body and the EVAP canister purge valve, then go to step 25.

17. Turn the ignition switch OFF.
18. Remove the FTP sensor with its connector connected (see **FTP SENSOR REPLACEMENT**).
19. Connect a T-fitting (A) from the vacuum pump/gauge, 0-30 in.Hg, and the vacuum pump, to the FTP sensor (B) as shown.

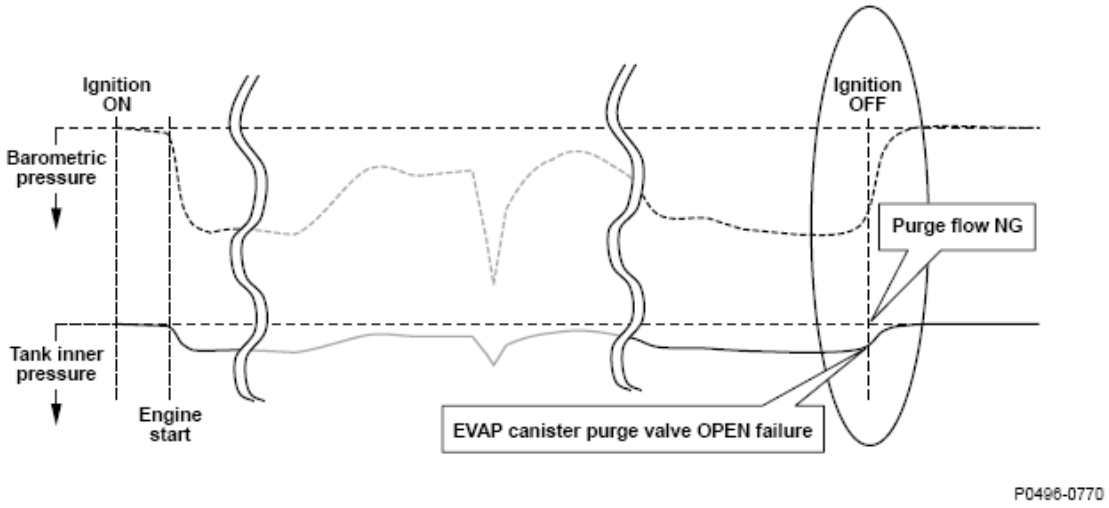


Fig. 32: Identifying T-Fitting And FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Turn the ignition switch ON (II).
21. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
22. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.
23. Check the FTP SENSOR in the DATA LIST with the HDS.

Does the value change?

YES - Check for debris or blockage at the EVAP canister port, then go to step 25.

NO - Go to step 23.

24. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
25. Reconnect all hoses.
26. Turn the ignition switch ON (II).
27. Reset the ECM with the HDS.
28. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
29. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1.

DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES - Go to step 6.

   NO - Go to step 4.

4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM.

6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

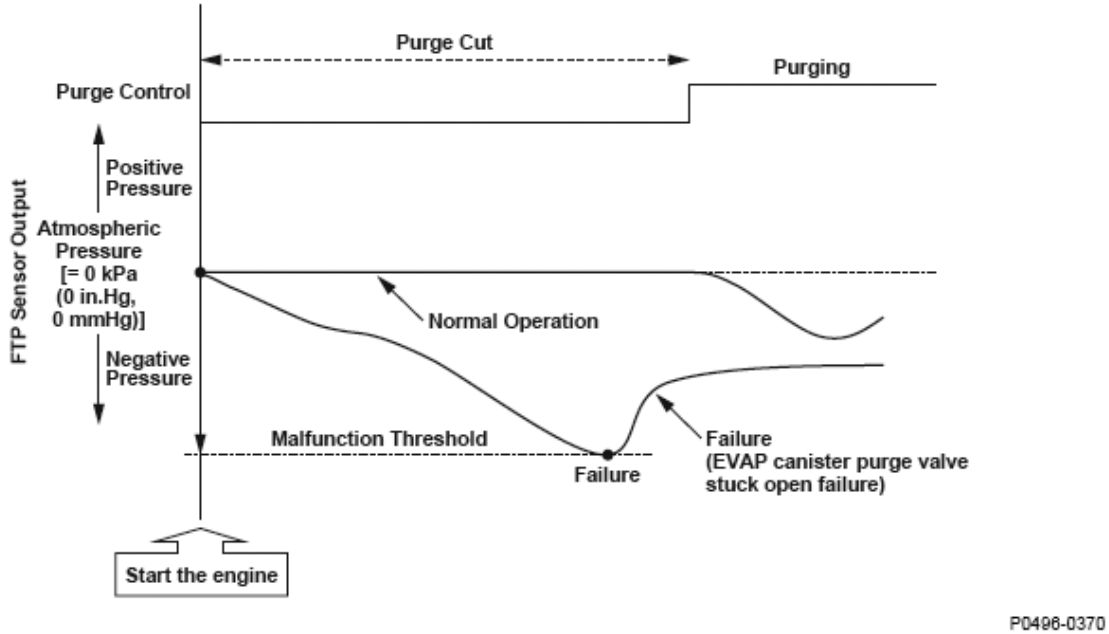


Fig. 33: Measuring Voltage Between EVAP Canister Vent Shut Valve 2P Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay, then go to step 18.

10. Turn the ignition switch OFF.
11. At the valve side, measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

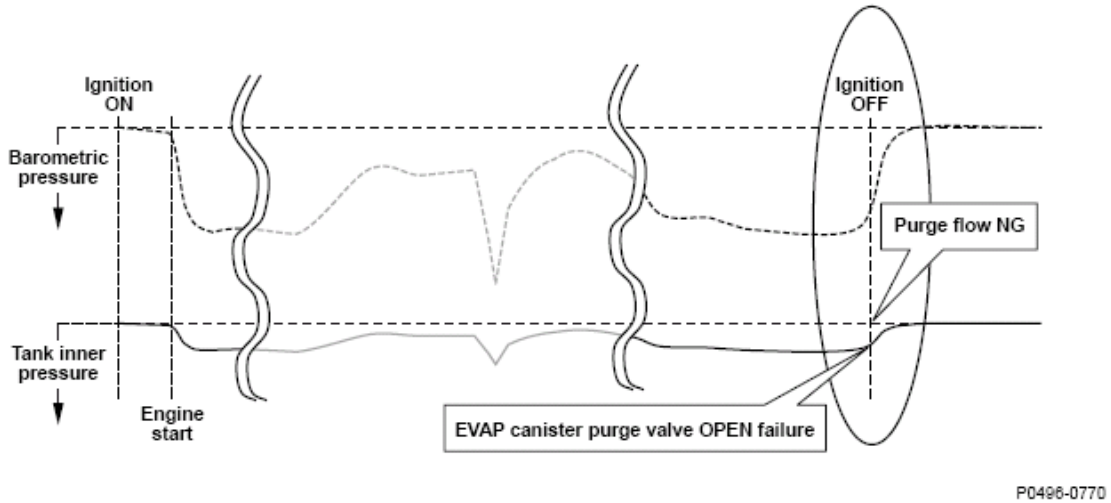


Fig. 34: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 25-30 0, at room temperature?

YES - Go to step 12.

NO - Go to step 17.

12. Jump the SCS line with the HDS.
13. Disconnect ECM connector A (44P).
14. Check for continuity between ECM connector terminal A10 and body ground.

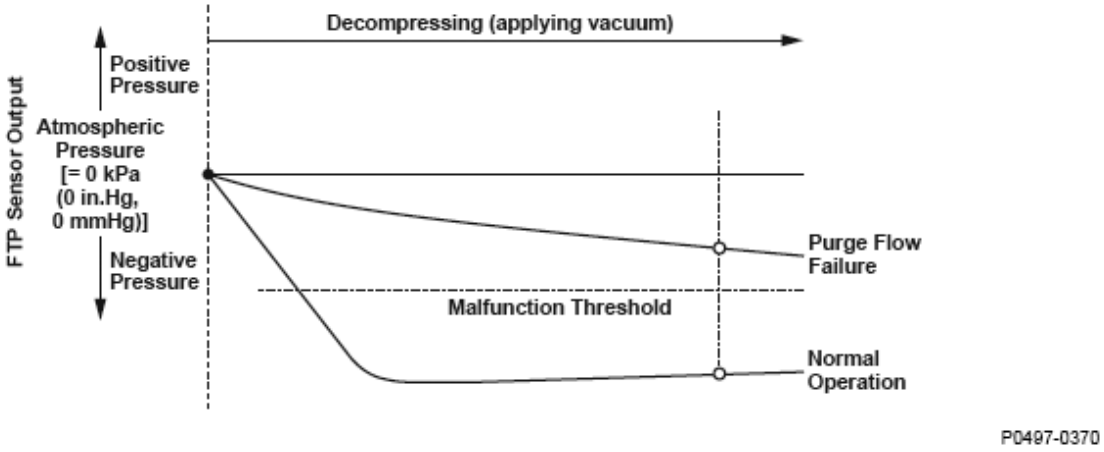


Fig. 35: Checking Continuity Between ECM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the EVAP canister vent shut valve and the ECM (A10), then go to step 18.

NO - Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

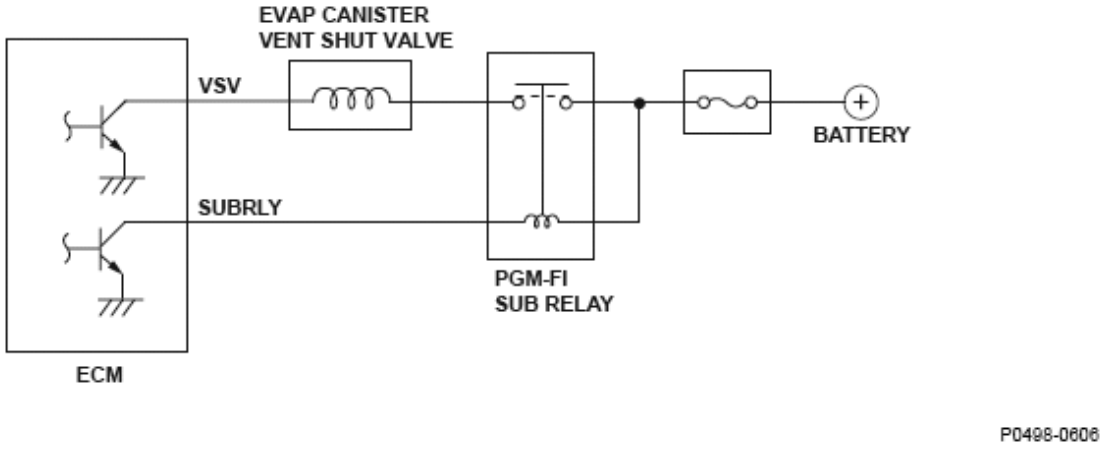


Fig. 36: Connecting EVAP Canister Vent Shut Valve 2P Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check for continuity between ECM connector terminal A10 and body ground.

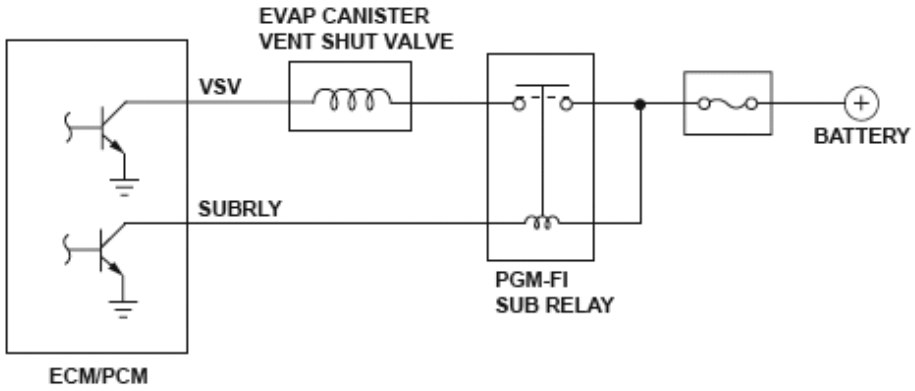


Fig. 37: Checking Continuity Between ECM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the EVAP canister vent shut valve and the ECM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM, then go to step 1.

NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTSs were indicated in step 23, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM, then go to step 1. If the screen indicates NOT COMPLETED,

go to step 22.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 27. If the ECM was substituted, go to step 1.

    NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P0499: EVAP CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0499 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM.

5. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).

6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0499 indicated?

   YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 6. If the ECM was substituted, go to step 1.

   NO - Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.

   NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 6. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM; DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is it between - 0.67 and 0.67 kPa (- 0.2 and 0.2 in.Hg, - 5 and 5 mmHg), or 2.4 and 2.6 V?

   YES - Go to step 6.

   NO - Go to step 17.

6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 10.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.

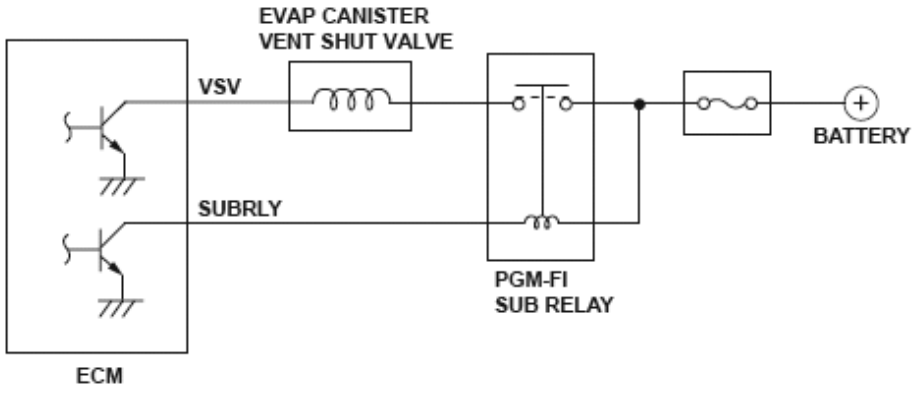


Fig. 38: Checking EVAP Canister Vent Shut Valve Operation
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the valve operate?

YES - Check for a blockage in the EVAP canister, vent hoses, and drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO - Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 23.

17. Disconnect the air tube (A) from the FTP sensor (B).

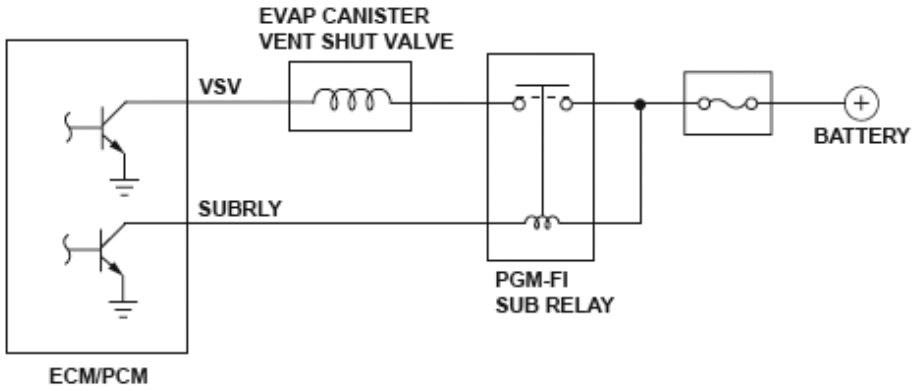


Fig. 39: Disconnecting Air Tube From FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between - 0.67 and 0.67 kPa (- 0.2 and 0.2 in.Hg, - 5 and 5 mmHg), or 2.4 and 2.6 V?

    YES - Check for a blockage in the FTP sensor air tube or vent, then go to step 23.

    NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see **EVAP CANISTER REPLACEMENT**).

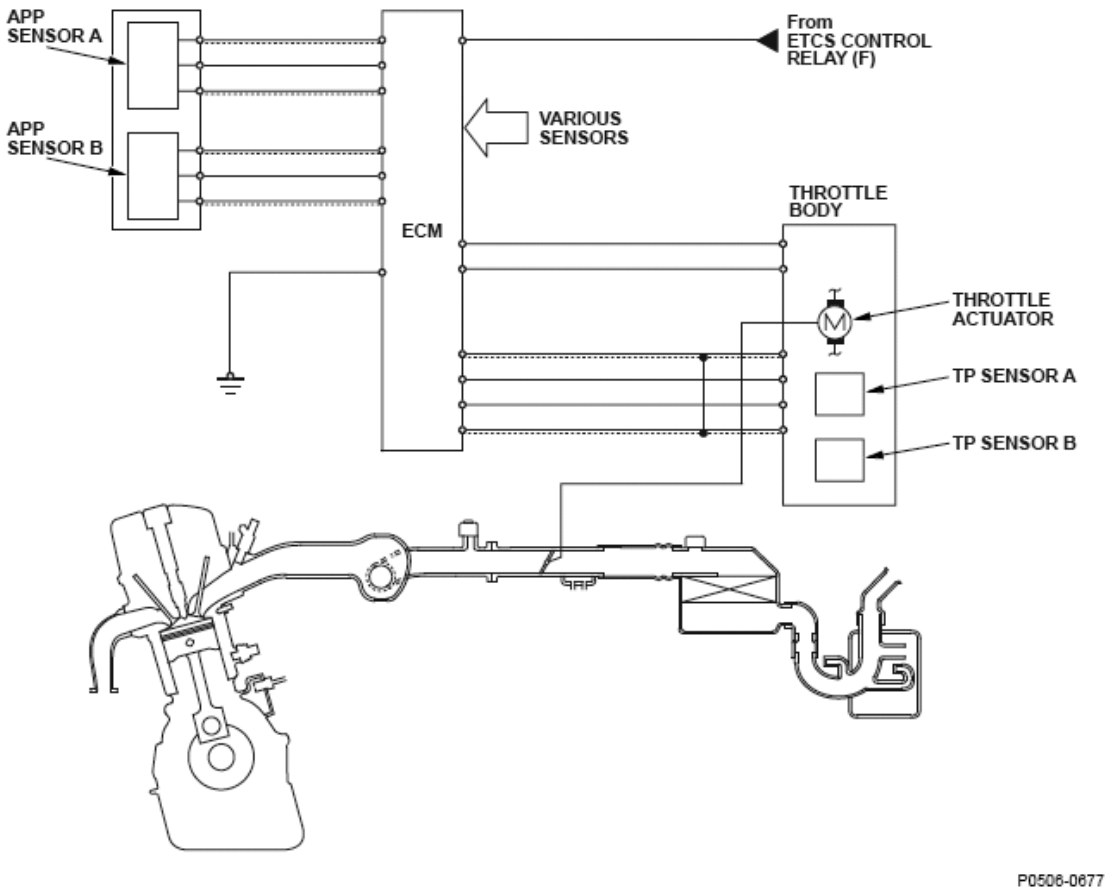


Fig. 40: Removing FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Turn the ignition switch ON (II).
22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between - 0.67 kPa and 0.67 kPa (- 0.2 and 0.2 in.Hg, - 5 and 5 mmHg), or 2.4 and 2.6 V?

    YES - Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

    NO - Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 23.

23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1454 and/or P2422 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM, then go to step 1.

NO - Go to step 28.

28. Monitor the OBD STATUS for DTC PI 454 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P145C: EVAP SYSTEM PURGE FLOW MALFUNCTION ('07 MODEL)

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P145C is indicated alone, do the troubleshooting for DTC P0496 and P0497 using freeze date for P145C.**
- **If any of the DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTC first, then recheck for P145C:**

  P0496, P0497: EVAP system purge flow

FUEL CAP WARNING MESSAGE SYSTEM TROUBLESHOOTING

Special Tools Required

- Vacuum/pressure gauge, 0-4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

When the fuel cap warning message does not go off after fuel cap tightened, or the message turned on frequently, do this troubleshooting procedure.

'07-08 model

1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Replace or tighten the cap, then go to step 13.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

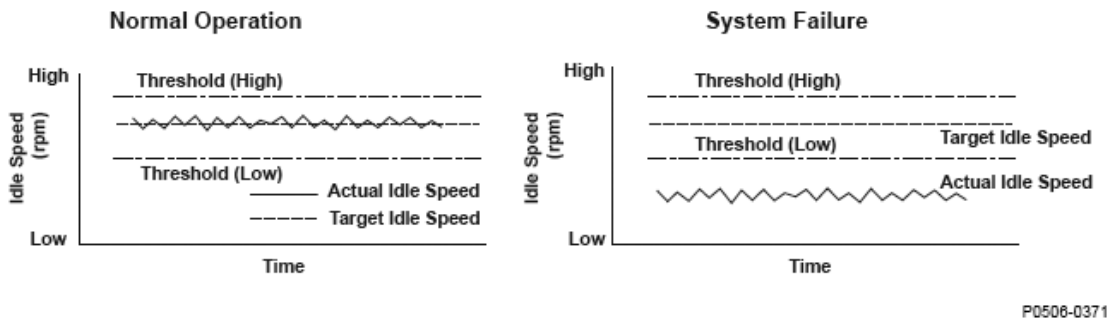


Fig. 41: Checking Fuel Fill Cap Seal And Fuel Fill Pipe Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES - Replace the fuel fill cap or the fuel fill pipe, then go to step 13.

NO - Go to step 3.

3. Reinstall and tighten the fuel fill cap.
4. Clear the DTC with the HDS.
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 1 minute.
6. Test drive at 45 mph (72 km/h) for 1 minute or more.

Does fuel cap warning message come on?

YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time.

7. Turn the ignition switch OFF.
8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge 0-30 in.Hg, to the EVAP canister purge valve as shown.

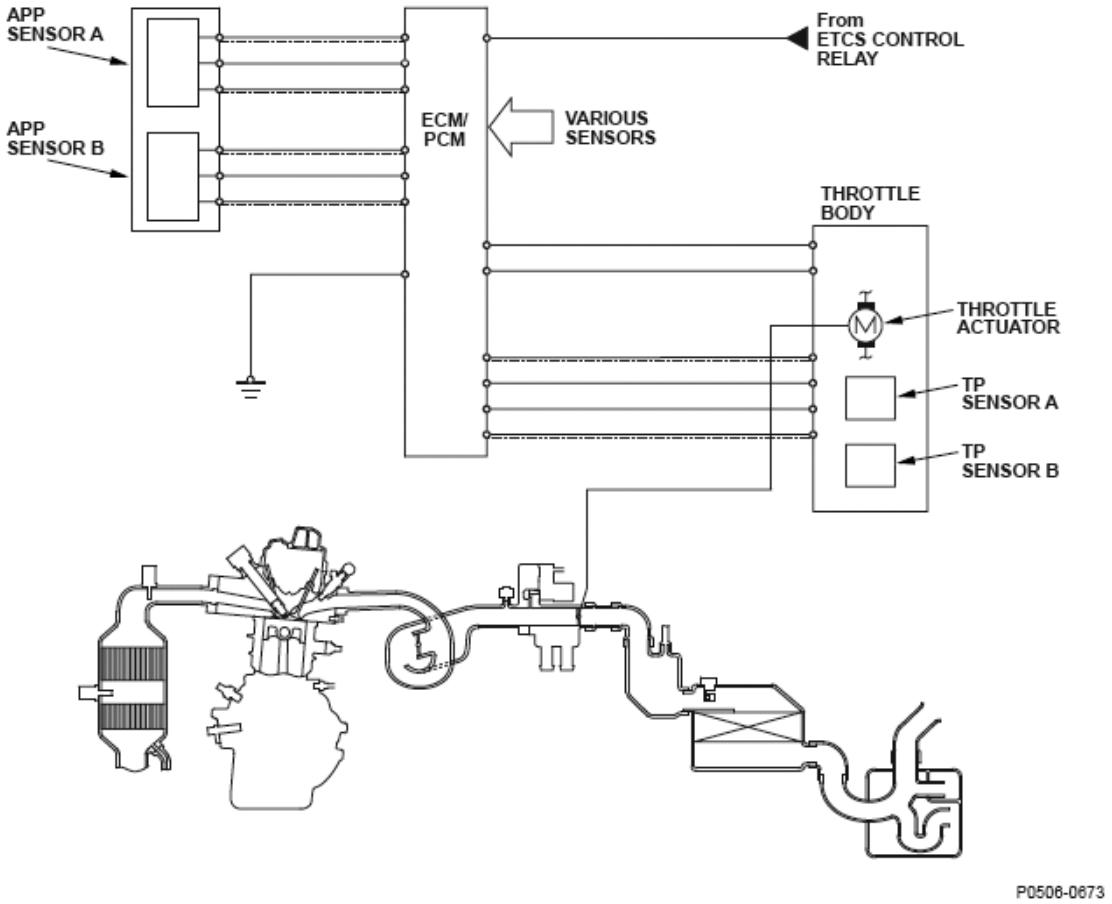


Fig. 42: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge To EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Turn the ignition switch ON (II).
10. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.
11. Select the EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release momentary?

    YES - Check for blockage at the EVAP canister purge line between EVAP canister purge valve and the EVAP canister, then go to step 12.

    NO - Replace the EVAP canister purge valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 12.

12. Reconnect all hoses.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until a radiator fan comes on, then let it idle for 1 minute.
17. Test drive at 45 mph (72 km/h) for 1 minute or more.

Does the fuel cap message come on?

YES - Go to step 1 and recheck.

NO - Troubleshooting is complete.

EVAP CANISTER REPLACEMENT

1. Raise the vehicle on a lift.
2. Remove the cover (A).

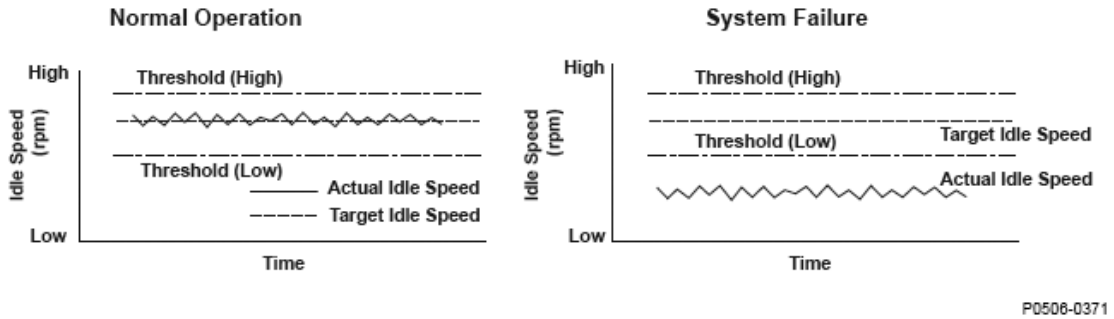


Fig. 43: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the EVAP canister guard pipe (A).

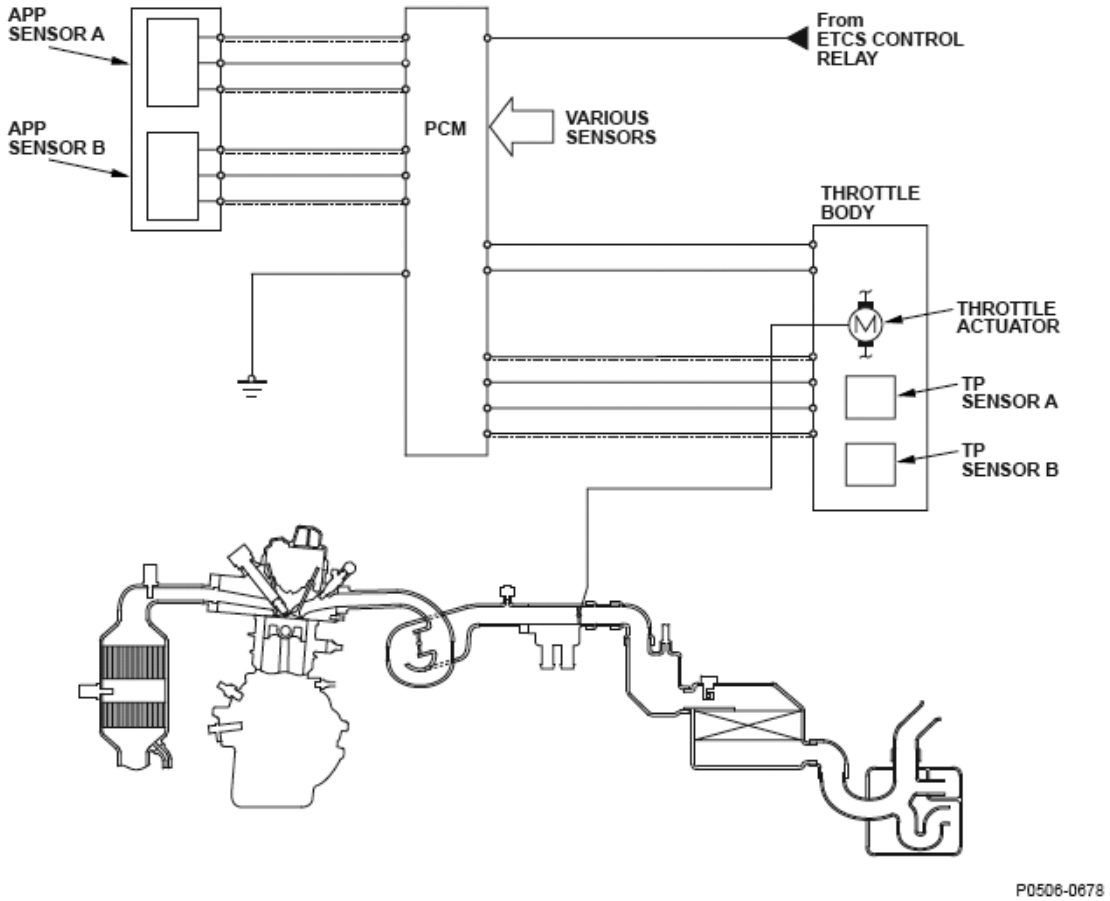


Fig. 44: Removing EVAP Canister Guard Pipe (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the hoses (A), the FTP sensor connector (B), the EVAP canister vent shut valve connector (C) and the bolts (D).

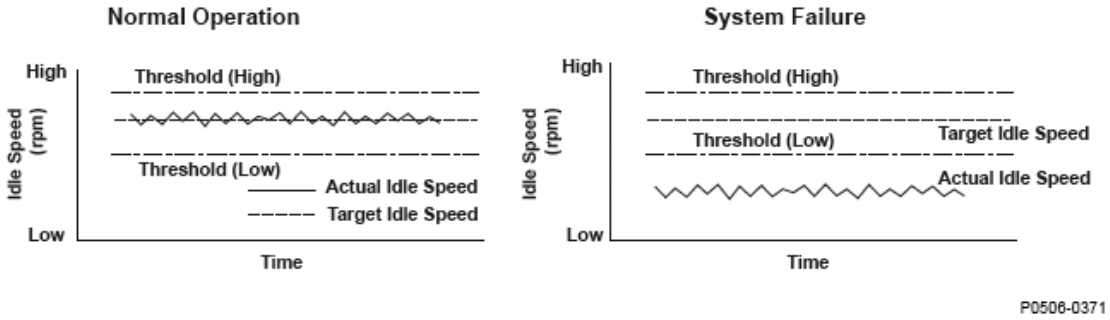


Fig. 45: Removing Hoses, FTP Sensor Connector, EVAP Canister Vent Shut Valve Connector And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the EVAP canister.
6. Remove the cap (A).

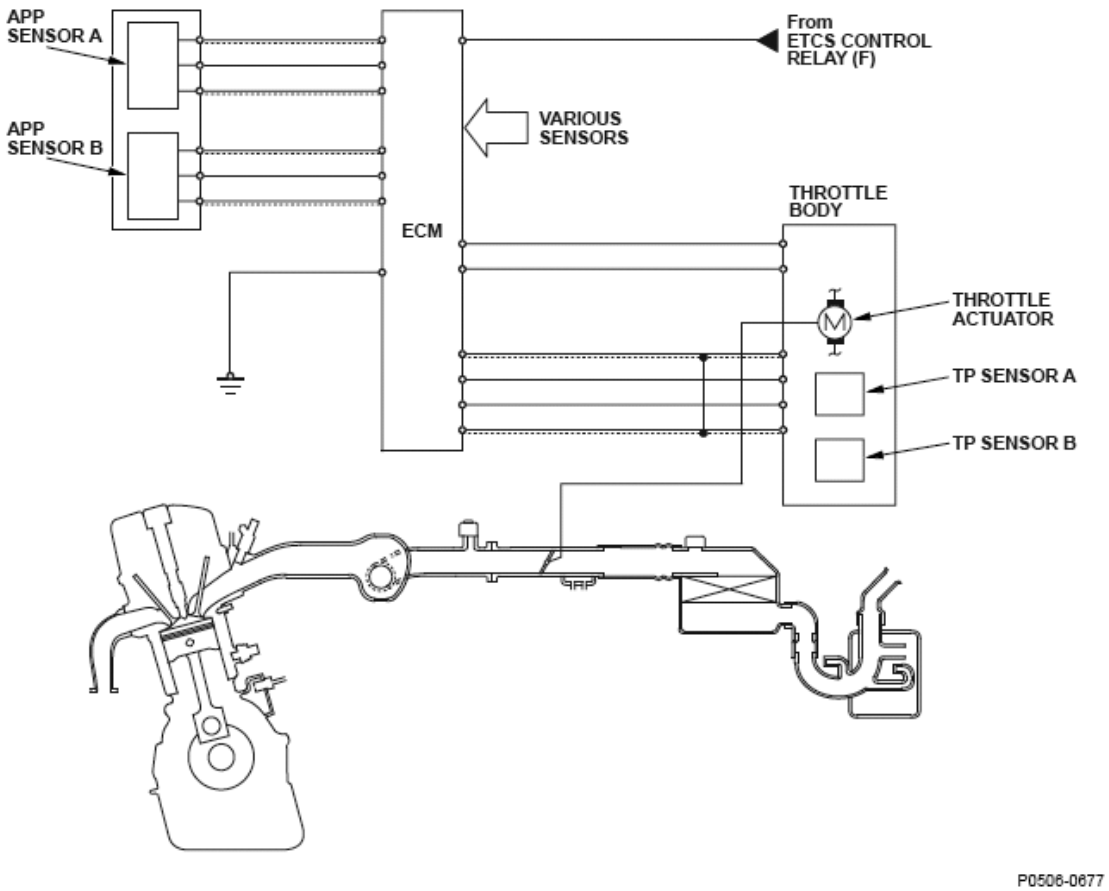


Fig. 46: Removing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the EVAP canister vent shut valve (B).
8. Install the EVAP canister vent shut valve on the new EVAP canister with new O-rings (C).

NOTE: Do not coat the O-rings with oil.

9. Install the parts in the reverse order of removal.

FTP SENSOR REPLACEMENT

1. Remove the cover (see step 1 in **EVAP CANISTER REPLACEMENT**).
2. Disconnect the FTP sensor connector (A).

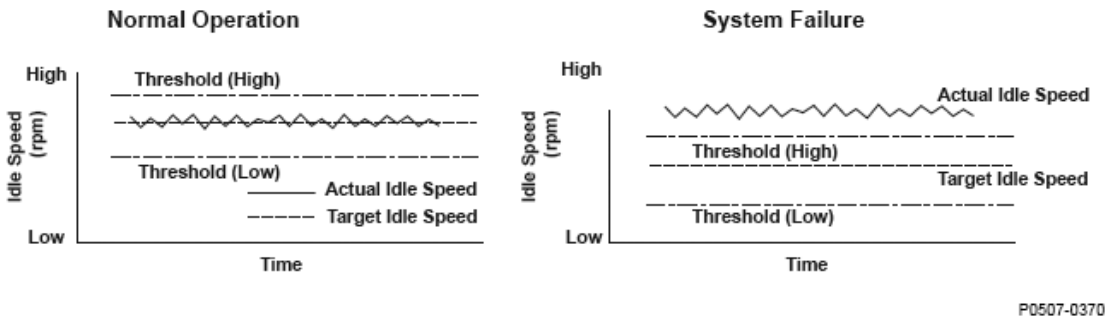


Fig. 47: Disconnecting FTP Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the hose (B), and then remove the FTP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D) and a new retainer (E).

EVAP CANISTER VENT SHUT VALVE REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Remove the cap (A).

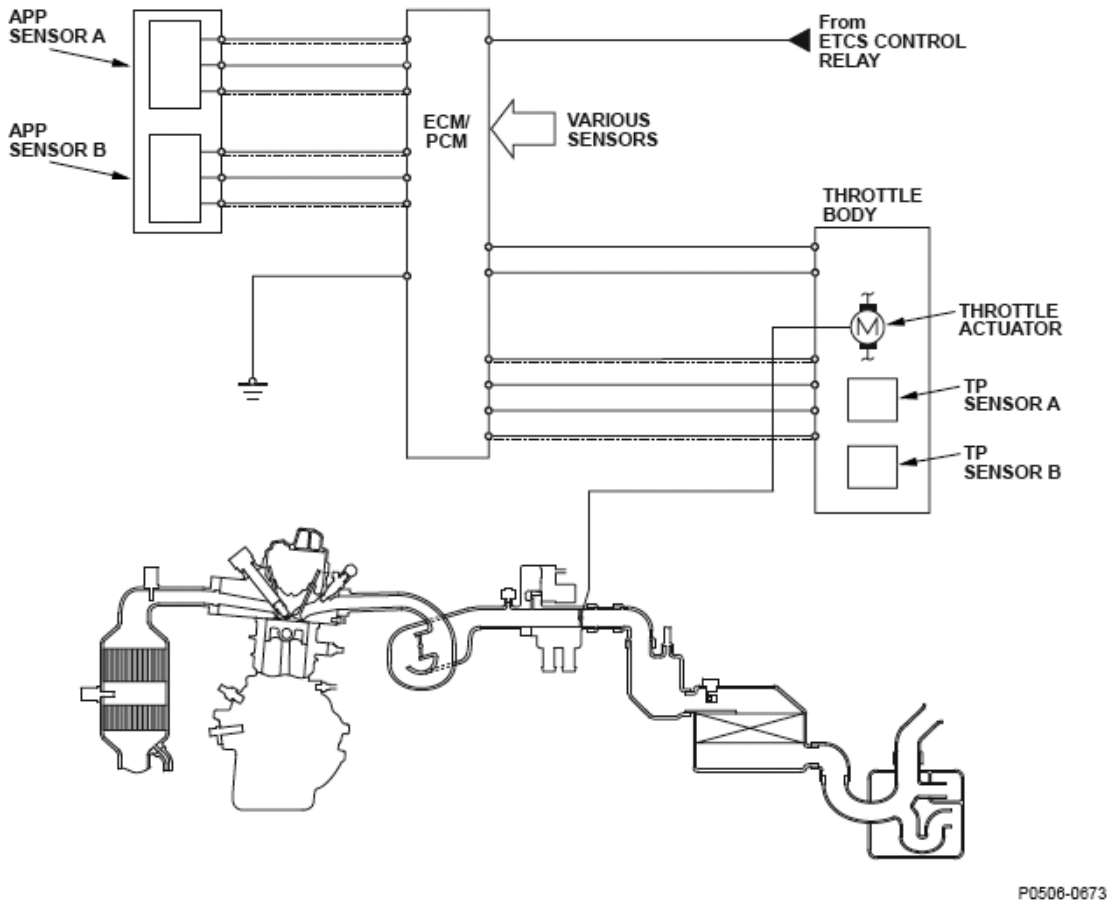


Fig. 48: Removing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the EVAP canister vent shut valve (B).
4. Install the parts in the reverse order of removal with new O-rings (C) and a new cap (A).

NOTE: Do not coat the O-rings with oil.

EVAP CANISTER PURGE VALVE REPLACEMENT

1. Remove the intake manifold cover (see **INTAKE MANIFOLD AND EXHAUST SYSTEM (K20Z3)**).

2. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
3. Relieve the fuel pressure (see **FUEL PRESSURE RELIEVING**).
4. Remove the fuel line (A).

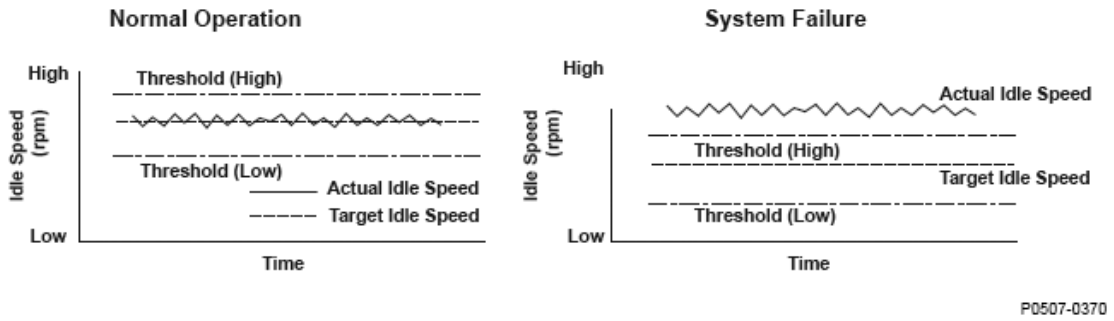


Fig. 49: Removing Fuel Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the EVAP canister purge valve 2P connector (B).
6. Remove the bolts (C) and the hoses (D), then remove the EVAP canister purge valve (E).
7. Install the parts in the reverse order of removal.

2006-08 ENGINE PERFORMANCE

EVAP System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

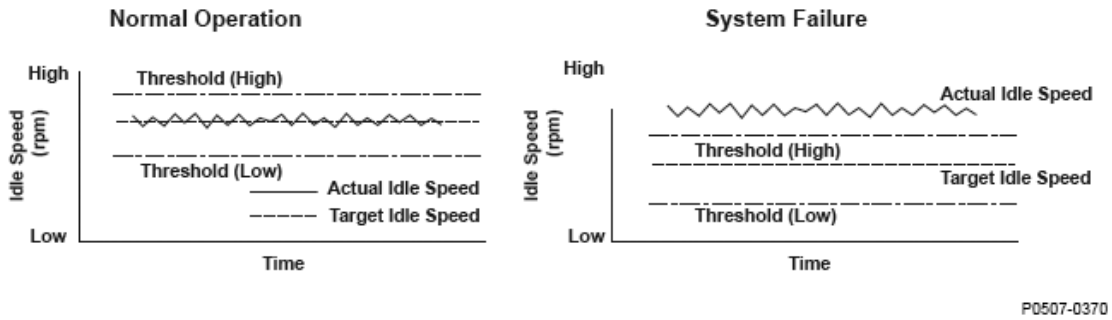


Fig. 1: Identifying EVAP System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS. Is DTC P0443 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM.

5. Turn the ignition switch OFF, and allow the engine to cool below HOT (60°C).
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0-30 in.Hg, to the hose.

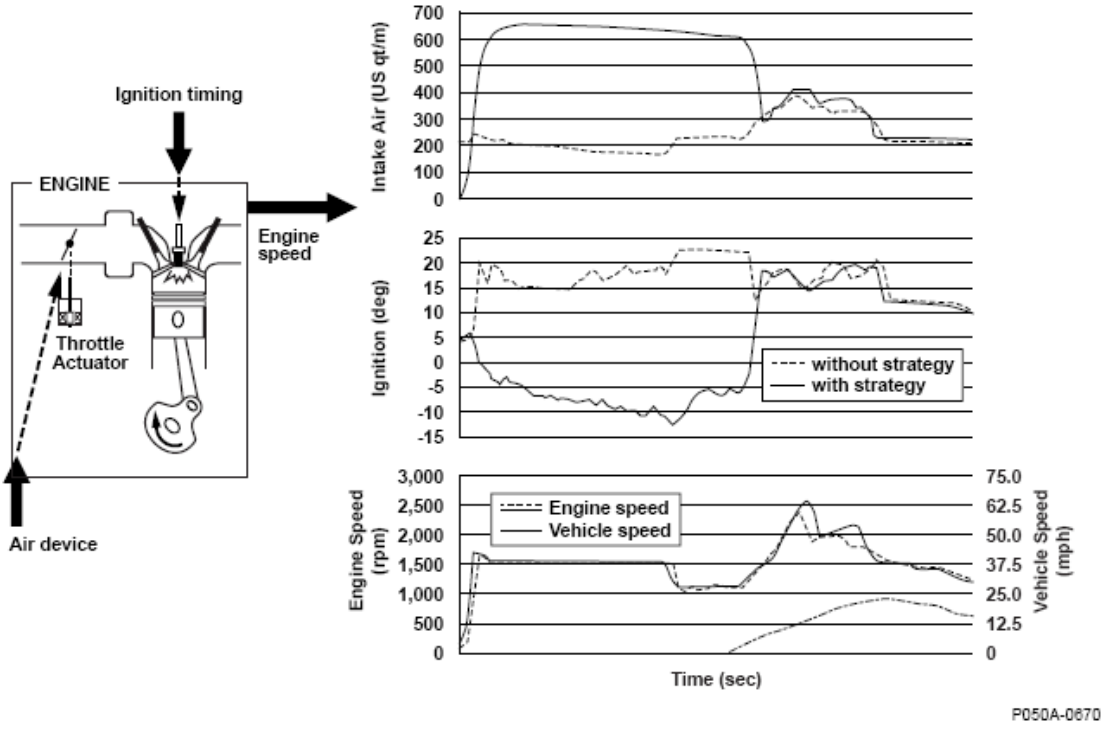


Fig. 2: Disconnecting Vacuum Hose From EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Start the engine, and let it idle.

   Is there vacuum?

   YES - Go to step 8.

   NO - Go to step 14.

8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

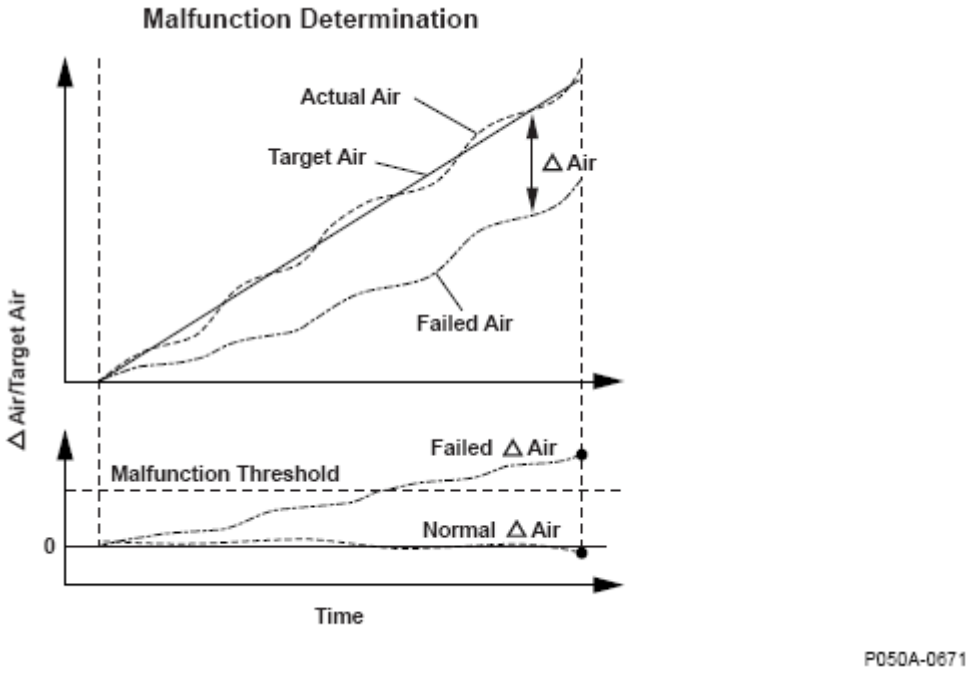


Fig. 3: Checking Continuity Between EVAP Canister Purge Valve 2P Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Go to step 23.

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (44P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

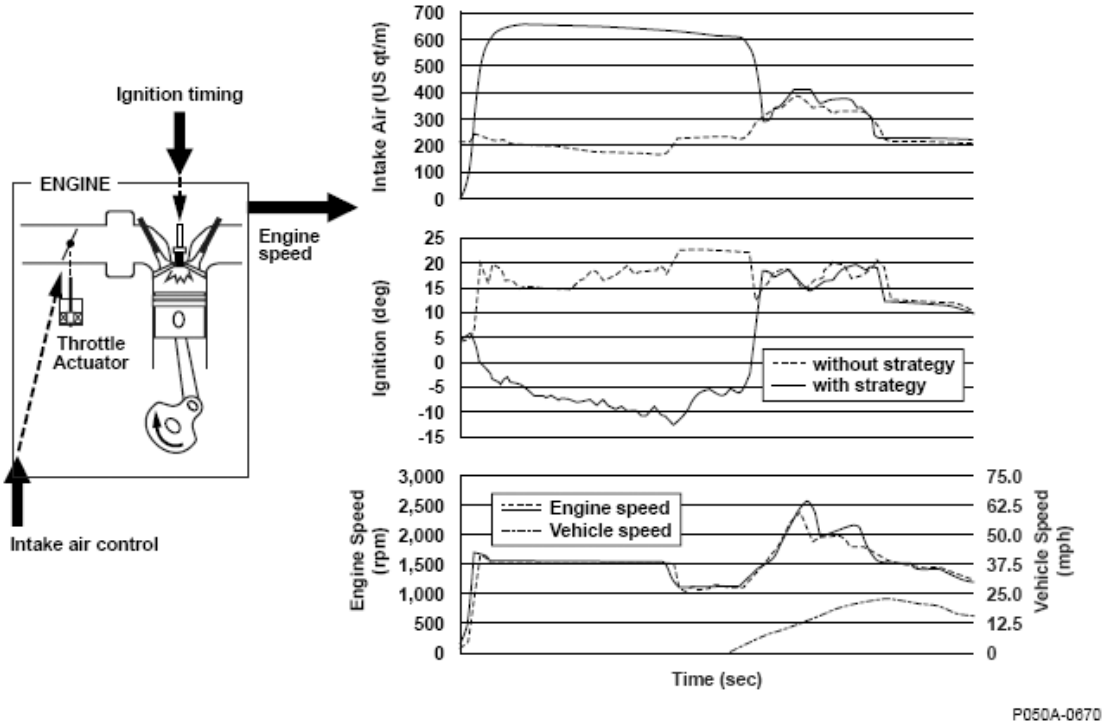


Fig. 4: Checking Continuity Between EVAP Canister Purge Valve 2P Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

NO - Go to step 30.

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

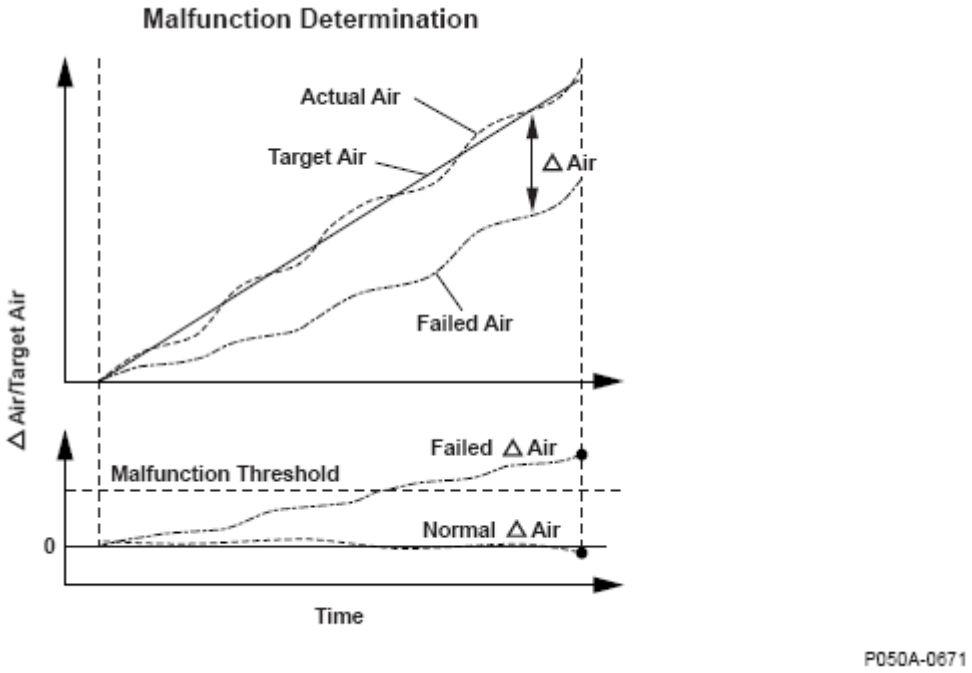


Fig. 5: Measuring Voltage Between EVAP Canister Purge Valve 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 18.

NO - Repair open in the wire between the EVAP canister purge valve and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector B (44P).
21. Check for continuity between ECM/PCM connector terminal B3 and EVAP canister purge valve 2P connector terminal No. 2.

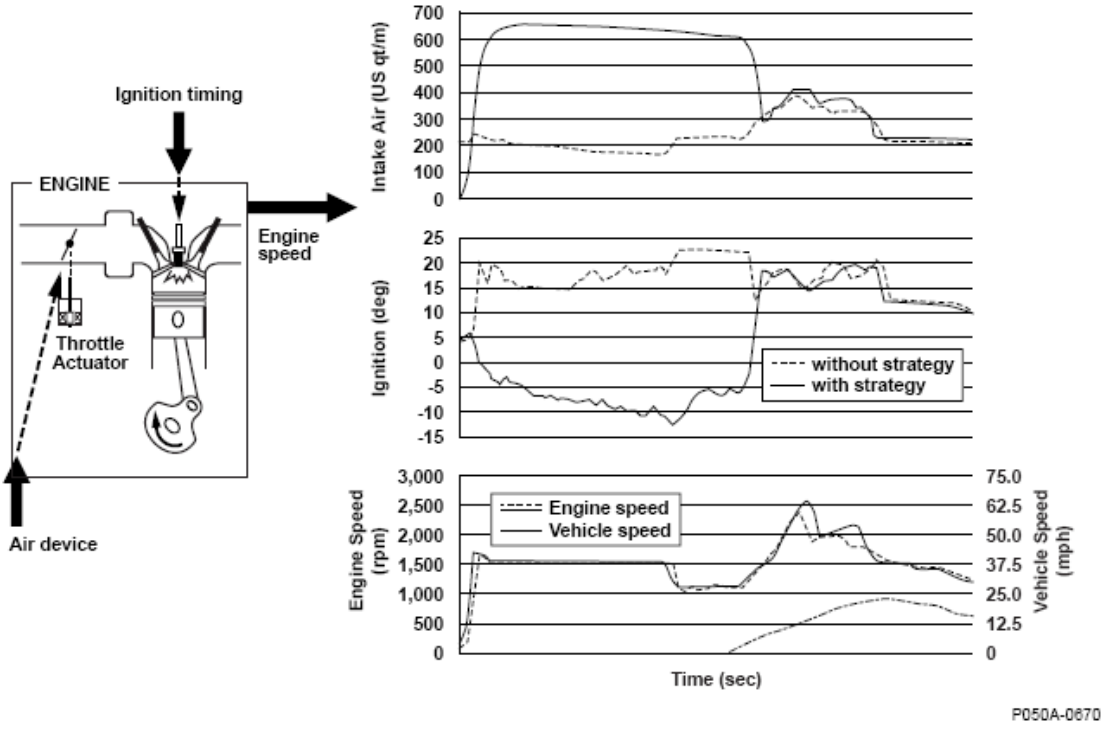


Fig. 6: Checking Continuity Between ECM/PCM Terminal B3 And EVAP Canister Purge Valve 2P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

22. At the purge valve side, measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

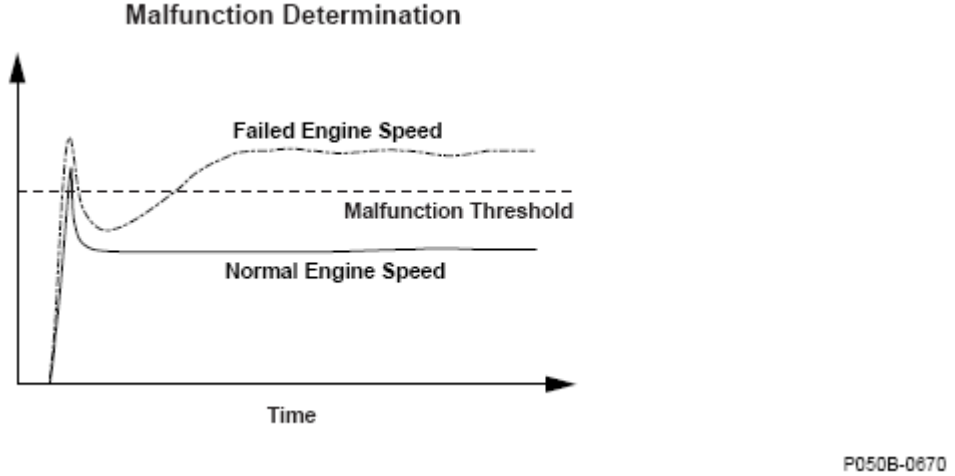


Fig. 7: Measuring Resistance Between EVAP Canister Purge Valve 2P Connector Terminals No. 1 And 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 25 ohms at room temperature?

YES - Go to step 30.

NO - Go to step 23.

23. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES - Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1.

NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTCs troubleshooting.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
32. Start the engine, and let it idle.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES - Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 32. If the ECM/PCM was substituted, go to step 1.

NO - Go to step 34.

34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 32. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC P0451: FTP SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 5.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine, and let it idle 1 minute.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0451 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0452: FTP SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about - 7.3 kPa (-2.16 in.Hg, - 55 mmHg), or 0.3 V or less indicated?

   YES - Go to step 10.

   NO - Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).

13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (2.15 in.Hg, 54.7 mmHg) or 4.90 V indicated?

    YES - Go to step 24.

    NO - Go to step 14.

14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

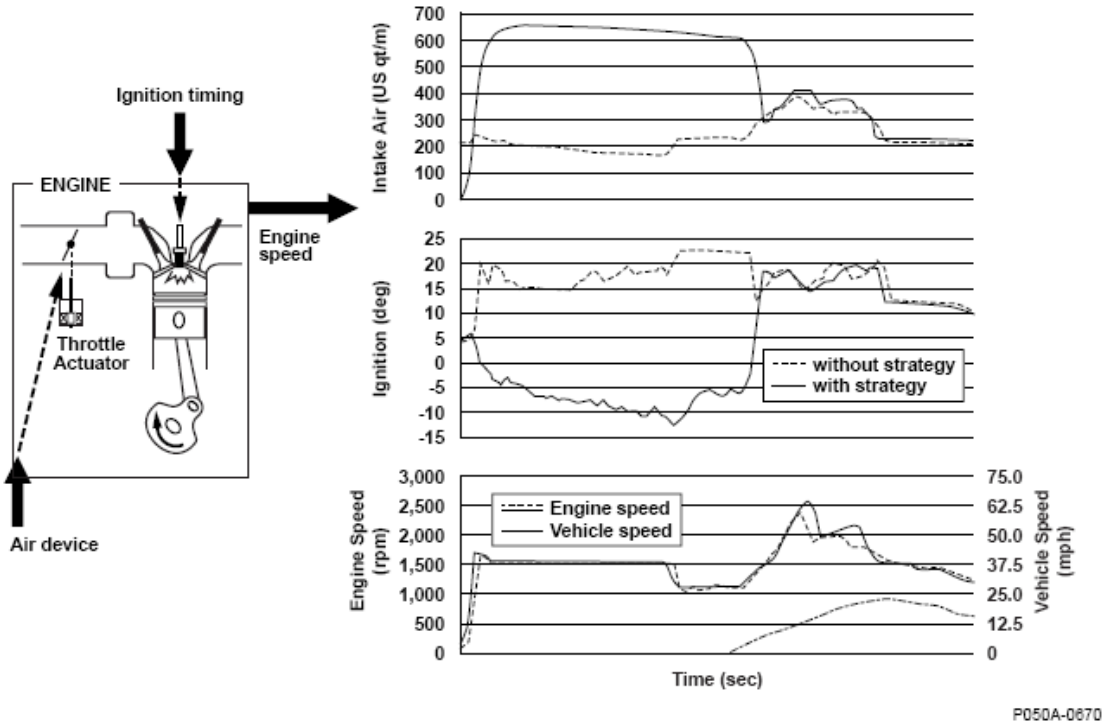


Fig. 8: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 20.

NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

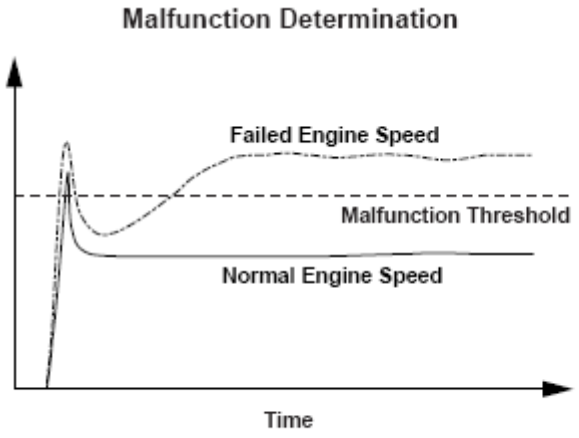


Fig. 9: Connecting FTP Sensor 3P Connector Terminal No. 1 To Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Check for continuity between ECM/PCM connector terminal A19 and body ground.

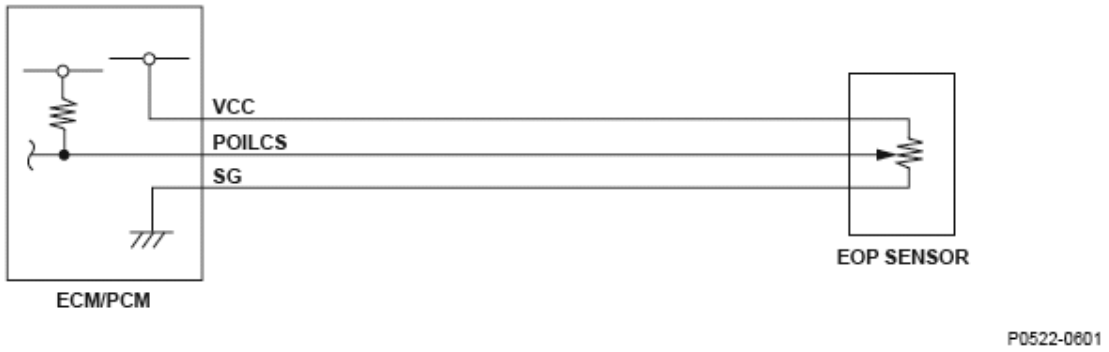


Fig. 10: Checking Continuity Between ECM/PCM Connector Terminal A19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 32.

NO - Repair open in the wire between the ECM/PCM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch OFF.
21. Jump the SCS line with the HDS.
22. Disconnect ECM/PCM connector A (44P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

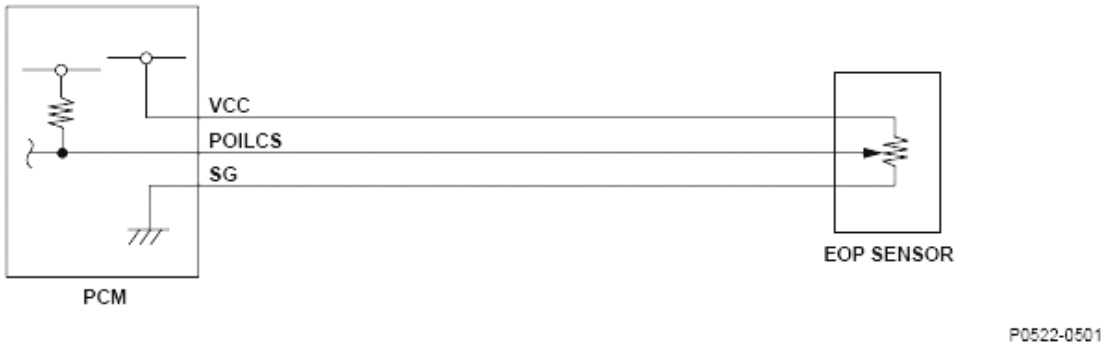


Fig. 11: Checking Continuity Between FTP Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A26) and the FTP sensor, then go to step 26.

NO - Go to step 32.

24. Turn the ignition switch OFF.
25. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

    NO - Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or

substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).

34. Start the engine, and let it idle.
35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 34. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more Indicated?

   YES - Go to step 10.

   NO - Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 10.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

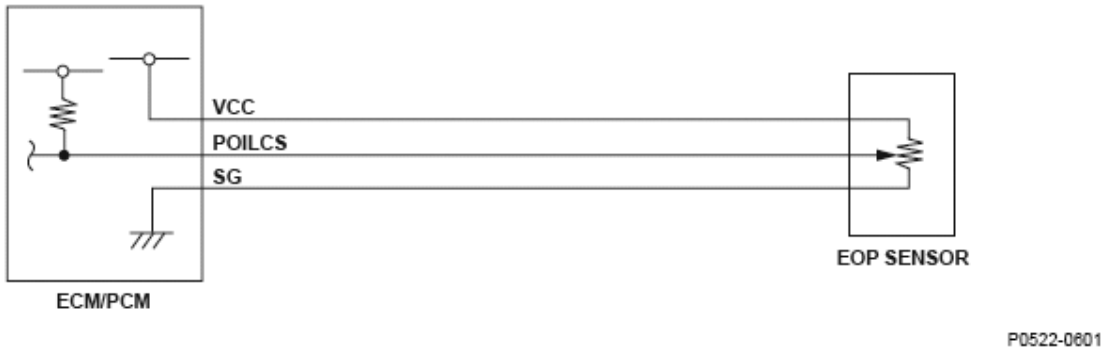


Fig. 12: Connecting FTP Sensor 3P Connector Terminals No. 2 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES - Go to step 15.

NO - Go to step 26.

15. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

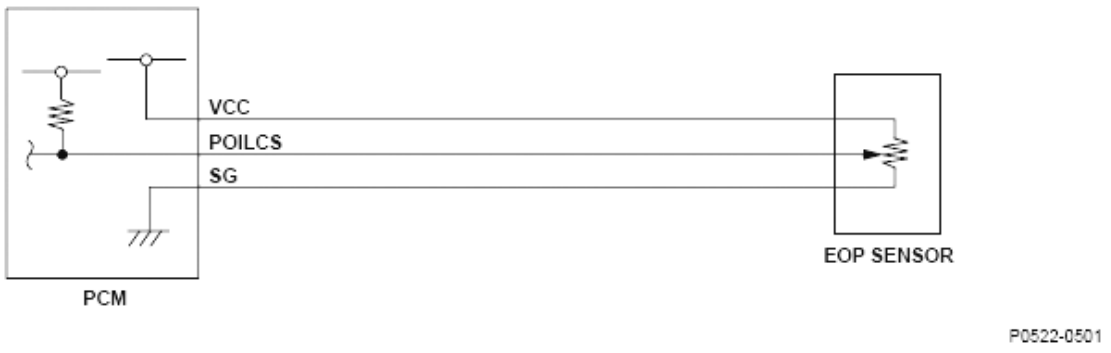


Fig. 13: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 21.

NO - Go to step 16.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

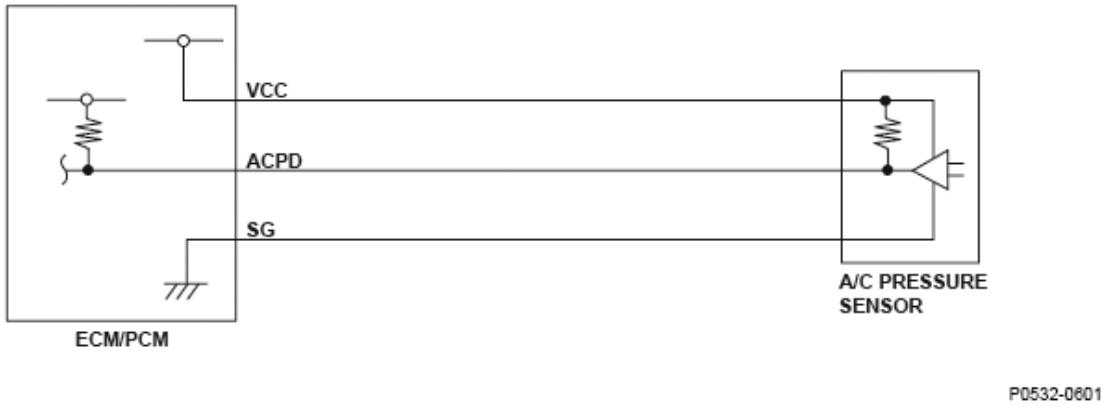


Fig. 14: Connecting FTP Sensor 3P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Check for continuity between ECM/PCM connector terminal A9 and body ground.

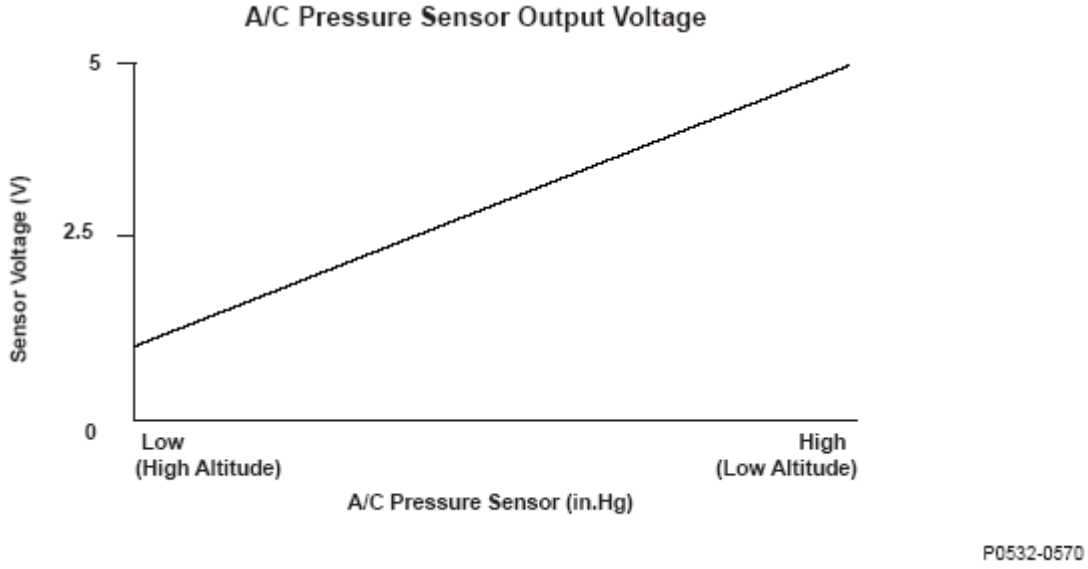


Fig. 15: Checking Continuity Between ECM/PCM Connector Terminal A9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 34.

NO - Repair open in the wire between the ECM/PCM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect ECM/PCM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

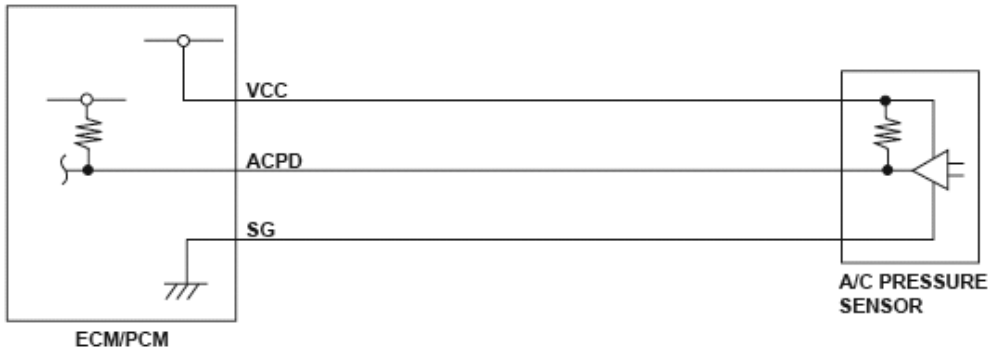


Fig. 16: Connecting FTP Sensor 3P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Check for continuity between ECM/PCM connector terminal A26 and body ground.

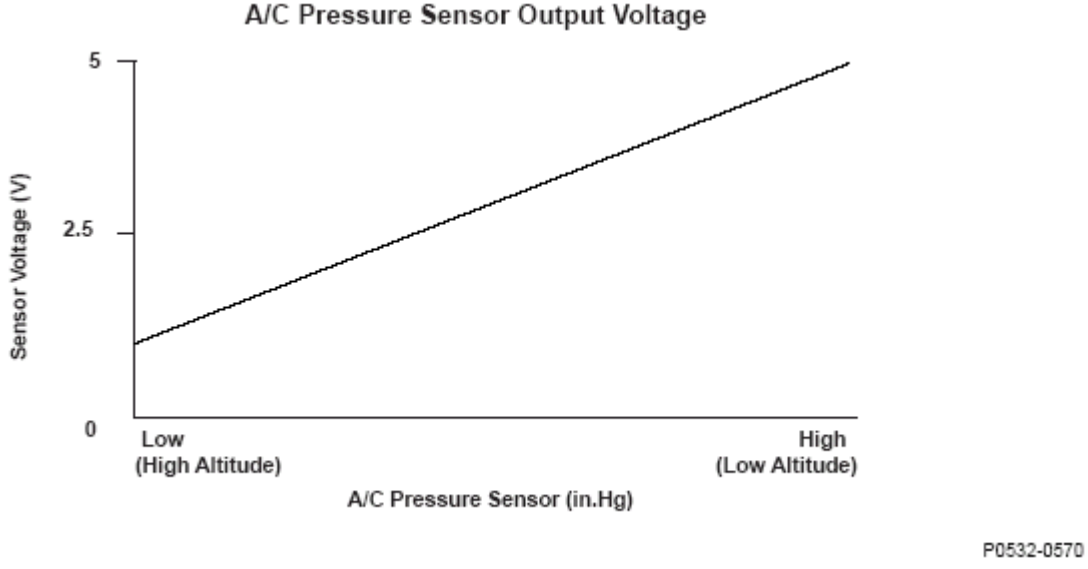


Fig. 17: Checking Continuity Between ECM/PCM Connector Terminal A26 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 34.

NO - Repair open in the wire between the ECM/PCM (A26) and the FTP sensor, then go to step 28.

26. Turn the ignition switch OFF.
27. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
28. Reconnect all connectors.
29. Turn the ignition switch ON (II).
30. Reset the ECM/PCM with the HDS.
31. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

    NO - Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.
35. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
36. Start the engine, and let it idle.
37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 36. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs

or DTCs were indicated in step 37, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 36. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0455: EVAP SYSTEM LARGE LEAK DETECTED; DTC P0456: EVAP SYSTEM VERY SMALL LEAK DETECTED

NOTE: **The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.**

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.**

1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Replace or tighten the cap, then go to step 22.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

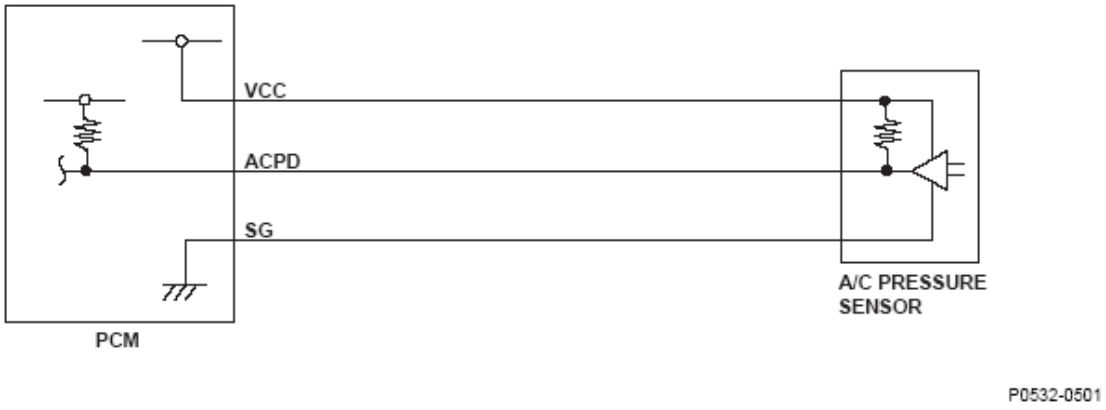


Fig. 18: Checking Fuel Fill Cap Seal And Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES - Replace the fuel fill cap or the fuel fill pipe, then go to step 22.

NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

   NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

   YES - Go to step 8.

   NO -

   - Replace the fuel tank vapor recirculation tube, then go to step 22.
   - If necessary, replace the fuel tank (see **FUEL TANK REPLACEMENT**), then go to step 22.
8. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).

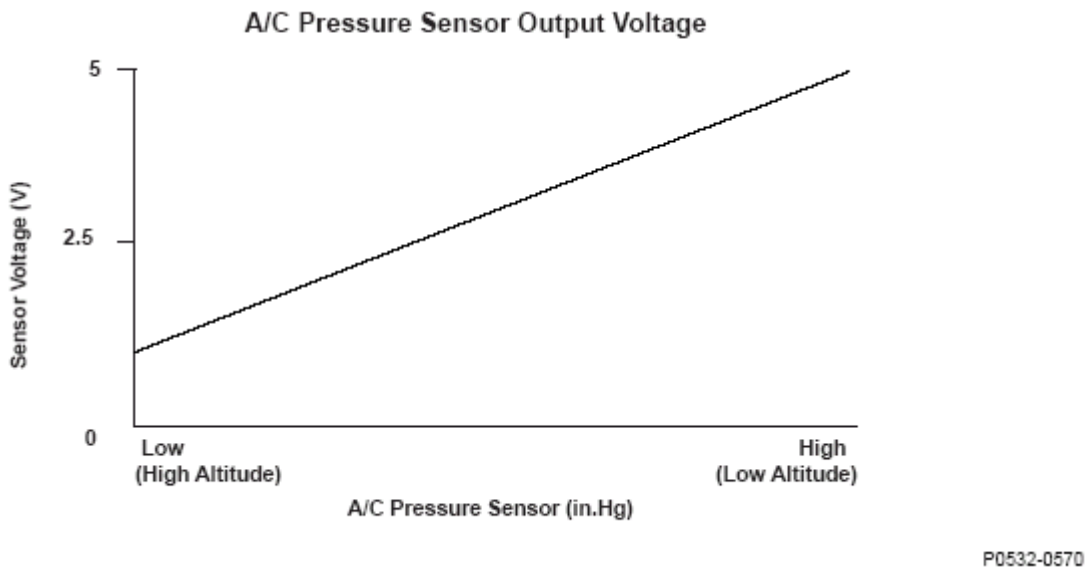


Fig. 19: Disconnecting Fuel Tank Vapor Recirculation Tube From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0-30 in.Hg, to the vacuum hose as shown.

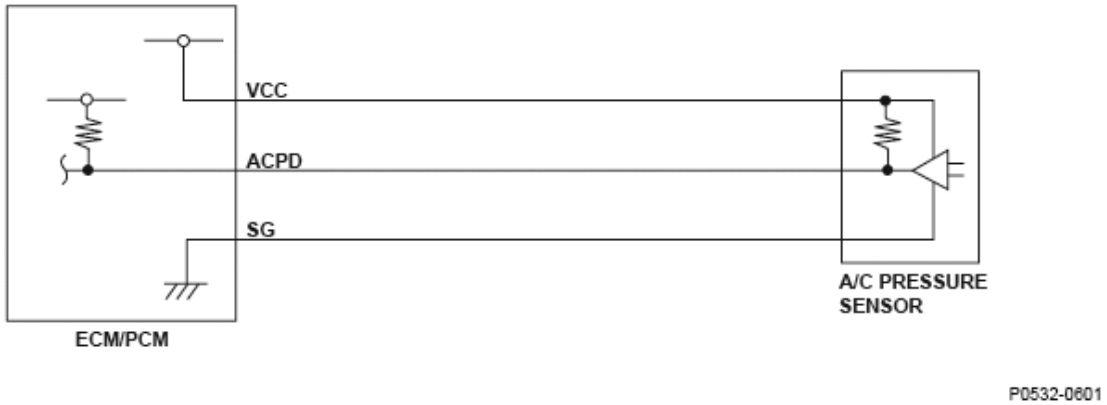


Fig. 20: Disconnecting Vacuum Hose (Purge Line) And EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch ON (II).
11. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
12. Apply vacuum to the hose until the FTP reads 1.90 V (-0.59 in.Hg,-15.1 mmHg).

NOTE: Be careful not to exceed the pressure. If you exceed the pressure, the FTP sensor can be damaged.

13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

YES - Go to step 14.

NO - Go to step 19.

14. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.
15. Disconnect the fresh air hose (A) from the EVAP canister (B), and plug the EVAP canister port (C).

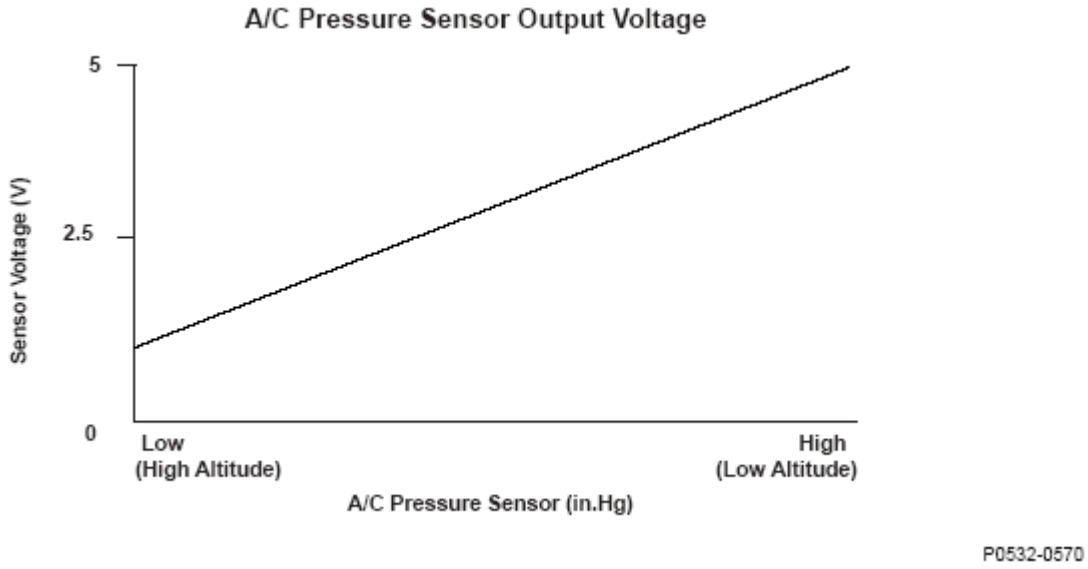


Fig. 21: Disconnecting Fresh Air Hose From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Apply vacuum to the EVAP system until the FTP reads 1.90 V (-0.59 in.Hg,-15.1 mmHg).

NOTE: Be careful not to exceed the pressure. If you exceed the pressure, the FTP sensor can be damaged.

17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

YES - Go to step 18.

NO - Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 21.

18. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

Is the line OK?

YES - Replace these parts, then go to step 21:

- FTP sensor O-ring
- EVAP canister vent shut valve case and O-ring
- EVAP canister

NO - Reconnect or repair the EVAP canister purge hose, then go to step 21.

19. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.
20. Check these parts for looseness or damage:
    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES - Check the fuel tank unit base gasket (see **FUEL TANK REPLACEMENT**), and check the fuel tank, then go to step 21.

    NO - Repair or replace the damaged parts, then go to step 21.

21. Reconnect all hoses and connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES - Troubleshooting is complete.

    NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

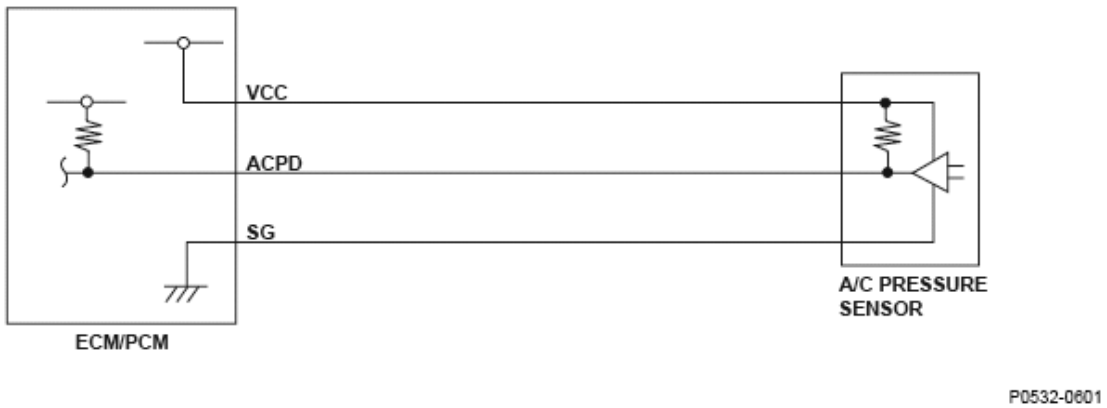


Fig. 22: Checking Fuel Fill Cap Seal And Fuel Fill Pipe Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES - Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the ECM/PCM.

   NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
11. Check the EVAP canister vent shut valve (A) operation.

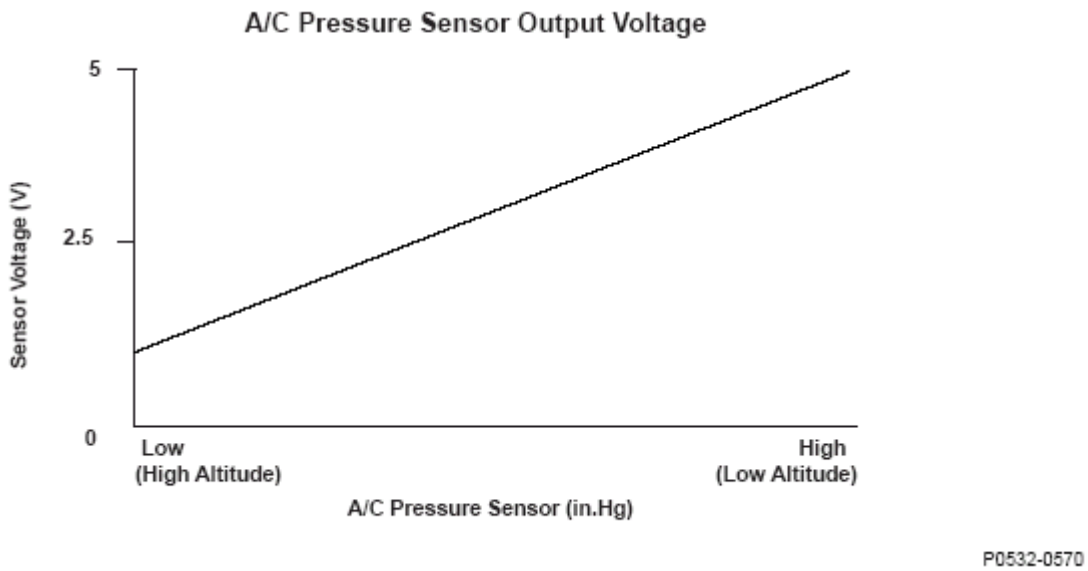


Fig. 23: Checking EVAP Canister Vent Shut Valve Operation
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the valve operate?

YES - Check the routing of the EVAP canister vent tube, then go to step 18.

NO - Go to step 12.

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0496: EVAP SYSTEM HIGH PURGE FLOW DETECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
6. Turn the ignition switch ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Troubleshooting is complete.

   NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED

Special Tools Required

- Vacuum/pressure gauge, 0-4 in.Hg, 07JAZ-001000B
- Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the fuel fill cap installation. (The cap must say "TIGHTEN TO CLICK." The cap should tighten 1/4 turn after it is tight.)

   Is the fuel fill cap installed and properly tightened?

   YES - Go to step 2.

   NO - Properly install the fuel fill cap, then go to step 23.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

   NO - Go to step 5.

5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

   Is the line OK?

   YES - Go to step 6.

   NO - Reconnect or repair the EVAP canister purge line, then go to step 23.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the vacuum hose (A) as shown.

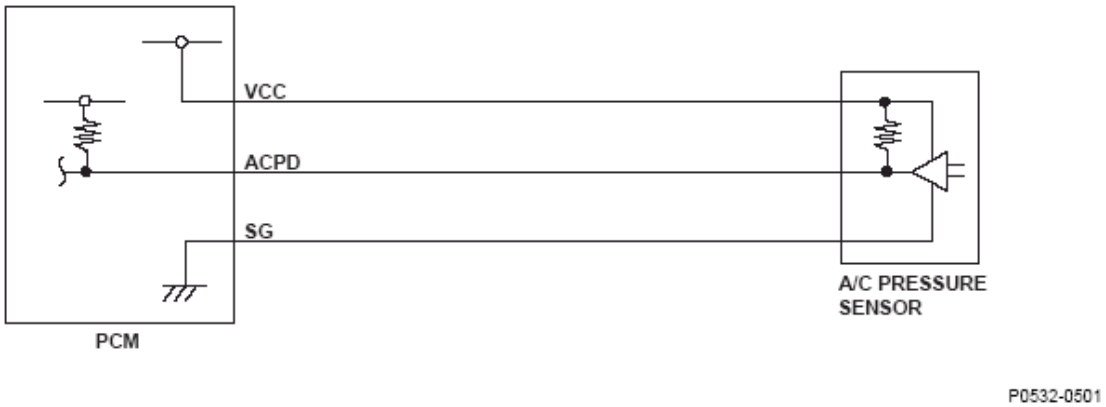


Fig. 24: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge, To Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
8. Slowly apply about 0.6 in.Hg (15 mmHg) of vacuum to the hose.

   Does it hold vacuum?

   YES - Replace the EVAP canister purge valve, then go to step 22.

   NO - Go to step 9.

9. Reconnect the vacuum hose to the EVAP canister purge valve.
10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the hose as shown.

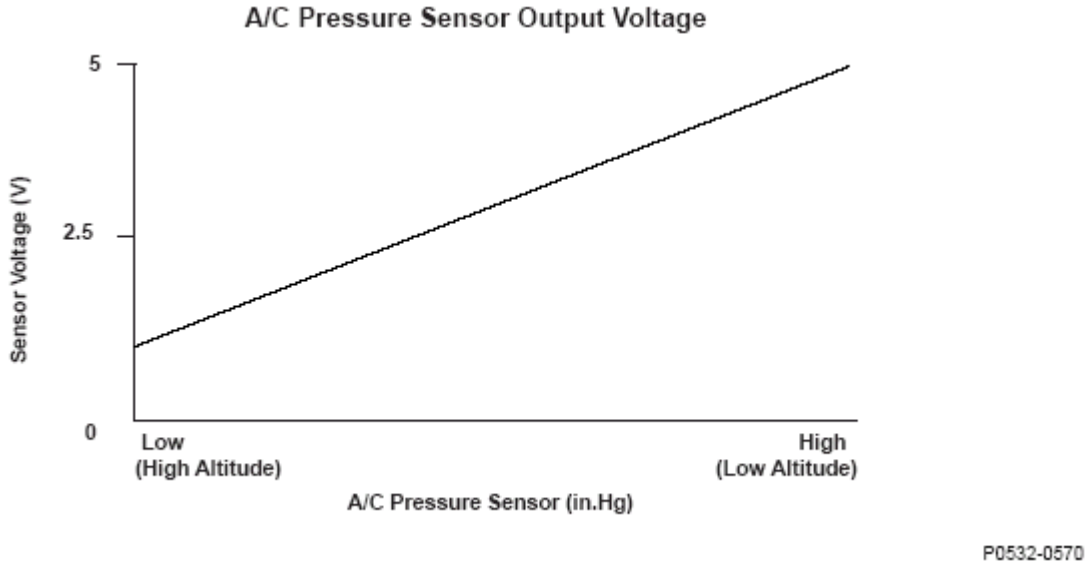


Fig. 25: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/ Gauge To Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
12. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

    Does it hold vacuum?

    YES - Check for a restricted EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 22.

    NO - Go to step 13.

13. Remove the FTP sensor with its connector connected (see **FTP SENSOR REPLACEMENT**).
14. Connect a T-fitting (A) from the vacuum pump/gauge, 0-30 in.Hg, and the vacuum pump to the FTP sensor (B) as shown.

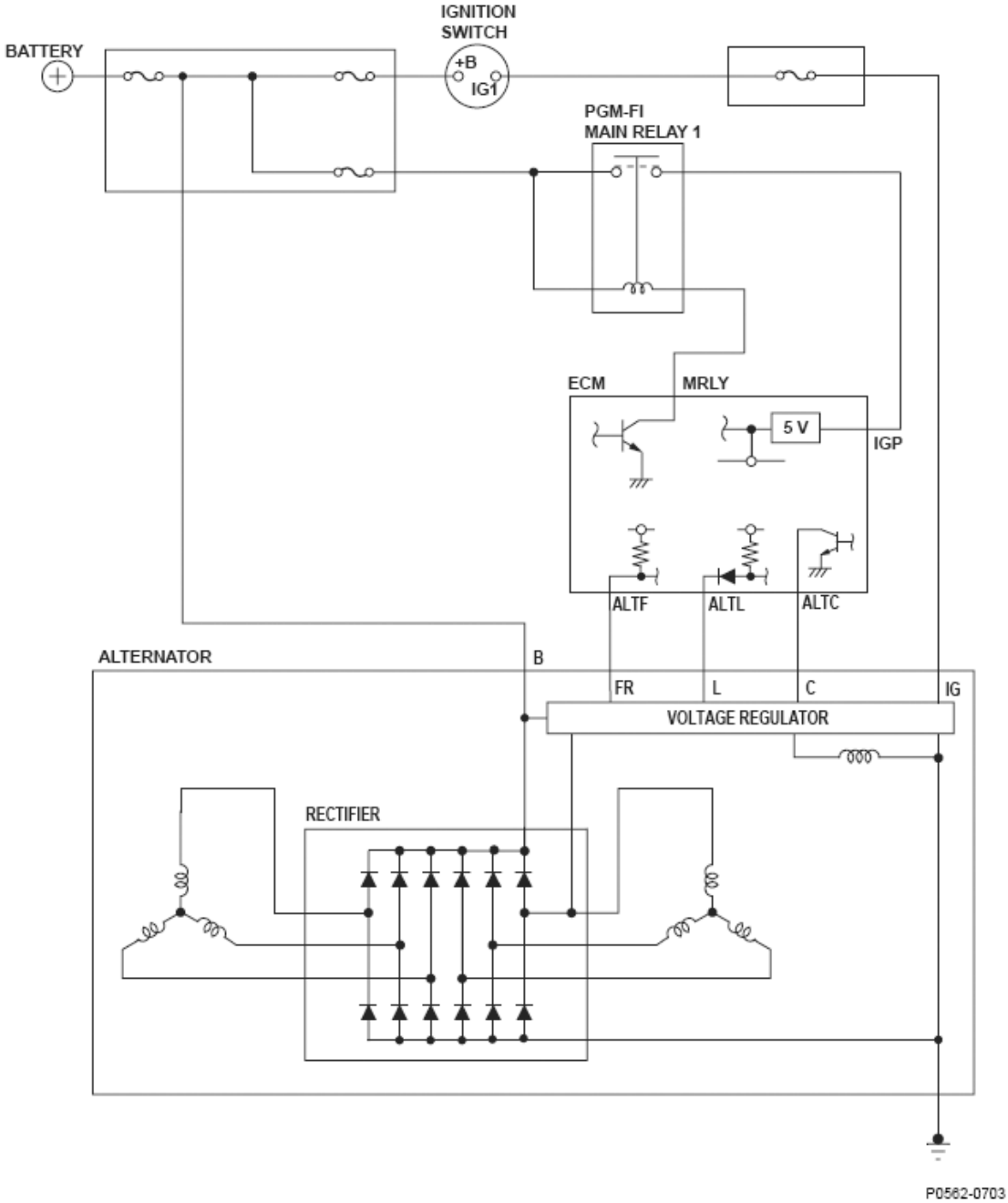


Fig. 26: Connecting T-Fitting From Vacuum Pump/Gauge And Vacuum Pump To FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
16. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.
17. Check the FTP SENSOR in the DATA LIST with the HDS.

Is the difference more than 1.1 kPa (0.31 in.Hg, 8 mmHg) before and after applying vacuum?

YES - Go to step 18.

NO - Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.
19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0-30 in.Hg, to the hose as shown.

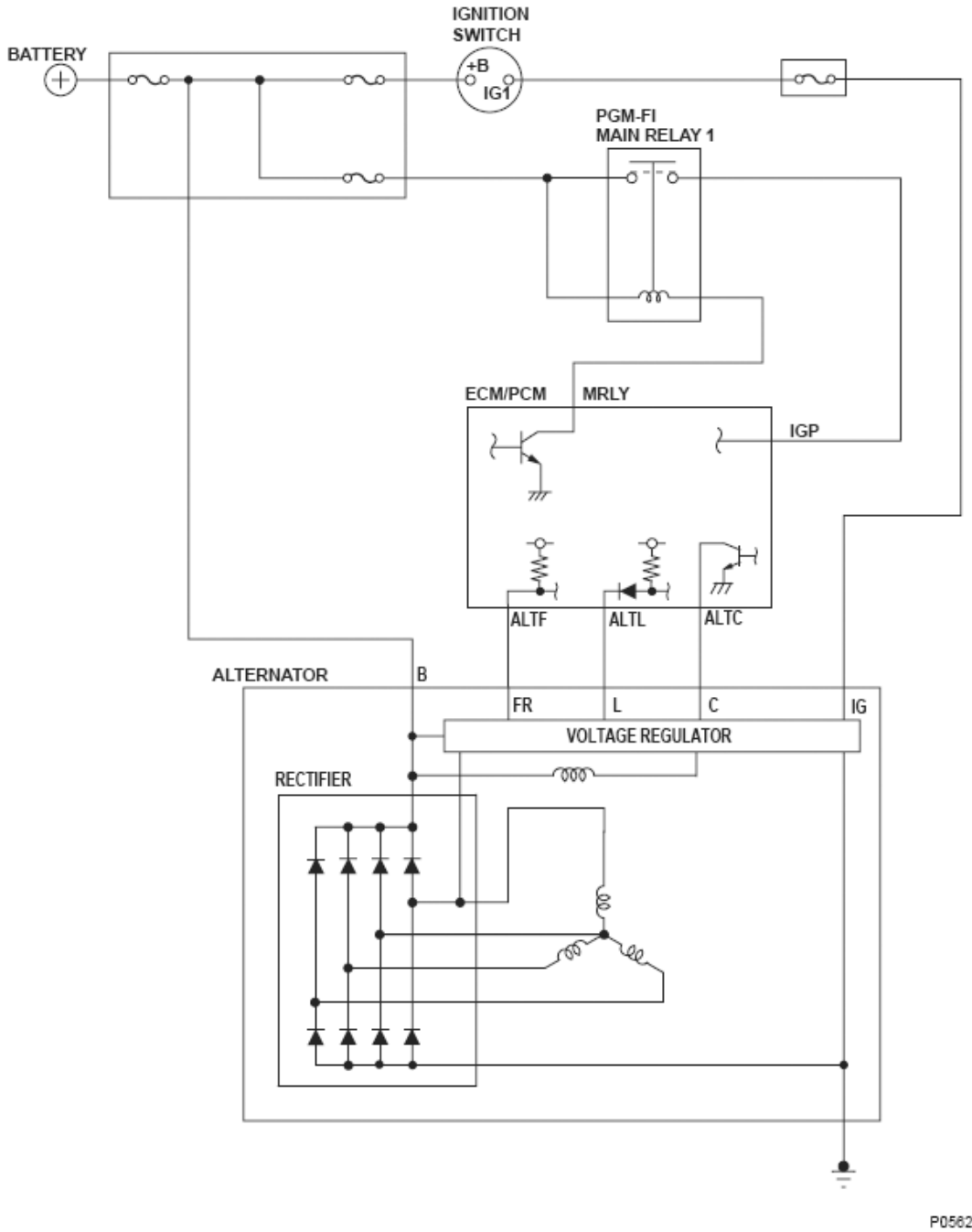


Fig. 27: Connecting T-Fitting From Vacuum Gauge And Vacuum Pump/Gauge To Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
21. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

Does the hose hold vacuum?

YES - Check for a blockage at the EVAP canister port, then go to step 22.

NO - Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 22.

22. Reconnect all hoses.
23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Troubleshooting is complete.

NO - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS. Is DTC P0498 indicated?

YES - Go to step 6.

NO - Go to step 4.

4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS. Is DTC P0498 indicated?

YES - Go to step 6.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM.

6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

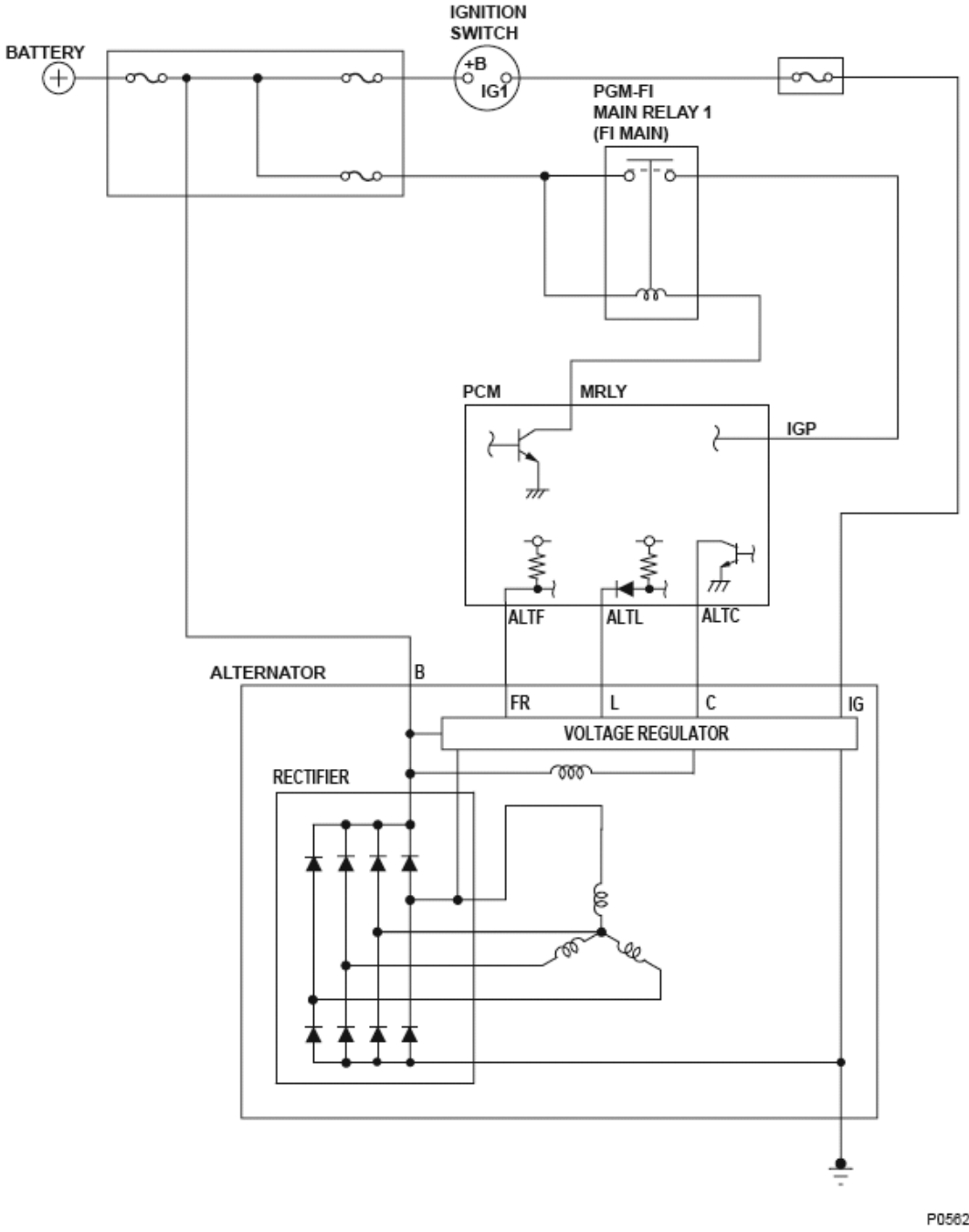


Fig. 28: Measuring Voltage Between EVAP Canister Vent Shut Valve 2P Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 10.

NO - Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay (E), then go to step 18.

10. Turn the ignition switch OFF.

11. At the valve side, measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

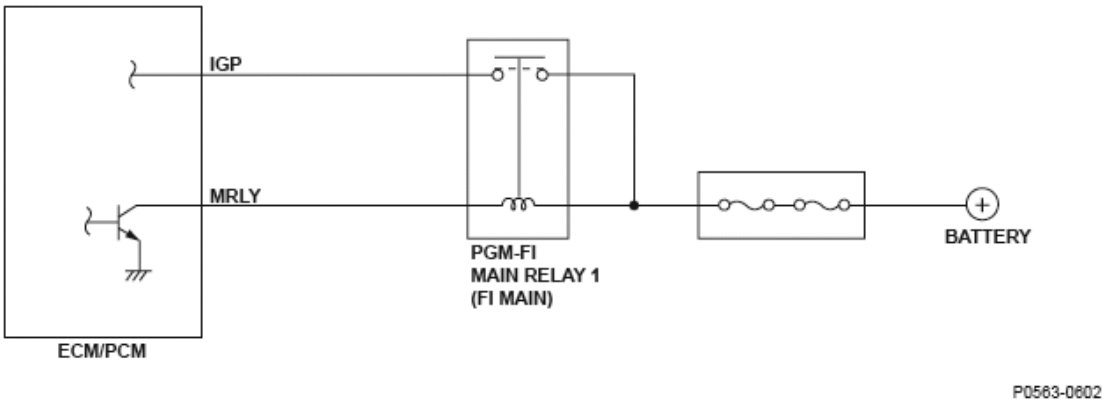


Fig. 29: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 25-30 ohms at room temperature?

YES - Go to step 12.

NO - Go to step 17.

12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector A (44P).
14. Check for continuity between ECM/PCM connector terminal A10 and body ground.

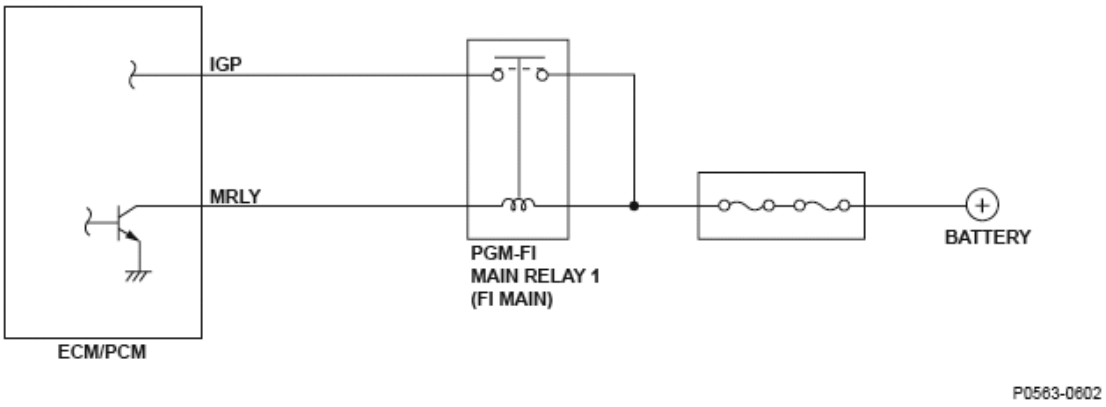


Fig. 30: Checking Continuity Between ECM/PCM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), then go to step 18.

NO - Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

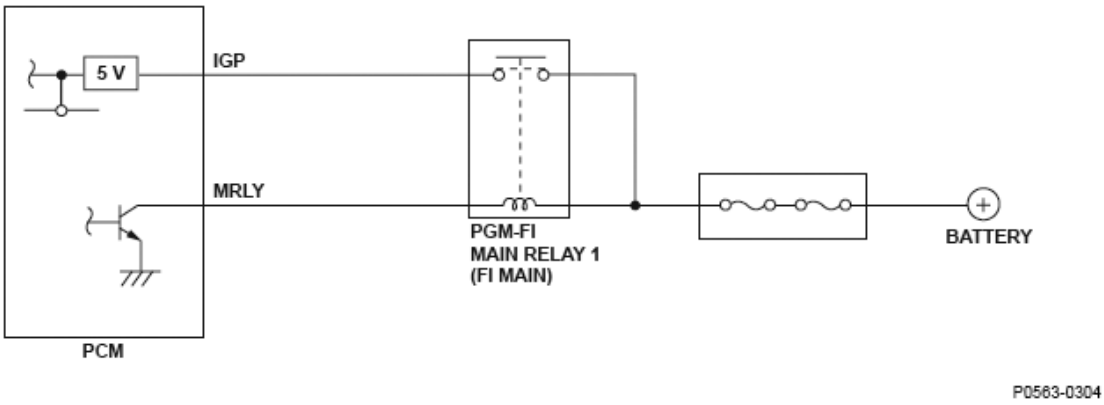


Fig. 31: Connecting EVAP Canister Vent Shut Valve Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check for continuity between ECM/PCM connector terminal A10 and body ground.

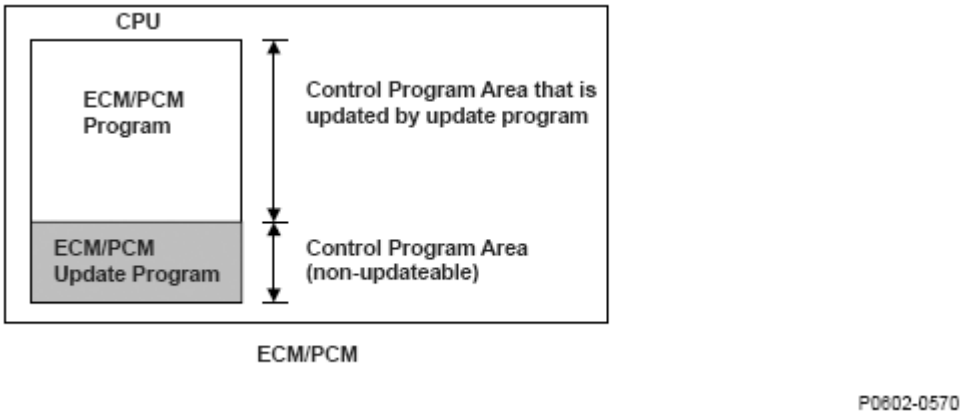


Fig. 32: Checking Continuity Between ECM/PCM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1.

    NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 27. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 27. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P0499: EVAP CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS. Is DTC P0499 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM.

5. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0499 indicated?

   YES - Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 6. If the ECM/PCM was substituted, go to step 1.

   NO - Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTCs troubleshooting.

   NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 6. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM; DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is it between - 0.67 and 0.67 kPa (- 0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

   YES - Go to step 6.

   NO - Go to step 17.

6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park on neutral) until the radiator fan comes on, then let it idle.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.

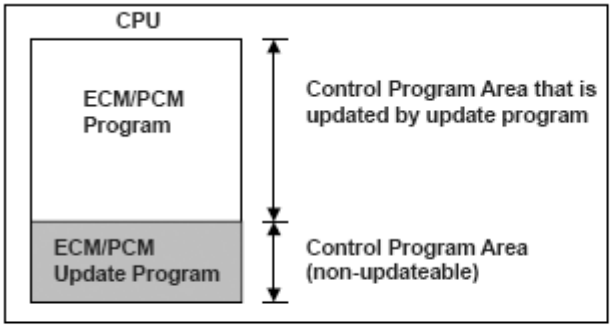


Fig. 33: Checking EVAP Canister Vent Shut Valve Operation
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the valve operate?

YES - Check for a blockage in the EVAP canister, vent hoses, and drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO - Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**), then go to step 23.

17. Disconnect the air tube (A) from the FTP sensor (B).

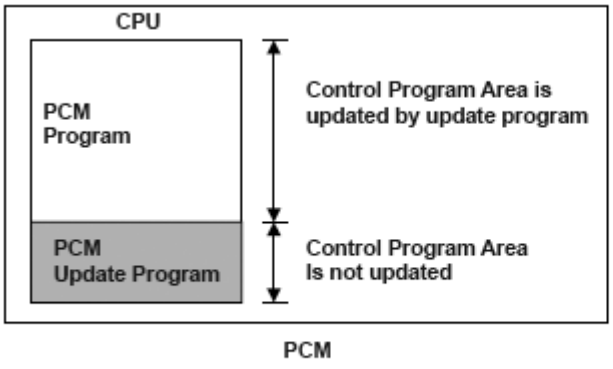


Fig. 34: Disconnecting Air Tube From FTP Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between - 0.67 and 0.67 kPa (- 0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

    YES - Check for a blockage in the FTP sensor air tube or vent, then go to step 23.

    NO - Go to step 19.

19. Turn the ignition switch OFF.

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see **FTP SENSOR REPLACEMENT**).

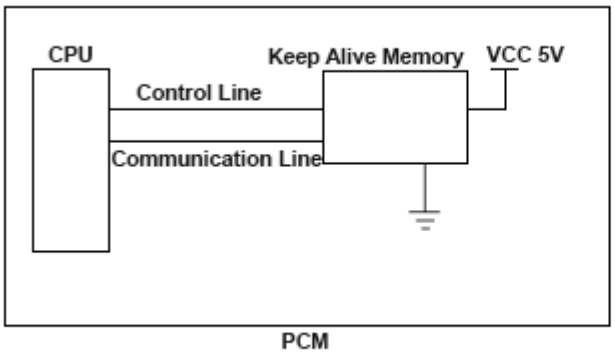


Fig. 35: Removing FTP Sensor From EVAP Canister With Connector Connected
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Turn the ignition switch ON (II).
22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between - 0.67 kPa and 0.67 kPa (- 0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

    YES - Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

    NO - Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 23.

23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
27. Check for Temporary DTCs or DTCs with the HDS.

    If DTC P1454 and/or P2422 indicated?

    YES - Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

    NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

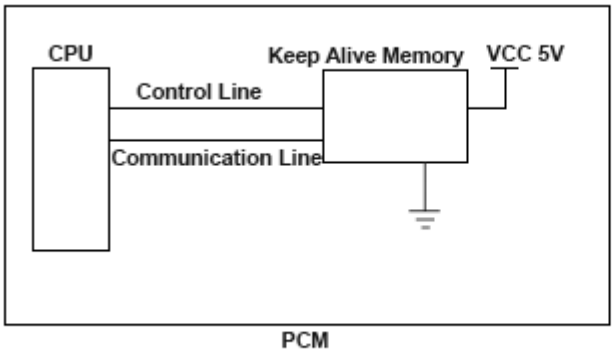
    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the FTP

sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EVAP CANISTER REPLACEMENT

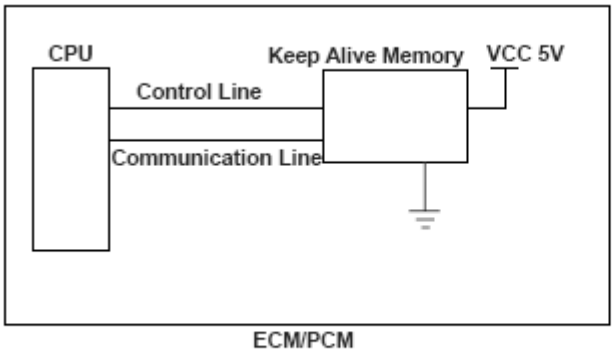
1. Remove the cover (A).



P0603-0571

Fig. 36: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the EVAP canister guard pipe (A).



P0603-0570

Fig. 37: Removing EVAP Canister Guard Pipe (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the hoses (A), the FTP sensor connector (B), the EVAP canister vent shut valve connector (C) and the bolts (D).

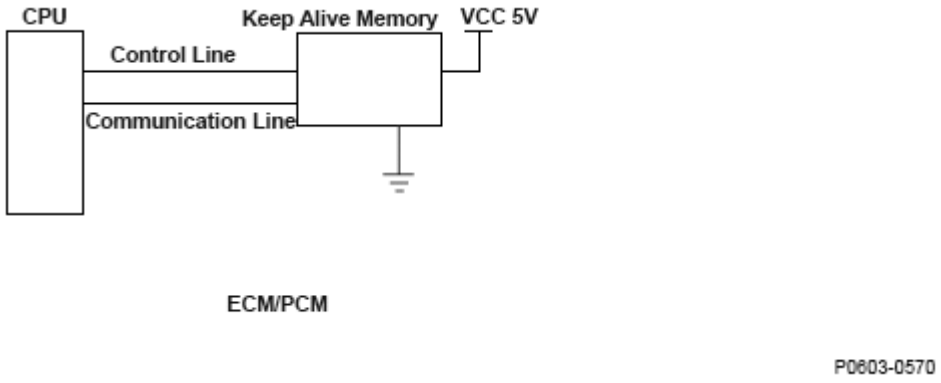


Fig. 38: Removing Hoses, FTP Sensor Connector, EVAP Canister Vent Shut Valve Connector And Bolts (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the EVAP canister.
5. Remove the cap (A).

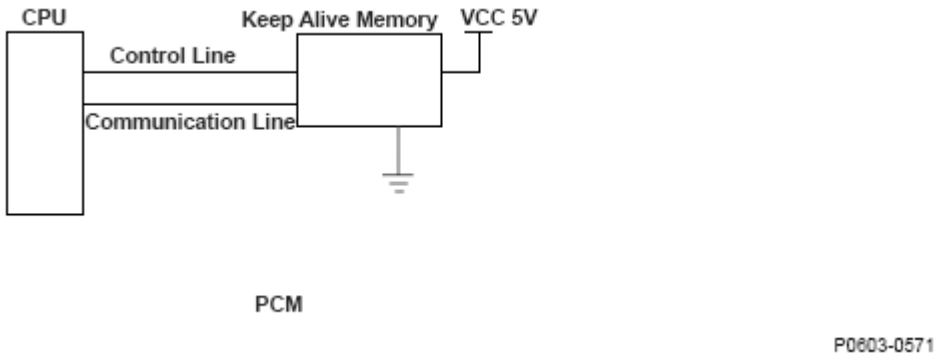


Fig. 39: Removing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the EVAP canister vent shut valve (B).
7. Install the EVAP canister vent shut valve in the new EVAP canister with new O-rings (C).

NOTE: Do not coat the O-rings with oil.

8. Install the parts in the reverse order of removal.

FTP SENSOR REPLACEMENT

1. Remove the cover (see step 1 in **EVAP CANISTER REPLACEMENT**).
2. Disconnect the FTP sensor connector (A).

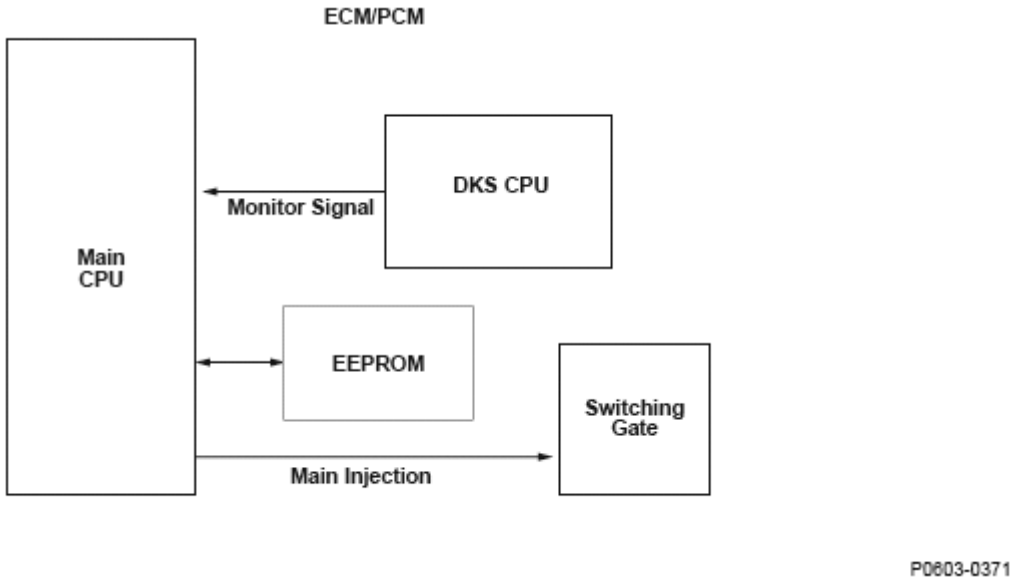


Fig. 40: Disconnecting FTP Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the hose (B), and remove the FTP sensor (C).
4. Install the sensor in the reverse order of removal with a new O-ring (D) and a new retainer (E).

EVAP CANISTER VENT SHUT VALVE REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Remove the cap (A).

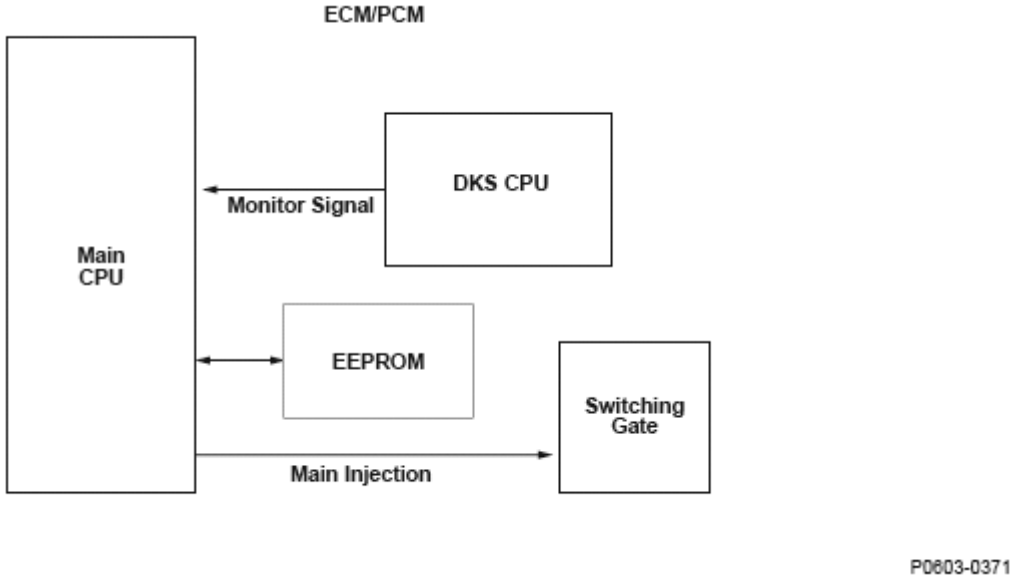


Fig. 41: Removing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the EVAP canister vent shut valve (B).
4. Install the parts in the reverse order of removal with new O-rings (C) and a new cap.

NOTE: Do not coat the O-rings with oil.

EVAP CANISTER PURGE VALVE REPLACEMENT

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the hose (A) and the EVAP canister purge valve 2P connector (B).

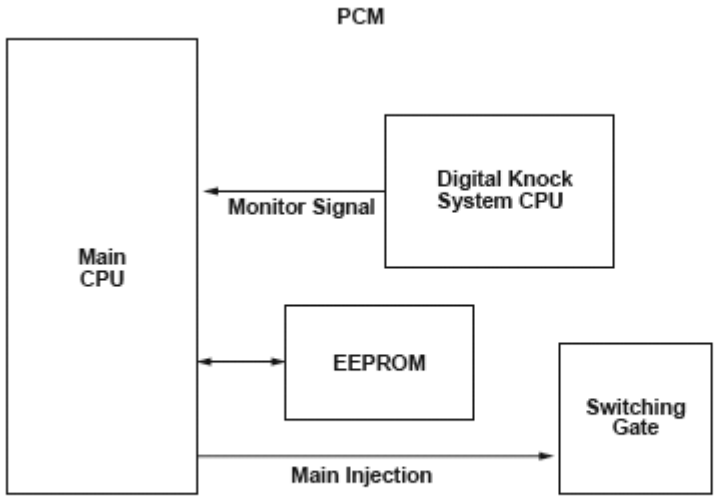


Fig. 42: Disconnecting Hose And EVAP Canister Purge Valve 2P Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the EVAP canister purge valve (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

2006-09 ENGINE PERFORMANCE

Fuel and Emissions Systems (K20Z3) - Civic

SPECIAL TOOLS

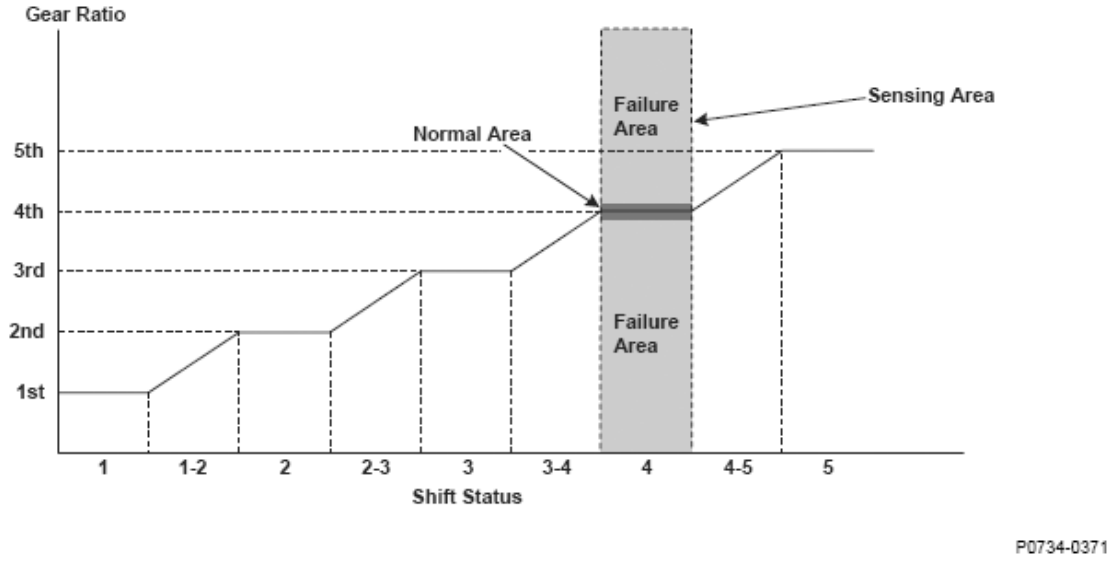


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

SERVICE INFORMATION

Periodically, new ECM software or new service procedures may become available. Always check online for he latest software or service information troubleshooting.

OPENS AND SHORTS

"Open" and "short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs) this can sometimes mean something works, but not the way it's supposed to.

HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

NOTE: **If the ignition switch is turned ON (II), and the engine is not started, the MIL stays on for 15-20 seconds (see MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)).**

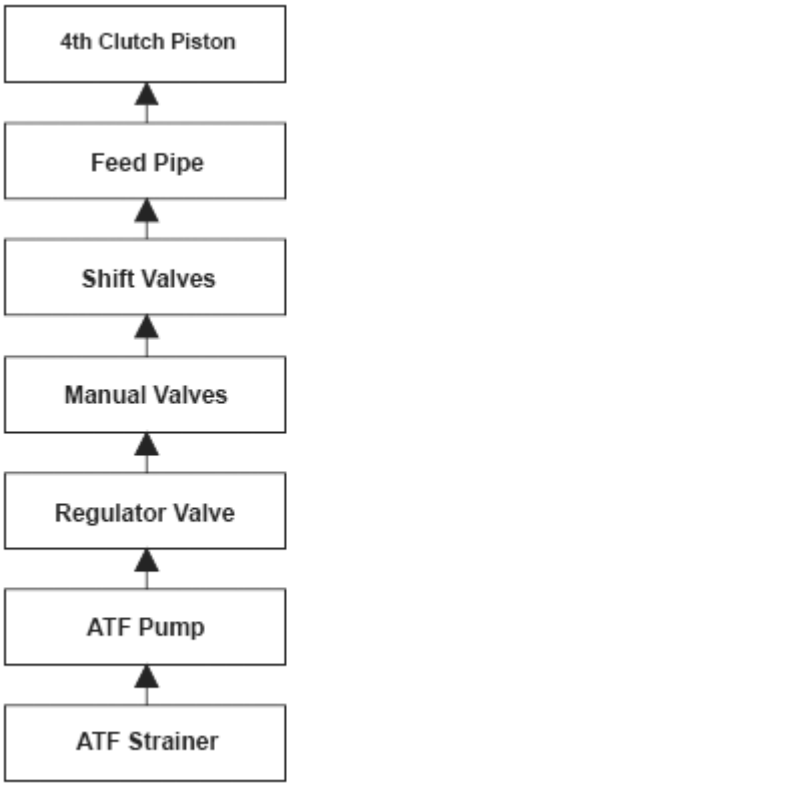


Fig. 2: Identifying MIL
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

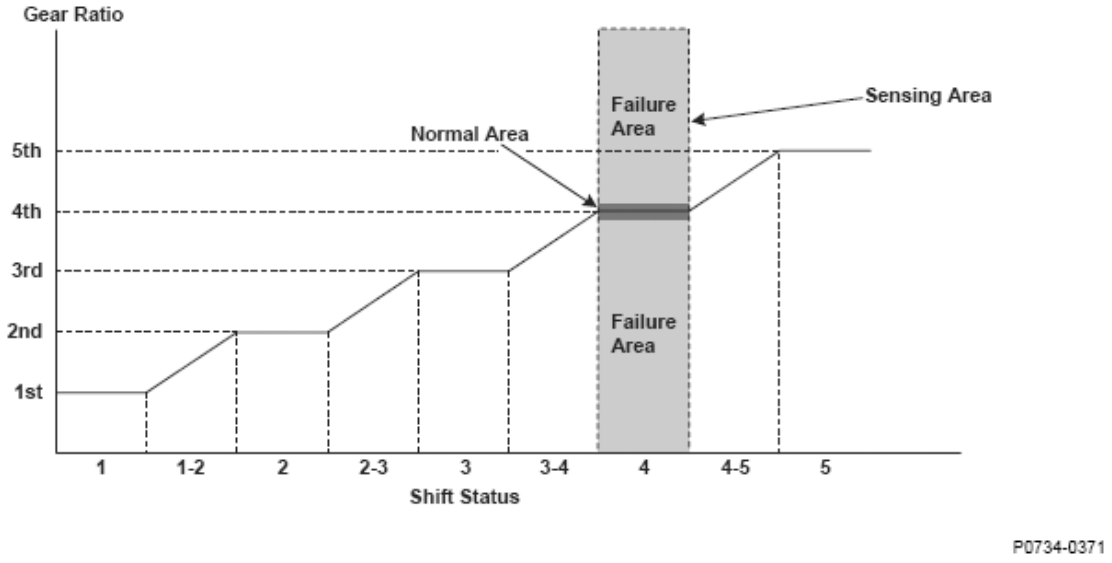


Fig. 3: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**)
5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- **Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.**
- **The HDS can read the DTC, freeze data, on-board snapshot, current data, and other engine control module (ECM) data.**
- **For specific operations, refer to the user's manual that came with the HDS.**

6. If no DTCs are found, go to MIL troubleshooting (see **MIL CIRCUIT TROUBLESHOOTING**).

If the MIL did not stay on

If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC

Some of the troubleshooting requires you to reset the ECM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced ECM.

HDS CLEAR COMMAND

The ECM stores various specific data to correct the system even if there is no electrical power such as when the battery negative terminal or No. 19 Fl MAIN (15 A) fuse are disconnected. Stored data based on failed

parts should be cleared by using the "CLEAR COMMAND" of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, ECM reset, and crank (CKP) pattern clear. DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting. The ECM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except crank (CKP) pattern. If the crank (CKP) pattern data in the ECM was cleared, you must do the crank (CKP) pattern learn procedure. The crank (CKP) pattern clear command erases only crank (CKP) pattern data. This command is for repair of a misfire or the CKP sensor.

SCAN TOOL CLEAR COMMAND

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the ECM, and it clears all commands at the same time (crank (CKP) pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**); crank (CKP) pattern learn procedure; test-drive to set readiness codes to complete (see **HOW TO SET READINESS CODES**).

DTC CLEAR

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

ECM RESET

1. Reset the ECM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

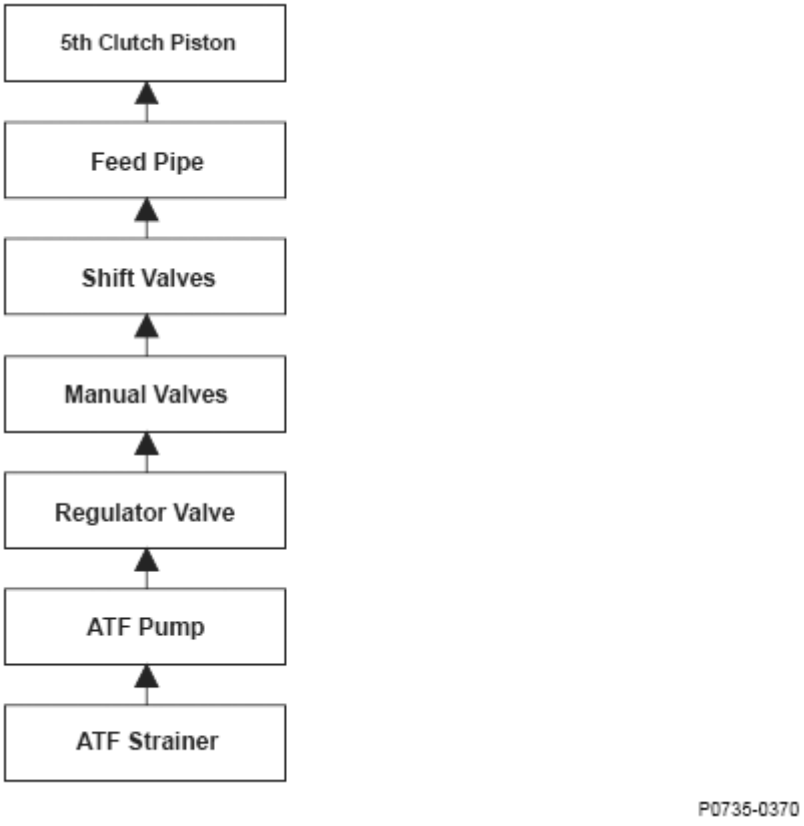


Fig. 4: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

LEARN PROCEDURE (WITHOUT THE HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the transmission in 1st gear.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the transmission in 1st gear.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait for 30 seconds.

HOW TO END A TROUBLESHOOTING SESSION (REQUIRED AFTER ANY TROUBLESHOOTING)

1. Reset the ECM with the HDS.

2. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: j
The ECM is part of the immobilizer system. If you replace the ECM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

HOW TO TROUBLESHOOT CIRCUITS AT THE ECM CONNECTORS

NOTE: The ECM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the ECM during this function, without jumping the SCS line first, can damage the ECM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).

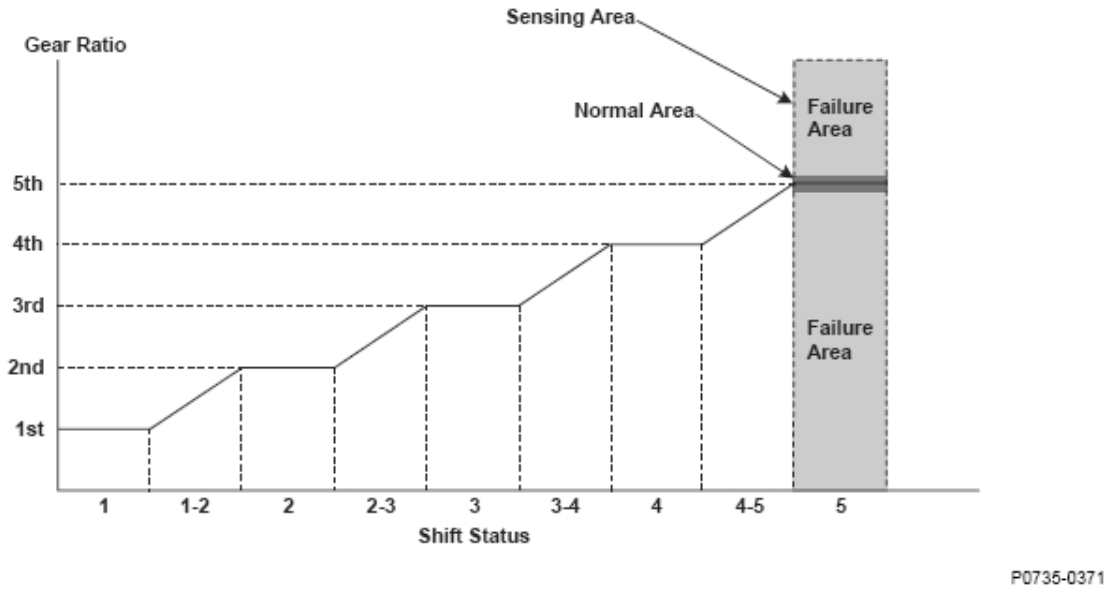


Fig. 5: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Lift up the under-hood fuse/relay box (D).

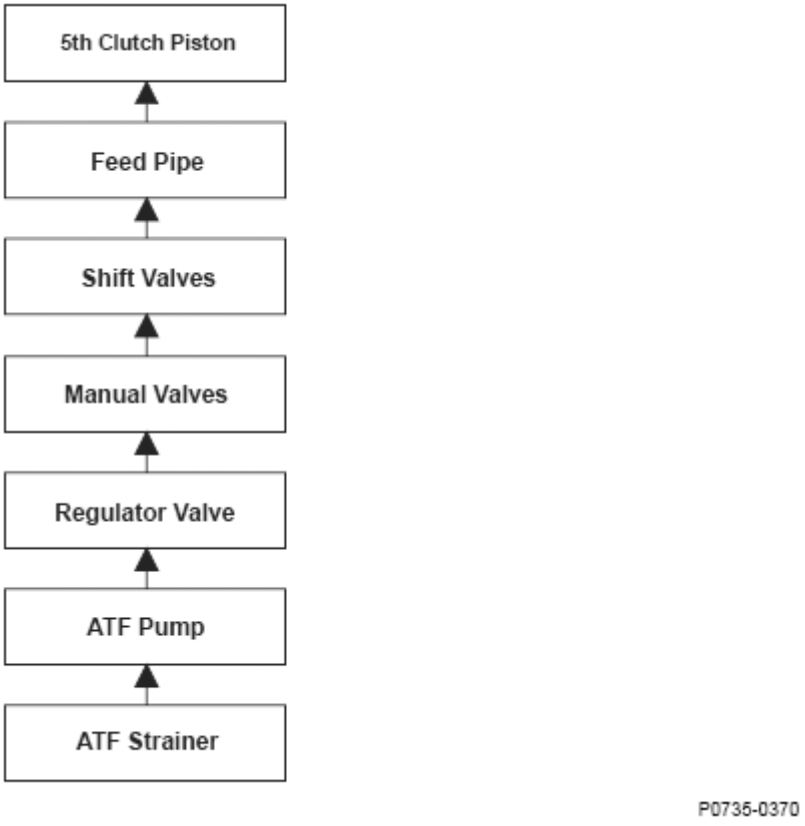


Fig. 6: Lifting Up Under-Hood Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the coolant reservoir (E). Disconnect the ECM connectors A, B, and C.
5. When diagnosis/troubleshooting is done at the ECM connector, use the terminal test port (A) above the terminal you need to check.

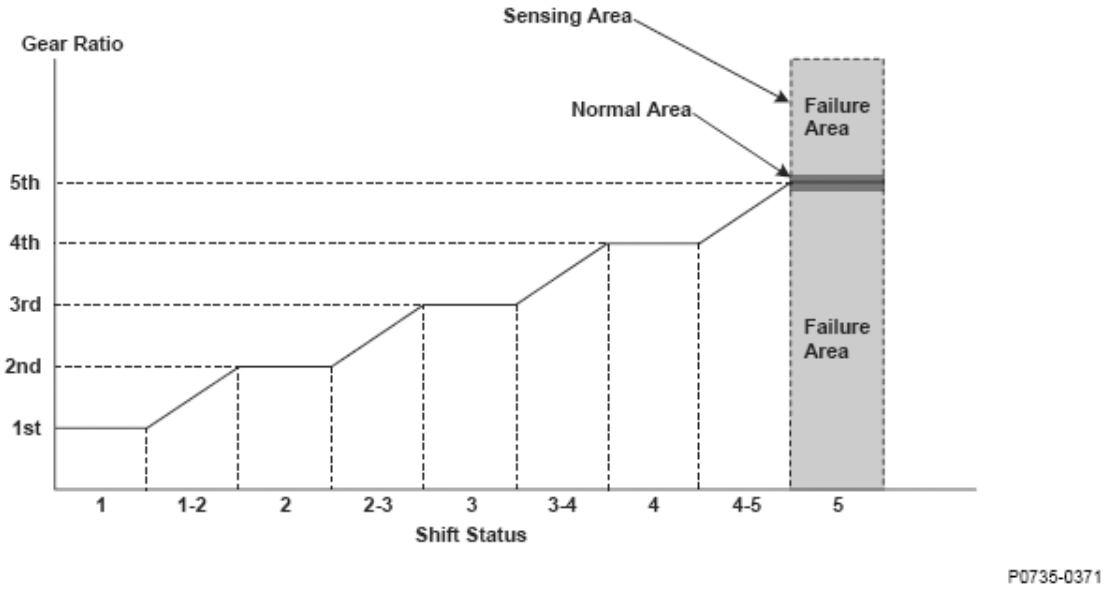


Fig. 7: Using Test Port To Check ECM Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).

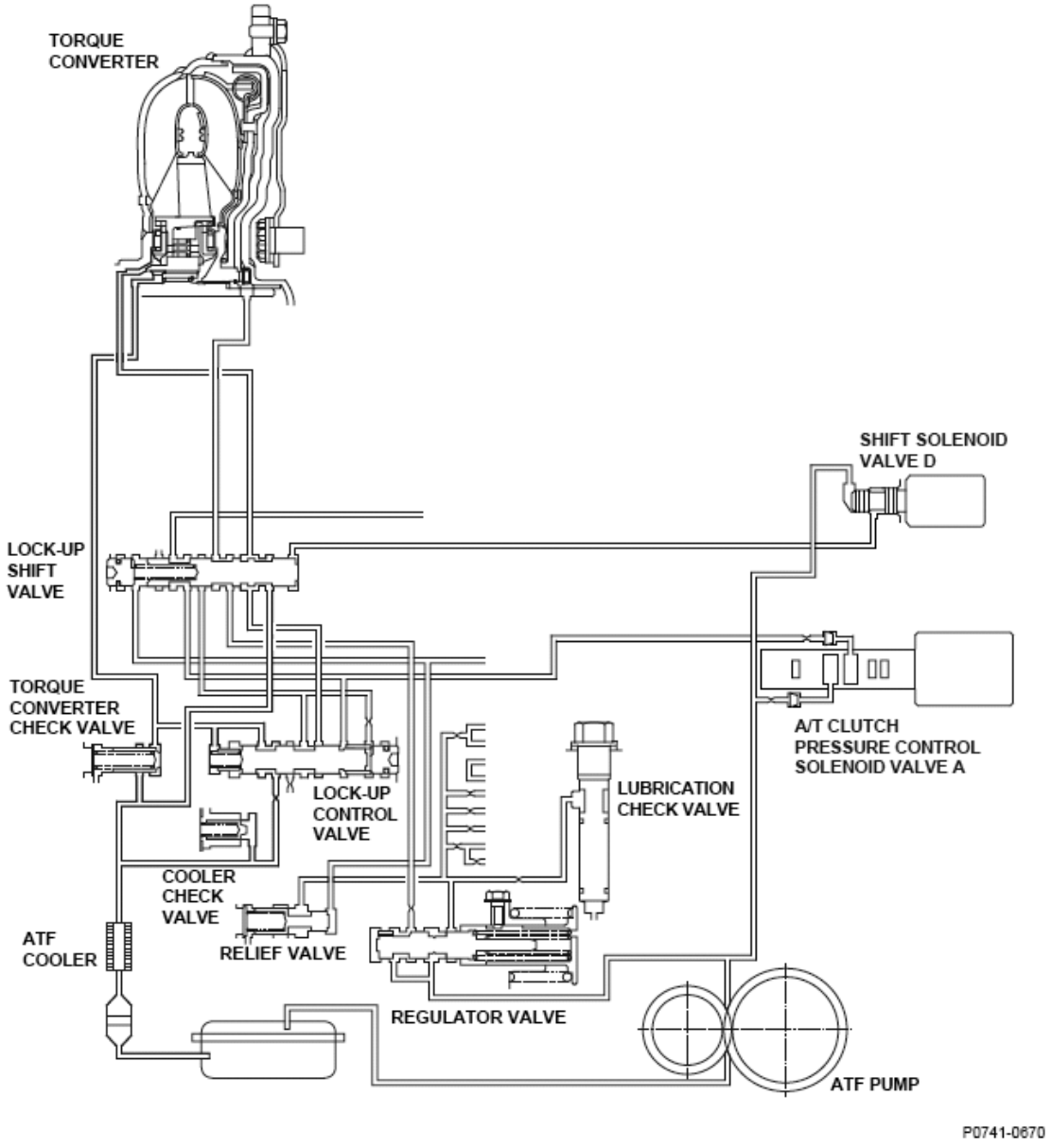


Fig. 8: Connecting Patch Cord Terminals To Commercially Available Digital Multimeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTE:

- **For accurate results, always use the pin probe (male).**
- **To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.**

- **Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.**

SUBSTITUTING THE ECM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE: Use this procedure when you have to substitute a known-good ECM during troubleshooting procedures.

1. **Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.**
2. **Turn the ignition switch to ON (II).**
3. **Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting. If you are returning from DLC circuit troubleshooting, skip steps 4 and 5, then clean the throttle body after substituting the ECM.**
4. **Select the INSPECTION MENU with the HDS.**
5. **Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.**

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. **Turn the ignition switch to LOCK (0).**
7. **Jump the SCS line with the HDS.**
8. **Do the battery removal procedure.**

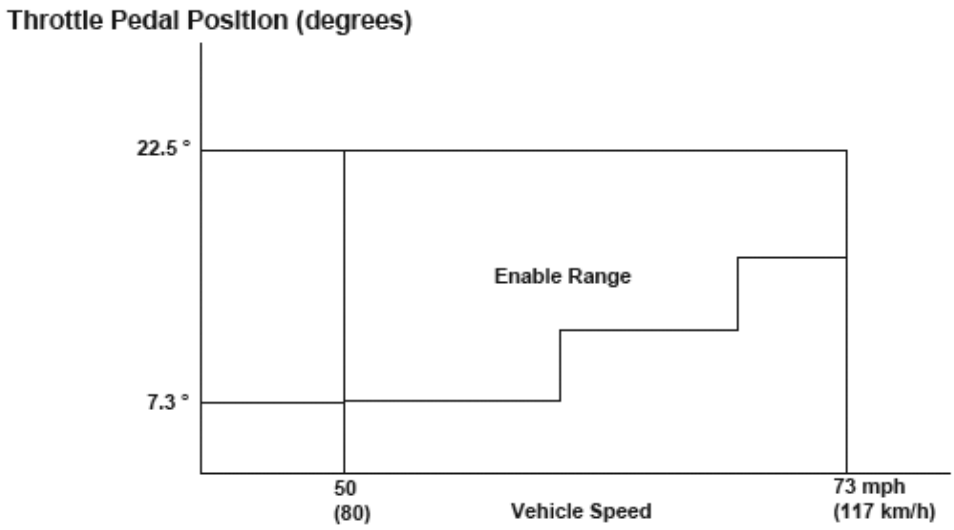


Fig. 9: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. **Remove the cover (A).**

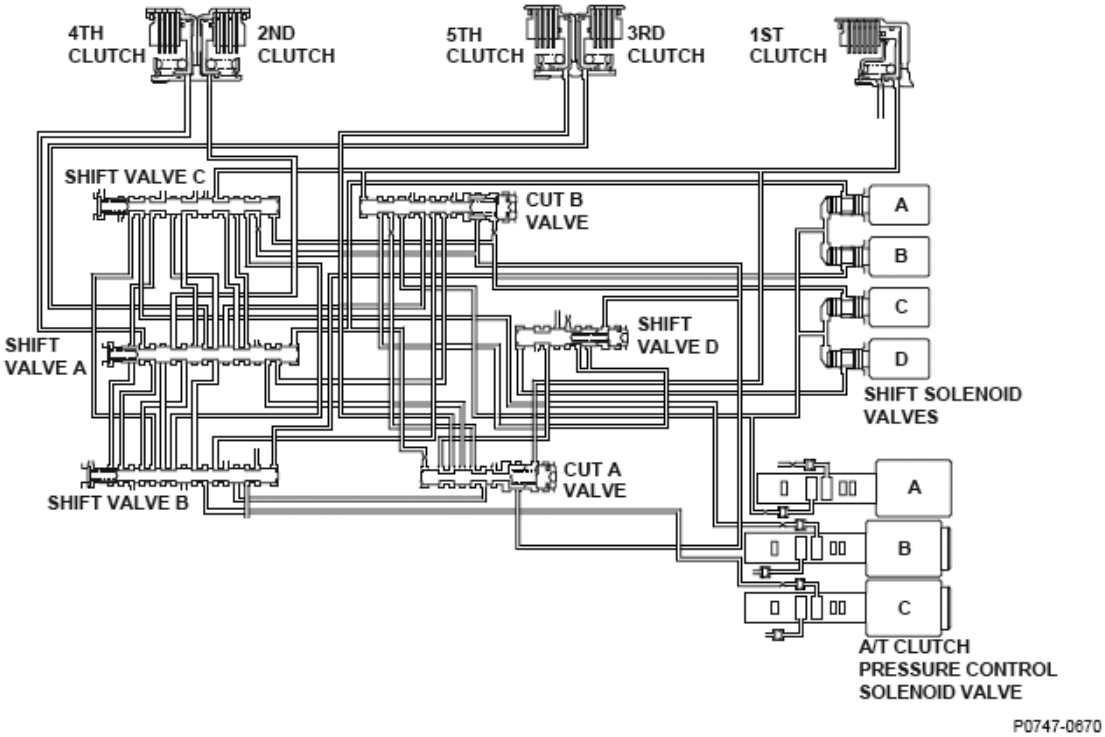


Fig. 10: Remove the Cover
Courtesy of TOYOTA

10. **Remove the bolts (D), then remove the ECM (E).**
11. **Disconnect ECM connectors A, B, and C.**

NOTE: ECM connectors A, B, and C have symbols (A=?, B=? , C=?)

embossed on them for identification.

12. **Install a known-good ECM in the reverse order of removal.**
13. **Do the battery installation procedure. (See BATTERY REMOVAL AND INSTALLATION).**

NOTE: While doing the battery terminal reconnection procedure, do not start the engine.

14. **Turn the ignition switch to ON (II).**

NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the ECM; ignore it, and continue this procedure.

15. **Manually input the VIN to the ECM with the HDS.**
16. **Select the IMMOBI SYSTEM with the HDS.**
17. **Enter the immobilizer ECM code that you got from the iN, and use the ECM replacement procedure in the IMMOBI MENU of the HDS; it allows you to start the engine.**
18. **Reset the ECM with the HDS.**
19. **If the TP POSITION CHECK failed in step 5, clean the throttle body. (See THROTTLE BODY CLEANING).**
20. **Update the ECM if it does not have the latest software. (see ECM REPLACEMENT).**
21. **Do the ECM idle learn procedure.(seeECM IDLE LEARN PROCEDURE).**
22. **Do the CKP pattern clear/CKP pattern learn procedure.**

1. Turn the ignition switch ON (II), but do not start the engine.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.
3. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**). If you are returning from the DLC circuit troubleshooting, skip step 4 to 5 and clean the throttle body after updating the ECM (see **THROTTLE BODY CLEANING**).
4. USA, Canada models: Select the INSPECTION MENU with the HDS.
5. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS (USA, Canada models). Select the update program, and follow the screen prompts to update the ECM.
7. If the software in the ECM is the latest disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the ECM is not the latest, follow the instructions on the screen.

NOTE: If the ECM update system requires you to cool the ECM, follow the instructions on screen. If you run into a problem during the update procedure, (programming takes over 15 minutes, status bar goes over 100%, immobilizer light flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM:

- Leave the ignition switch in the ON (II) position.
- Connect a jumper battery (do not connect a battery charger).
- Shut down the HDS.
- Disconnect the HDS from the DLC.
- Reboot the HDS.
- Reconnect the HDS to the DLC, and try the update procedure again.

8. USA, Canada models: If the TP POSITION CHECK failed in step 6, clean the throttle body (see **THROTTLE BODY CLEANING**).
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Do the CKP learn procedure.

SUBSTITUTING THE ECM

Special Tools Required

- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

NOTE: Use this procedure when you need to substitute a known-good ECM during troubleshooting procedures.

1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 11: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**). If you are returning from DLC circuit troubleshooting, skip step 5 to 10, and clean the throttle body after substituting the ECM (see **THROTTLE BODY CLEANING**).
5. USA, Canada models: Select the INSPECTION MENU with the HDS.
6. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

7. Turn the ignition switch OFF.
8. Remove the battery.
9. Remove the cover (A).

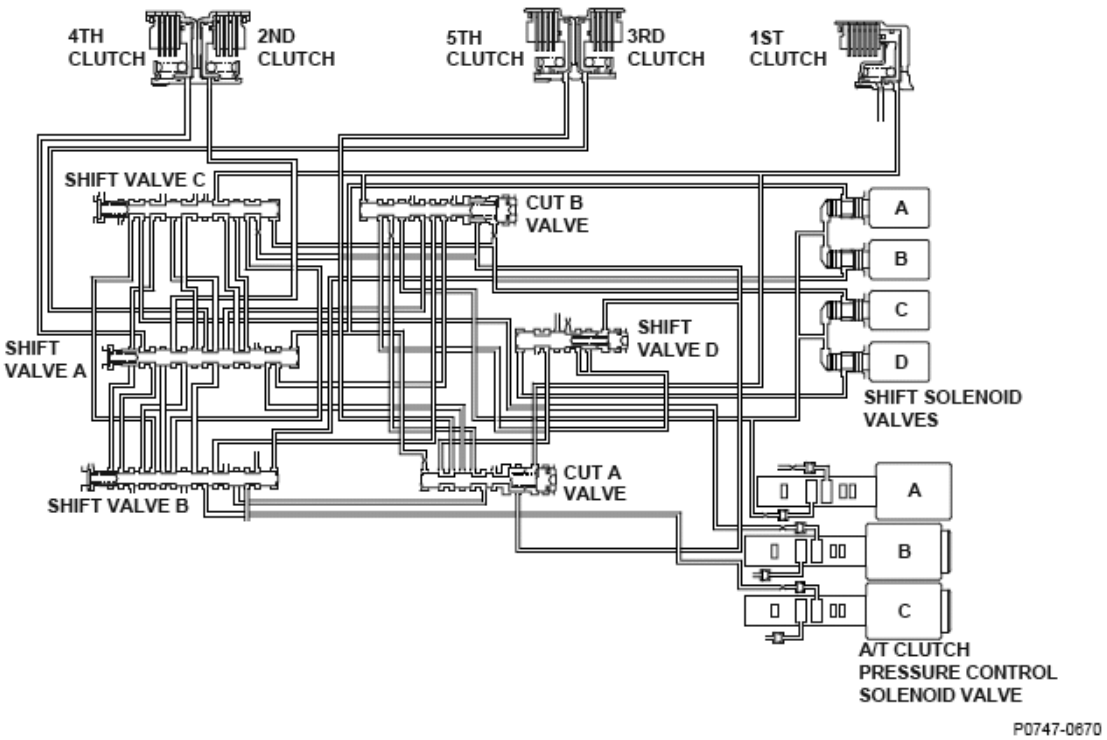


Fig. 12: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the bolts (D), then remove the ECM (E). B A

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 13: Removing ECM (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Disconnect ECM connectors A, B, and C.

NOTE: ECM connectors A, B, and C have symbols (A=[], B=delta, C=o) embossed on them for identification.

12. Install the ECM and the battery in the reverse order of removal.
13. Turn the ignition switch ON (II).

NOTE: USA, Canada models: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the ECM; ignore it, and continue this procedure.

14. USA, Canada models: Manually input the VIN to the ECM with the HDS.
15. Update the ECM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the ECM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the ECM with the HDS.
19. USA, Canada models: If the TP POSITION CHECK failed in step 6, clean the throttle body (see **THROTTLE BODY CLEANING**).
20. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
21. Do the CKP pattern learn procedure.
22. Enter the anti-theft codes for the radio and the navigation system (if equipped), and set the clock.

OBD STATUS

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on board diagnosis is successfully finished.
- FAILED: The on board diagnosis has finished but failed.

- EXECUTING: The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.
- OUT OF CONDITION: The vehicle has stayed out of the enable conditions for the DTC.

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX (1 OF 4)

DTC (MIL indication (1))	Two Drive Cycle Detection	Detection Item	MIL	Note
P0010 (56)	-	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	ON	(see **DTC P0010: VTC OIL CONTROL SOLENOID VALVE MALFUNCTION**)
P0011(56)	O	Variable Valve Timing Control (VTC) System Malfunction	ON	(see **DTC P0011: VTC SYSTEM MALFUNCTION**)
P0101 (50)	O	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	(see **DTC P0101: MAF SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0102 (50)	-	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see **DTC P0102: MAF SENSOR CIRCUIT LOW VOLTAGE**)
P0103 (50)	-	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see **DTC P0103: MAF SENSOR CIRCUIT HIGH VOLTAGE**)
P0107 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see **DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE**)
P0108 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see **DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE**)
P0111 (10)	O	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see **DTC P0111: IAT SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0112 (10)	-	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see **DTC P0112: IAT SENSOR CIRCUIT LOW VOLTAGE**)

P0113 (10)	-	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see **DTC P0113: IAT SENSOR CIRCUIT HIGH VOLTAGE**)
P0116 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see **DTC P0116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0117 (6)	-	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see **DTC P0117: ECT SENSOR 1 CIRCUIT LOW VOLTAGE**)
P0118 (6)	-	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see **DTC P0118: ECT SENSOR 1 CIRCUIT HIGH VOLTAGE**)
P0122 (7)	-	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see **DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE**)
P0123 (7)	-	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see **DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE**)
P0125 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see **DTC P0125: ECT SENSOR 1 MALFUNCTION/SLOW RESPONSE**)
P0128 (87)	O	Cooling System Malfunction	ON	(see **DTC P0128: COOLING SYSTEM MALFUNCTION**)
P0133 (61)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Malfunction/Slow Response	ON	(see **DTC P0133: A/F SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE**)
P0134 (41)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	(see **DTC P0134: A/F SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION**)
P0135(41)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	(see **DTC P0135: A/F SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION**)
P0137 (63)	-(2) O(3)	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	(see **DTC P0137: SECONDARY HO2S (SENSOR 2) CIRCUIT LOW VOLTAGE**)
P0138 (63)	-(2)	Secondary Heated	ON	(see **DTC P0138:**

	O[3]	Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage		**SECONDARY HO2S (SENSOR 2) CIRCUIT HIGH VOLTAGE**)
P0139 (63)	O	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	(see **DTC P0139: SECONDARY HO2S (SENSOR 2) SLOW RESPONSE**)
P0141 (65)	-	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	(see **DTC P0141: SECONDARY HO2S (SENSOR 2) HEATER CIRCUIT MALFUNCTION**)
P0171 (45)	O	Fuel System Too Lean	ON	(see **DTC P0171: FUEL SYSTEM TOO LEAN**)
P0172 (45)	O	Fuel System Too Rich	ON	(see **DTC P0172: FUEL SYSTEM TOO RICH**)
P0222 (7)	-	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see **DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE**)
P0223 (7)	-	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see **DTC P0223-.TP SENSOR B CIRCUIT HIGH VOLTAGE**)
P0300 (75) any combination of the following P0301 (71) P0302 (72) P0303 (73) P0304 (74)	O	Random Misfire Detected	ON	(see **DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING**)
P0301 (71)	O	No. 1 Cylinder Misfire Detected	ON	(see **DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED**)
P0302 (72)	O	No. 2 Cylinder Misfire Detected	ON	(see **DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED**)
P0303 (73)	O	No. 3 Cylinder Misfire Detected	ON	(see **DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED**)
P0304 (74)	O	No. 4 Cylinder Misfire Detected	ON	(see **DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED**)
P0325 (23)	-	Knock Sensor Circuit Malfunction	ON	(see **DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION**)
P0335 (4)	-	Crankshaft Position (CKP) Sensor No Signal	ON	(see **DTC P0335: CKP SENSOR NO SIGNAL**)

P0339 (4)	-	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	(see **DTC P0339: CKP SENSOR CIRCUIT INTERMITTENT INTERRUPTION**)
P0340 (57)	-	Camshaft Position (CMP) Sensor A No Signal	ON	(see **DTC P0340: CMP SENSOR A NO SIGNAL**)
P0341 (57)	-	Camshaft Position (CMP) Sensor A and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON	(see **DTC P0341: CMP SENSOR A AND CKP SENSOR INCORRECT PHASE DETECTED**)
P0344 (57)	-	Camshaft Position (CMP) Sensor A Circuit Intermittent Interruption	ON	(see **DTC P0344: CMP SENSOR A CIRCUIT INTERMITTENT INTERRUPTION**)
P0365 (8)	-	Camshaft Position (CMP) Sensor B Circuit No Signal	ON	(see **DTC P0365: CMP SENSOR B CIRCUIT NO SIGNAL**)
P0369 (8)	-	Camshaft Position (CMP) Sensor B Circuit Intermittent Interruption	ON	(see **DTC P0369: CMP SENSOR B CIRCUIT INTERMITTENT INTERRUPTION**)

NOTE:
The above DTCs are indicated when the PGM-FI system is selected in the HDS.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) '06 model

(3) '07-08 models

DTC TROUBLESHOOTING INDEX (2 OF 4)

DTC (MIL indication (1))	Two Drive Cycle Detection	Detection Item	MIL	Note
P0420 (67)	O	Catalyst System Efficiency Below Threshold	ON	(see **DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD**)
P0443 (92)	-	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see **DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION**)
P0451 (91)	O	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see **DTC P0451: FTP SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0452 (91)	-(2)	Fuel Tank Pressure	ON	(see **DTC P0452: FTP**

	O[3]	(FTP) Sensor Circuit Low Voltage		**SENSOR CIRCUIT LOW VOLTAGE**)
P0453 (91)	-[2] O[3]	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see **DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE**)
P0455 (90)	O	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see **DTC P0455: EVAP SYSTEM LARGE LEAK DETECTED**)
P0456 (90)	O	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see **DTC P0456: EVAP SYSTEM VERY SMALL LEAK DETECTED**)
P0457 (90)[2]	O	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see **DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING**)
P0461 (121)	-	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	(see **DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0462 (121)	-	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see **DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE**)
P0463 (121)	-	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see **DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE**)
P0496 (92)	O	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	(see **DTC P0496: EVAP SYSTEM HIGH PURGE FLOW DETECTED**)
P0497 (90)[2]	O	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see **DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED ('06 MODEL)**)
P0497 (90)[3]	-	Evaporative Emission (EVAP) System Low Purge Flow Detected	OFF	(see **DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED ('07 MODEL)**)
P0498 (117)	-	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see **DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE**)
P0499 (117)	-	Evaporative Emission (EVAP) Canister Vent	ON	(see **DTC P0499: EVAP CANISTER VENT SHUT**

		Shut Valve Circuit High Voltage		**VALVE CIRCUIT HIGH VOLTAGE**)
P0506 (14)	O	Idle Control System RPM Lower Than Expected	ON	(see **DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED**)
P0507 (14)	O	Idle Control System RPM Higher Than Expected	ON	(see **DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED**)
P050A (167)	O	Cold Start Idle Air Control System Performance Problem	ON	(see **DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM**)
P050B (167)	O	Cold Start Ignition Timing Control System Performance Problem	ON	(see **DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM**)
P0532 (191)	-	A/C Pressure Sensor Circuit Low Voltage	OFF	(see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**)
P0533 (191)	-	A/C Pressure Sensor Circuit High Voltage	OFF	(see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**)
P0562 (34)	-	Charging System Low Voltage	OFF	(see **DTC P0562: CHARGING SYSTEM LOW VOLTAGE**)
P0563 (34)	-	Engine Control Module (ECM) Power Source Circuit Unexpected Voltage	OFF	(see **DTC P0563: ECM POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE**)
P0602 (196)	-	Engine Control Module (ECM) Programming Error	ON	(see **DTC P0602: ECM PROGRAMMING ERROR**)
P0603 (131)	-	Engine Control Module (ECM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see **DTC P0602: ECM PROGRAMMING ERROR**)
P0606 (0)	-	Engine Control Module (ECM) Processor Malfunction	ON	(see **DTC P0606: ECM PROCESSOR MALFUNCTION**)
P0630 (139)	-	VIN Not Programmed or Mismatch	ON	(see **DTC P0630: VIN NOT PROGRAMMED OR**

				MISMATCH)
P0685 (135)	O	Engine Control Module (ECM) Power Control Circuit/Internal Circuit Malfunction	ON	(see **DTC P0685: ECM POWER CONTROL CIRCUIT/INTERNAL CIRCUIT MALFUNCTION**)
P0720 (122)	-	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see **DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION**)
P1009 (56)	-	Variable Valve Timing Control (VTC) Advance Malfunction	ON	(see **DTC P1009: VTC ADVANCE MALFUNCTION**)
P1109 (13)	-	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see **DTC P1109: BARO SENSOR CIRCUIT OUT OF RANGE HIGH**)
P1116 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see **DTC P1116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P1128 (5)	O	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see **DTC P1128: MAP SENSOR SIGNAL LOWER THAN EXPECTED**)
P1129 (5)	O	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see **DTC P1129: MAP SENSOR SIGNAL HIGHER THAN EXPECTED**)
P1157 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit Malfunction	ON	(see **DTC P1157: A/F SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION**)

NOTE:

The above DTCs are indicated when the PGM-FI system is selected in the HDS.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) '06 model

(3) '07-08 models

DTC TROUBLESHOOTING INDEX (3 OF 4)

DTC (MIL indication (1))	Two Drive Cycle Detection	Detection Item	MIL	Note
P1172 (61)	-(2)	Air Fuel Ratio (A/F)	ON	(see **DTC P1172: A/F**

	O[3]	Sensor (Sensor 1) Circuit Out of Range High		**SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH**)
P1297 (20)	-	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see **DTC P1297: ELD CIRCUIT LOW VOLTAGE**)
P1298 (20)	-	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see **DTC P1298: ELD CIRCUIT HIGH VOLTAGE**)
P1454 (91)	O	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see **DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM**)
P145C (90)[3]	O	Evaporative Emission (EVAP) System Purge Flow Malfunction	ON	(see **DTC P145C: EVAP SYSTEM PURGE FLOW MALFUNCTION ('07 MODEL)**)
P1549 (34)	-	Charging System High Voltage	OFF	(see **DTC P1549: CHARGING SYSTEM HIGH VOLTAGE**)
P1658 (40)	-	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see **DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION**)
P1659 (40)	-	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see **DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION**)
P1683 (40)	-	Throttle Valve Default Position Spring Performance Problem	ON	(see **DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM**)
P1684 (40)	-	Throttle Valve Return Spring Performance Problem	ON	(see **DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM**)
P16BB (116)	-	Alternator B Terminal Circuit Low Voltage	OFF	(see **DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE**)
P16BC (116)	-	Alternator FR Terminal Circuit/IGP	OFF	(see **DTC P16BC: ALTERNATOR FR**

		Circuit Low Voltage		**TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE**)
P2101 (40)	-	Electronic Throttle Control System (ETCS) Malfunction	ON	(see **DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION**)
P2118 (40)	-	Throttle Actuator Current Range/Performance Problem	ON	(see **DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM**)
P2122 (37)	-	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see **DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE**)
P2123 (37)	-	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see **DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE**)
P2127 (37)	-	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see **DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE**)
P2128 (37)	-	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see **DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE**)
P2135 (7)	-	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	(see **DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION**)
P2138 (37)	-	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see **DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION**)
P2176 (40)	-	Throttle Actuator Control System Idle Position Not Learned	ON	(see **DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED**)
P2183 (192)	O	Engine Coolant	ON	(see **DTC P2183: ECT**

		Temperature (ECT) Sensor 2 Circuit Range/Performance Problem		**SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P2184 (192)	-	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see **DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE**)
P2185 (192)	-	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see **DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE**)
P2195 (48)	-(2) O(3)	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	(see **DTC P2195: A/F SENSOR (SENSOR 1) SIGNAL STUCK LEAN**)
P2227 (13)	O	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see **DTC P2227: BARO SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P2228 (13)	-	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see **DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE**)
P2229 (13)	-	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see **DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE**)
P2238 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS+ Circuit Low Voltage	ON	(see **DTC P2238: A/F SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE**)
P2252 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS-Circuit Low Voltage	ON	(see **DTC P2252: A/F SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE**)

NOTE:
The above DTCs are indicated when the PGM-FI system is selected in the HDS.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) '06 model

(3) '07-08 models

DTC TROUBLESHOOTING INDEX (4 OF 4)

DTC (MIL indication (1))	Two Drive Cycle Detection	Detection Item	MIL	Note
		Secondary Heated Oxygen Sensor		(see **DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK**

P2270 (63)	O	(Secondary H02S (Sensor 2)) Circuit Signal Stuck Lean	ON	**LEAN; DTC P2271: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK RICH**)
P2271 (63)	O	Secondary Heated Oxygen Sensor (Secondary H02S (Sensor 2)) Circuit Signal Stuck Rich	ON	(see **DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK LEAN; DTC P2271: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK RICH**)
P2422 (117)	O	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see **DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION**)
P2610 (132)	-	Engine Control Module (ECM) Ignition Off Internal Timer Malfunction	ON	(see **DTC P2610: ECM IGNITION OFF INTERNAL TIMER MALFUNCTION**)
P2646 (22)	-	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	(see **DTC P2646: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT LOW VOLTAGE**)
P2647 (22)	-	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	(see **DTC P2647: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT HIGH VOLTAGE**)
P2648 (21)	-	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	(see **DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE**)
P2649 (21)	-	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	(see **DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE**)
P2A00 (61)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Range/Performance Problem	ON	(see **DTC P2A00: A/F SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM**)
U0028 (126)	-	F-CAN Malfunction (BUS-OFF)	ON	(see **DTC U0028: F-CAN MALFUNCTION (BUS-OFF)**)
U0122 (126)(2)	-	F-CAN Malfunction (Engine Control Module (ECM)-VSA Modulator-Control Unit)	OFF	(see **DTC U0122: F-CAN MALFUNCTION (ECM-VSA)**)
U0131 (126)	-	F-CAN Malfunction (Engine Control Module (ECM)-EPS Control Unit)	OFF	(see **DTC U0131: F-CAN MALFUNCTION (ECM-EPS)**)
U0155 (126)	-	F-CAN Malfunction (Engine Control Module (ECM)-Gauge Control Module)	ON	(see **DTC U0155: F-CAN MALFUNCTION (ECM-GAUGE CONTROL MODULE)**)

NOTE:

The above DTCs are indicated when the PGM-FI system is selected in the HDS.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) With VSA

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see **BATTERY TEST**). 2. Test the starter (see **STARTER PERFORMANCE TEST**). 3. Check the fuel pressure (see **FUEL PRESSURE TEST**). 4. Troubleshoot the fuel pump circuit (see **FUEL PUMP CIRCUIT TROUBLESHOOTING**).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see **MIL CIRCUIT TROUBLESHOOTING**).	
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see **MIL CIRCUIT TROUBLESHOOTING**).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine is hard to start (MIL works OK, no	1. Test the battery (see **BATTERY TEST**). 2. Check the fuel pressure (see **FUEL PRESSURE TEST**).	• Low compression • Intake air leaks • Contaminated

DTCs set)	3. Clean the throttle body (see **THROTTLE BODY CLEANING**).	fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Clean the throttle body (see **THROTTLE BODY CLEANING**).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Do the throttle position learning check (see **THROTTLE BODY TEST**).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Do the carbon accumulation check (see **THROTTLE BODY TEST**).	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see **ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING**). 2. Do the carbon accumulation check (see **THROTTLE BODY TEST**). 3. Troubleshoot the A/C signal switch circuit (see **A/C SIGNAL CIRCUIT TROUBLESHOOTING**).	
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see **ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING**). 2. Inspect the APP sensor (see **APP SENSOR SIGNAL INSPECTION**).	
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see **FUEL PRESSURE TEST**).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level
Engine stalls (MIL works OK, no DTCs	1. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**). 2. Check the fuel pressure (see **FUEL PRESSURE TEST**). 3. Check the idle speed (see **IDLE SPEED**	• Intake air leaks • Faulty harness

set)	**INSPECTION**). 4. Troubleshoot the brake pedal position switch signal circuit (see **BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING**).	and sensor connections
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**). 4. Replace the fuel tank (see **FUEL TANK REPLACEMENT**).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	1. Replace the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**). 2. Replace the fuel tank (see **FUEL TANK REPLACEMENT**).	Malfunctioning gas station filling nozzle.
Fuel cap warning message comes on and stays on (MIL works OK, no DTCs set) ('07 model)	Troubleshoot the fuel cap warning message system (see **FUEL CAP WARNING MESSAGE SYSTEM TROUBLESHOOTING**).	
HDS does not communicate with the ECM or the vehicle	Troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).	

SYSTEM DESCRIPTION

ELECTRONIC CONTROL SYSTEM

The functions of the fuel and emission control systems are managed by the engine control module (ECM).

Self-diagnosis

The ECM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle (for '07 model DTC P0457, the DTC is set in the beginning of the third drive cycle). When a DTC is stored, the ECM turns on the malfunction indicator lamp (MIL) by supplying ground to the MIL circuit.

- **One Drive Cycle Detection Method**

  When an abnormality occurs in the signal from a sensor or from another control unit, the ECM stores a DTC for the failure and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**

  When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the ECM stores a Temporary DTC. The MIL does not come on at this time. If the failure

continues in the second drive cycle, the ECM stores a DTC and turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor or from another control unit, the ECM ignores that signal and substitute a pre-programmed value for them that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

MIL Bulb Check and Readiness Code Condition

When the ignition switch is turned ON (II), the ECM supplies ground to the MIL circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

Self Shut Down (SSD) Mode

After the ignition switch is turned OFF, the ECM stays on (up to 30 minutes). If the ECM connector is disconnected during this time, the ECM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned OFF.

ECM Electrical Connections

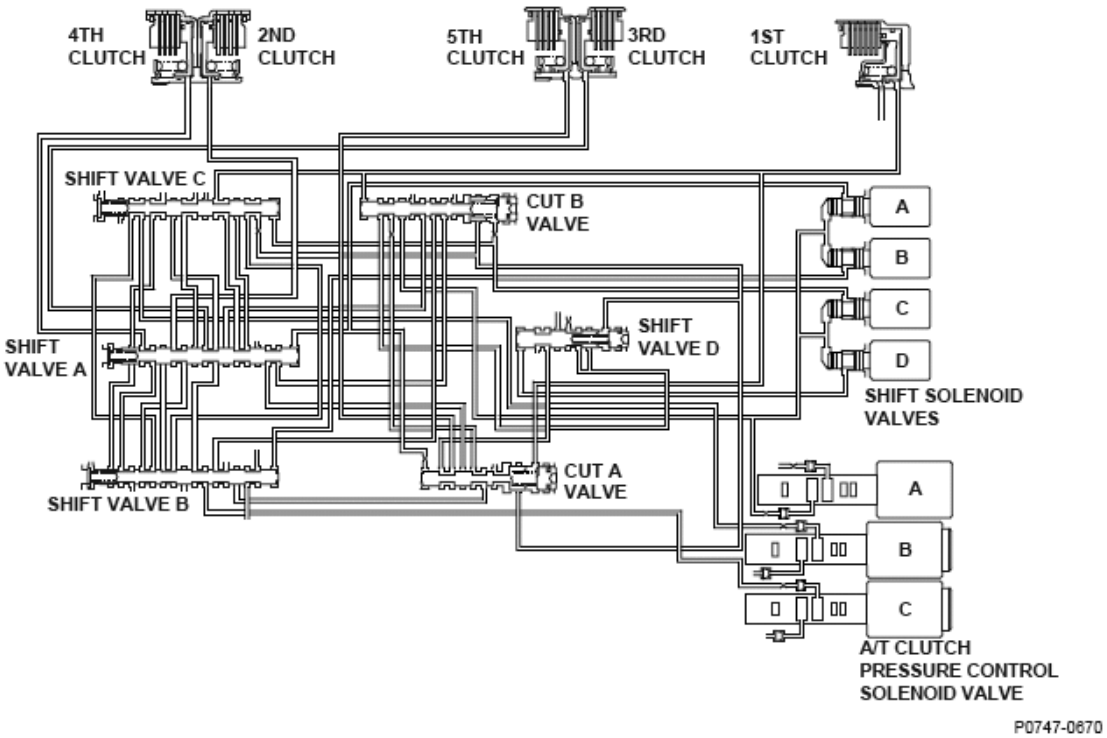


Fig. 14: Identifying ECM Electrical Connections (1 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 15: Identifying ECM Electrical Connections (2 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

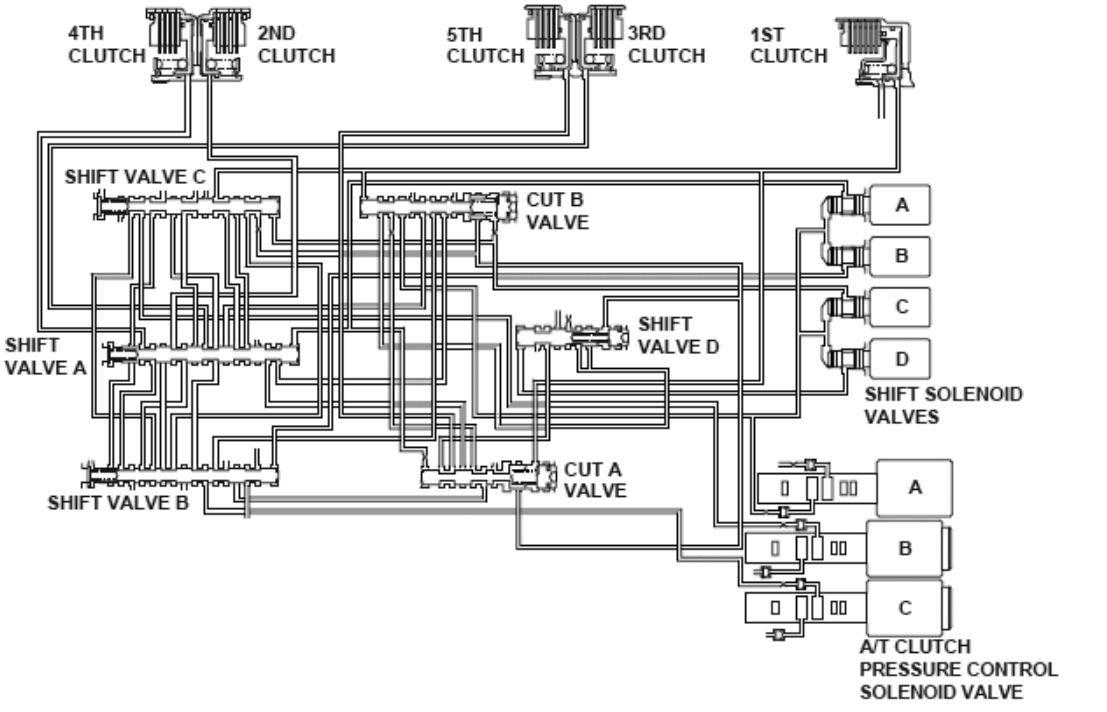


Fig. 16: Identifying ECM Electrical Connections (3 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 17: Identifying ECM Electrical Connections (4 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

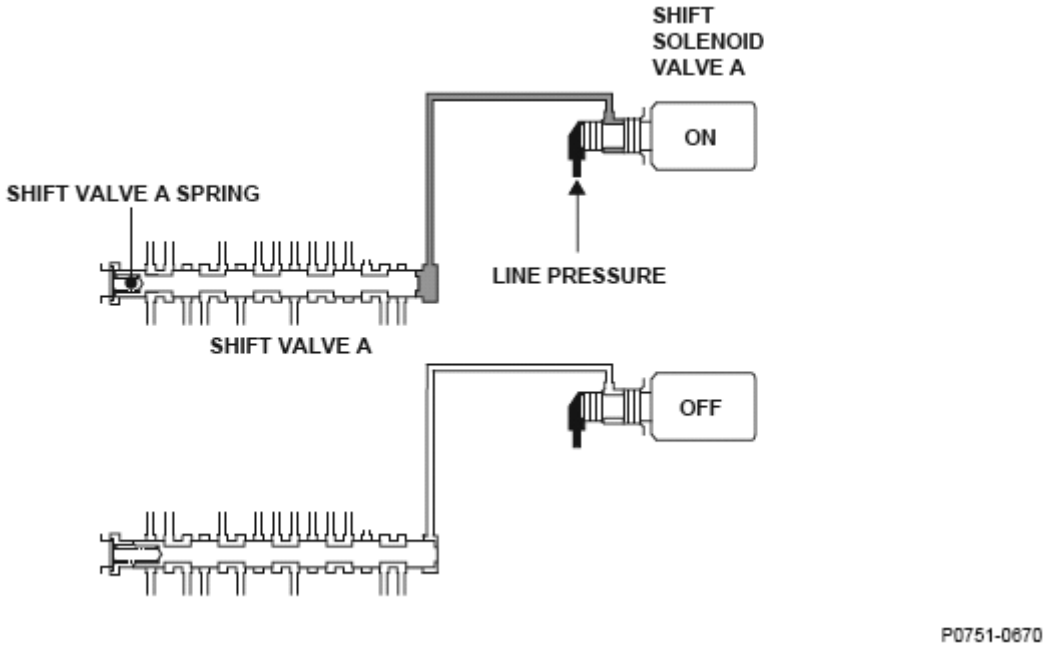


Fig. 18: Identifying ECM Electrical Connections (5 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Vacuum Hose Routing

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 19: Identifying Vacuum Hose Routing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Vacuum Distribution

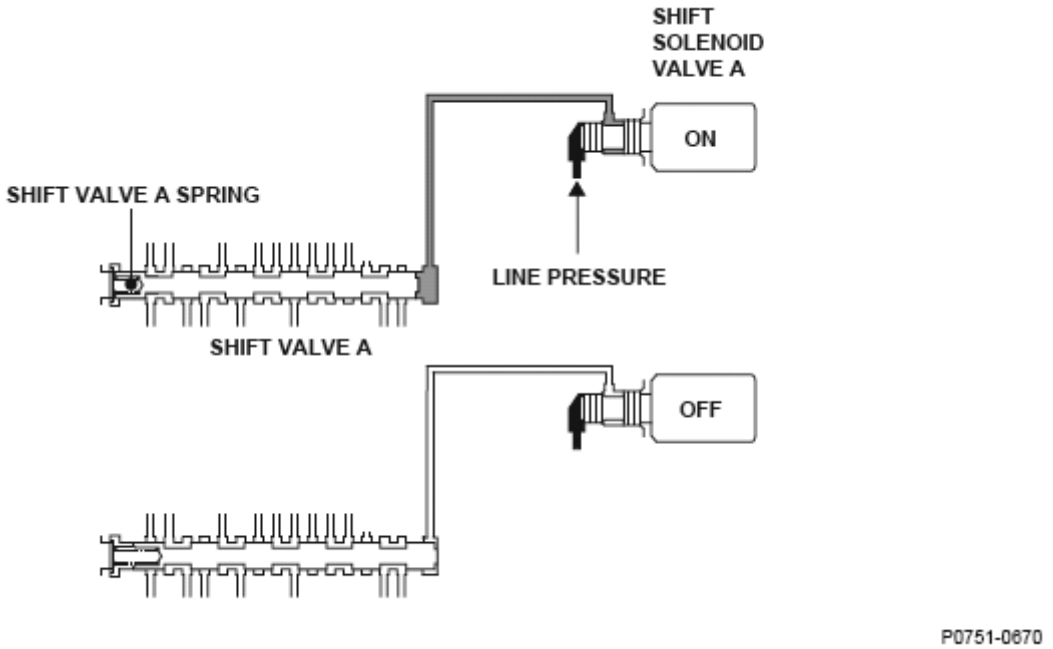


Fig. 20: Identifying Vacuum Distribution
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ECM Inputs and Outputs at Connector A (SQUARE) (44P)

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 21: Identifying ECM Inputs And Outputs At Connector A (SQUARE) (44P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (1 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
4	BLU(1) PUR(2)	FANL (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
5	GRY	FANH (RADIATOR FAN CONTROL)	Drives A/C condenser fan	With A/C condenser fan running: about 0 V With A/C condenser fan stopped: battery

			relay	voltage
6	GRN	MRLY(PGM-FIMAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	IGP (POWER SOURCE)	Power source for ECM circuit	With ignition switch ON (II): battery voltage
9	BLK	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 Vat all times
10	LTGRN	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
15	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	About 0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
16	LTGRN	ACPD (A/C PRESSURE SENSOR)	Detects A/C pressure sensor signal	With A/C switch ON: about 1.7-4.8 V (depending on A/C pressure)
17	YEL	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
18	PUR	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.25 V
19	RED	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20	YEL	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V (4.0 V momentarily)
21	LTBLU (1) PNK(2)	UBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
23	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1-4.8 V (depending on electrical load)

(1) 2-door

(2) 4-door

ECM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (2 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
24	GRY	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	BRN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26	WHT(1) LT GRN(2)	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
27	GRN	RVS (REVERSE LOCK SOLENOID)	Drives reverse lockout solenoid	With vehicle speed below 9 mph (15 km/h): battery voltage With vehicle speed above 13 mph (20 km/h): about 0 V
28	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
29	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using the HDS: about 0 V With service check signal opened: about 5.0 V
33	GRN	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
34	LTBLU	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	BLU	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 Vat all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
37	RED	CANL(CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)

(1) 2-door

(2) 4-door

ECM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (3 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
39	BRN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
40	LTGRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
				With ignition switch ON (II)

41	LTBLU	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SIGNAL)	Detects clutch pedal position switch signal	and clutch pedal released: about 0 V With ignition switch ON (II) and clutch pedal pressed: battery voltage
42	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
44	PNK	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With ignition switch OFF: about 5.0 V

ECM Inputs and Outputs at Connector B (TRIANGLE) (44P)

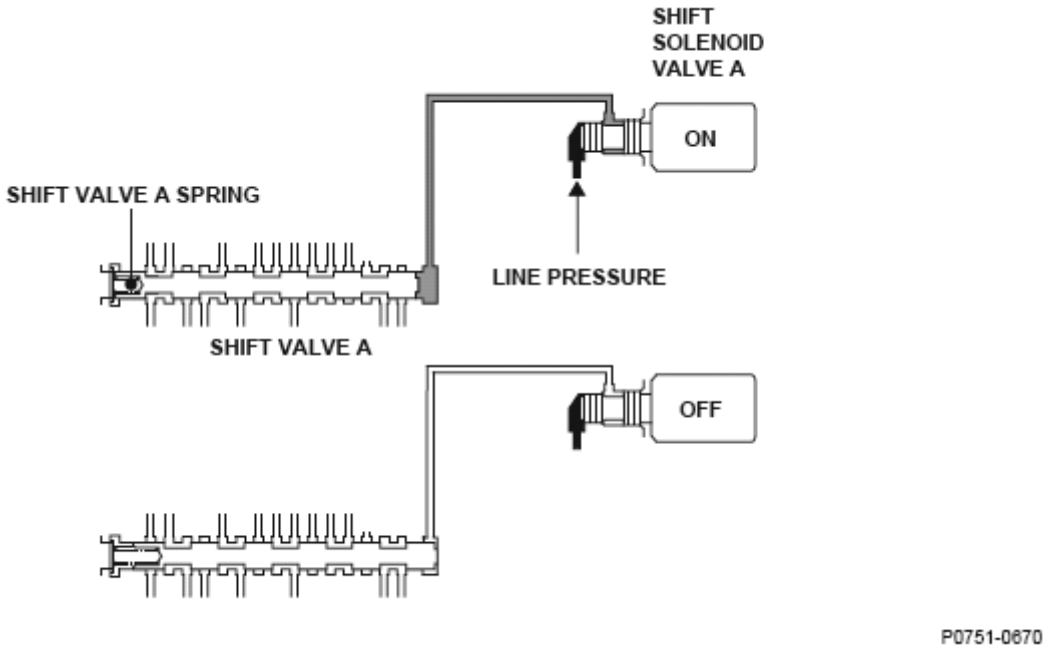


Fig. 22: Identifying ECM Inputs And Outputs At Connector B (TRIANGLE) (44P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM INPUTS AND OUTPUTS AT CONNECTOR B (TRIANGLE) (44P)

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK/RED(1) BLK(2)	PG2 (POWER GROUND)	Ground circuit for ECM circuit	Less than 1.0 V at all times
3	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140° F (60°C): battery voltage With engine running, engine coolant above 140 T-(60°

				C): duty controlled
4	BLK/WHT	S02SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY H02S) HEATER (SENSOR 2))	Drives secondary H02S heater (sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	YEL/RED	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch OFF: about 0 V With engine running: battery voltage
18	YEL	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
23	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
30	RED/BLK	VG+ (MASS AIR FLOW (MAF) SENSOR+SIDE)	Detects MAF sensor signal	At idle: 1.1-1.6 V (between VG+ terminal and VG- terminal)
31	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1-4.0 V (about 1.8 Vat normal operating temperature)
32	BLK/BLU	VG - (MASS AIR FLOW (MAF) SENSOR-SIDE)	Ground for MAF sensor signal	
33	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
36	BLK	PG1 (POWER GROUND)	Ground circuit for ECM circuit	Less than 1.0 Vat all times
41	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With fully warmed up engine running: 5.0 V (depending on electrical load)
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With

				engine running: battery voltage
43	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 2.6-3.4 V (depending on electrical load)
(1) '06 model (2) '07-08 models				

ECM Inputs and Outputs at Connector C (CIRCLE) (44P)

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 23: Identifying ECM Inputs And Outputs At Connector C (CIRCLE) (44P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM INPUTS AND OUTPUTS AT CONNECTOR C (CIRCLE) (44P) (1 OF 2)

Terminal number	Wire color	Terminal name	Description	Signal
1	WHT	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
2	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM circuit	Less than 1.0 V at all times
3	GRN/YEL	ETCSM - (THROTTLE ACTUATOR-SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	BLU/RED	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
6	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	

9	WHT/GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL (SENSOR 1))	Drives A/F sensor heater (sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V
11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
12	BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
15	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
16	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
17	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
18	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
20	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V
21	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V

ECM INPUTS AND OUTPUTS AT CONNECTOR C (CIRCLE) (44P) (1 OF 2)

Terminal number	Wire color	Terminal name	Description	Signal
22	BLU/BLK	VTPSW (ROCKER ARM OIL PRESSURE SWITCH)	Detects rocker arm oil pressure switch signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
23	BLU/WHT	VTC (VTC OIL CONTROL SOLENOID VALVE)	Drives VTC oil control solenoid valve	with ignition switch ON (II): about 0 V
27	WHT/RED	SH02S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY H02S) (SENSOR 2)	Detects secondary H02S (sensor 2) signal	With throttle fully opened at idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
29	RED	AFS+ (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) +SIDE)	Detects A/F sensor (sensor 1) signal	
		AFS- (AIR FUEL RATIO	Detects A/F sensor	

30	RED/YEL	(A/F) SENSOR (SENSOR 1) - SIDE)	(sensor 1) signal	
31	GRN	CMPB (CAMSHAFT POSITION (CMP) SENSOR B)	Detects CMP sensor B signal	With engine running: pulses
32	BLU/YEL	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
36	BLK/GRN	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
39	GRN	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM circuit	Less than 1.0 V at all times
41	BLU/WHT	CMPA (CAMSHAFT POSITION (CMP) SENSOR A)	Detects CMP sensor A signal	With engine running: pulses
42	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II): pulses With vehicle moving: about 5.0 V (pulses)
44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM circuit	Less than 1.0 V at all times

PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor

The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the TWC, and sends signals to the ECM which varies the duration of fuel injection accordingly.

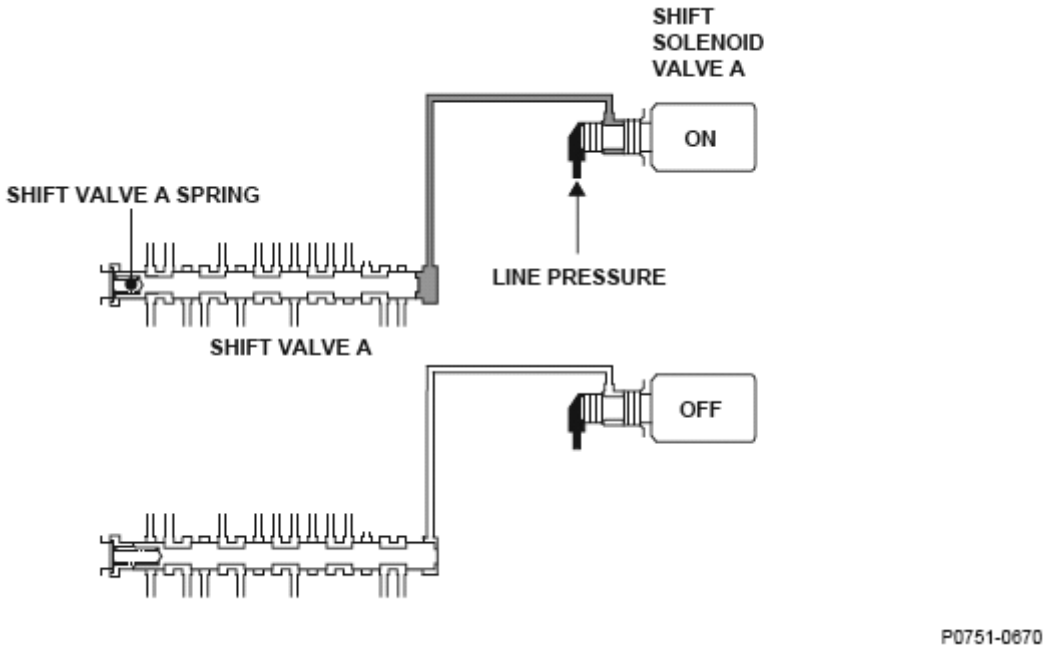


Fig. 24: Identifying Air Fuel Ratio (A/F) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Camshaft Position (CMP) Sensor B

CMP sensor B detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 25: Identifying Camshaft Position (CMP) Sensor B
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Crankshaft Position (CKP) Sensor

The CKP sensor detects crankshaft speed and is used by the ECM to determine ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.

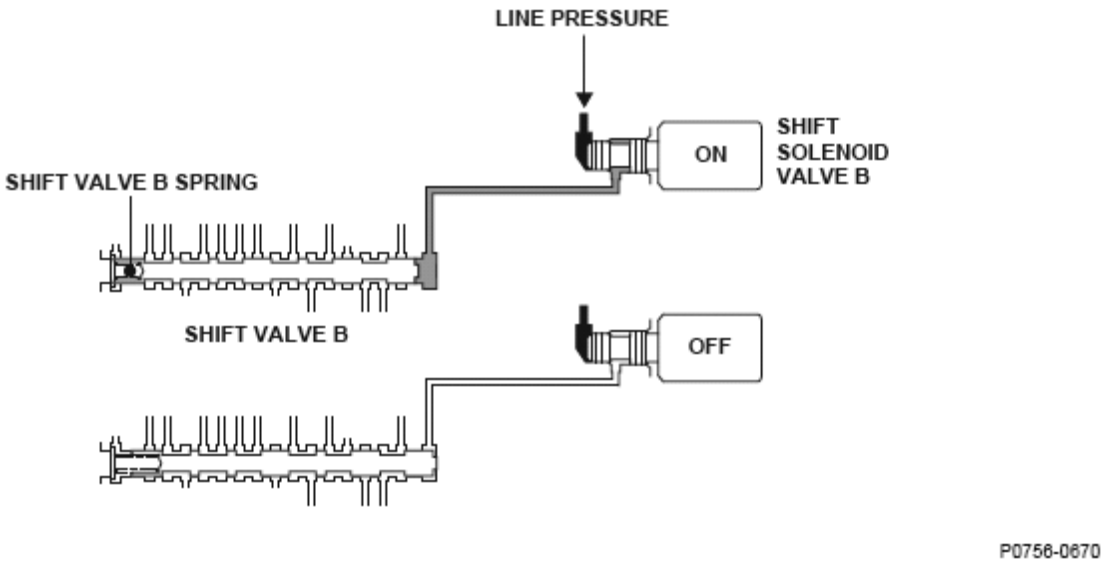


Fig. 26: Identifying Crankshaft Position (CKP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Engine Coolant Temperature (ECT) Sensor 1 and 2

ECT sensors 1 and 2 are temperature dependent resistor (thermistors). The resistance decreases as the engine coolant temperature increases.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 27: Identifying Engine Coolant Temperature (ECT) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Ignition Timing Control

The ECM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature and intake air temperature.

Injector Timing and Duration

The ECM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM detects long term malfunctions in the fuel system and sets a

diagnostic trouble code (DTC).

Knock Sensor

The knock control system adjusts the ignition timing to minimize knock.

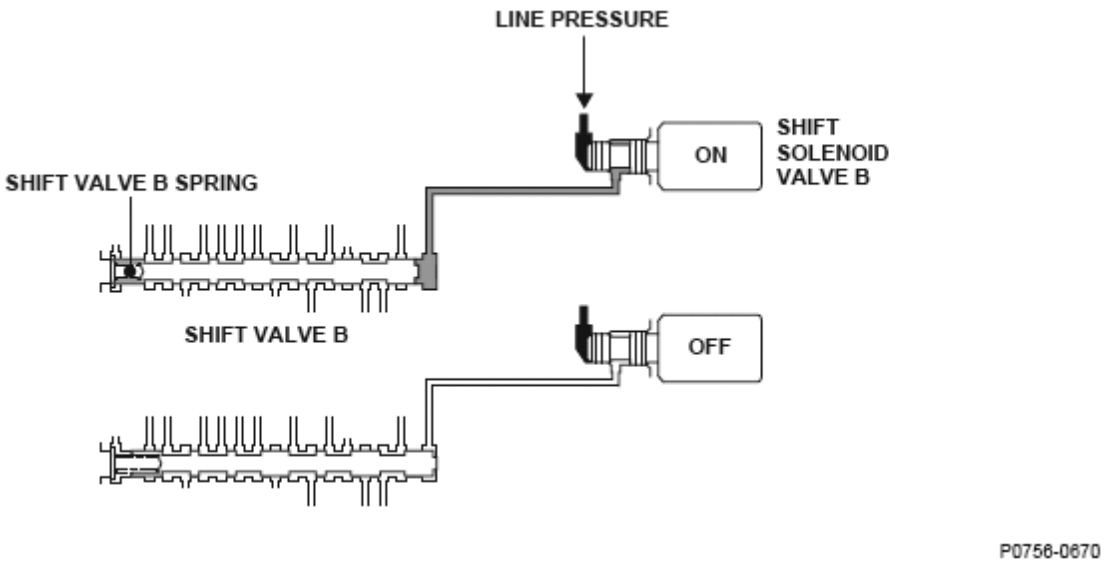


Fig. 28: Identifying Knock Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the ECM.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 29: Identifying Manifold Absolute Pressure (MAP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures (see **MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)**).

Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor

The mass air flow (MAF) sensor/intake air temperature (IAT) sensor contains a hot wire and a thermistor. It is located in the intake air passage. The resistance of the hot wire and thermistor changes due to intake air temperature and air flow. The control circuit in the MAF sensor controls the current to keep the hot wire at a set temperature. The current is converted to voltage in the control circuit, then output to the ECM.

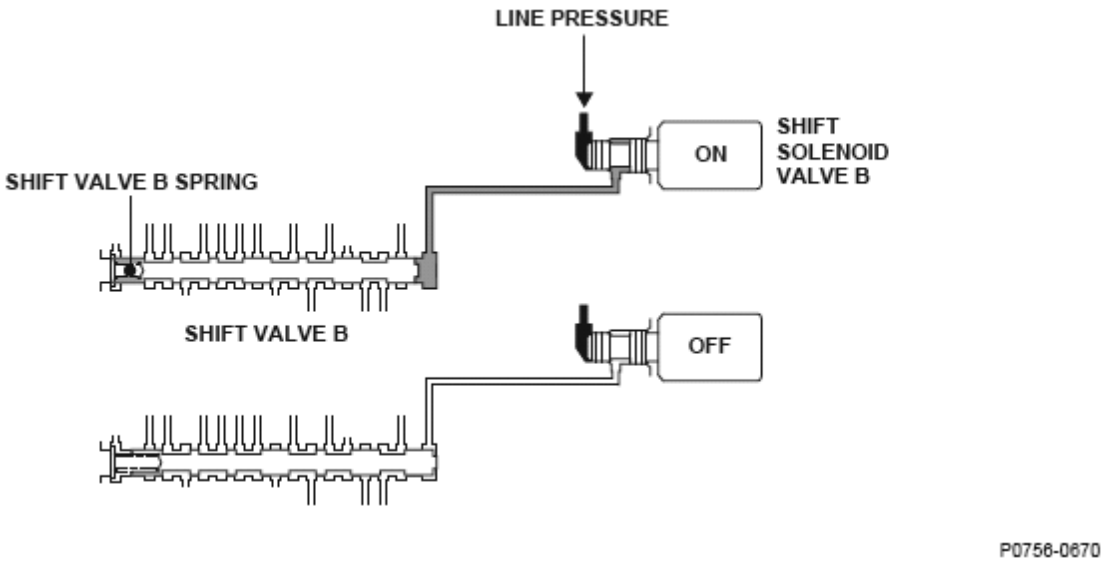


Fig. 30: Identifying Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Output Shaft (Countershaft) Speed Sensor

This sensor detects countershaft speed.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 31: Identifying Output Shaft (Countershaft) Speed Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Secondary Heated Oxygen Sensor (Secondary H02S)

The secondary H02S detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC), and sends signals to the ECM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The ECM compares the H02S output with the A/F sensor output to determine catalyst efficiency. The secondary H02S is located on the TWC.

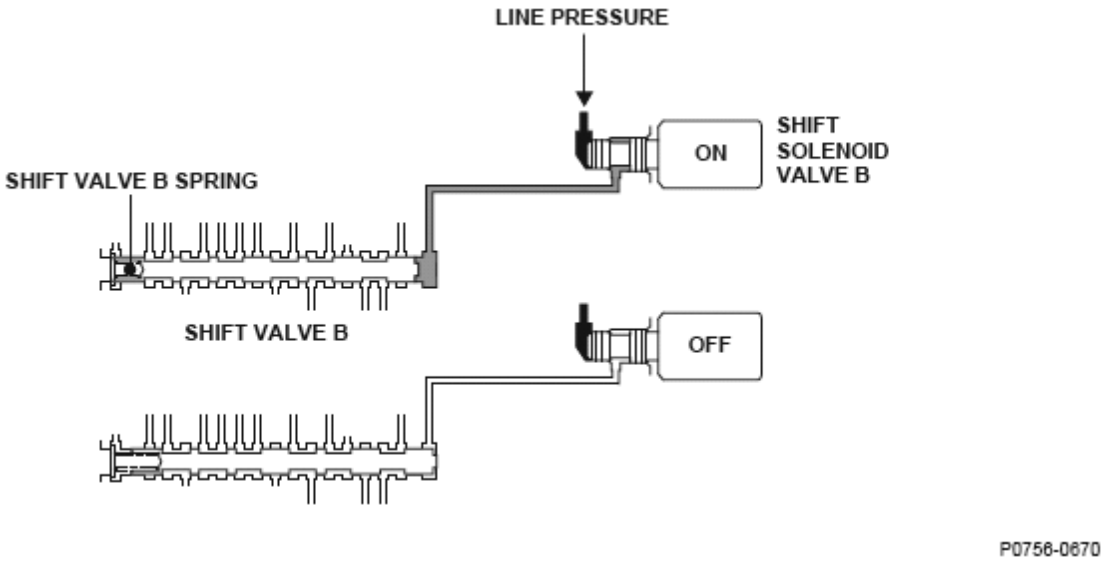


Fig. 32: Identifying Secondary Heated Oxygen Sensor (Secondary H02S)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Electronic Throttle Control System

The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

Idle control: When the engine is idling, the ECM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the ECM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The ECM controls the throttle actuator to maintain set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

Accelerator Pedal Position (APP) Sensor

As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 33: Identifying Accelerator Pedal Position (APP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Throttle Body

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.

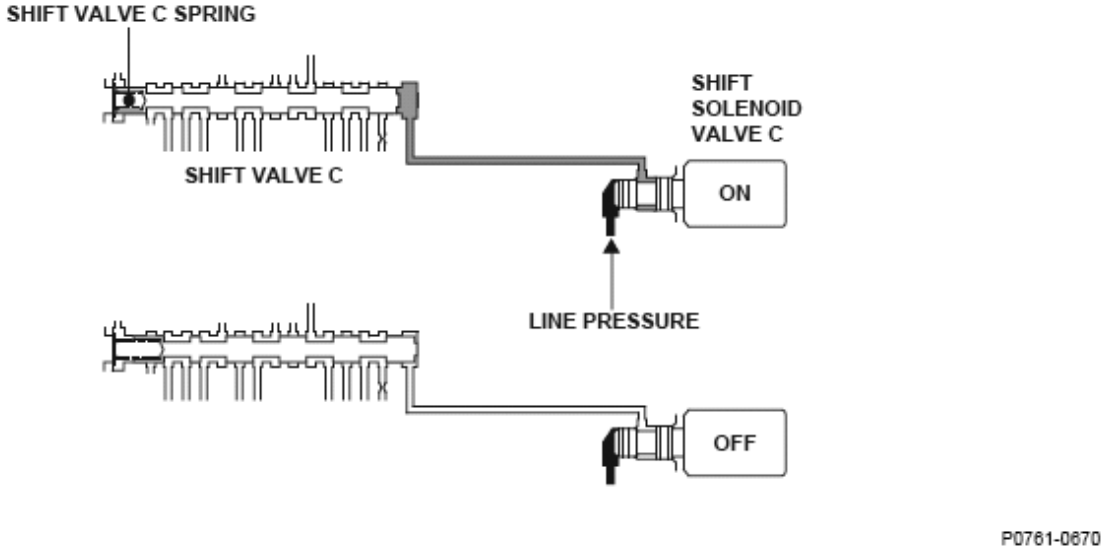


Fig. 34: Identifying Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch

The brake pedal position switch signals the ECM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the ECM when the power steering load is high.

Fuel Supply System

Fuel Cutoff Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 1,150 rpm. Fuel cutoff control also occurs when the engine speed exceeds 8,200 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM cuts the fuel at engine speeds over 7,700 rpm. Engine speed of fuel cut is lower on a cold engine.

Fuel Pump Control

When the ignition is turned on, the ECM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

PGM-FI main relay 1 is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

VTEC/VTC

- The i-VTEC has a variable valve timing control (VTC) mechanism on the intake camshaft in addition to the usual VTEC.

  This mechanism improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.

- The VTEC mechanism changes the valve lift and timing by using more than one cam profile.
- The VTC changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 35: VTEC/VTC Valve Lift And Timing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VTC CONTROL DESCRIPTION

Driving Condition	VTC Control	Description
(1) Light-load	Base Position	For stable combustion the cam angle is retarded, and it reduces the entry of exhaust gas into the cylinder.
(2) Medium/high-load	Advance Control	Cam phase angle is controlled to optimize valve timing, improving fuel efficiency and reducing emissions.
(3) High speed	Advance-Base Position	To reduce pumping loss, the intake valve is closed quickly. This gives a charging effect to the air/fuel mixture, maximizing engine power.

VTC System

- The VTC system makes continuous intake valve timing changes based on operating conditions.
- Intake valve timing is optimized to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the desired EGR effect and reduce pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- The system reduces the cam advance at idle, stabilizes combustion, and reduces engine speed.
- If a malfunction occurs, the VTC system control is disabled and the valve timing is fixed at the fully retarded position.

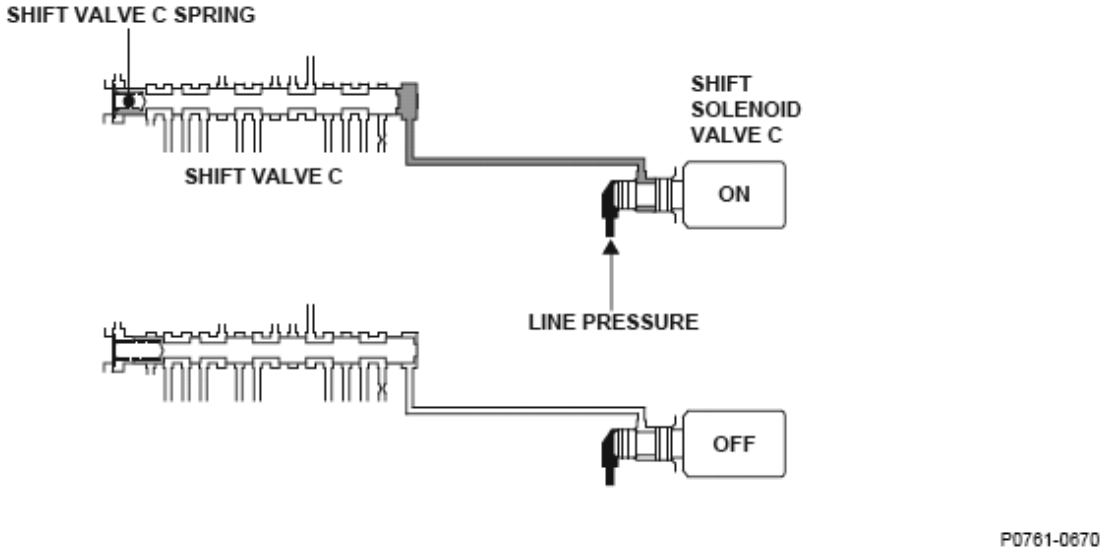


Fig. 36: Identifying Maximum VTC Advance System
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VTEC System

- The VTEC system changes the cam profile to correspond to the engine speed. It maximizes torque at low engine speed and output at high engine speed.

- The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 37: Identifying Valve Timing Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VTEC/VTC

System Diagram

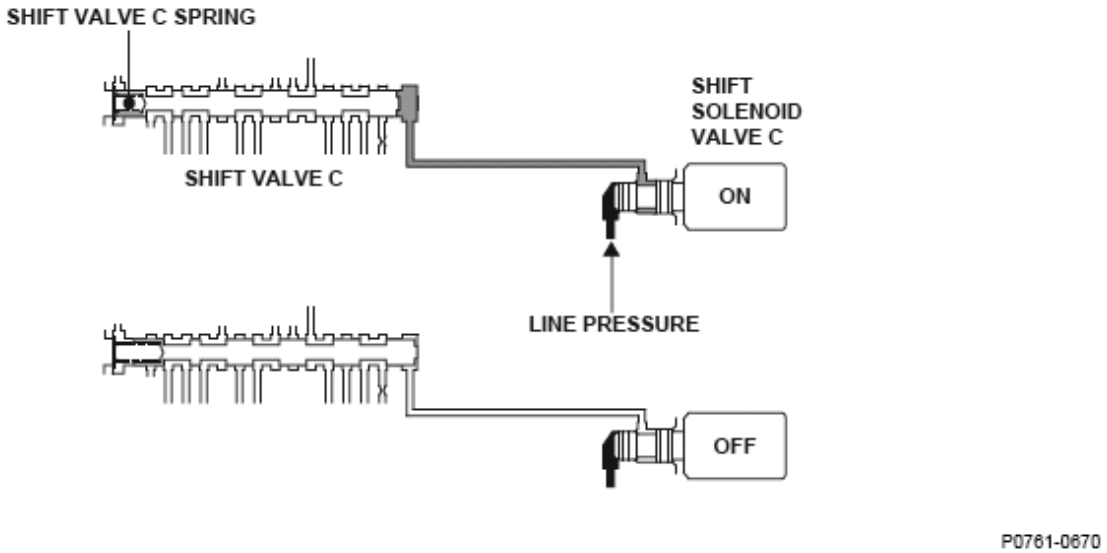


Fig. 38: Identifying VTEC/VTC System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Camshaft Position (CMP) Sensor A

CMP sensor A detects camshaft angle position for the VTC system.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 39: Identifying Camshaft Position (CMP) Sensor A
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Intake Air System

This system supplies air for engine needs.

Intake Air Bypass Control Thermal Valve

When the engine is cold, the intake air bypass control thermal valve sends air to the injector. The amount of air is regulated by engine coolant temperature. Once the engine is hot, the intake air bypass control thermal valve closes, stopping air to the injector.

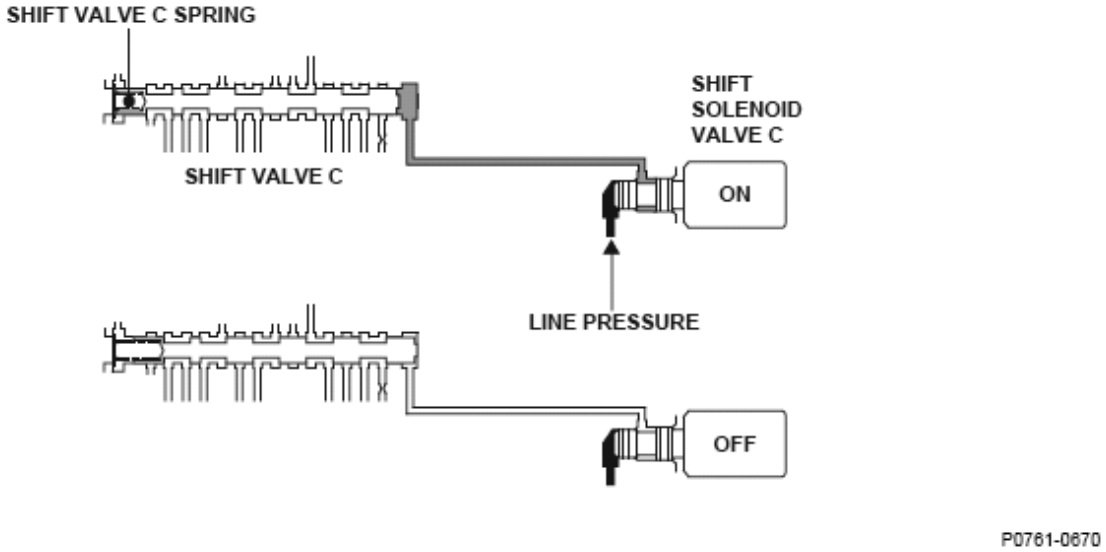


Fig. 40: Identifying Intake Air Bypass Control Thermal Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Catalytic Converter System

Three Way Catalytic Converter (TWC)

The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (C02), nitrogen (N2), and water vapor.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 41: Identifying Three Way Catalytic Converter (TWC)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.

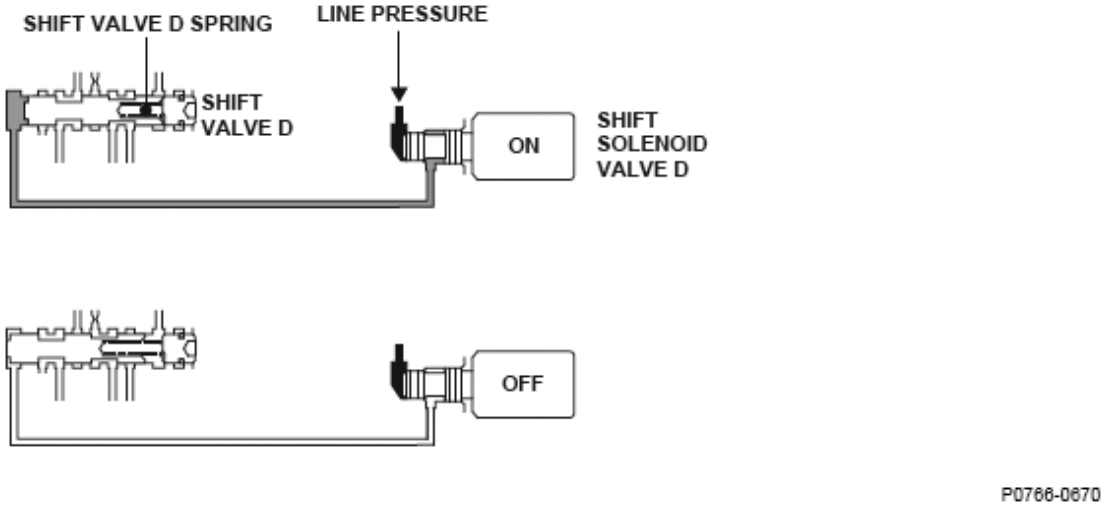


Fig. 42: Identifying Positive Crankcase Ventilation (PCV) System
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Evaporative Emission (EVAP) Control System

Refer to the system diagram to see a functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged back into the engine and burned.

EVAP Canister Purge Valve

When the engine coolant temperature is below 140°F (60°C), the ECM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 43: Identifying EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Fuel Tank Pressure (FTP) Sensor

The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM during the EVAP leak check.

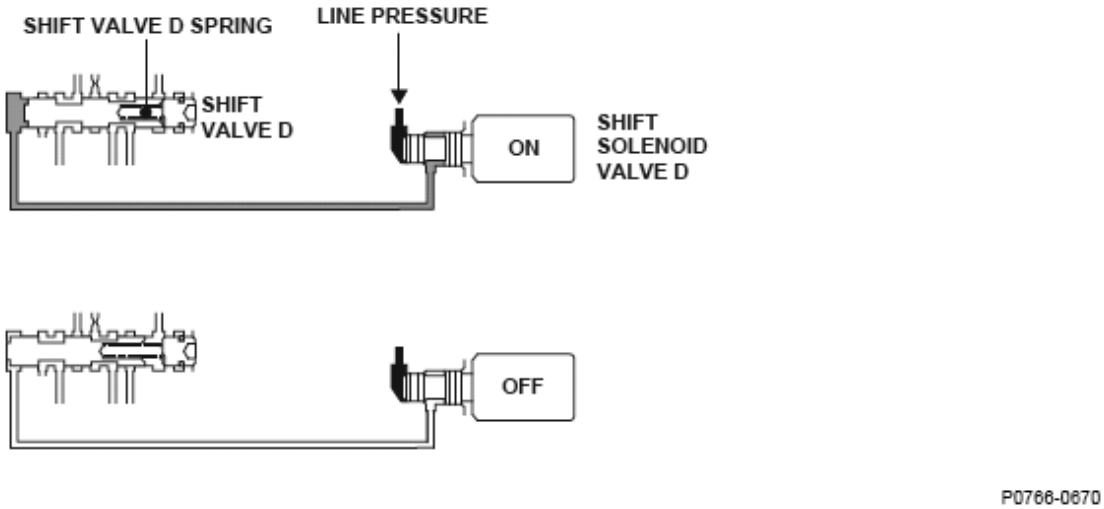


Fig. 44: Identifying Fuel Tank Pressure (FTP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister.

The EVAP canister vent shut valve controls the venting of the EVAP canister.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 45: Identifying EVAP Canister Vent Shut Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Fuel Cap Warning Message ('06 model)

The ECM detects whether the fuel fill cap is loose or missing under certain conditions and alerts the driver by showing the information in the gauge display. If the ECM detects a small volume leak, the MIL may come on during the third drive cycle and store a DTC.

First drive cycle

During the first drive cycle after a cold start, the ECM alerts the driver to check the fuel fill cap by showing a "CHECK FUEL CAP" message in the gauge display (A), and it stores Temporary DTC P0457 "Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing". Tightening the fuel cap does not make the message go off immediately.

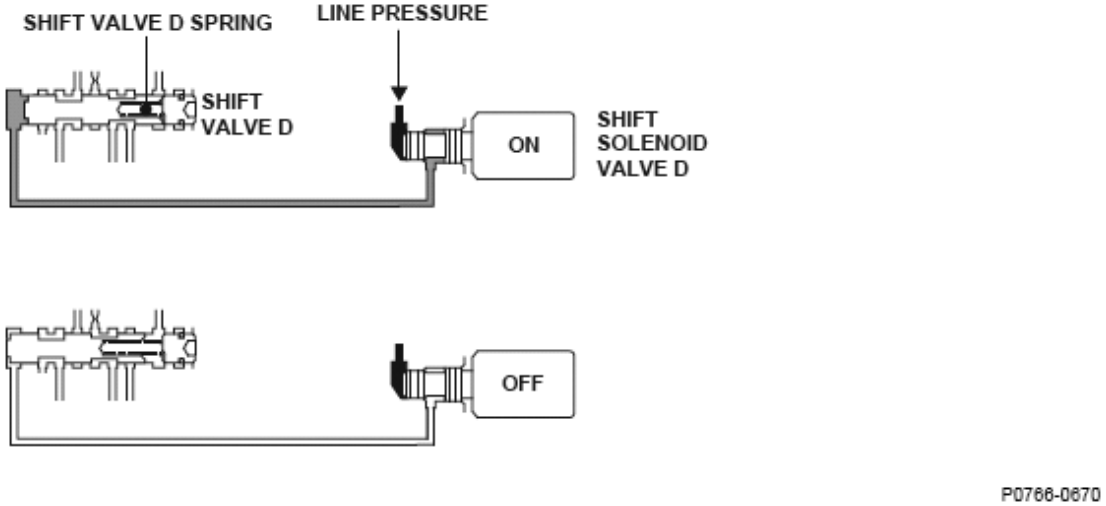


Fig. 46: Identifying Fuel Cap Warning Message In Gauge Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

To make the message go off (With the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.

2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (Without the HDS) ('06 model)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days of normal driving.

To make the message go off (Without the HDS) ('07-08 model)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch OFF.
3. Repeat step 2 two more times.

Fuel Cap Warning Message ('07 model)

The ECM will detect a loose or missing fuel fill cap as an evaporative system leak and alerts the driver by showing a warning message in the gauge display.

First drive cycle

The first time a leak is detected a "CHECK FUEL CAP" message in the gauge display (A). To scroll to another message, press the select/reset button. The "CHECK FUEL CAP" message will appear each time you restart the engine until the system turns the message off. Turn the engine off then replace or tighten the fuel fill cap until clicks at least once. The message should go off after several days of normal driving after the fuel fill cap has been tightened or replaced.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 47: Identifying Fuel Cap Warning Message In Gauge Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

To make the message go off (With the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (Without the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days of normal driving.

Electronic Throttle Control System Diagram

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, the electronic throttle control system (ETCS) control relay, and the ECM.

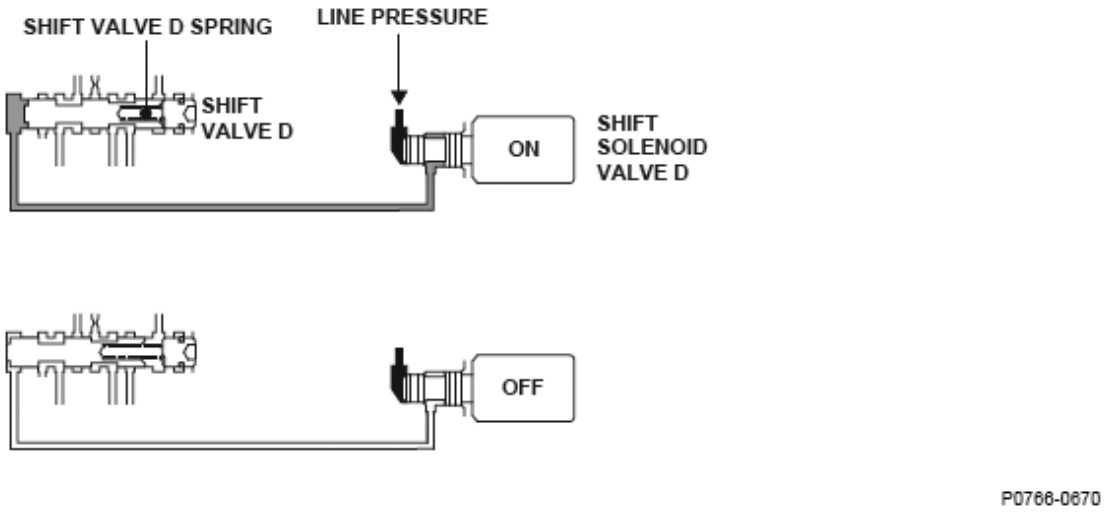


Fig. 48: Electronic Throttle Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.

The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140°F (60°C).

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 49: Identifying Evaporative Emission (EVAP) Control Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ECM Circuit Diagram

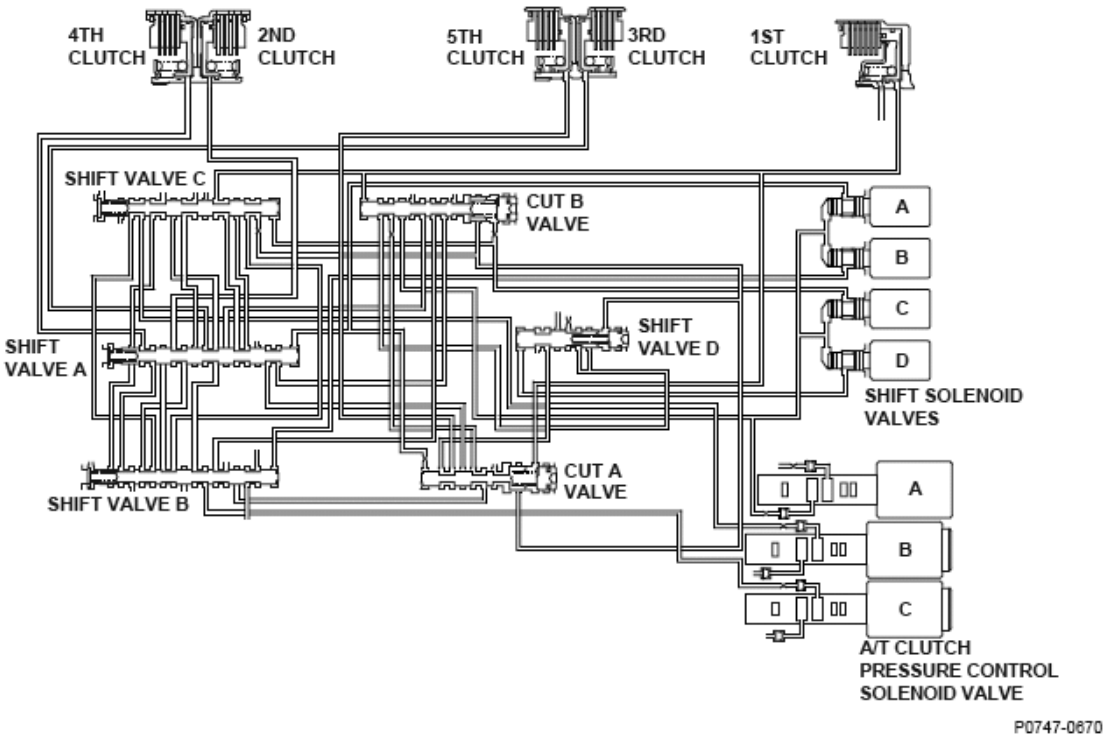


Fig. 50: ECM Circuit Diagram (1 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 51: ECM Circuit Diagram (2 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

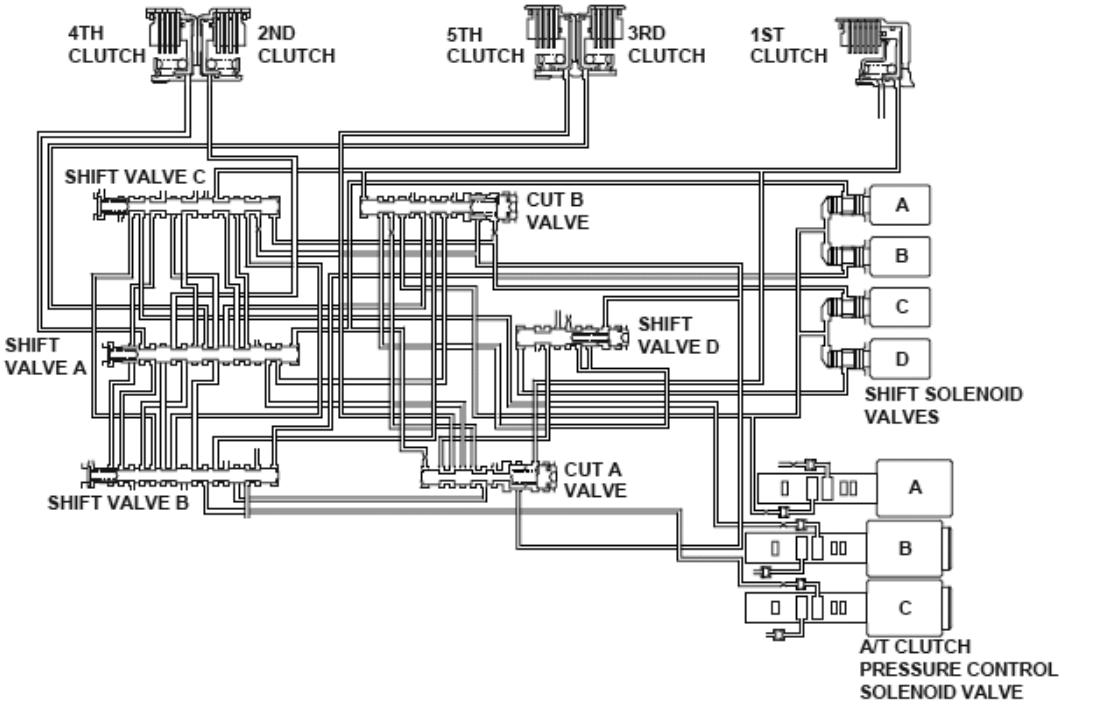


Fig. 52: ECM Circuit Diagram (3 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 53: ECM Circuit Diagram (4 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

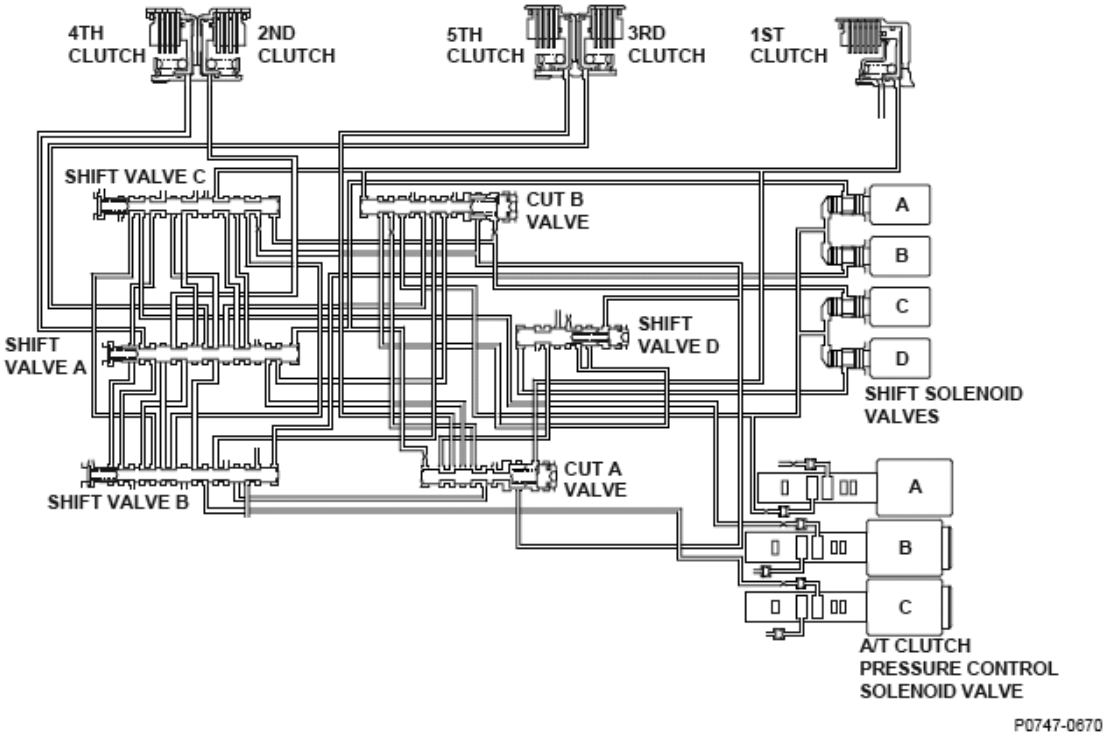


Fig. 54: ECM Circuit Diagram (5 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 55: ECM Circuit Diagram (6 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

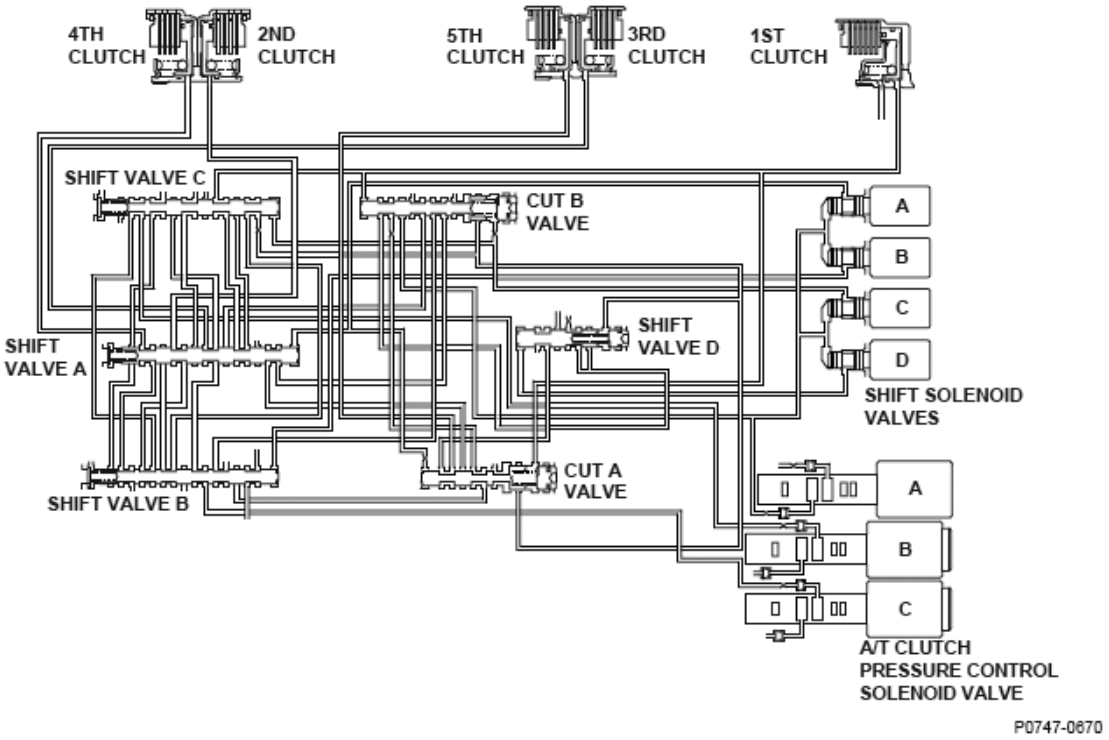


Fig. 56: ECM Circuit Diagram (7 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 57: ECM Circuit Diagram (8 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

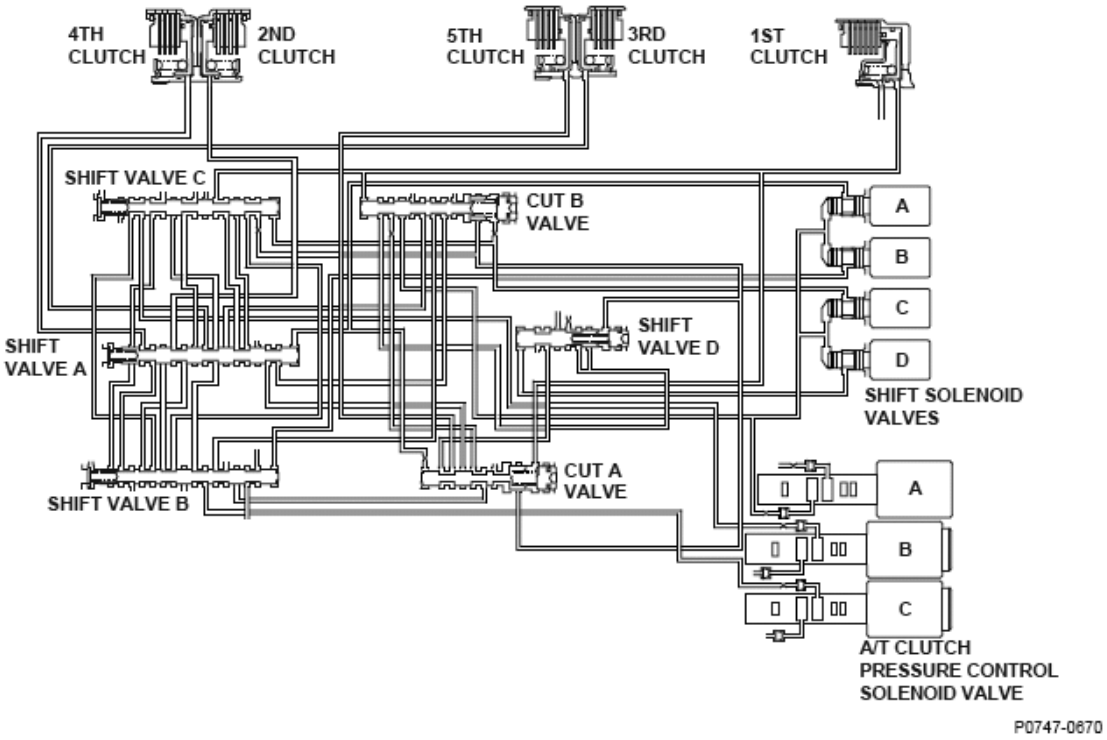


Fig. 58: ECM Circuit Diagram (9 Of 9)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HOW TO SET READINESS CODES

MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are set to complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see **OBD STATUS**). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

CATALYTIC CONVERTER MONITOR AND READINESS CODE

NOTE:

- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM is reset with the HDS.**

- **Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.**
- **The readiness code will not switch to complete until all the enable criteria are met.**
- **If a fault in the secondary H02S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.**

Enable Criteria

- Engine coolant temperature (ECT SENSOR 1) at 158°F (70°C) or more.
- Intake air temperature (IAT SENSOR) at 20°F (-7°C) or more.
- Vehicle speed sensor (VSS) above 25 mph (40 km/h).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to complete.
4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM MONITOR AND READINESS CODE

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- Engine coolant temperature (ECT SENSOR 1 and 2) between 176°F (80°C) and 212°F (100°C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- Vehicle speed (VSS) 0 mph (0 km/h).
- Intake air temperature (IAT SENSOR 1) between 32°F (0°C)and 212°F (100°C).

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
    - If the result is normal, readiness is complete.
    - If the result is not normal, go to the next step.

4. Check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR MONITOR AND READINESS CODE

NOTE:
- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM is reset with the HDS.**

Enable Criteria

Engine coolant temperature (ECT SENSOR 1) at 140°F (60°C) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the AIR FUEL RATIO (A/F) SENSOR in the DTCs MENU with the HDS.
   - If the screen shows complete, readiness is complete.
   - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST MENU. Check the ECT SENSOR 1 in the ALL DATA LIST with the HDS. If the ECT SENSOR 1 is less than 140°F (60°C), run the engine until it is more than 140°F (60°C), then repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR HEATER MONITOR READINESS CODE

NOTE: **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM is reset with the HDS.**

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, repeat the procedure.

MISFIRE MONITOR AND READINESS CODE

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

FUEL SYSTEM MONITOR AND READINESS CODE

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

COMPREHENSIVE COMPONENT MONITOR AND READINESS CODE

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

2006-09 ENGINE PERFORMANCE

Fuel and Emissions Systems (R18A1) - Civic (Except Hybrid)

SPECIAL TOOLS

NOTE: Refer to the FUEL AND EMISSIONS SYSTEMS (GX) (SUPPLEMENT) article for additional information for the GX model.

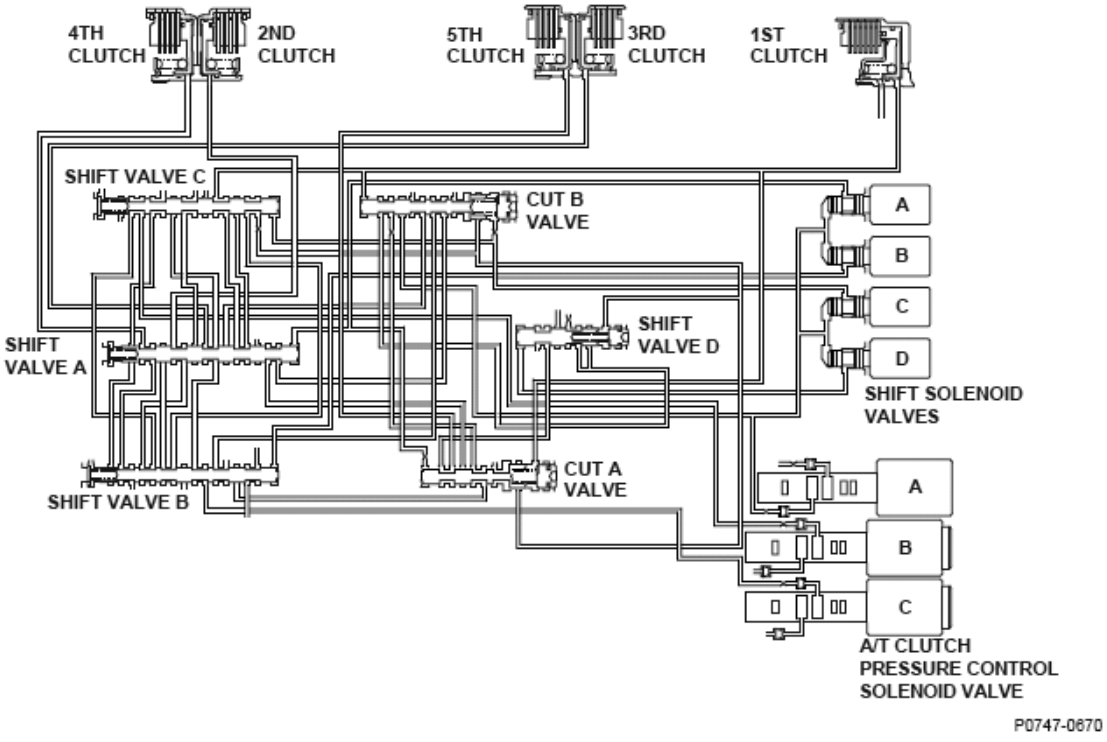


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

INTERMITTENT FAILURES

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

SERVICE INFORMATION

Periodically, new ECM/PCM software or new service procedures may become available. Always check online for the latest software or service information related to the DTCs or symptoms you are troubleshooting.

OPENS AND SHORTS

"Open" and "short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs or PCMs) this can sometimes mean something works, but not the way it's supposed to.

HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)

If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL stays on for 15-20 seconds (see MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)).

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 2: Identifying Malfunction Indicator Lamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

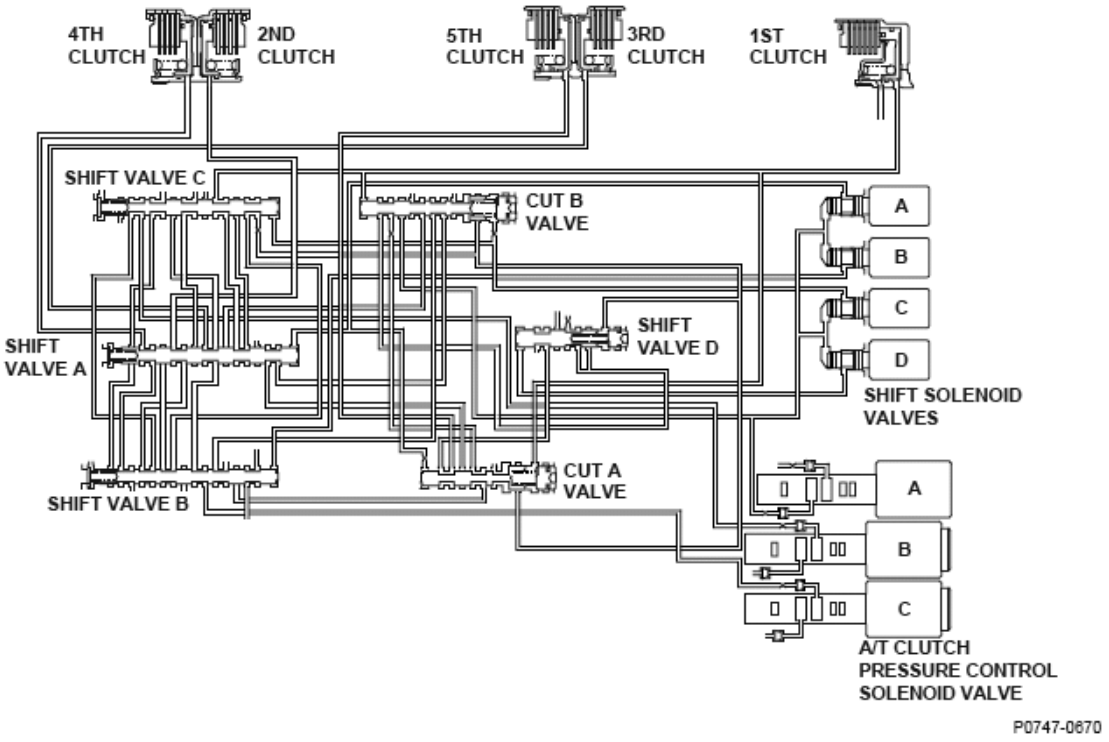


Fig. 3: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting and begin the appropriate troubleshooting procedure.

NOTE:

- **Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.**
- **The HDS can read the DTC, freeze data, on-board snapshot, current data, and other engine control module (ECM) or powertrain control module (PCM) data.**
- **For specific operations, refer to the user's manual that came with the HDS.**

6. If no DTCs are found, go to MIL troubleshooting (see **MIL CIRCUIT TROUBLESHOOTING**).

If the MIL did not stay on

If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC

Some of the troubleshooting requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so

will only result in confusion and possibly, a needlessly replaced ECM/PCM.

HDS CLEAR COMMAND

The ECM/PCM stores various specific data to correct the system even if there is no electrical power such as when the battery negative terminal or No. 19 Fl MAIN (15 A) fuse are disconnected. Stored data based on failed parts should be cleared by using the "CLEAR COMMAND" of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, ECM/PCM reset, and CKP pattern clear. DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting. The ECM/PCM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except CKP pattern. If the CKP pattern data in the ECM/PCM was cleared, you must do the CKP pattern learn procedure. The CKP pattern clear command erases only CKP pattern data. This command is for repair of a misfire or the CKP sensor.

SCAN TOOL CLEAR COMMAND

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the ECM/PCM, and it clears all commands at the same time (CKP pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**); CKP pattern learn procedure; Test-drive to set readiness codes to complete (see **MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)**).

DTC CLEAR

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

ECM/PCM RESET

1. Reset the ECM/PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

Shift solenoid valve / Clutch											
	A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
	B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON
	C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF
	D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1st		CPC A	LINE	CPC C		CPC A					
2nd		CPC B		CPC B	LINE	CPC B		CPC A			
3rd		CPC C				CPC C	CPC C	CPC C			
4th								CPC B	CPC B	CPC B	
5th										CPC C	CPC C

CPC: Clutch Pressure Control pressure

Fig. 4: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the A/T in 2 position, or M/T in 1st gear.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the A/T in 2 position, or M/T in 1st gear.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait for 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the ECM/PCM with the HDS.
2. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

HOW TO TROUBLESHOOT CIRCUITS AT THE ECM/PCM CONNECTORS

NOTE: The ECM/PCM overwrites data and monitors the EVAP system for up to 15

minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the ECM/PCM during this function, without jumping the SCS line first, can damage the ECM/PCM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).

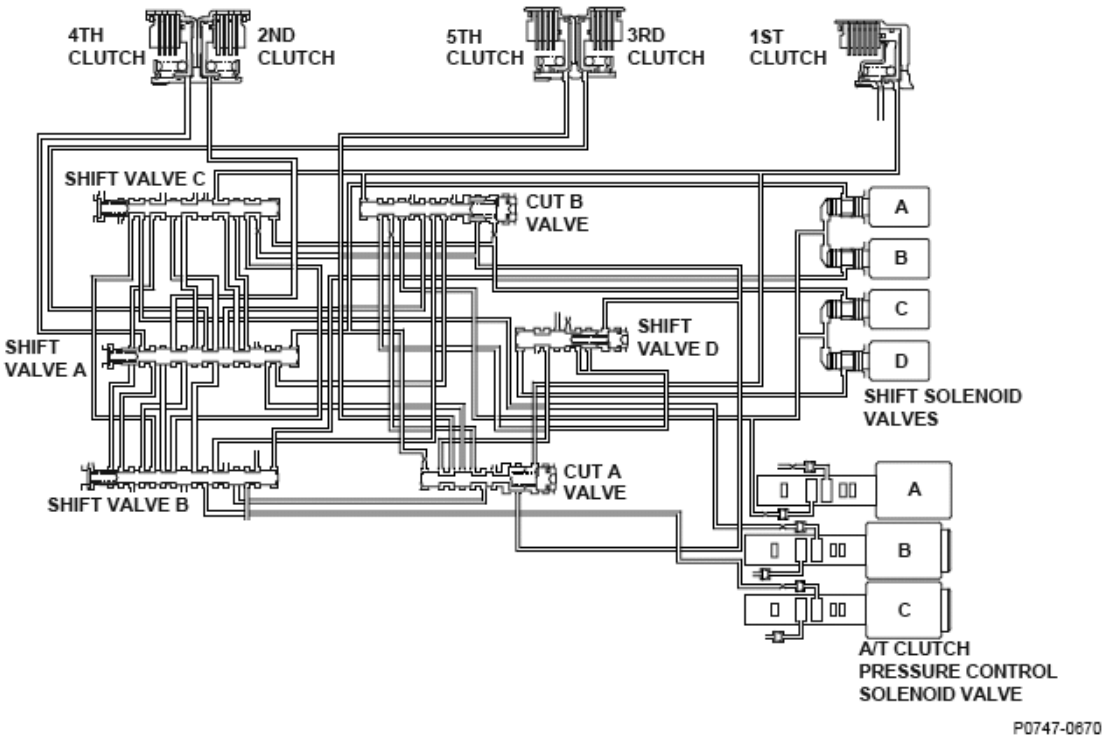


Fig. 5: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Lift up the under-hood fuse/relay box (D).

Shift solenoid valve / Clutch											
A	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	
B	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	
C	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	
D	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1st	CPC A	LINE	CPC C		CPC A						
2nd	CPC B		CPC B	LINE	CPC B		CPC A				
3rd	CPC C				CPC C	CPC C	CPC C				
4th							CPC B	CPC B	CPC B		
5th									CPC C	CPC C	

CPC: Clutch Pressure Control pressure

Fig. 6: Lifting Up Under-Hood Fuse/Relay Box
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the coolant reservoir (E). Disconnect the ECM/PCM connectors A, B, and C, and probe the

terminals from the terminal side of the connectors.

NOTE: ECM/PCM connectors A, B, and C have symbols (A=[], B=delta, C= o) embossed on them for identification.

5. When diagnosis/troubleshooting is done at the ECM/PCM connector, use the terminal test port (A) above the terminal you need to check.

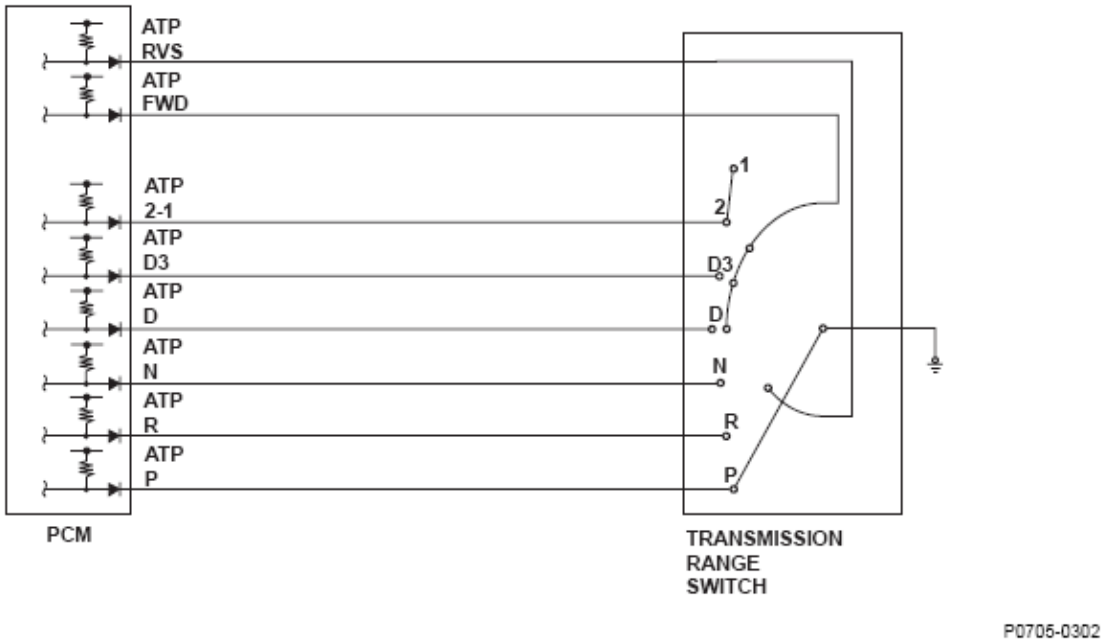


Fig. 7: Using Test Port To Check ECM Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).

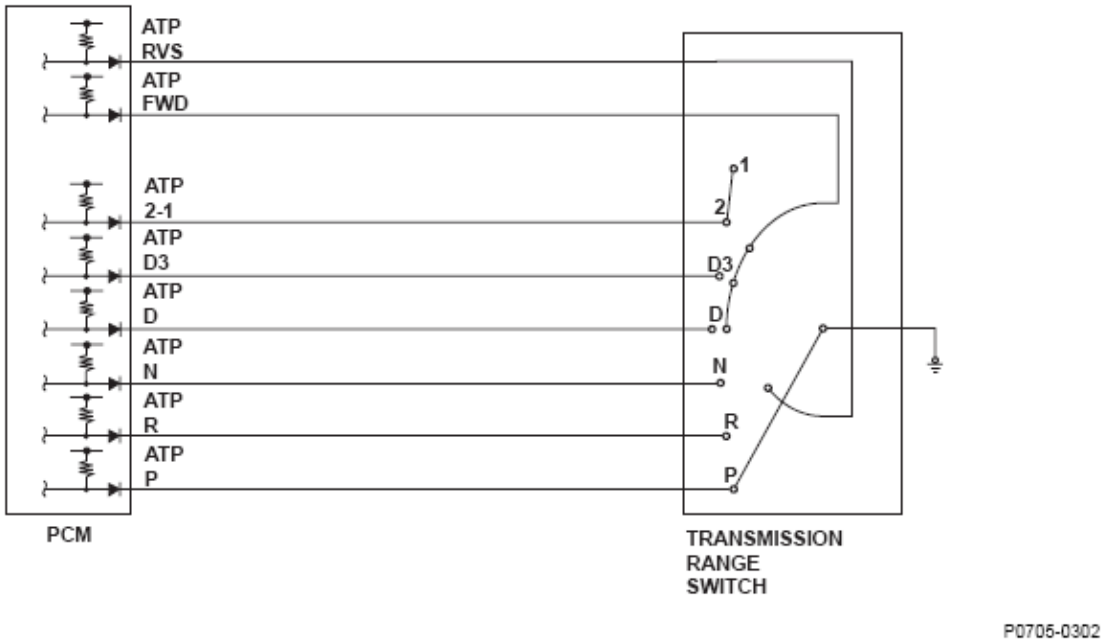


Fig. 8: Connecting Patch Cord Terminals To Commercially Available Digital Multimeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTE:

- **For accurate results, always use the pin probe (male).**
- **To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.**
- **Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.**

SUBSTITUTING THE ECM/PCM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE: Use this procedure when you need to substitute a known-good PCM during troubleshooting procedures.

1. **Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.**

2. **Turn the ignition switch to ON (II).**
3. **Make sure the HDS communicates with the PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting. If you are returning from DLC circuit troubleshooting, skip steps 4 and 5, then clean the throttle body after substituting the PCM.**
4. **Select the INSPECTION MENU with the HDS.**
5. **Select the ETCS TEST, then select the TP POSITION CHECK and follow the screen prompts.**

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. **Turn the ignition switch to LOCK (0).**
7. **Jump the SCS line with the HDS.**
8. **Do the battery removal procedure.**

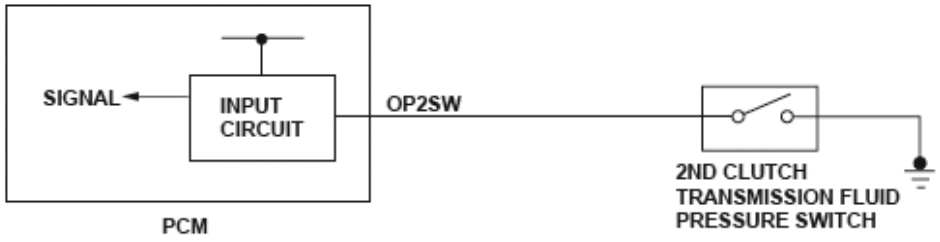


Fig. 9: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. **Remove the cover (A).**
10. **Remove the bolts (D), then remove the PCM (E).**
11. **Disconnect PCM connectors A, B, and C.**

NOTE: PCM connectors A, B, and C have symbols (A=?, B=? , C=?) embossed on them for identification.

12. **Install a known-good PCM in the reverse order of removal.**
13. **Do the battery installation procedure.**
14. **Turn the ignition switch to ON (II).**

NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

15. **Manually input the VIN to the PCM with the HDS.**
16. **Select the IMMOBI SYSTEM with the HDS.**
17. **Enter the immobilizer PCM code that you got from the iN, and use the PCM replacement procedure in the IMMOBI MENU of the HDS; it allows**

you to start the engine.

18. **Update the PCM if it does not have the latest software.**
19. **Reset the PCM with the HDS.**
20. **If the TP POSITION CHECK failed in step 7, clean the throttle body.**
21. **Do the PCM idle learn procedure.**
22. **Do the CKP pattern clear/CKP pattern learn procedure.**

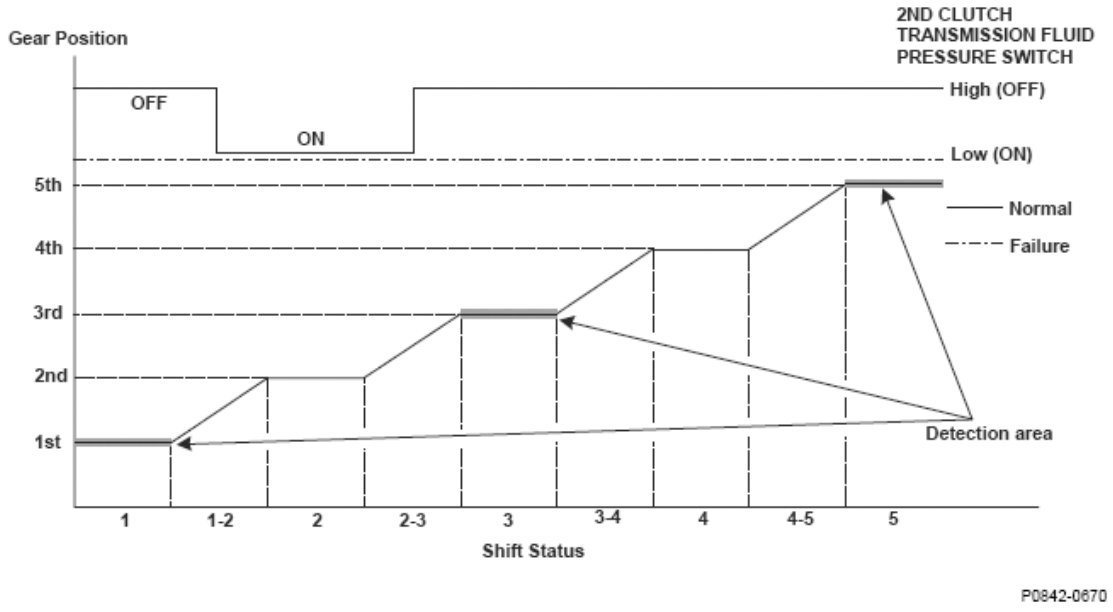


Fig. 10: Removing ECM/PCM (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- **PASSED: The on board diagnosis is successfully finished.**
- **FAILED: The on board diagnosis has finished but failed.**
- **EXECUTING: The vehicle is in enable criteria conditions of the DTC, and the on board diagnosis is running.**
- **NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.**
- **OUT OF CONDITION: The vehicle has stayed out of the enable conditions of the DTC.**

SUBSTITUTING THE ECM/PCM

Special Tools Required

- Honda diagnostic system (HDS)

- Honda interface module (HIM)
- HDS pocket tester

NOTE: Use this procedure when you need to substitute a known-good ECM/PCM during troubleshooting procedures.

1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

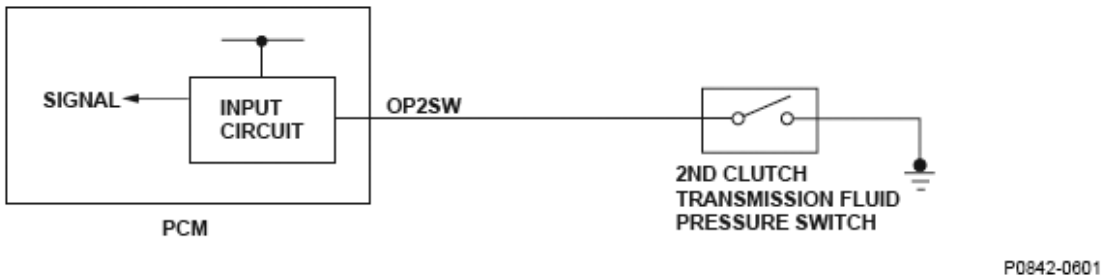


Fig. 11: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**). If you are returning from DLC circuit troubleshooting, skip step 5 to 10, and clean the throttle body after substituting the ECM/PCM (see **THROTTLE BODY CLEANING**).
5. USA, Canada models: Select the INSPECTION MENU with the HDS.
6. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

7. Turn the ignition switch OFF.
8. Remove the battery.
9. Remove the cover (A).

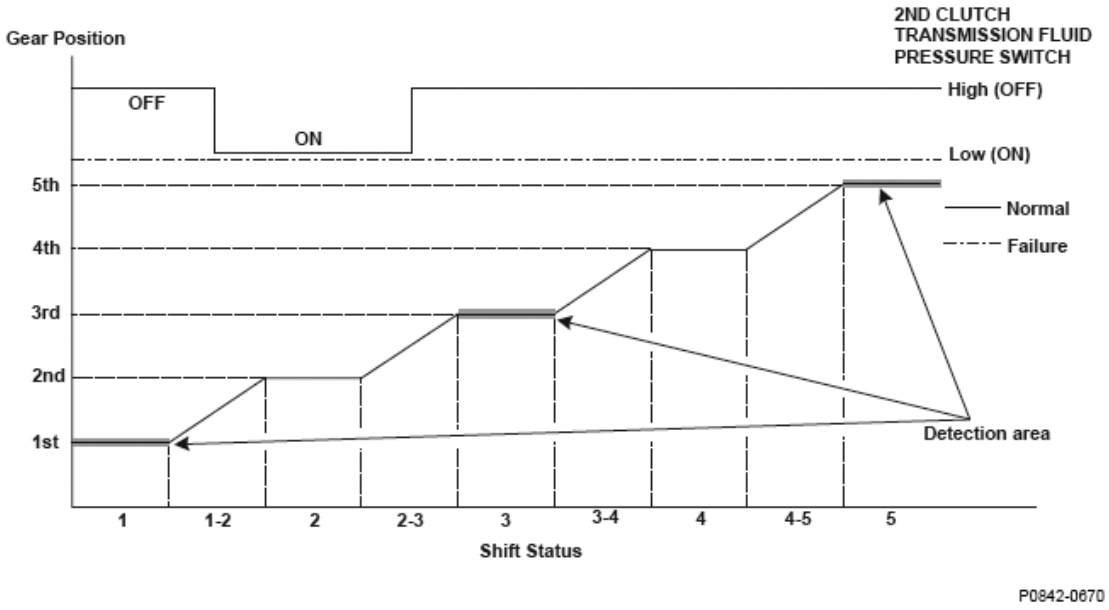


Fig. 12: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the bolts (D), then remove the ECM/PCM (E).
11. Disconnect ECM/PCM connectors A, B, and C.

NOTE: ECM/PCM connectors A, B, and C have symbols (A=[], B=delta, C=o) embossed on them for identification.

12. Install the ECM/PCM and the battery in the reverse order of removal.
13. Turn the ignition switch ON (II).

NOTE: USA, Canada models: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.

14. USA, Canada models: Manually input the VIN to the ECM/PCM with the HDS.
15. Update the ECM/PCM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the ECM/PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the ECM/PCM with the HDS.
19. USA, Canada models: If the TP POSITION CHECK failed in step 6, clean the throttle body (see **THROTTLE BODY CLEANING**).
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Do the CKP pattern learn procedure.
22. Enter the anti-theft codes for the radio and the navigation system (if equipped), and set the clock.

OBD STATUS

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on board diagnosis is successfully finished.
- FAILED: The on board diagnosis has finished but failed.
- EXECUTING: The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.
- OUT OF CONDITION: The vehicle has stayed out of the enable conditions for the DTC.

DTC TROUBLESHOOTING INDEX

NOTE: Refer to the FUEL AND EMISSIONS SYSTEMS (GX) (SUPPLEMENT) article for additional information for the GX model.

DTC TROUBLESHOOTING INDEX (1 OF 4)

DTC (MIL indication(1))	Two Drive Cycle Detection	Detection Item	MIL	Note
P0101 (50)	O	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	(see **DTC TROUBLESHOOTING**)
P0102(50)	-	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see **DTC P0102: MAF SENSOR CIRCUIT LOW VOLTAGE**)
P0103(50)	-	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see **DTC P0103: MAF SENSOR CIRCUIT HIGH VOLTAGE**)
P0107 (3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see **DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE**)
P0108(3)	-	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see **DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE**)
P0111 (10)	O	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see **DTC P0111: IAT SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0112 (10)	-	Intake Air Temperature (IAT) Sensor Circuit Low	ON	(see **DTC P0112: IAT SENSOR CIRCUIT LOW VOLTAGE**)

		Voltage		
P0113 (10)	-	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see **DTC P0113: IAT SENSOR CIRCUIT HIGH VOLTAGE**)
P0116 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see **DTC P0116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0117 (6)	-	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see **DTC P0117: ECT SENSOR 1 CIRCUIT LOW VOLTAGE**)
P0118 (6)	--	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see **DTC P0118: ECT SENSOR 1 CIRCUIT HIGH VOLTAGE**)
P0122 (7)	-	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see **DTC P0122: TP SENSOR A CIRCUIT LOW VOLTAGE**)
P0123 (7)	-	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see **DTC P0123: TP SENSOR A CIRCUIT HIGH VOLTAGE**)
P0125 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see **DTC P0125: ECT SENSOR 1 MALFUNCTION/SLOW RESPONSE**)
P0128 (87)	O	Cooling System Malfunction	ON	(see **DTC P0128: COOLING SYSTEM MALFUNCTION**)
P0133 (61)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Malfunction/Slow Response	ON	(see **DTC P0133: A/F SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE**)
P0134 (41)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	(see **DTC P0134: A/F SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION**)
P0135(41)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	(see **DTC P0135: A/F SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION**)
P0137 (63)	-	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	(see **DTC P0137: SECONDARY HO2S (SENSOR 2) CIRCUIT LOW VOLTAGE**)
		Secondary Heated		

P0138 (63)	-	Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON	(see **DTC P0138: SECONDARY HO2S (SENSOR 2) CIRCUIT HIGH VOLTAGE**)
P0139 (63)	O	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	(see **DTC P0139: SECONDARY HO2S (SENSOR 2) SLOW RESPONSE**)
P0141 (65)	-	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	(see **DTC P0141: SECONDARY HO2S (SENSOR 2) HEATER CIRCUIT MALFUNCTION**)
P0171 (45)	O	Fuel System Too Lean	ON	(see **DTC P0171: FUEL SYSTEM TOO LEAN**)
P0172 (45)	O	Fuel System Too Rich	ON	(see **DTC P0172: FUEL SYSTEM TOO RICH**)
P0222 (7)	-	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see **DTC P0222: TP SENSOR B CIRCUIT LOW VOLTAGE**)
P0223 (7)	-	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see **DTC P0223: TP SENSOR B CIRCUIT HIGH VOLTAGE**)
P0300 (75) any combination of the following P0301 (71) P0302 (72) P0303 (73) P0304 (74)	O	Random Misfire Detected	ON	(see **DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING: DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED**)
P0301 (71)	O	No. 1 Cylinder Misfire Detected	ON	(see **DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED**)
P0302 (72)	O	No. 2 Cylinder Misfire Detected	ON	(see **DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED**)
P0303 (73)	O	No. 3 Cylinder Misfire Detected	ON	(see **DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED**)
P0304 (74)	O	No. 4 Cylinder Misfire Detected	ON	(see **DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED**)
P0325 (23)	-	Knock Sensor Circuit Malfunction	ON	(see **DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION**)
P0335 (4)	-	Crankshaft Position (CKP) Sensor No Signal	ON	(see **DTC P0335: CKP SENSOR NO SIGNAL**)
P0339 (4)	-	Crankshaft Position (CKP) Sensor Circuit Intermittent	ON	(see **DTC P0339: CKP SENSOR INTERMITTENT INTERRUPTION**)

		Interruption		
P0351 (71)	-	No. 1 Cylinder Ignition Coil Circuit Malfunction	ON	(see **DTC P0351: NO. 1 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION**)
P0352 (72)	-	No. 2 Cylinder Ignition Coil Circuit Malfunction	ON	(see **DTC P0352: NO. 2 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION**)
P0353 (73)	-	No. 3 Cylinder Ignition Coil Circuit Malfunction	ON	(see **DTC P0353: NO. 3 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION**)
P0354 (74)	-	No. 4 Cylinder Ignition Coil Circuit Malfunction	ON	(see **DTC P0354: NO. 4 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION**)
P0365 (8)	-	Camshaft Position (CMP) Sensor No Signal	ON	(see **DTC P0365: CMP SENSOR NO SIGNAL**)
P0369 (8)	-	Camshaft Position (CMP) Sensor Circuit Intermittent Interruption	ON	(see **DTC P0369: CMP SENSOR CIRCUIT INTERMITTENT INTERRUPTION**)
P0400 (80)	O	Exhaust Gas Recirculation (EGR) System Leak Detected	ON	(see **DTC P0400: EGR SYSTEM LEAK DETECTED**)
P0401 (80)	O	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see **DTC P0401: EGR INSUFFICIENT FLOW**)
P0404 (12)	O	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	(see **DTC P0404: EGR VALVE CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0406 (12)	-	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see **DTC P0406: EGR VALVE POSITION SENSOR CIRCUIT HIGH VOLTAGE**)
P0420 (67)	O	Catalyst System Efficiency Below Threshold	ON	(see **DTC P0420: CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD**)

NOTE:

The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

DTC TROUBLESHOOTING INDEX (2 OF 4)

DTC (MIL	**Two Drive**			

indication (1))	Cycle Detection	Detection Item	MIL	Note
P0443 (92)	-	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see **DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION**)
P0451 (91)	O	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see **DTC P0451: FTP SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0452 (91)	-	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see **DTC P0452: FTP SENSOR CIRCUIT LOW VOLTAGE**)
P0453 (91)	-	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see **DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE**)
P0455 (90)	O	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see **DTC P0455: EVAP SYSTEM LARGE LEAK DETECTED**)
P0456 (90)	O	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see **DTC P0456: EVAP SYSTEM VERY SMALL LEAK DETECTED**)
P0457 (90)	O	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see **DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL FILL CAP LOOSE OR MISSING**)
P0461 (121)	O	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	(see **DTC P0461: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P0462 (121)	-	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see **DTC P0462: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT LOW VOLTAGE**)
P0463 (121)	-	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see **DTC P0463: FUEL LEVEL SENSOR (FUEL GAUGE SENDING UNIT) CIRCUIT HIGH VOLTAGE**)
P0496 (92)	O	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	(see **DTC P0496: EVAP SYSTEM HIGH PURGE FLOW DETECTED**)
P0497 (90)	O	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see **DTC P0497: EVAP SYSTEM LOW PURGE FLOW DETECTED**)
P0498 (117)	-	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see **DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE**)
P0499 (117)	-	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	(see **DTC P0499: EVAP CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE**)
P0506 (14)	O	Idle Control System RPM Lower Than Expected	ON	(see **DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN**

				EXPECTED)
P0507 (14)	O	Idle Control System RPM Higher Than Expected	ON	(see **DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED**)
P050A (167)	O	Cold Start Idle Air Control System Performance Problem	ON	(see **DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM**)
P050B (167)	O	Cold Start Ignition Timing Control System Performance Problem	ON	(see **DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM**)
P0522 (22)	-	Engine Oil Pressure (EOP) Sensor Circuit Low Voltage	ON	(see **DTC P0522: EOP SENSOR CIRCUIT LOW VOLTAGE**)
P0523 (22)	-	Engine Oil Pressure (EOP) Sensor Circuit High Voltage	ON	(see **DTC P0523: EOP SENSOR CIRCUIT HIGH VOLTAGE**)
P0532(191)	-	A/C Pressure Sensor Circuit Low Voltage	OFF	(see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**)
P0533 (191)	-	A/C Pressure Sensor Circuit High Voltage	OFF	(see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**)
P0562 (34)	-	Charging System Low Voltage	OFF	(see **DTC P0562: CHARGING SYSTEM LOW VOLTAGE**)
P0563 (34)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see **DTC P0563: ECM/PCM POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE**)
P0602 (196)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Programming Error	ON	(see **DTC P0602: ECM/PCM PROGRAMMING ERROR**)
P0603 (131)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see **DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR**)
P0606 (0)	-	Engine Control Module (ECM)/Powertrain Control Module (PCM) Processor Malfunction	ON	(see **DTC P0606: ECM/PCM PROCESSOR MALFUNCTION**)
P060A (131)(2)	-	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	(see **DTC P060A: PCM (A/T SYSTEM) INTERNAL CONTROL MODULE MALFUNCTION**)
P0630 (139)	-	VIN Not Programmed or Mismatch	ON	(see **DTC P0630: VIN NOT PROGRAMMED OR MISMATCH**)
P0685 (135)	O	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit	ON	(see **DTC P0685: ECM/PCM POWER CONTROL CIRCUIT/INTERNAL CIRCUIT**

		Malfunction		**MALFUNCTION**)
P0720 (70) (2), (3)	-	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see **DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION**)
P0720 (122)(4)	-	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see **DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION**)
P1077 (106)	O	Intake Manifold Tuning (IMT) Valve Stuck in High RPM Position	ON	(see **DTC P1077: IMT VALVE STUCK IN HIGH RPM POSITION**)
P1078 (106)	O	Intake Manifold Tuning (IMT) Valve Stuck in Low RPM Position	ON	(see **DTC P1078: IMT VALVE STUCK IN LOW RPM POSITION**)
P1109 (13)	-	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see **DTC P1109: BARO SENSOR CIRCUIT OUT OF RANGE HIGH**)
P1116 (86)	O	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see **DTC P1116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P1128 (5)	O	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see **DTC P1128: MAP SENSOR SIGNAL LOWER THAN EXPECTED**)
P1129 (5)	O	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see **DTC P1129: MAP SENSOR SIGNAL HIGHER THAN EXPECTED**)

NOTE:

The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) A/T

(3) The D indicator and the MIL may come on at the same time (A/T).

(4) M/T

DTC TROUBLESHOOTING INDEX (3 OF 4)

DTC (MIL indication (1))	Two Drive Cycle Detection	Detection Item	MIL	Note
P1157 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit Malfunction	ON	(see **DTC P1157: A/F SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION**)

P1172 (61)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Out of Range High	ON	(see **DTC P1172: A/F SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH**)
P1297 (20) (2)	-	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see **DTC P1297: ELD CIRCUIT LOW VOLTAGE**)
P1298 (20) (2)	-	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see **DTC P1298: ELD CIRCUIT HIGH VOLTAGE**)
P1454 (91)	O	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see **DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM**)
P1549 (34)	-	Charging System High Voltage	OFF	(see **DTC P1549: CHARGING SYSTEM HIGH VOLTAGE**)
P1658 (40)	-	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see **DTC P1658: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY ON MALFUNCTION**)
P1659 (40)	-	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see **DTC P1659: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY OFF MALFUNCTION**)
P1683 (40)	-	Throttle Valve Default Position Spring Performance Problem	ON	(see **DTC P1683: THROTTLE VALVE DEFAULT POSITION SPRING PERFORMANCE PROBLEM**)
P1684 (40)	-	Throttle Valve Return Spring Performance Problem	ON	(see **DTC P1684: THROTTLE VALVE RETURN SPRING PERFORMANCE PROBLEM**)
P16BB (116)	-	Alternator B Terminal Circuit Low Voltage	OFF	(see **DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE**)
P16BC (116)	-	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see **DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE**)
P2101 (40)	-	Electronic Throttle Control System (ETCS) Malfunction	ON	(see **DTC P2101: ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) MALFUNCTION**)
P2118 (40)	-	Throttle Actuator Current Range/Performance Problem	ON	(see **DTC P2118: THROTTLE ACTUATOR CURRENT RANGE/PERFORMANCE PROBLEM**)
P2122 (37)	-	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see **DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE**)
P2123 (37)	-	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see **DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE**)

P2127 (37)	-	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see **DTC P2127: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT LOW VOLTAGE**)
P2128 (37)	-	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see **DTC P2128: APP SENSOR B (THROTTLE POSITION SENSOR E) CIRCUIT HIGH VOLTAGE**)
P2135 (7)	-	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	(see **DTC P2135: TP SENSOR A/B INCORRECT VOLTAGE CORRELATION**)
P2138 (37)	-	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see **DTC P2138: APP SENSOR A/B (THROTTLE POSITION SENSOR D/E) INCORRECT VOLTAGE CORRELATION**)
P2176 (40)	-	Throttle Actuator Control System Idle Position Not Learned	ON	(see **DTC P2176: THROTTLE ACTUATOR CONTROL SYSTEM IDLE POSITION NOT LEARNED**)
P2183 (192)	O	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	(see **DTC P2183: ECT SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P2184 (192)	-	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see **DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE**)
P2185 (192)	-	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see **DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE**)
P2195 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	(see **DTC P2195: A/F SENSOR (SENSOR 1) SIGNAL STUCK LEAN**)
P2227 (13)	O	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see **DTC P2227: BARO SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM**)
P2228 (13)	-	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see **DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE**)
P2229 (13)	-	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see **DTC P2229: BARO SENSOR CIRCUIT HIGH VOLTAGE**)
P2238 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS+ Circuit Low Voltage	ON	(see **DTC P2238: A/F SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE**)
P2252 (48)	-	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS-Circuit Low Voltage	ON	(see **DTC P2252: A/F SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE**)

P2270 (63)	O	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Lean	ON	(see **DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK LEAN**)
P2271 (63)	O	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Rich	ON	(see **DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK LEAN; DTC P2271: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK RICH**)
P2413 (12)	O	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see **DTC P2413: EGR SYSTEM MALFUNCTION**)

NOTE:

The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) All models except Canada

DTC TROUBLESHOOTING INDEX (4 OF 4)

DTC (MIL indication (1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2422 (117)	O	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see **DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION**)
P2610 (132)	O	Engine Control Module (ECM)/Powertrain Control Module (PCM) Ignition Off Internal Timer Malfunction	ON	(see **DTC P2610: ECM/PCM IGNITION OFF INTERNAL TIMER MALFUNCTION**)
P2646 (22)	-	VTEC System Stuck OFF	ON	(see **DTC P2646: VTEC SYSTEM STUCK OFF**)
P2647 (22)	-	VTEC System Stuck ON	ON	(see **DTC P2647: VTEC SYSTEM STUCK ON**)
P2648 (21)	-	Rocker Arm Oil Control solenoid Circuit Low Voltage	ON	(see **DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE**)
P2649 (21)	-	Rocker Arm Oil Control solenoid Circuit High Voltage	ON	(see **DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE**)
P2A00 (61)	O	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Range/Performance Problem	ON	(see **DTC P2A00: A/F SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM**)
U0155		F-CAN Malfunction (Engine Control Module		(see **DTC U0155: F-CAN**

(126)	-	(ECM)/Powertrain Control Module (PCM)-Gauge Control Module)	ON	**MALFUNCTION (ECM/PCM-GAUGE CONTROL MODULE)**)
U0300 (131)(2)	-	PGM-FI System and A/T System Program Version Mismatch	ON	(see **DTC U0300: PGM-FI SYSTEM AND A/T SYSTEM PROGRAM VERSION MISMATCH**)

NOTE:
The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

(1) These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(2) A/T

SYMPTOM TROUBLESHOOTING INDEX

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see **BATTERY TEST**). 2. Test the starter: • M/T model (see **M/T**) • A/T model (see **A/T**) 3. Check the fuel pressure (see **FUEL PRESSURE TEST**). 4. Troubleshoot the fuel pump circuit (see **FUEL PUMP CIRCUIT TROUBLESHOOTING**).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see **MIL CIRCUIT TROUBLESHOOTING**).	
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see **MIL CIRCUIT TROUBLESHOOTING**).	
Engine will not start (MIL works OK, no DTCs set, immobilizer	Check the immobilizer system.	

indicator stays on or flashes)		
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see **BATTERY TEST**). 2. Check the fuel pressure (see **FUEL PRESSURE TEST**). 3. Clean the throttle body (see **THROTTLE BODY CLEANING**).	• Low compression • Intake air leaks • Contaminated fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Clean the throttle body (see **THROTTLE BODY CLEANING**).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Do the throttle position learning check (see **THROTTLE BODY TEST**).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**). 2. Check the idle speed (see **IDLE SPEED INSPECTION**). 3. Do the carbon accumulation check (see **THROTTLE BODY TEST**).	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see **ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING**). 2. Do the carbon accumulation check (see **THROTTLE BODY TEST**). 3. Troubleshoot the A/C signal switch circuit (see **A/C SIGNAL CIRCUIT TROUBLESHOOTING**).	
After warming up, idle speed is above specification without load (MIL works OK,	1. Troubleshoot the alternator FR signal circuit (see **ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING**). 2. Inspect the APP sensor (see **APP SENSOR SIGNAL INSPECTION**).	

no DTCs set)	3. Troubleshoot the A/C signal switch circuit (see **A/C SIGNAL CIRCUIT TROUBLESHOOTING**).	
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**). 2. Troubleshoot the PSP switch signal circuit (see **PSP SWITCH SIGNAL CIRCUIT TROUBLESHOOTING**). 3. Do the carbon accumulation check (see **THROTTLE BODY TEST**).	Power steering system
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see **FUEL PRESSURE TEST**).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**). 2. Check the fuel pressure (see **FUEL PRESSURE TEST**). 3. Check the idle speed (see **IDLE SPEED INSPECTION**). 4. Troubleshoot the brake pedal position switch signal circuit (see **BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING**).	• Intake air leaks • Faulty harness and sensor connections
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**). 4. Replace the fuel tank (see **FUEL TANK REPLACEMENT**).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	1. Replace the fuel tank unit (see **FUEL TANK UNIT REMOVAL/INSTALLATION**). 2. Replace the fuel tank (see **FUEL TANK REPLACEMENT**).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the ECM/PCM or the vehicle	Troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).	

SYSTEM DESCRIPTION

ELECTRONIC CONTROL SYSTEM

The functions of the fuel and emission control systems are managed by the engine control module (ECM) on vehicles with manual transmissions or the powertrain control module (PCM) on vehicles with automatic transmissions.

Self-diagnosis

The ECM/PCM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle. When a DTC is stored, the ECM/PCM turns on the malfunction indicator lamp (MIL) by supplying ground to the MIL circuit.

- **One Drive Cycle Detection Method**

  When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM stores a DTC for the failure and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**

  When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the ECM/PCM stores a Temporary DTC for the failure. The MIL does not come on at this time. If the failure continues in the second drive cycle, the ECM/PCM stores a DTC and turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM ignores that signal and substitutes a pre-programmed value for them that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

MIL Bulb Check and Readiness Code Condition

When the ignition switch is turned ON (II), the ECM/PCM supplies ground to the MIL circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

Self Shut Down (SSD) Mode

After the ignition switch is turned OFF, the ECM/PCM stays on (up to 30 minutes). If the ECM/PCM connector is disconnected during this time, the ECM/PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned OFF.

ECM/PCM Electrical Connections

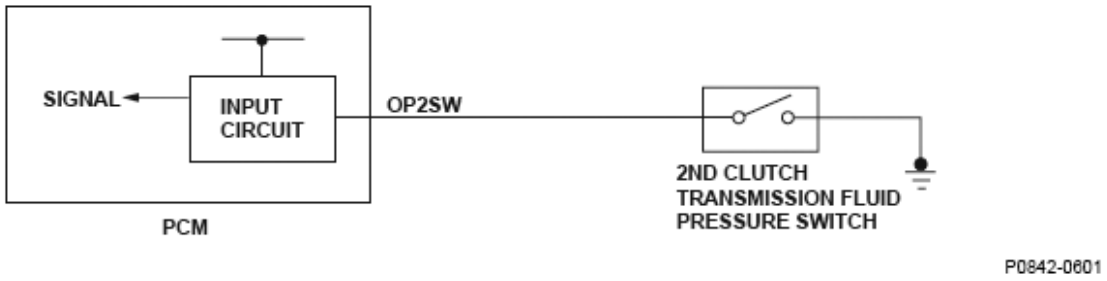


Fig. 13: ECM/PCM Electrical Connections (1 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

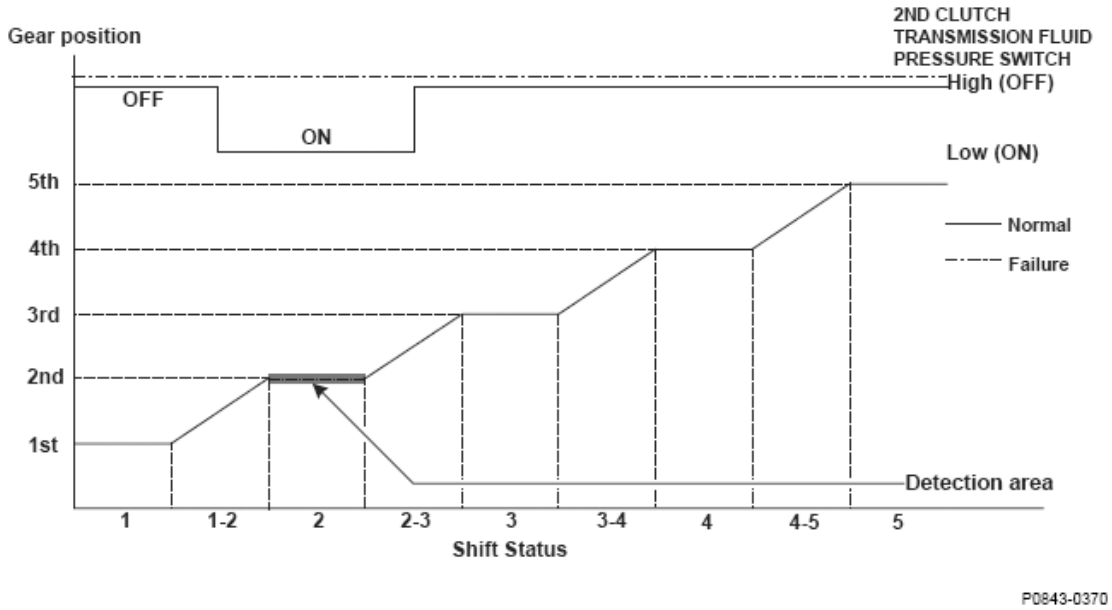


Fig. 14: ECM/PCM Electrical Connections (2 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

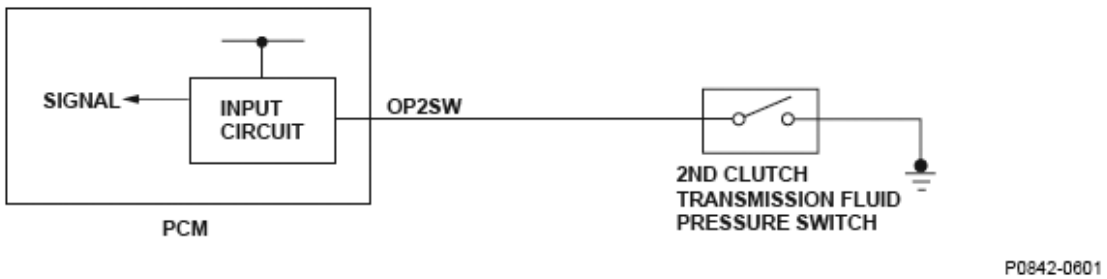


Fig. 15: ECM/PCM Electrical Connections (3 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

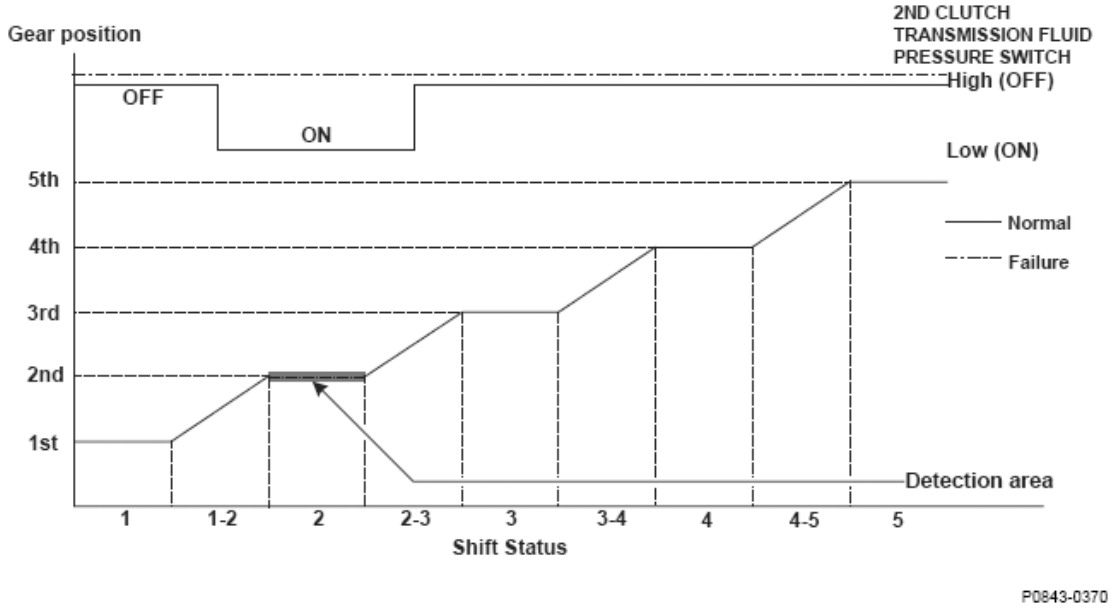


Fig. 16: ECM/PCM Electrical Connections (4 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

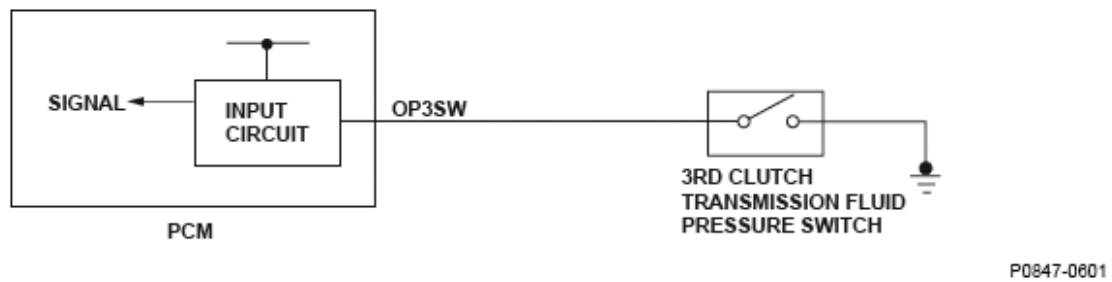


Fig. 17: ECM/PCM Electrical Connections (5 Of 5)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VACUUM HOSE ROUTING

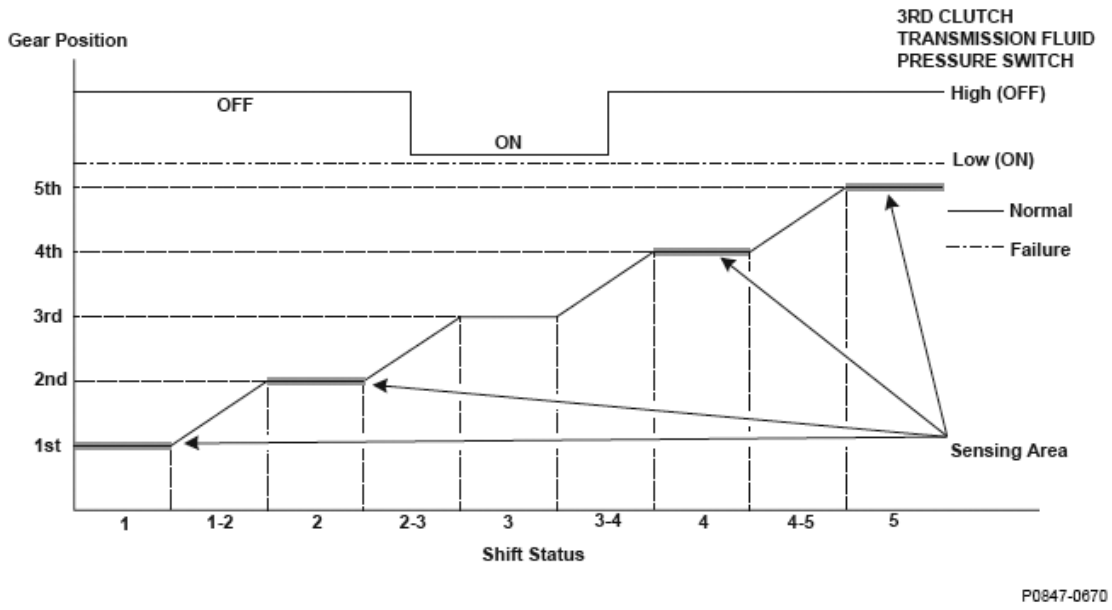


Fig. 18: Identifying Vacuum Hose Routing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VACUUM DISTRIBUTION

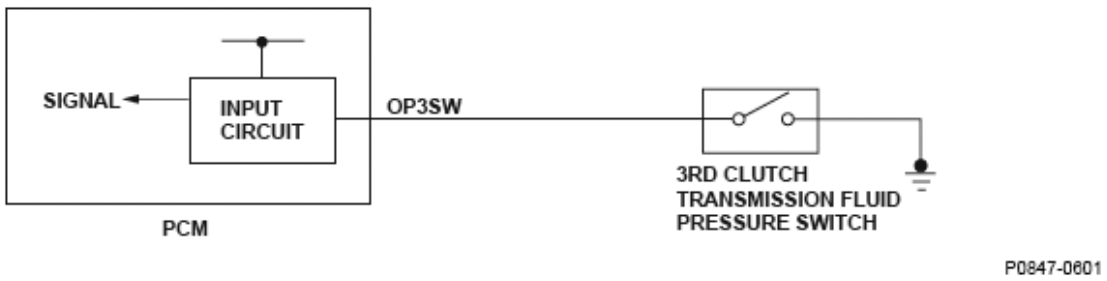


Fig. 19: Identifying Vacuum Distribution Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P)

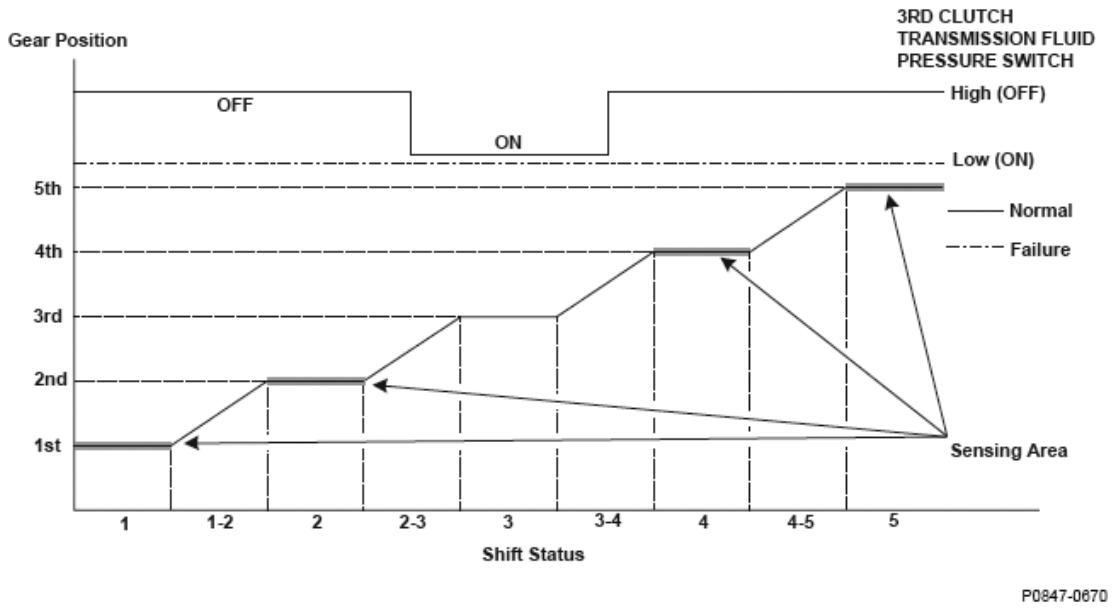


Fig. 20: Identifying ECM/PCM Inputs And Outputs Connector Terminals A (SQUARE) (44P) (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (1 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
4	BLU	FANL (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
5	GRY	FANH (RADIATOR FAN CONTROL)	Drives A/C condenser fan relay	With A/C condenser fan running: about 0 V With A/C condenser fan stopped: battery voltage
6	GRN	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	IGP (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage
9	BLK	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
10	LTGRN	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch	With compressor ON: about 0 V With compressor OFF:

			relay	battery voltage
15	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	About 0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
16	LTGRN	ACPD (A/C PRESSURE SENSOR)	Detects A/C pressure sensor signal	With A/C switch ON: about 1.7-4.8 V (depending on A/C pressure)
17	YEL	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
18	PUR	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.25 V
19	RED	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20	YEL	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V (4.0 V momentarily)
21	LTBLU	SUBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
22	PNK	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage
23(1)	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1-4.8 V (depending on electrical load)

(1) All models except Canada

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (2 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
24	GRY	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	BRN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V

26	WHT	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
27(1)	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (ID, in P position, brake pedal pressed, and accelerator released: battery voltage
29	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using the HDS: about 0 V With service check signal opened: about 5.0 V
33	GRN	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
34	LT BLU	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	BLU	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
37	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)

(1) A/T

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR A (SQUARE) (44P) (3 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
39(2)	BRN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
40	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal crossed: battery voltage
41(1)	LTBLU	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SIGNAL)	Detects clutch pedal position switch signal	With ignition switch ON (II) and clutch pedal released: about 0 V With ignition switch ON (II) and clutch

				pedal pressed: battery voltage
42	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
44	PNK	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With ignition switch OFF: about 5.0 V
(1) M/T with cruise control (2) With cruise control				

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR B (TRIANGLE) (44P)

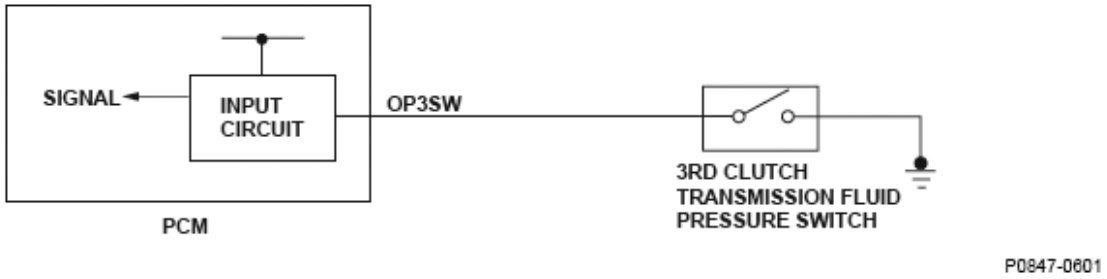


Fig. 21: Identifying ECM/PCM Inputs And Outputs Connector B (TRIANGLE) (44P) (1 Of 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR B (TRIANGLE) (44P) (1 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for ECM/PCM circuit	Less than 1.0 V at all times
2	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
3	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140°F (60°C): battery voltage With engine running, engine coolant above 140°F (60°C): duty controlled
4	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER (SENSOR 2))	Drives secondary HO2S heater (sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty

				controlled
7	YEL/RED	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
8(1)	BLU/YEL	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch input	With ignition switch ON (II): Without 2nd clutch pressure: about 5.0 V With 2nd clutch pressure: about 0 V
9(1)	BLK/RED	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch input	With ignition switch ON (II): Without 3rd clutch pressure: about 5.0 V With 3rd clutch pressure: about 0 V
10(1)	BLU	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 2 and D positions (in 2nd and 4th gears), and D3 position (in 2nd gear): battery voltage With engine running in P, R, N, and 1 positions (in 1st, 3rd, and 5th gears), and D3 position (in 1st and 3rd gears): about 0 V
11(1)	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in P and R positions: battery voltage With engine running in N, 1, or D, D3 position (in 1st, 3rd, 4th gears): about 0 V
12(1)	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL)	Detects transmission range switch N position signal input	In N position: about 0 V In any position other than N: about 5.0 V
13(1)	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal input	In P position: about 0 V In any position other than P: battery voltage
14(1)	WHT/GRN	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R position: about 0 V In any position other than R: battery voltage
15(1)	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 position signal input	In D3 position: about 0 V In any position other than D3: battery voltage

(1) A/T

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR B (TRIANGLE) (44P) (2 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
16(1)	BRN	ATP2-1 (TRANSMISSION RANGE SWITCH 2-1)	Detects transmission range switch 2 position and 1 position signal input	In 2 and 1 positions: about 0 V In other than 2 and 1 positions: battery voltage
17(1)	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V With engine idling in N position: about 2.5 V (pulses)
18	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20(1)	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in R and D positions (in 3rd gear): battery voltage With engine running in P, N, 2, and D positions (in 1st, 2nd, and 5th gears), and D3 position (in 1st and 2nd gears): about 0 V
21(1)	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D position: about 0 V In any position other than D: battery voltage
22(1)	YEL	ATPRVS (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R position: about 0 V In any position other than R: battery voltage
23	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1-4.8 V (depending on engine coolant temperature)
25(1)	BLU/WHT	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
26(1)	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in 1 and D positions (in 1st, 4th, and 5th gears) and D3 position (in 1st gear): battery voltage With engine running in P, N, and 2 positions, and D, D3 positions (in 2nd and 3rd gears): about 0 V
				With ignition switch ON

27(1)	BRN/RED	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	(II): about 0.2-4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
28(1)	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/D3/2 POSITION)	Detects transmission range switch D, D3, and 2 positions signal In D, D3, and 2 positions: about 0 V	In any other position: battery voltage
29	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2-3.0 V (depending on EGR valve lift)
(1) A/T				

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR B (TRIANGLE) (44P) (3 OF 3)

Terminal number	Wire color	Terminal name	Description	Signal
30	RED/BLU	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle: 1.1-1.6 V (between VG+ terminal and VG- terminal)
31	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1-4.0 V (about 1.8 V at normal operating temperature)
32	BLK/RED	VG-(MASS AIR FLOW (MAF) SENSOR-SIDE)	Ground for MAF sensor signal	
33	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	BLK/WHT	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
35(1)	WHT	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled
36	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/PCM circuit	Less than 1.0 Vat all times
37	BRN	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage
38	WHT/BLK	IMT- (INTAKE MANIFOLD TUNING (IMT) ACTUATOR-SIDE)	Ground for IMT actuator	With ignition switch ON (II): 4.5 V (between IMT+ terminal and IMT-terminal)
39	WHT	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	With ignition switch ON (II): about 0 V With engine speed above 5,200 rpm: about 5.0 V
		ALTC (ALTERNATOR	Sends alternator	With fully warmed up engine running: 5.0 V

41(2)	WHT/GRN	CONTROL)	control signal	(depending on electrical load)
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
43	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 2.6-3.4 V (depending on electrical load)
44(1)	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
(1) A/T (2) All models except Canada				

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR C (CIRCLE) (44P)

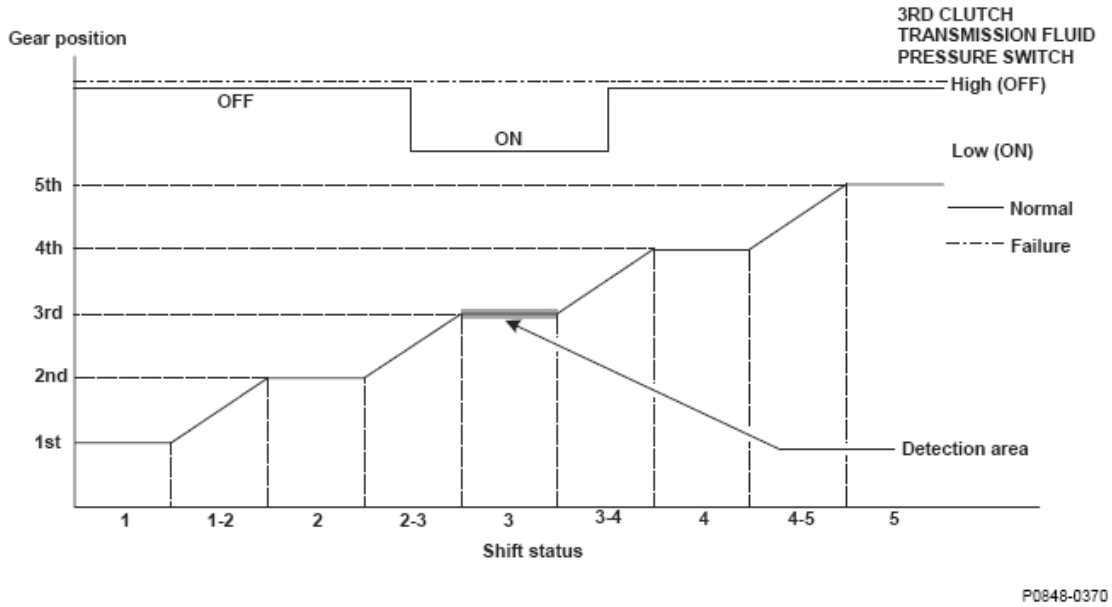


Fig. 22: Identifying ECM/PCM Inputs And Outputs Connector C (CIRCLE) (44P) (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Standard battery voltage is about 12 V.

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR C (CIRCLE) (44P) (1 OF 2)

Terminal number	Wire color	Terminal name	Description	Signal
1	WHT/GRN	IG1 ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
2	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM/PCM circuit	Less than 1.0 V at all times

3	YEL/GRN	ETCSM- (THROTTLE ACTUATOR-SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	YEL/RED	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
6	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
9	GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL (SENSOR D)	Drives A/F sensor heater (sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V
11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
12	GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor around	Less than 1.0 V at all times
15	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
16	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
17	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
18	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
20	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V
21	YEL	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V

ECM/PCM INPUTS AND OUTPUTS AT CONNECTOR C (CIRCLE) (44P) (2 OF 2)

Terminal	Wire color	Terminal name	Description	Signal

number				
22	WHT/BLK	POILCS (ENGINE OIL PRESSURE (EOP) SENSOR)	Detects EOP sensor signal	With ignition switch ON (II): about 0.5 V With engine running: about 0.7 V (depending on engine oil pressure)
27	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2))	Detects secondary HO2S (sensor 2) signal	With throttle fully opened at idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
29	RED	AFS+ (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) +SIDE)	Detects A/F sensor (sensor 1) signal	
30	RED/YEL	AFS- (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) -SIDE)	Detects A/F sensor (sensor 1) signal	
31	WHT/GRN	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses
32	BLU/WHT	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
36	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
39	BLU	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/PCM circuit	Less than 1.0 V at all times
42	RED/BLU	KS(KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43	BLK/BLU	NC(OUTPUTSHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II): about 0 V or about 5.0 V With vehicle moving: about 2.5 V (pulses)
44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/PCM circuit	Less than 1.0 V at all times

PGM-FI SYSTEM

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor

The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the TWC, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

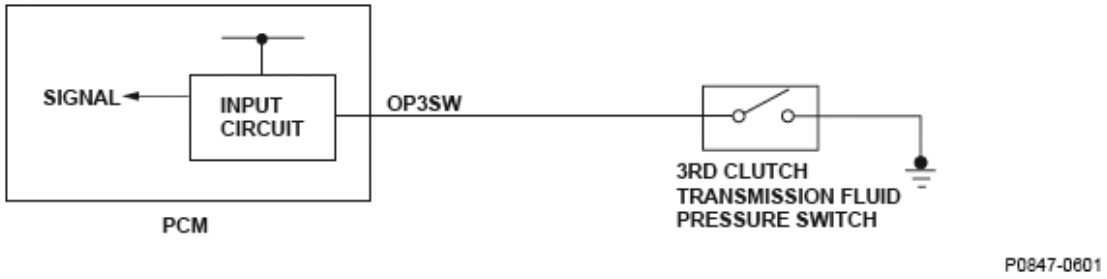


Fig. 23: Identifying Air Fuel Ratio (A/F) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Camshaft Position (CMP) Sensor

The CMP sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.

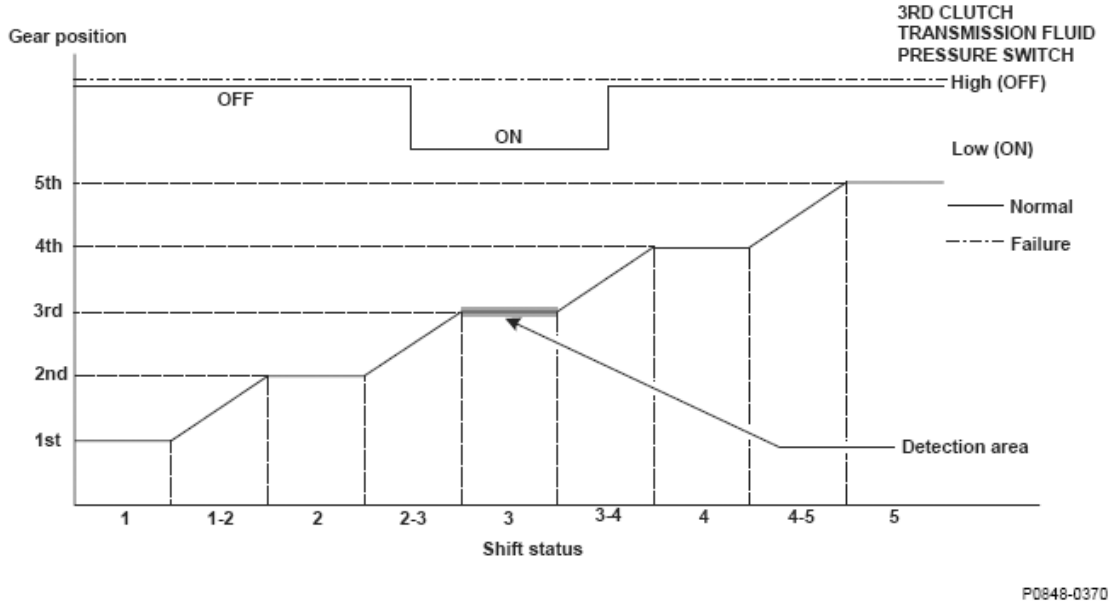


Fig. 24: Identifying Camshaft Position (CMP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Crankshaft Position (CKP) Sensor

The CKP sensor detects crankshaft speed and is used by the ECM/PCM to determine ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.

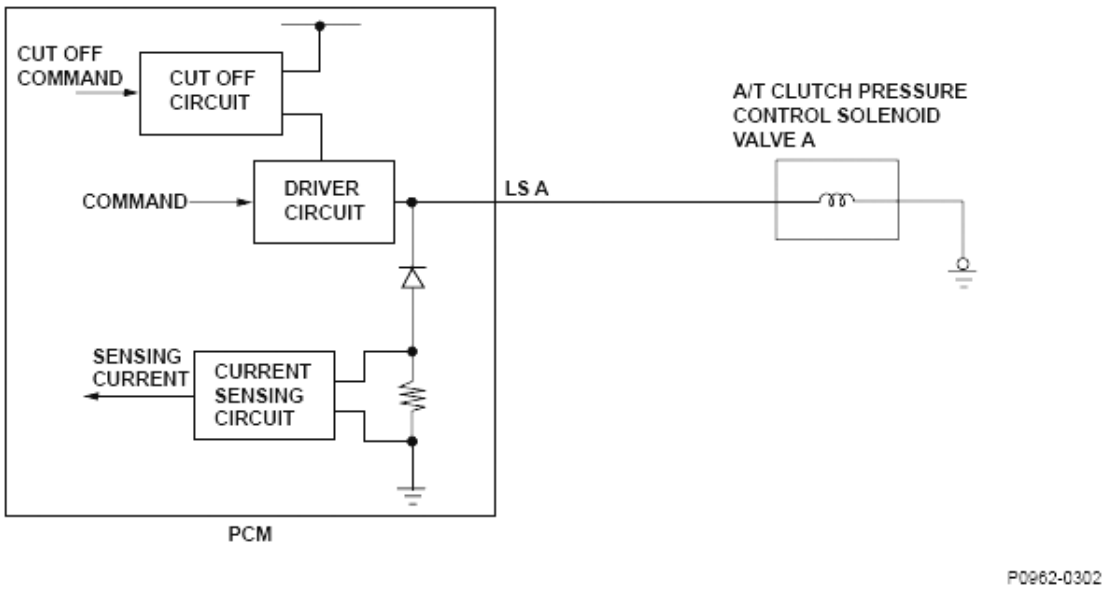


Fig. 25: Identifying Crankshaft Position (CKP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Engine Coolant Temperature (ECT) Sensor 1 and 2

The ECT sensors 1 and 2 are temperature dependent resistor (thermistors). The resistance decreases as the engine coolant temperature increases.

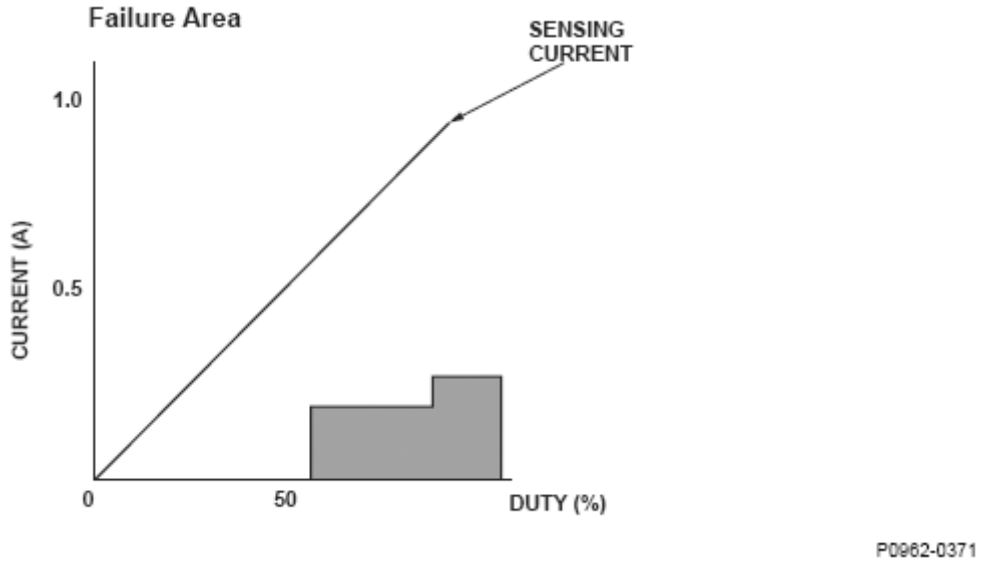


Fig. 26: Engine Coolant Temperature (ECT) Sensor 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Ignition Timing Control

ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature and intake air temperature.

Injector Timing and Duration

The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).

Knock Sensor

The knock control system adjusts the ignition timing to minimize knock.

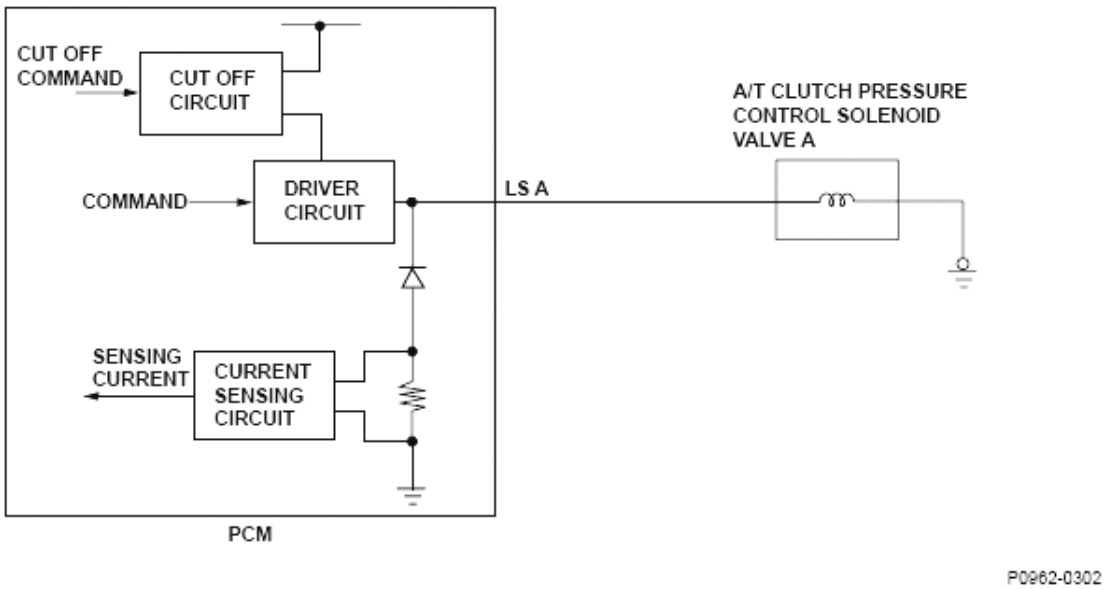


Fig. 27: Identifying Knock Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.

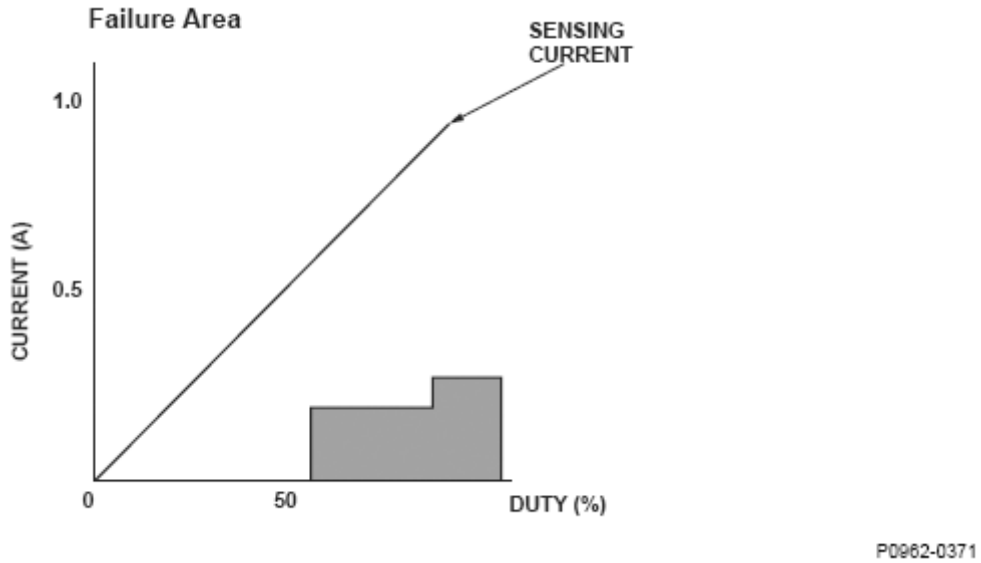


Fig. 28: Identifying Manifold Absolute Pressure (MAP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures (see **MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)**).

Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor

The mass air flow (MAF) sensor/intake air temperature (IAT) sensor contains a hot wire and a thermistor. It is located in the intake air passage. The resistance of the hot wire and thermistor changes due to intake air temperature and air flow. The control circuit in the MAF sensor controls the current to keep the hot wire at a set temperature. The current is converted to voltage in the control circuit, then output to the ECM/PCM.

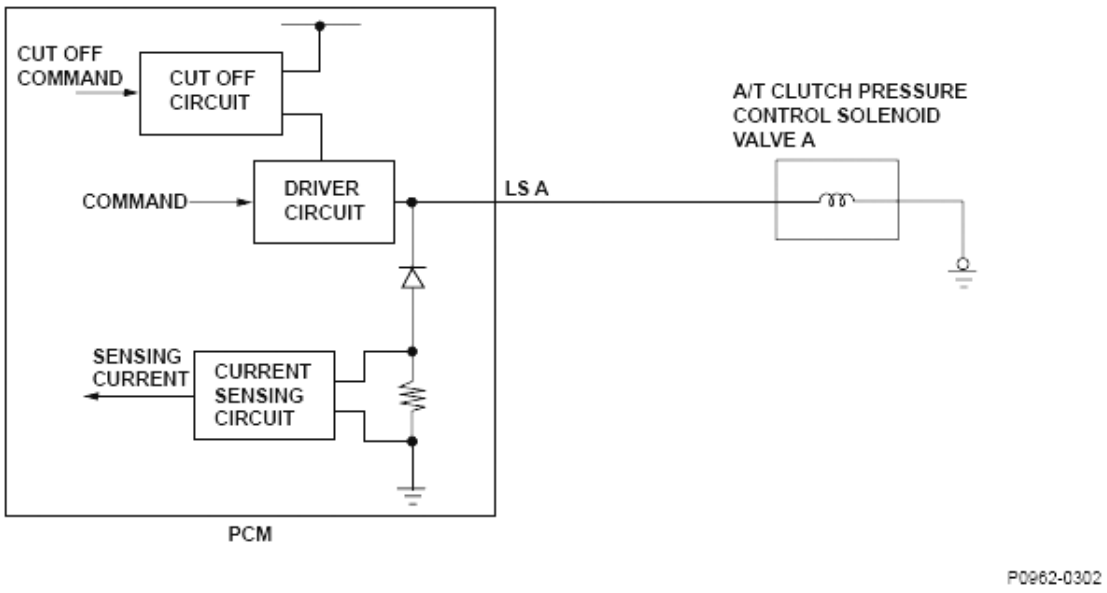


Fig. 29: Identifying Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Output Shaft (Countershaft) Speed Sensor (M/T)

This sensor detects countershaft speed.

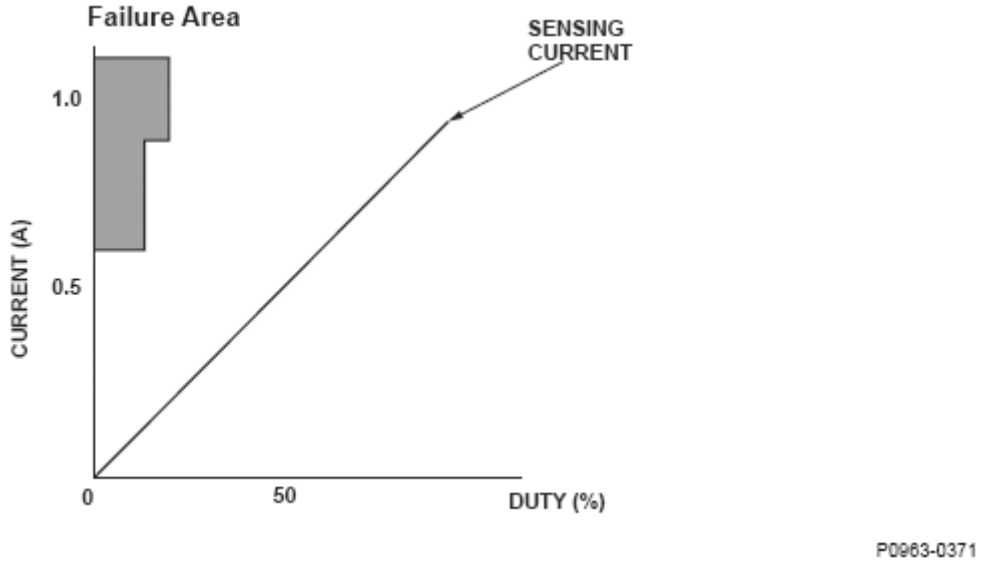


Fig. 30: Identifying Output Shaft (Countershaft) Speed Sensor (M/T)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWO, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The ECM/PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is located on the TWC.

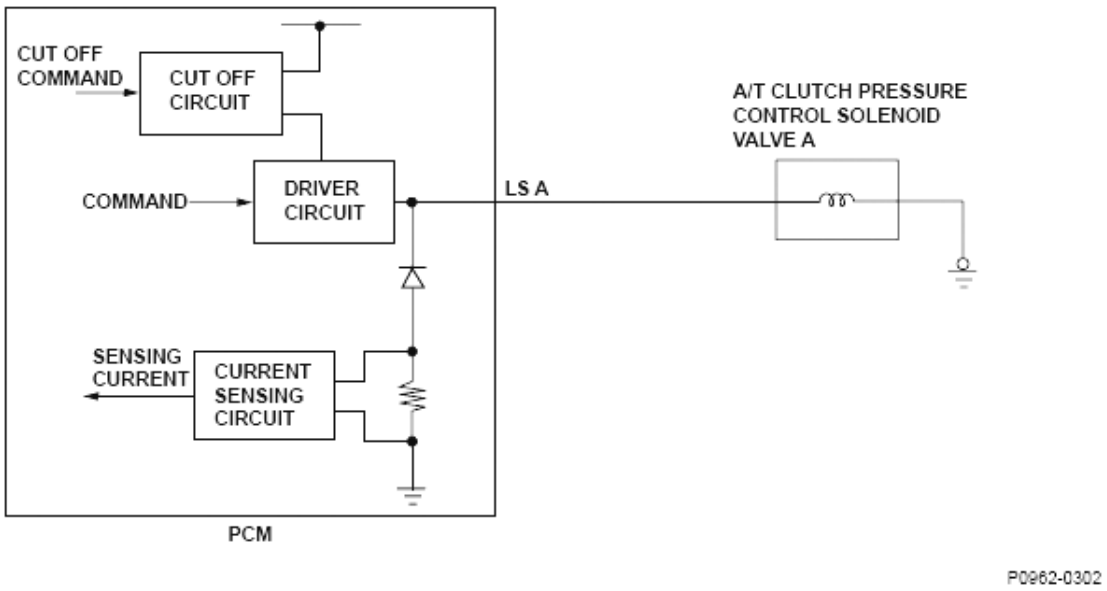


Fig. 31: Identifying Secondary Heated Oxygen Sensor (Secondary HO2S) And Sensor Terminals And Heater Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ELECTRONIC THROTTLE CONTROL SYSTEM

The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

Idle control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the ECM/PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The ECM/PCM controls the throttle actuator to maintain set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

Accelerator Pedal Position (APP) Sensor

As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM/PCM.

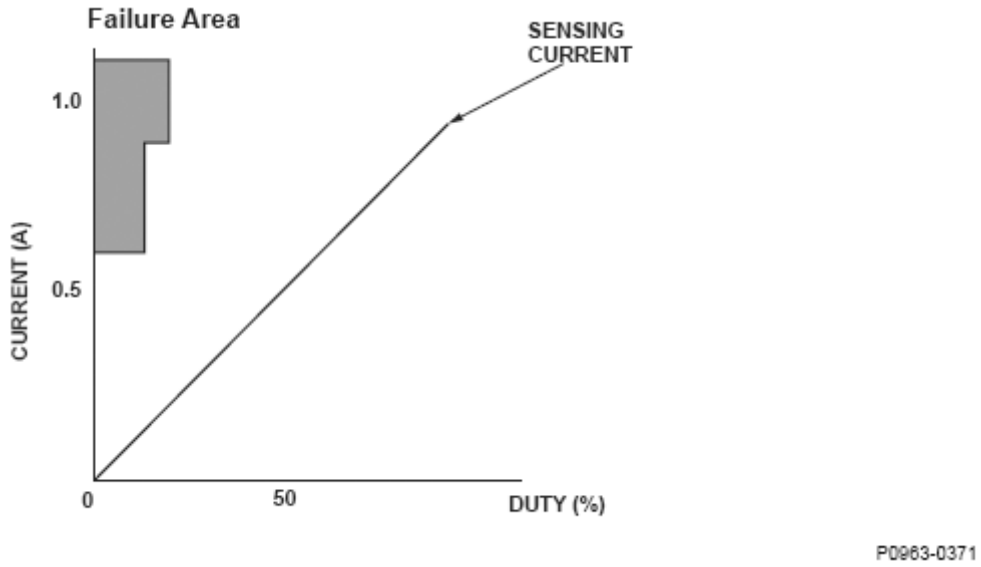


Fig. 32: Identifying Accelerator Pedal Position (APP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Throttle Body

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.

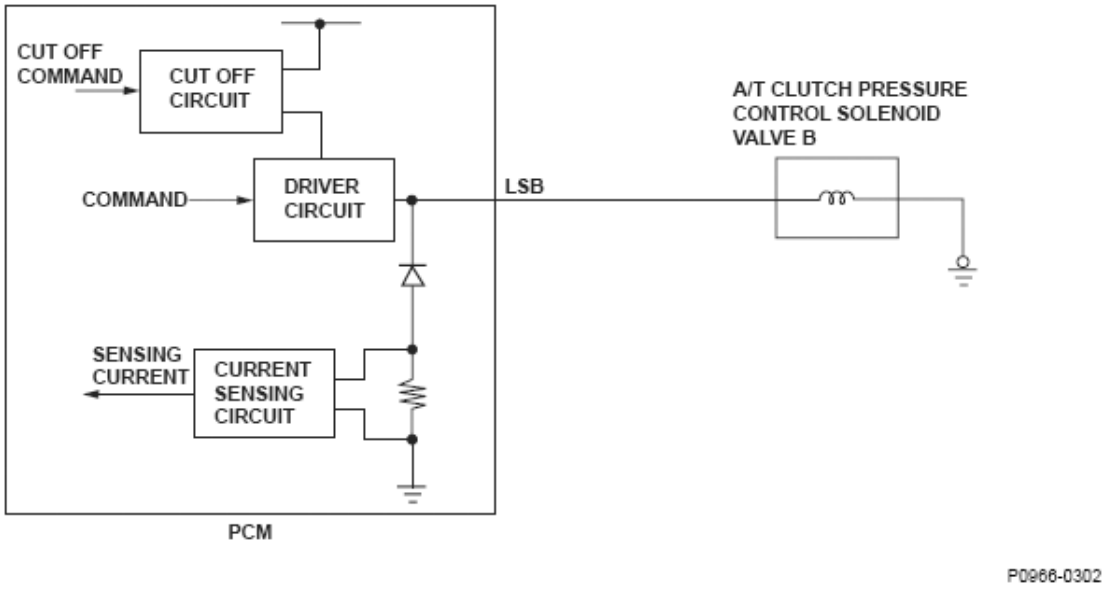


Fig. 33: Identifying Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

IDLE CONTROL SYSTEM

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch

The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Power Steering Pressure (PSP) Switch

The PSP switch signals the ECM/PCM when the power steering load is high.

FUEL SUPPLY SYSTEM

Fuel Cutoff Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 910 rpm (A/T model), or 950 rpm (M/T model). Fuel cutoff also occurs when the engine speed exceeds 6,900 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM/PCM cuts the fuel at engine speeds over 5,000 rpm. The engine speed of fuel cut is lower on a cold engine.

Fuel Pump Control

When the ignition is turned on, the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM/PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

PGM-FI main relay 1 is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

VTEC SYSTEM

- This mechanism improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC mechanism changes the valve lift and timing by using more than one cam profile.
- The VTEC system changes the cam profile (angle) at cruising speeds.

  (Cam angle is changed to obtain the desired EGR effect and reduce pumping loss).

OPERATION

At engine start, and high load

- The rocker arm oil control valve is OFF.
- Oil pressure enters secondary rocker arm B from the oil passage in the intake rocker shaft.

  This forces the VTEC switching piston into secondary rocker arm A against the return spring and

disengages the secondary arm A from the secondary arm B to stop valve actuation.

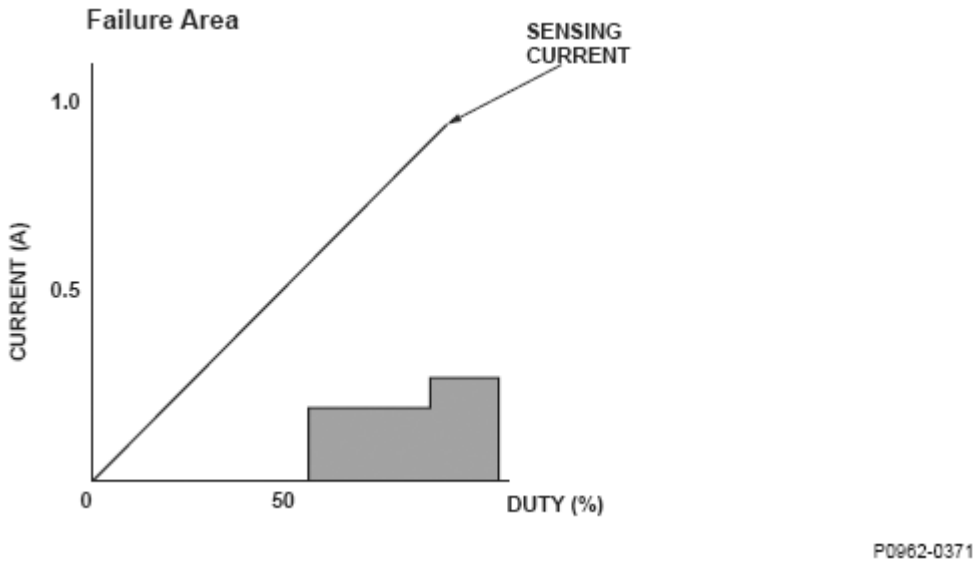


Fig. 34: Identifying VTEC System Operation Diagram - At Engine Start, And High Load
Courtesy of AMERICAN HONDA MOTOR CO., INC.

At cruise

The rocker arm oil control valve switches oil pressure to the oil passage in the intake rocker arm shaft. Oil pressure then enters secondary rocker arm A, and it moves the VTEC switching piston in the rocker arm.

This causes the VTEC switching piston to slide into secondary rocker arm B, locking secondary rocker arms A and B together.

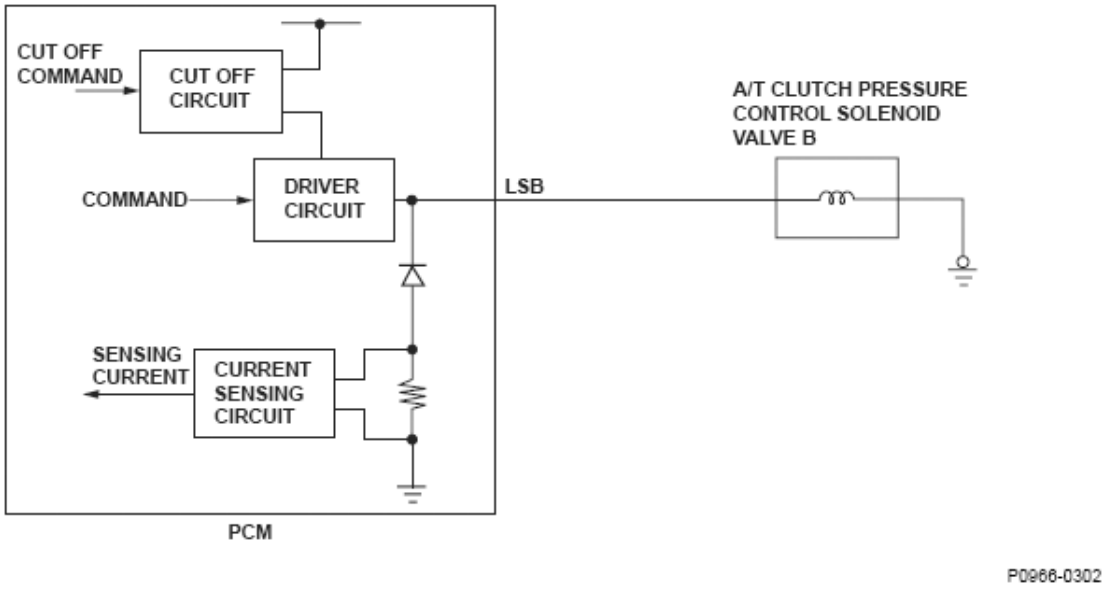


Fig. 35: Identifying VTEC System Operation Diagram - At Cruise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CATALYTIC CONVERTER SYSTEM

Three Way Catalytic Converter (TW)

The TWC converts hydrocarbons (HO, carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO_2), nitrogen (N_2), and water vapor.

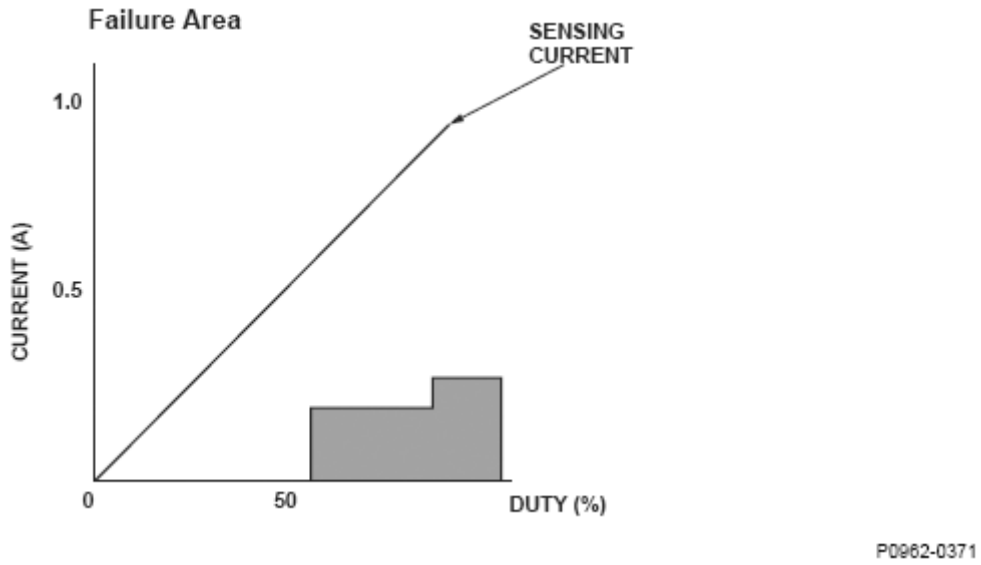


Fig. 36: Identifying Three Way Catalytic Converter (TW)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.

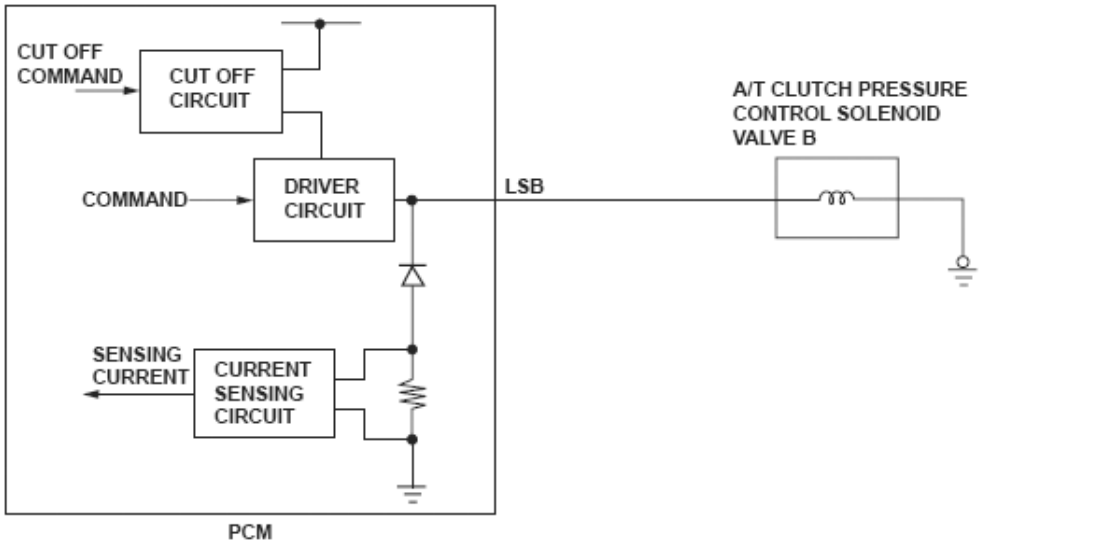


Fig. 37: Identifying Positive Crankcase Ventilation (PCV) System
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EXHAUST GAS RECIRCULATION (EGR) SYSTEM

Refer to the system diagram to see a functional layout of the system.

EGR Valve

The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM

Refer to the system diagram to see a functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve

When the engine coolant temperature is below 140°F (60°C), the ECM/PCM turns off the EVAP canister purge valve cutting vacuum to the EVAP canister.

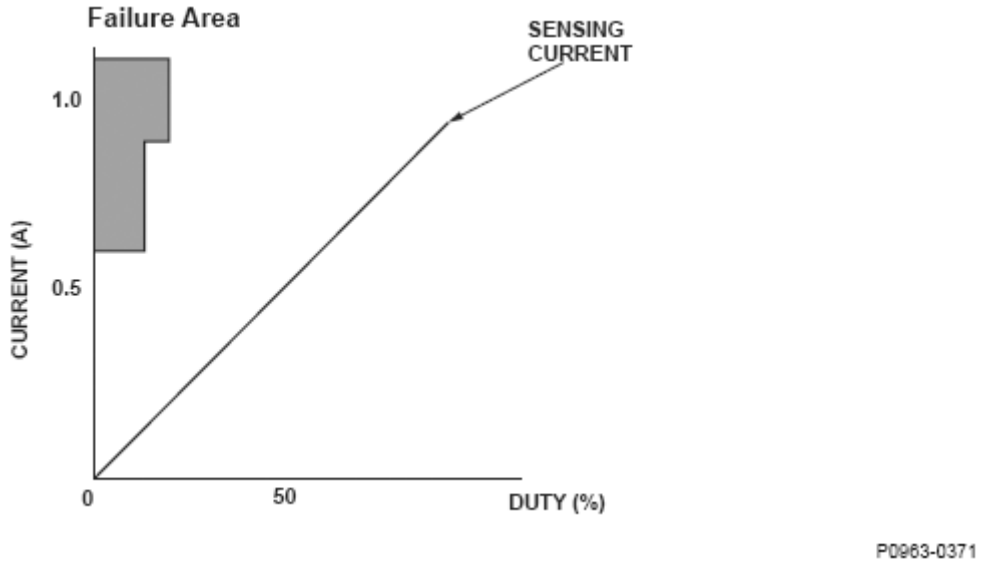


Fig. 38: Identifying EVAP Canister Purge Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Fuel Tank Pressure (FTP) Sensor

The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM during the EVAP leak check.

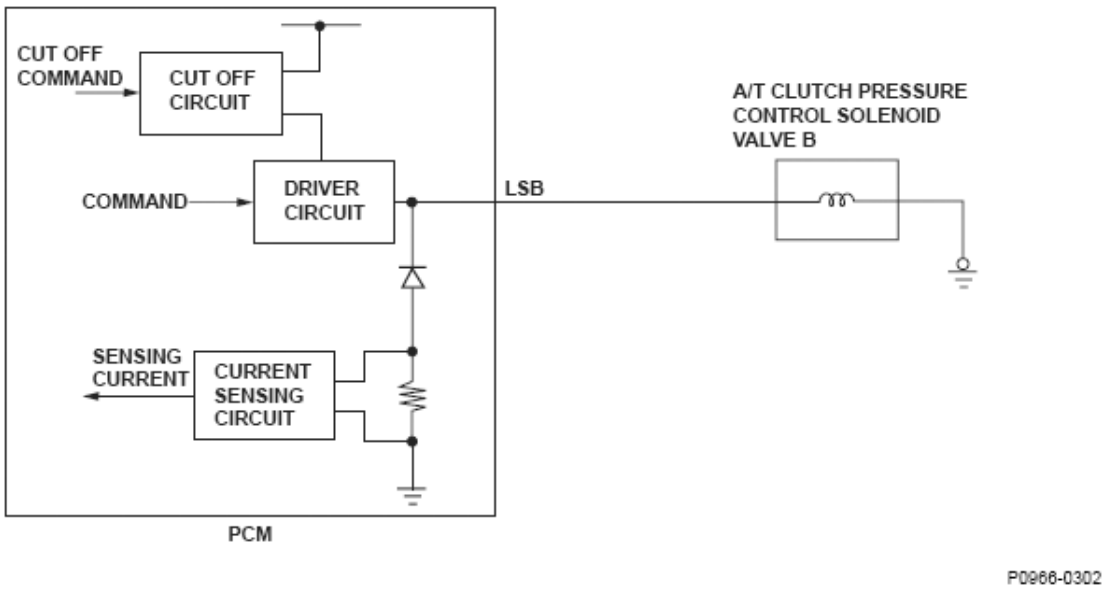


Fig. 39: Identifying Fuel Tank Pressure (FTP) Sensor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister.

The EVAP canister vent shut valve controls the venting of the EVAP canister.

Fig. 40: Identifying EVAP Canister Vent Shut Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FUEL CAP WARNING MESSAGE

The ECM/PCM detects a loose or missing fuel fill cap as an evaporative system leak and alerts the driver by showing a warning message in the gauge display.

First drive cycle

The first time a leak is detected a "CHECK FUEL CAP" message appears in the gauge display (A). To scroll to another message, press the select/reset button. The "CHECK FUEL CAP" message will appear each time you restart the engine until the system turns the message off. Turn the engine off hen replace or tighten the fuel fill cap until it clicks at least once.

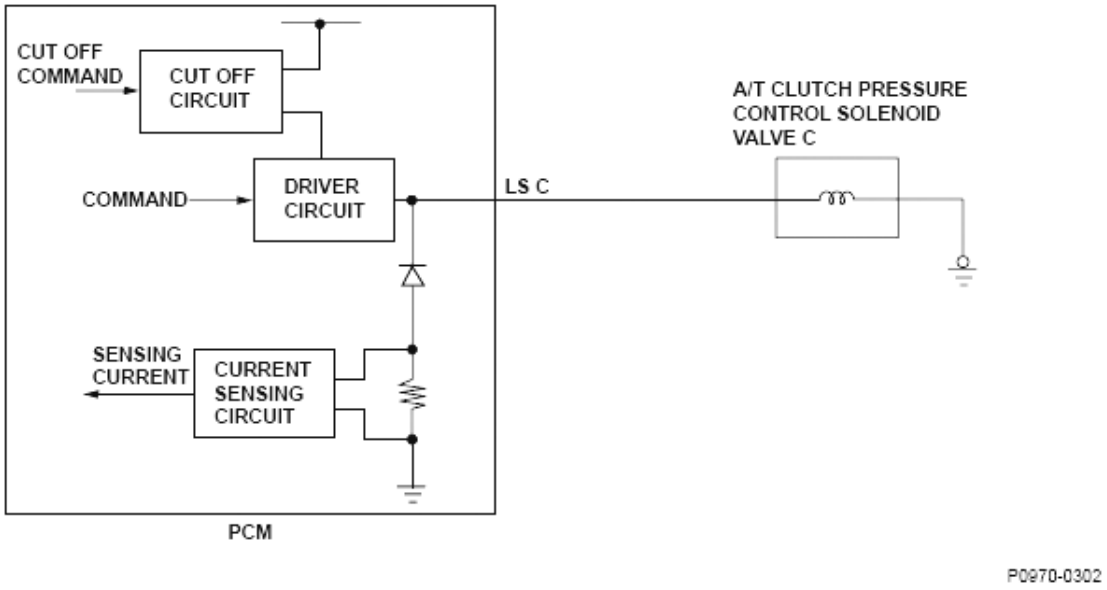


Fig. 41: Identifying Message In Gauge Display
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TO MAKE THE MESSAGE GO OFF (WITH THE HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

TO MAKE THE MESSAGE GO OFF (WITHOUT THE HDS) ('06 MODEL)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days of normal driving.

TO MAKE THE MESSAGE GO OFF (WITHOUT THE HDS) ('07-08 MODELS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch OFF.

3. Do step 2 two more times.

ELECTRONIC THROTTLE CONTROL SYSTEM DIAGRAM

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, electronic throttle control system (ETCS) control relay, and the ECM/PCM.

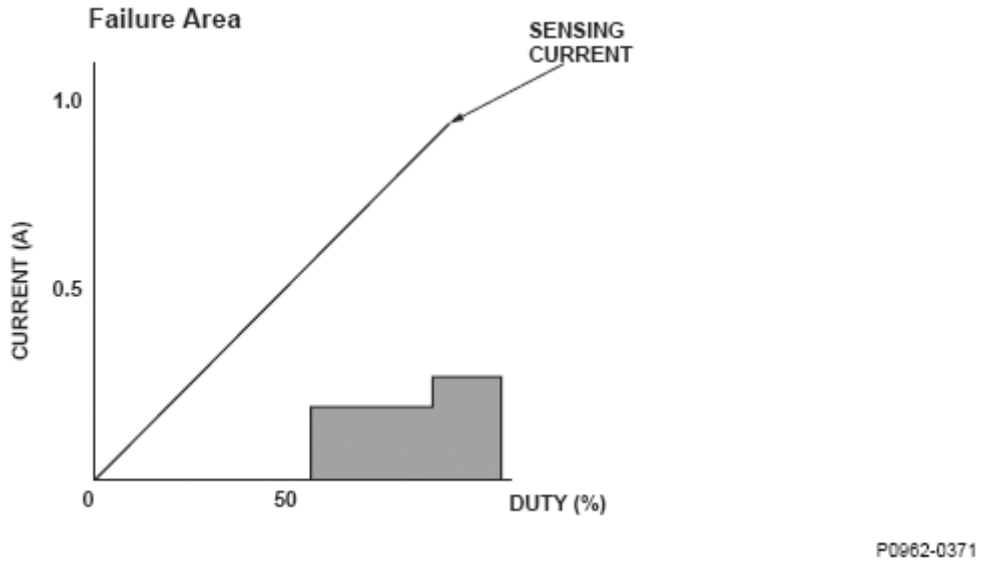


Fig. 42: Identifying Electronic Throttle Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTAKE MANIFOLD TUNING (IMT) VALVE SYSTEM

Engine power is adjusted by opening and closing the intake manifold tuning (IMT) actuator. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed. The intake manifold tuning (IMT) valve actuator contains a sensor that detects the IMT valve position and sends it to the ECM/PCM.

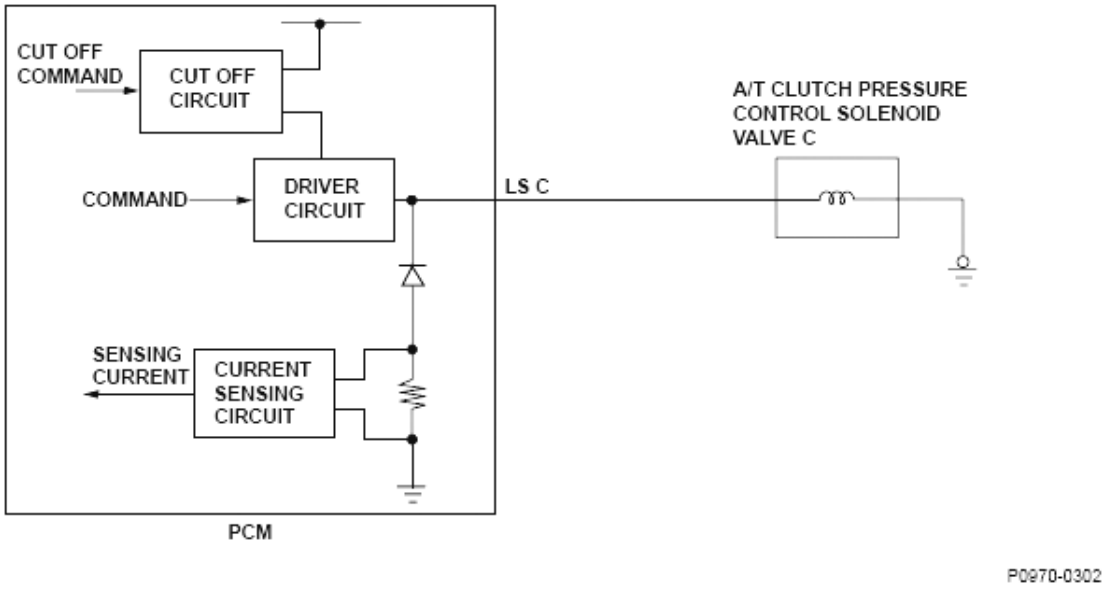


Fig. 43: Identifying Intake Manifold Tuning (IMT) Valve System
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EXHAUST GAS RECIRCULATION (EGR) SYSTEM DIAGRAM

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR pipe and the intake manifold, and into the combustion chambers. Routing the exhaust gas through the EGR pipe helps to prevent carbon deposits from forming in the intake manifold and the throttle body. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.

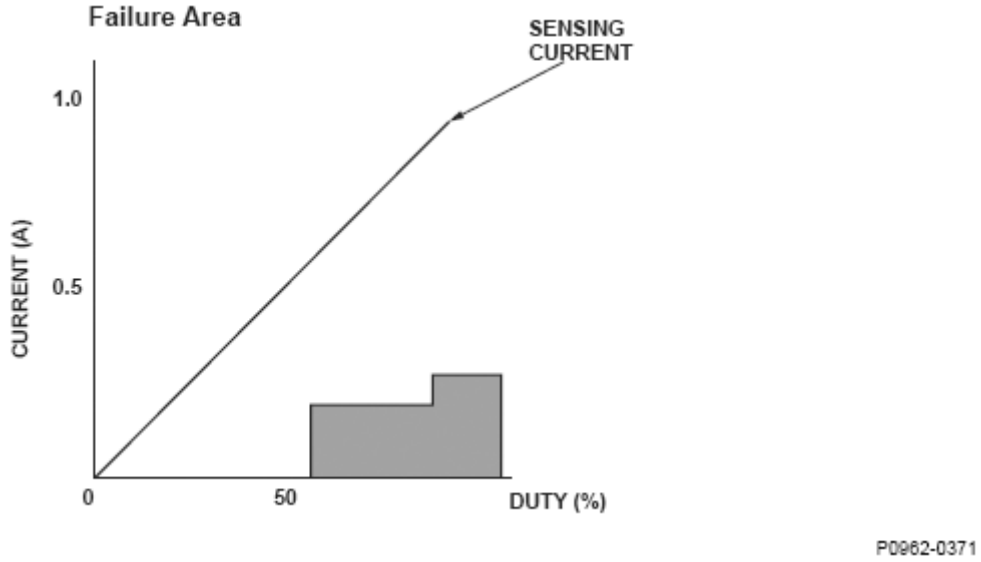


Fig. 44: Identifying Exhaust Gas Recirculation (EGR) System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

EVAPORATIVE EMISSION (EVAP) CONTROL DIAGRAM

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.

The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140°F (60°C).

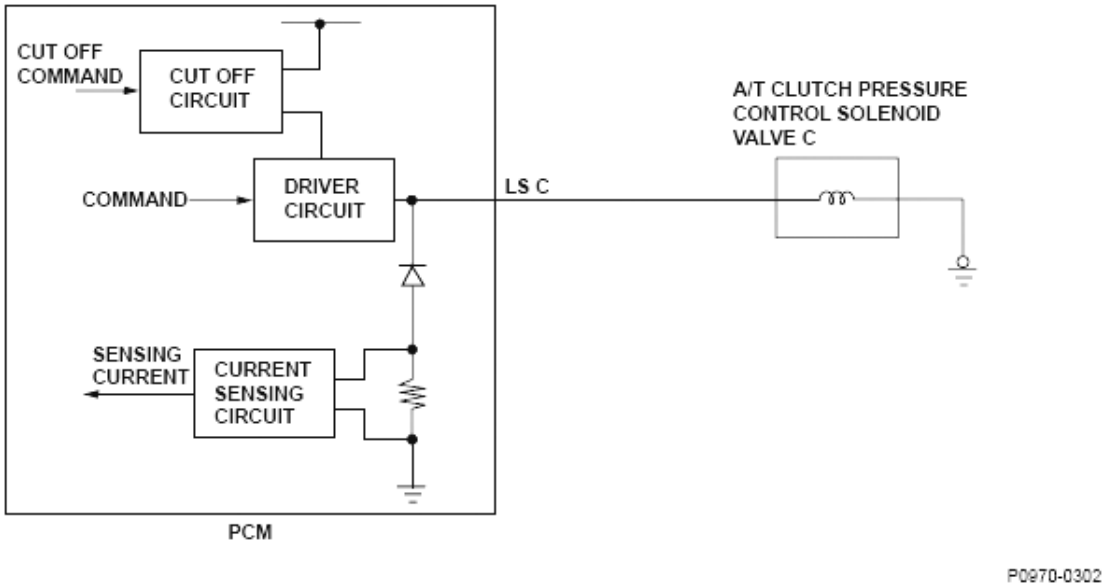


Fig. 45: Identifying Evaporative Emission (EVAP) Control Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ECM/PCM CIRCUIT DIAGRAM

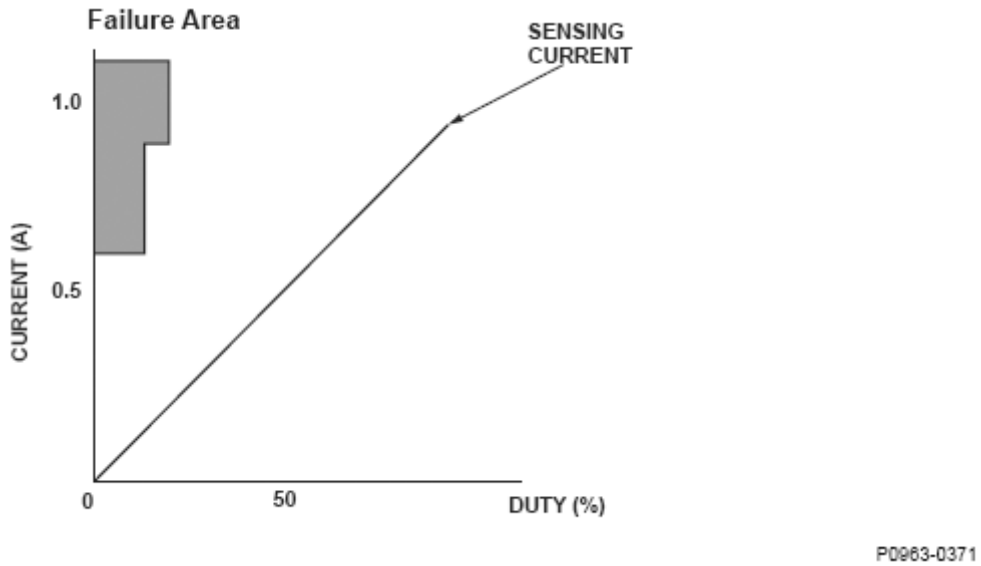


Fig. 46: ECM/PCM Circuit Diagram (1 Of 11)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

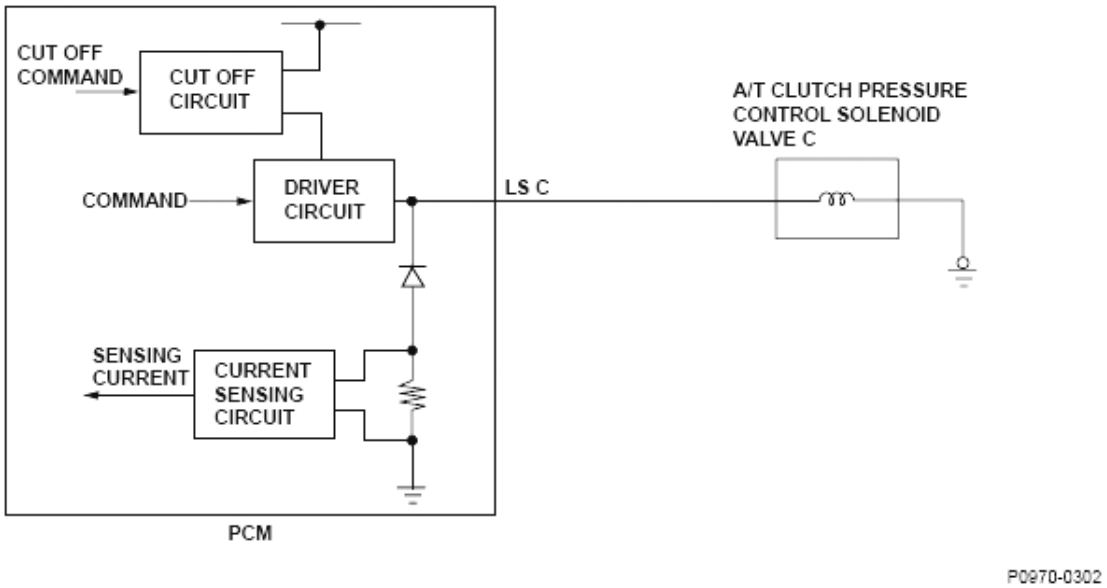


Fig. 47: ECM/PCM Circuit Diagram (2 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

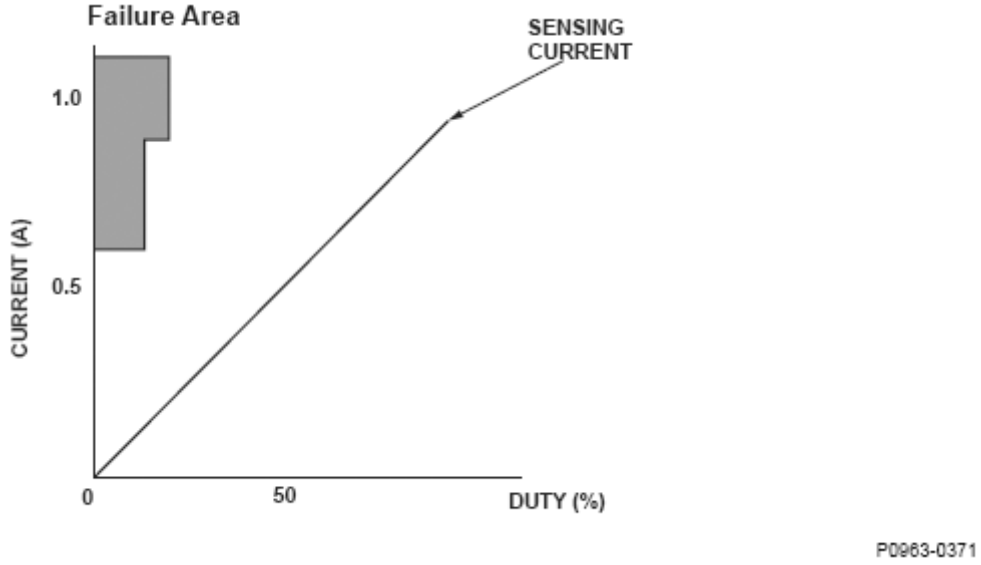


Fig. 48: ECM/PCM Circuit Diagram (3 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

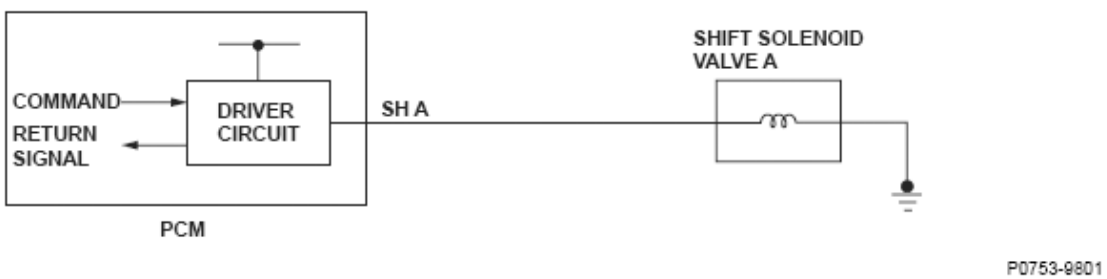


Fig. 49: ECM/PCM Circuit Diagram (4 Of 11)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 50: ECM/PCM Circuit Diagram (5 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

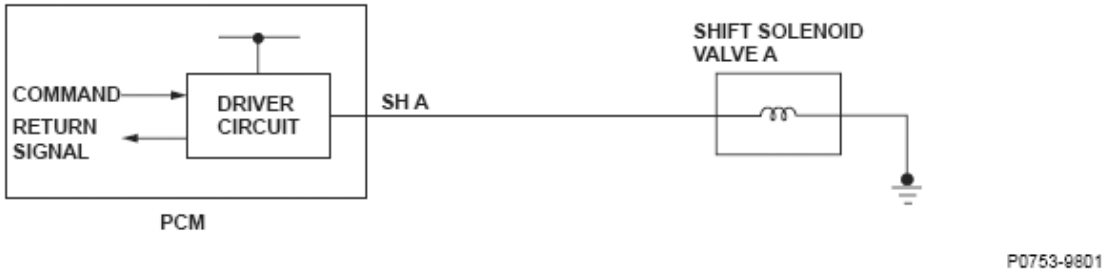


Fig. 51: ECM/PCM Circuit Diagram (6 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 52: ECM/PCM Circuit Diagram (7 Of 11)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

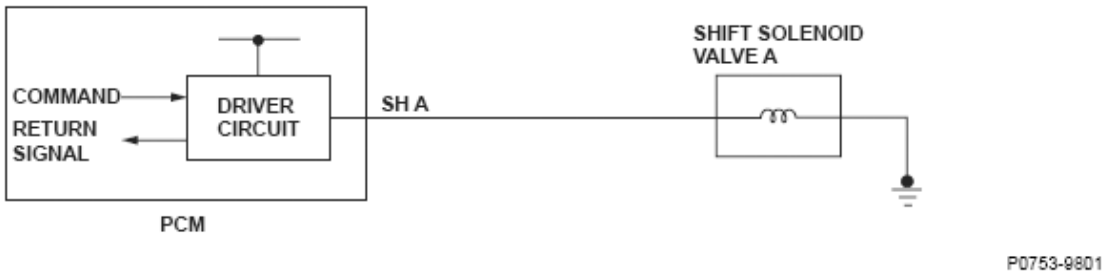


Fig. 53: ECM/PCM Circuit Diagram (8 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 54: ECM/PCM Circuit Diagram (9 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

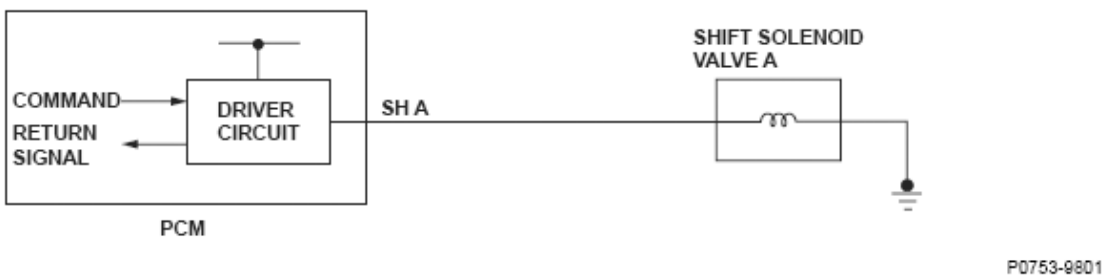


Fig. 55: ECM/PCM Circuit Diagram (10 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 56: ECM/PCM Circuit Diagram (11 Of 11)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HOW TO SET READINESS CODES

MALFUNCTION INDICATOR LAMP (MIL) INDICATION (IN RELATION TO READINESS CODES)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15-20 seconds. If it then goes off, the readiness codes are set to complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see **OBD STATUS**). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

CATALYTIC CONVERTER MONITOR AND READINESS CODE

NOTE:

- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.**
- **Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.**
- **The readiness code will not switch to complete until all the enable**

criteria are met.

- **If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.**

Enable Criteria

- Engine coolant temperature (ECT SENSOR 1) at 158°F (70°C) or more.
- Intake air temperature (IAT SENSOR) at 20°F (-7°C) or more.
- Vehicle speed sensor (VSS) above 25 mph (40 km/h).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to complete.
4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM MONITOR AND READINESS CODE

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- Engine coolant temperature (ECT SENSOR 1 and 2) between 176°F (80°C) and 212°F (100°C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- Vehicle speed (VSS) 0 mph (0 km/h).
- Intake air temperature (IAT SENSOR) between 32°F (0°C) and 212°F (100°C).

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
    - If the result is normal, readiness is complete.
    - If the result is not normal, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR MONITOR AND READINESS CODE

NOTE:

- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.**

Enable Criteria

Engine coolant temperature (ECT SENSOR 1) at 140°F (60°C) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the AIR FUEL RATIO (A/F) SENSOR in the DTCs MENU with the HDS.
   - If the screen shows complete, readiness is complete.
   - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST MENU. Check the ECT SENSOR 1 in the ALL DATA LIST with the HDS. If the ECT SENSOR 1 is less than 140°F (60°C), run the engine until it is more than 140°F (60°C), then repeat the procedure.

AIR FUEL RATIO (A/F) SENSOR HEATER MONITOR READINESS CODE

NOTE: **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.**

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, repeat the procedure.

MISFIRE MONITOR AND READINESS CODE

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

FUEL SYSTEM MONITOR AND READINESS CODE

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.

- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

COMPREHENSIVE COMPONENT MONITOR AND READINESS CODE

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR MONITOR AND READINESS CODE

NOTE:

- **Do not turn the ignition switch off during the procedure.**
- **All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.**

Enable Criteria

Engine coolant temperature (ECT SENSOR 1) at 176°F (80°C) or more.

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Drive at a steady speed with the A/T in D position or M/T in 4th gear, at 50-62 mph (80-100 km/h) or above for more than 10 seconds.
4. With the A/T in D position or M/T in 4th gear, decelerate from 62 mph (100 km/h) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.
5. Check the OBD status screen for DTC P0401 in the DTCs MENU with the HDS.
    - If it is PASSED, readiness is complete.
    - If it is not PASSED, go to step 3 and retest.

2006-08 ENGINE PERFORMANCE

Idle Control System (K20Z3) - Civic (All Except Hybrid & Si)

COMPONENT LOCATION INDEX

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 1: Identifying Idle Control System Component Location (K20Z3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Check under these DATA LIST parameter conditions with the HDS:
   - Engine coolant temperature (ECT SENSOR 1) above 156 °F (70 °C)
   - IAT SENSOR above 32 °F (0 °C)
   - VSS is 0 mph (0 km/h)
   - ST FUEL TRIM between 0.69-1.47
   - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

YES -Go to step 6.

NO -If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Remove the air intake duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
7. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES -If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**). Also check for damage to the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO -Check the A/C system or power steering system, then go to step 9.

8. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
12. Check under these DATA LIST parameter conditions with the HDS:
    - Engine coolant temperature (ECT SENSOR 1) above 156 °F (70 °C)
    - IAT SENSOR above 32 °F (0 °C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.69-1.47
    - FSS is CLOSED
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES -Go to step 19.

    NO -Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, go to step 19. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11 and recheck.

15. Remove the air intake duct from the throttle body (see **THROTTLE BODY**

REMOVAL/INSTALLATION).

16. Check for dirt, carbon, or damage in the throttle bore.

    Is there dirt, carbon, or damage in the throttle bore?

    YES -If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**). Also check for damage to the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

    NO -Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or A/C, change the gear position, etc.).
18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -Intermittent failure, the system is OK at this time.

    NO -If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17.

19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
21. Check under these DATA LIST parameter conditions with the HDS:
    - Engine coolant temperature (ECT SENSOR 1) above 156 °F (70 °C)
    - IAT SENSOR above 32 °F (0 °C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.69-1.47
    - FSS is CLOSED
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES -Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1.

    NO -Go to step 23.

23. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES -If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTCs troubleshooting.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle for at least 20 seconds.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES -Go to step 5.

   NO -If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Check for vacuum leaks at these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose
   - Brake booster

   Are there any leaks?

   YES -Repair or replace the leaking part(s), then go to step 6.

   NO -Go to step 6.

6. Turn the ignition switch ON (II).

7. Reset the ECM with the HDS.
8. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle for at least 20 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES -Go to step 12.

    NO -Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, go to step 12. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.

12. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
13. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES -Check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 13. If the ECM was substituted, go to step 1.

    NO -Go to step 15.

15. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES -If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 13. If the ECM was substituted, go to step 1. If the screen indicates

EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the A/C pressure sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES -Go to step 10.

   NO -Go to step 9.

9. Measure voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

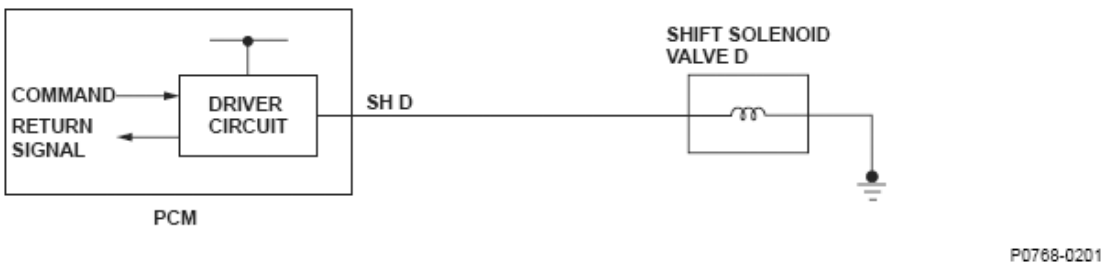


Fig. 2: Measuring Voltage Between A/C Pressure Sensor 3P Connector Terminals No 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 18.

NO -Go to step 14.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector A (44P).
13. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 3: Checking Continuity Between A/C Pressure Sensor 3P Connector Terminal No 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM (A16) and the A/C pressure sensor, then go to step 20.

NO -Go to step 28.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 1 and ECM connector terminal A19.

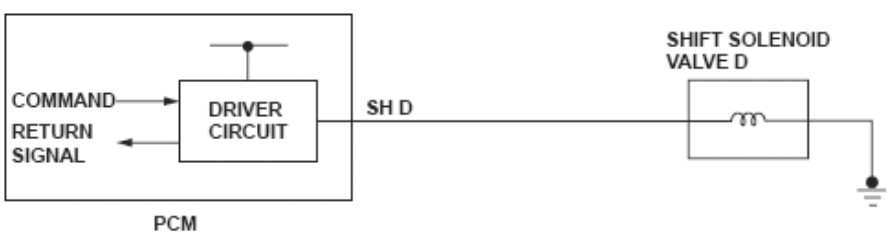


Fig. 4: Checking Continuity Between A/C Pressure Sensor 3P Terminal No 1 And ECM Terminal A19
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 28.

NO -Repair open in the wire between the ECM (A19) and the A/C pressure sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the A/C pressure sensor (see **A/C LINE REPLACEMENT**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Start the engine, and let it idle.
25. Turn the blower switch on.
26. Turn the A/C switch on.
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0532 indicated?

YES -Check for poor connections or loose terminals at the A/C pressure sensor and the ECM, then go to step 1.

NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
30. Start the engine, and let it idle.
31. Turn the blower switch on.
32. Turn the A/C switch on.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0532 indicated?

YES -Check for poor connections or loose terminals at the A/C pressure sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 30. If the ECM was substituted, go to step 1.

NO -If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 V or more?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the A/C pressure sensor 3P connector.
7. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 5: Connecting A/C Pressure Sensor 3P Connector Terminals No 2 And No 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Turn the ignition switch ON (II).
9. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 V or more?

   YES -Go to step 10.

NO -Go to step 22.

10. Turn the ignition switch OFF.
11. Remove the jumper wire from the A/C pressure sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

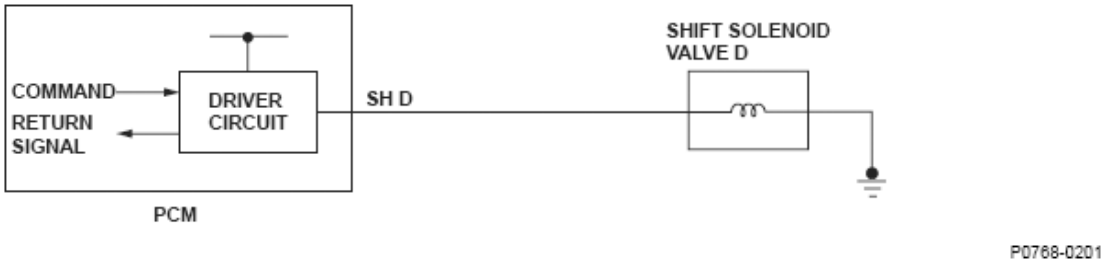


Fig. 6: Measuring Voltage Between A/C Pressure Sensor 3P Connector Terminals No 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 14.

NO -Go to step 18.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and ECM connector terminal A16.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 7: Checking Continuity Between A/C Pressure Sensor 3P Terminal No 2 And ECM Terminal A16

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 32.

NO -Repair open in the wire between the ECM (A16) and the A/C pressure sensor, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect ECM connector A (44P).
21. Check for continuity between A/C pressure sensor 3P connector terminal No. 3 and ECM connector terminal A9.

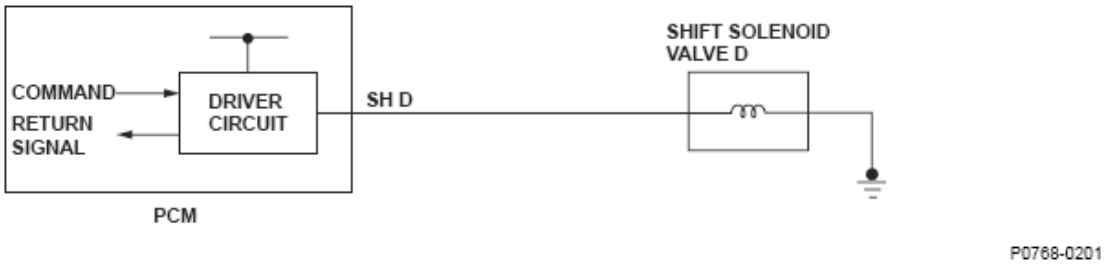


Fig. 8: Checking Continuity Between A/C Pressure Sensor 3P Terminal No 3 And ECM Terminal A9
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 32.

NO -Repair open in the wire between the ECM (A9) and the A/C pressure sensor, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the A/C pressure sensor (see **A/C LINE REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Start the engine, and let it idle.
29. Turn the blower switch on.
30. Turn the A/C switch on.
31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0533 indicated?

YES -Check for poor connections or loose terminals at the A/C pressure sensor and the ECM, then go to step 1.

NO -Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

32. Reconnect all connectors.
33. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
34. Start the engine, and let it idle.
35. Turn the blower switch on.
36. Turn the A/C switch on.
37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0533 indicated?

    YES -Check for poor connections or loose terminals at the A/C pressure sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 34. If the ECM was substituted, go to step 1.

    NO -If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

A/C SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES -Go to step 5.

   NO -Do the A/C system test (see **A/C SYSTEM TEST**).

5. Check the A/C system.

   Does the A/C system operate?

   YES -The air conditioning system circuit is OK.

   NO -Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

   Is there a clicking noise from the A/C compressor clutch?

YES -Do the A/C system test (see **A/C SYSTEM TEST**).

NO -Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM connector A (44P).
12. Turn the ignition switch ON (II).
13. Momentarily connect ECM connector terminal A14 to body ground with a jumper wire several times.

Shift solenoid valve / Gear position	Shift solenoid valve A	Shift solenoid valve B	Shift solenoid valve C	Shift solenoid valve D
Park	OFF	OFF	OFF	ON
Reverse	OFF	ON	ON	ON
Neutral	OFF	OFF	OFF	OFF
1st	OFF	ON	OFF	ON/OFF
1st - 2nd	ON	ON	OFF	ON/OFF
2nd	ON	OFF	OFF	ON/OFF
2nd - 3rd	OFF	OFF	OFF	ON/OFF
3rd	OFF	OFF	ON	ON/OFF
3rd - 4th	ON	OFF	ON	ON/OFF
4th	ON	ON	ON	ON/OFF
4th - 5th	OFF	ON	ON	ON/OFF
5th	OFF	ON	OFF	ON/OFF

Fig. 9: Connecting ECM Connector Terminal A14 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there a clicking noise from the A/C compressor clutch?

YES -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO -Check for poor connections or loose terminals at the A/C compressor clutch relay and the ECM. If the connections are OK, check the A/C compressor clutch relay (see **POWER RELAY TEST**). Then repair open in the wire between the ECM (A14) and the A/C compressor clutch relay and the other A/C systems.

ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

Does the percentage vary?

YES -The alternator signal circuit is OK.

NO -Go to step 4.

4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM connector B (44P).
8. Check for continuity between body ground and ECM connector terminal B43.

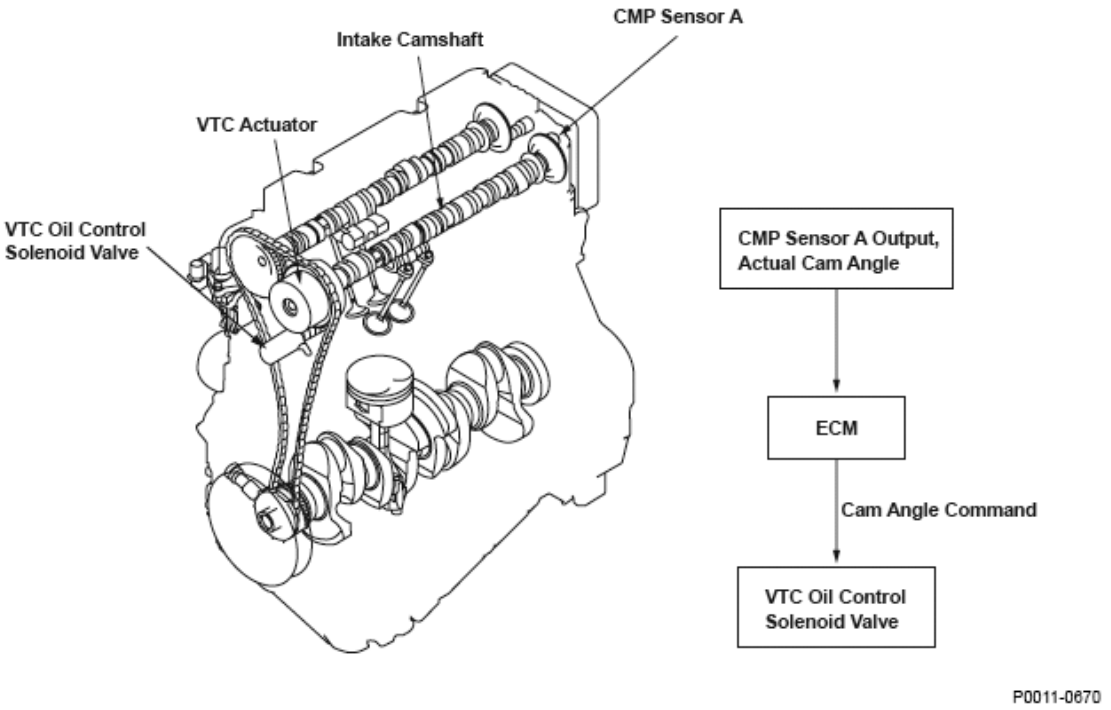


Fig. 10: Checking Continuity Between Body Ground And ECM Connector Terminal B43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM (B43) and the alternator.

NO -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it indicate OFF?

YES -Go to step 3.

NO -Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES -The brake pedal position switch signal circuit (BKSW line) is OK.

   NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM connector A (44P).
8. Check for continuity between ECM connector terminal A40 and body ground.

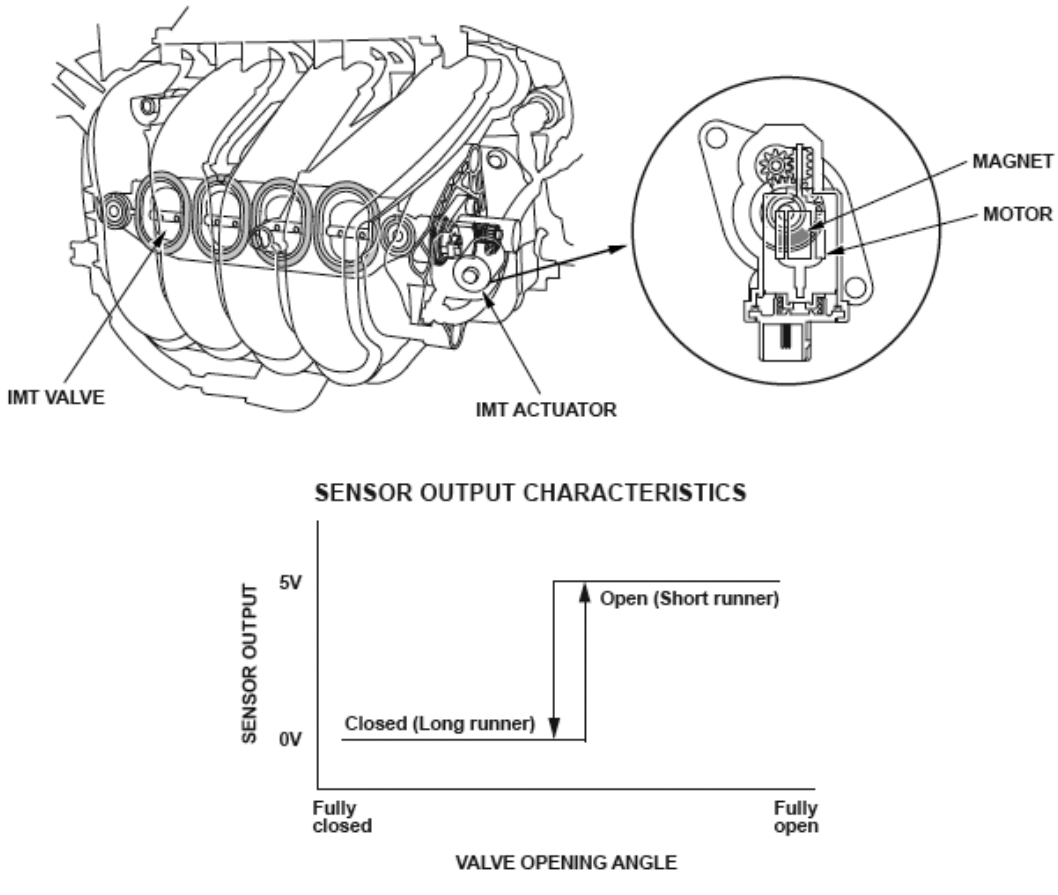


Fig. 11: Checking Continuity Between ECM Connector Terminal A40 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM (A40) and the No. 12 HORN, STOP (15 A) fuse. Replace the No. 12 HORN, STOP (15 A) fuse.

NO -Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

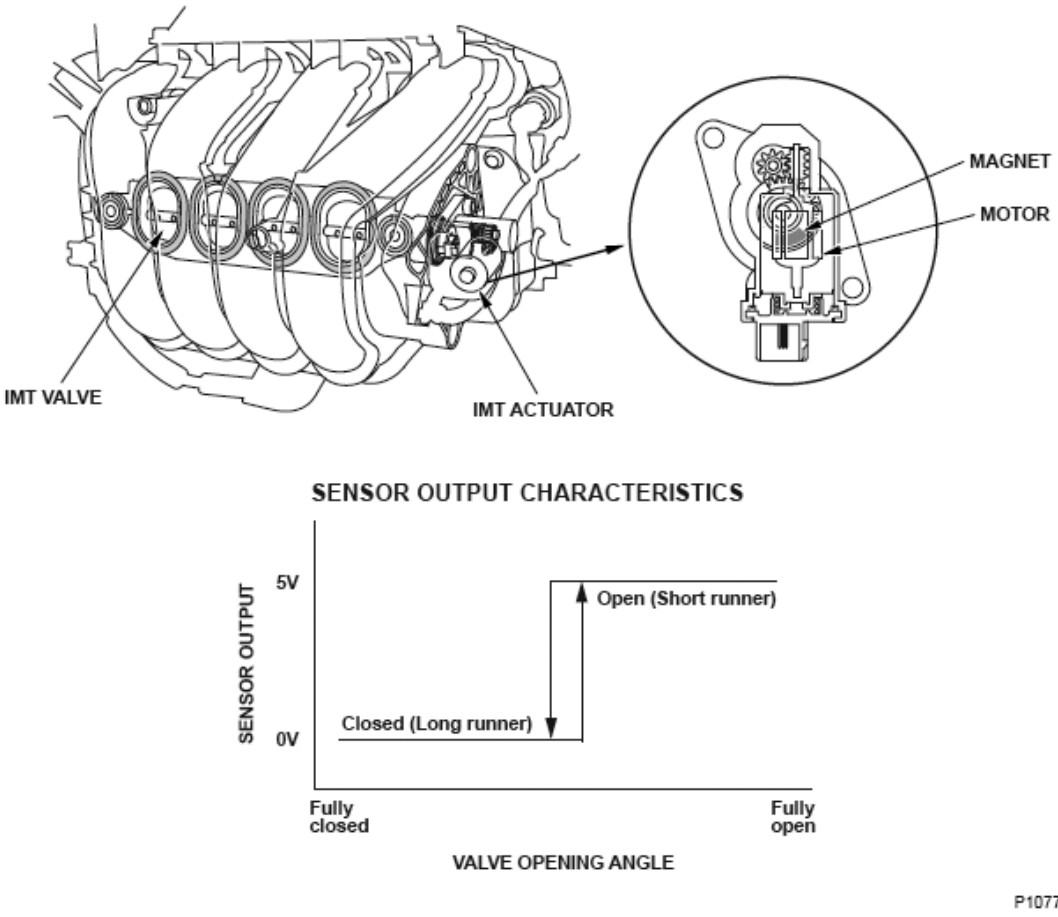


Fig. 12: Connecting Brake Pedal Position Switch 4P Terminal No 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check for continuity between ECM connector terminal A40 and body ground.

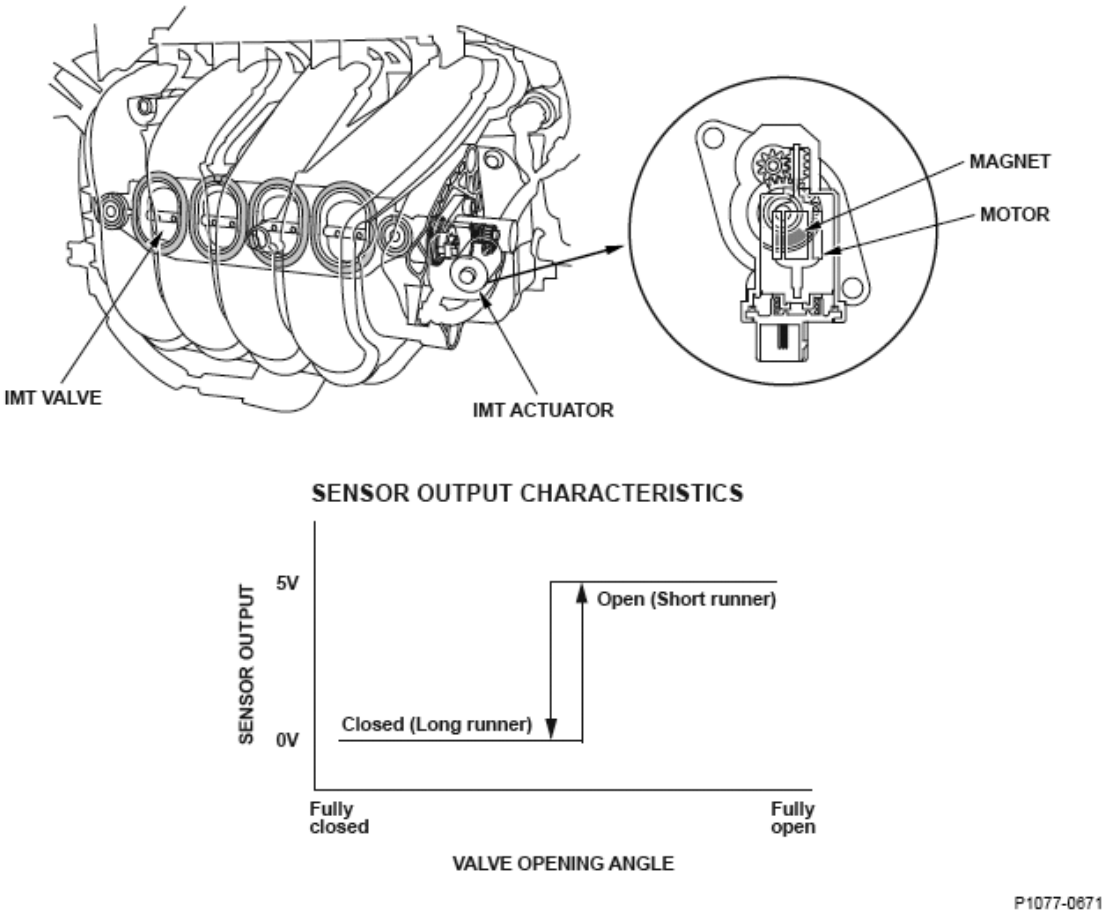


Fig. 13: Checking Continuity Between ECM Connector Terminal A40 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair open in the wire between the brake pedal position switch and the No. 12 HORN, STOP (15 A) fuse. Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

NO -Repair open in the wire between the ECM (A40) and the brake pedal position switch.

IDLE SPEED INSPECTION

NOTE:

- **Before checking the idle speed, check these items:**
  - **The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.**
  - **Ignition timing**
  - **Spark plugs**
  - **Air cleaner**
  - **PCV system**
- **Apply the parking brake, and make sure the headlights are off.**

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

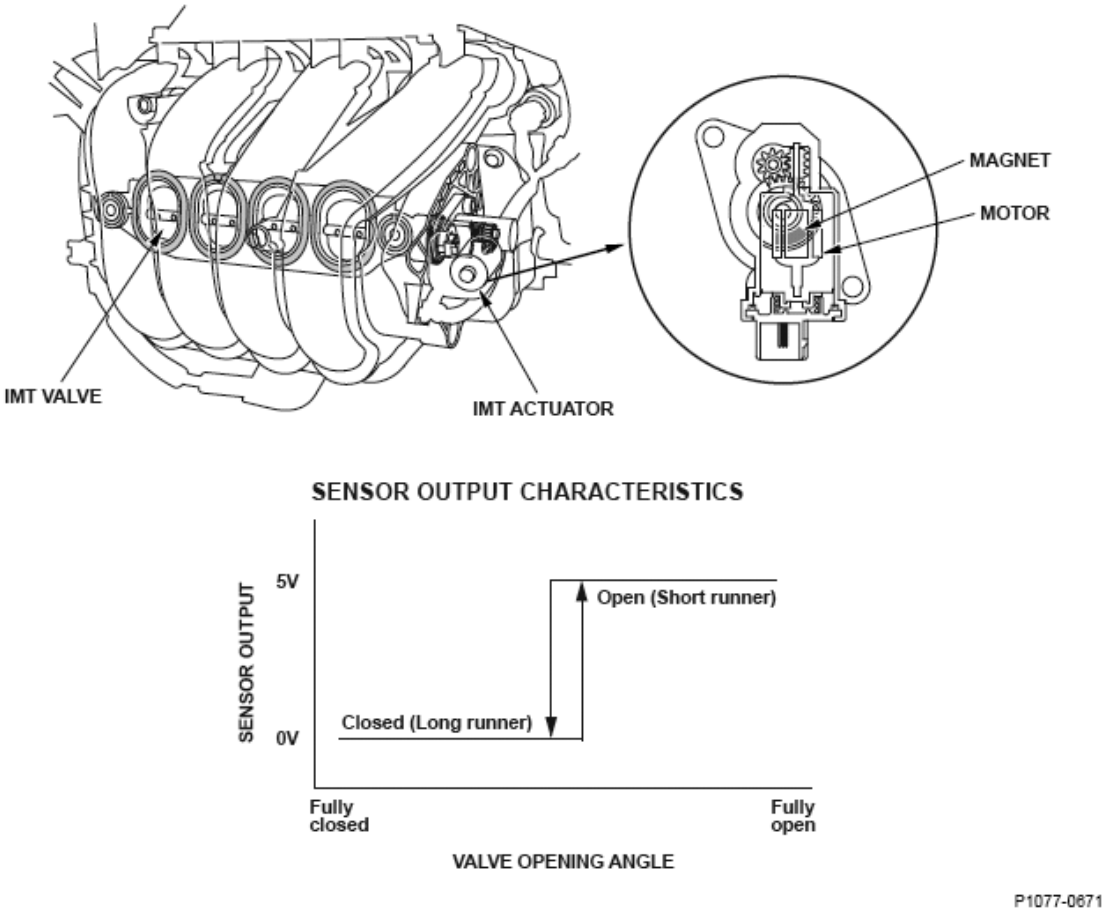


Fig. 14: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be: 750±50 rpm

6. Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on high, and headlights on high beam).

   Idle speed should be: 750±50 rpm

NOTE: **If the idle speed is not within specification, do the ECM idle learn procedure (see ECM IDLE LEARN PROCEDURE). If the idle speed is**

still not within specification, go to symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM IDLE LEARN PROCEDURE

The idle learn procedure must be done so the ECM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace ECM.
- Reset ECM.
- Update ECM.
- Replace or clean the throttle body.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

PROCEDURE

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.
2. Reset the ECM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

6. Verify on the HDS data list that the idle learn procedure is complete.

2006-08 ENGINE PERFORMANCE

Idle Control System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: Refer to the IDLE CONTROL SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

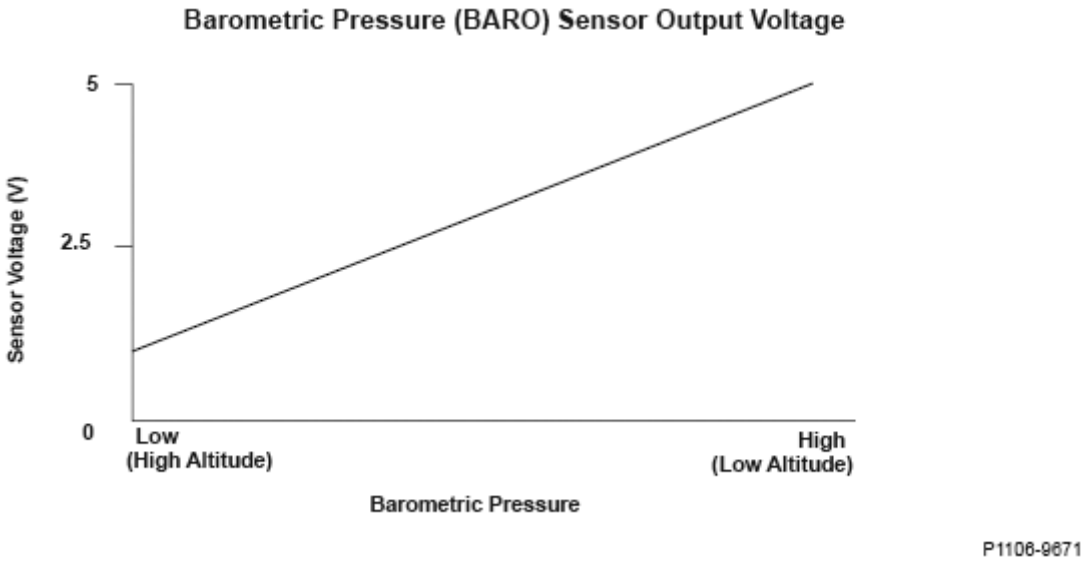


Fig. 1: Identifying IDLE Control System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check under these DATA LIST parameter conditions with the HDS:
   - ECT SENSOR 1 above 156°F (70°C)
   - IAT SENSOR above 32°F (0°C)
   - VSS is 0 mph (0 km/h)
   - ST FUEL TRIM between 0.73-1.47
   - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 6.

NO - If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Remove the intake air duct from the throttle body (see **THROTTLE BODY CLEANING**).
7. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES - If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**). Also check for damage to the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO - Check the A/C system or power steering system, then go to step 17.

8. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Check under these DATA LIST parameter conditions with the HDS:
    - ECT SENSOR 1 above 156°F (70°C)
    - IAT SENSOR above 32°F (0°C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.73-1.47
    - FSS is CLOSED
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES - Go to step 19.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, go to step 19. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11 and recheck.

15. Remove the air intake duct from the throttle body (see **THROTTLE BODY CLEANING**).
16. Check for dirt, carbon, or damage in the throttle bore.

    Is there dirt, carbon, or damage in the throttle bore?

    YES - If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**). Also check for damage to the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

    NO - Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or A/C, change the gear position, etc.).
18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Intermittent failure, the system is OK at this time.

    NO - If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17.

19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
21. Check under these DATA LIST parameter conditions with the HDS:
    - ECT SENSOR 1 above 156°F (70°C)
    - IAT SENSOR above 32°F (0°C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.73-1.47
    - FSS is CLOSED
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 23.

23. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

DTC P0507: IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 5.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Check for vacuum leaks at these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose
   - Brake booster

   Are there any leaks?

   YES - Repair or replace the leaking part(s), then go to step 6.

   NO - Go to step 6.

6. Turn the ignition switch ON (II).

7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO - Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 12. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.

12. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES - Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 13. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see

SUBSTITUTING THE ECM/PCM), then go to step 13. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the A/C pressure sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES - Go to step 10.

   NO - Go to step 9.

9. Measure voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

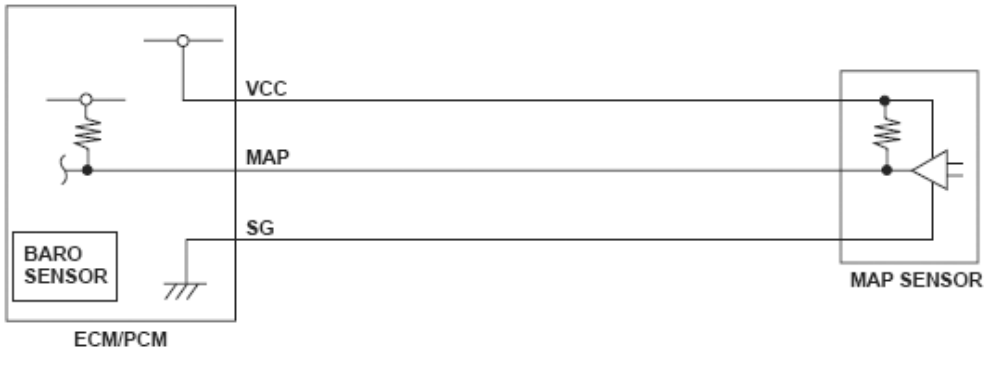


Fig. 2: Measuring Voltage Between A/C Pressure Sensor 3P Connector Terminals No. 1 And 3

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 18.

NO - Go to step 14.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (44P).
13. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

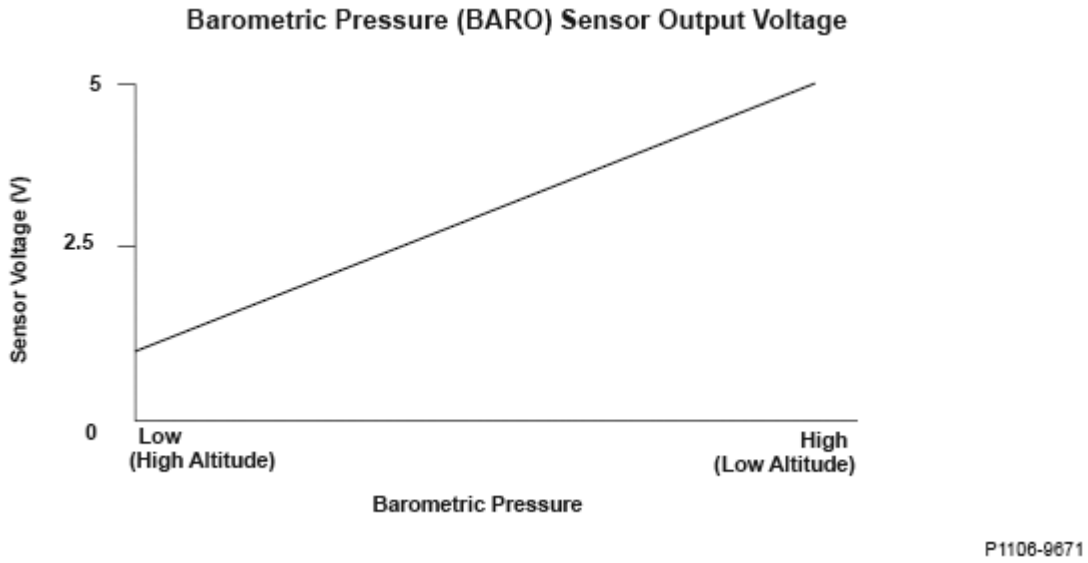


Fig. 3: Checking Continuity Between A/C Pressure Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 20.

NO - Go to step 28.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 1 and ECM/PCM connector terminal A19.

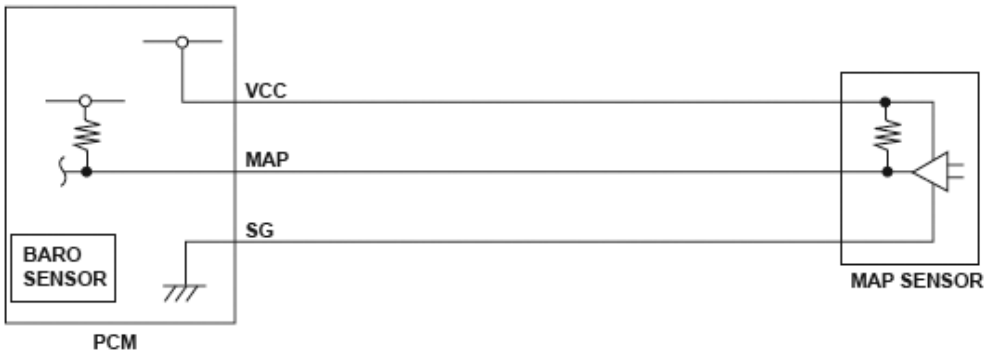


Fig. 4: Checking Continuity Between A/C Pressure Sensor 3P Terminal No. 1 And ECM/PCM Terminal A19
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM/PCM (A19) and the A/C pressure sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the A/C pressure sensor (see **A/C LINE REPLACEMENT**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Start the engine, and let it idle.
25. Turn the blower switch on.
26. Turn the A/C switch on.
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0532 indicated?

YES - Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Start the engine, and let it idle.
31. Turn the blower switch on.

32. Turn the A/C switch on.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0532 indicated?

YES - Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 4.75 V or more?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the A/C pressure sensor 3P connector.
7. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

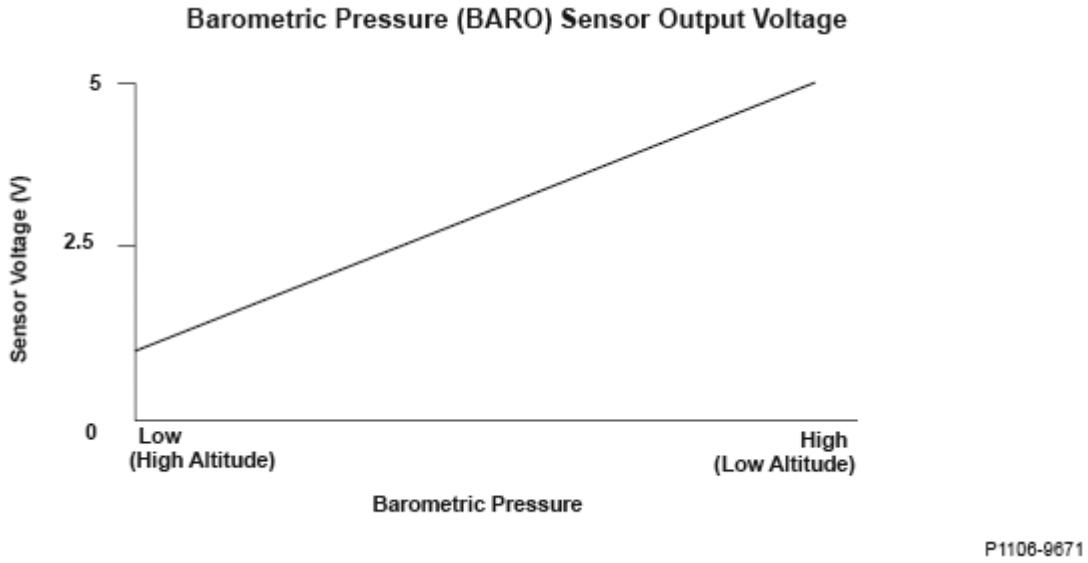


Fig. 5: Connecting A/C Pressure Sensor 3P Connector Terminals No. 2 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Turn the ignition switch ON (II).
9. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 V or more?

   YES - Go to step 10.

   NO - Go to step 22.

10. Turn the ignition switch OFF.
11. Remove the jumper wire from the A/C pressure sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between A/C pressure sensor 3P connector terminal No. 1 and No. 3.

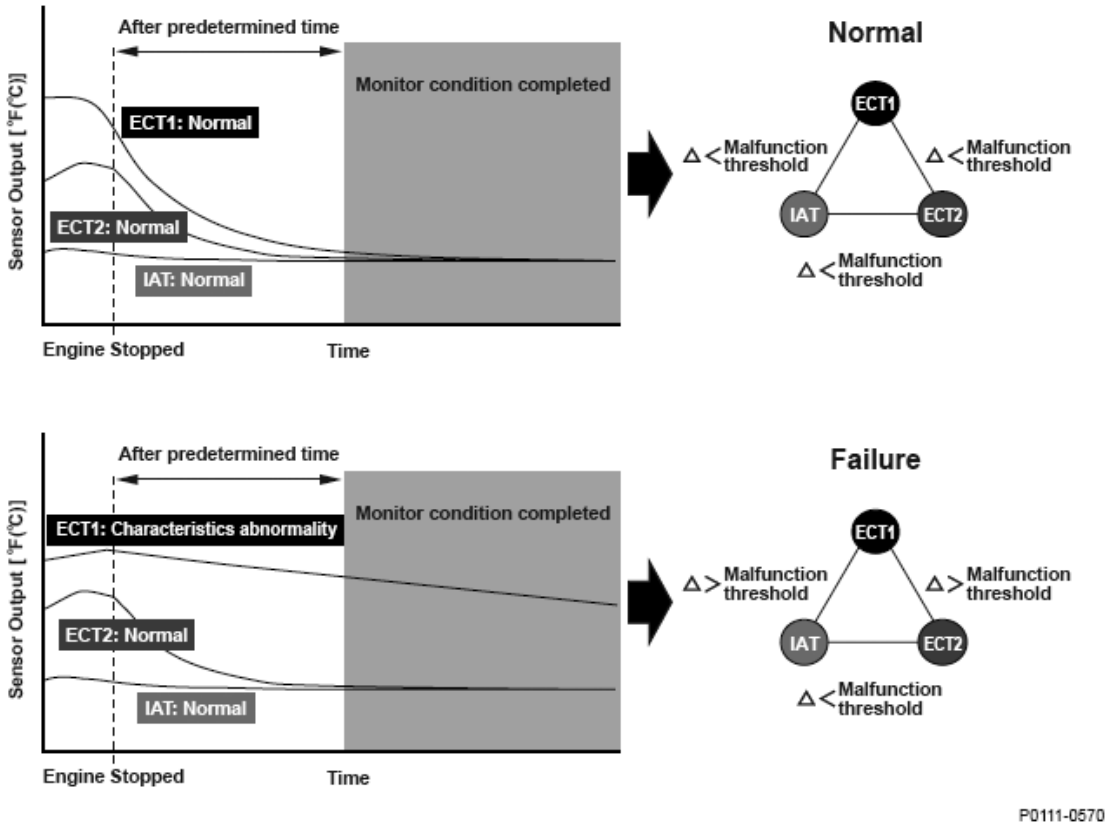


Fig. 6: Checking Voltage Between A/C Pressure Sensor 3P Connector Terminal No. 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 14.

NO - Go to step 18.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and ECM/PCM connector terminal A16.

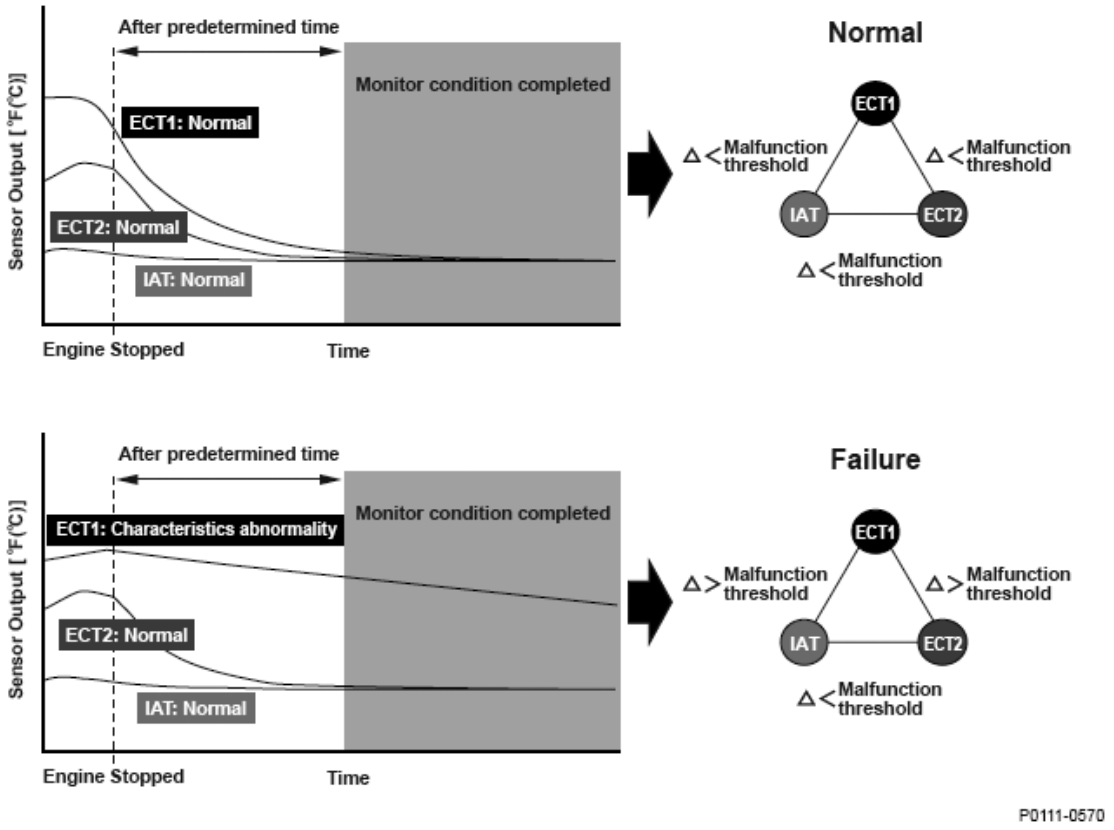


Fig. 7: Checking Continuity Between A/C Pressure Sensor 3P Terminal No. 2 And ECM/PCM A16
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 32.

NO - Repair open in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector A (44P).
21. Check for continuity between A/C pressure sensor 3P connector terminal No. 3 and ECM/PCM connector terminal A9.

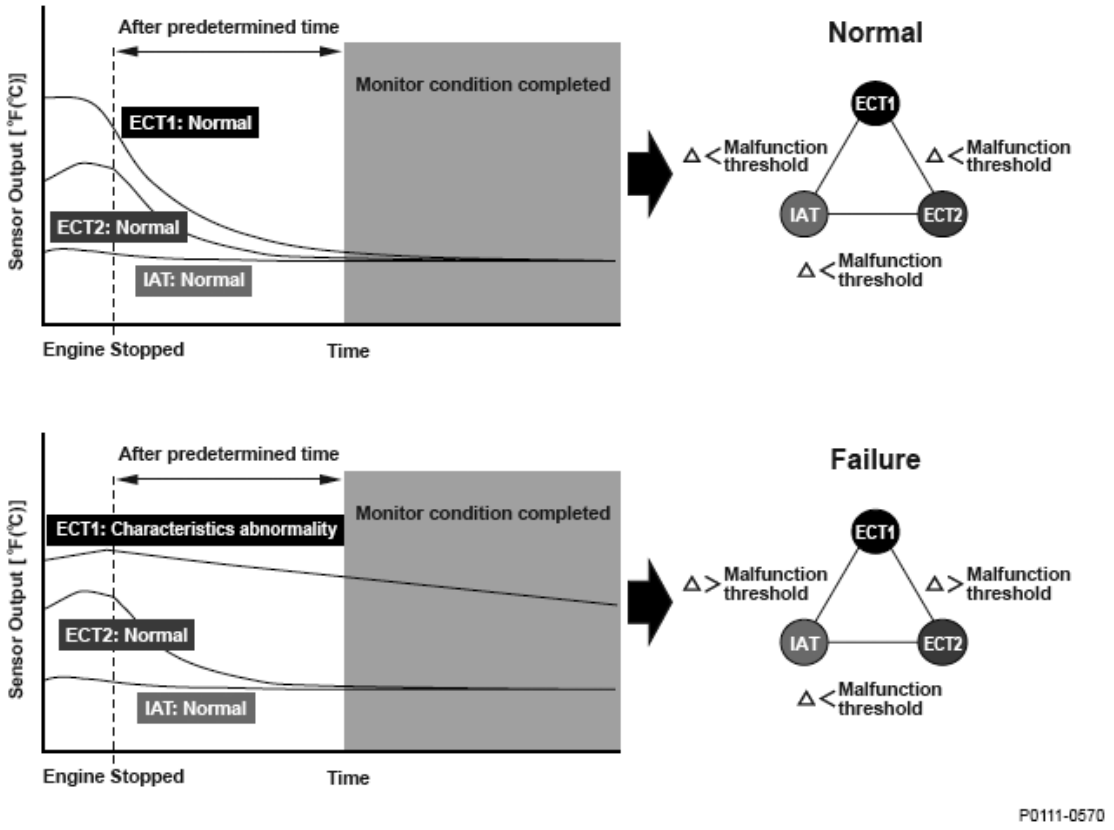


Fig. 8: Checking Continuity Between A/C Pressure Sensor 3P Terminal No. 3 And ECM/PCM Terminal A9
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 32.

NO - Repair open in the wire between the ECM/PCM (A9) and the A/C pressure sensor, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the A/C pressure sensor (see **A/C LINE REPLACEMENT**).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Start the engine, and let it idle.
29. Turn the blower switch on.
30. Turn the A/C switch on.
31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0533 indicated?

YES - Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM.

then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
34. Start the engine, and let it idle.
35. Turn the blower switch on.
36. Turn the A/C switch on.
37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0533 indicated?

    YES - Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

A/C SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES - Go to step 5.

   NO - Do the A/C system test (see **A/C SYSTEM TEST**).

5. Check the A/C system.

   Does the A/C system operate?

   YES - The air conditioning system circuit is OK.

   NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

Is there a clicking noise from the A/C compressor clutch?

YES - Do the A/C system test (see **A/C SYSTEM TEST**).

NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (44P).
12. Turn the ignition switch ON (II).
13. Momentarily connect ECM/PCM connector terminal A14 to body ground with a jumper wire several times.

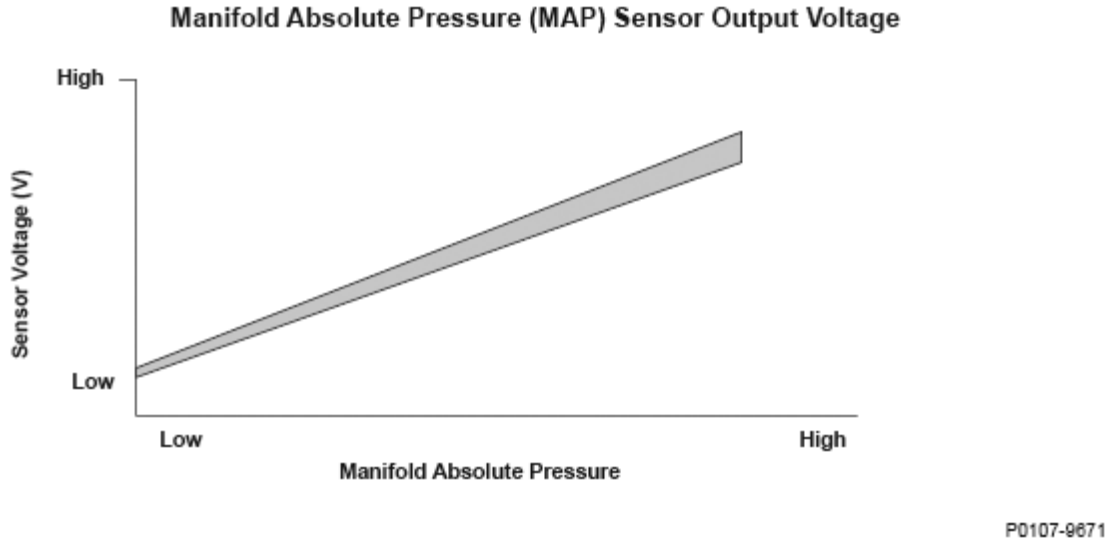


Fig. 9: Connecting ECM/PCM Connector Terminal A14 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there a clicking noise from the A/C compressor clutch?

YES - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections are OK, check the A/C clutch relay (see **POWER RELAY TEST**), repair open in the wire between the ECM/PCM (A14) and the A/C clutch relay and the other A/C systems.

ALTERNATOR FR SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

Does the percentage vary?

YES - The alternator signal circuit is OK.

NO - Go to step 4.

4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (44P).
8. Check for continuity between body ground and ECM/PCM connector terminal B43.

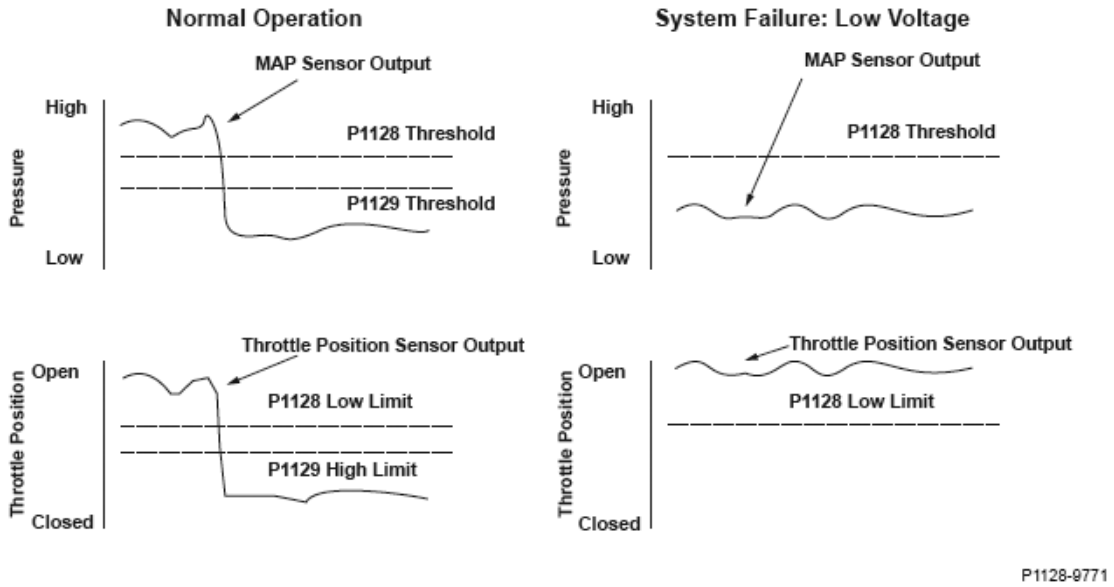


Fig. 10: Checking Continuity Between Body Ground And ECM/PCM Connector Terminal B43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B43) and the alternator.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

PSP SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it indicate ON?

YES - Go to step 4.

NO - Go to step 14.

4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to OFF?

YES - The PSP switch signal circuit is OK.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to OFF?

YES - Replace the PSP switch (see **COMPONENT LOCATION INDEX** .

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (44P).
13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

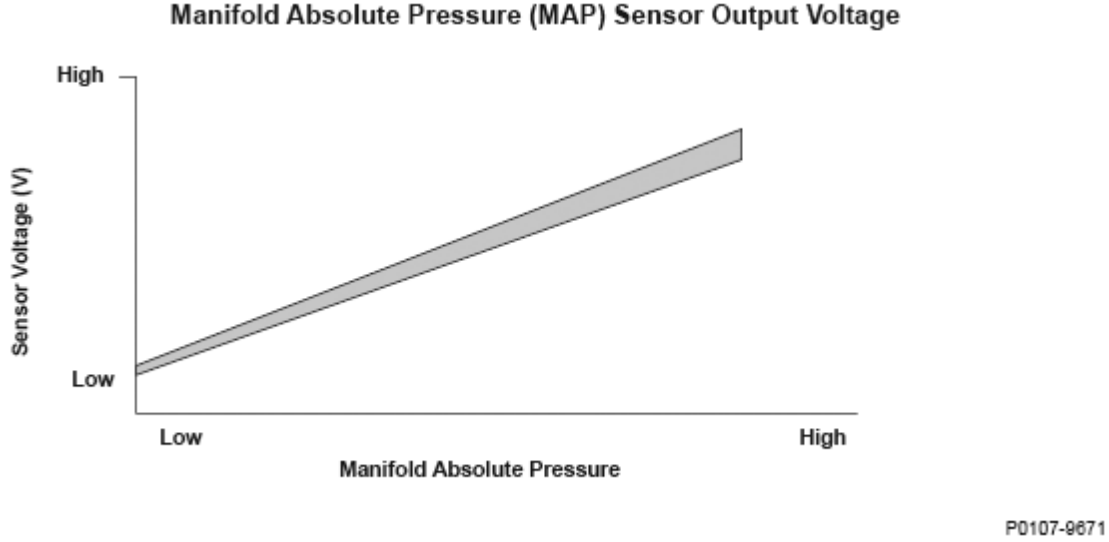


Fig. 11: Checking Continuity Between PSP Switch 2P Connector Terminal No. 1And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A22) and the PSP switch.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

14. Turn the ignition switch OFF.
15. Disconnect the PSP switch 2P connector.
16. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

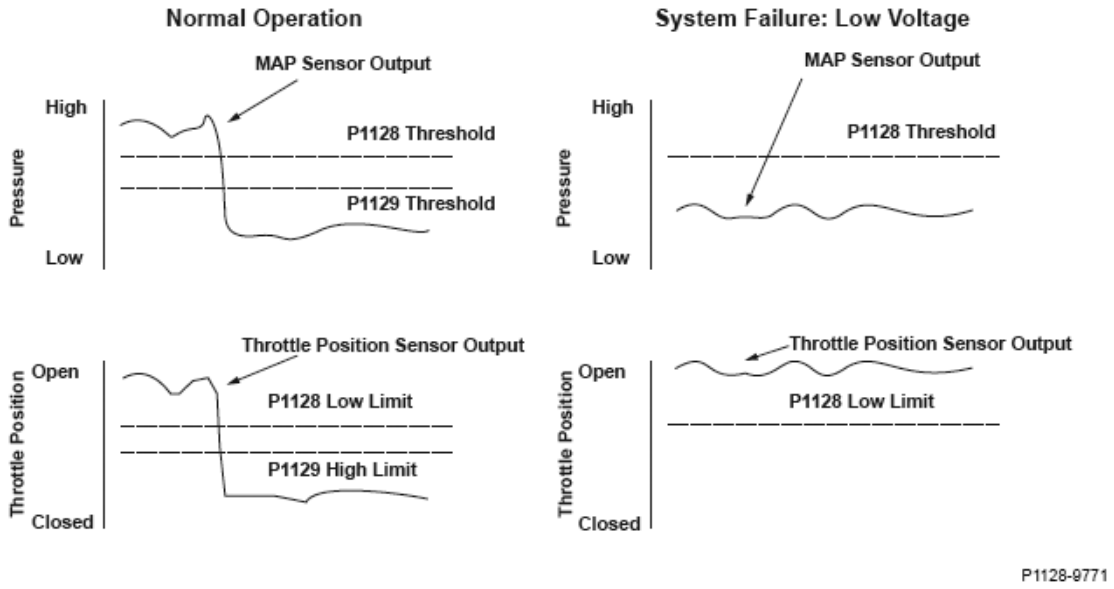


Fig. 12: Connecting PSP Switch 2P Connector Terminals No. 1 And 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES - Replace the PSP switch (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

NO - Go to step 18.

18. Turn the ignition switch OFF.
19. Remove the jumper wire from the PSP switch 2P connector.
20. Jump the SCS line with the HDS.
21. Disconnect ECM/PCM connector A (44P).
22. Connect PSP switch 2P connector terminal No. 1 to body ground with a jumper wire.

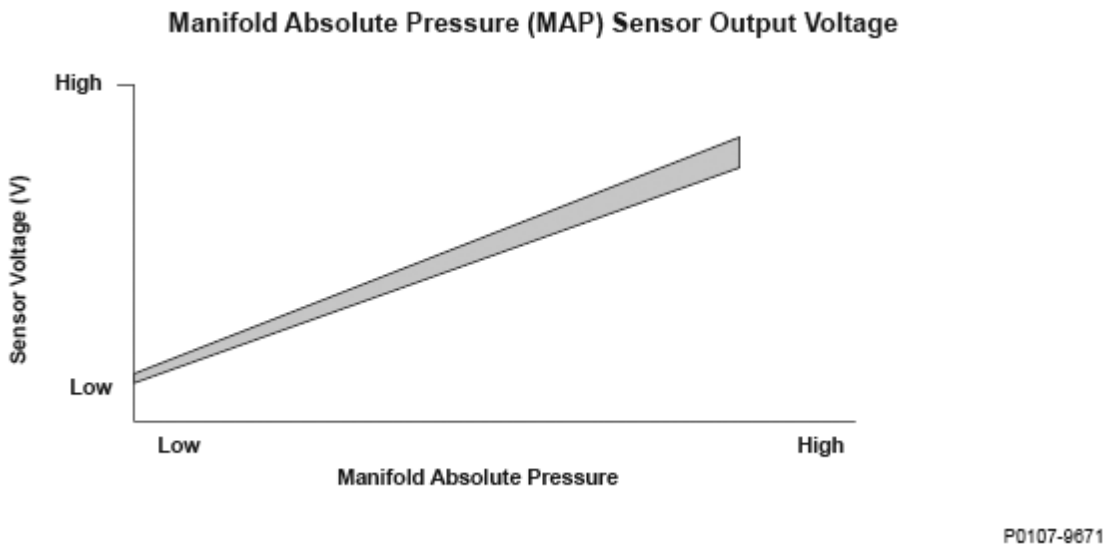


Fig. 13: Connecting PSP Switch 2P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Check for continuity between body ground and ECM/PCM connector terminal A22.

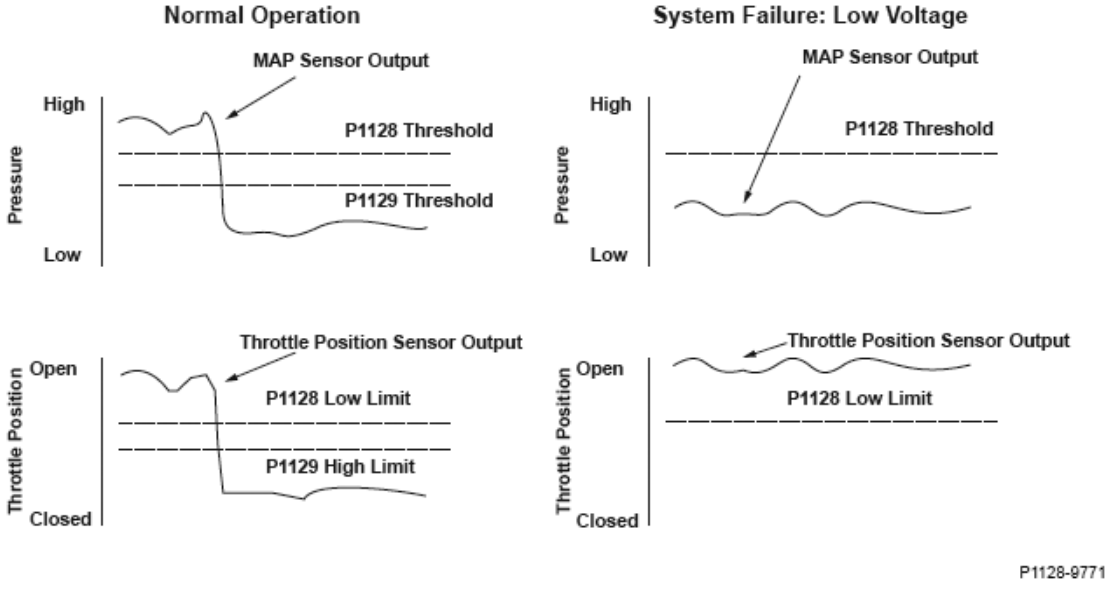


Fig. 14: Checking Continuity Between Body Ground And ECM/PCM Connector Terminal A22
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the PSP switch and the ECM/PCM (A22).

24. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

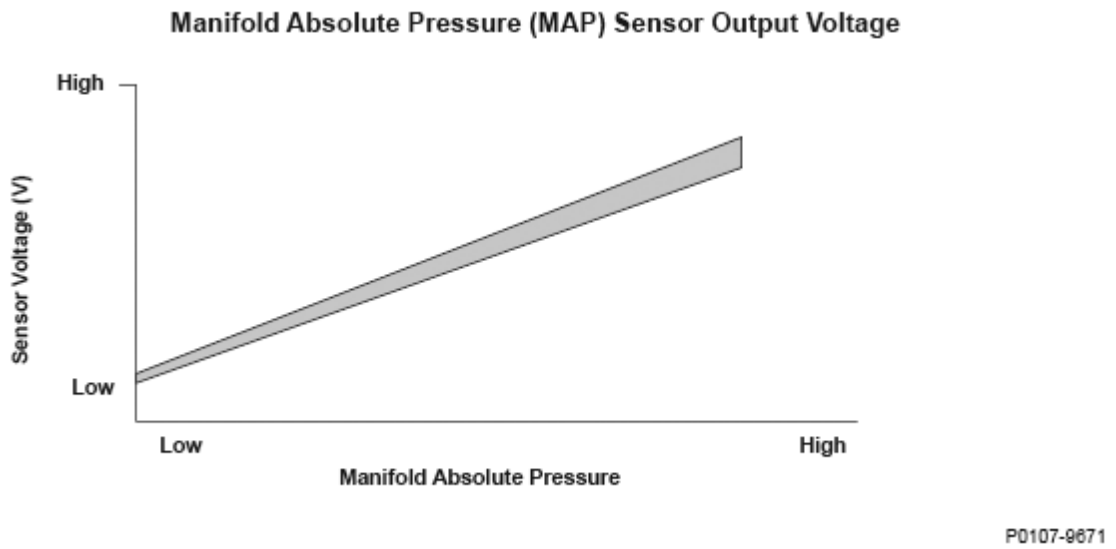


Fig. 15: Checking Continuity Between PSP Switch 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Repair open in the wire between the PSP switch and G401 (see **CONNECTOR TO HARNESS INDEX**).

BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it indicate OFF?

   YES - Go to step 3.

   NO - Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES - The brake pedal position switch signal circuit (BKSW line) is OK.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM/PCM connector A (44P).
8. Check for continuity between ECM/PCM connector terminal A40 and body ground.

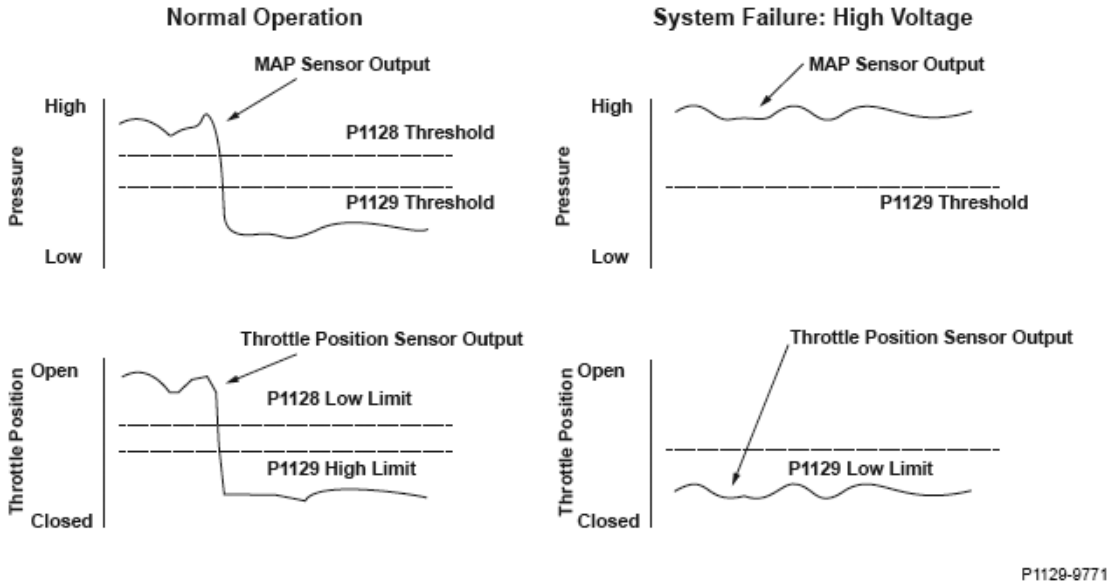


Fig. 16: Checking Continuity Between ECM/PCM Connector Terminal A40 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A40) and the No. 12 HORN, STOP (15 A) fuse. Replace the No. 12 HORN, STOP (15 A) fuse.

NO - Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

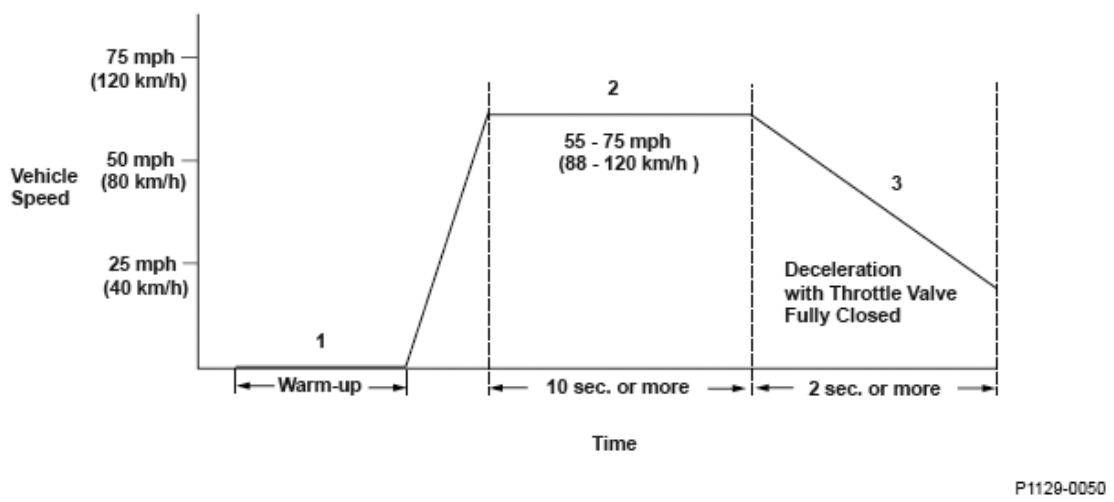


Fig. 17: Connecting Brake Pedal Position Switch 4P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check for continuity between ECM/PCM connector terminal A40 and body ground.

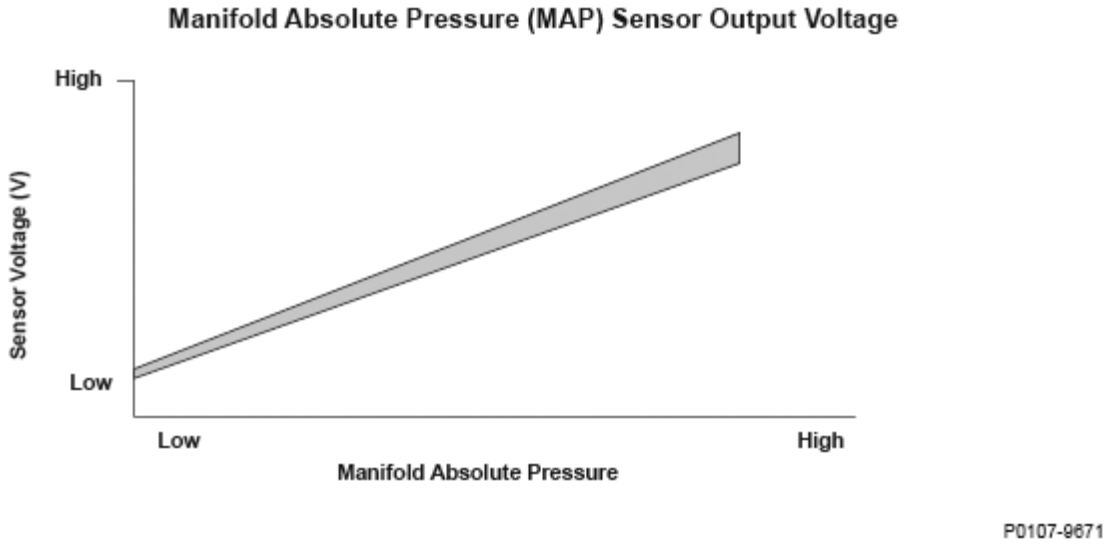


Fig. 18: Checking Continuity Between ECM/PCM Connector Terminal A40 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair open in the wire between the brake pedal position switch and the No. 12 HORN, STOP (15 A) fuse. Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

NO - Repair open in the wire between the ECM/PCM (A40) and the brake pedal position switch.

IDLE SPEED INSPECTION

NOTE:

- **Before checking the idle speed, check these items:**
  - **The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.**
  - **Ignition timing**
  - **Spark plugs**
  - **Air cleaner**
  - **PCV system**
- **Apply the parking brake, and make sure the headlights are off.**

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

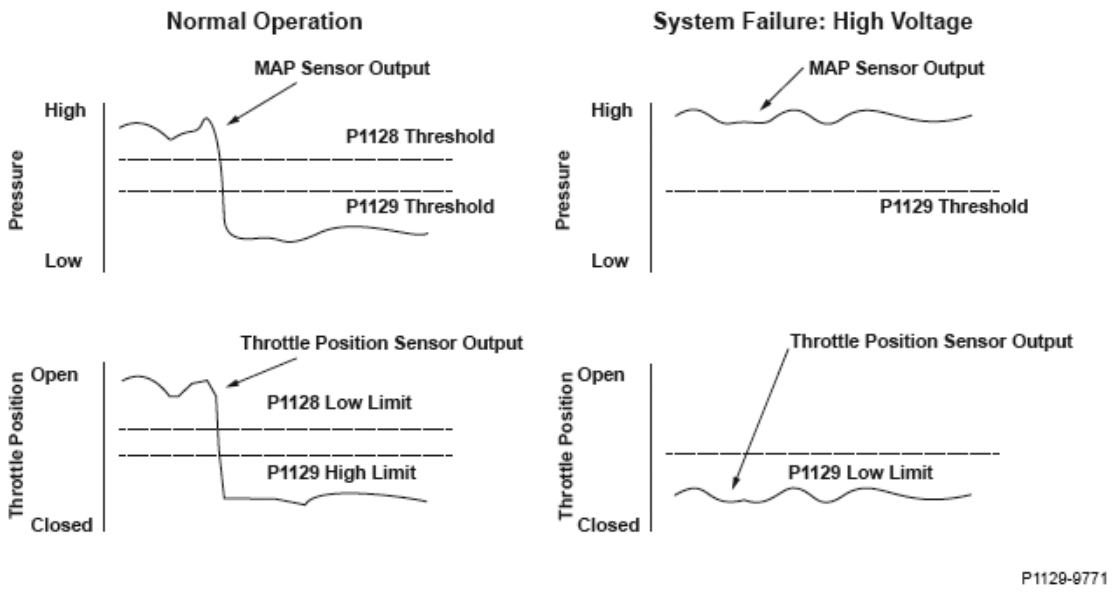


Fig. 19: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be:

IDLE SPEED SPECIFICATION FOR USA MODELS

M/T	670±50 rpm
A/T	670±50 rpm (in Park or neutral)

IDLE SPEED SPECIFICATION FOR ALL MODELS EXCEPT USA

M/T	750±50 rpm
A/T	750±50 rpm (in Park or neutral)

6. Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on high, and headlights on high beam).

Idle speed should be:

IDLE SPEED SPECIFICATION FOR USA MODELS

M/T	710±50 rpm
A/T	710±50 rpm (in Park or neutral)

IDLE SPEED SPECIFICATION FOR ALL MODELS EXCEPT USA

M/T	750±50 rpm

A/T	750±50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE). If the idle speed is still not within specification, go to symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM/PCM IDLE LEARN PROCEDURE

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace ECM/PCM.
- Reset ECM/PCM.
- Update ECM/PCM.
- Replace or clean the throttle body.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

PROCEDURE

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.
2. Reset the ECM/PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194°F (90°C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

6. Verify on the HDS data list that the idle learn procedure is complete.

2006-08 ENGINE PERFORMANCE

Intake Air System (K20Z3) - Civic (All Except Si)

THROTTLE BODY TEST

CARBON ACCUMULATION CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

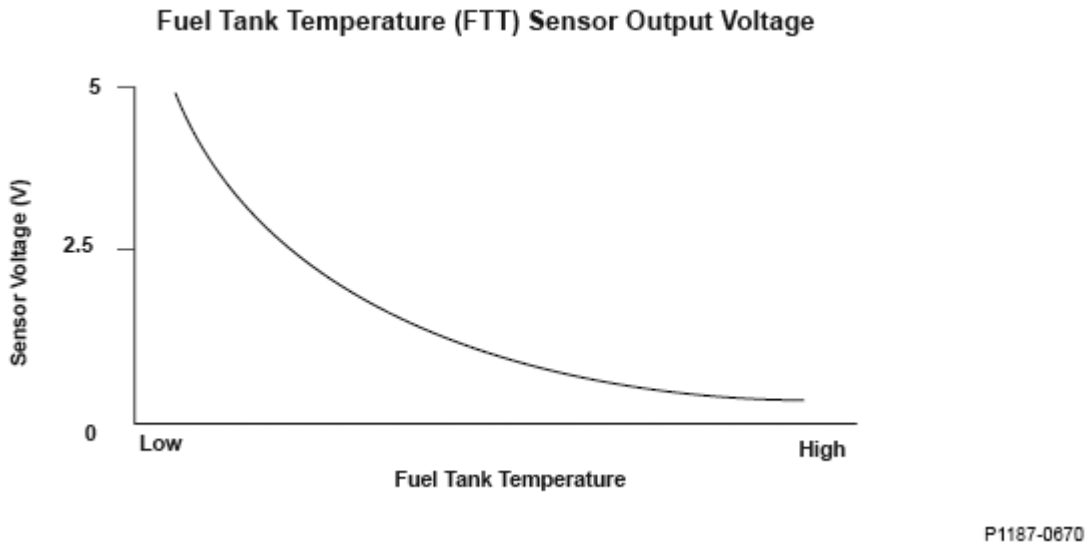


Fig. 1: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 deg. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE POSITION LEARNING CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC)

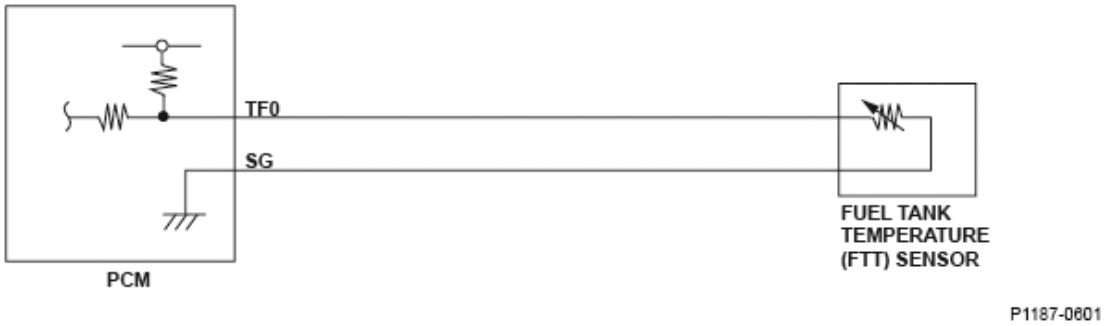


Fig. 2: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:
- **Remove the throttle body to clean it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).**
- **Do not spray throttle plate and induction cleaner directly on the throttle body.**
- **Use Honda genuine throttle plate and induction cleaner.**

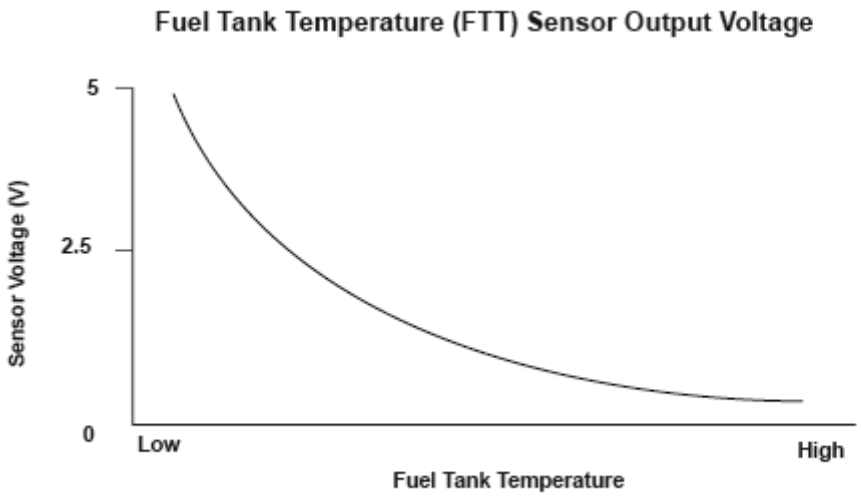


Fig. 3: Identifying Throttle Shaft Bearing Area
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
5. Reset the ECM with the HDS (see **HDS CLEAR COMMAND**).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

INTAKE AIR BYPASS CONTROL THERMAL VALVE TEST

Special Tools Required

Vacuum pump/gauge, 0-30 in.Hg, Snap-on YA4000A or equivalent, commercially available

1. Start the engine, and let it idle.

NOTE: Engine coolant temperature must be below 149°F (65°C).

2. Remove the intake manifold cover .
3. Remove the vacuum hose (A) from the air intake duct, and connect a vacuum pump/gauge, 0-30 in.Hg, to the hose.

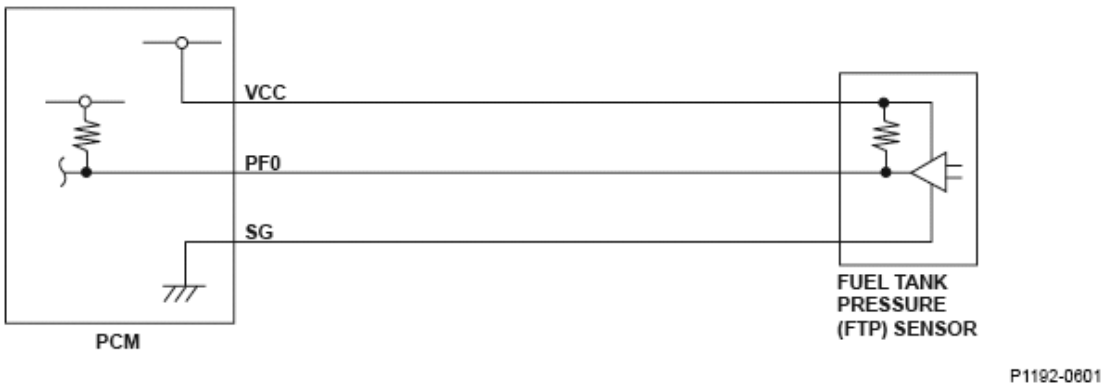


Fig. 4: Identifying Vacuum Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Raise and lower the engine speed, and make sure the vacuum gauge reading changes as the engine speed changes.

   If the vacuum reading does not change, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see **INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT**).
5. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
6. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   If the vacuum reading changes, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see **INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT**).

AIR CLEANER REMOVAL/INSTALLATION

1. Disconnect the MAF sensor/IAT sensor connector (A).

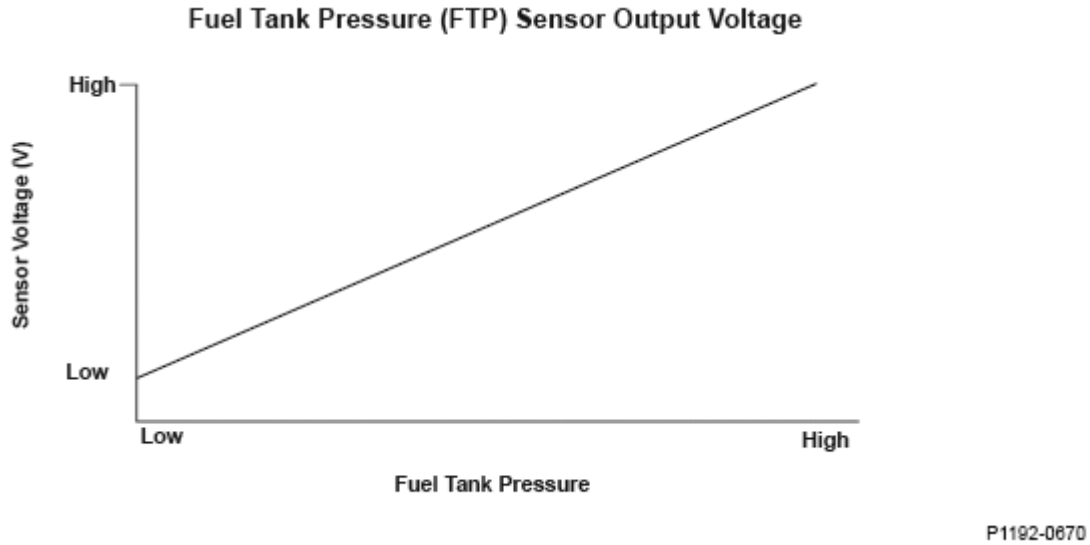


Fig. 5: Identifying MAF Sensor/IAT Sensor Connector And Air Cleaner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the bolts (B), then remove the air cleaner (C).
3. Install the parts in the reverse order of removal.

AIR CLEANER ELEMENT INSPECTION/REPLACEMENT

1. Open the air cleaner housing cover (A).

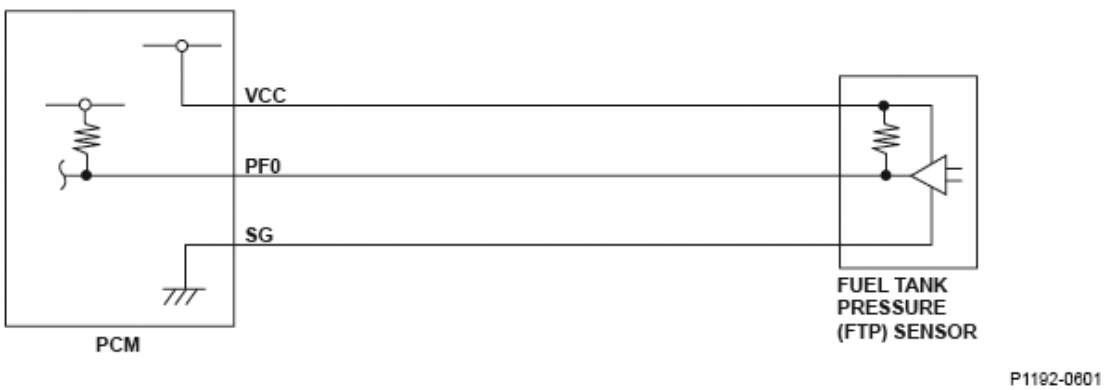


Fig. 6: Identifying Air Cleaner Housing Cover, Air Cleaner Element And Air Cleaner Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

NOTE: Do not use compressed air to clean the air cleaner element.

4. Install the parts in the reverse order of removal. Clean and remove any debris from inside the air cleaner housing.
5. If the maintenance minder required to replace the air cleaner element, reset the maintenance minder

(see **MAINTENANCE MINDER**).

- If you did not replace the air cleaner element, this procedure is complete.
- If the maintenance minder required air cleaner element replacement, reset the maintenance minder. (see**MAINTENANCE MINDER**).
- If you replaced the air cleaner element, reset the ECM with the HDS, and do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).

INTAKE AIR RESONATOR REMOVAL/INSTALLATION

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
3. Remove the bolt (A), and pipe (B).

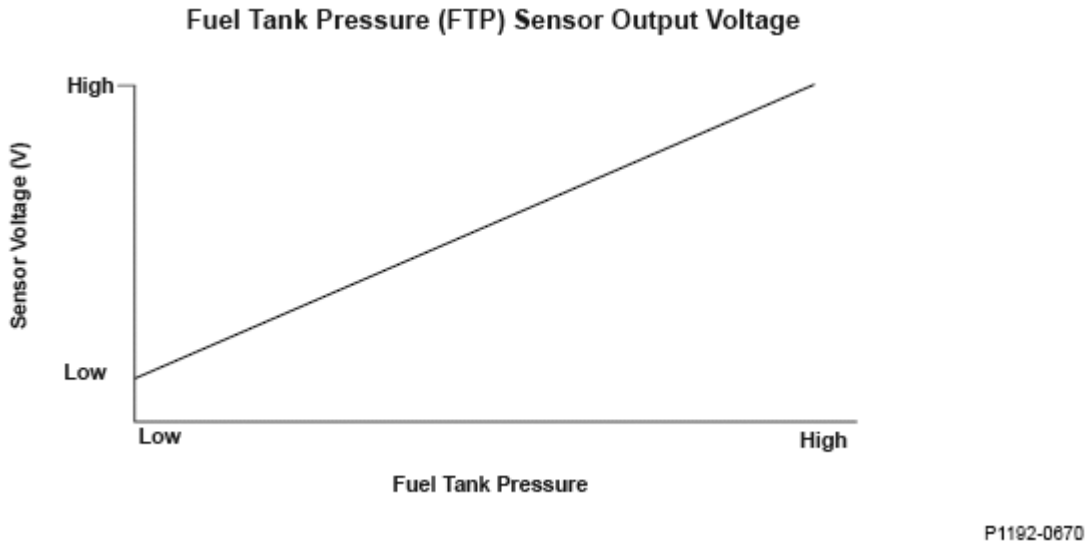


Fig. 7: Identifying Pipe, Duct And Resonator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the resonator (C).
5. Remove the battery.
6. Remove the bolt (D), and duct (E).
7. Install the parts in the reverse order of removal.
8. Reinstall the battery, and do these items:
   - Enter the anti-theft code for the audio system and the navigation system (if equipped).
   - Set the clock (if needed).

THROTTLE BODY REMOVAL/INSTALLATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 5.

1. Connect the HDS to the DLC while the engine is stopped.
2. USA, Canada models: Select the INSPECTION MENU on the HDS.
3. USA, Canada models: Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch OFF.
5. Remove the air intake duct (A).

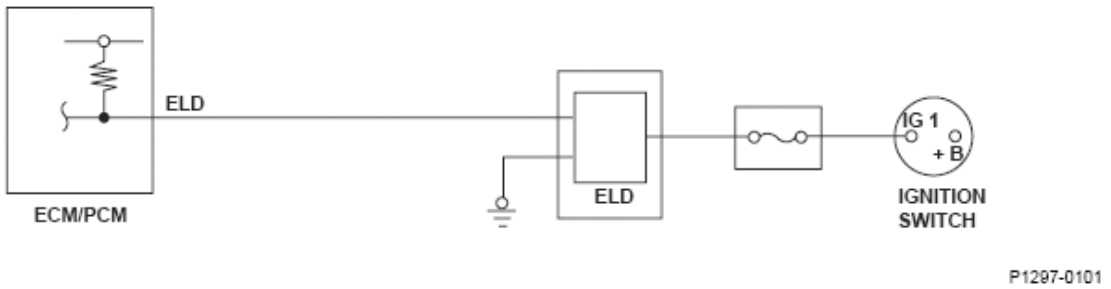


Fig. 8: Identifying Air Intake Duct, Throttle Body And Water Bypass/Vacuum Hoses (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hoses (D) and the clamp (E).
9. Remove the throttle body (F).
10. Install the parts in the reverse order of removal with a new gasket (G), then do this:
    - Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
    - Refill the radiator with engine coolant (see **COOLANT CHECK**).

THROTTLE BODY DISASSEMBLY/REASSEMBLY

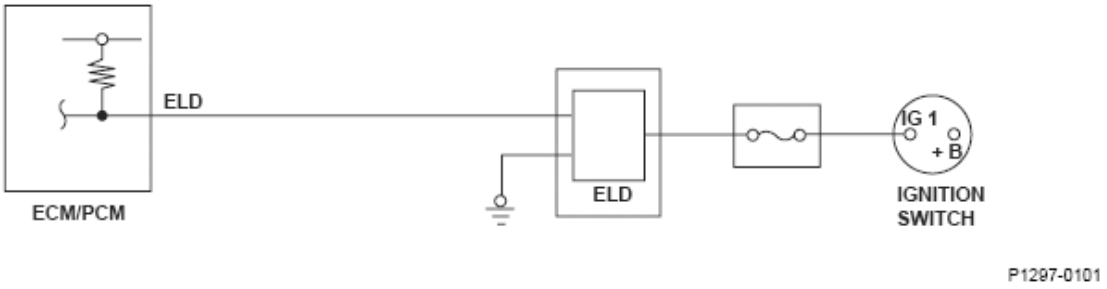


Fig. 9: Identifying Throttle Body And O-Ring (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INTAKE AIR BYPASS CONTROL THERMAL VALVE REPLACEMENT

1. Remove the engine cover .

2. Remove the air intake duct (A).

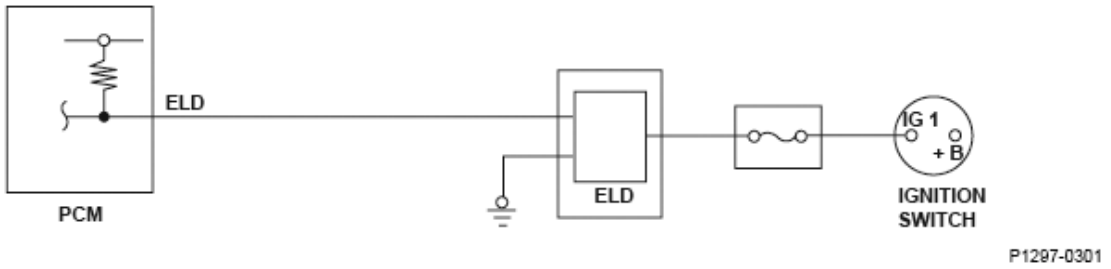


Fig. 10: Identifying Air Intake Duct And Intake Air Bypass Control Thermal Valve (With Torque Specification)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the hoses (B).
4. Remove the intake air bypass control thermal valve (C).
5. Install the parts in the reverse order of removal.

NOTE:

- **Position the valve angle as shown.**
- **Make sure the center of the clamp (D) and its lever end (E) are within the ranges shown.**

2006-08 ENGINE PERFORMANCE

Intake Air System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: Refer to the INTAKE AIR SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

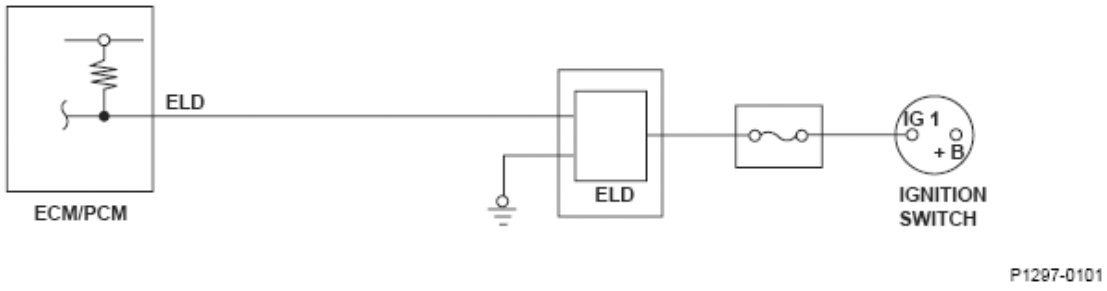


Fig. 1: Locating Intake Air System Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P1077: IMT VALVE STUCK IN HIGH RPM POSITION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

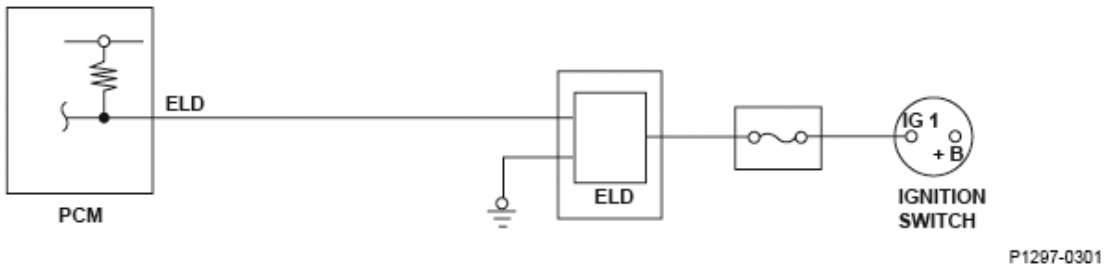


Fig. 2: Measuring Voltage Between IMT Actuator 5P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (44P).
11. Check for continuity between IMT actuator 5P connector terminal No. 1 and ECM/PCM connector terminal B18.

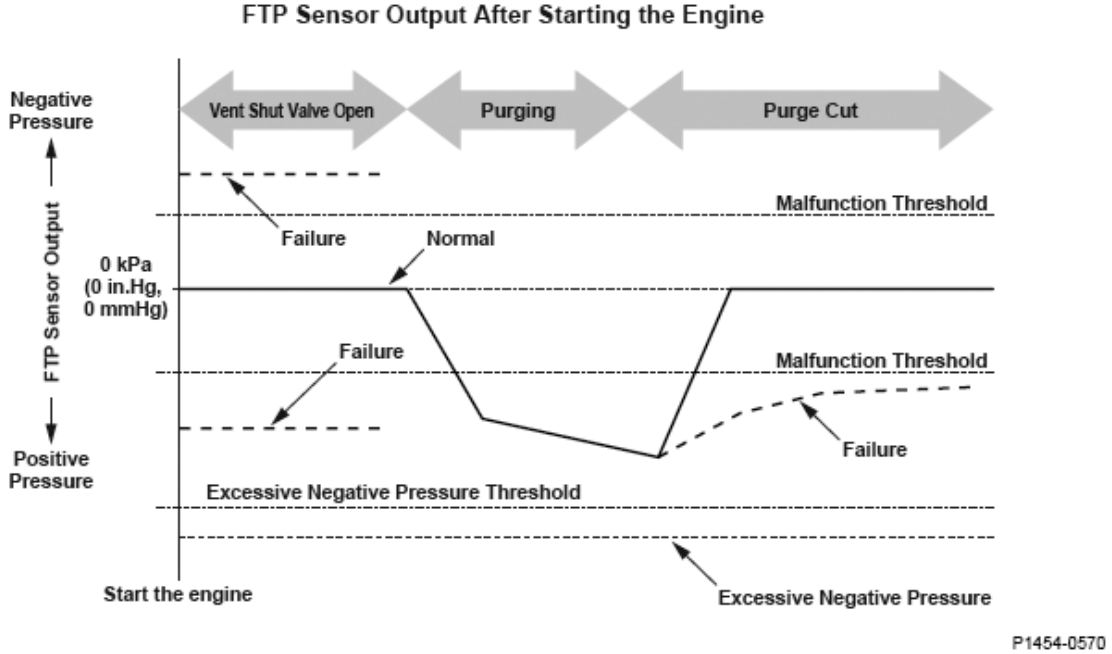


Fig. 3: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 1 And ECM/PCM Terminal B18
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 36.

NO - Repair open in the wire between the ECM/PCM (B18) and the IMT actuator, then go to step 30.

12. Measure voltage between IMT actuator 5P connector terminal No. 3 and body ground.

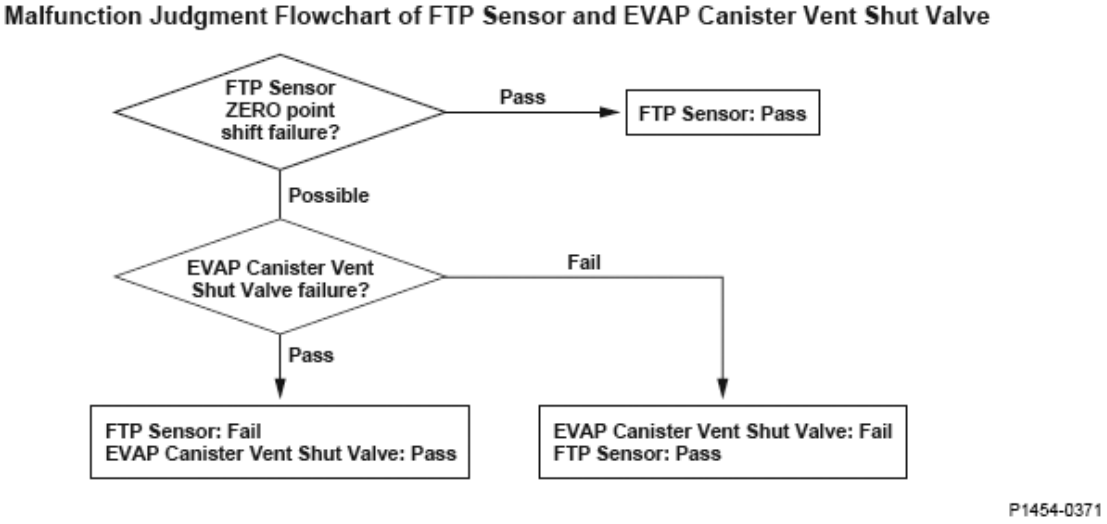


Fig. 4: Measuring Voltage Between IMT Actuator 5P Connector Terminal No 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 17.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector B (44P).
16. Check for continuity between IMT actuator 5P connector terminal No. 3 and ECM/PCM connector terminal B39.

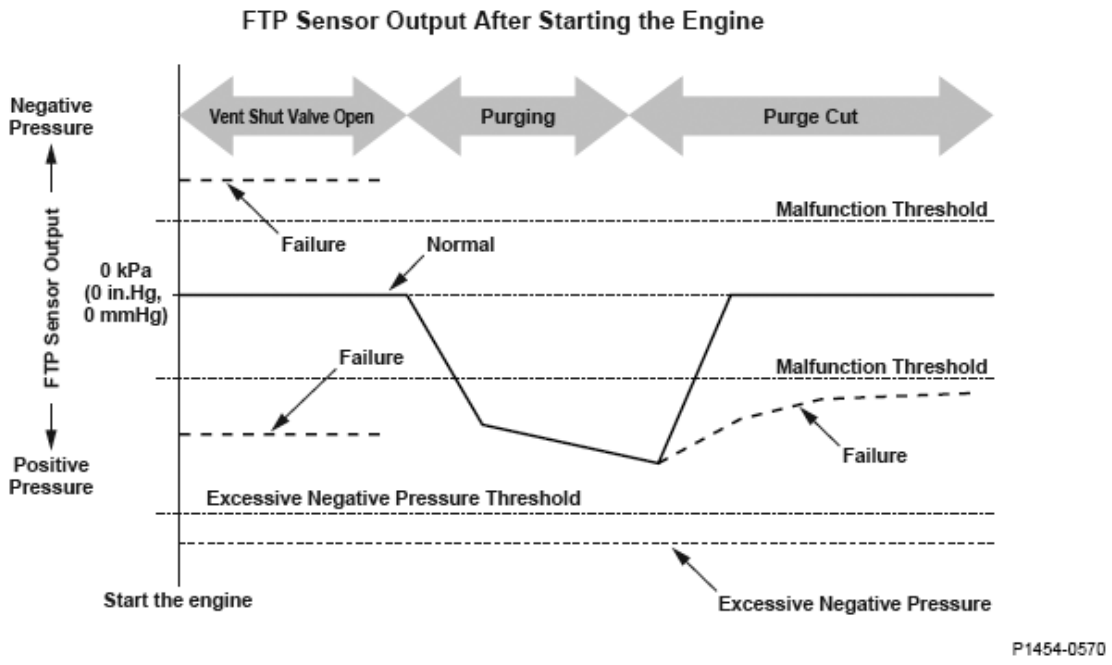


Fig. 5: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 3 And ECM/PCM Terminal B39
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 36.

NO - Repair open in the wire between the ECM/PCM (B39) and the IMT actuator, then go to step 30.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (44P).
20. Check for continuity between IMT actuator 5P connector terminal No. 2 and ECM/PCM connector terminal B33.

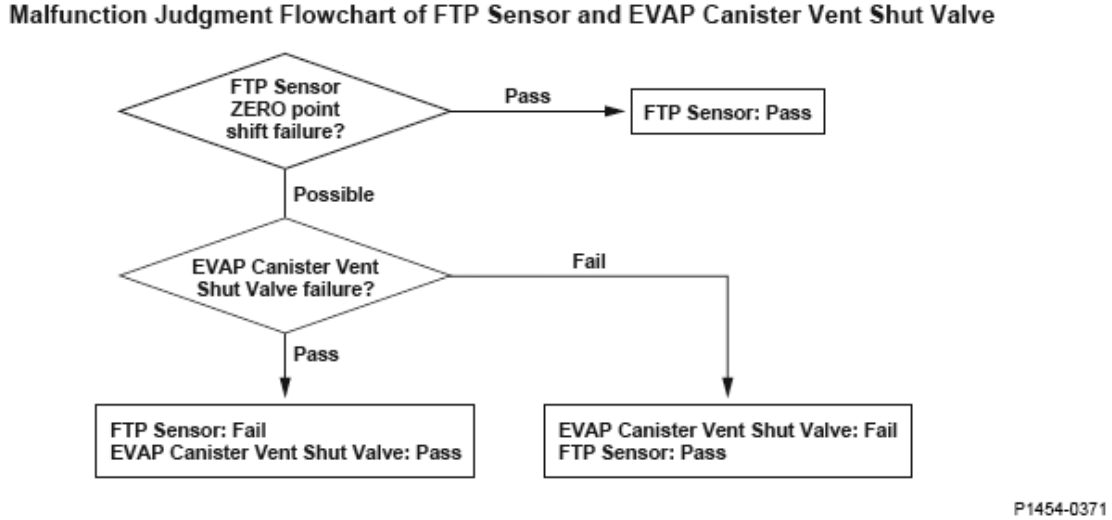


Fig. 6: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 2 And ECM/PCM Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the ECM/PCM (B33) and the IMT actuator, then go to step 30.

21. Check for continuity between ECM/PCM connector terminal B37 and body ground.

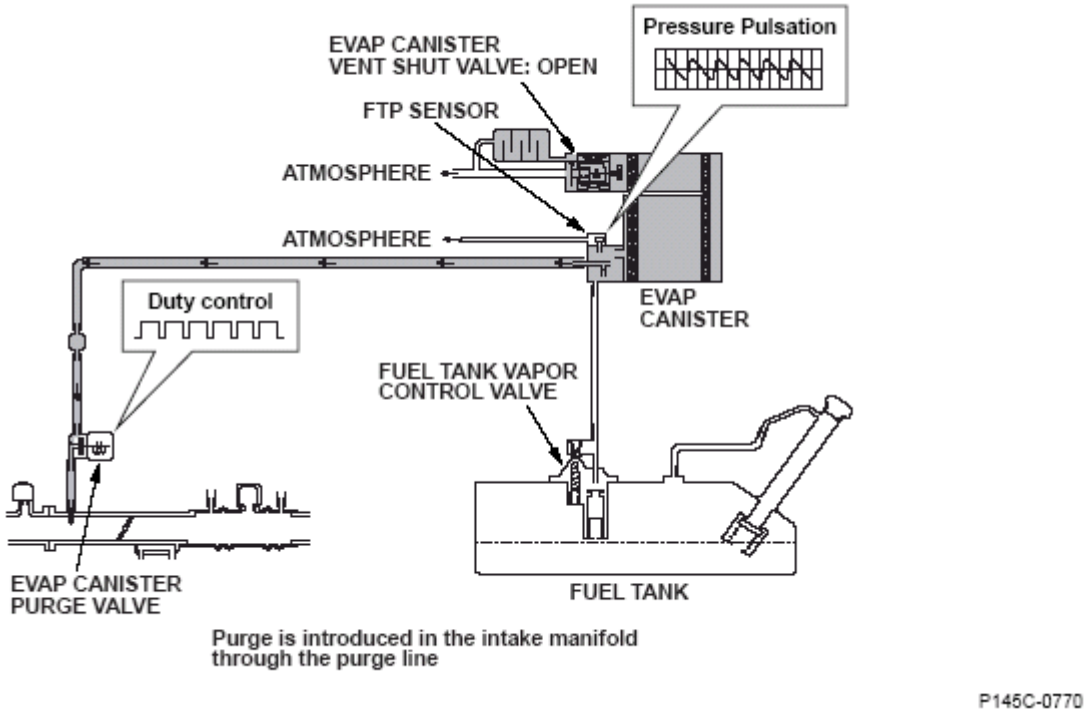


Fig. 7: Checking Continuity Between ECM/PCM Connector Terminal B37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 30.

NO - Go to step 22.

22. Check for continuity between ECM/PCM connector terminal B38 and body ground.

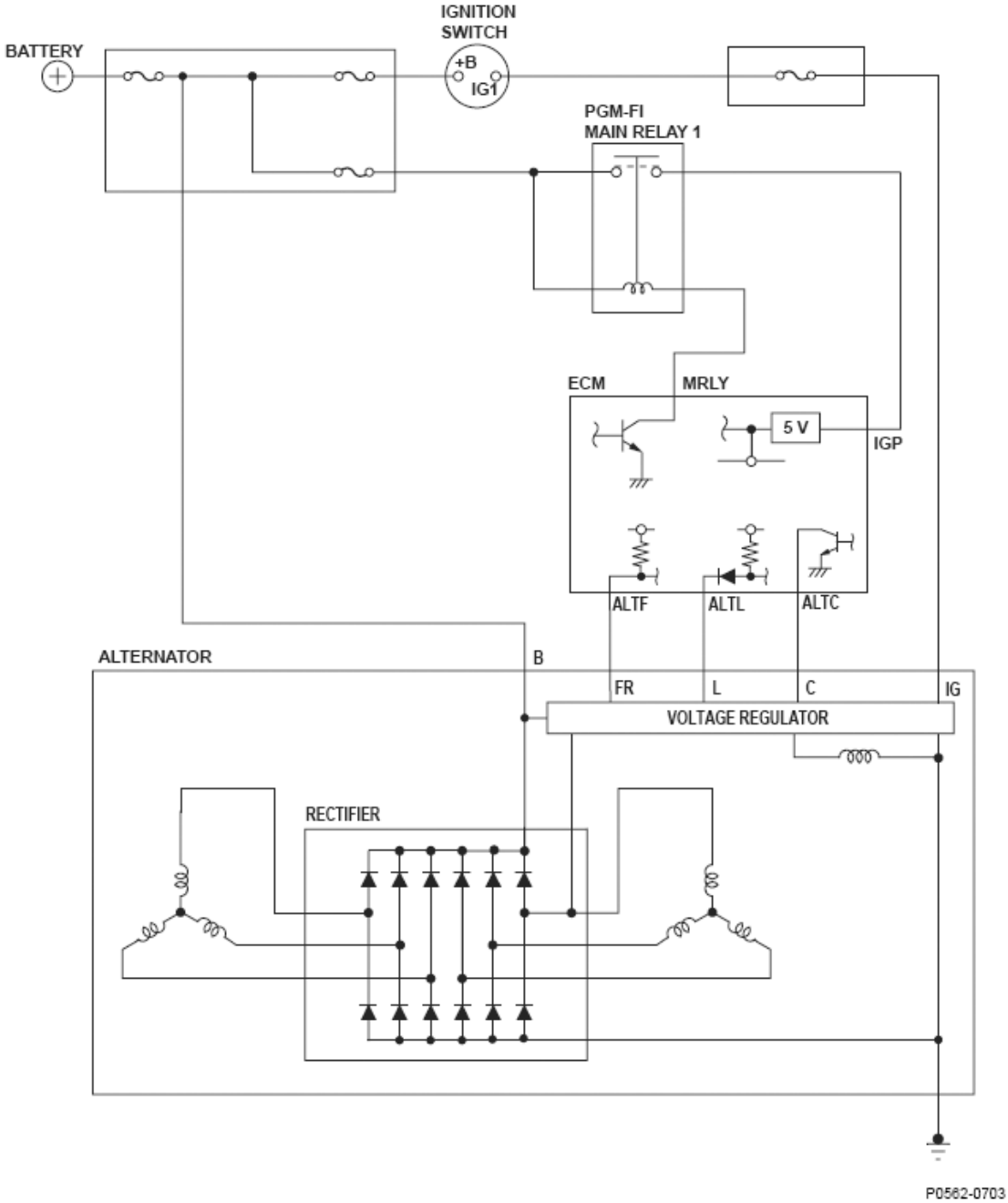


Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 30.

NO - Go to step 23.

23. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal B37.

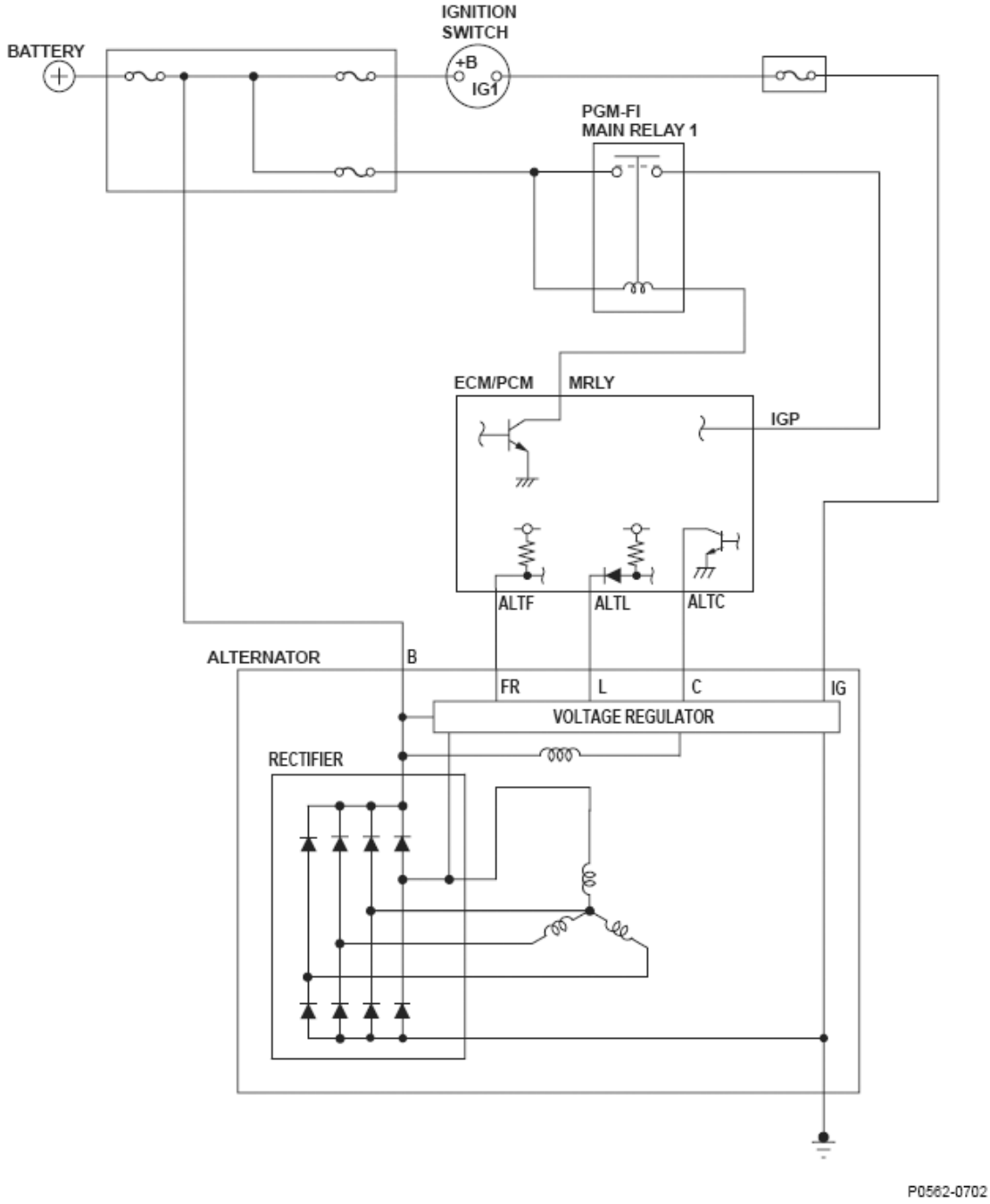


Fig. 9: Checking Continuity Between IMT Actuator 5P Connector Terminal No 4 And ECM/PCM Terminal B37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 30.

24. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal B38.

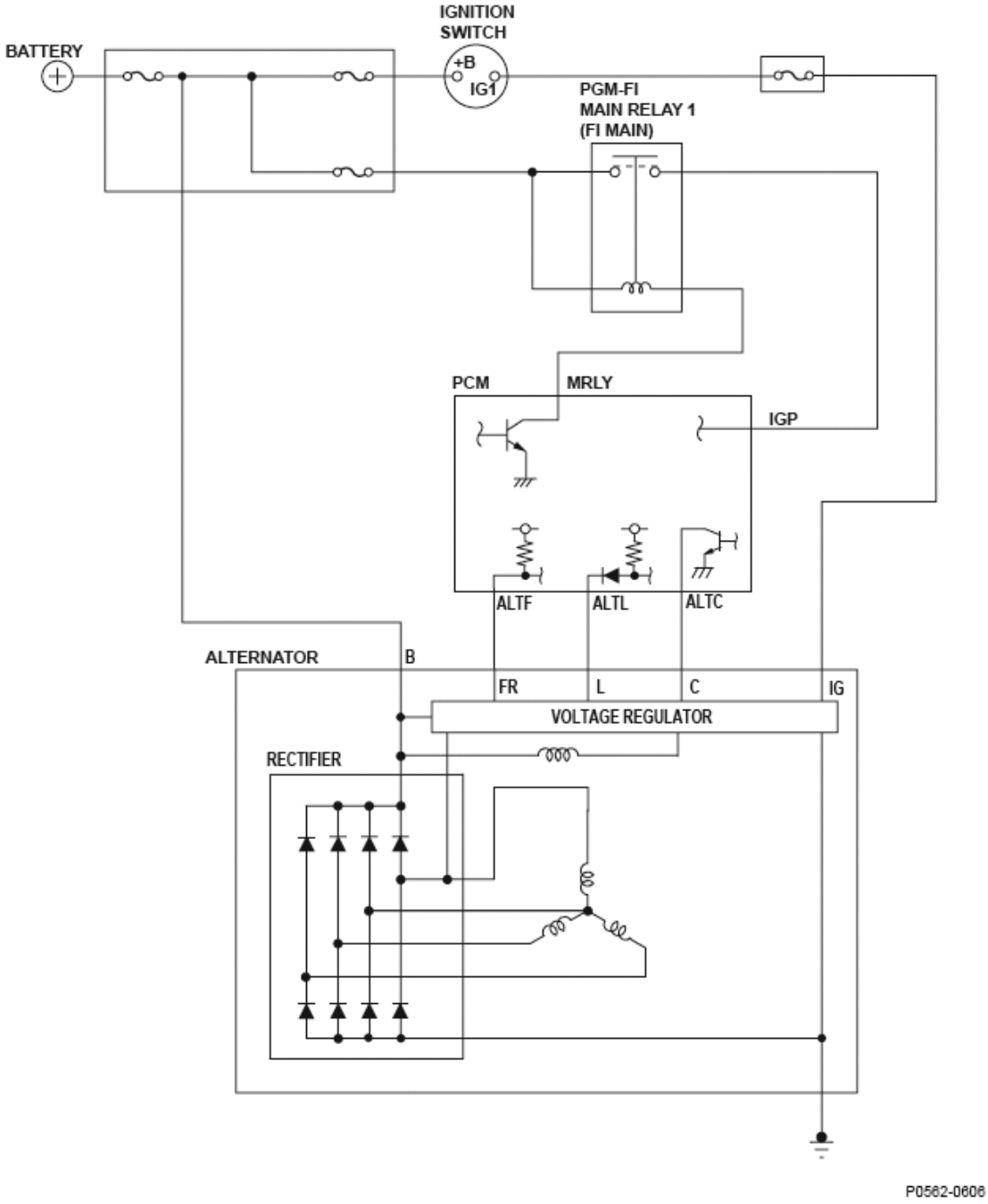


Fig. 10: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 5 And ECM/PCM Terminal B38
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 30.

25. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
26. Move the IMT valve by hand.

Does it move smoothly?

YES - Go to step 27.

NO - Replace the IMT valve (see **IMT VALVE REPLACEMENT**), then go to step 30.

27. Substitute a known-good IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
28. Turn the ignition switch ON (II).
29. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Replace the original IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**), then go to step 30.

NO - Go to step 36.

30. Reconnect all connectors.
31. Turn the ignition switch ON (II).
32. Reset the ECM/PCM with the HDS.
33. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
34. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

NO - Go to step 35.

35. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTCs troubleshooting.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

36. Reconnect all connectors.
37. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
38. Start the engine, and let it idle.
39. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 38. If the ECM/PCM was substituted, go to step 1.

NO - Go to step 40.

40. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 39, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 38. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1078: IMT VALVE STUCK IN LOW RPM POSITION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES - Go to step 12.

   NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.

10. Disconnect ECM/PCM connector B (44P).
11. Check for continuity between ECM/PCM connector terminal B39 and body ground.

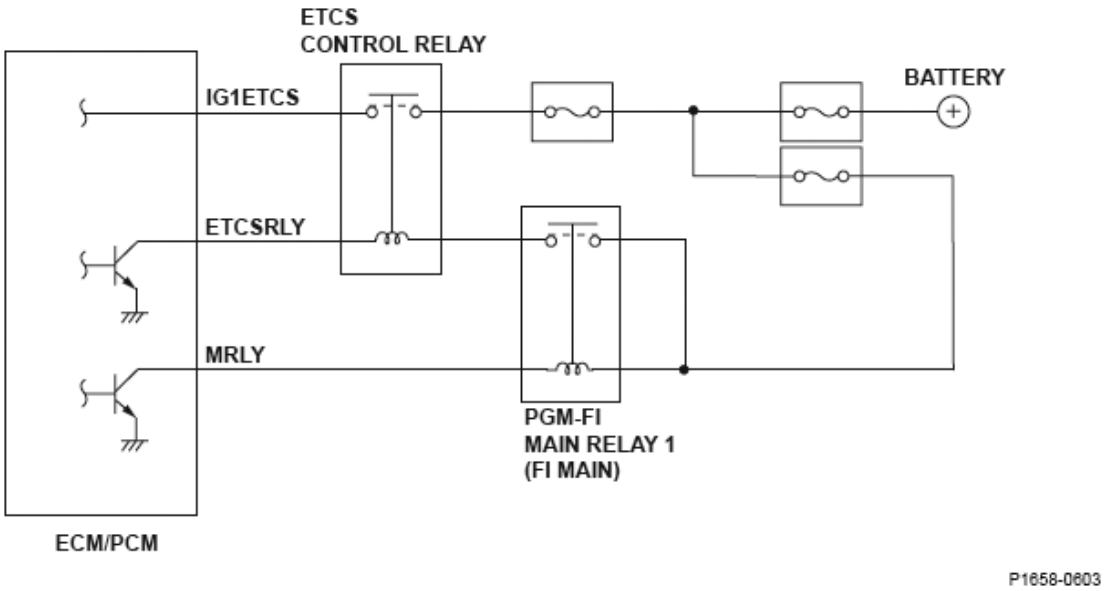


Fig. 11: Checking Continuity Between ECM/PCM Connector Terminal B39 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B39) and the IMT actuator, then go to step 21.

NO - Go to step 28.

12. Check for continuity between ECM/PCM connector terminal B37 and body ground.

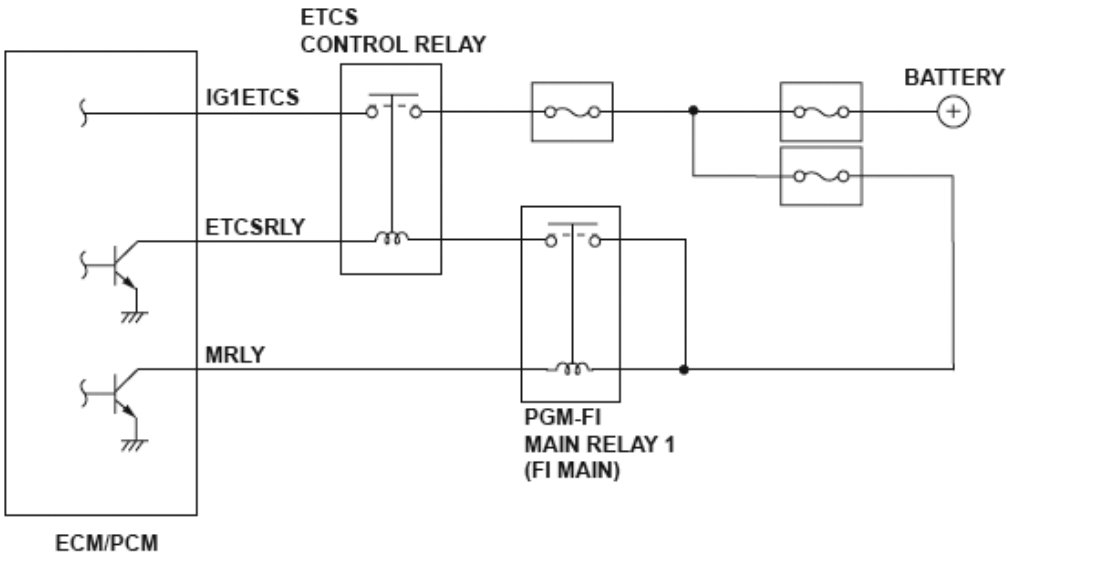


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal B37 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 21.

NO - Go to step 13.

13. Check for continuity between ECM/PCM connector terminal B38 and body ground.

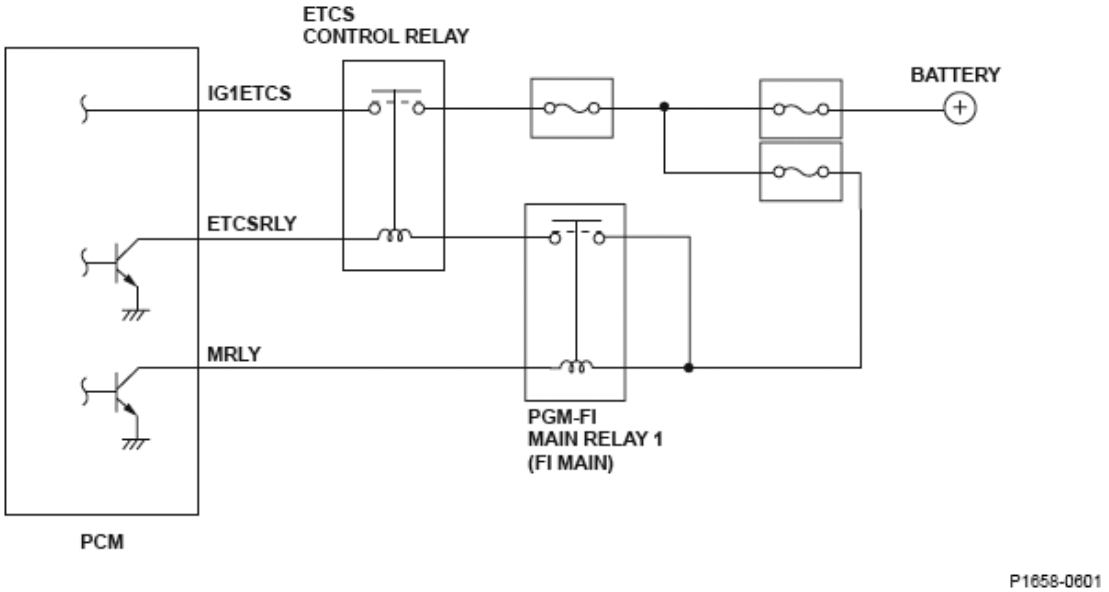


Fig. 13: Checking Continuity Between ECM/PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 21.

NO - Go to step 14.

14. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal B37.

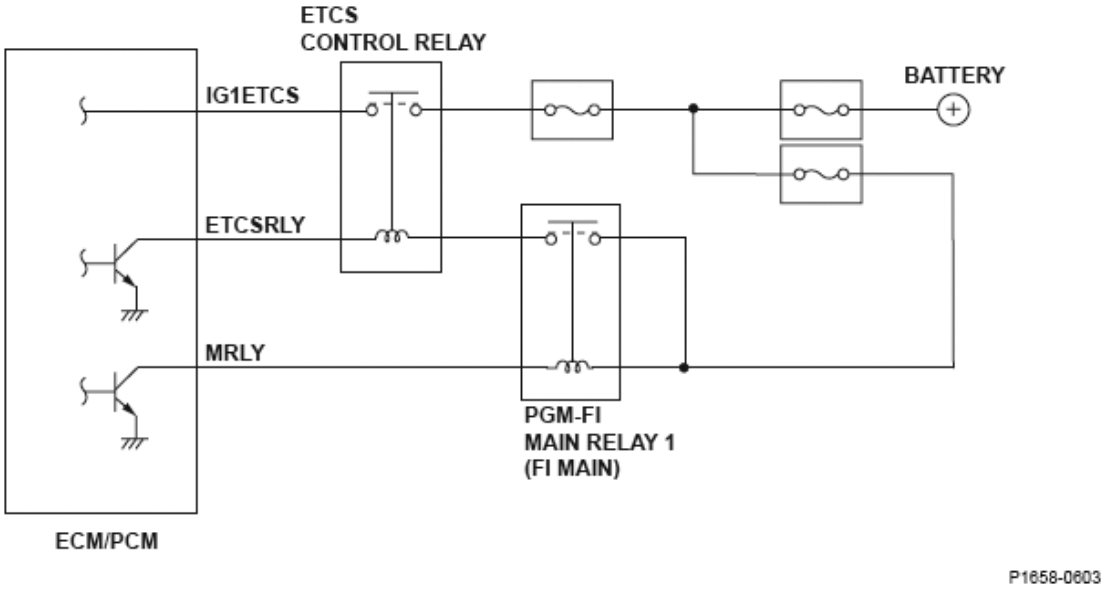


Fig. 14: Checking Continuity Between IMT Actuator 5P Connector Terminal No. 4 And ECM/PCM Terminal B37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM/PCM (B37) and the IMT actuator, then go to step 21.

15. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal B38.

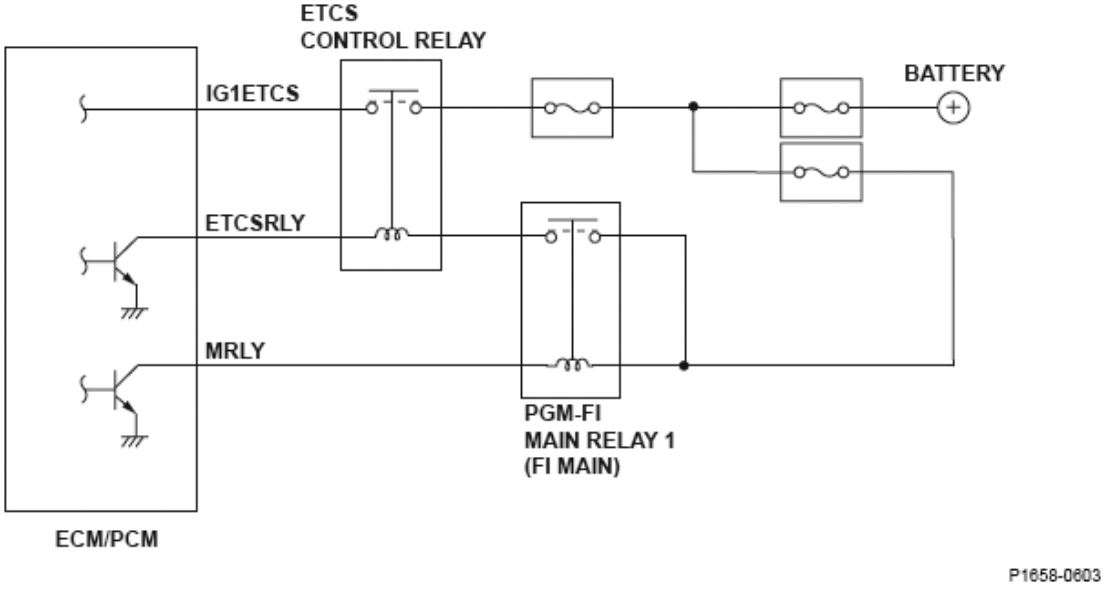


Fig. 15: Checking Continuity Between IMT Actuator 5P Connector Terminal No 5 And ECM/PCM Terminal B38
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the ECM/PCM (B38) and the IMT actuator, then go to step 21.

16. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
17. Move the IMT valve by hand.

Does it move smoothly?

YES - Go to step 18.

NO - Replace the IMT valve (see **IMT VALVE REPLACEMENT**), then go to step 21.

18. Substitute a known-good IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
19. Turn the ignition switch ON (II).
20. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES - Replace the original IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**), then go to step 21.

NO - Go to step 29.

21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Do the IMT TEST in the INSPECTION MENU with the HDS.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1078 indicated?

YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

NO - Go to step 27.

27. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the IMT

actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Do the IMT TEST in the INSPECTION MENU with the HDS.
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1078 indicated?

    YES - Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 32.

32. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTCs troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 30.

THROTTLE BODY TEST

CARBON ACCUMULATION CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

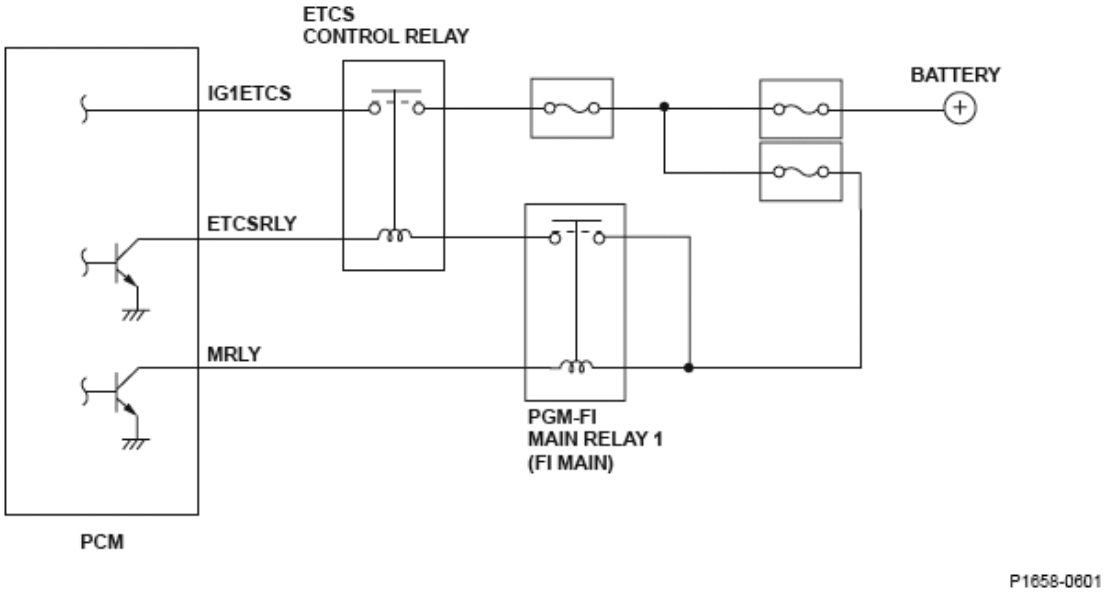


Fig. 16: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 3 deg. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE POSITION LEARNING CHECK

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

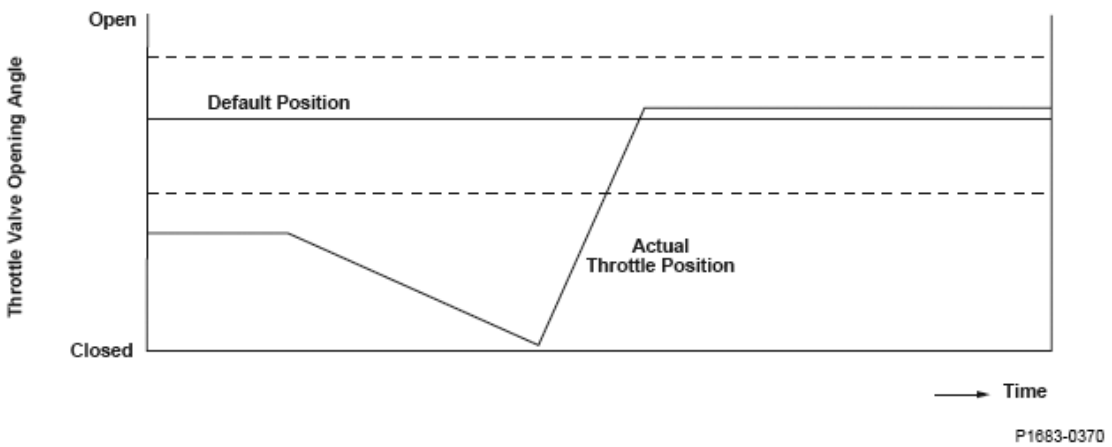


Fig. 17: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:
- **Remove the throttle body to clean it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).**
- **Do not spray throttle plate and induction cleaner directly on the throttle body.**
- **Use Honda genuine throttle plate and induction cleaner.**

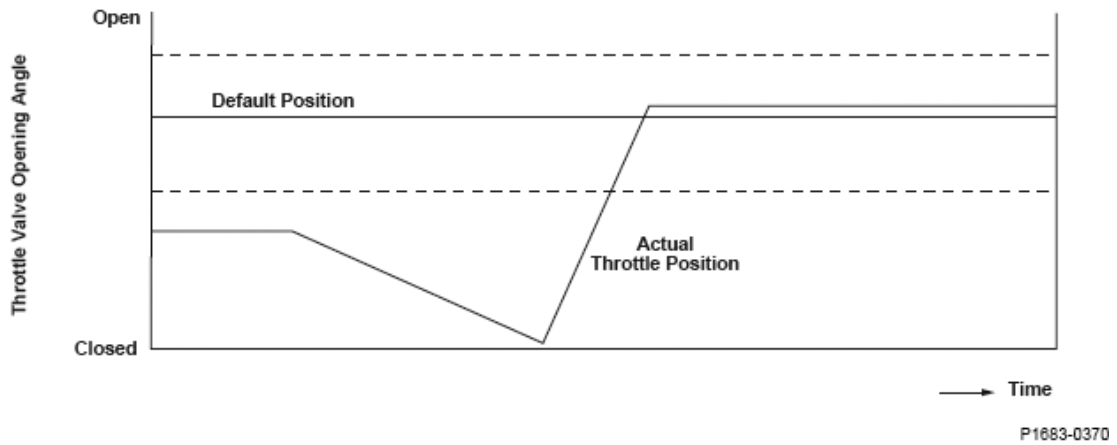


Fig. 18: Cleaning Off Carbon From Throttle Valve And Inside Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
5. Reset the ECM/PCM with the HDS (see **ECM/PCM RESET**).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

AIR CLEANER REMOVAL/INSTALLATION

1. Disconnect the MAF sensor/IAT sensor connector (A).

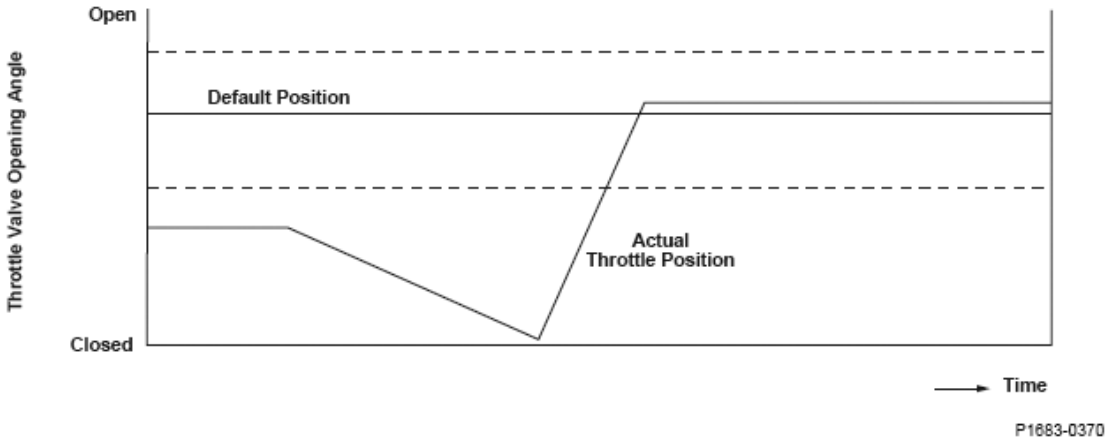


Fig. 19: Disconnecting MAF Sensor/IAT Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner housing cover (B).
3. Remove the air cleaner element (C) from the air cleaner housing (D).
4. Loosen the bolt (E), and the pipe (F).
5. Remove the air cleaner housing.
6. Install the parts in the reverse order of removal.

AIR CLEANER ELEMENT INSPECTION/REPLACEMENT

1. Open the air cleaner housing cover (A).

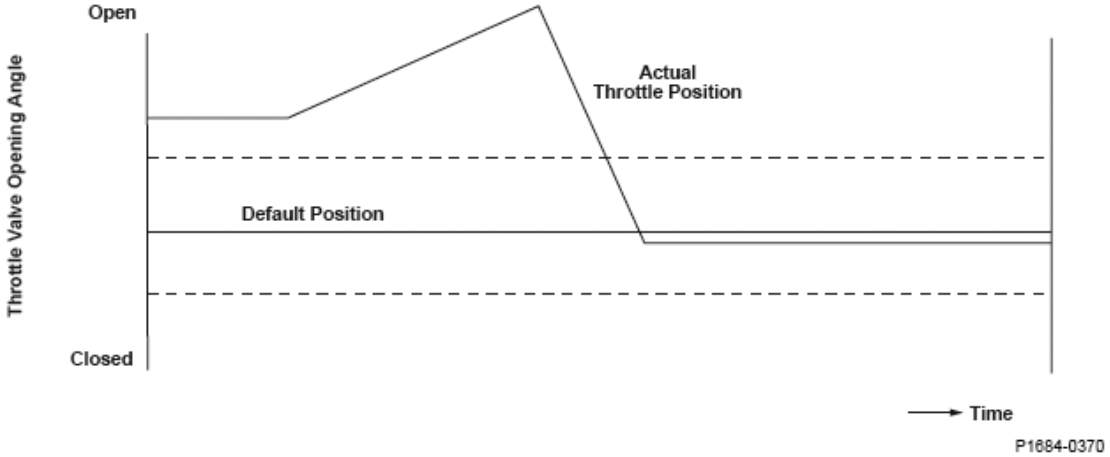


Fig. 20: Opening Air Cleaner Housing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

NOTE: Do not use compressed air to clean the air cleaner element.

4. Install the parts in the reverse order of removal.
5. Install the parts in the reverse order of removal.
   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner element replacement, reset the maintenance minder.
   - If the idle speed fluctuates, do the idle speed inspection.

RESONATOR REMOVAL/INSTALLATION

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Remove the bolts (A), and the intake air ducts (B).

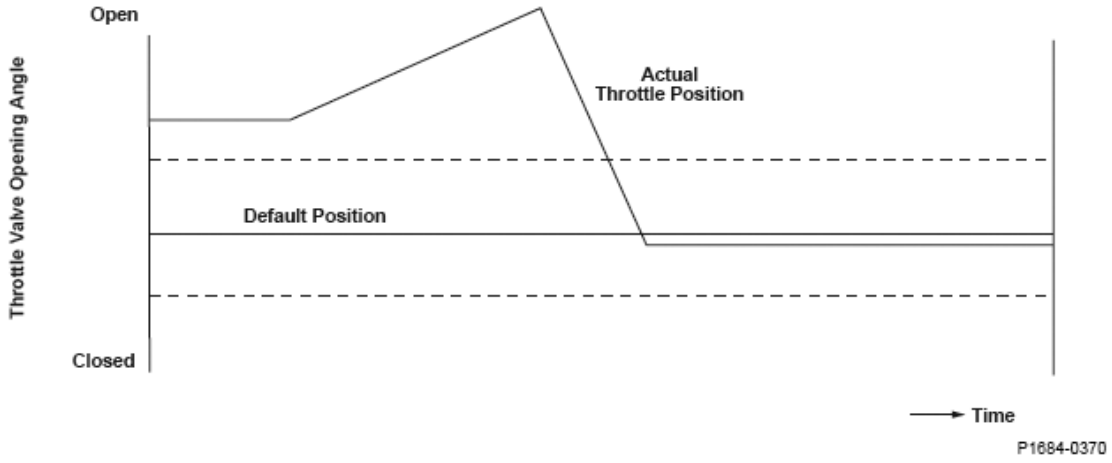


Fig. 21: Removing Intake Air Ducts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the resonator (C).
4. Install the parts in the reverse order of removal.

IMT ACTUATOR REMOVAL/INSTALLATION

1. Remove the intake manifold (see **REMOVAL**).
2. Remove the bolts (A) and the IMT actuator (B).

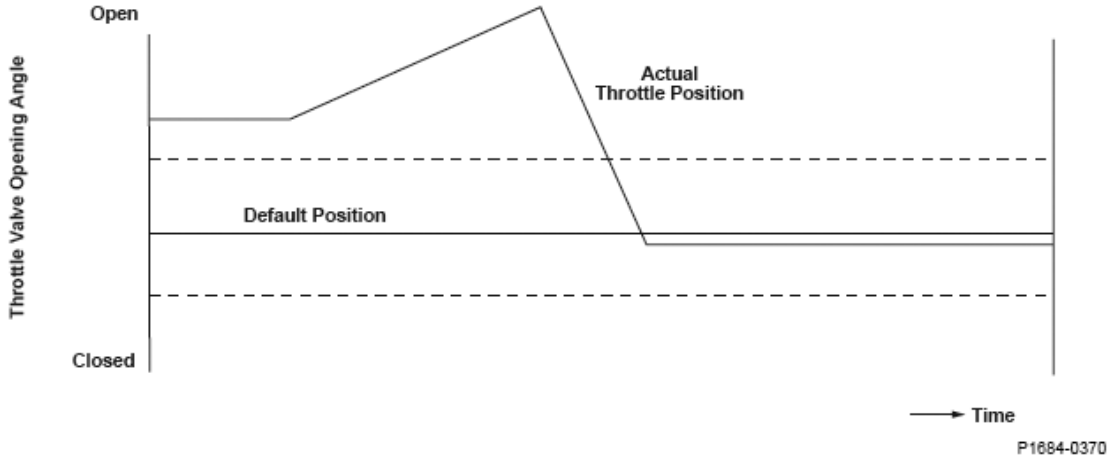


Fig. 22: Removing IMT Actuator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the parts in the reverse order of removal with a new O-ring (C).

IMT VALVE REPLACEMENT

1. Remove the IMT actuator (see **IMT ACTUATOR REMOVAL/INSTALLATION**).
2. Remove the IMT cover (A).

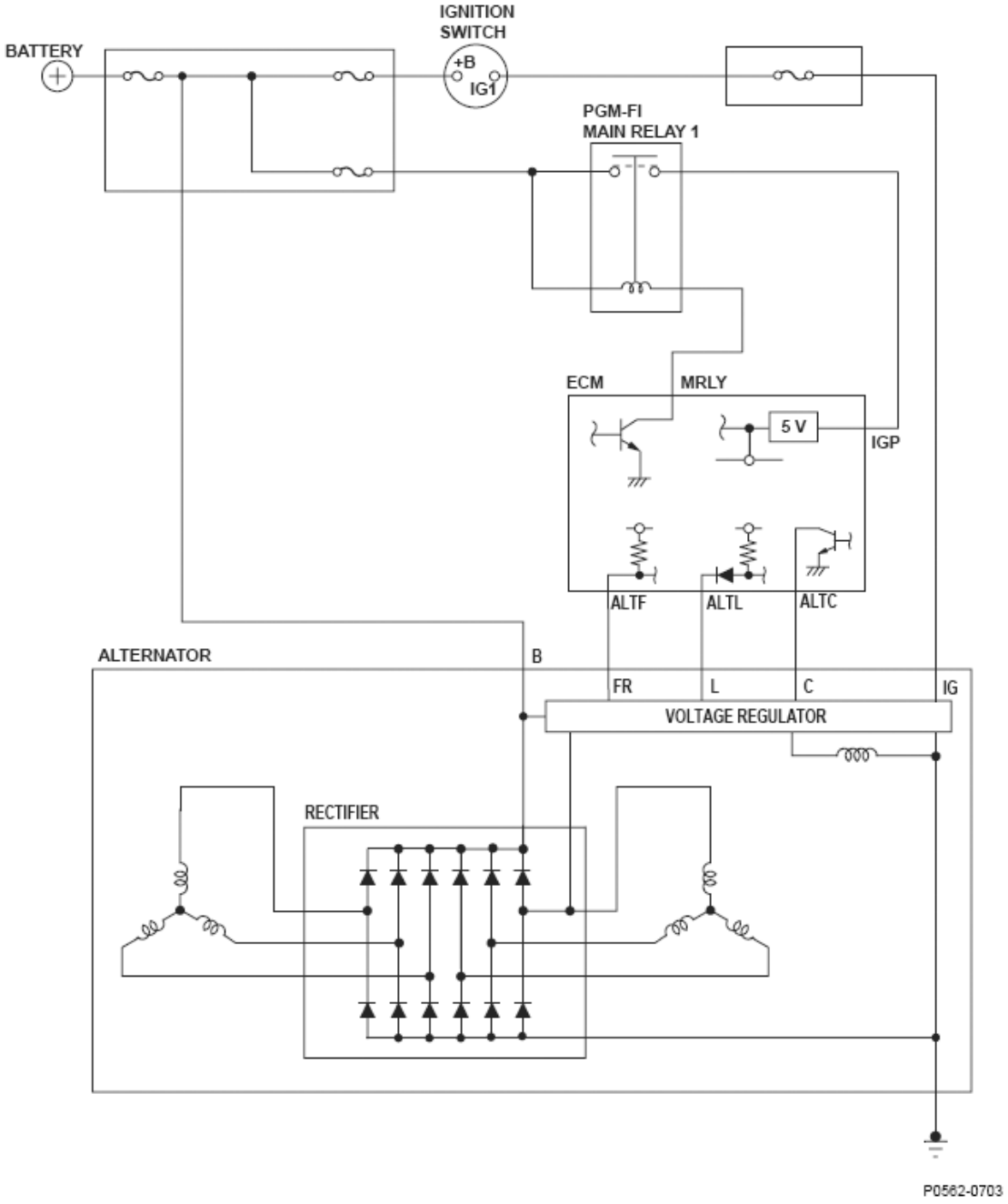


Fig. 23: Removing IMT Cover (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts (B) and the IMT valve (C).
4. Install the parts in the reverse order of removal with new O-rings (D).

THROTTLE BODY REMOVAL/INSTALLATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. USA, Canada models: Select the INSPECTION MENU on the HDS.
3. USA, Canada models: Do the TP POSITION CHECK in the ETCS TEST.
4. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
5. Remove the air cleaner (see **THROTTLE BODY CLEANING**).
6. Disconnect the throttle body connector (A) and the EVAP purge control solenoid valve connector (B).

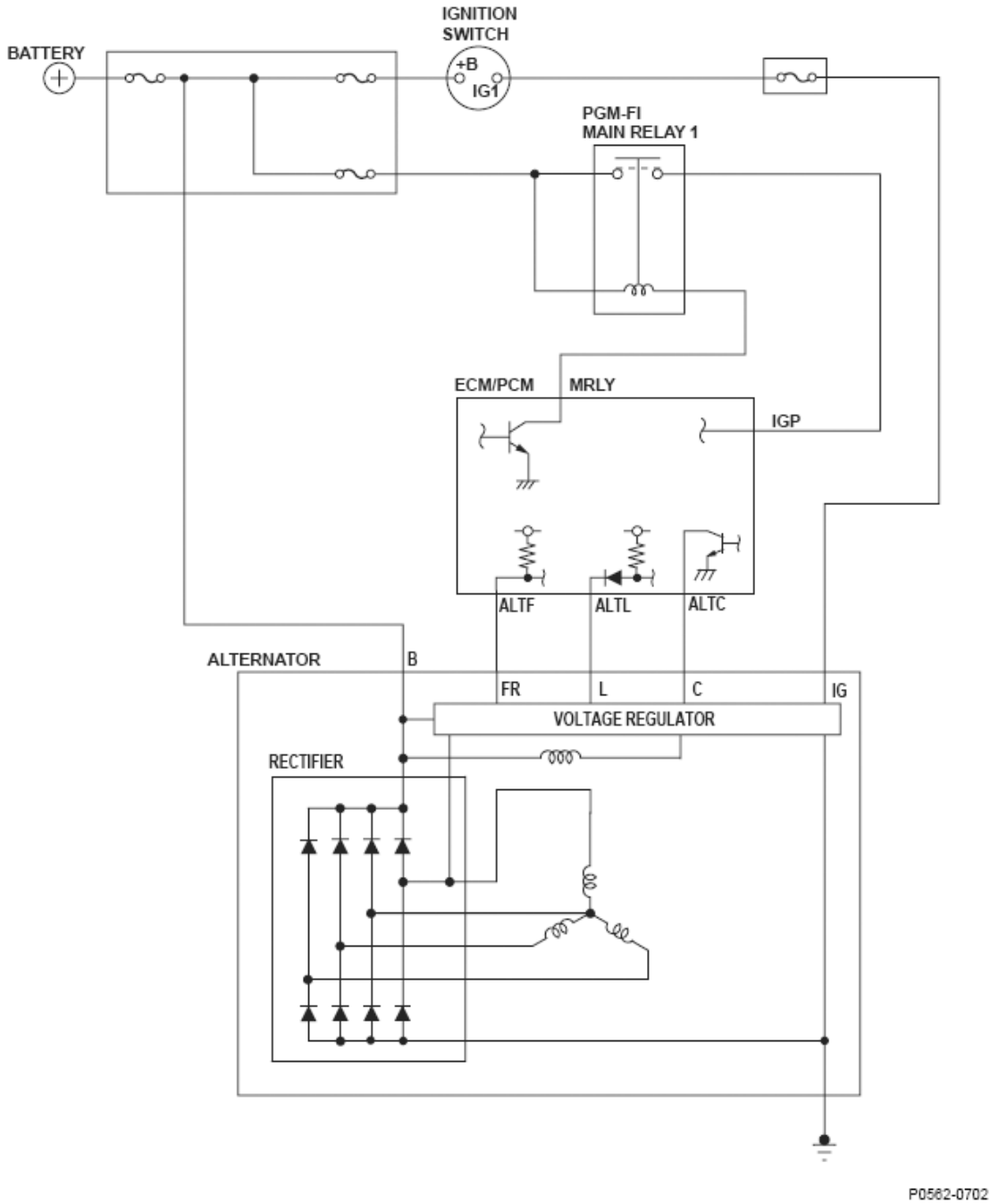


Fig. 24: Disconnecting Throttle Body Connector And EVAP Purge Control Solenoid Valve

Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the throttle body connector (B) and the EVAP purge control solenoid valve connector (C).
8. Disconnect and plug the water bypass hoses (C).
9. Disconnect the vacuum hose (D).
10. Remove the throttle body (E).
11. Install the parts in the reverse order of removal with a new gasket (F).

NOTE:

- **Do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE) after replacing throttle body.**
- **Refill the radiator with engine coolant (see COOLANT REPLACEMENT).**

THROTTLE BODY DISASSEMBLY/REASSEMBLY

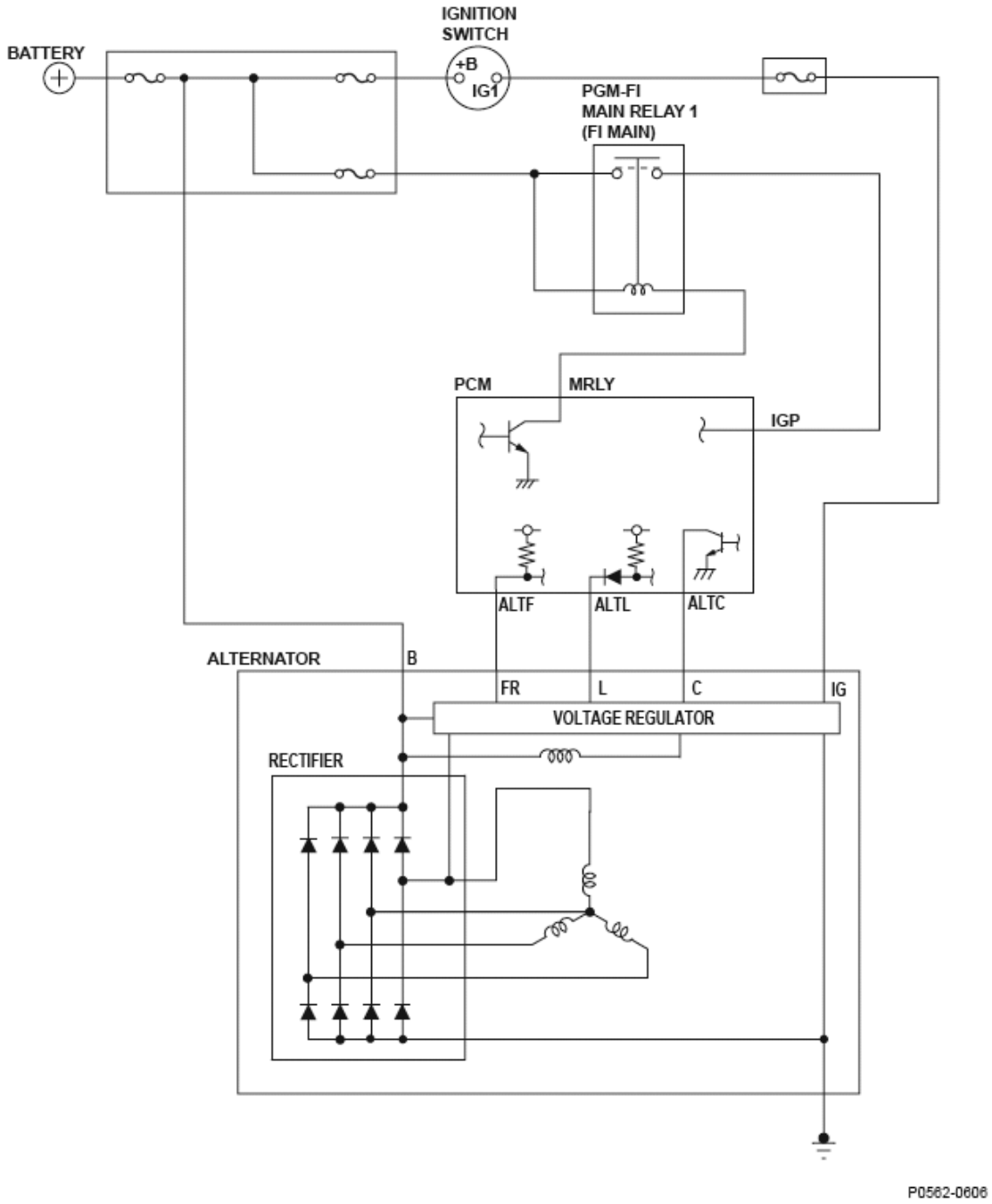


Fig. 25: Disassembly/Reassembly Of Throttle Body (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2006-09 ENGINE PERFORMANCE

PCV System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

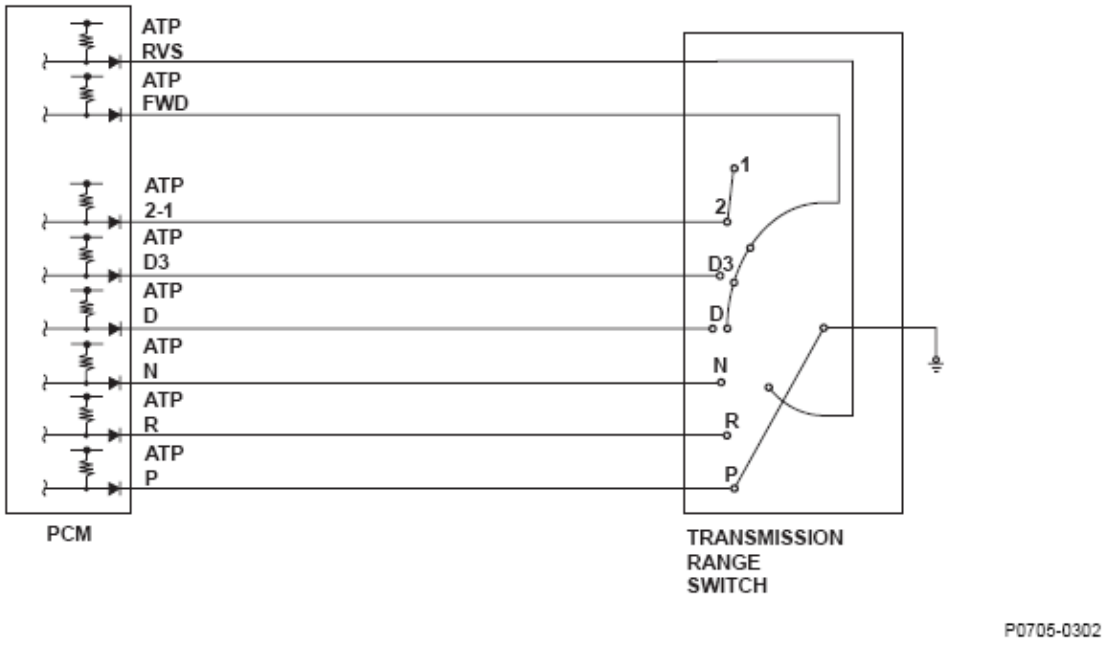


Fig. 1: Identifying PCV Valve Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE INSPECTION

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.

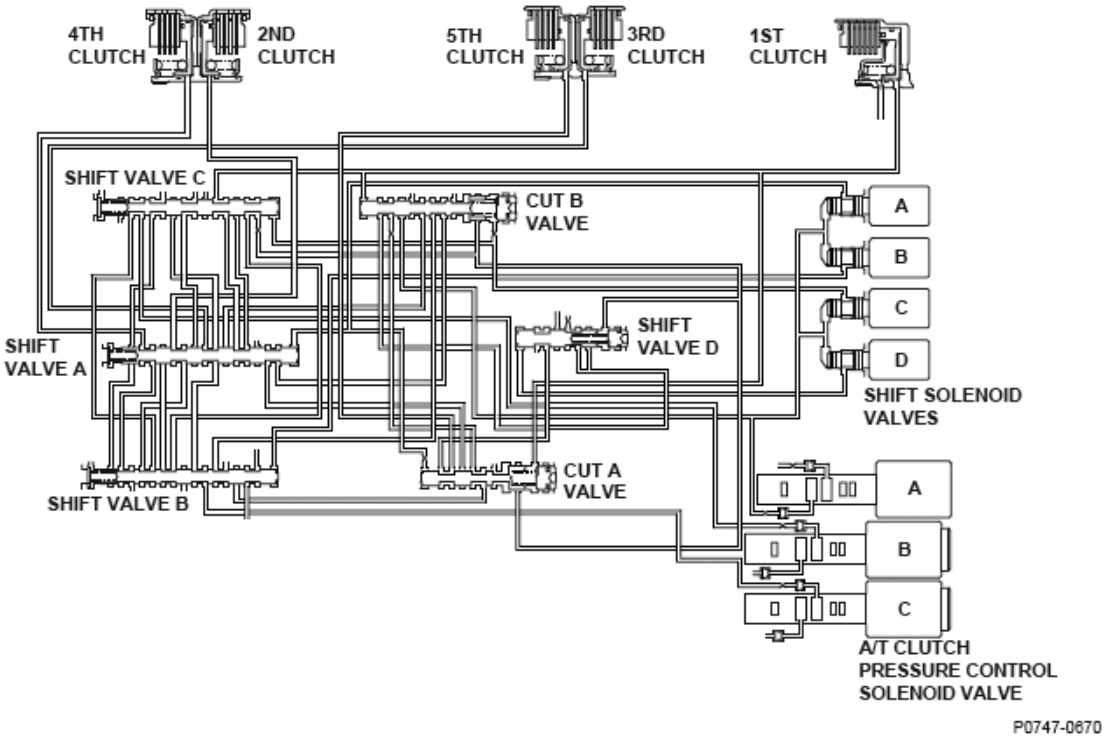


Fig. 2: Identifying PCV Valve, Hoses And Connections
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.

   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 3: Pinching Hose Using Pliers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCV VALVE REPLACEMENT

1. Remove the harness holder (A).

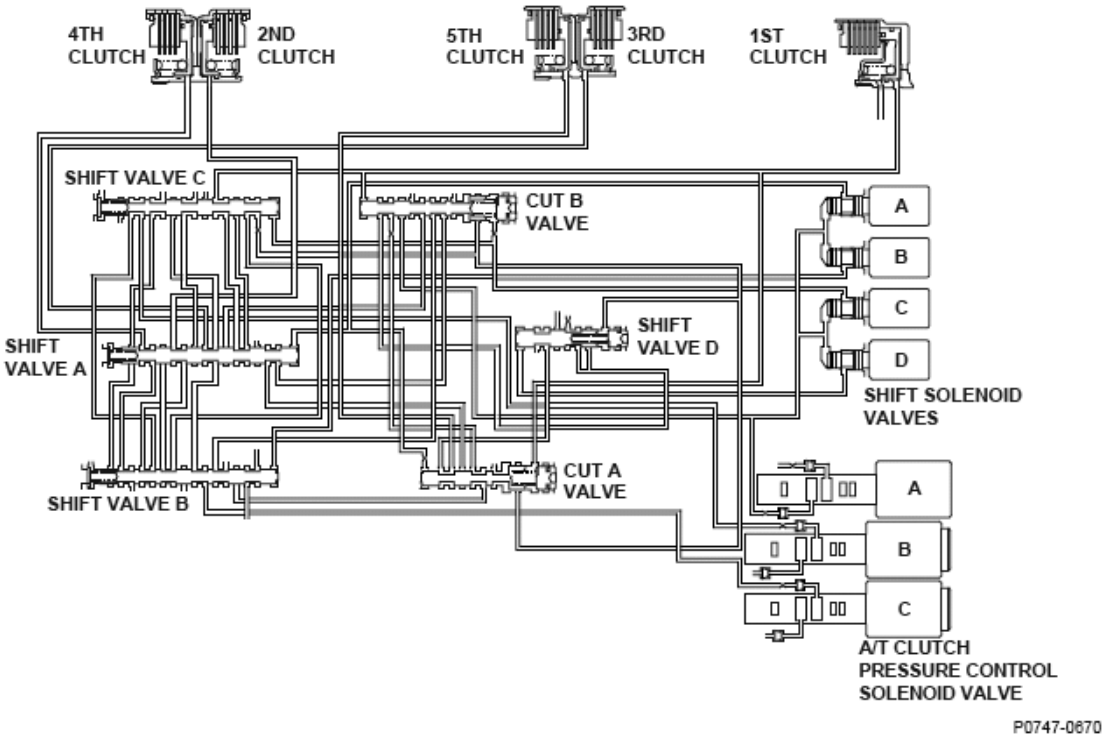


Fig. 4: Identifying Harness Holder, PCV Hose, PCV Valve And Washer (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the PCV hose (B).
3. Remove the PCV valve (C).
4. Install the parts in the reverse order of removal with a new washer (D).

2006-08 ENGINE PERFORMANCE

PGM-FI System (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX

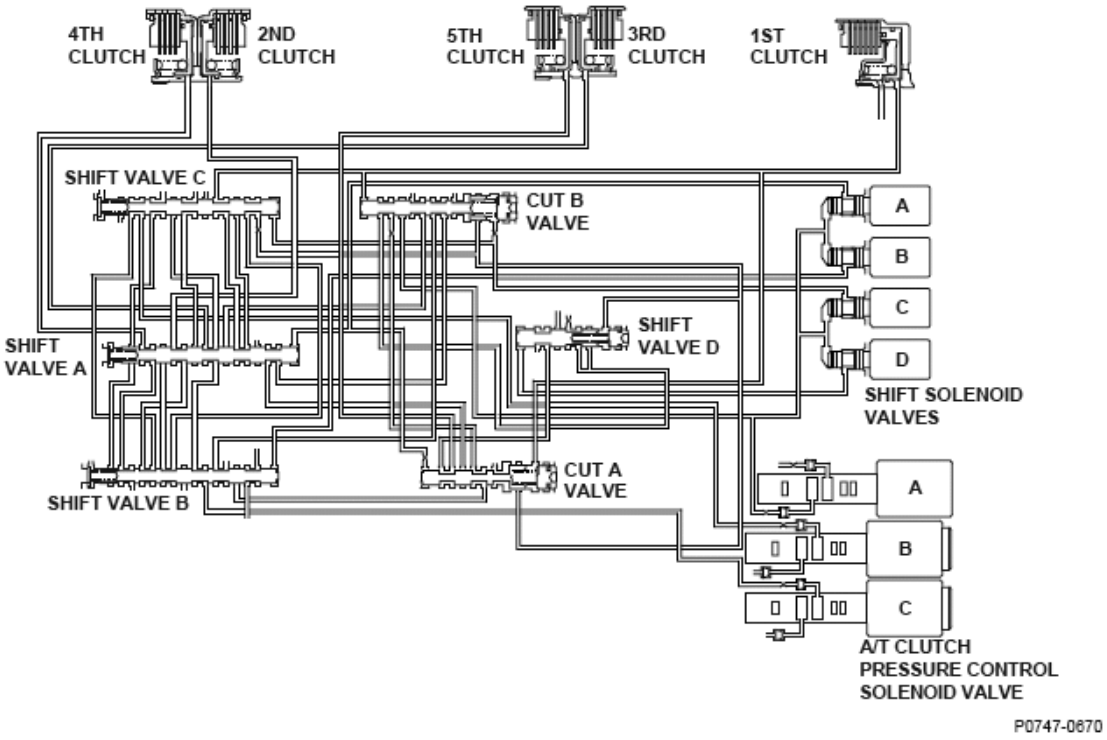


Fig. 1: Identifying PGM-FI System Component Location (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 2: Identifying PGM-FI System Component Location (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0101: MAF SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board**

snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

- **If DTC P1128, P1129, P2228, and/or P2229 are stored at the same time as DTC P0101, troubleshoot those DTCs first, then recheck for DTC P0101.**

1. Check for poor connections or damage to these parts:
   - PCV hose
   - Air intake duct
   - Air cleaner
   - Purge (PCS) line
   - Brake booster hose

   Are the parts OK?

   YES - GO to step 2.

   NO - Repair or replace the damaged parts, then go to step 17.

2. Check for damage or looseness at the air duct in the air cleaner.

   Is it OK?

   YES - Go to step 3.

   NO - Reconnect or replace the air duct in the air cleaner, then go to step 15.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 15.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 0.2 gm/s or 0.5 V?

   YES - Go to step 7.

   NO - Go to step 13.

7. Start the engine.
8. Vary the engine speed between 2,000 rpm and 3,000 rpm.

9. Check the MAF SENSOR in the DATA LIST with the HDS.

   Does the reading change?

   YES - Go to step 10.

   NO - Go to step 13.

10. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR
12. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES - Go to step 13.

    NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM. If the screen indicates NOT COMPLETED, go to step 11 and recheck.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0101 indicated?

    YES - Check for poor connections or loose terminals at the MAF sensor and the ECM, then go to step 1.

    NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0102: MAF SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is about 0 gm/s, or 0.1 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM.

3. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES - Go to step 4.

   NO - Repair short in the wire between the MAF sensor and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 20.

4. Turn the ignition switch OFF.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 3 and body ground.

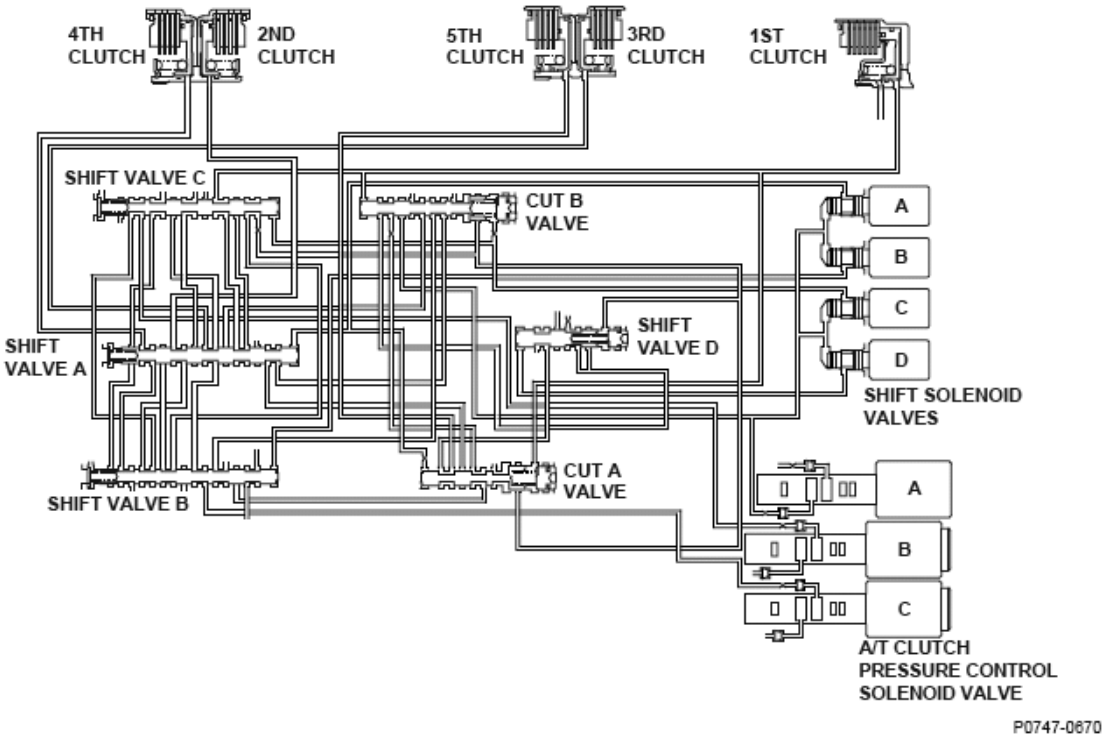


Fig. 3: Measuring Voltage Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 8.

NO - Repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the MAF sensor, then go to step 20.

8. Turn the ignition switch OFF.
9. Measure resistance between MAF sensor/IAT sensor 5P connector terminal No. 1 and body ground.

Shift solenoid valve / Cut valve / Clutch					
	A	OFF	ON	ON	OFF
	B	ON	ON	ON	ON
	C	OFF	OFF	OFF	OFF
	D	OFF	OFF	OFF	OFF
	A	OFF	OFF	ON	ON
	B	ON	ON	ON	OFF
1st Clutch		LINE	CPC C	CPC C	
5th Clutch					CPC C

CPC: Clutch Pressure Control pressure

Fig. 4: Measuring Resistance Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 190-210 kohms?

YES - Go to step 14.

NO - Go to step 10.

10. Jump the SCS line with the HDS.
11. Disconnect ECM connector B (44P).
12. Check for continuity between ECM connector terminal B30 and body ground.

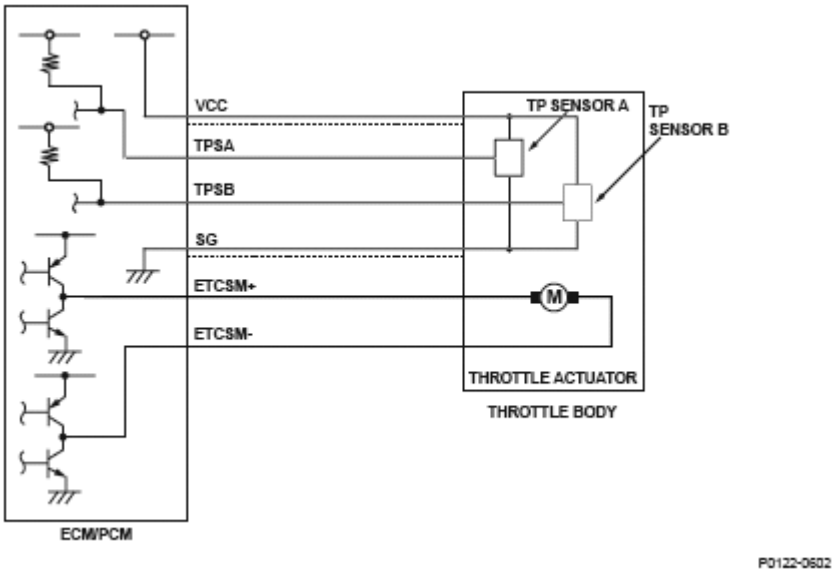


Fig. 5: Checking For Continuity Between ECM Connector Terminal B30 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (B30) and the MAF sensor, then go to step 21.

NO - Go to step 13.

13. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 1 and ECM connector terminal B30.

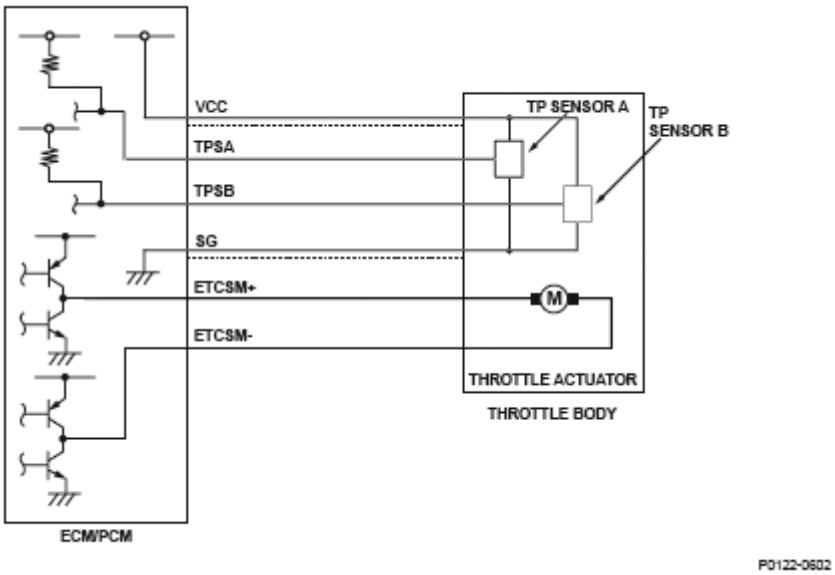


Fig. 6: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 1 And ECM Connector Terminal B30
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM (B30) and the MAF sensor, then go to step 21.

14. Substitute a known-good MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Start the engine. Hold the engine speed at 2,000 rpm without load (in neutral).
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0102 indicated?

YES - Go to step 27.

NO - Replace the original MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM with the HDS.
24. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0102 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

26. Reconnect all connectors.
27. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0102 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0103: MAF SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

Is about 202 gm/s, or 4.89 V or more indicated?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM.

3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Disconnect ECM connector B (44P).
7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and ECM connector terminal B32.

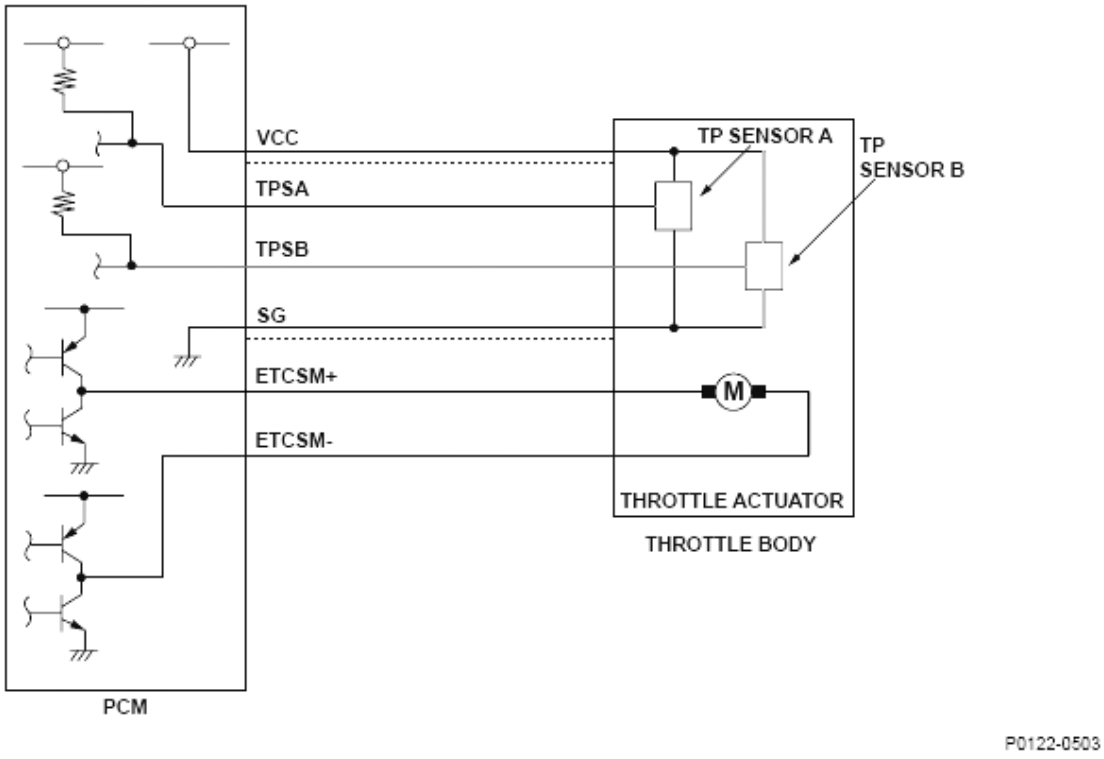


Fig. 7: Checking Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 2 And ECM Terminal B32
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 8.

NO - Repair open in the wire between the ECM (B32) and the MAF sensor, then go to step 15.

8. Reconnect ECM connector B (44P).
9. Connect MAF sensor/IAT sensor 5P connector terminals No. 1 and No. 2 with a jumper wire.

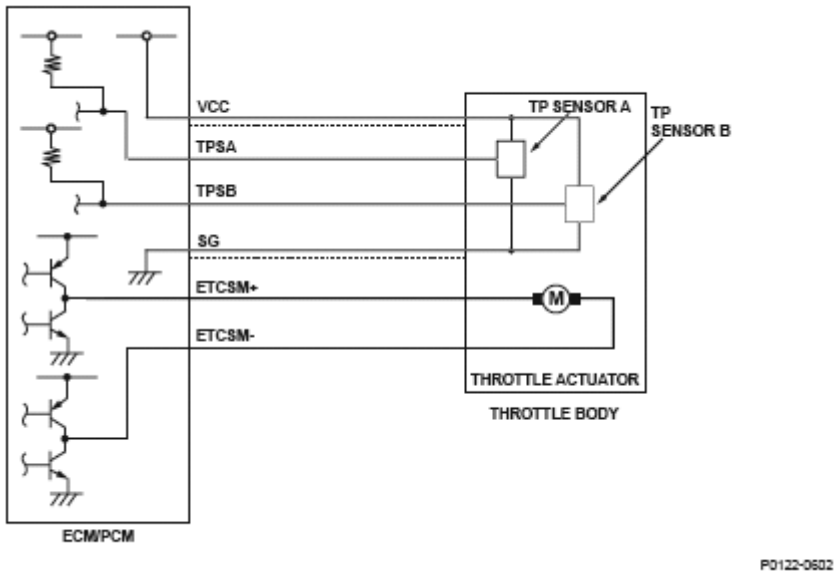


Fig. 8: Connecting MAF Sensor/IAT Sensor 5P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch ON (II).
11. Clear the DTC with the HDS.
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES - Go to step 20.

    NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the ECM with the HDS.
18. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.
22. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

   YES - Go to step 12.

   NO - Go to step 7.

7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

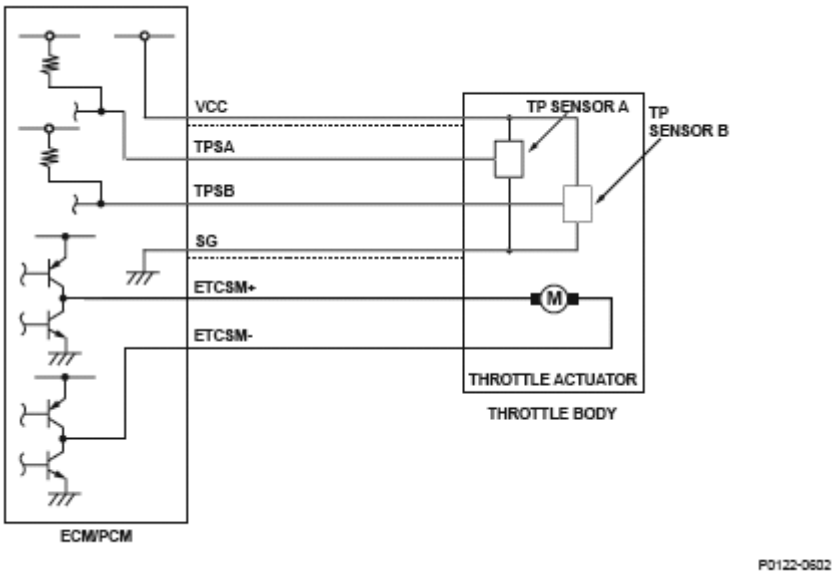


Fig. 9: Measuring Voltage Between MAP Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM connector C (44P).
11. Check for continuity between ECM connector terminal C13 and MAP sensor 3P connector terminal No. 1.

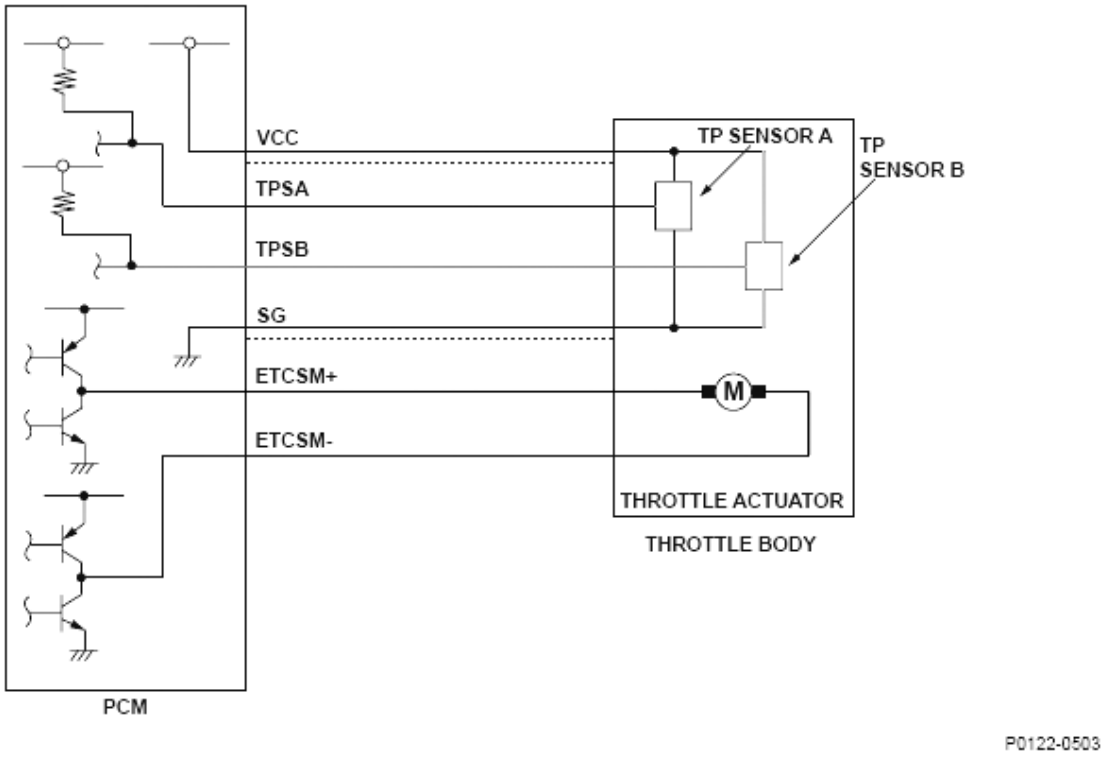


Fig. 10: Checking Continuity Between ECM Connector Terminal C13 And MAP Sensor 3P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the ECM (C13) and the MAP sensor, then go to step 18.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM connector C (44P).
15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

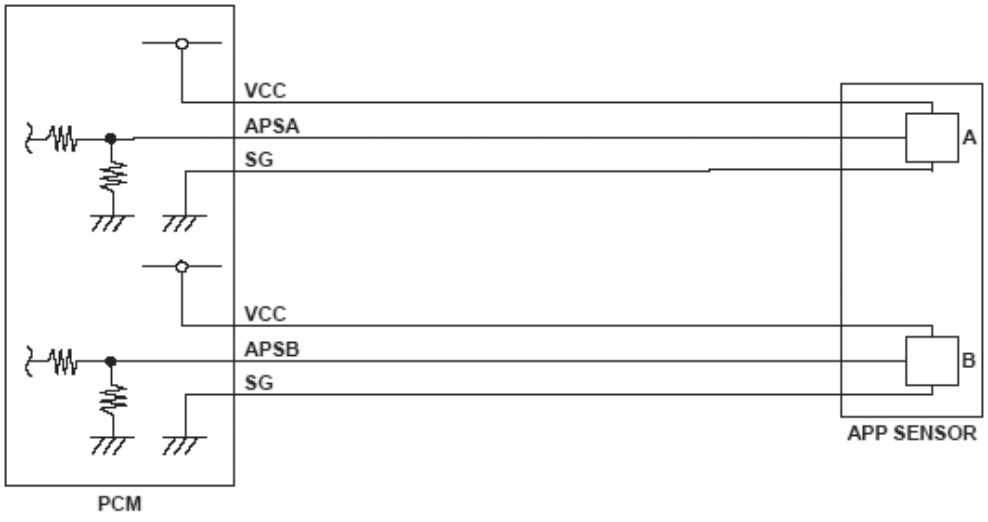


Fig. 11: Checking For Continuity Between MAP Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C11) and the MAP sensor, then go to step 18.

NO - Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

YES - Check for poor connections or loose terminals at the MAP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

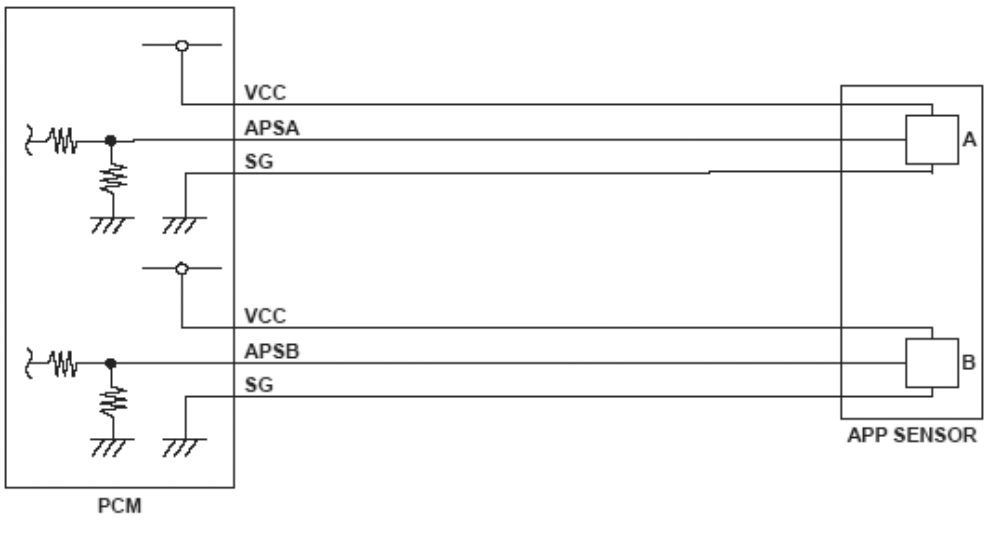


Fig. 12: Connecting MAP Sensor 3P Connector Terminals No. 2 And No. 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

YES - Go to step 8.

NO - Go to step 18.

8. Remove the jumper wire from the MAP sensor 3P connector.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

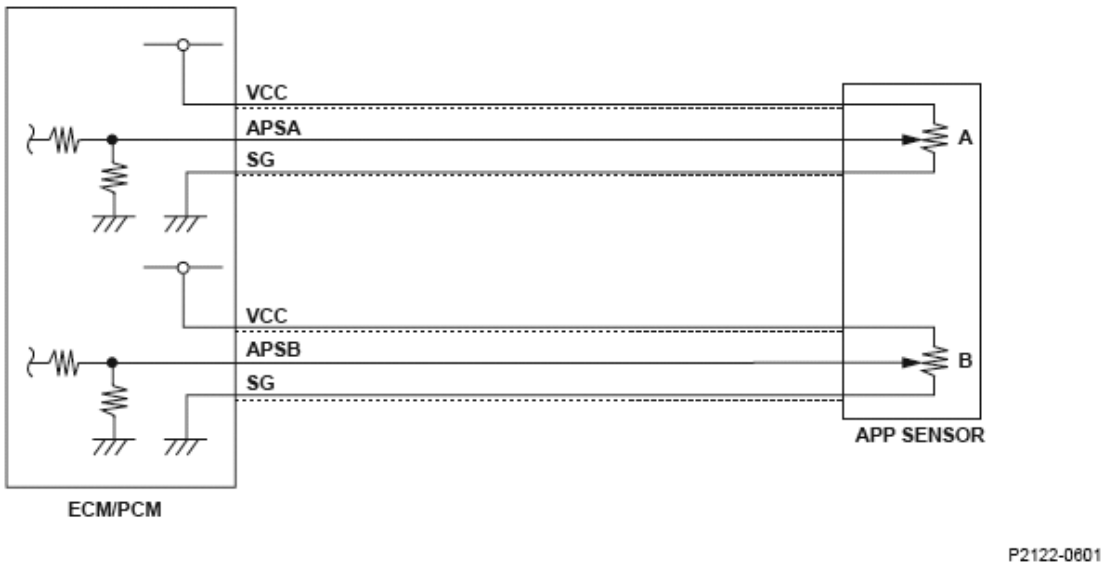


Fig. 13: Measuring Voltage Between MAP Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 14.

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between ECM connector terminal C14 and MAP sensor 3P connector terminal No. 3.

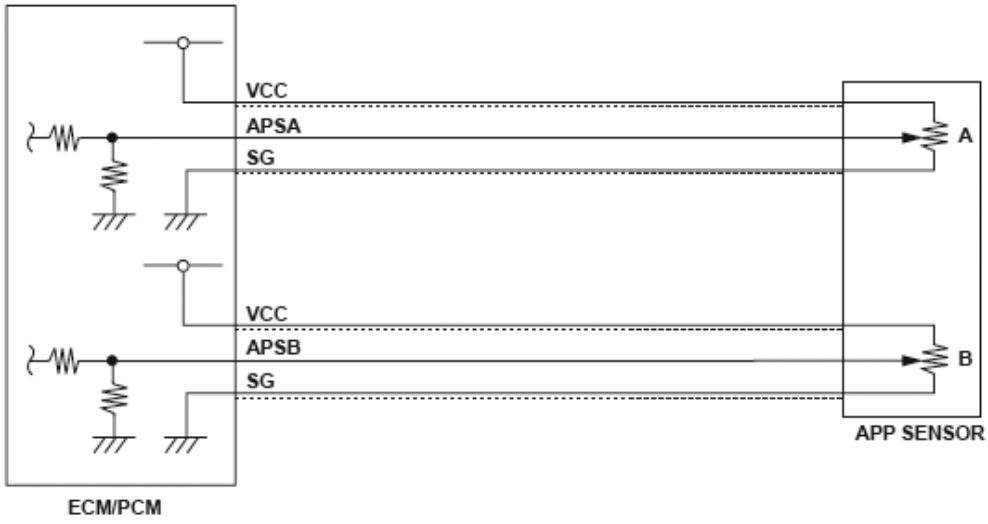


Fig. 14: Checking Continuity Between ECM Connector Terminal C14 And MAP Sensor 3P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (C14) and the MAP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector C (44P).
17. Check for continuity between ECM connector terminal C11 and MAP sensor 3P connector terminal No. 2.

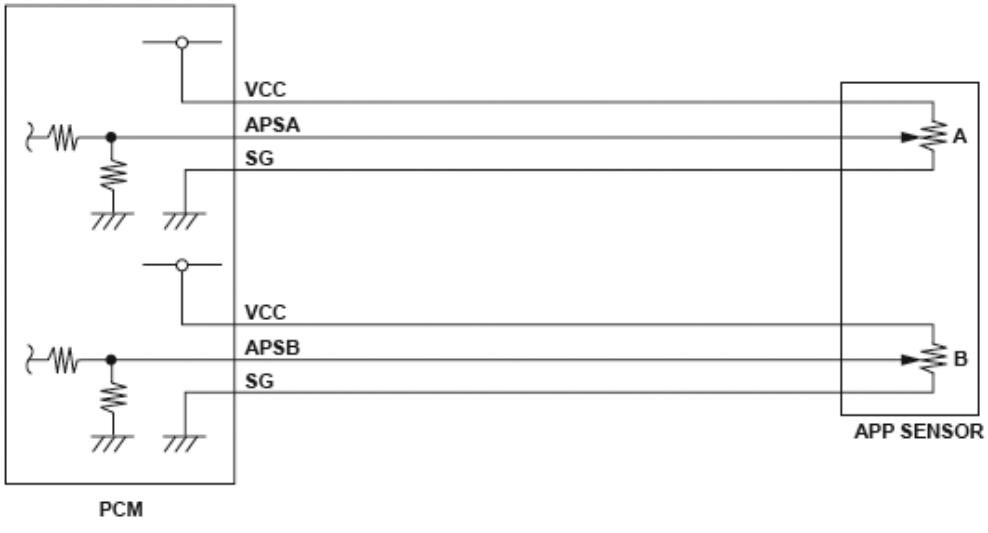


Fig. 15: Checking Continuity Between ECM Connector Terminal C11 And MAP Sensor 3P

Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (C11) and the MAP sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES - Check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES - Check for poor connections or loose terminals at the MAP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0111: IAT SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for poor connections or loose terminals at ECT sensor 1/2 and the IAT sensor.

Are the connections and terminals OK?

YES - Go to step 2.

NO - Repair the connectors or terminals, then go to step 15.

2. Remove the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
3. Allow IAT sensor to cool to ambient temperature.
4. Note the ambient temperature.
5. Connect the MAF sensor/IAT sensor to the 5P connector, but do not install the sensor onto the air cleaner.
6. Turn the ignition switch ON (II).
7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.
8. Compare the value of IAT SENSOR and the ambient temperature.

Does the value of IAT SENSOR differ 5.4°F (3°C) or more?

YES - Go to step 13.

NO - Go to step 9.

9. Disconnect the MAF sensor/IAT sensor from the 5P connector.
10. Using a heat gun, blow hot air on the MAF sensor/IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.
11. Connect the MAF sensor/IAT sensor to the 5P connector, but do not install the sensor onto the air cleaner.
12. Check the IAT SENSOR in the DATA LIST with the HDS.

Does the IAT SENSOR change 59°F (33°C) or more?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0111 indicated?

YES - Check for poor connections or loose terminals at the IAT sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0112: IAT SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector B (44P).
10. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

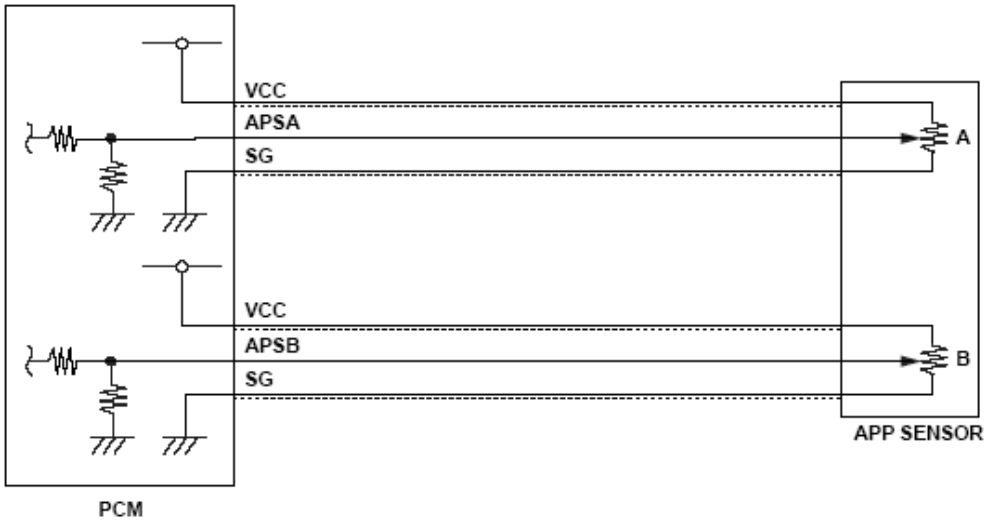


Fig. 16: Checking Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the IAT sensor and the ECM (B31), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES - Check for poor connections or loose terminals at the IAT sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0113: IAT SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Connect MAF sensor/IAT sensor 5P connector terminals No. 4 and No. 5 with a jumper wire.

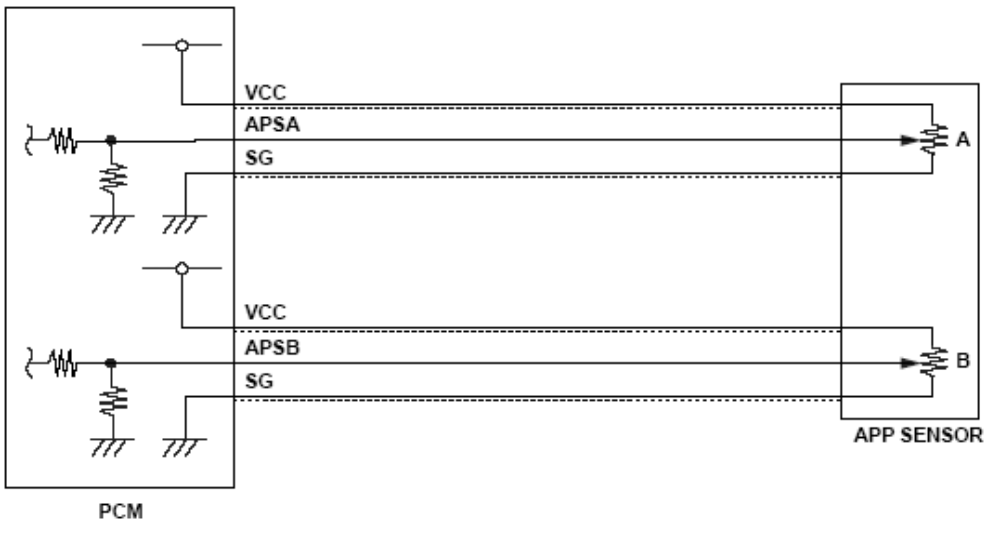


Fig. 17: Connecting MAF Sensor/IAT Sensor 5P Connector Terminals No. 4 And No. 5 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).

7. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

   YES - Go to step 8.

   NO - Go to step 20

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

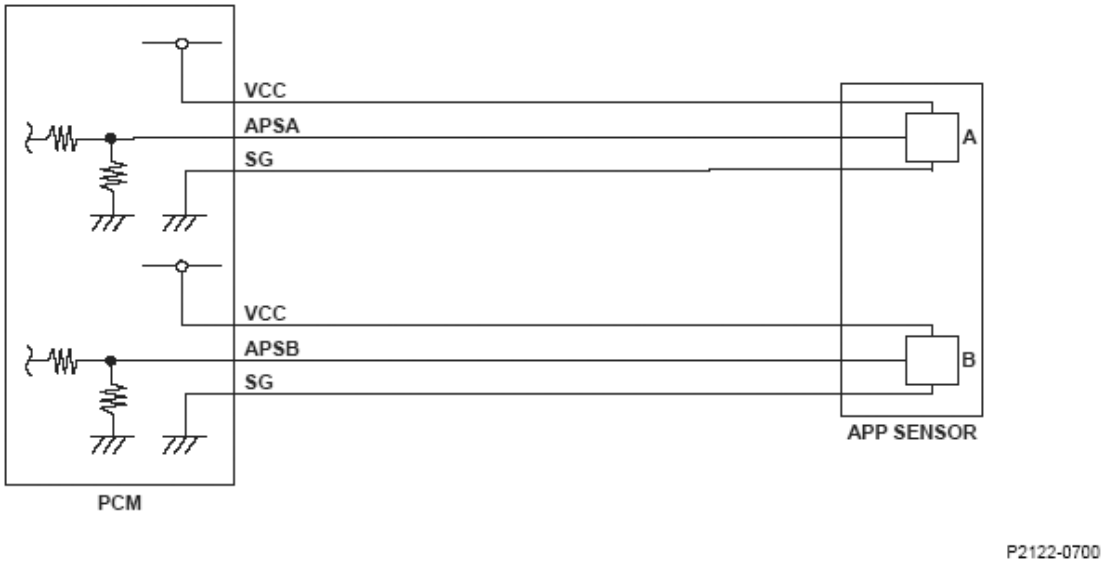


Fig. 18: Measuring Voltage Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM connector B (44P).
15. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM connector terminal B33.

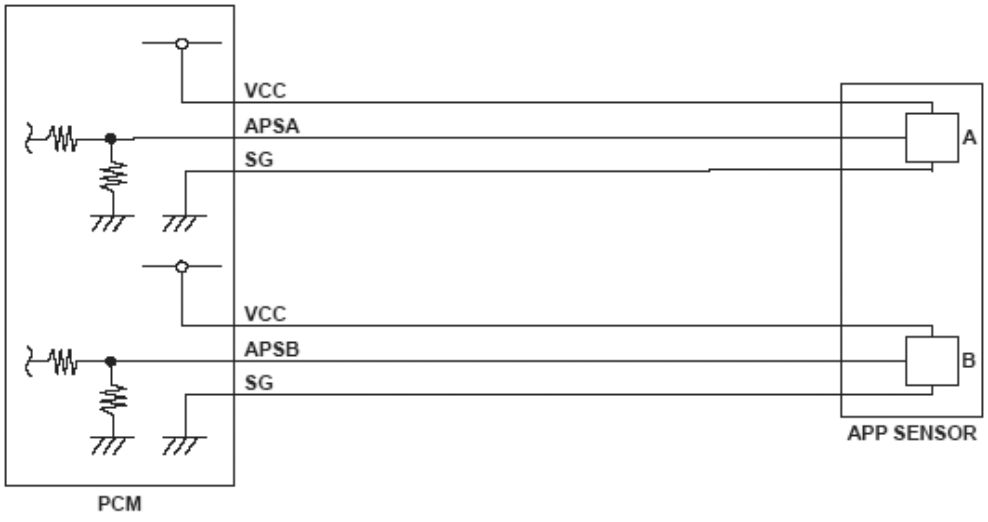


Fig. 19: Checking Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 4 And Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (B33) and the IAT sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector B (44P).
19. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and ECM connector terminal B31.

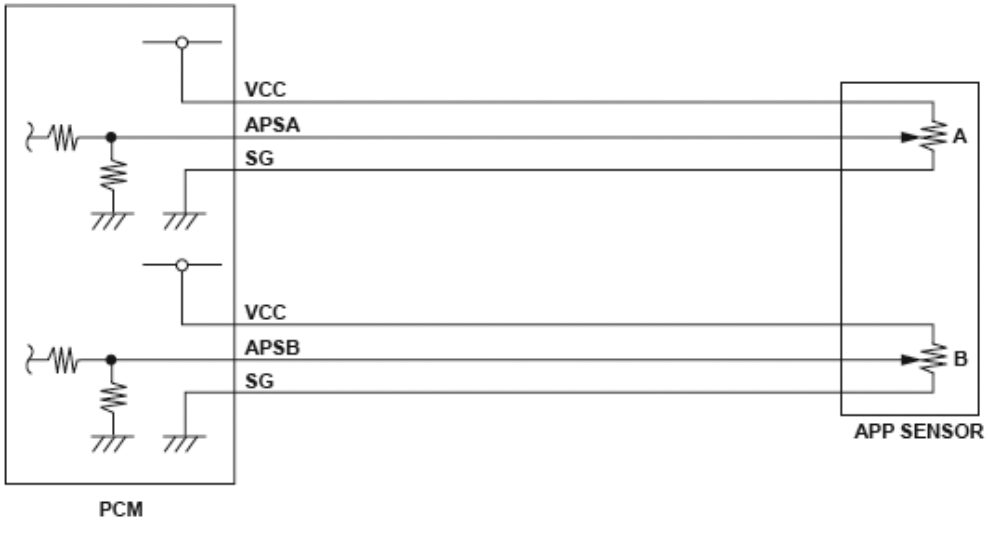


Fig. 20: Checking Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 5

And B31
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (B31) and the IAT sensor, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 176°F (80°C) or more, or 0.78 V or less indicated?

YES - Go to step 6.

NO - Go to step 3.

3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18°F (10°C) or more?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM.

NO - Go to step 11.

6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch ON (II).
10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18°F (10°C) or more?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
13. Turn the ignition switch ON (II).
14. Reset the ECM with the HDS.
15. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0116 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0117: ECT SENSOR 1 CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 12P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector B (44P).
10. Check for continuity between ECT sensor 12P connector terminal No. 1 and body ground.

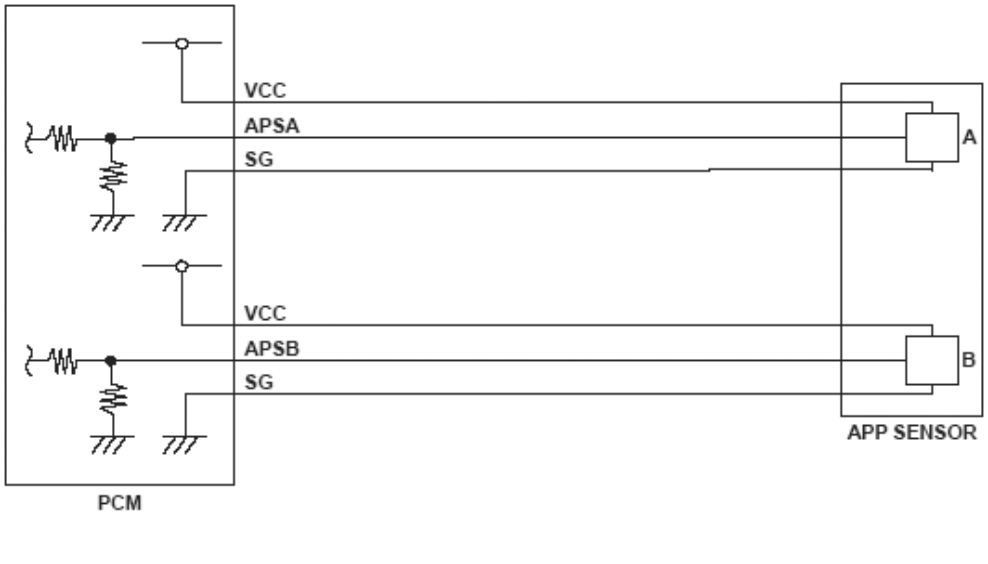


Fig. 21: Checking For Continuity Between ECT Sensor 12P Connector Terminal No. 1 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECT sensor 1 and the ECM (B23), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0117 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0117 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0118: ECT SENSOR 1 CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 12P connector.
5. Connect ECT sensor 12P connector terminals No. 1 and No. 2 with a jumper wire.

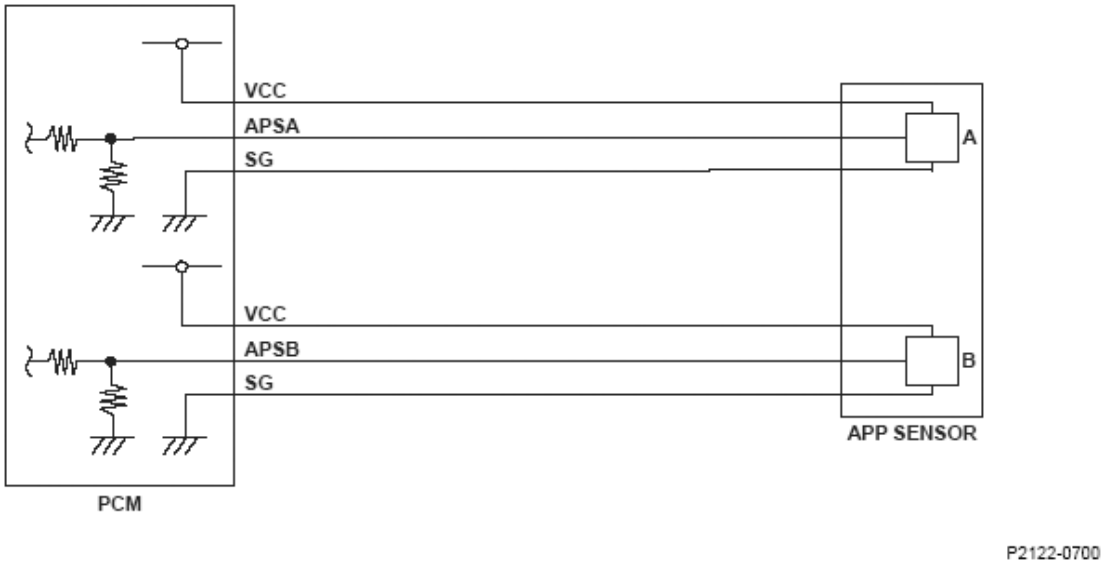


Fig. 22: Connecting ECT Sensor 12P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES - Go to step 8.

NO - Go to step 20

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the ECT sensor 12P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 12P connector terminal No. 1 and body ground.

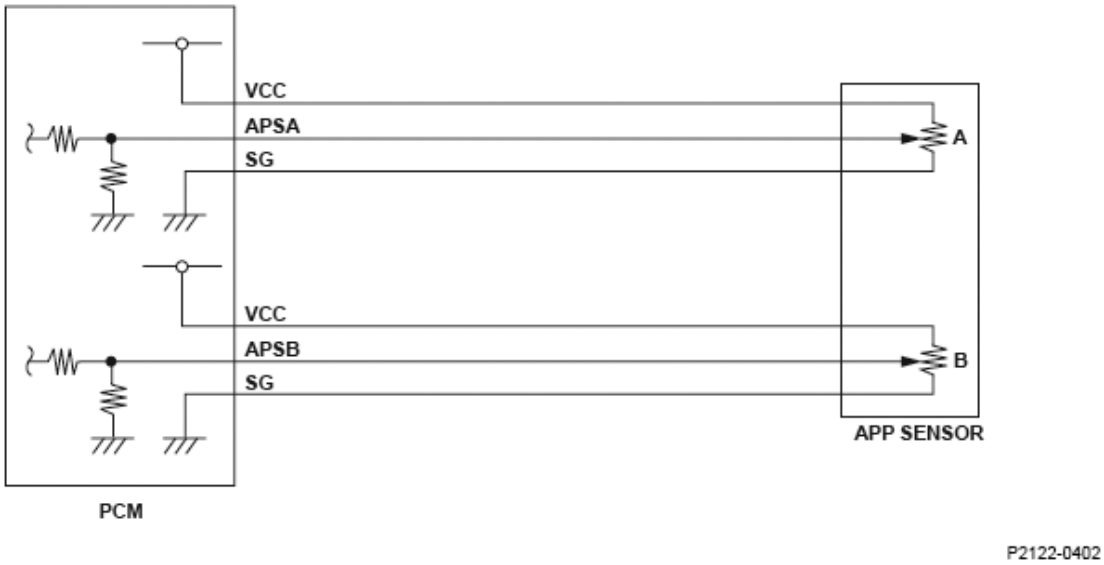


Fig. 23: Measuring Voltage Between ECT Sensor 12P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM connector B (44P).
15. Check for continuity between ECT sensor 12P connector terminal No. 2 and ECM connector terminal B33.

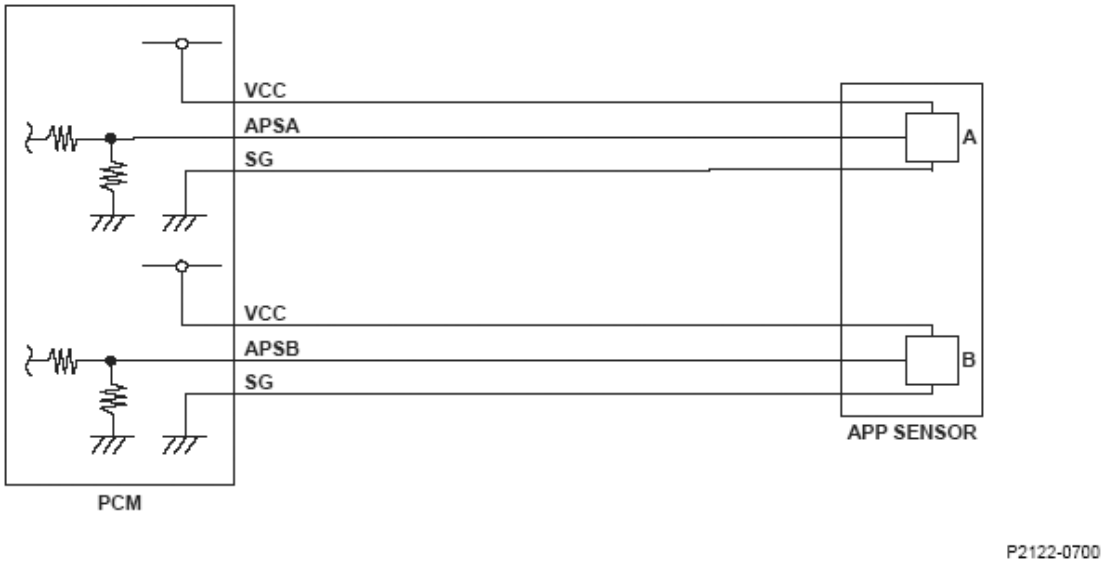


Fig. 24: Checking Continuity Between ECT Sensor 12P Connector Terminal No. 2 And ECM

Connector Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (B33) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector B (44P).
19. Check for continuity between ECT sensor 12P connector terminal No. 1 and ECM connector terminal B23.

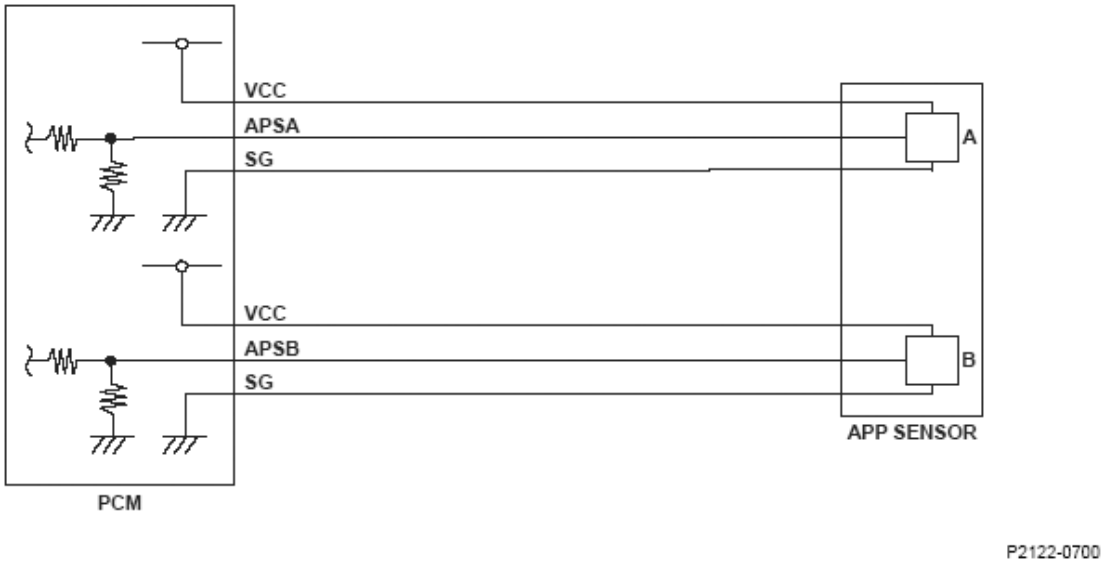


Fig. 25: Checking Continuity Between ECT Sensor 12P Connector Terminal No. 1 And ECM Connector Terminal B23
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (B23) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0118 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0118 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0125: ECT SENSOR 1 MALFUNCTION/SLOW RESPONSE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 0°F (-18°C) or less indicated?

YES - Go to step 9.

NO - Go to step 3.

3. Allow the engine to cool to 104°F (40°C) or less.
4. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
5. Start the engine, and let it idle.
6. Let the engine idle until ECT SENSOR 1 goes up 40°F (22°C) or more from the recorded temperature.
7. Note the value of ECT SENSOR 2 in the DATA LIST with the HDS.
8. Compare ECT SENSOR 2 and the recorded temperature.

Did ECT SENSOR 2 change 14°F (8°C) or more?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose

terminals at ECT sensor 1, ECT sensor 2, and the ECM.

NO - Check the thermostat (see **FAN MOTOR TEST**). If the thermostat is OK, go to step 9. If the thermostat is faulty, replace it (see **THERMOSTAT REPLACEMENT**), then go to step 11.

9. Turn the ignition switch OFF.
10. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM with the HDS.
13. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
14. Allow the engine to cool to ambient temperature.
15. Start the engine, and let it idle for 20 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0125 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P0125 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

DTC P0128: COOLING SYSTEM MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Check the FAN CTRL in the DATA LIST with the HDS.

   Is it OFF?

   YES - Go to step 5.

NO - Wait until the FAN CTRL is off, then go to step 5.

5. Check the radiator fan operation.

   Does the radiator fan keep running?

   YES - Check the radiator fan circuit (see **CIRCUIT DIAGRAM**), and the radiator fan relay (see **POWER RELAY TEST**). If the circuits and the relay are OK, go to step 19.

   NO - Go to step 6.

6. Let the engine cool until the coolant temperature is 104°F (40°C) or less.
7. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
8. Start the engine, and let it idle.
9. Let the engine idle until ECT SENSOR 1 goes up 40°F (22°C) or more from the recorded temperature.
10. Check ECT SENSOR 2 in the DATA LIST with the HDS.
11. Compare the value of recorded ECT SENSOR 2 and the present value of ECT SENSOR 2.

    Did temperature rise 14°F (8°C) or more?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM.

    NO - Test the thermostat (see **FAN MOTOR TEST**), then go to step 12.

12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Let the engine cool until the coolant temperature is between 21°F (-6°C) and 104°F (40°C).
15. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
16. Test-drive at a steady speed between 15-75 mph (24-120 km/h) for 10 minutes.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES - Check the cooling system, then go to step 1.

    NO - Go to step 18.

18. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check the cooling system, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Let the engine cool until the coolant temperature is between 21°F (-6°C) and 104°F (40°C).
21. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
22. Test-drive at a steady speed between 15-75 mph (24-120 km/h) for 10 minutes.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1.

    NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P0133: A/F SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in 3rd or 4th gear
   - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26-81 mph (41-130 km/h).
5. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

YES - Go to step 6.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 3rd or 4th gear
    - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26-81 mph (41-130 km/h).
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0133 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0134: A/F SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.**
- **If DTC P0135 is stored at the same time as DTC P0134, troubleshoot**

DTC P0135 first, then recheck for DTC P0134.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0134 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0134 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM, then go to step 1.

    NO - Go to step 11.

11. Monitor the OBD STATUS for DTC P0134 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: A/F SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0135 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM.

5. Turn the ignition switch OFF.
6. Check the No. 11 FI SUB (15 A) fuse in the underhood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 7.

   NO - Go to step 20.

7. Test the PGM-FI subrelay (E) in the under-hood fuse/relay box (see **POWER RELAY TEST**).

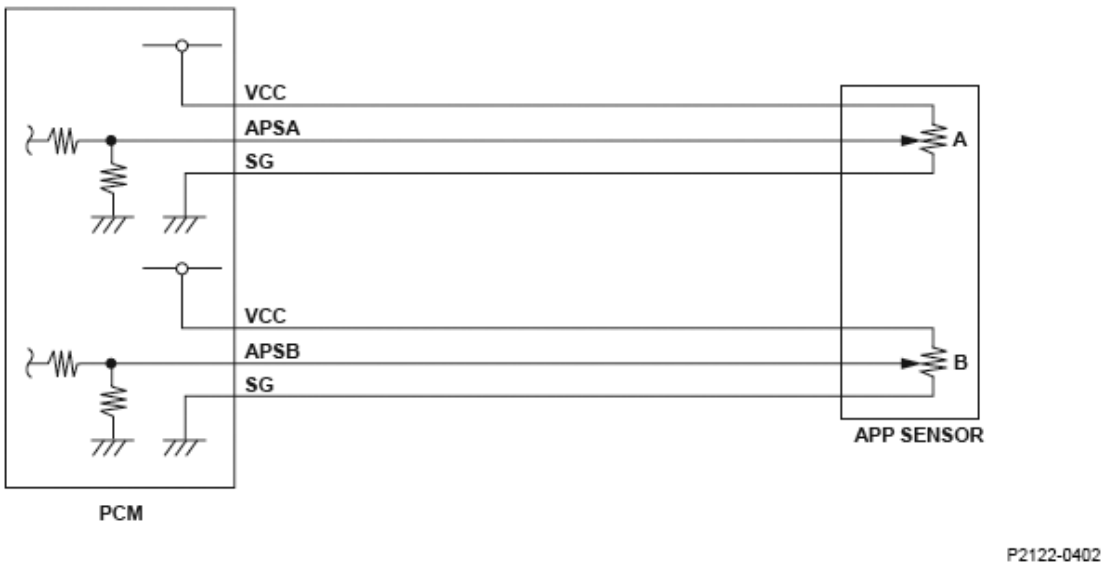


Fig. 26: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the PGM-FI subrelay OK?

YES - Go to step 8.

NO - Replace the PGM-FI subrelay, then go to step 24.

8. Disconnect the A/F sensor (Sensor 1) 4P connector.
9. At the sensor side, measure resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3

and No. 4.

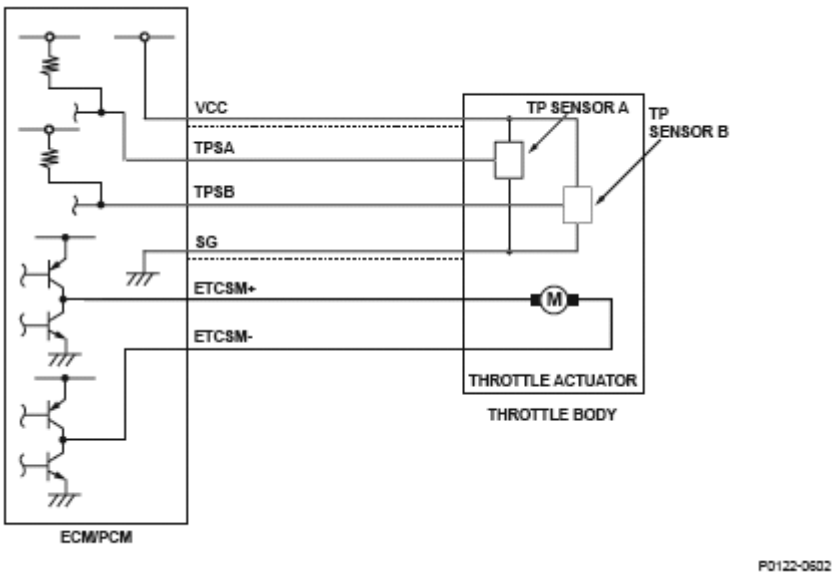


Fig. 27: Measuring Resistance Between A/F Sensor 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 2.0-2.7 ohms at room temperature?

YES - Go to step 10.

NO - Go to step 24.

10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 3, and between terminals No. 1 and No. 4 individually.

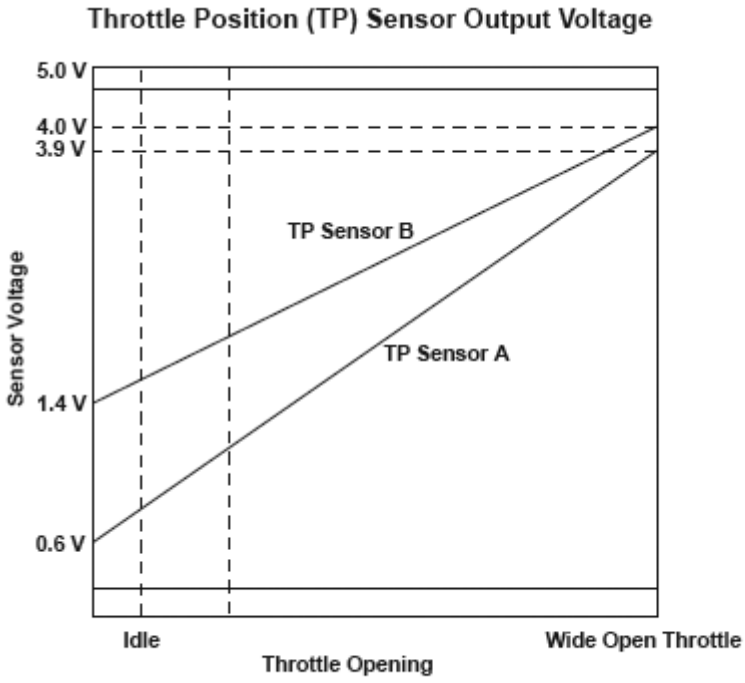


Fig. 28: Checking Continuity Between A/F Sensor 4P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Go to step 11.

11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Connect A/F sensor (Sensor 1) 4P connector terminal No. 3 to body ground with a jumper wire.

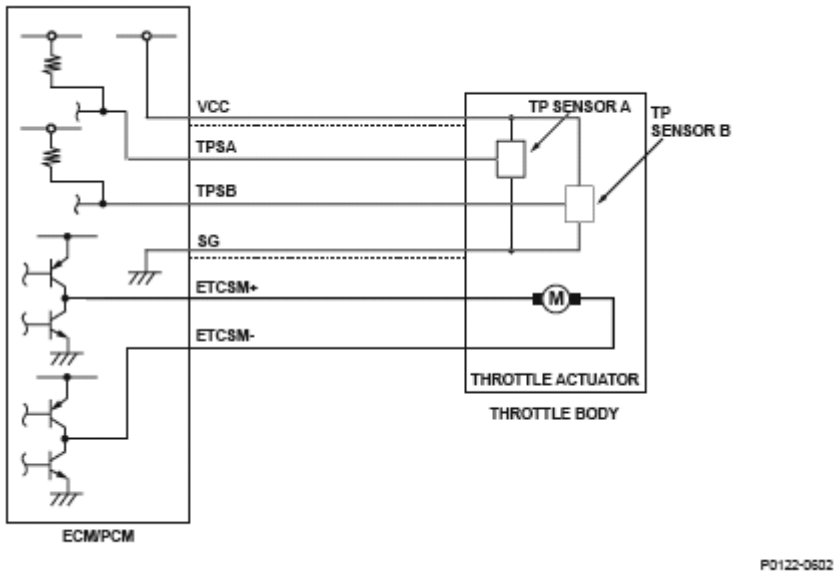


Fig. 29: Connecting A/F Sensor 4P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Check for continuity between ECM connector terminal C9 and body ground.

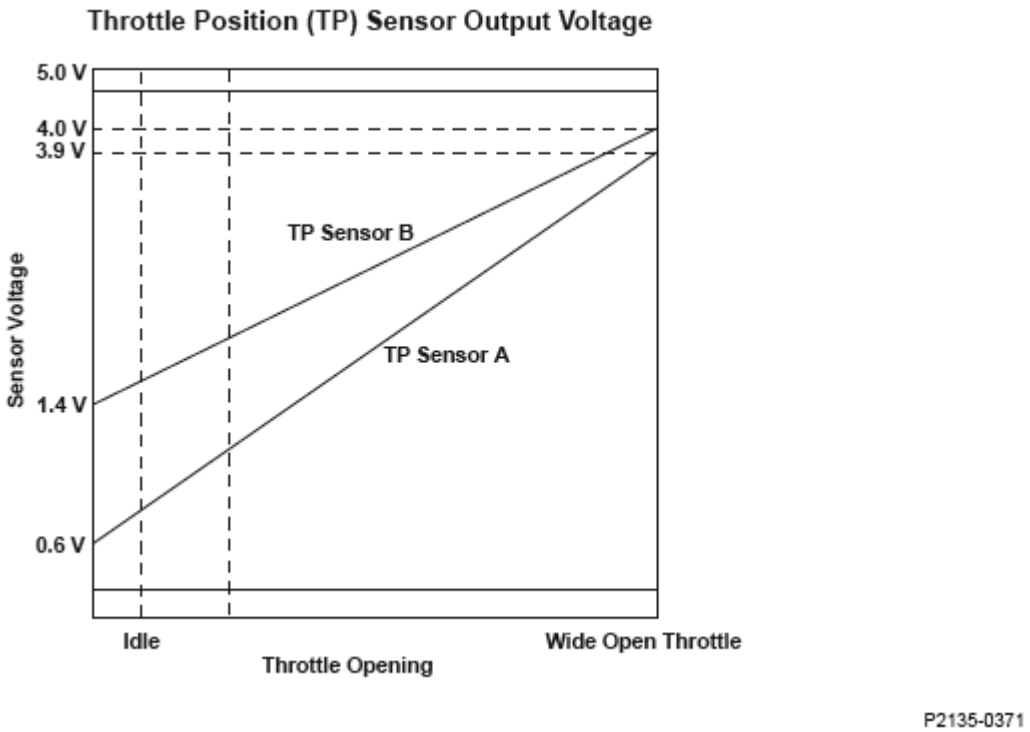


Fig. 30: Checking Continuity Between ECM Connector Terminal C9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM (C9) and the A/F sensor (Sensor 1), then go to step 25.

15. Remove the PGM-FI subrelay (E) from the under-hood fuse/relay box.

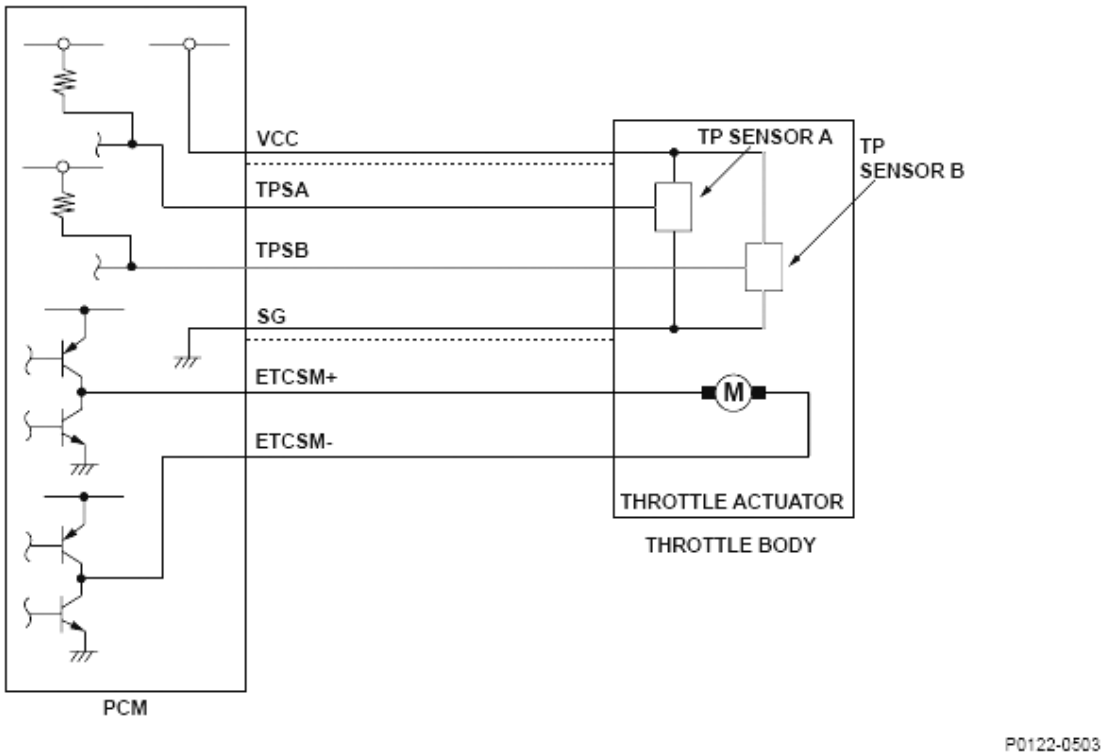


Fig. 31: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Connect A/F sensor (Sensor 1) 4P connector terminal No. 4 to body ground with a jumper wire.

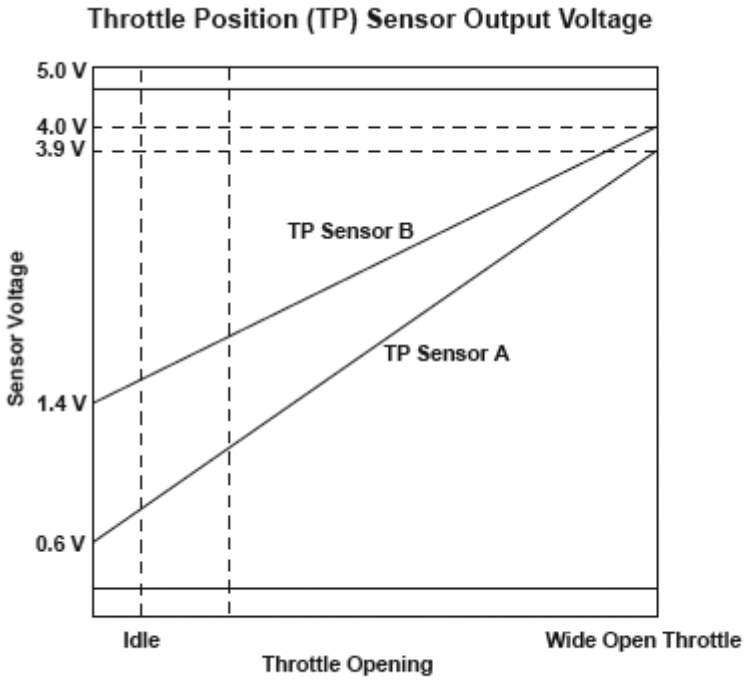


Fig. 32: Connecting A/F Sensor 4P Connector Terminal No. 4 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between PGM-FI subrelay 4P connector terminal No. 2 and body ground.

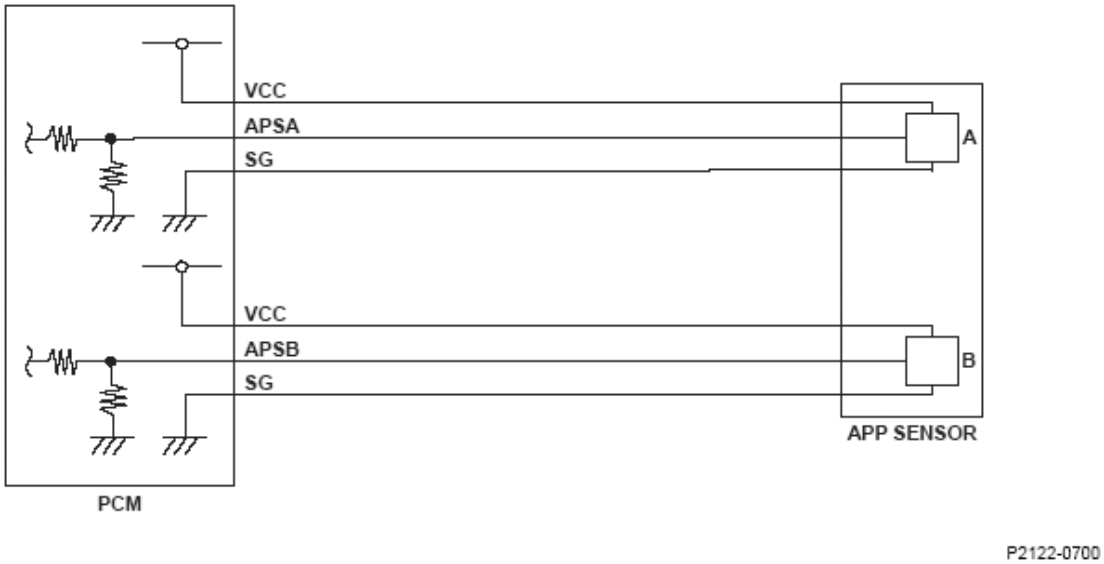


Fig. 33: Checking For Continuity Between PGM-FI Subrelay 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18.

NO - Repair open in the wire between the A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 25.

18. Disconnect ECM connector A (44P).
19. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM connector terminal A21.

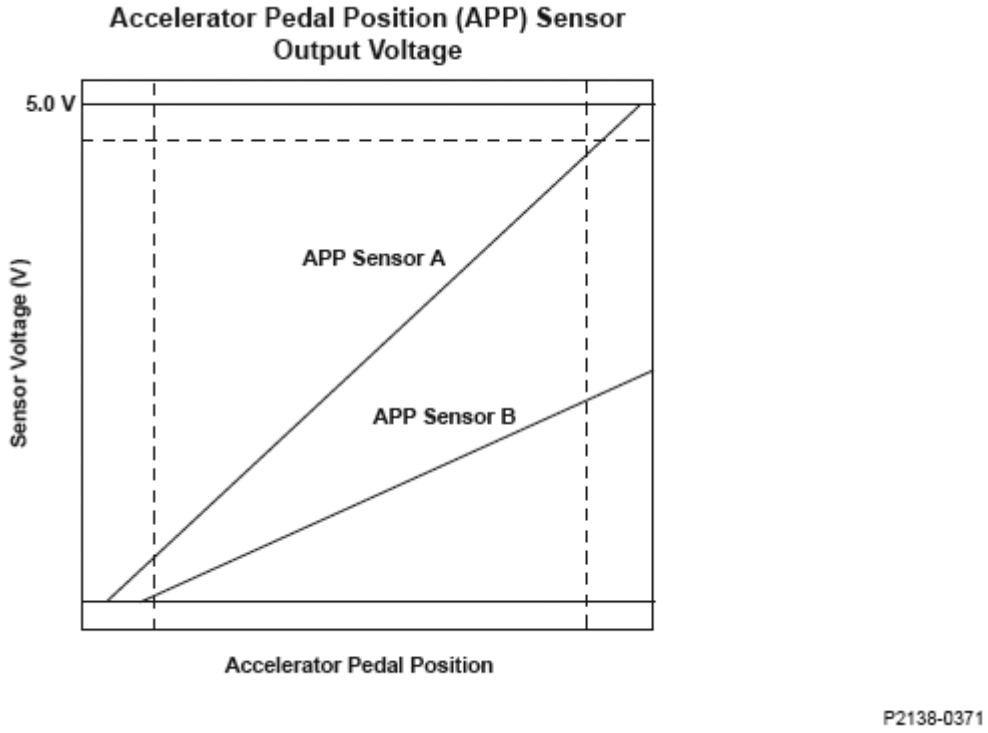


Fig. 34: Checking Continuity Between PGM-FI Subrelay 4P Connector Terminal No. 3 And ECM Connector Terminal A21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 31.

NO - Repair open in the wire between the ECM (A21) and the PGM-FI subrelay, then go to step 25.

20. Remove the PGM-FI subrelay (E) from the underhood fuse/relay box.

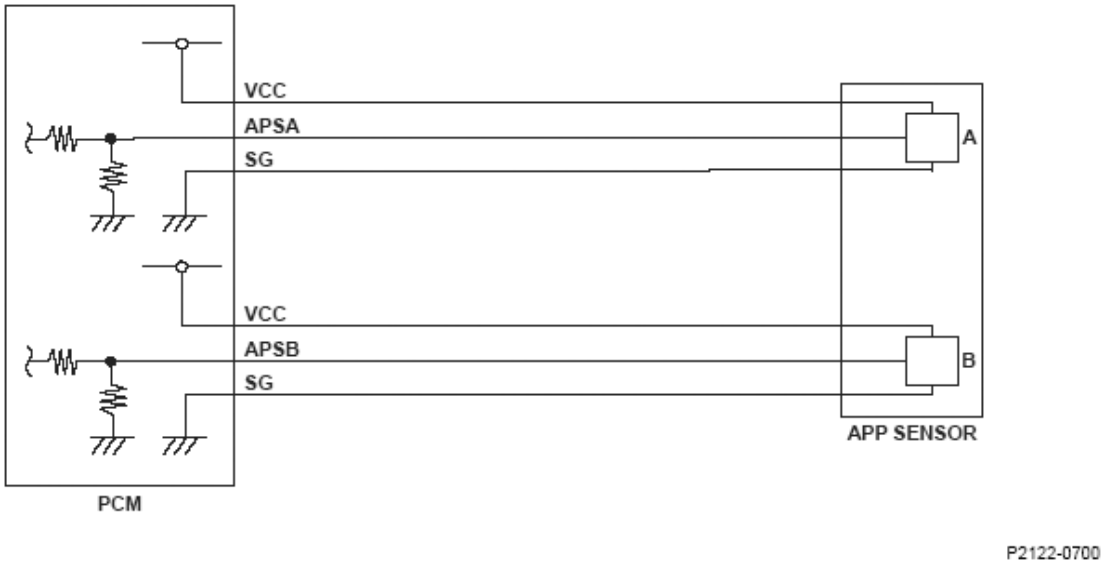


Fig. 35: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Disconnect the A/F sensor (Sensor 1) 4P connector.
22. Disconnect the EVAP canister vent shut valve 2P connector.
23. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and body ground.

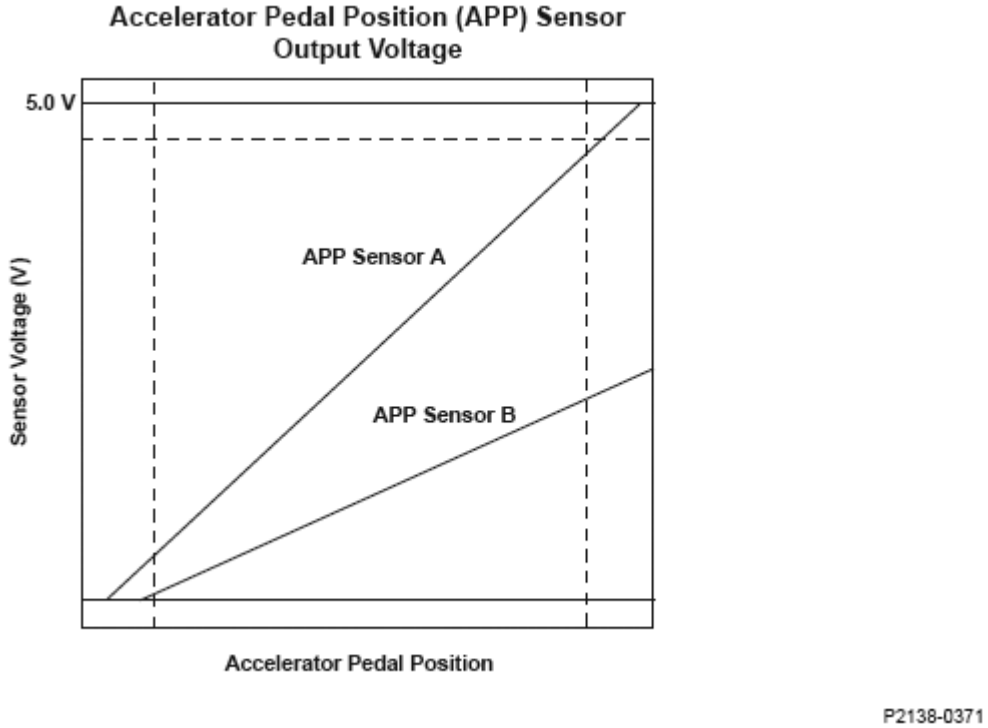


Fig. 36: Checking For Continuity Between A/F Sensor 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PGM-FI subrelay, the EVAP canister vent shut valve, and the A/F sensor (Sensor 1). Also replace the No. 11 FI SUB (15 A) fuse, then go to step 25.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 25.

24. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
25. Reconnect all connectors.
26. Turn the ignition switch ON (II).
27. Reset the ECM with the HDS.
28. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM, then go to step 1.

    NO - Go to step 30.

30. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

31. Reconnect all connectors.
32. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
33. Start the engine, and let it idle.
34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 33. If the ECM was substituted, go to step 1.

    NO - Go to step 35.

35. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 33. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0137: SECONDARY HO2S (SENSOR 2) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM.

5. Turn the ignition switch OFF.
6. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES - Go to step 10.

   NO - Go to step 14.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

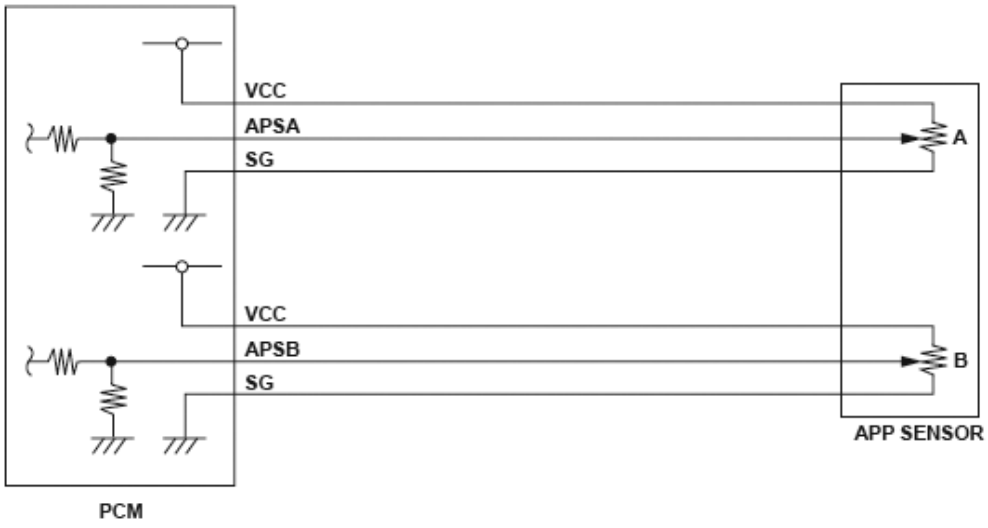


Fig. 37: Checking For Continuity Between Secondary HO2S 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C27) and the secondary HO2S (Sensor 2), then go to step 16.

NO - Go to step 24.

14. Turn the ignition switch OFF.
15. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Reset the ECM with the HDS.
19. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
20. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
21. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 4th gear
    - Engine speed between 1,500-3,000 rpm
    - Drive about 1 minute or more
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0137 indicated?

YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1.

NO - Go to step 23.

23. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

24. Reconnect all connectors.
25. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
26. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
27. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 4th gear
    - Engine speed between 1,500-3,000 rpm
    - Drive 1 minute or more
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 26. If the ECM was substituted, go to step 1.

    NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 26. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 26.

DTC P0138: SECONDARY HO2S (SENSOR 2) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL

TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.27 V or more?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM.

5. Turn the ignition switch OFF.
6. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

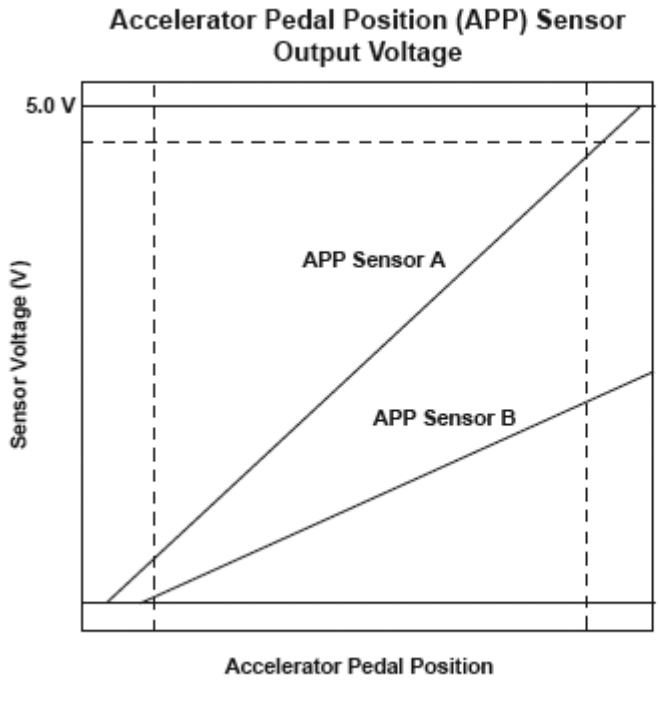


Fig. 38: Connecting Secondary HO2S 4P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Turn the ignition switch ON (II).
10. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.27 V or more?

YES - Go to step 11.

NO - Go to step 20.

11. Turn the ignition switch OFF.
12. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 2 to body ground with a jumper wire.

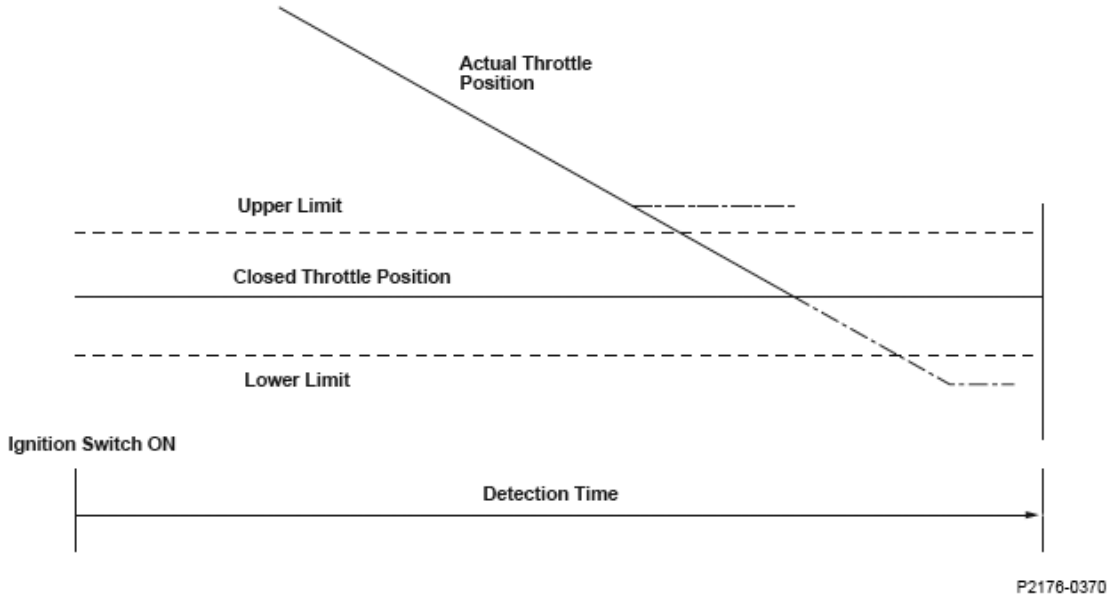


Fig. 39: Connecting Secondary HO2S 4P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Turn the ignition switch ON (II).
15. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 1.27 V or more?

YES - Go to step 16.

NO - Repair open in the wire between the ECM (B33) and the secondary HO2S (Sensor 2), then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector C (44P).
19. Check for continuity between ECM connector terminal C27 and body ground.

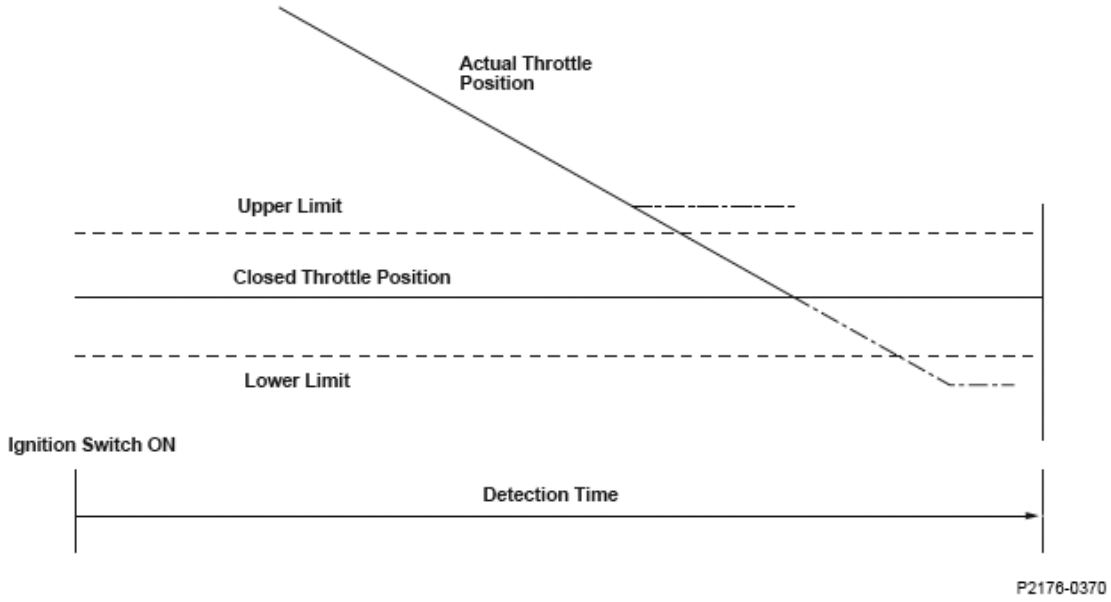


Fig. 40: Checking Continuity Between ECM Connector Terminal C27 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 30.

NO - Repair open in the wire between the ECM (C27) and the secondary HO2S (Sensor 2), then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
27. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 4th gear
    - Engine speed between 1,500-3,000 rpm
    - Drive about 1 minute or more
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0138 indicated?

YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1.

NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 26.

30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
32. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
33. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 4th gear
    - Engine speed between 1,500-3,000 rpm
    - Drive about 1 minute or more
34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 32. If the ECM was substituted, go to step 1.

    NO - Go to step 35.

35. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 32. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 32.

DTC P0139: SECONDARY HO2S (SENSOR 2) SLOW RESPONSE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL

TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in 4th gear
   - Vehicle speed at 35 mph (56 km/h) or more
   - Drive about 15 seconds
5. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 4th gear
    - Vehicle speed at 35 mph (56 km/h) or more
    - Drive about 15 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0141: SECONDARY HO2S (SENSOR 2) HEATER CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0141 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM.

5. Turn the ignition switch OFF.
6. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES - Go to step 7.

   NO - Repair short in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

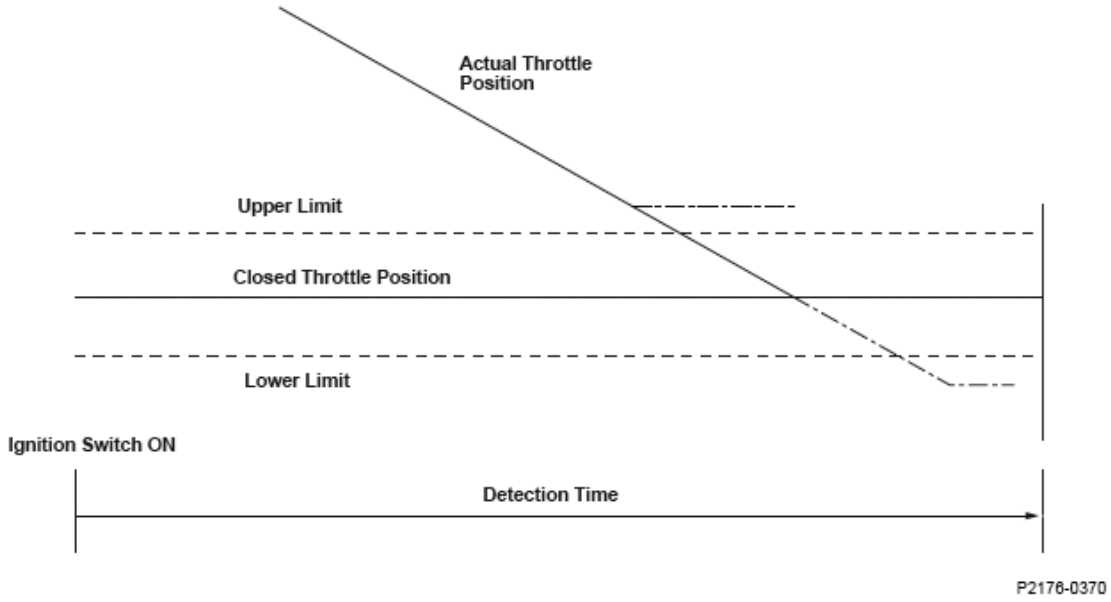


Fig. 41: Measuring Resistance Between Secondary HO2S 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 5.4-7.3 ohms at room temperature?

YES - Go to step 9.

NO - Go to step 22.

9. At the secondary HO2S (Sensor 2) side, check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

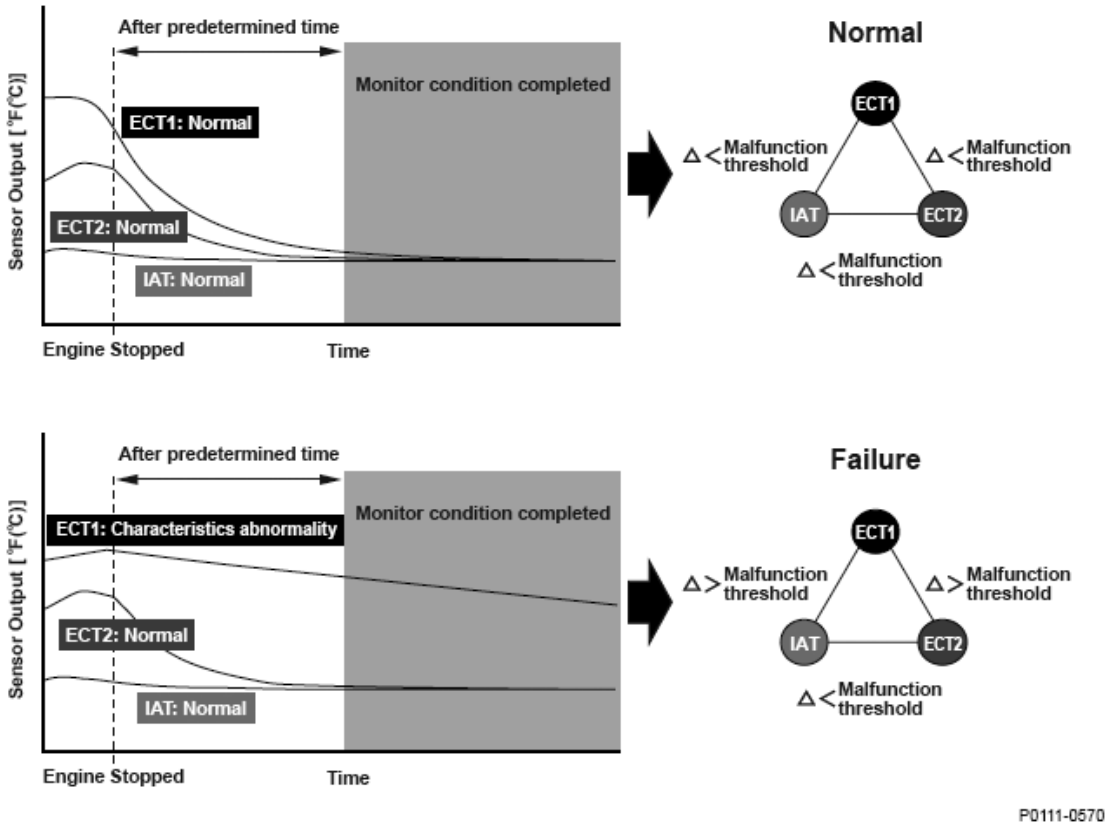


Fig. 42: Checking Continuity Between Body Ground And Secondary HO2S 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Go to step 10.

10. Turn the ignition switch ON (II).
11. Measure voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

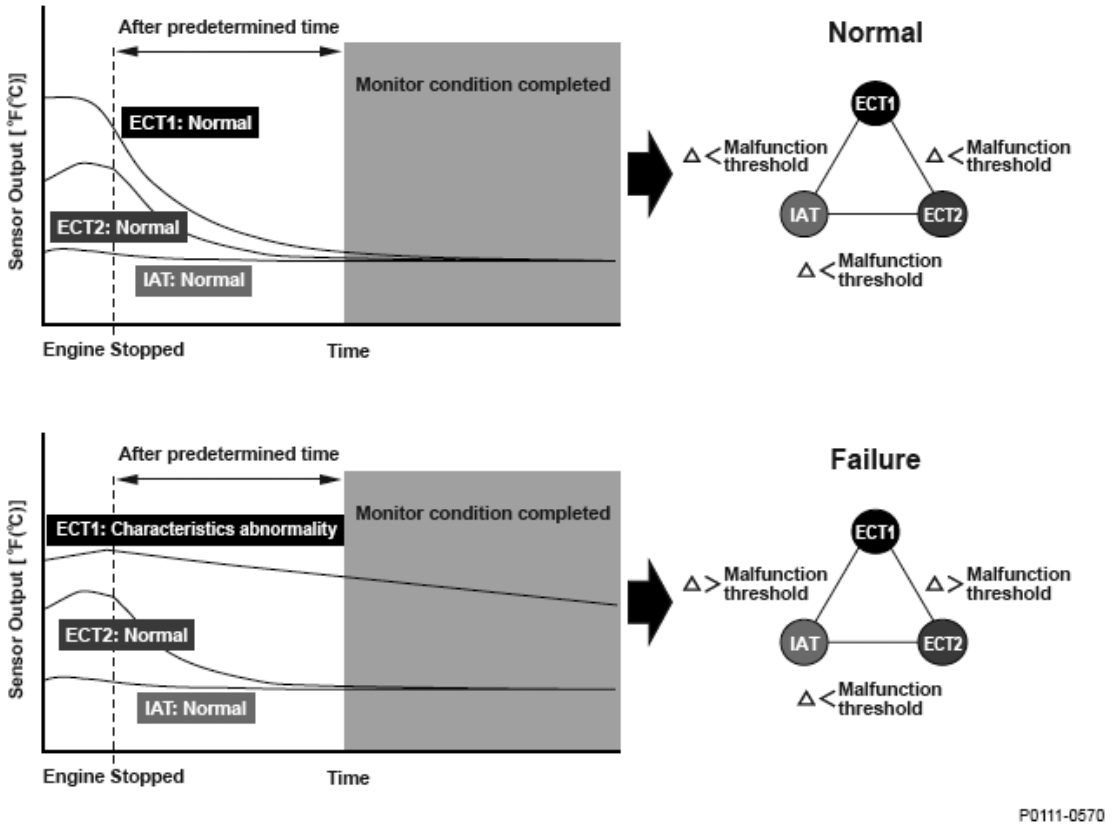


Fig. 43: Measuring Voltage Between Secondary HO2S 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM connector B (44P).
15. Check for continuity between ECM connector terminal B4 and body ground.

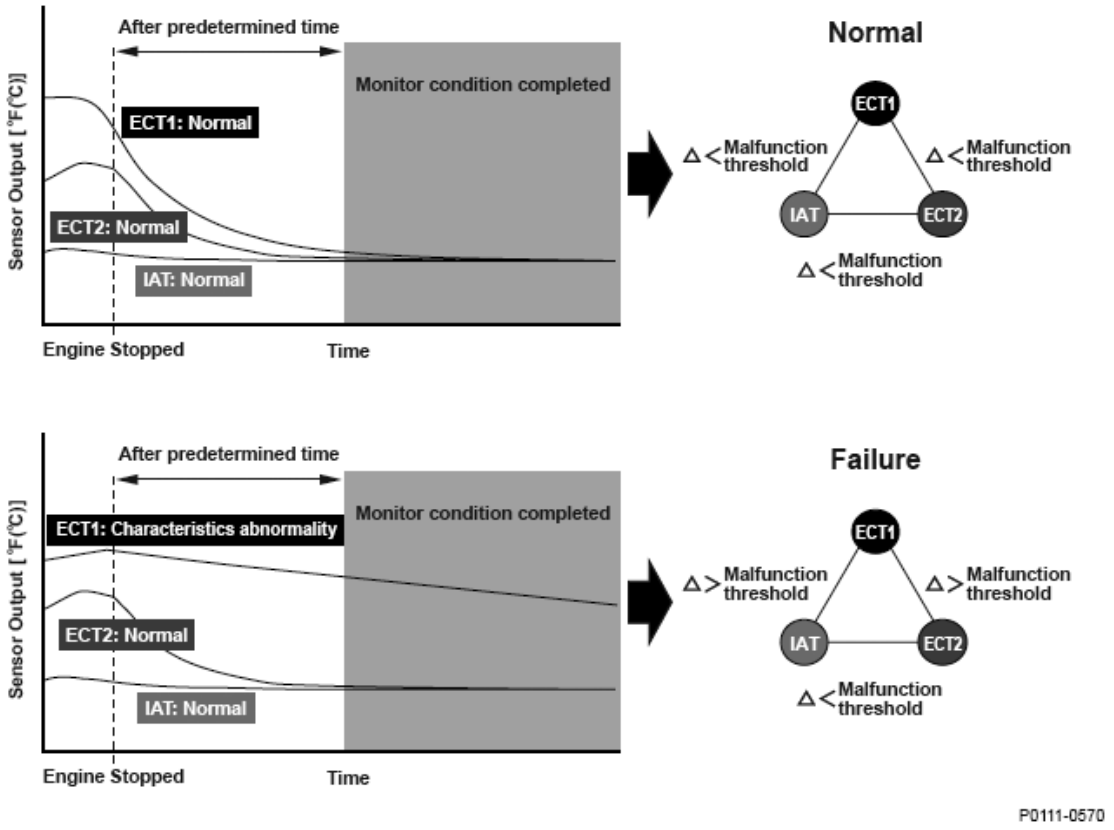


Fig. 44: Checking Continuity Between ECM Connector Terminal B4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

NO - Go to step 29.

16. Measure voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

Fig. 45: Measuring Voltage Between Secondary HO2S 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 17.

NO - Repair open in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM connector B (44P).
20. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

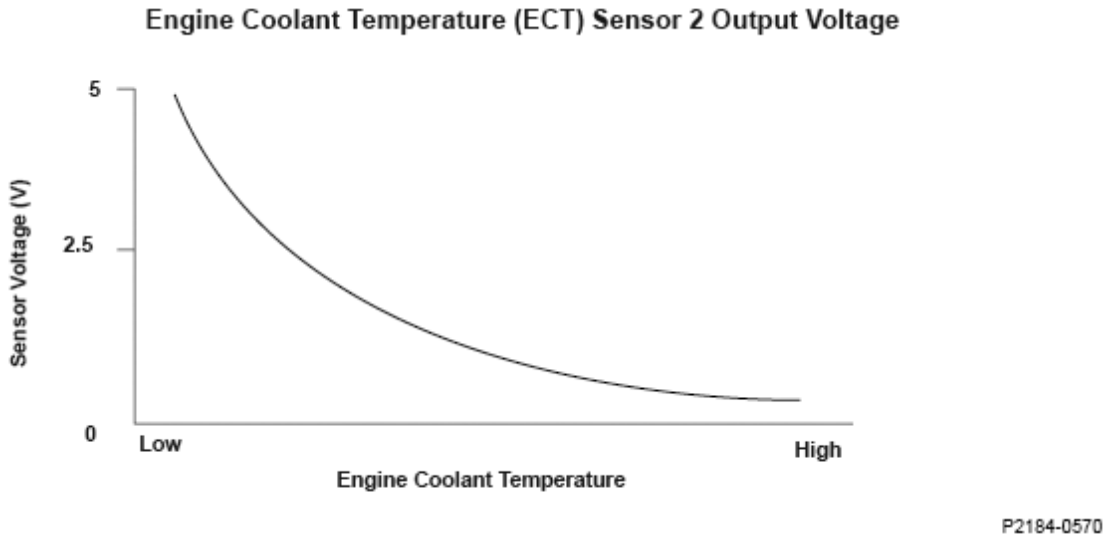


Fig. 46: Connecting Secondary HO2S 4P Connector Terminal No. 3 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between ECM connector terminal B4 and body ground.

Fig. 47: Checking For Continuity Between ECM Connector Terminal B4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

22. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM with the HDS.
26. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1.

    NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.
30. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
31. Start the engine, and let it idle.
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 31. If the ECM was substituted, go to step 1.

    NO - Go to step 33.

33. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary

HO2S (Sensor 2) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 31. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0171: FUEL SYSTEM TOO LEAN; DTC P0172: FUEL SYSTEM TOO RICH

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If any of the DTCs listed below are indicated at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.**

  P0101, P0102, P0103: Mass airflow (MAF) sensor

  P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

  P0133, P1172, P1157, P2195, P2238, P2252, P2A00: Air fuel ratio (A/F) sensor (Sensor 1)

  P0134, P0135: Airfuel ratio (A/F) sensor (Sensor 1) heater

  P0137, P0138, P0139, P2270, P2271: Secondary HO2S (Sensor 2)

  P0141: Secondary HO2S (Sensor 2) heater

  P2646, P2647, P2648, P2649: VTEC system

  P0443, P0496: EVAP canister purge valve

1. Check the fuel pressure (see **FUEL PRESSURE TEST**).

   Is the fuel pressure OK?

   YES - Go to step 2.

   NO -

   - If the pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 7.
   - If the pressure is too low, check the fuel pump, the fuel feed pipe and the fuel filter. If they are OK, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 7.
2. Check for vacuum leaks at these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body

- Intake manifold
- Brake booster
- Brake booster hose
- Air Intake duct

Are the parts OK?

YES - Go to step 3.

NO - Repair or replace parts with leaks, then go to step 7.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Check for these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in neutral
   - All electrical loads off
5. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

   Did the engine speed vary more than 100 rpm from 2,500 rpm?

   YES - Repeat step 5.

   NO - Go to step 6.

6. While holding the engine speed at 4,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 5.7-8.3 gm/s?

   YES - Check the engine valve clearances and adjust if necessary (see **VALVE CLEARANCE ADJUSTMENT**). If the valve clearances are OK, replace the injectors (see **INJECTOR REPLACEMENT**), then go to step 7.

   NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 7.

7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in neutral

- All electrical loads off

NOTE: **DTC P0171 and/or P0172 may take up to 80 minutes of test driving to set. Using the HDS, monitor the air fuel feed back average (AF FB AVE). If the air fuel feed back average stays within 0.80-1.25, there is no problem at this time.**

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0171 or P0172 indicated?

    YES - Go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING:; DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored.**
- **If the misfire is frequent enough to damage the catalyst, the MIL will flash whenever the misfire occurs, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored. When the misfire stops, the MIL will remain on.**
- **If any of the DTCs listed below are indicated at the same time as the random misfire DTCs, troubleshoot those DTCs first, then recheck for random misfire DTCs:**

  P0101, P0102, P0103: Mass air flow (MAF) sensor

P0107, P0108: Manifold absolute pressure (MAP) sensor

P0171, P0172: Fuel system

P0335, P0339: Crankshaft position (CKP) sensor

P0365, P0369: Camshaft position (CMP) sensor B

P0506, P0507: Idle control system

P2646, P2647, P2648, P2649: VTEC sys

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

NO - If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. if the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Intermittent failure, the system is OK at this time.

9. Turn the ignition switch OFF.
10. Check the fuel quality.

    Is the quality good?

    YES - Go to step 11.

    NO - Drain the tank and fill with a known-good fuel, then go to step 25.

11. Inspect the spark plugs (see **SPARK PLUG INSPECTION**). If the spark plugs are fouled or worn, replace them.
12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 14.

    NO - Go to step 25.

14. Check the fuel pressure (see **FUEL PRESSURE TEST**).

    Is the fuel pressure OK?

    YES - Go to step 15.

    NO -

- If the fuel pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 25.
- If the fuel pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 25.

15. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
16. Check for these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - Transmission in neutral
    - All electrical loads off
17. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

    Did the engine speed vary more than 100 rpm from 2,500 rpm?

    YES - Repeat step 17.

    NO - Go to step 18.

18. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 5.7-8.3 gm/s?

    YES - Go to step 19.

    NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 25.

19. Turn the ignition switch OFF.
20. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
21. Remove the rocker arm oil pressure switch (A), and install the special tools as shown, then install the rocker arm oil pressure switch in the pressure gauge attachment (B).

NOTE: Install the rocker arm oil pressure switch in the reverse order of removal with a new O-ring.

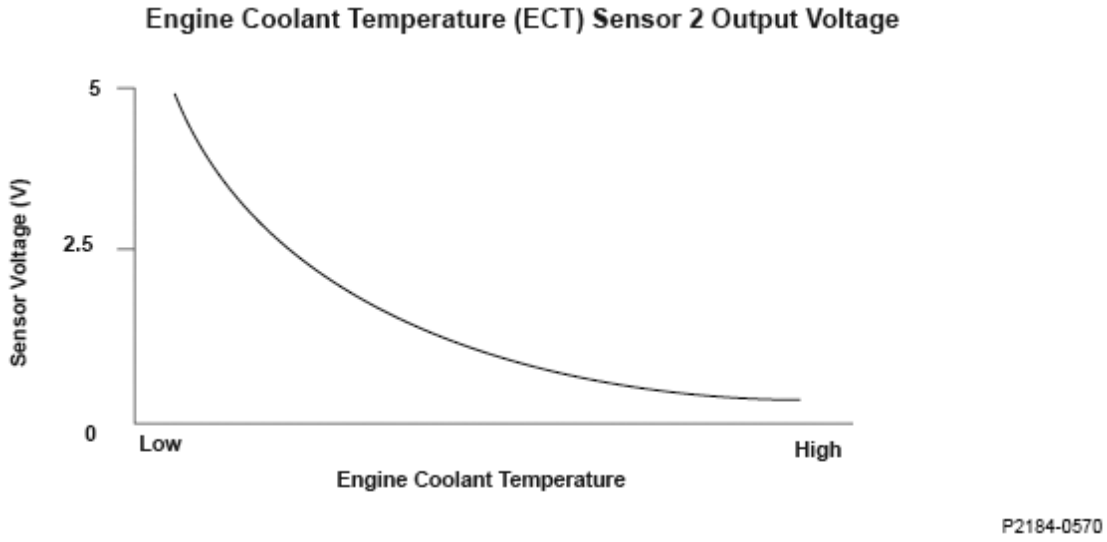


Fig. 48: Removing Rocker Arm Oil Pressure Switch (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Reconnect the rocker arm oil pressure switch 2P connector.
23. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
24. Check the oil pressure at engine speeds of 1,000 rpm and 2,000 rpm.

    Is the oil pressure below 49 kPa (0.5 kgf/cm^2 , 7 psi)?

    YES - Check for air in the fuel line, then go to step 25.

    NO - Inspect the VTEC system, then go to step 25.

25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Clear the CKP pattern with the HDS.
28. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
29. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
30. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0300, P0301, P0302, P0303, or P0304 indicated?

    YES - Check for a poor connections or loose terminals at the ignition coil, the injector, and the ECM,

then go to troubleshooting DTC P0301, P0302, P0303, or P0304 (see **DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED**).

NO - Go to step 32.

32. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Intermittent failure, the system is OK at this time. Check for loose wires or poor connections in the fuel system circuit.

9. Turn the ignition switch OFF.
10. Remove the intake manifold cover (see **INTAKE MANIFOLD AND EXHAUST SYSTEM (K20Z3)**).
11. Start the engine, and listen for a clicking sound at the injector of the problem cylinder.

    Does the injector click?

    YES - Go to step 12.

    NO - Go to step 42.

12. Turn the ignition switch OFF.
13. Exchange the ignition coil from the problem cylinder with one from another cylinder.
14. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR

15. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 16.

    NO - Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). Make sure the coil connections are secure.

16. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was exchanged?

    YES - Replace the faulty ignition coil (see **IGNITION COIL REMOVAL/INSTALLATION**), then go to step 60.

    NO - Go to step 17.

17. Turn the ignition switch OFF.
18. Exchange the spark plug from the problem cylinder with one from another cylinder.
19. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
20. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 21.

    NO - Intermittent misfire due to spark plug fouling (no misfire at this time).

21. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was exchanged?

    YES - Replace the faulty spark plug, then go to step 60.

    NO - Go to step 22.

22. Turn the ignition switch OFF.
23. Exchange the injector from the problem cylinder with one from the another cylinder.

24. Start the engine, and let it idle for 2 minutes.
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
26. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 27.

    NO - Intermittent misfire due to bad contact at the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector.

27. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was exchanged?

    YES - Replace the faulty injector (see **INJECTOR REPLACEMENT**), then go to step 60.

    NO - Go to step 28.

28. Turn the ignition switch OFF.
29. Disconnect the ignition coil 3P connector from the problem cylinder.
30. Turn the ignition switch ON (II).
31. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

Fig. 49: Measuring Voltage Between Ignition Coil 3P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 32.

NO - Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 60.

32. Turn the ignition switch OFF.
33. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

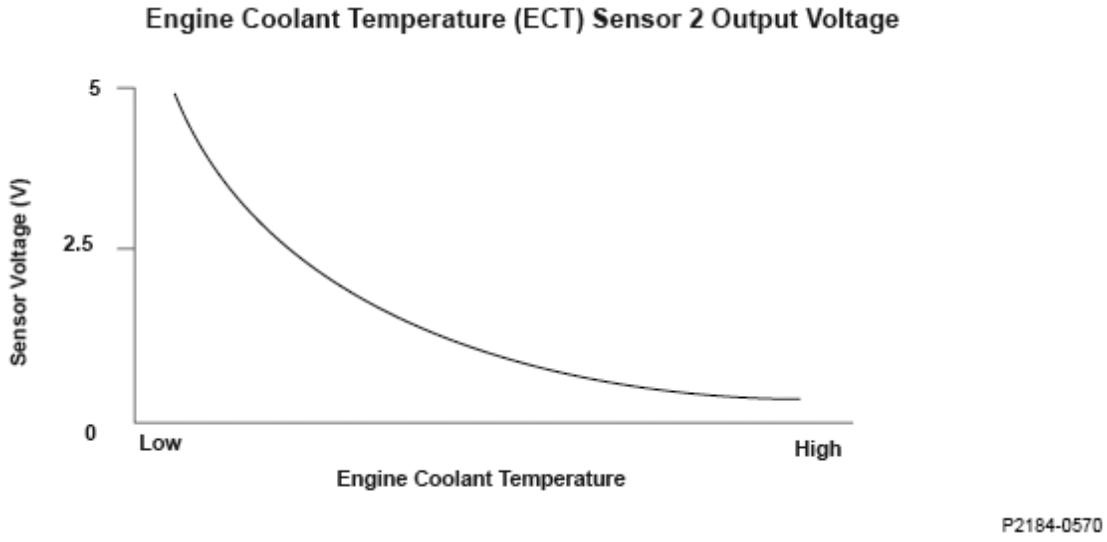


Fig. 50: Checking For Continuity Between Ignition Coil 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 34.

NO - Repair open in the wire between the ignition coil and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 60.

34. Turn the ignition switch OFF.
35. Jump the SCS line with the HDS.
36. Disconnect ECM connector C (44P).
37. Check for continuity between body ground and the appropriate ECM connector terminal of the problem cylinder (see **BODY GROUND AND ECM CONNECTOR TERMINAL**).

BODY GROUND AND ECM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

Fig. 51: Checking Continuity Between Body Ground And ECM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM and the ignition coil, then go to step 60.

NO - Go to step 38.

38. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the appropriate ECM connector terminal of the problem cylinder (see table).

IGNITION COIL 3P CONNECTOR TERMINAL NO. 1 AND ECM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

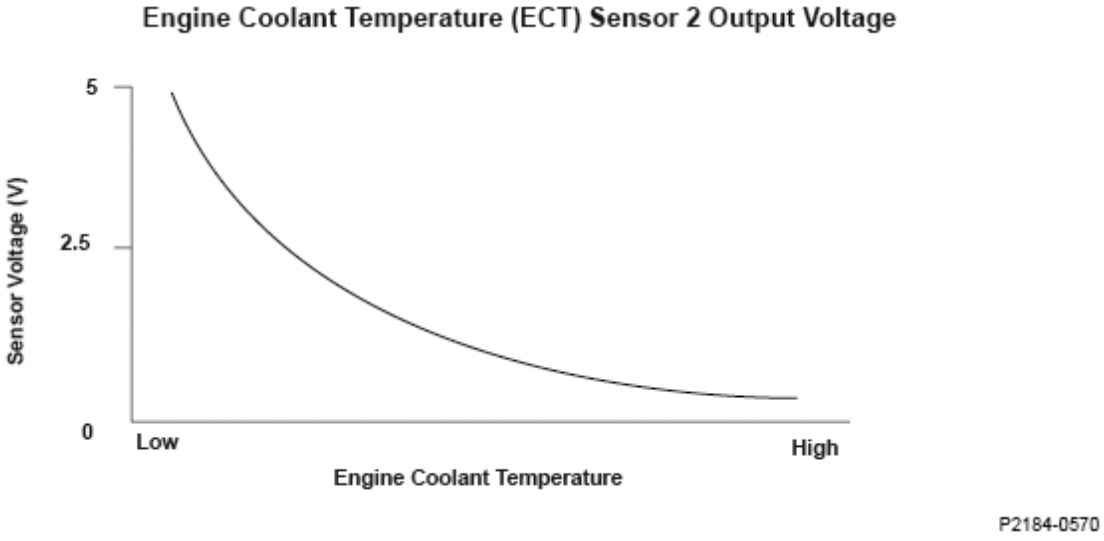


Fig. 52: Checking Continuity Between Ignition Coil 3P Connector Terminal No. 1 And ECM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 39.

NO - Repair open in the wire between the ECM and the ignition coil, then go to step 60.

39. Reconnect all connectors.
40. Do an engine compression and a cylinder leakdown test (see **ENGINE COMPRESSION INSPECTION**).

    Did the engine pass both tests?

    YES - Go to step 41.

    NO - Repair the engine, then go to step 60.

41. Do the VTEC rocker arm test (see **VTEC ROCKER ARM TEST**). Did the engine pass the test?

    YES - Go to step 42.

    NO - Repair the VTEC rocker arm (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**), then go to step 60.

42. Turn the ignition switch OFF.
43. Jump the SCS line with the HDS.
44. Disconnect ECM connector C (44P).
45. Turn the ignition switch ON (II).
46. Measure voltage between body ground and the appropriate ECM connector terminal of the problem cylinder (see **BODY GROUND AND APPROPRIATE ECM CONNECTOR TERMINAL**).

BODY GROUND AND APPROPRIATE ECM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

Fig. 53: Measuring Voltage Between Body Ground And ECM Connector Terminal Of Problem

Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 54.

NO - Go to step 47.

47. Turn the ignition switch OFF.
48. Disconnect the injector 2P connector from the problem cylinder.
49. Turn the ignition switch ON (II).
50. Measure voltage between injector 2P connector terminal No. 1 and body ground.

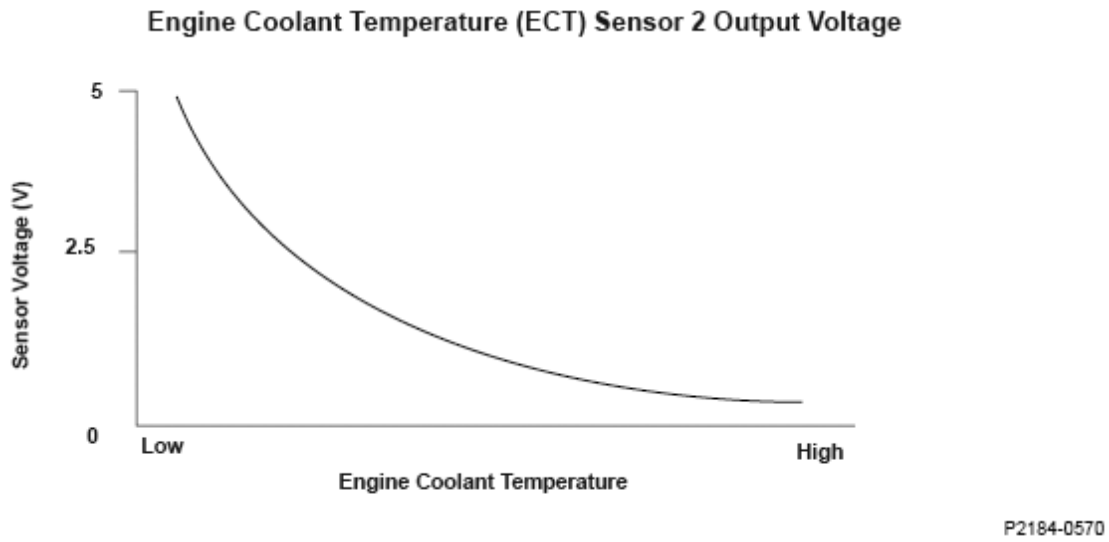


Fig. 54: Measuring Voltage Between Injector 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 51.

NO - Repair open in the wire between the injector and PGM-FI main relay 1, then go to step 60.

51. Turn the ignition switch OFF.
52. Check for continuity between body ground and the appropriate ECM connector terminal of the problem cylinder (see **BODY GROUND AND APPROPRIATE ECM CONNECTOR TERMINAL**).

BODY GROUND AND APPROPRIATE ECM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED

No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

Fig. 55: Checking Continuity Between Body Ground And ECM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM and the injector, then go to step 60.

NO - Go to step 53.

53. Check for continuity between appropriate injector 2P connector terminal No. 2 and the appropriate ECM connector terminal of the problem cylinder (see **INJECTOR 2P CONNECTOR TERMINAL NO. 2 AND ECM CONNECTOR TERMINAL**).

INJECTOR 2P CONNECTOR TERMINAL NO. 2 AND ECM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

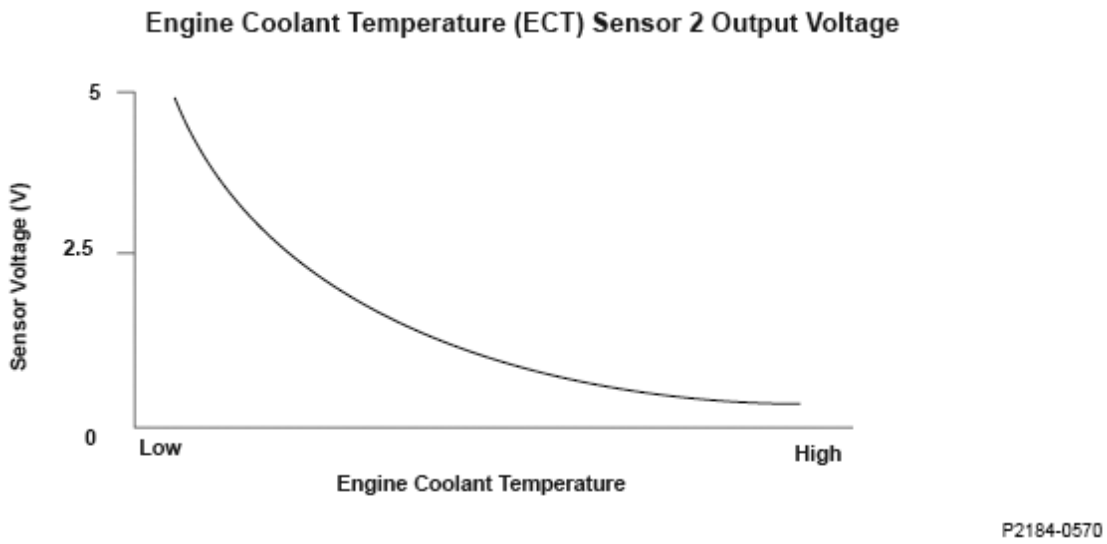


Fig. 56: Checking For Continuity Between Injector 2P Connector Terminal No. 2 And ECM Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 54.

NO - Repair open in the wire between the ECM and the injector, then go to step 60.

54. At the injector side, measure resistance between injector 2P connector terminals No. 1 and No. 2.

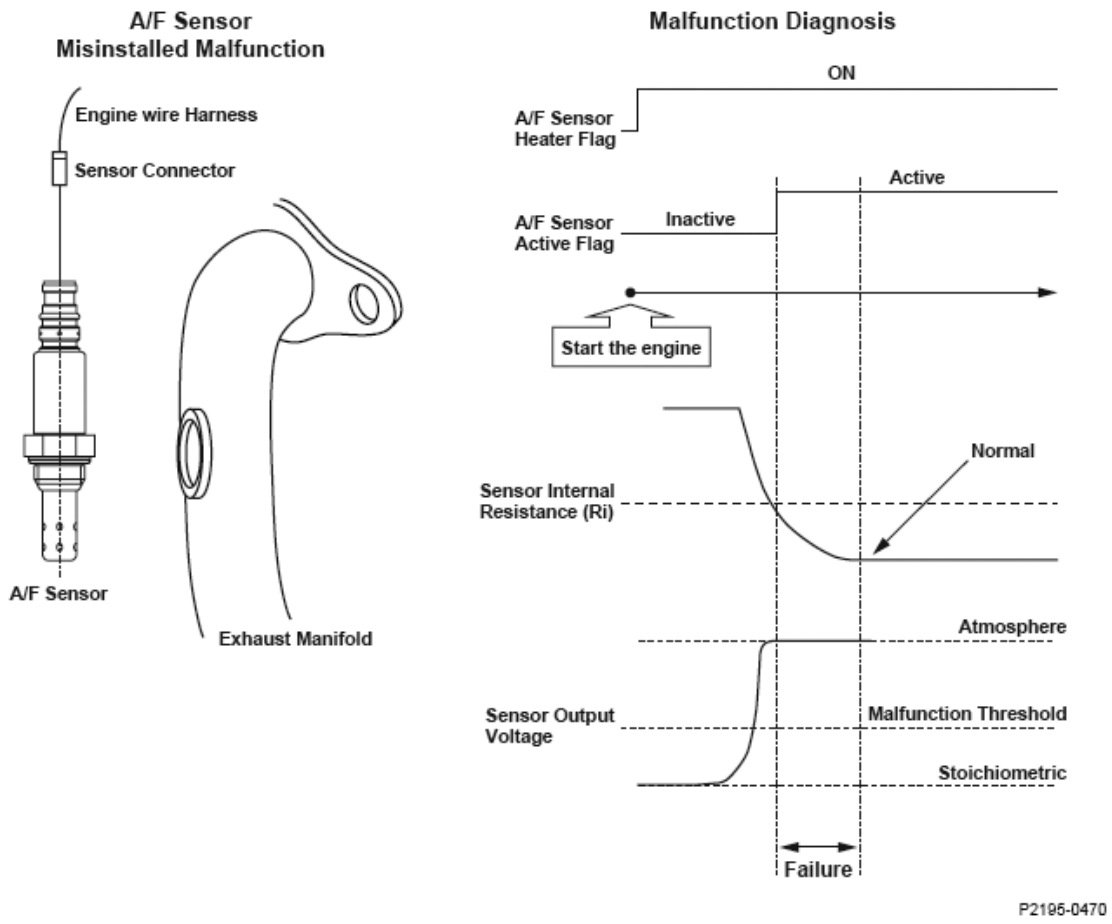


Fig. 57: Measuring Resistance Between Injector 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 10-13 ohms?

YES - Go to step 55.

NO - Replace the injector (see **INJECTOR REPLACEMENT**), then go to step 60.

55. Substitute a known-good injector into the problem cylinder.
56. Reconnect all connectors.
57. Start the engine, and let it idle for 2 minutes.
58. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
59. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 69 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire

counts?

YES - Go to step 70.

NO - Replace the original injector (see **INJECTOR REPLACEMENT**), then go to step 60.

60. Turn the ignition switch OFF.
61. Reconnect all connectors.
62. Turn the ignition switch ON (II).
63. Reset the ECM with the HDS.
64. Clear the CKP pattern with the HDS.
65. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
66. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
67. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
68. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 indicated?

    YES - Check for poor connections or loose terminals at the ignition coil, the injector, and the ECM, then go to troubleshooting DTC P0300, P0301, P0302, P0303, or P0304 (see **DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING:; DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED**).

    NO - Go to step 69.

69. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 68, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 67.

70. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).

71. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
72. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 Indicated?

    YES - Check for poor connections or loose terminals at the ignition coil, the injector, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 71. If the ECM was substituted, go to step 1.

    NO - Go to step 73.

73. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 72, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 71. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 71.

DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed between 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0325 indicated?

   YES - Go to step 6.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the ECM.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector (see **KNOCK SENSOR REPLACEMENT**).
9. Disconnect ECM connector C (44P).
10. Check for continuity between ECM connector terminal C42 and body ground.

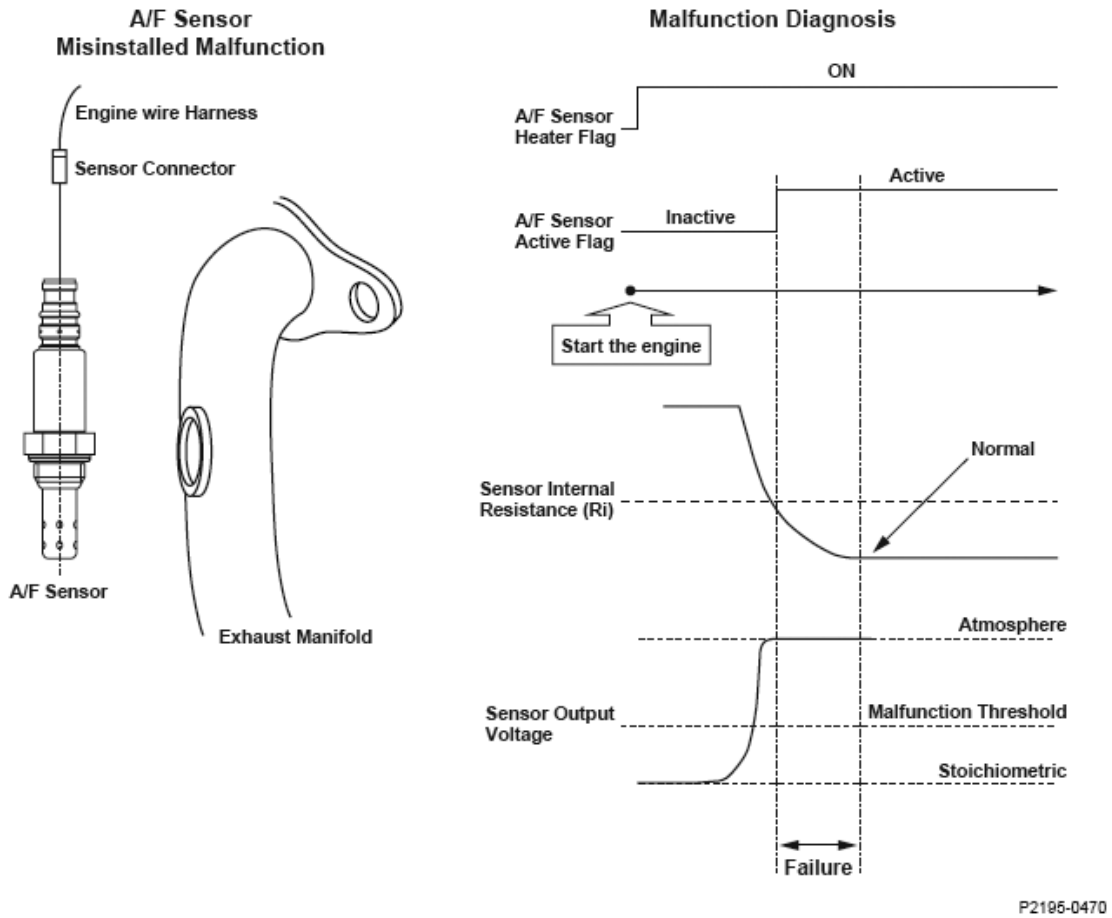


Fig. 58: Checking Continuity Between ECM Connector Terminal C42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C42) and the knock sensor, then go to step 14.

NO - Go to step 11.

11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.

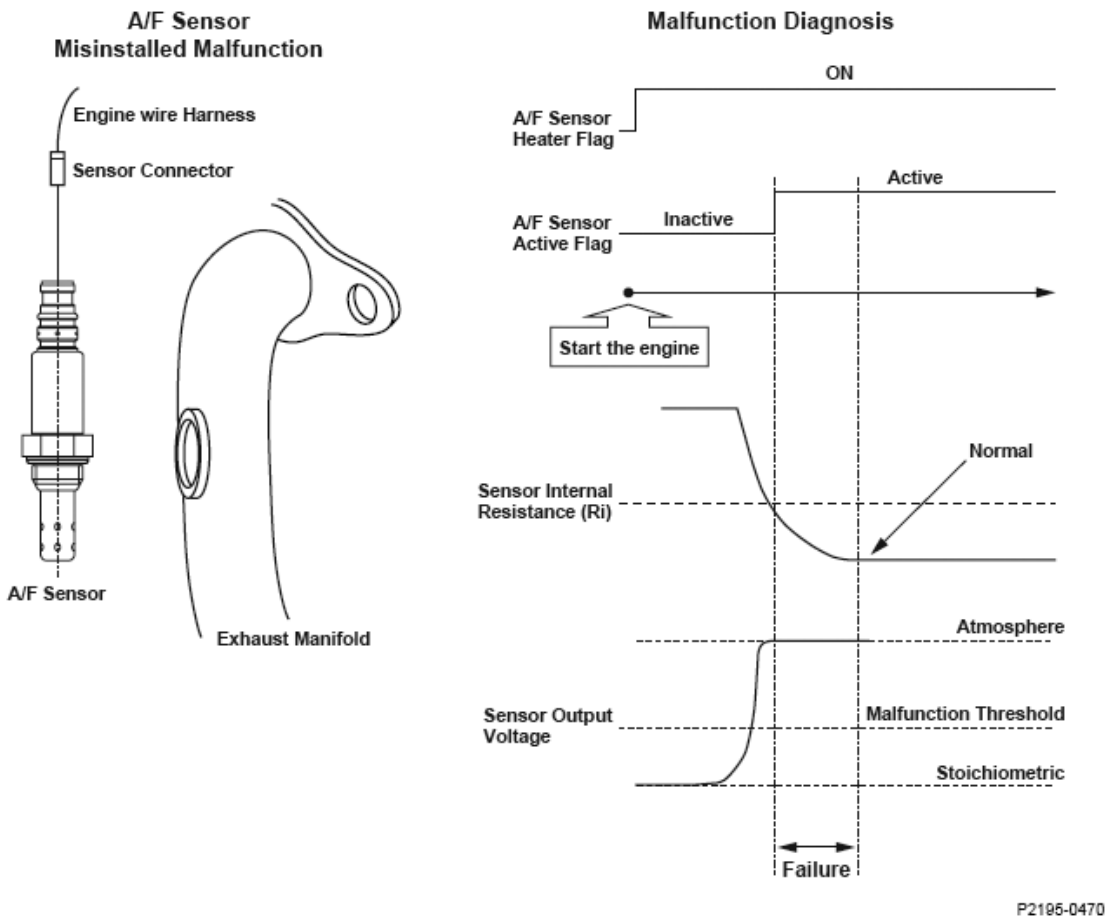


Fig. 59: Connecting Knock Sensor 1P Connector Terminal To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal C42 and body ground.

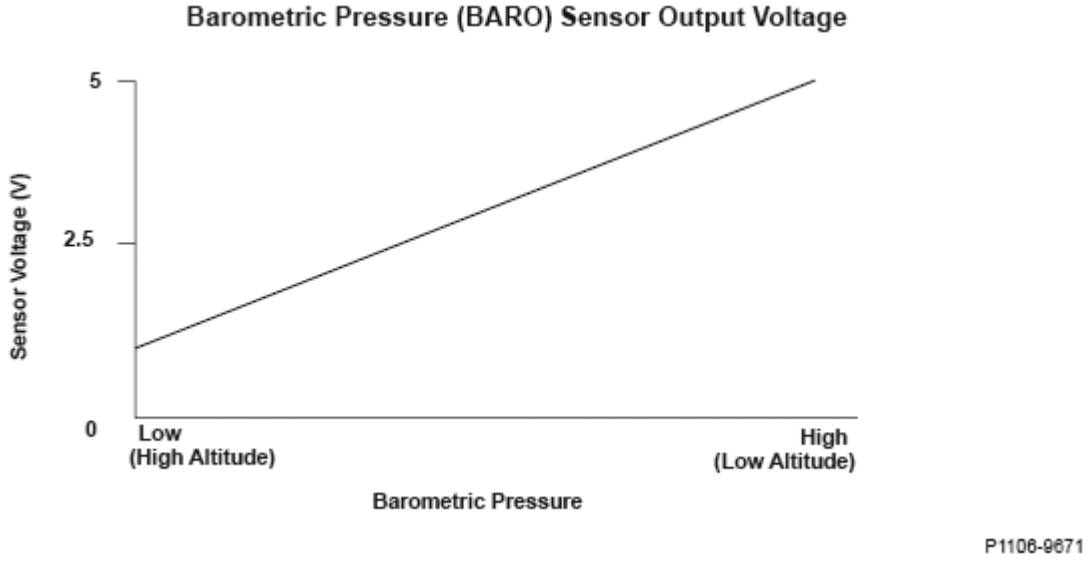


Fig. 60: Checking For Continuity Between ECM Connector Terminal C42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM (C42) and the knock sensor, then go to step 14.

13. Replace the knock sensor (see **KNOCK SENSOR REPLACEMENT**).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES - Go to step 21.

NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

21. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
22. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES - Check for poor connections or loose terminals at the knock sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 22. If the ECM was substituted, go to step 1.

NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the

original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 22. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

DTC P0335: CKP SENSOR NO SIGNAL

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the CKP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor 3P connector terminal No. 3 and body ground.

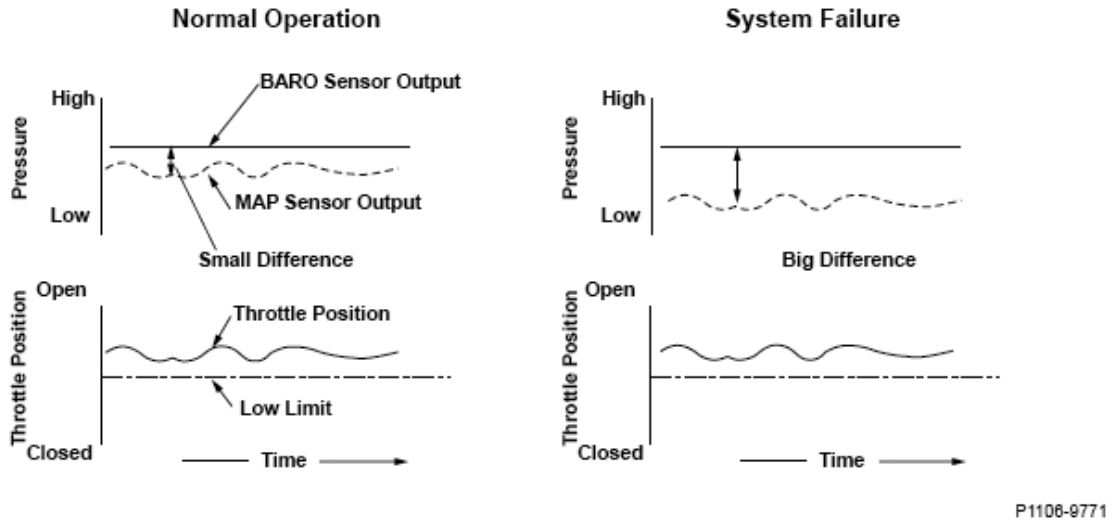


Fig. 61: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 3 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19.

9. Measure voltage between CKP sensor 3P connector terminal No. 1 and body ground.

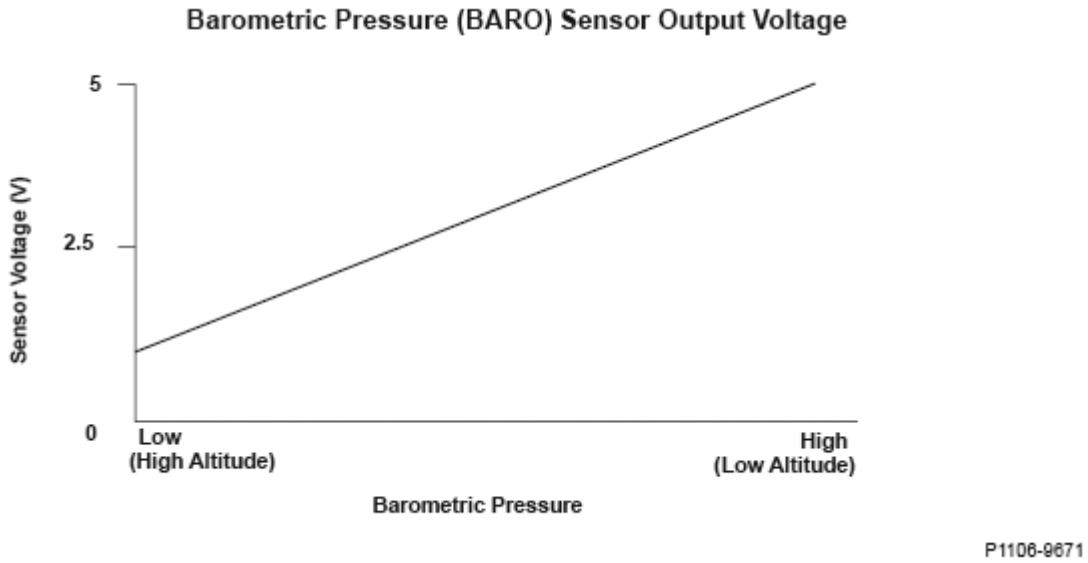


Fig. 62: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 11.

10. Measure voltage between CKP sensor 3P connector terminals No. 2 and No. 3.

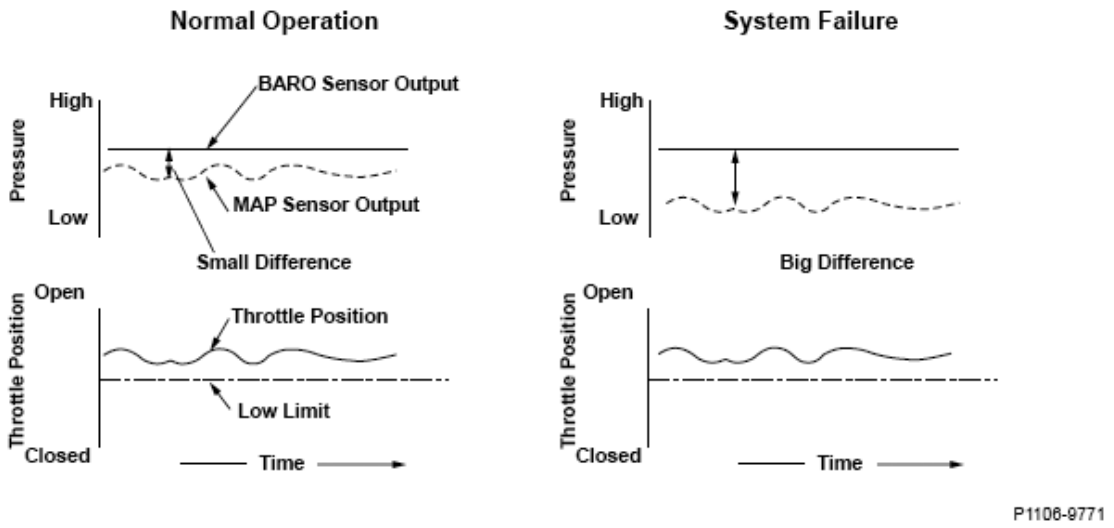


Fig. 63: Measuring Voltage Between CKP Sensor 3P Connector Terminals No. 2 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 17.

NO - Repair open in the wire between the CKP sensor and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 19.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between ECM connector terminal C32 and body ground.

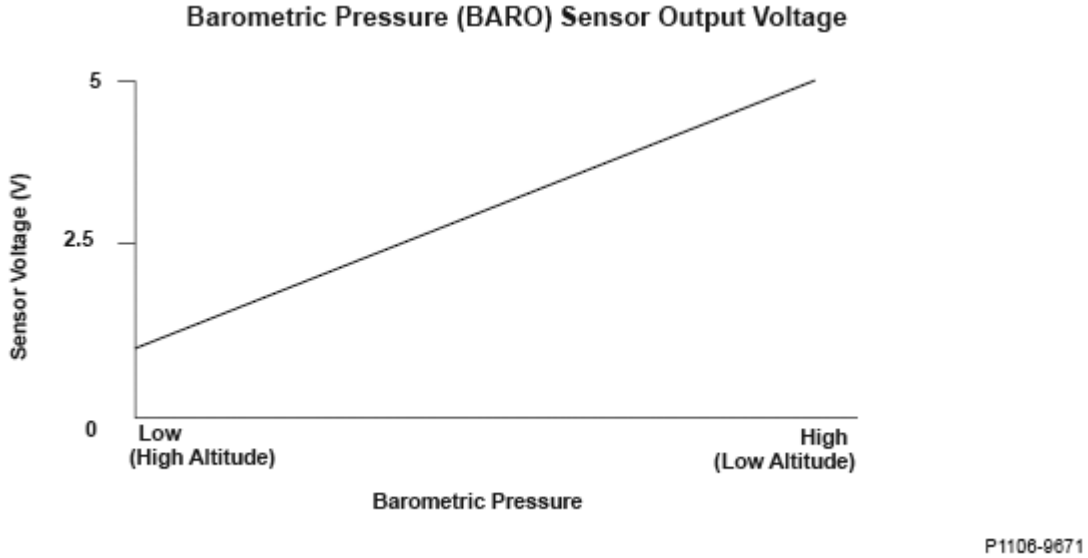


Fig. 64: Checking For Continuity Between ECM Connector Terminal C32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C32) and the CKP sensor, then go to step 19.

NO - Go to step 15.

15. Connect CKP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

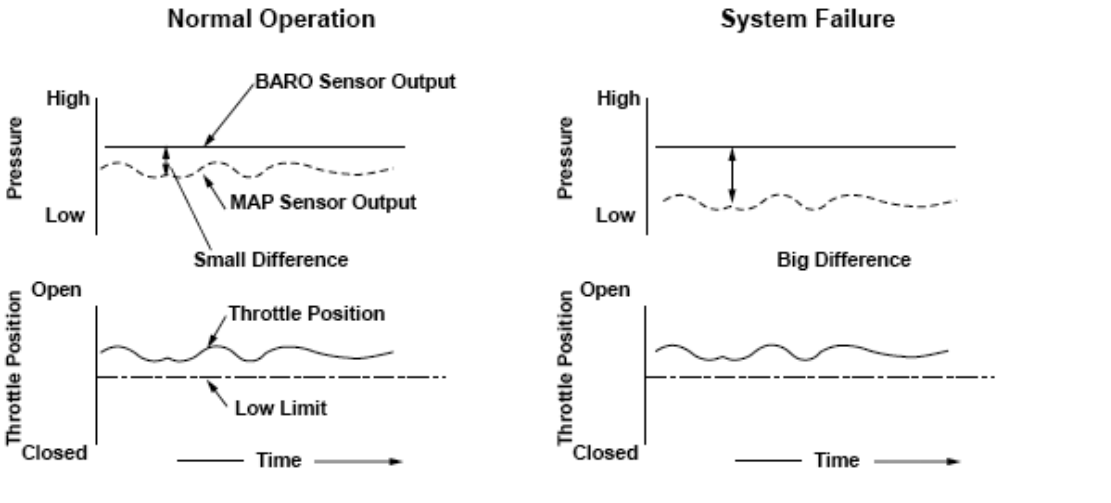


Fig. 65: Connecting CKP Sensor 3P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check for continuity between ECM connector terminal C32 and body ground.

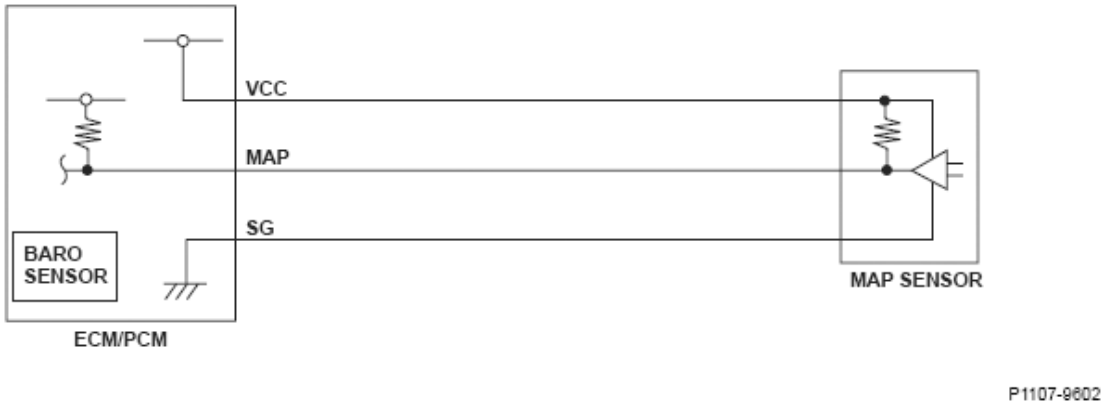


Fig. 66: Checking For Continuity Between ECM Connector Terminal C32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM (C32) and the CKP sensor, then go to step 19.

17. Turn the ignition switch OFF.
18. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**).
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the ECM with the HDS.
22. Clear the CKP pattern with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0335 indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

26. Reconnect all connectors.
27. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0335 indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0339: CKP SENSOR CIRCUIT INTERMITTENT INTERRUPTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE count in the DATA LIST with the HDS.

   Are 0 counts indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
6. Check the CKP NOISE count in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM.

7. Check for poor or loose connections and terminals at these locations:
   - CKP sensor
   - ECM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES - Go to step 8.

   NO - Repair the connectors or terminals, then go to step 11.

8. Remove the cam chain case (see step 15 in **CAM CHAIN REMOVAL**), and check for damage on the CKP sensor pulser plate.

   Is the pulser plate damaged?

   YES - Replace the CKP sensor pulser plate (see **CKP PULSE PLATE REPLACEMENT**), then go to step 11.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM with the HDS.
13. Clear the CKP pattern with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
16. Start the engine, and let it idle for 10 seconds.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0339 indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0365: CMP SENSOR B CIRCUIT NO SIGNAL

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0365 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor B 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor B 3P connector terminal No. 3 and body ground.

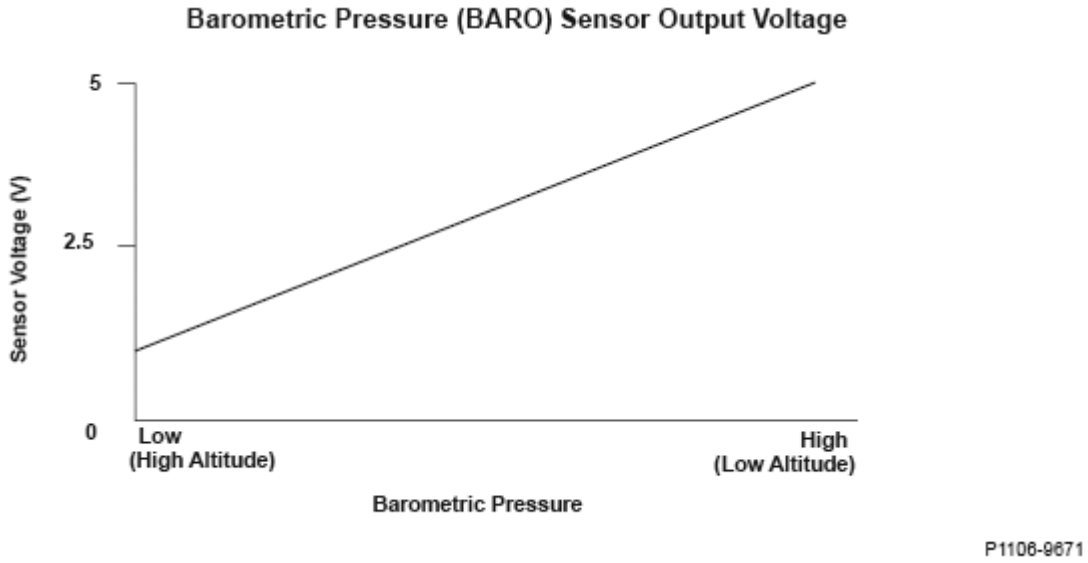


Fig. 67: Measuring Voltage Between CMP Sensor B 3P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between CMP sensor B and PGM-FI main relay 1, then go to step 18.

9. Measure voltage between CMP sensor B 3P connector terminal No. 1 and body ground.

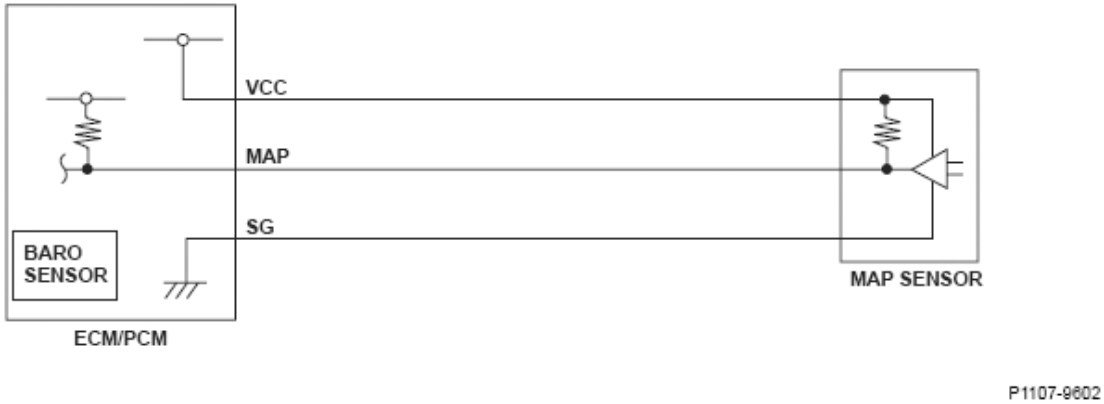


Fig. 68: Measuring Voltage Between CMP Sensor B 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

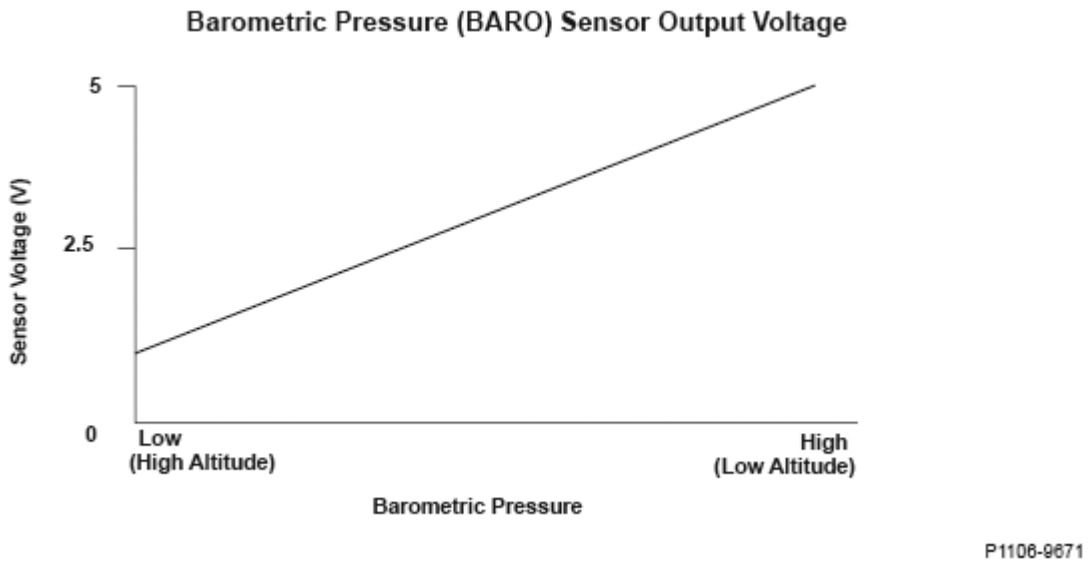


Fig. 69: Measuring Voltage Between CMP Sensor 3P Connector Terminals No. 2 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 16.

NO - Repair open in the wire between CMP sensor B and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 18.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between ECM connector terminal C31 and body ground.

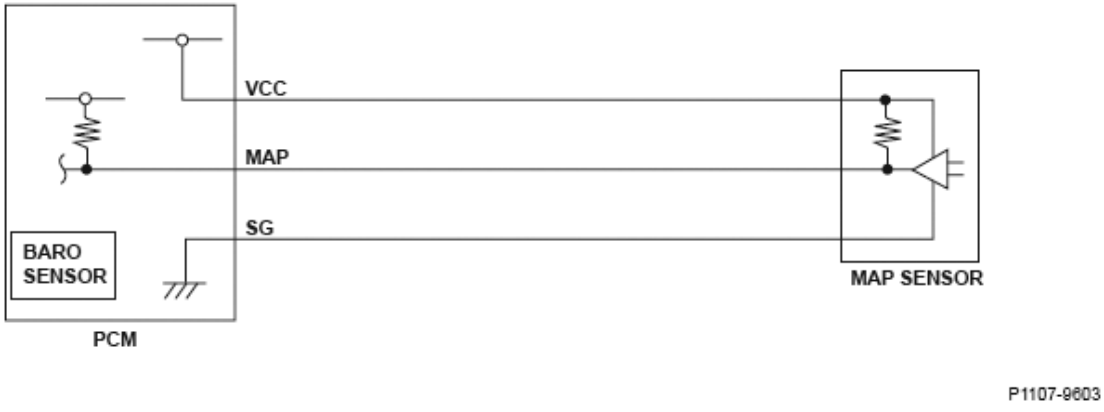


Fig. 70: Checking For Continuity Between ECM Connector Terminal C31 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C31) and CMP sensor B, then go to step 18.

NO - Go to step 15.

15. Check for continuity between CMP sensor B 3P connector terminal No. 1 and ECM connector terminal C31.

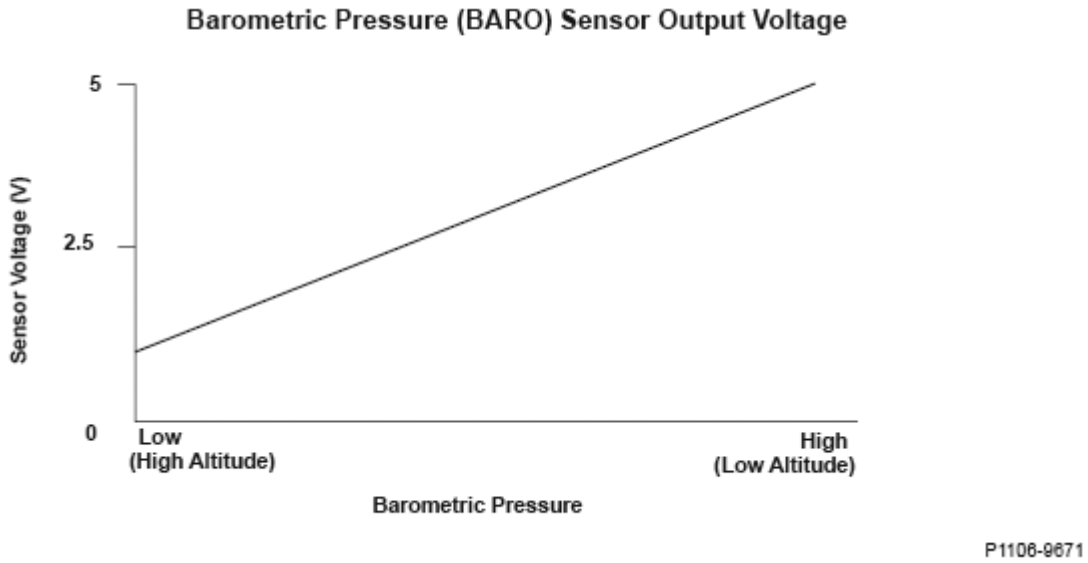


Fig. 71: Checking Continuity Between CMP Sensor B 3P Connector Terminal No. 1 And Connector Terminal C31
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the ECM (C31) and CMP sensor B, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace CMP sensor B (see **CMP SENSOR B REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0365 indicated?

YES - Check for poor connections or loose terminals at CMP sensor B and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0365 indicated?

    YES - Check for poor connections or loose terminals at CMP sensor B and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0369: CMP SENSOR B CIRCUIT INTERMITTENT INTERRUPTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP NOISE B count in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES - Go to step 7.

   NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
6. Check the CMP NOISE B count in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM.

7. Check for poor or loose connections and terminals at these locations:
   - CMP sensor B
   - ECM

- Engine ground
- Body ground

Are the connections and terminals OK?

YES - Go to step 8.

NO - Repair the connectors or terminals, then go to step 11.

8. Check for damage on the CMP sensor B pulser plate (see **CMP PULSE PLATE A REPLACEMENT**).

   Is the pulser plate damaged?

   YES - Replace the CMP sensor B pulser plate (see **CMP PULSE PLATE A REPLACEMENT**), then go to step 11.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Replace CMP sensor B (see **CMP SENSOR B REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM with the HDS.
13. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0369 indicated?

    YES - Check for poor connections or loose terminals at CMP sensor B and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050A indicated?

   YES - Go to the indicated DTC's troubleshooting.

NO - Go to step 3.

3. Check for poor connections or blockage at the air intake duct.

   Is it OK?

   YES - Go to step 4.

   NO - Reconnect or repair the air intake duct, then go to step 20.

4. Check for damage at the air cleaner housing.

   Is it OK?

   YES - Go to step 5.

   NO - Replace the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**), then go to step 20.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element or remove the debris (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 20.

   NO - Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES - Go to step 11.

    NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 20.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
12. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.
13. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 5.7-8.3 gm/s?

    YES - Go to step 14.

    NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

14. Turn the ignition switch OFF.
15. Allow the engine to cool to ambient temperature.
16. Note the ambient temperature.
17. Turn the ignition switch ON (II).
18. Note the value of IAT SENSOR quickly in the DATA LIST with the HDS.
19. Compare the value of the IAT SENSOR and the ambient temperature.

    Does the value of the IAT SENSOR differ 5.4°F (3°C) or more?

    YES - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

    NO - Check for dirt, carbon, or damage in the throttle bore. If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 20. If there is damage in the throttle bore, replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 20.

20. Turn the ignition switch ON (II).
21. Reset the ECM with the HDS.
22. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
23. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
24. Start the engine, and let it idle 10 seconds or more.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050A indicated?

    YES - Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM, then go to step 1.

    NO - Go to step 26.

26. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 23.

DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050B indicated?

   YES - Go to the indicated DTC's troubleshooting.

   NO - Go to step 3.

3. Check for poor connections or blockage at the air intake duct.

   Is it OK?

   YES - Go to step 4.

   NO - Reconnect or repair the air intake duct, then go to step 25.

4. Check for damage at the air cleaner housing.

   Is it OK?

   YES - Go to step 5.

   NO - Replace the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**), then go to step 25.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element or remove the debris (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 25.

NO - Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).

    Is the ignition timing OK?

    YES - Go to step 12.

    NO - Go to step 11.

11. Check for damage at the CKP sensor (see **CKP SENSOR REPLACEMENT**) and the CKP sensor pulser plate (see **CKP PULSE PLATE REPLACEMENT**).

    Is the CKP sensor and/or the CKP sensor pulser plate damaged?

    YES - Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**) and/or the CKP sensor pulser plate (see **CKP PULSE PLATE REPLACEMENT**), then go to step 6.

    NO - Go to step 31.

12. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES - Go to step 13.

    NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 25.

13. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
14. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.
15. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 5.7-8.3 gm/s?

YES - Go to step 16.

NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 25.

16. Turn the ignition switch OFF.
17. Drain the coolant (see **COOLANT REPLACEMENT**).
18. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), and ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
19. Allow the sensors to cool to ambient temperature.
20. Note the ambient temperature.
21. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.
22. Turn the ignition switch ON (II).
23. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
24. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does either sensor differ more than 5.4°F (3°C) from the ambient temperature?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the ambient temperature, then go to step 25.

    NO - Check and repair any problems with the following items, then go to step 25.

    - Engine compression and cylinder leakdown
    - VTEC system
    - Engine oil
    - A/C system
    - Power steering
25. Turn the ignition switch ON (II).
26. Reset the ECM with the HDS.
27. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
28. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
29. Start the engine, and let it idle 10 seconds or more.
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1.

    NO - Go to step 31.

31. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 28.

32. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
33. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
34. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
35. Start the engine, and let it idle 10 seconds or more.
36. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 34. If the ECM was substituted, go to step 1.

    NO - Go to step 37.

37. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 36, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 34. If the ECM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 34.

DTC P0562: CHARGING SYSTEM LOW VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If any high current load accessories are installed, this DTC can beset.**

- **If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/Con
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0562 indicated?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see **BATTERY TEST**).

7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Start the engine.
11. Check under these conditions:
    - A/Con
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
12. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0562 indicated?

    YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the

indicated DTC's troubleshooting.

DTC P0563: ECM POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0563 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Measure voltage between ECM connector terminal A6 and body ground.

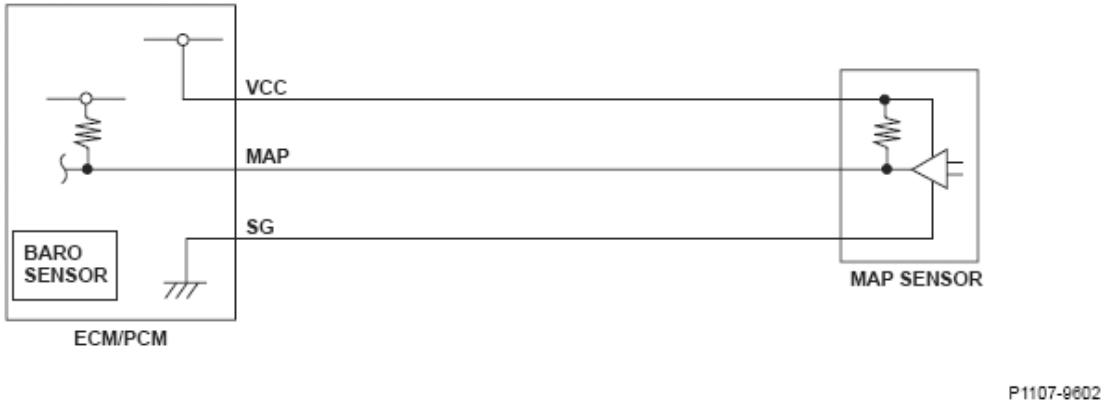


Fig. 72: Measuring Voltage Between ECM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO - Go to step 11.

11. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

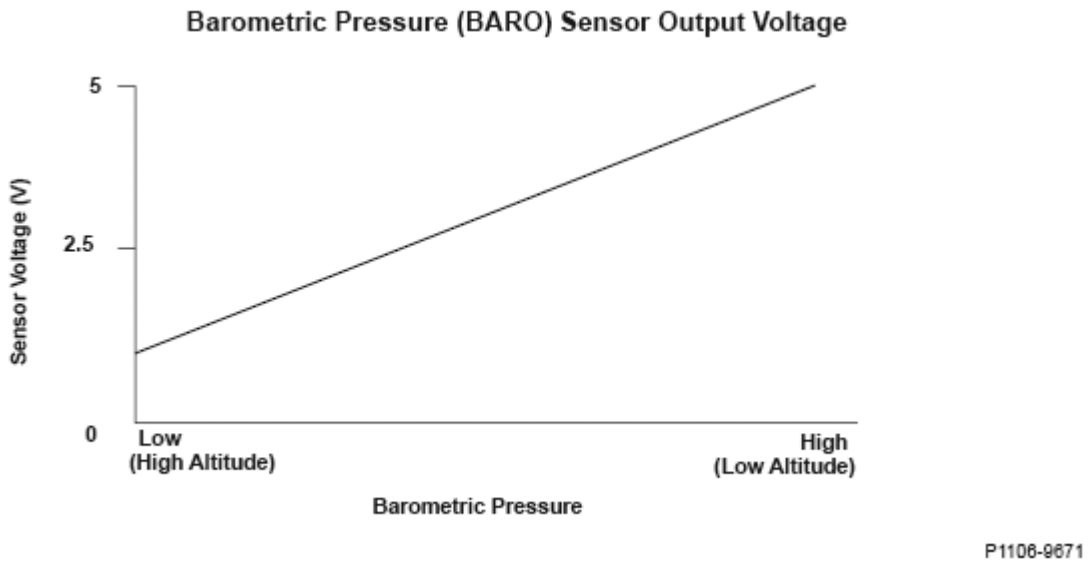


Fig. 73: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM connector terminal A6 and body ground.

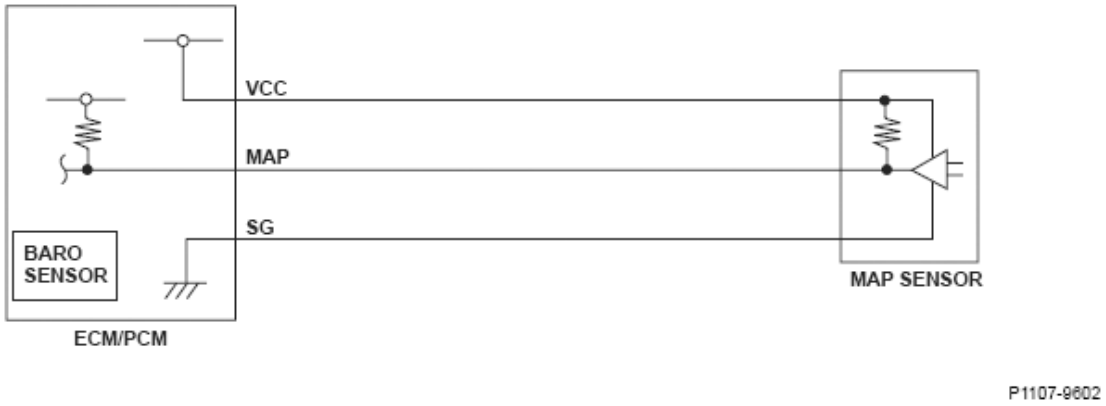


Fig. 74: Checking Continuity Between ECM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A6) and PGM-FI main relay 1, then go to step 16.

NO - Go to step 15.

13. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

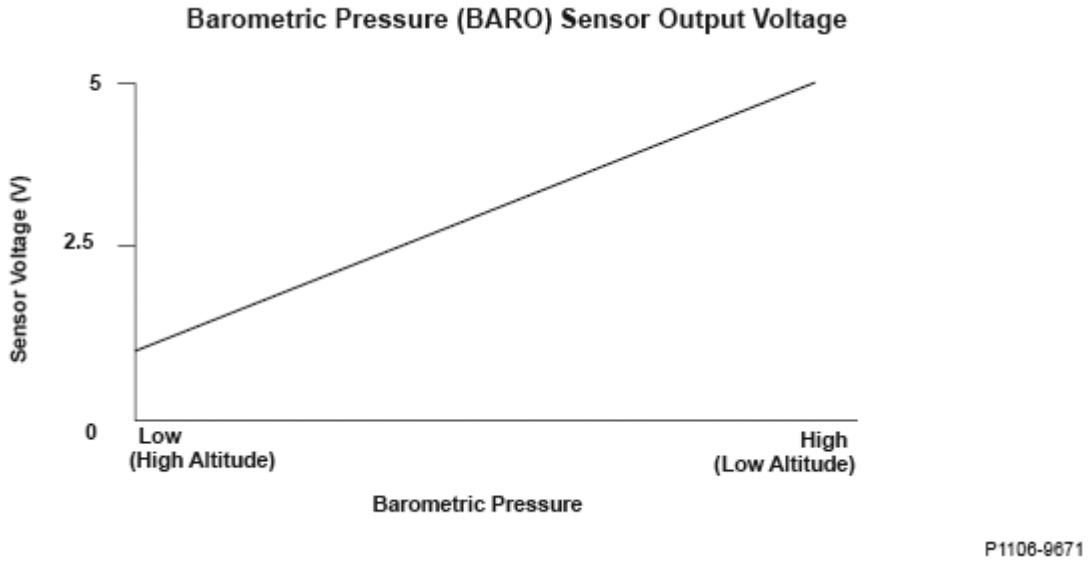


Fig. 75: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Measure voltage between ECM connector terminal A8 and body ground.

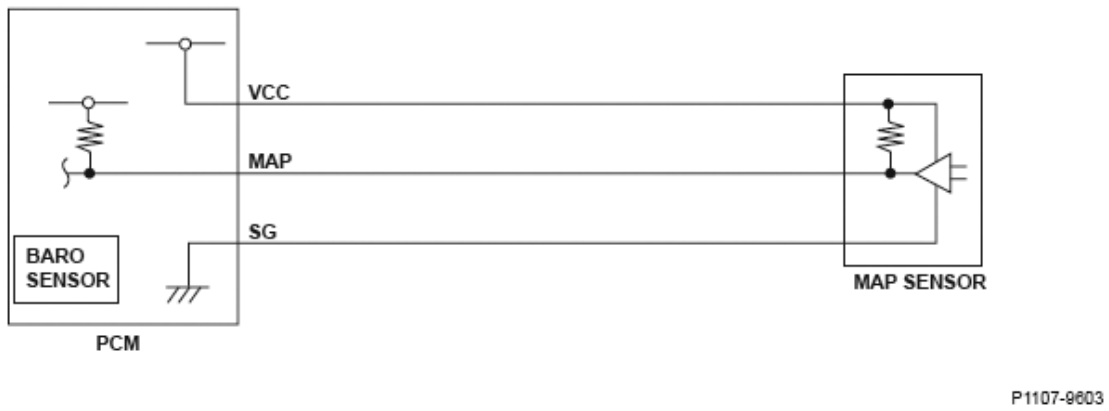


Fig. 76: Measuring Voltage Between ECM Connector Terminal A8 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM (A8) and PGM-FI main relay 1, then go to step 16.

NO - Go to step 15.

15. Test PGM-FI main relay 1 (see **POWER RELAY TEST**).

Is PGM-FI main relay 1 OK?

YES - Go to step 23.

NO - Replace PGM-FI main relay 1, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Reset the ECM with the HDS.
19. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
20. Turn the ignition switch OFF.
21. Wait 10 seconds.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0563 indicated?

    YES - Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0563 indicated?

    YES - Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0602: ECM PROGRAMMING ERROR

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This DTC is indicated when a ECM update is not completed.**
- **Do not turn the ignition switch OFF while updating the ECM. If you turn the ignition switch OFF before completion, the ECM can be damaged.**

1. Do the ECM update procedure (see **UPDATING THE ECM**).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0602 indicated?

   YES - Replace the original ECM (see **ECM REPLACEMENT**).

NO - Update is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0603: ECM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 indicated?

   YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0606: ECM PROCESSOR MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Wait 40 seconds.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0606 indicated?

   YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time.

7. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
8. Turn the ignition switch OFF.
9. Turn the ignition switch ON (II).
10. Wait 40 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0606 indicated?

    YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 8. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0630: VIN NOT PROGRAMMED OR MISMATCH

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This DTC is stored only when the ECM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.**

1. Turn the ignition switch ON (II).
2. Check the VIN with the HDS.

   Does the HDS show the vehicle's VIN?

   YES - Go to step 5.

   NO - Go to step 3.

3. Input the VIN to the ECM with the HDS.

   Does the screen show COMPLETE?

   YES - Go to step 5.

   NO - Go to step 4.

4. Check for DTCs with the HDS.

   Is DTC P0603 indicated?

YES - Go to the **DTC P0603 troubleshooting**.

NO - Go to step 9.

5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait for 5 seconds.
8. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time.

9. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0630 indicated?

YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0685: ECM POWER CONTROL CIRCUIT/INTERNAL CIRCUIT MALFUNCTION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the problem doesn't return after you clear the DTC, or it this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the ECM.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, then let it idle for 30 seconds.
4. Turn the ignition switch OFF.
5. Start the engine, then let it idle for 30 seconds.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0685 indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time.

9. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
10. Start the engine, then let it idle for 30 seconds.
11. Turn the ignition switch OFF.
12. Start the engine, then let it idle for 30 seconds.
13. Turn the ignition switch OFF.
14. Turn the ignition switch ON (II).
15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0685 indicated?

YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 10. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several minutes.
3. Check the C SHAFT SPD in the DATA LIST with the HDS.

Is any vehicle speed indicated?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM.

NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the output shaft (countershaft) speed sensor 3P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 1 and body ground.

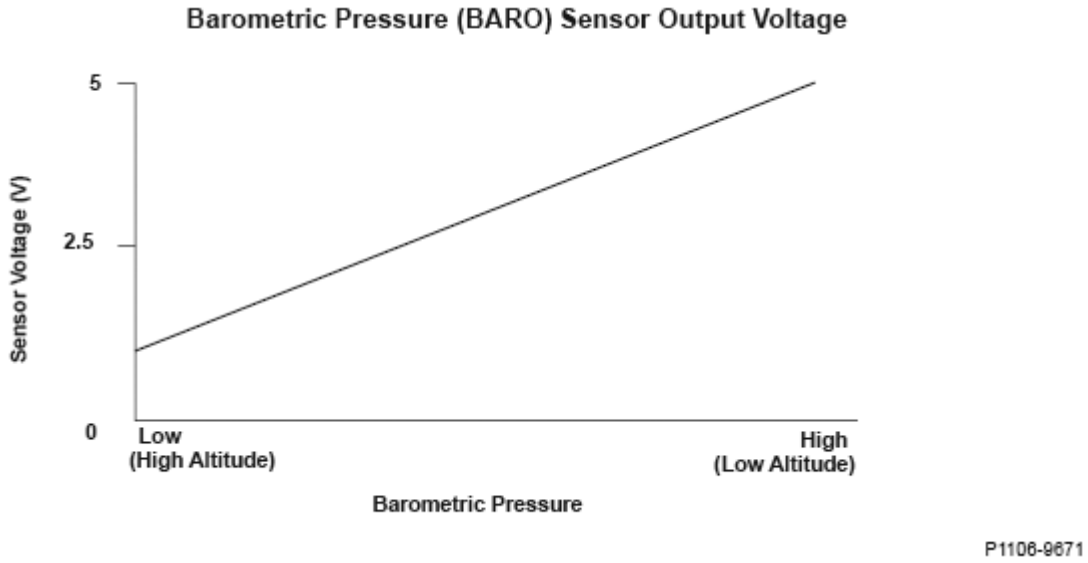


Fig. 77: Measuring Voltage Between Output Shaft Speed Sensor 3P Connector Terminal No. 1And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 8.

NO - Repair open in the wire between the ECM (B18) and the output shaft (countershaft) speed sensor, then go to step 18.

8. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 2 and body ground.

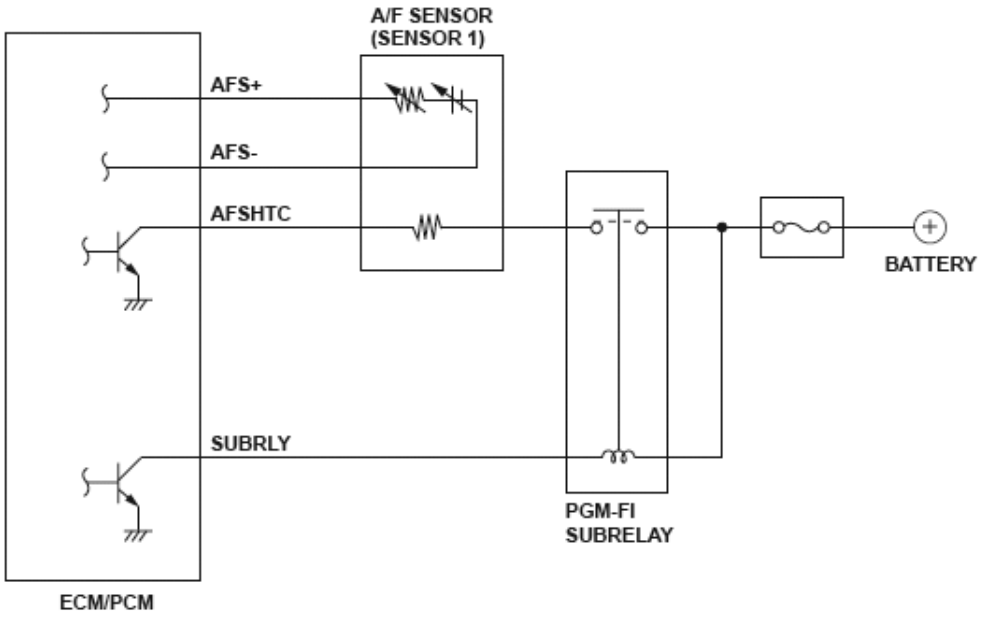


Fig. 78: Measuring Voltage Between Output Shaft Speed Sensor 3P Connector Terminal No. 2

And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 9.

NO - Go to step 10.

9. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminals No. 1 and No. 3.

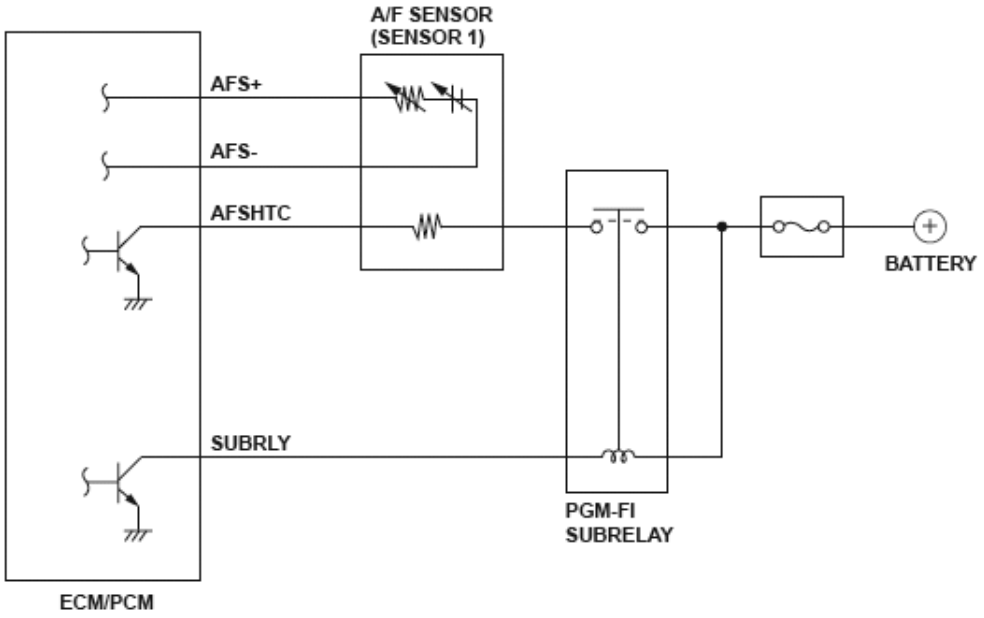


Fig. 79: Measuring Voltage Between Output Shaft Speed Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step l6.

NO - Repair open in the wire between the ECM (B33) and the output shaft (countershaft) speed sensor, then go to step 18.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between ECM connector terminal C43 and body ground.

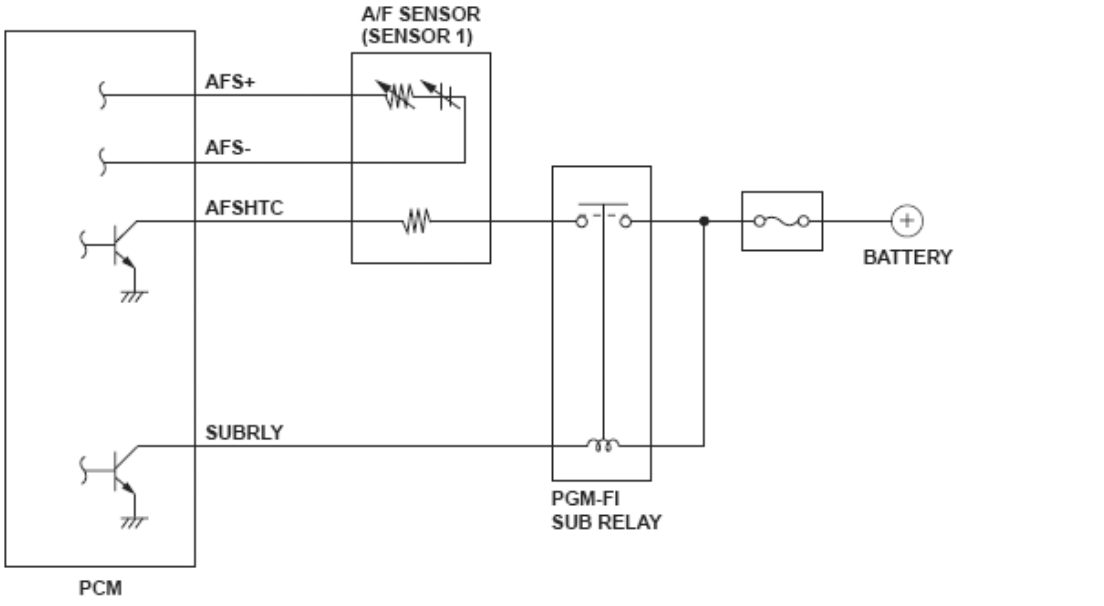


Fig. 80: Checking Continuity Between ECM Connector Terminal C43 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

NO - Go to step 14.

14. Connect output shaft (countershaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

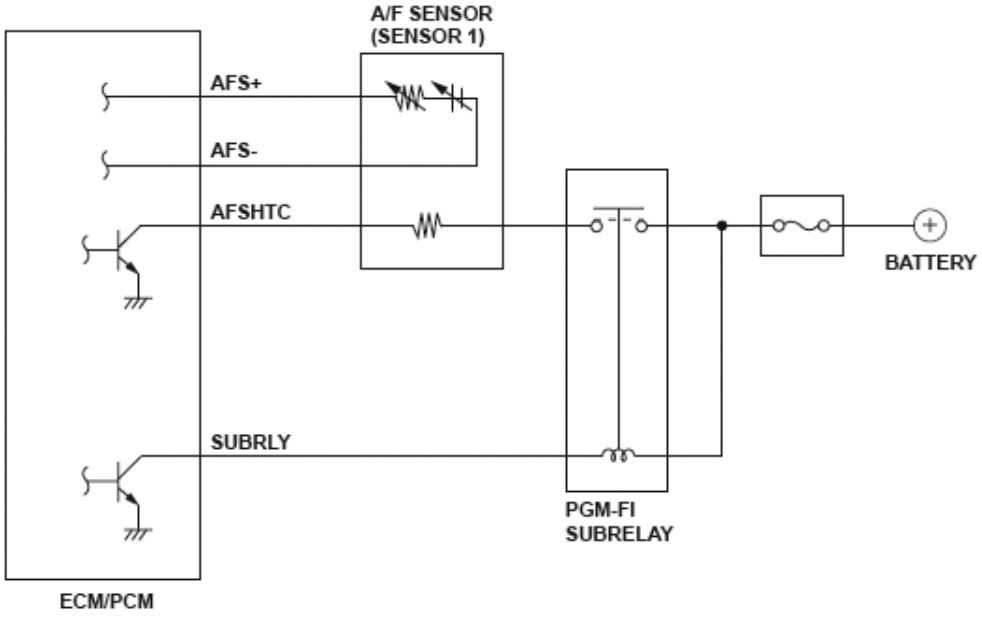


Fig. 81: Connecting Output Shaft Speed Sensor 3P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between ECM connector terminal C43 and body ground.

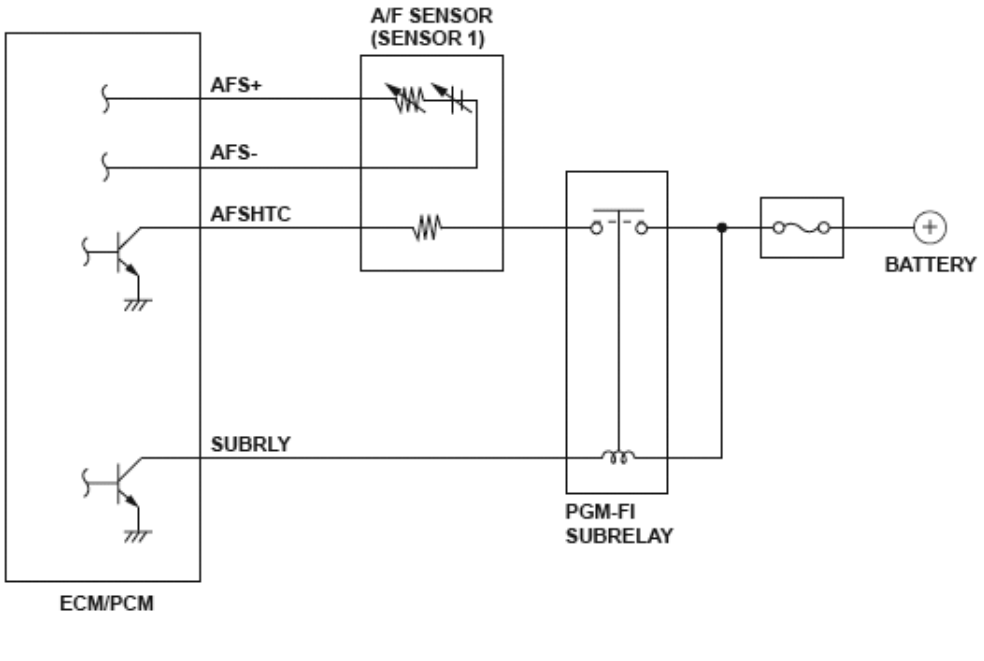


Fig. 82: Checking For Continuity Between ECM Connector Terminal C43 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the output shaft (countershaft) speed sensor (see **KNOCK SENSOR REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - Transmission in 5th gear
    - Engine speed between 2,000-3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0720 indicated?

YES - Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1.

NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
27. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - Transmission in 5th gear
    - Engine speed between 2,000-3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0720 indicated?

    YES - Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 27. If the ECM was substituted, go to step 1.

    NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P1109: BARO SENSOR CIRCUIT OUT OF RANGE HIGH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Reset the ECM with the HDS.
2. Start the engine.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.**

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).
3. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES - Go to step 15.

NO - Go to step 4.

4. Start the engine, and let it idle 10 minutes.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 117°F (47°C) or less indicated?

YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 27.

NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Drain the coolant (see **COOLANT REPLACEMENT**).
8. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
9. Allow ECT sensor 1 to cool to ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 1 to the 2P connector, but do not install sensor on the engine.
12. Turn the ignition switch ON (II).
13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 1 and the ambient temperature.

Does the value of ECT SENSOR 1 differ 5.4°F (3°C) or more?

YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 27.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM.

15. Start the engine, and let it idle 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 117°F (47°C) or less indicated?

YES - Replace ECT sensor (see **ECT SENSOR 1 REPLACEMENT**), then go to step 27.

NO - Go to step 17.

17. Let the engine idle 10 minutes.
18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 140°F (60°C) or less indicated?

YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Drain the coolant (see **COOLANT REPLACEMENT**).
21. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**) and the ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 to the 2P connector, and ECT sensor 2 to the 2P connector, but do not install them on the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 5.4°F (3°C) from the ambient temperature?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the ambient temperature, then go to step 27.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM.

27. Turn the ignition switch ON (II).
28. Reset the ECM with the HDS.
29. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1116 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1128: MAP SENSOR SIGNAL LOWER THAN EXPECTED

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Before starting this troubleshooting check for poor connections or blockage at the air intake duct.**

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is less than 54.1 kPa (16.0 in.Hg, 406 mmHg) or 1.61 V held for more than 5 seconds?

YES - Go to step 7.

NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Engine speed between 1,200-5,400 rpm
   - Transmission in 3rd gear
   - Vehicle speed accelerated from 16-31 mph (25-50 km/h) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 7.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM with the HDS.
11. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Engine speed between 1,200-5,400 rpm
    - Transmission in 3rd gear
    - Vehicle speed accelerated from 16-31 mph (25-50 km/h) under half throttle
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1128 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1.

    NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1129: MAP SENSOR SIGNAL HIGHER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for vacuum leaks in these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - Brake booster hose

   Are there any vacuum leaks?

   YES - Repair or replace parts with vacuum leaks, then go to step 9.

   NO - Go to step 2.

2. Start the engine. Hold the engine speed at 3.000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is more than 36.9 kPa (11.0 in.Hg, 277 mmHg) or 1.1 V held for more than for 5 seconds?

   YES - Go to step 7.

   NO - Go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in 5th gear
   - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds
   - During the drive, decelerate (with throttle fully closed) for at least 2 seconds
6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

YES - Go to step 7.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM with the HDS.
11. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 5th gear
    - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds
    - During the drive, decelerate (with throttle fully closed) for at least 2 seconds
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1129 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1.

    NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1157: A/F SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait 1 minute.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1157 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM connector C (44P).
9. Connect A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

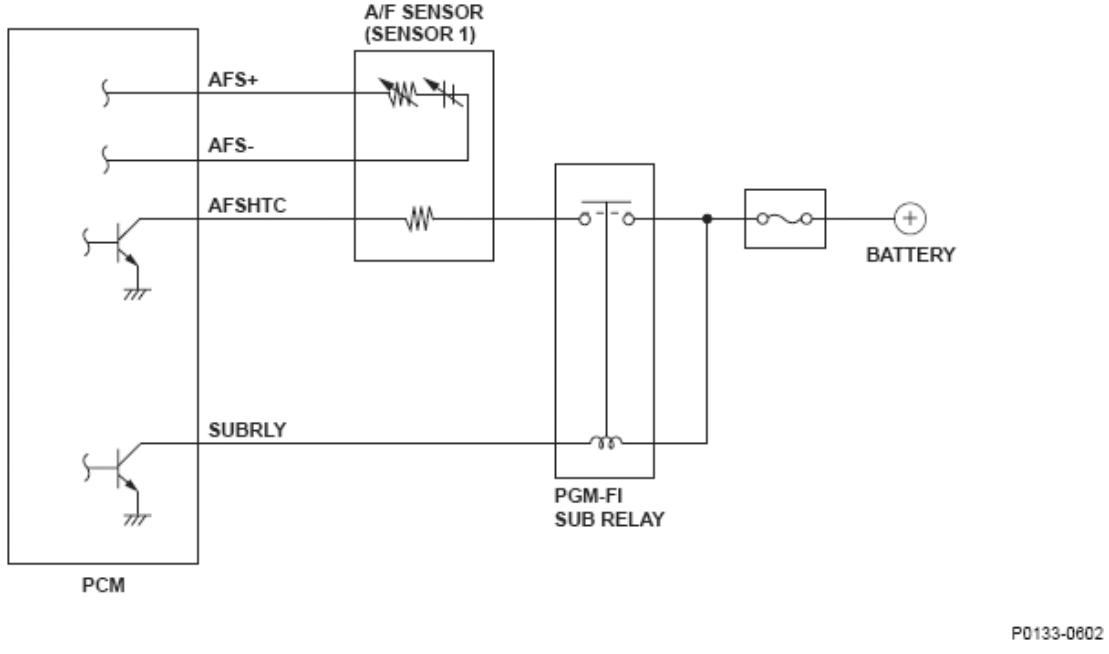


Fig. 83: Connecting A/F Sensor 4P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check for continuity between ECM connector terminals C29 and C30.

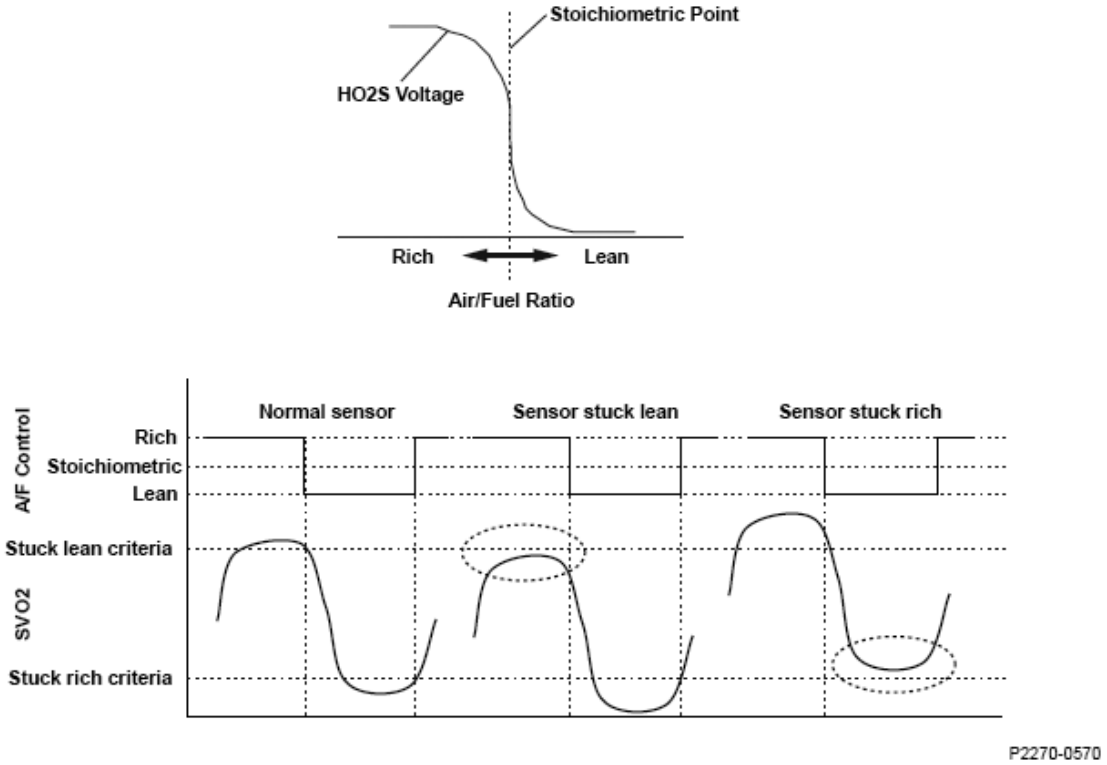


Fig. 84: Checking For Continuity Between ECM Connector Terminals C29 And C30
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Go to step 11.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 4P connector.
12. Connect A/F sensor (Sensor 1) 4P connector terminal No. 2 to body ground with a jumper wire.

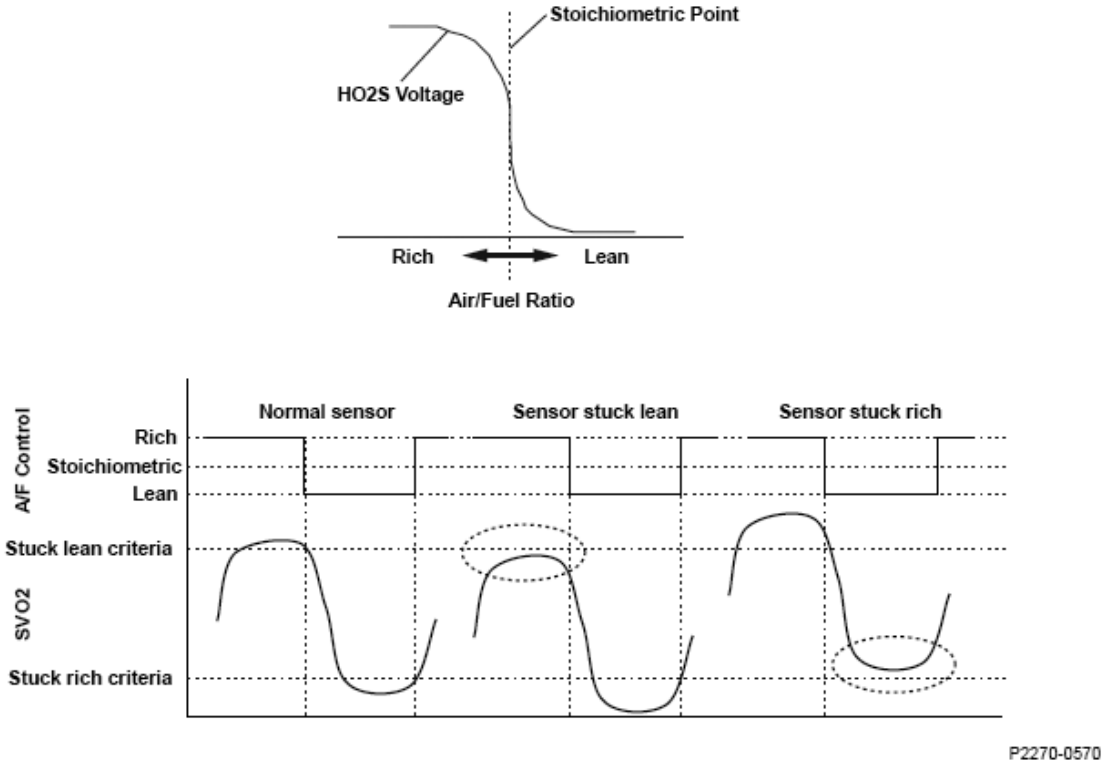


Fig. 85: Connecting A/F Sensor 4P Connector Terminal No. 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check for continuity between ECM connector terminal C29 and body ground.

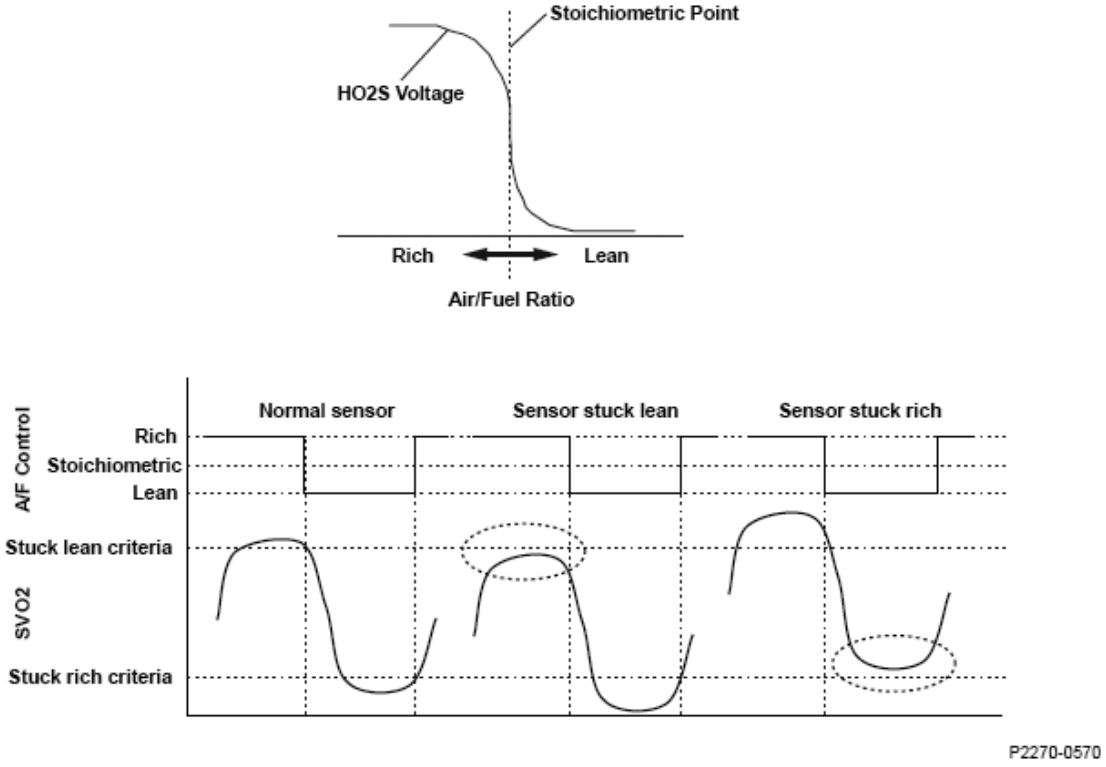


Fig. 86: Checking For Continuity Between ECM Connector Terminal C29 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair open in the wire between the ECM (C30) and the A/F sensor (Sensor 1), then go to step 15.

NO - Repair open in the wire between the ECM (C29) and the A/F sensor (Sensor 1), then go to step 15.

14. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the ECM with the HDS.
18. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1157 indicated?

YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the connector and terminal fits are OK, go to step 21.

NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
22. Start the engine, and let it idle.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1157 indicated?

YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 22. If the ECM was substituted, go to step 1.

NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, go to step 1. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 22. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1172: A/F SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 5.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1172 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1.

    NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC P1297: ELD CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between ECM connector terminal A23 and body ground.

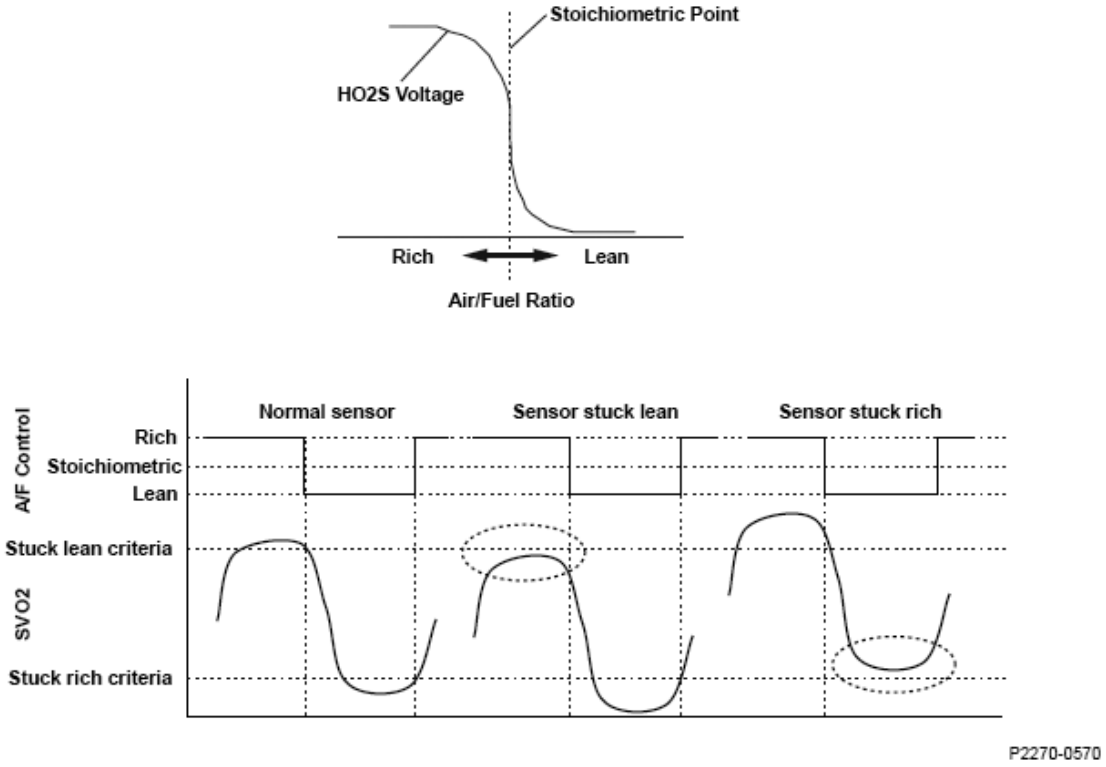


Fig. 87: Checking Continuity Between ECM Connector Terminal A23 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A23) and the ELD, then go to step 13.

NO - Go to step 20.

11. Turn the ignition switch OFF.
12. Replace the ELD (see **ELD REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Start the engine.
18. Turn on the headlights.
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1297 indicated?

YES - Check for poor connections or loose terminals at the ELD and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

20. Reconnect all connectors.
21. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
22. Start the engine.
23. Turn on the headlights.
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES - Check for poor connections or loose terminals at the ELD and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 22. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1298: ELD CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2 A or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

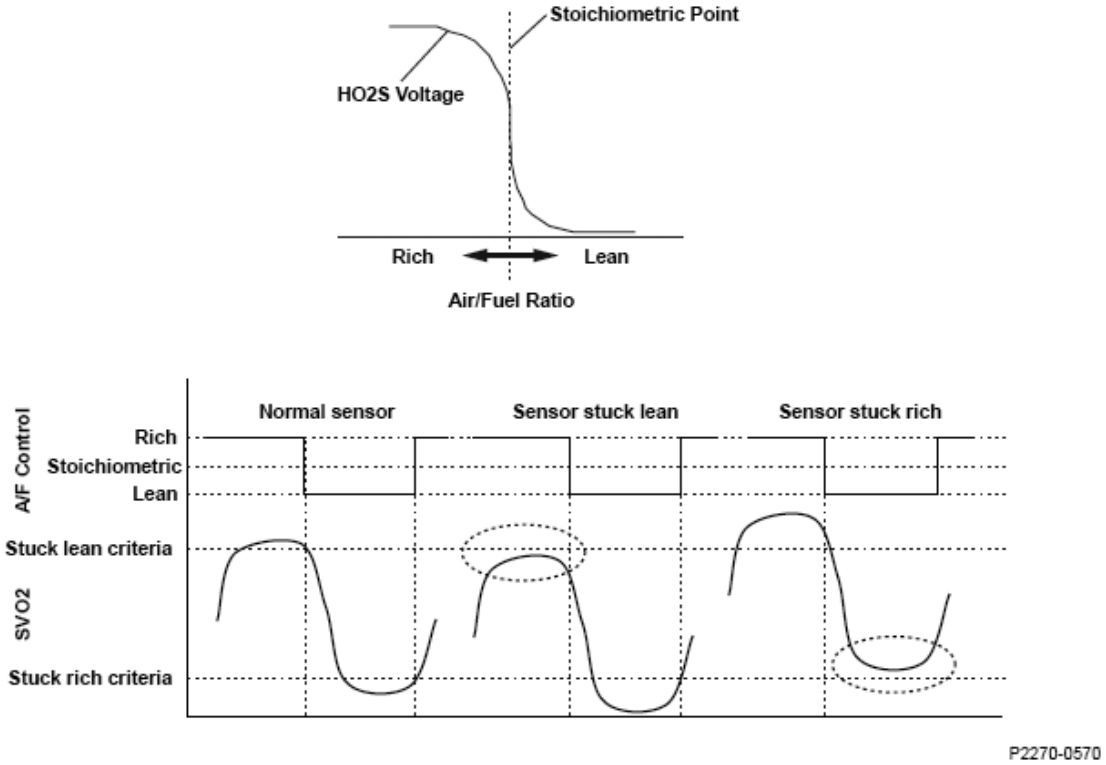


Fig. 88: Measuring Voltage Between ELD 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 7.

NO - Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the ELD, then go to step 12.

7. Jump the SCS line with the HDS.
8. Disconnect ECM connector A (44P).
9. Check for continuity between ELD 3P connector terminal No. 3 and ECM connector terminal A23.

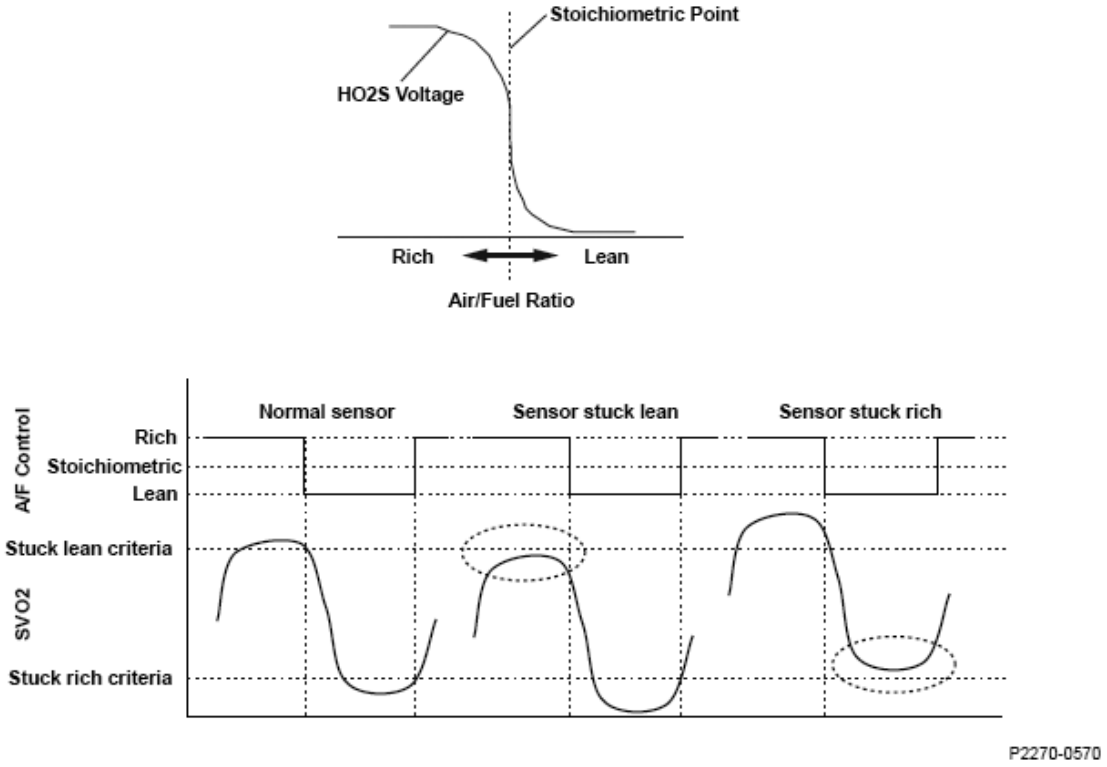


Fig. 89: Checking Continuity Between ELD 3P Connector Terminal No. 3 And ECM Connector Terminal A23
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the ECM (A23) and the ELD, then go to step 12.

10. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

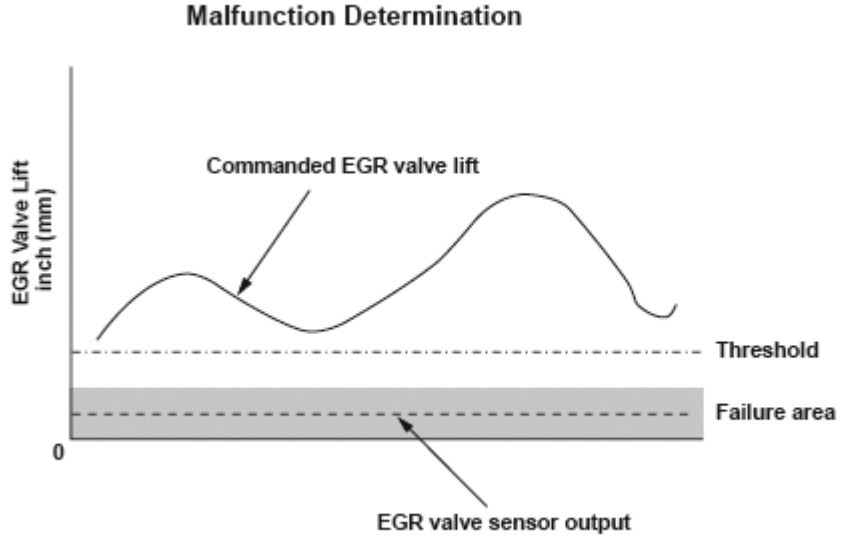


Fig. 90: Checking For Continuity Between ELD 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the ELD and G301 (see **CONNECTOR TO HARNESS INDEX**), then go to step 12.

11. Replace the ELD (see **ELD REPLACEMENT**).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the ECM with the HDS.
15. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1298 indicated?

    YES - Go to step 17.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

17. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1298 indicated?

    YES - Check for poor connections or loose terminals at the ELD and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1549: CHARGING SYSTEM HIGH VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If a high voltage battery (24 V, etc.) connected to the vehicle, this DTC can be stored.**

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C off
   - Headlights off
   - Rear window defogger off
5. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1549 indicated?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box.

7. Turn the ignition switch ON (II).
8. Reset the ECM with the HDS.
9. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
10. Start the engine.
11. Check under these conditions:
    - A/C off
    - Headlights off
    - Rear window defogger off
12. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1549 indicated?

    YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Start the engine.

4. Check under these conditions:
   - A/Con
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BB indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see **BATTERY TEST**).

7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

   Are the connections and terminals OK?

   YES - Go to step 8.

   NO - Repair the connectors or terminals, then go to step 9.

8. Check for an open in the wire between the alternator and under-hood fuse/relay box at the starter subharness.

   Is the harness OK?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 9.

   NO - Repair open in the wire between the alternator and the under-hood fuse/relay box, then go to step 9.

9. Turn the ignition switch ON (II).
10. Reset the ECM with the HDS.
11. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
12. Start the engine.
13. Check under these conditions:
    - A/Con
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on

- Headlights on high beam

14. Hold the engine speed at 2,000 rpm (in neutral) for 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BB indicated?

    YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for poor connections or loose terminals at the alternator 4P connector.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connector or terminals, then go to step 18.

2. Check the alternator mounting surface for corrosion.

   Is the mounting surface corroded?

   YES - Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**). Clean all mounting surfaces, reinstall the alternator, then go to step 18.

   NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Start the engine.
6. Check under these conditions:
   - A/Con
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
7. Hold the engine speed 2,000 rpm (in neutral) for 1 minute.
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator.

9. Turn the ignition switch OFF.
10. Disconnect the alternator 4P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between alternator 4P connector terminal No. 1 and body ground.

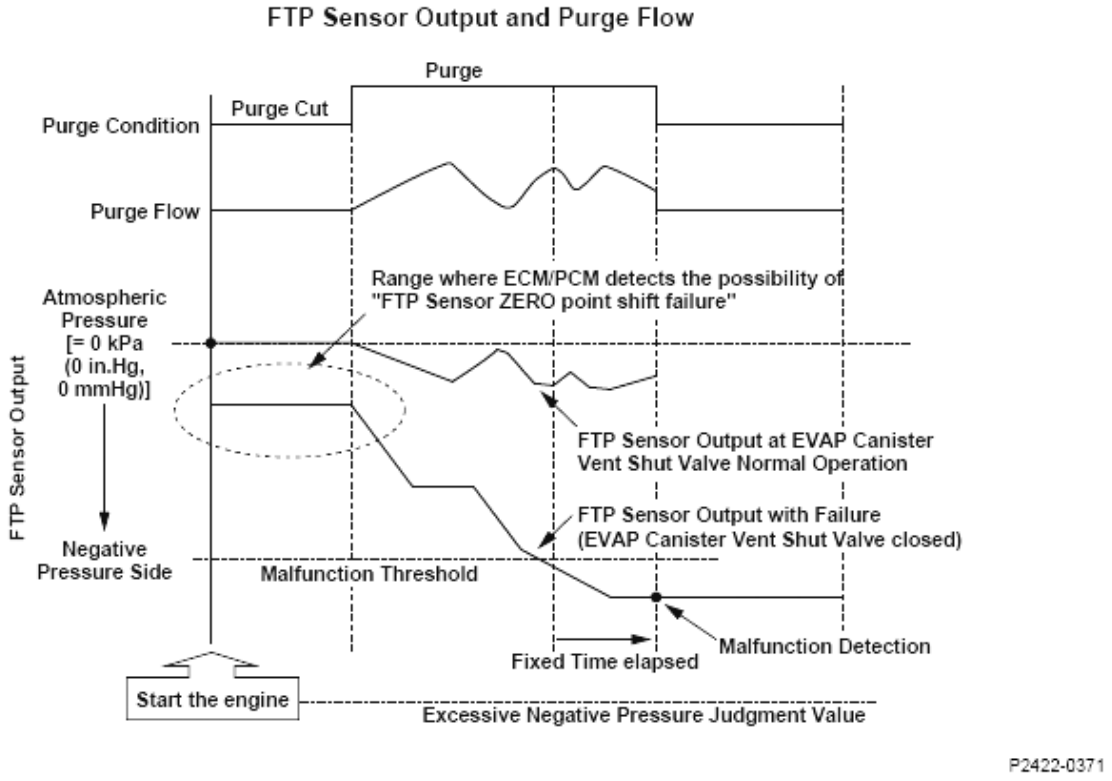


Fig. 91: Measuring Voltage Between Alternator 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO - Repair open in the wire between the alternator (IG1 line) and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 18.

13. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

Malfunction Judgment Flowchart of FTP Sensor and EVAP Canister Vent Shut Valve

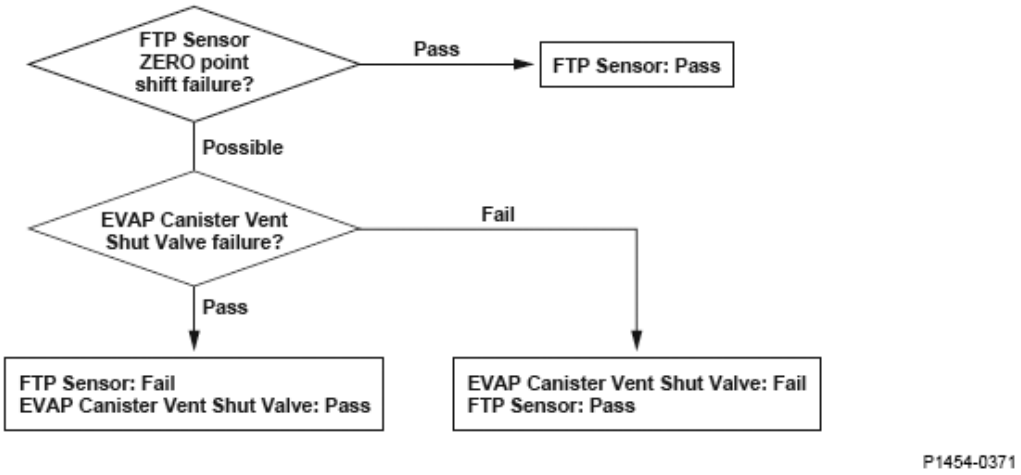


Fig. 92: Measuring Voltage Between Alternator 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 18.

NO - Go to step 14.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM connector B (44P).
17. Check for continuity between alternator 4P connector terminal No. 4 and ECM connector terminal B43.

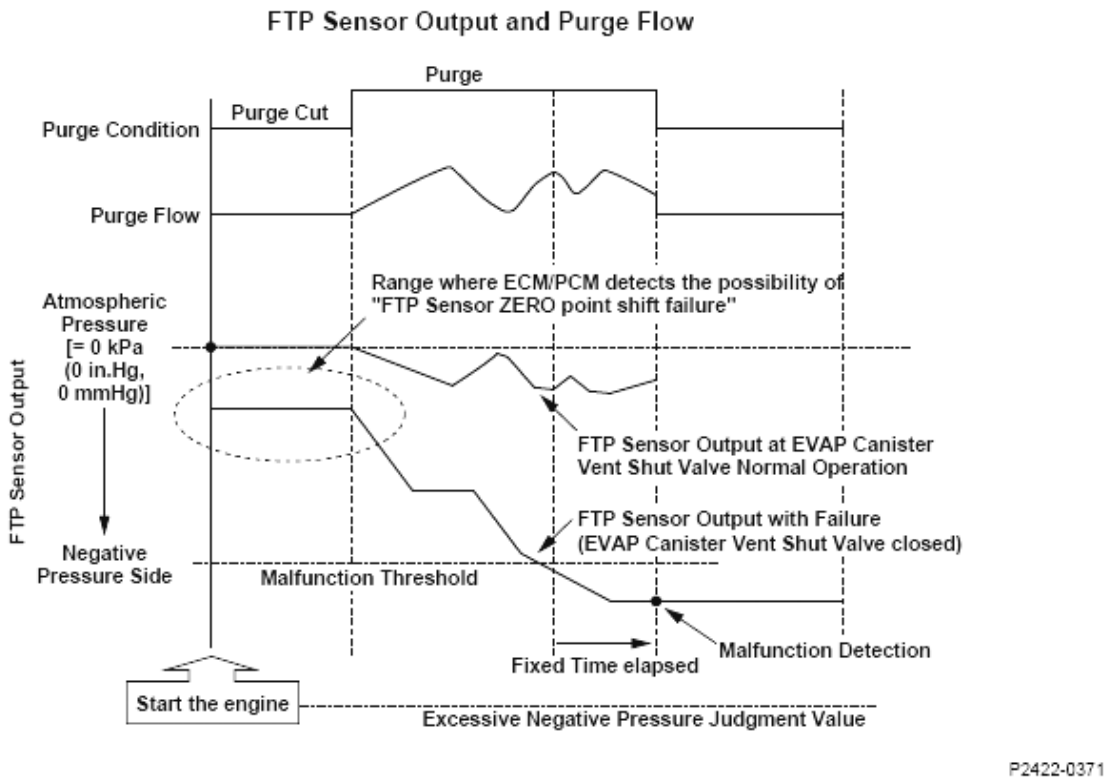


Fig. 93: Checking For Continuity Between Alternator 4P Connector Terminal No. 4 And ECM Connector Terminal B43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (B43) and the alternator, then go to step 18.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the ECM with the HDS.
22. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
23. Start the engine.
24. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
25. Hold the engine speed 2,000 rpm (in neutral) for 1 minute.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES - Check for poor connections or loose terminals at the alternator and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Start the engine.
30. Check under these conditions:
    - A/Con
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
31. Hold the engine speed 2,000 rpm (in neutral) for 1 minute.
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES - Check for poor connections or loose terminals at the alternator and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 29. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2183: ECT SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.**

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES - Go to step 15.

   NO - Go to step 4.

4. Start the engine, and let it idle 10 minutes.
5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 140°F (60°C) indicated?

   YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

   NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Drain the coolant (see **COOLANT REPLACEMENT**).
8. Remove ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
9. Allow ECT sensor 2 to cool to ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 2 to its 2P connector, but do not install it on the engine.
12. Turn the ignition switch ON (II).
13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 2 and the ambient temperature.

    Does ECT SENSOR 2 differ 5.4°F (3°C) or more?

    YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM.

15. Start the engine, and let it idle 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 117°F (47°C) or less indicated?

    YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 27.

    NO - Go to step 17.

17. Let the engine idle 10 minutes.
18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 140°F (60°C) or less indicated?

YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Drain the coolant (see **COOLANT REPLACEMENT**).
21. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**) and ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 5.4°F (3°C) from the ambient temperature?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the ambient temperature, then go to step 27.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM.

27. Turn the ignition switch ON (II).
28. Reset the ECM with the HDS.
29. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2183 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 356°F (180°C) or more, or 0.08 V or less indicated?

YES - Go to step 7.

NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (44P).
10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

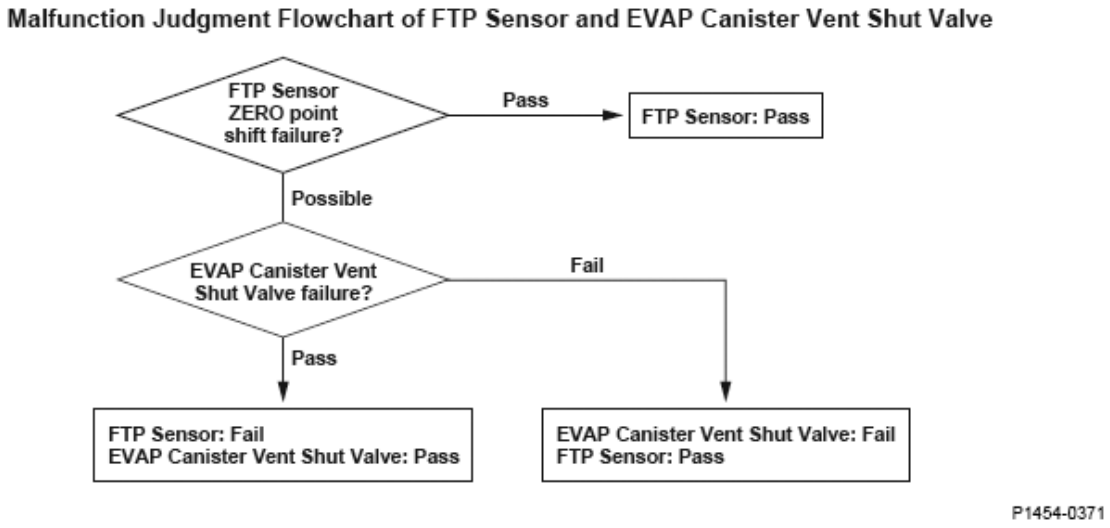


Fig. 94: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECT sensor 2 and the ECM (A33), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).

13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

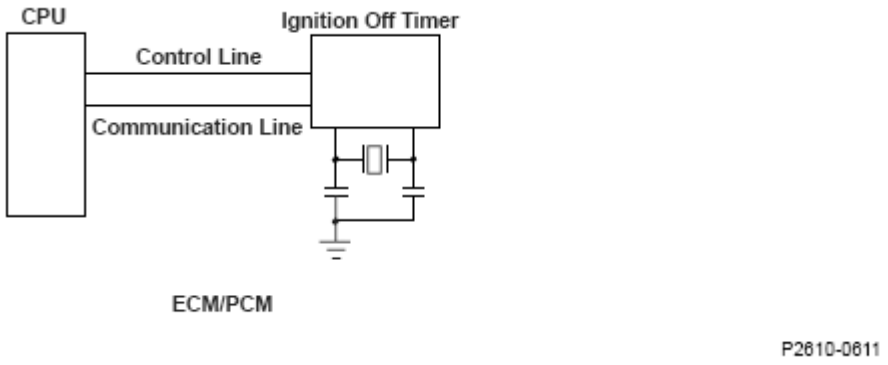


Fig. 95: Connecting ECT Sensor 2 2P Connector Terminals No. 1 And No. 2 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 8.

   NO - Go to step 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the ECT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

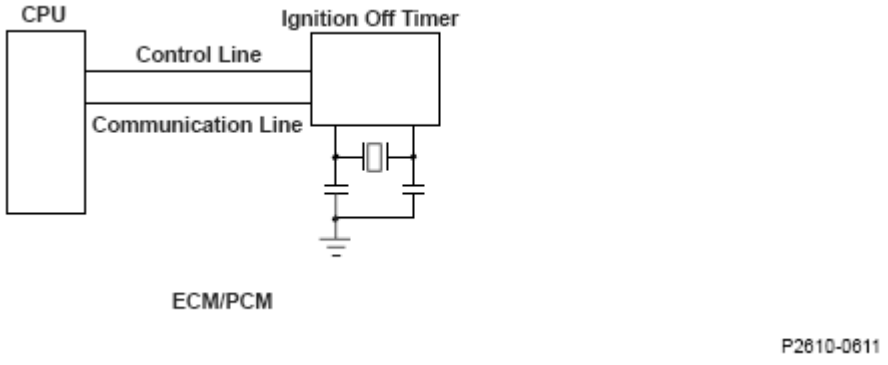


Fig. 96: Measuring Voltage Between ECT Sensor 2 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.

13. Jump the SCS line with the HDS.
14. Disconnect ECM connector A (44P).
15. Check for continuity between ECT sensor 2 2P connector terminal No. 2 and ECM connector terminal A9.

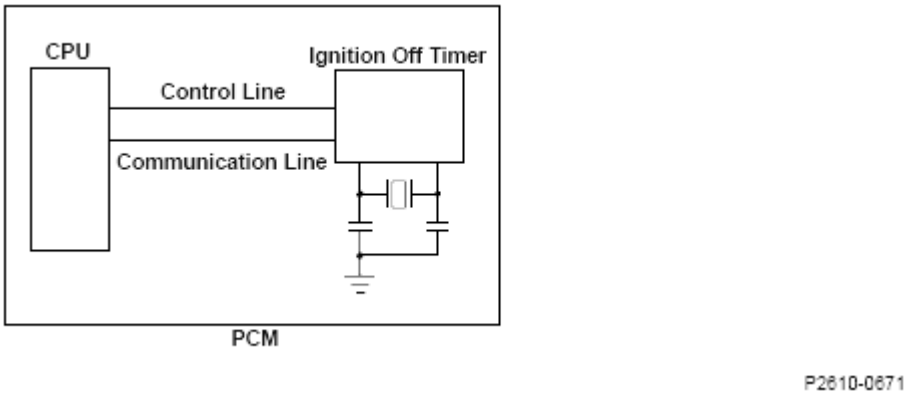


Fig. 97: Checking Continuity Between ECT Sensor 2 2P Connector Terminal No. 2 And ECM Connector Terminal A9
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (A9) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector A (44P).
19. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and ECM connector terminal A33.

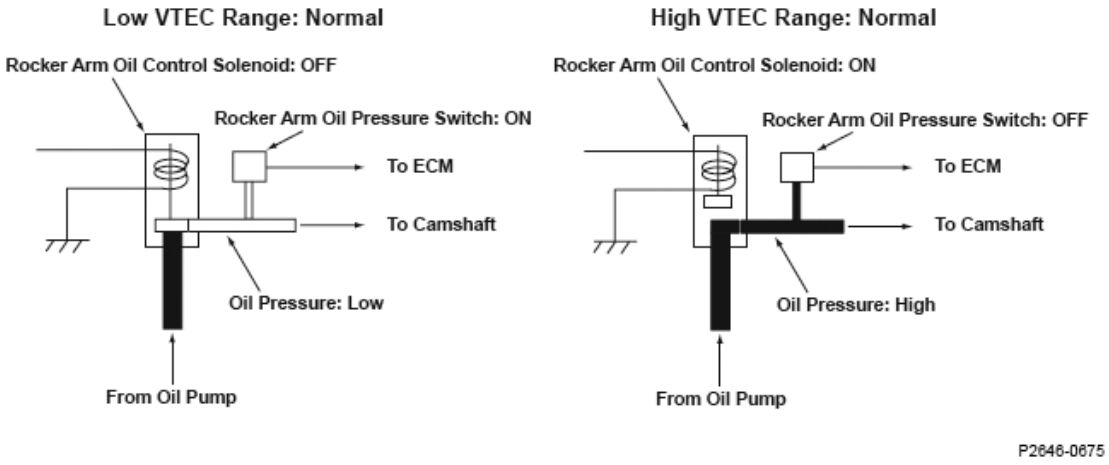


Fig. 98: Checking Continuity Between ECT Sensor 2 2P Connector Terminal No. 1 And ECM Connector Terminal A33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM (A33) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM with the HDS.
25. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2185 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2185 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2195: A/F SENSOR (SENSOR 1) SIGNAL STUCK LEAN

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.**
- **If DTC P2101, P2118, P2135, P2138, P2176 or a combination of P2122 and P2127, P2122, and P2138, or P2127 and P2138 is stored at the same time, troubleshoot them first, then recheck for DTC P2195.**

1. Check the installation of the A/F sensor (Sensor 1).

   Is the A/F sensor loose or disconnected from the exhaust pipe?

   YES - Go to step 6.

   NO - Go to step 2.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 indicated?

   YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 13.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

6. Turn the ignition switch OFF.
7. Reinstall the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1.

    NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicated NOT COMPLETED, keep idling until a result comes on.

13. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a

known-good ECM (see **SUBSTITUTING THE ECM**).

14. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 14. If the ECM was substituted, go to step 1.

    NO - Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 14. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2227: BARO SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.**

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101 kPa (29.9 in.Hg, 760 mmHg), or about 2.9 V at sea level indicated?

   YES - Go to step 3.

   NO - Go to step 7.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)

- Transmission in 4th gear
- REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 7.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
9. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in 4th gear
   - REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2227 indicated?

    YES - Check for poor connections or loose terminals at the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 8. If the ECM was substituted, go to step 1.

    NO - Go to step 11.

11. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 8. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 8.

DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 53 kPa (15.6 in.Hg, 397 mmHg), or 1.58 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time.

3. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES - Check for poor connections or loose terminals at the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2229: BARO SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.2 in.Hg, 1,200 mmHg), or 4.5 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time.

3. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES - Check for poor connections or loose terminals at the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the

original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2238: A/F SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2238 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM connector C (44P).
8. Check for continuity between ECM connector terminal C29 and body ground.

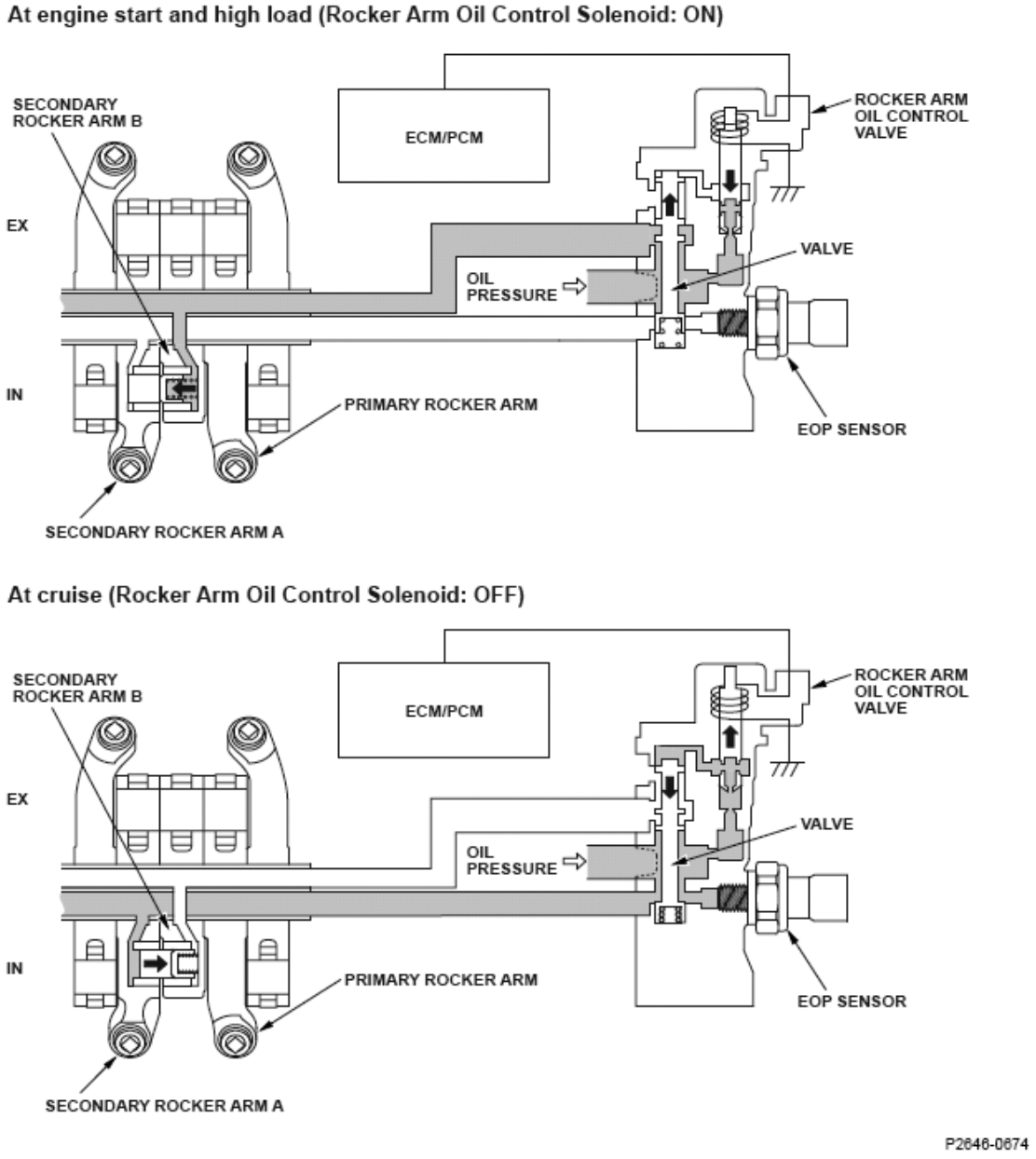


Fig. 99: Checking For Continuity Between ECM Connector Terminal C29 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C29) and the A/F sensor (Sensor 1), then go to step 10.

NO - Go to step 9.

9. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
10. Reconnect all connectors.
11. Turn the ignition switch ON (II).
12. Reset the ECM with the HDS.

13. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the connector and terminal fits are OK, go to step 16.

    NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

16. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
17. Start the engine, and let it idle.
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 17. If the ECM was substituted, go to step 1.

    NO - Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 17. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2252: A/F SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL

TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2252 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM connector C (44P).
9. Check for continuity between ECM connector terminal C30 and body ground.

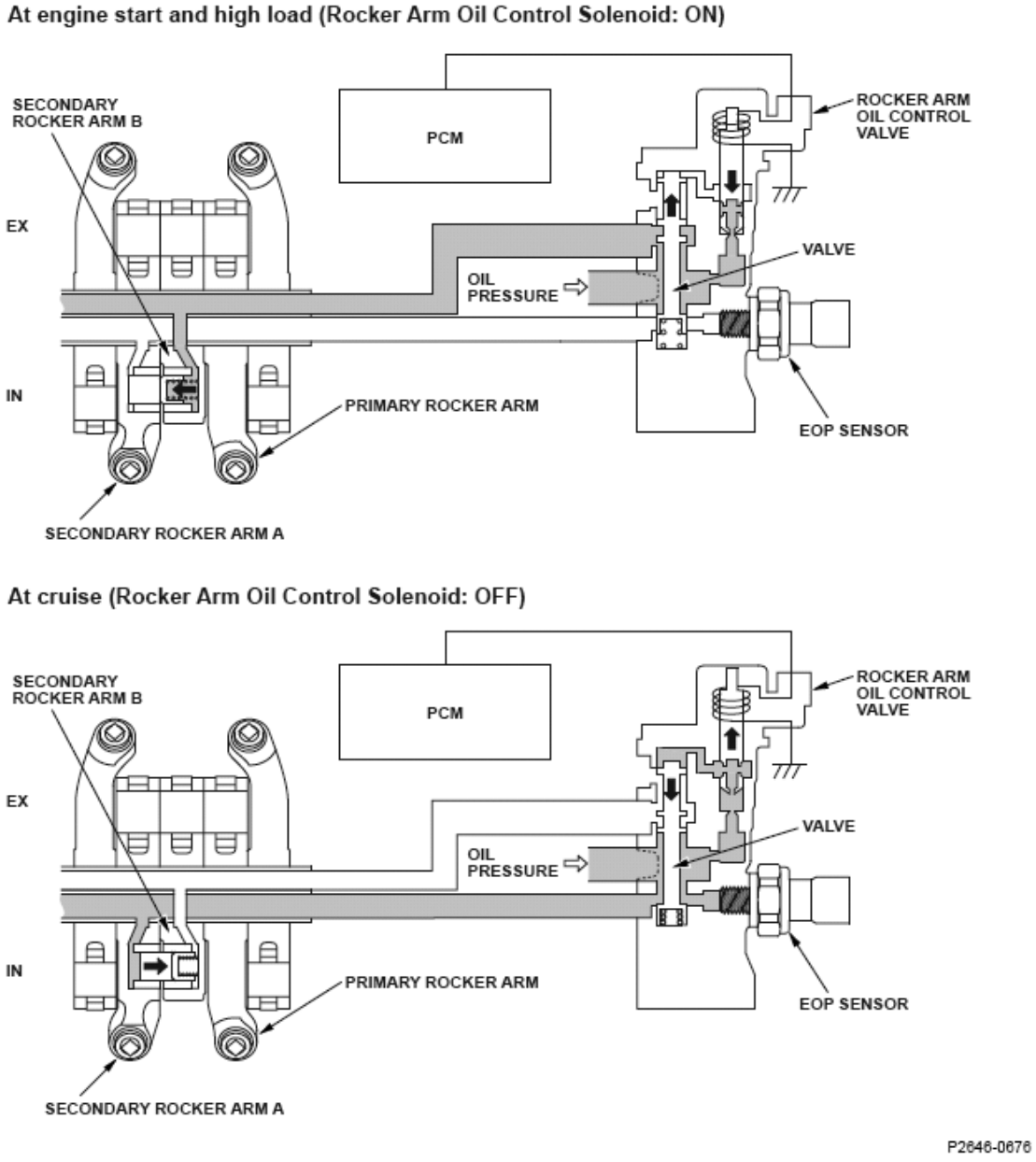


Fig. 100: Checking Continuity Between ECM Connector Terminal C30 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C30) and the A/F sensor (Sensor 1), then go to step 11.

NO - Go to step 10.

10. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.

14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2252 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the connector and terminal fits are OK, go to step 17.

    NO - Go to step 16.

16. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

17. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
18. Start the engine, and let it idle.
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2252 indicated?

    YES - Go to step 1 and recheck.

    NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs was indicated in step 19, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 18. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK LEAN; DTC P2271: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK RICH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL

TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Vehicle speed at 35 mph (56 km/h) or more for at least 20 seconds
5. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see **SECONDARY HO2S REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Start the engine, and let it idle without load (in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Vehicle speed at 35 mph (56 km/h) or more for at least 20 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270 or P2271 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving

until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P2610: ECM IGNITION OFF INTERNAL TIMER MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2A00: A/F SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Transmission in 3rd gear
   - Vehicle speed between 25-55 mph (40-88 km/h) for 5 minutes
   - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds, then decelerate (with throttle fully closed) for 5 seconds

5. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM with the HDS.
10. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Transmission in 3rd gear
    - Vehicle speed between 25-55 mph (40-88 km/h) for 5 minutes
    - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds, then decelerate (with throttle fully closed) for 5 seconds
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2A00 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1.

    NO - Go to step 13.

13. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC U0028: F-CAN MALFUNCTION (BUS-OFF)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0028 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0028 indicated?

   - **YES** - If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck . If the ECM was substituted, go to step 1.
   - **NO** - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM Replacement**). If any other Temporary DTCs or DTCs were indicated in step, go to the indicated DTC's troubleshooting

DTC U0122: F-CAN MALFUNCTION (ECM-VSA)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC U0028 and U0122 indicated at the same time?

   YES - Go to the troubleshooting for DTC U0028.

   NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0122 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach), the VSA modulator-control unit, and the ECM.

5. Check for communication to the VSA system with the HDS.

   Does the HDS communicate with the VSA modulator-control unit?

   YES - Go to step 6.

   NO - Go to the DLC circuit troubleshooting (see **DLC Circuit Troubleshooting**)..

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the VSA modulator-control unit 37P connector.
9. Disconnect ECM connector A (44P).
10. Check for continuity between ECM connector terminal A36 and VSA modulator-control unit 37P connector terminal No. 15.

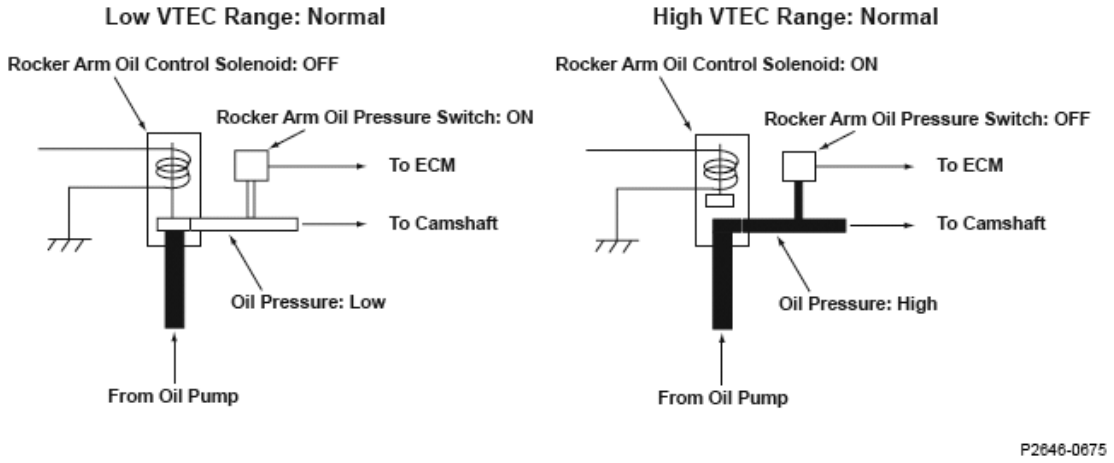


Fig. 101: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminals No. 1 And No. 15
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the ECM (A36) and the VSA modulator-control unit, then go to step 12.

11. Check for continuity between ECM connector terminal A37 and VSA modulator-control unit 37P connector terminal No. 1.

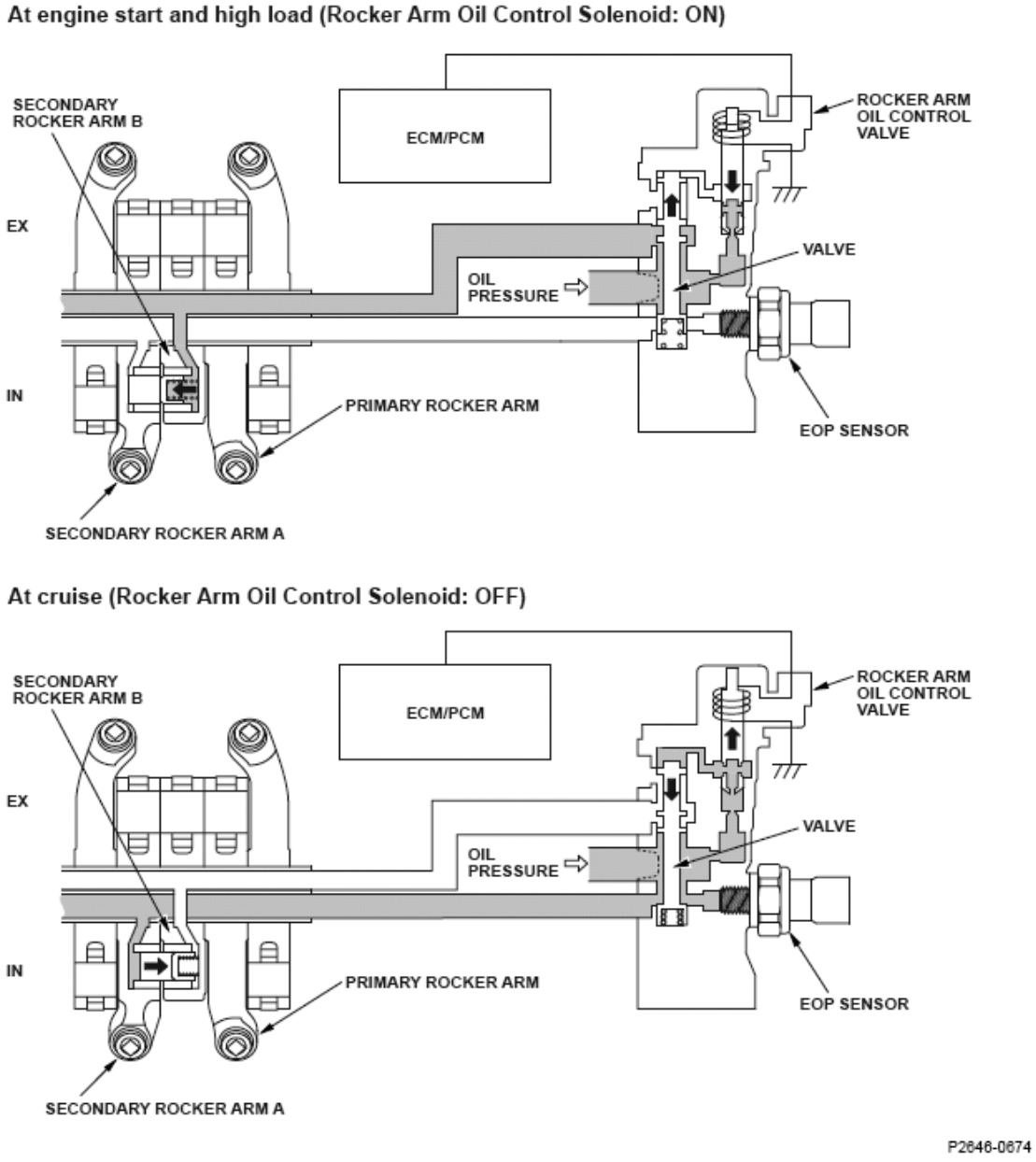


Fig. 102: Measuring Voltage Between VSA Modulator-Control Unit 37P Connector Terminal No. 28 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Substitute a known-good VSA modulator-control unit, then go to step 12 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit, then go to step 12.

NO - Repair open in the wire between the ECM (A37) and the VSA modulator-control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the ECM with the HDS.

15. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC U0122 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach), the VSA modulator-control unit, and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0131: F-CAN MALFUNCTION (ECM-EPS)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

    Are DTC U0028 and U0131 indicated at the same time?

    YES - Go to **TROUBLESHOOTING DTC U0028**.

    NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC U0131 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach), the EPS control unit, and the ECM.

5. Check that the HDS communicates with the EPS system.

    Does the HDS communicate with the EPS control unit?

    YES - Go to step 6.

    NO - Go to the **DLC circuit troubleshooting** (see).

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect EPS control unit connector D (28P).
9. Disconnect ECM connector A (44P).

10. Connect ECM connector terminal A36 to body ground with a jumper wire.

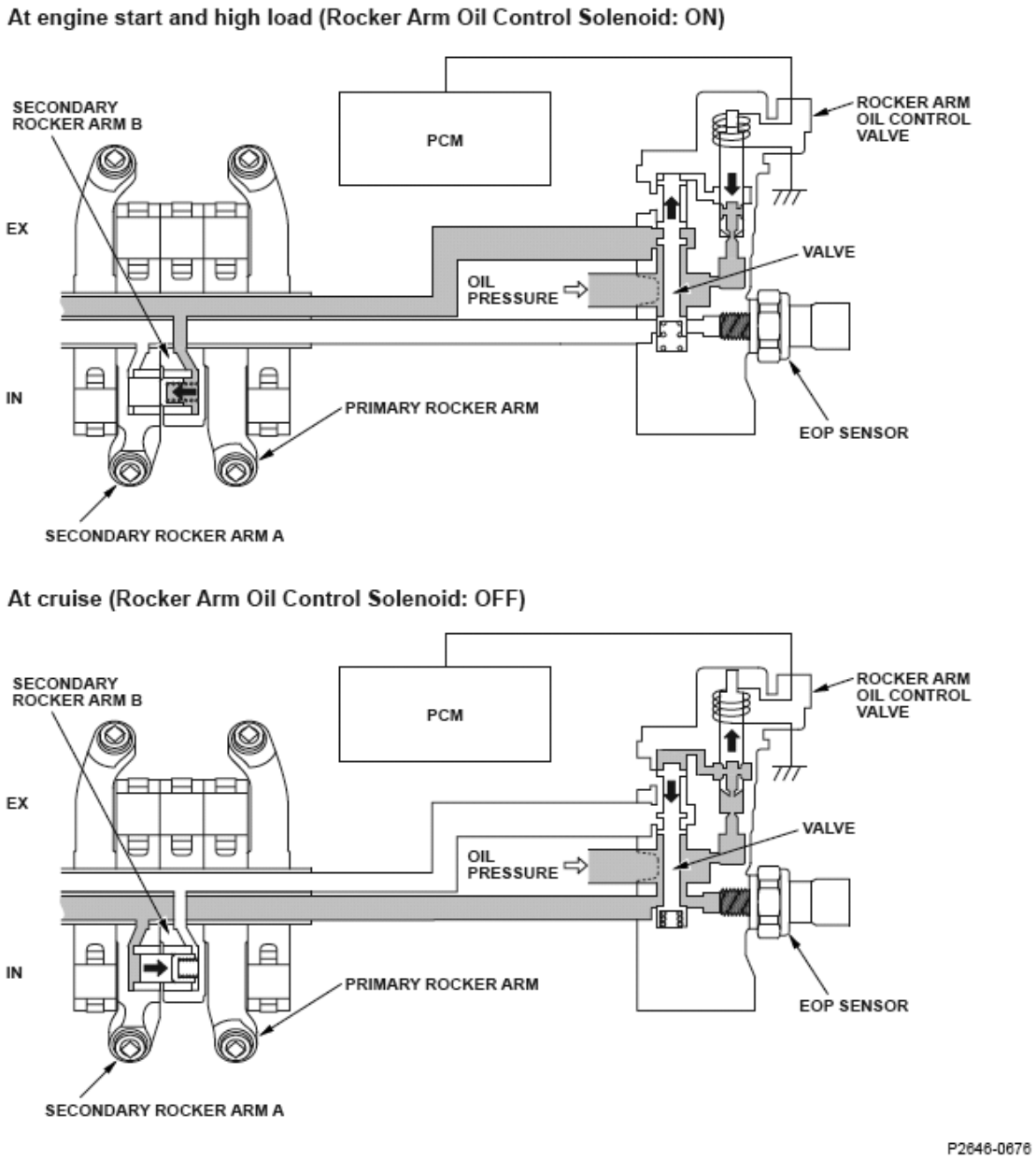


Fig. 103: Connecting ECM Connector Terminal A36 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

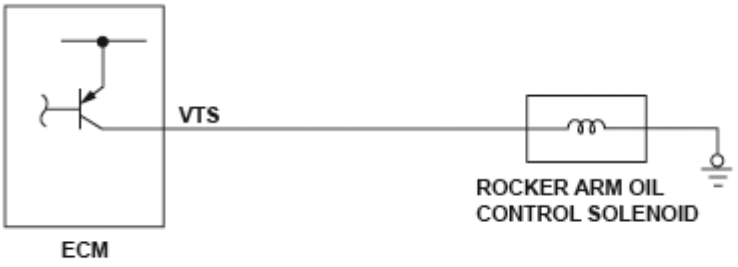


Fig. 104: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the ECM (A36) and the EPS control unit, then go to step 14.

12. Connect ECM connector terminal A37 to body ground with a jumper wire.

Fig. 105: Connecting ECM Connector Terminal A37 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

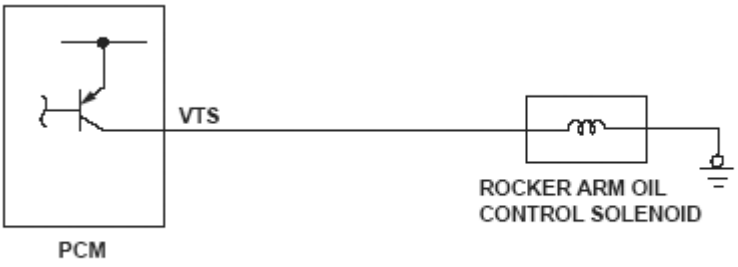


Fig. 106: Checking For Continuity Between EPS Control Unit Connector D (28P) Terminal No. 15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Substitute a known-good EPS control unit, then go to step 14 and recheck. If no DTCs are indicated, replace the original EPS control unit, then go to step 14.

NO - Repair open in the wire between the ECM (A37) and the EPS control unit, then go to step 14.

14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC U0131 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach), the EPS control unit, and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0155: F-CAN MALFUNCTION (ECM-GAUGE CONTROL MODULE)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0155 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the ECM.

4. Check for body electrical DTCs in the DTCs MENU with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES - Go to step 5.

   NO - Do the gauge control module (tach) input test (see **CIRCUIT DIAGRAM - GAUGE CONTROL MODULE (TACH)**).

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (tach) (see **TACHOMETER**).

8. Disconnect the gauge control module (tach) 36P connector.
9. Disconnect ECM connector A (44P).
10. Connect gauge control module (tach) 36P connector terminal No. 1 to body ground with a jumper wire.

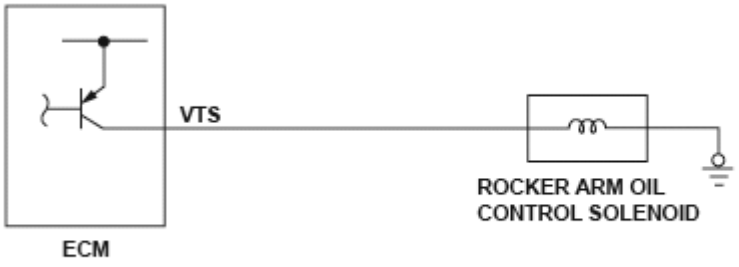


Fig. 107: Connecting Gauge Control Module 36P Connector Terminal No. 1 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM connector terminal A36 and body ground.

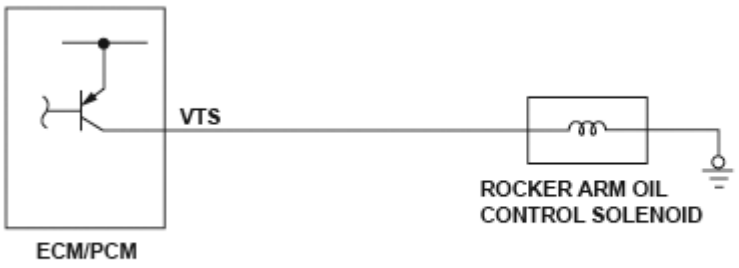


Fig. 108: Checking Continuity Between ECM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the ECM (A36) and the gauge control module (tach), then go to step 14.

12. Connect gauge control module (tach) 36P connector terminal No. 19 to body ground with a jumper wire.

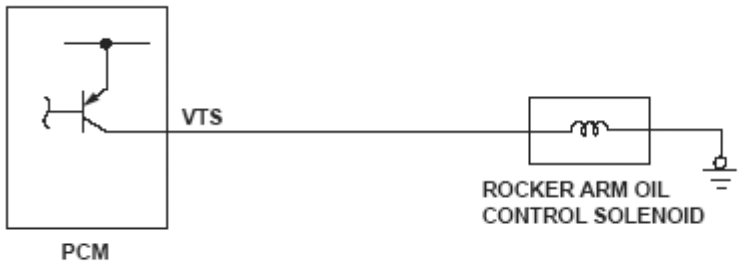


Fig. 109: Connecting Gauge Control Module 36P Connector Terminal No. 19 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Check for continuity between ECM connector terminal A37 and body ground.

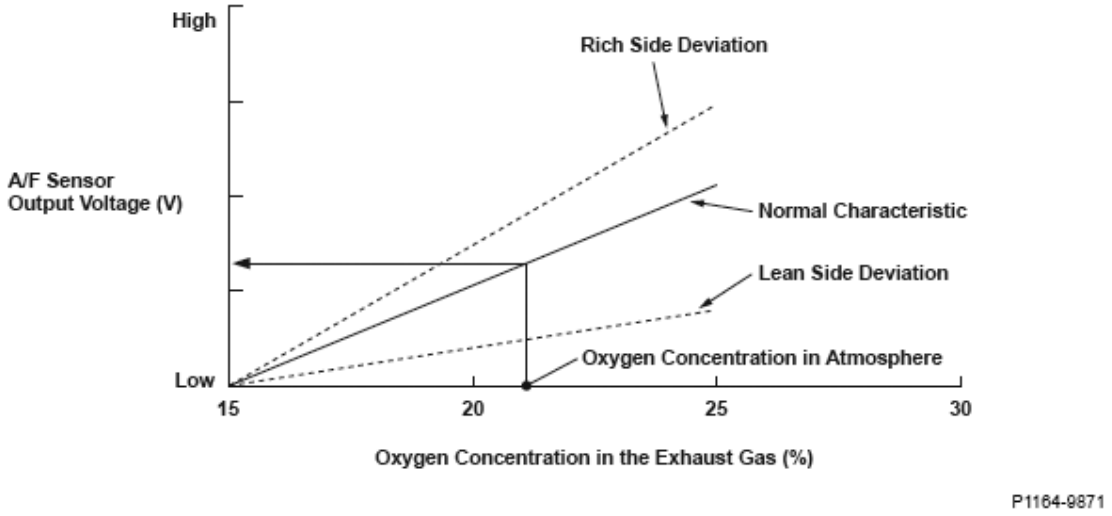


Fig. 110: Checking Continuity Between ECM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Substitute a known-good gauge control module (tach), then go to step 14 and recheck. If no DTCs are indicated, replace the original gauge control module (tach), then go to step 14.

NO - Repair open in the wire between the ECM (A37) and the gauge control module (tach), then go to step 14.

14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0155 indicated?

YES - Check for poor connections or loose terminals at the gauge control module (tach) and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

F-CAN CIRCUIT TROUBLESHOOTING

NOTE: Information marked with an asterisk(*) applies to the CANL line.

1. Turn the ignition switch OFF.
2. Jump the SCS line with the HDS.
3. Disconnect ECM connector A (44P), then disconnect the HDS.
4. Measure resistance between ECM connector terminals A36 and A37.

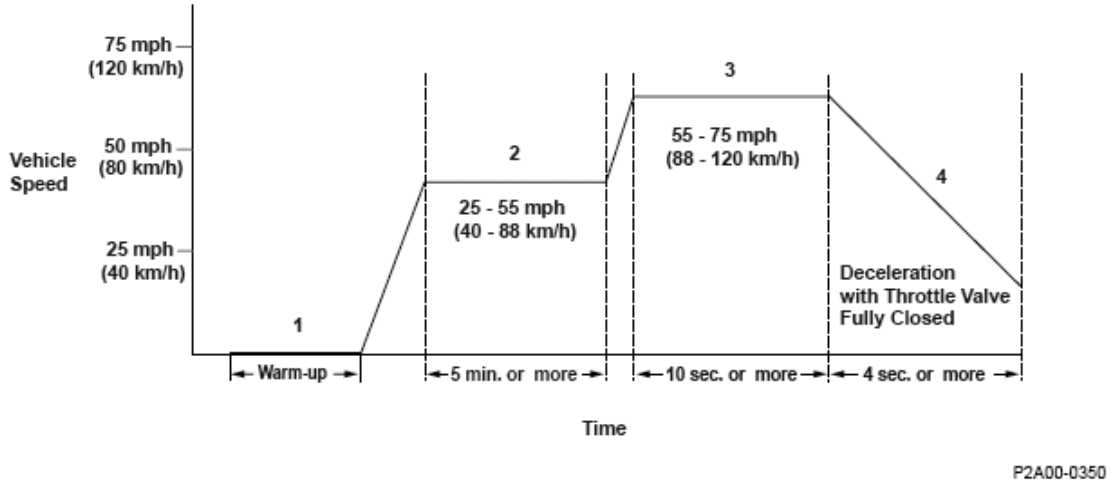


Fig. 111: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 95 - 116 ohms (with ABS system), 91-111 ohms (with VSA system), or 88-107 ohms (with VSA system and TPMS)?

YES - Go to step 44.

NO - Go to step 5.

5. Disconnect the gauge control module (tach) 36P connector (see **TACHOMETER**).
6. Disconnect the ABS modulator-control unit 25P connector (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) (or the VSA modulator-control unit 37P connector (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**) and the yaw rate/lateral acceleration sensor 4P connector (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**)).
7. Disconnect the SRS unit 28P connector (see **SRS UNIT REPLACEMENT**).
8. Disconnect EPS control unit connector D (28P) (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

9. With TPMS: Disconnect the TPMS control unit 20P connector.
10. Check for continuity between ECM connector terminals A36 and A37.

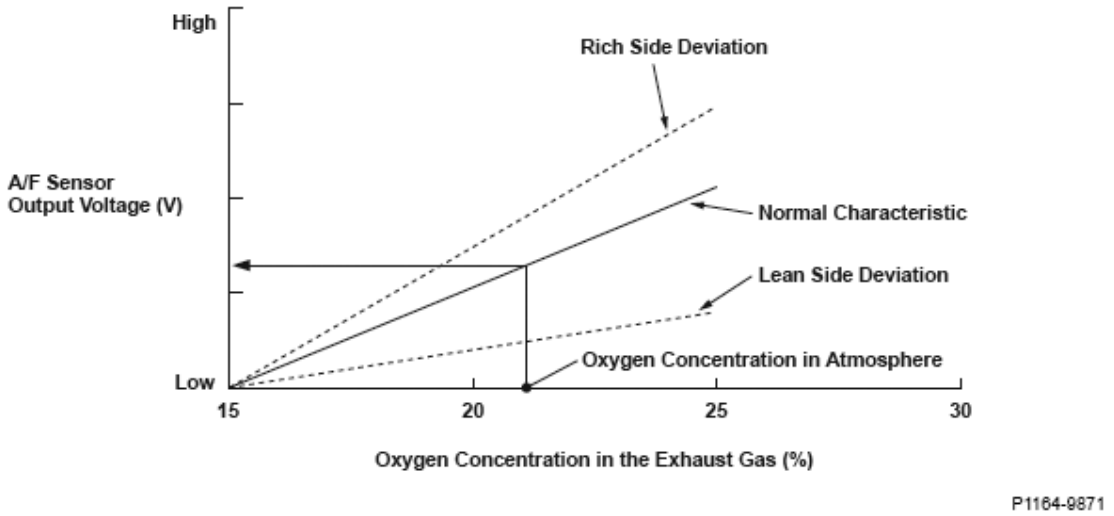


Fig. 112: Checking For Continuity Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between ECM connector terminals A36 and A37*.

NO - Go to step 11.

11. Connect ECM connector terminal A36 to body ground with a jumper wire.

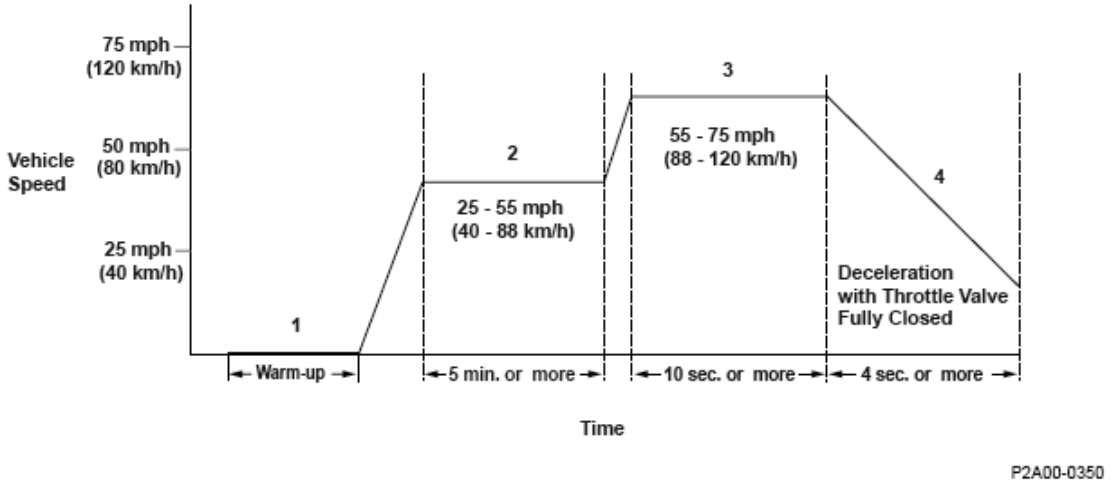


Fig. 113: Connecting ECM Connector Terminal A36 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between gauge control module (tach) 36P connector terminal No. 1 and body ground.

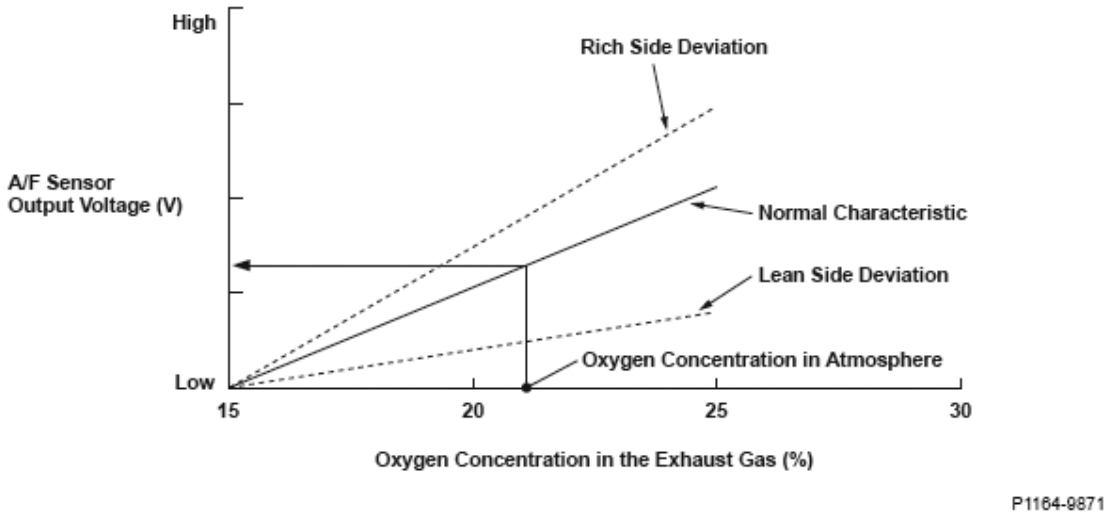


Fig. 114: Checking Continuity Between Gauge Control Module 36P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- With ABS system: Go to step 13.
- With VSA system: Go to step 14.

NO - Repair open in the wire between the ECM (A36) and the gauge control module (tach).

13. Check for continuity between ABS modulator-control unit 25P connector terminal No. 1 and body ground.

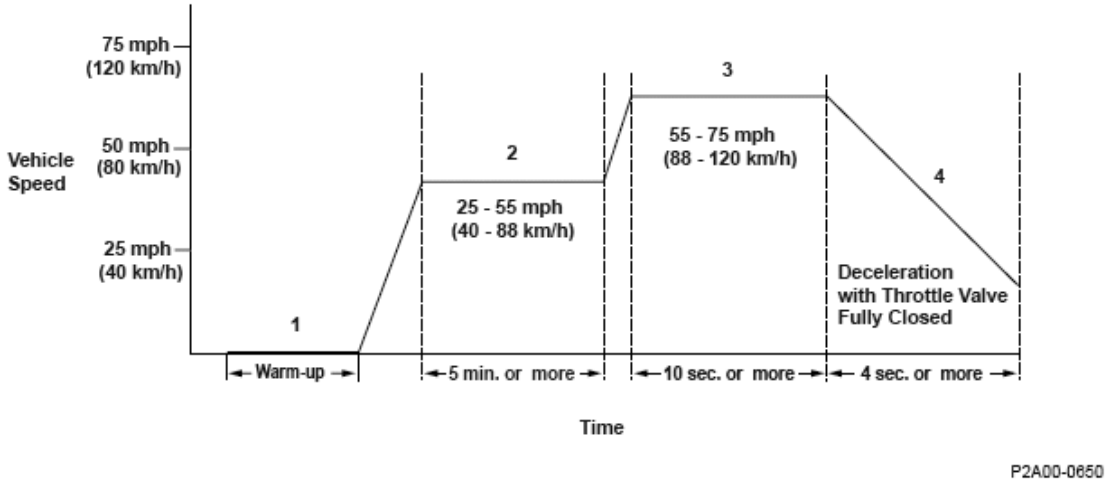


Fig. 115: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the ECM (A36) and the ABS modulator-control unit.

14. Check for continuity between VSA modulator-control unit 37P connector terminal No. 15 and body ground.

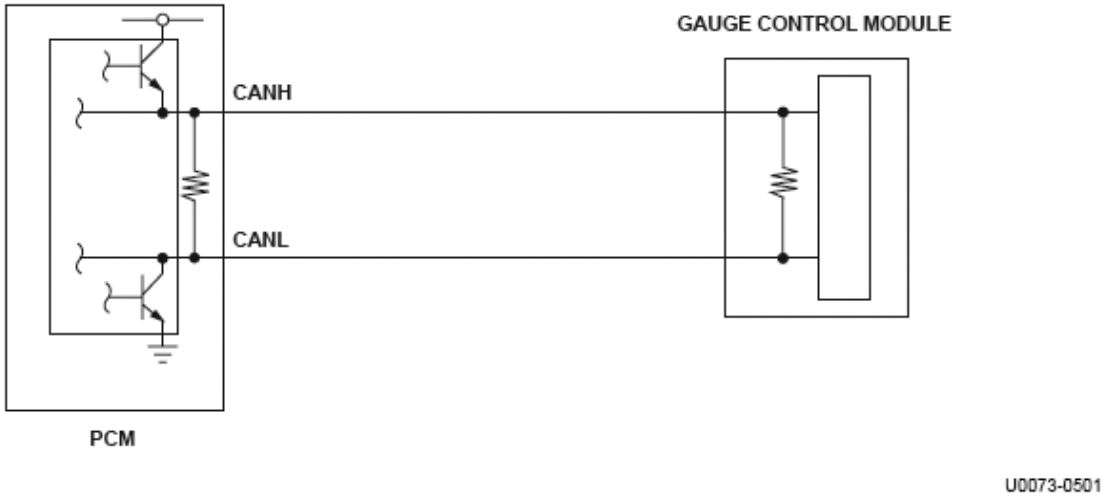


Fig. 116: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal No. 15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM (A36) and the VSA modulator-control unit.

15. Check for continuity between yaw rate-lateral acceleration sensor 5P connector terminal No. 3 and body ground.

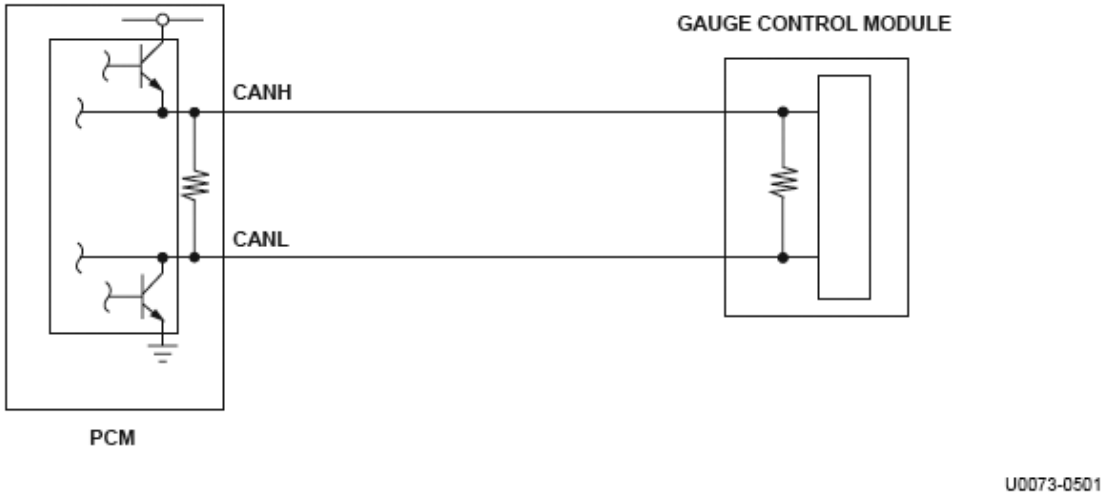


Fig. 117: Checking Between Yaw Rate-Lateral Acceleration Sensor 5P Connector Terminal No.

3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM (A36) and the yaw rate-lateral acceleration sensor.

16. Check for continuity between SRS unit connector A (28P) terminal No. 11 and body ground.

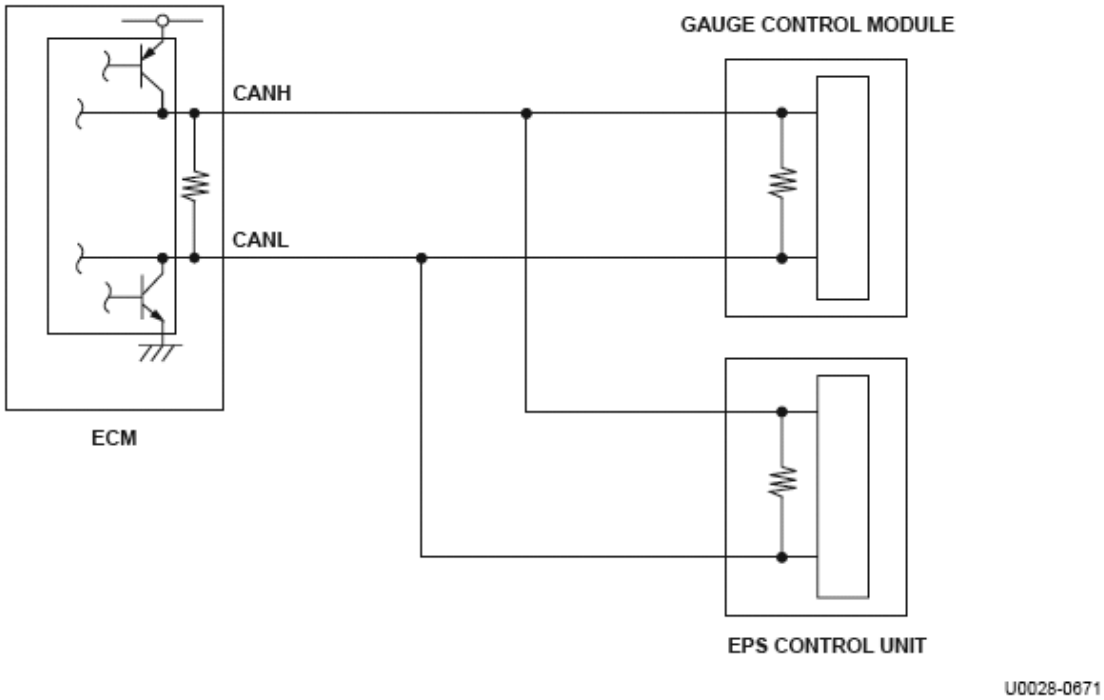


Fig. 118: Checking Continuity Between SRS Unit Connector (28P) Terminal No. 11 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 17.

NO - Repair open in the wire between the ECM (A36) and the SRS unit.

17. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

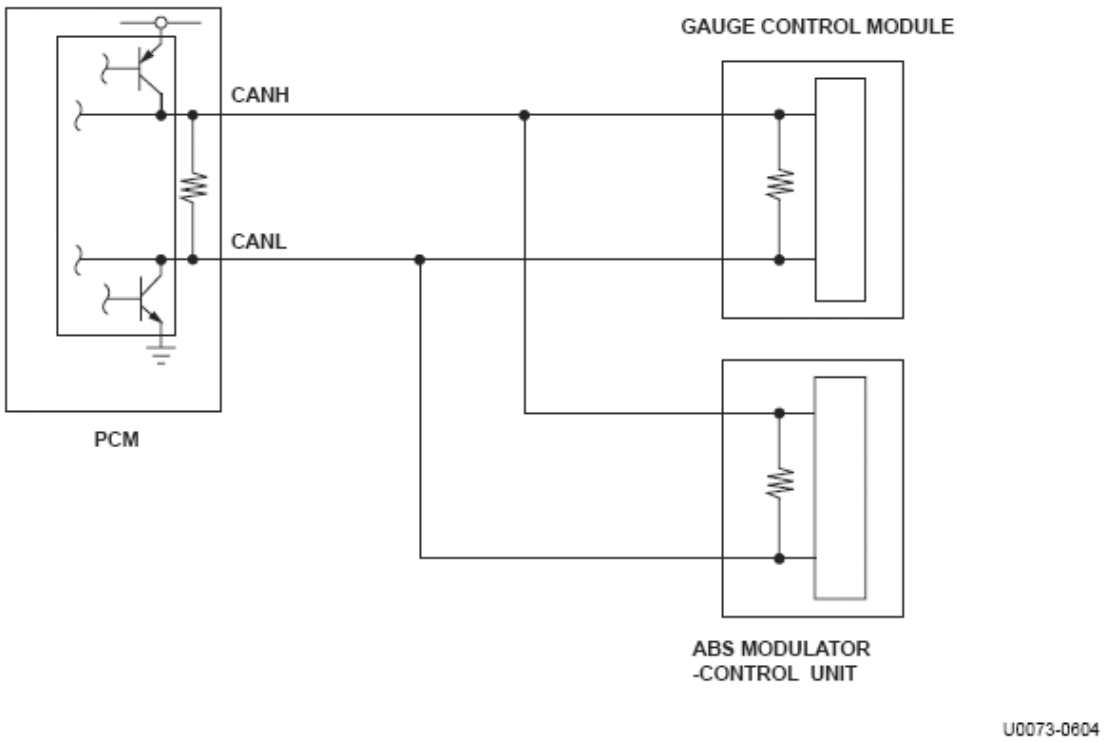


Fig. 119: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- With TPMS: Go to step 18.
- Without TPMS: Go to step 19.

NO - Repair open in the wire between the ECM (A36) and the EPS control unit.

18. Check for continuity between TPMS control unit 20P connector terminal No.2 and body ground.

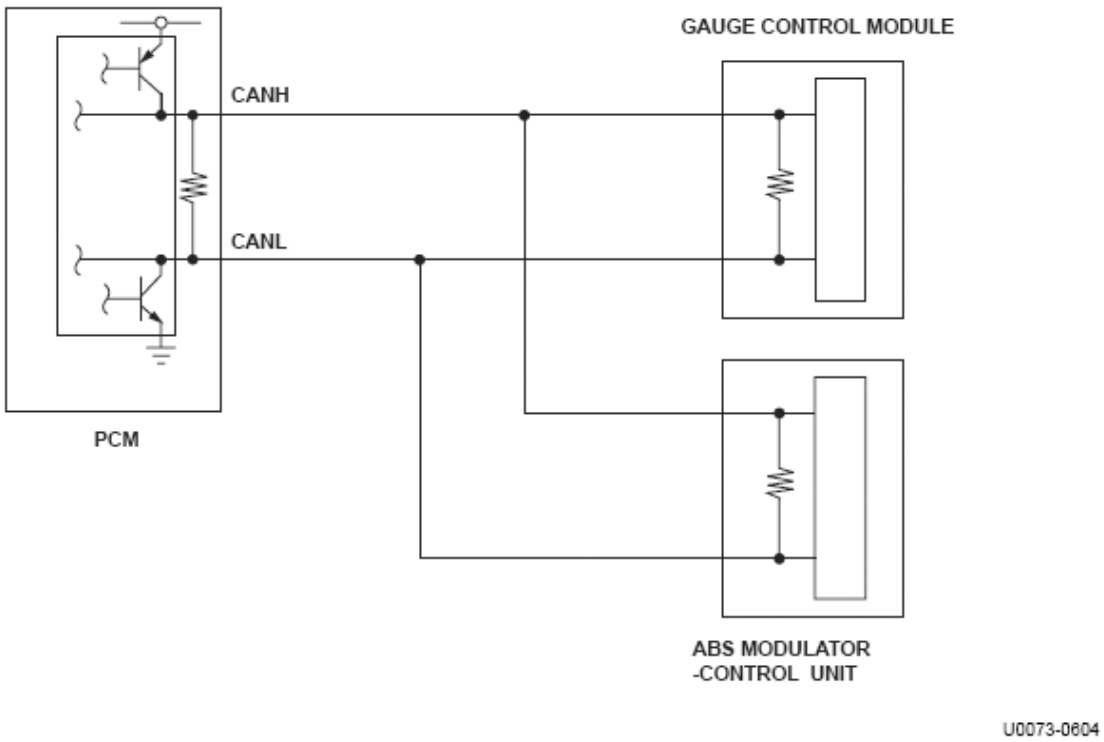


Fig. 120: Checking For Continuity Between TPMS Control Unit 20P Connector Terminal No.2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (A36) and the TPMS control unit.

19. Remove the jumper wire from ECM connector A (44P).
20. Connect ECM connector terminal A37 to body ground with a jumper wire.

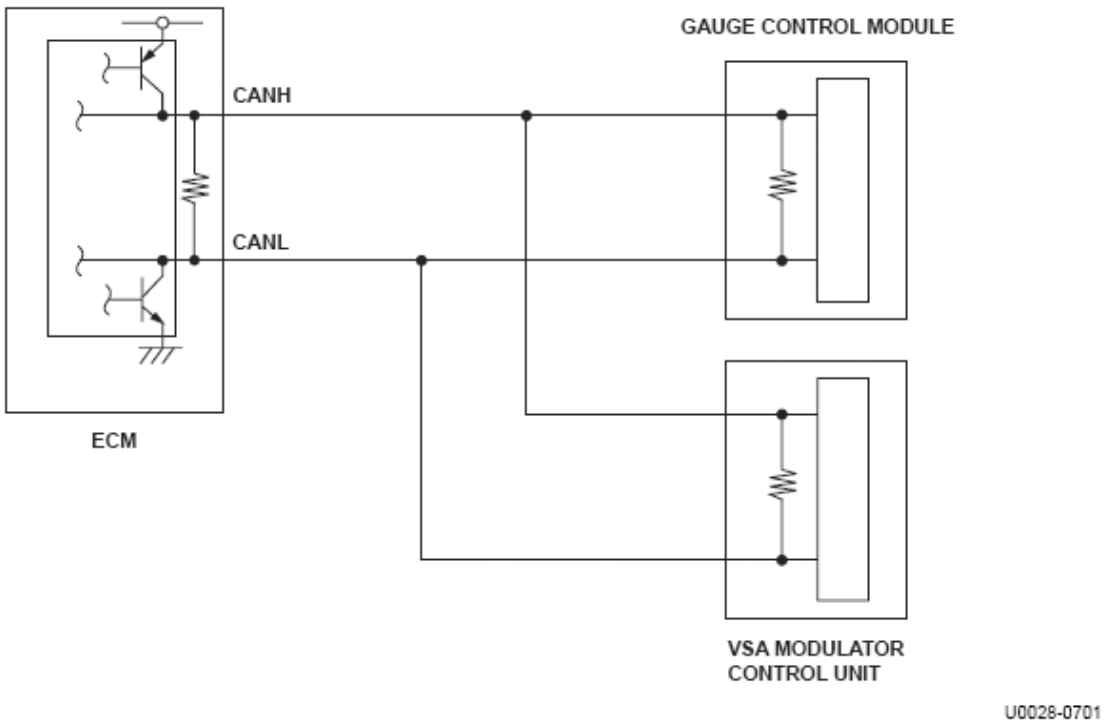


Fig. 121: Connecting ECM Connector Terminal A37 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Check for continuity between gauge control module (tach) 36P connector terminal No. 19 and body ground.

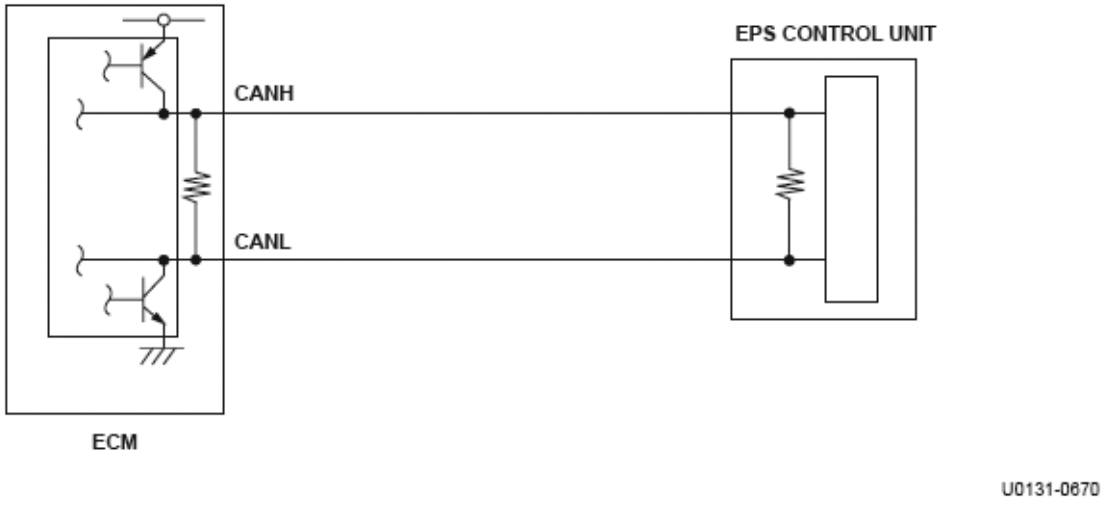


Fig. 122: Checking Continuity Between Gauge Control Module 36P Connector Terminal No. 19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- With ABS system: Go to step 22.

- With VSA system: Go to step 23.

NO - Repair open in the wire between the ECM (A37) and the gauge control module (tach).

22. Check for continuity between ABS modulator-control unit 25P connector terminal No. 17 and body ground.

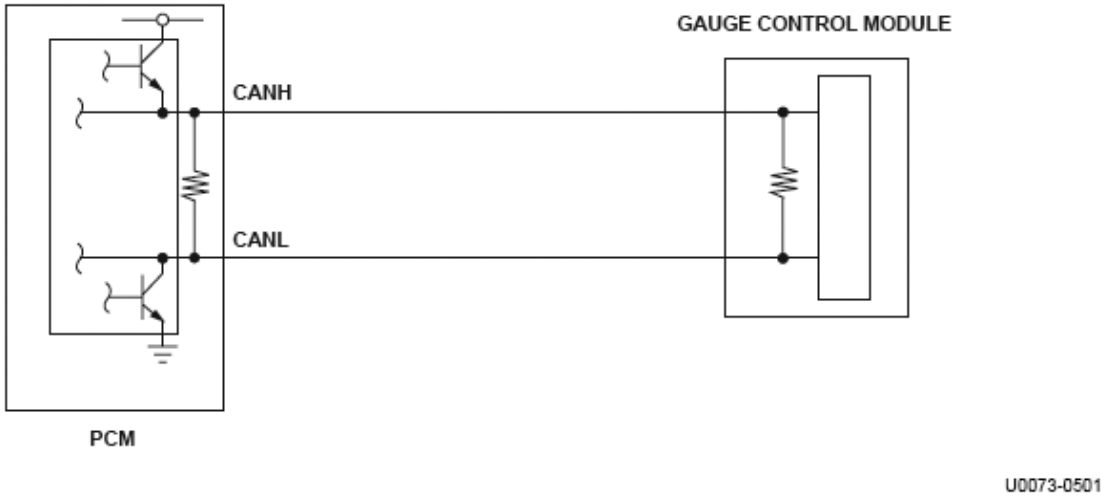


Fig. 123: Checking Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (A37) and the ABS modulator-control unit.

23. Check for continuity between VSA modulator-control unit 37P connector terminal No. 1 and body ground.

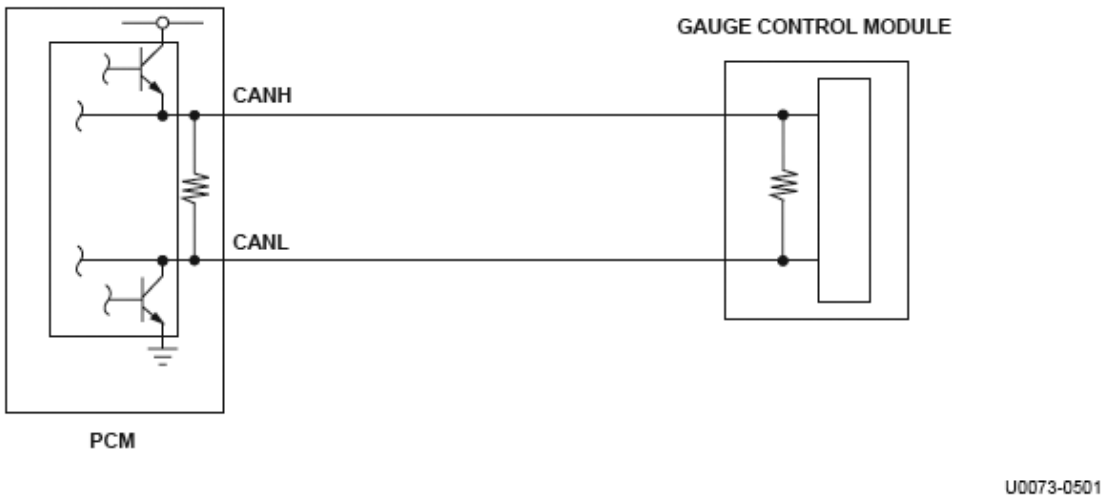


Fig. 124: Checking Continuity Between VSA Modulator-Control Unit 37P Connector Terminal

1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the ECM (A37) and the VSA modulator-control unit.

24. Check for continuity between yaw rate-lateral acceleration sensor 5P connector terminal No. 4 and body ground.

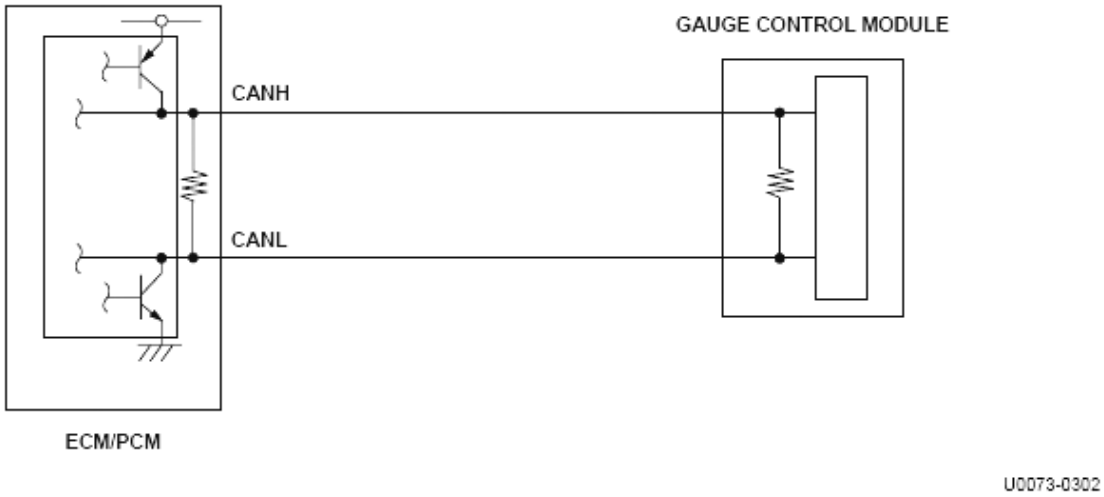


Fig. 125: Checking Continuity Between Yaw Rate-Lateral Acceleration Sensor 5P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (A37) and the yaw rate-lateral acceleration sensor.

25. Check for continuity between SRS unit connector A (28P) terminal No. 12 and body ground.

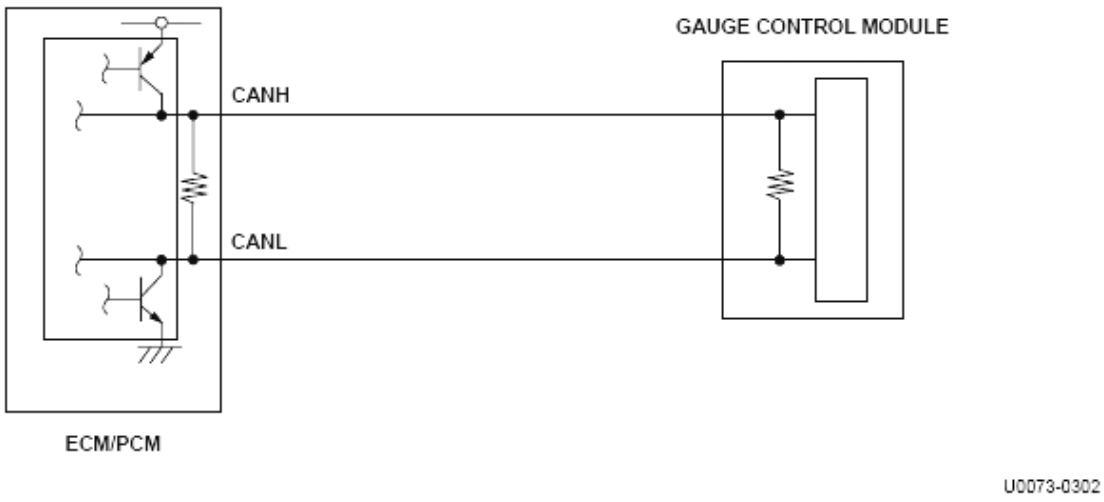


Fig. 126: Checking For Continuity Between SRS Unit Connector (28P) Terminal No. 12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM (A37) and the SRS unit.

26. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

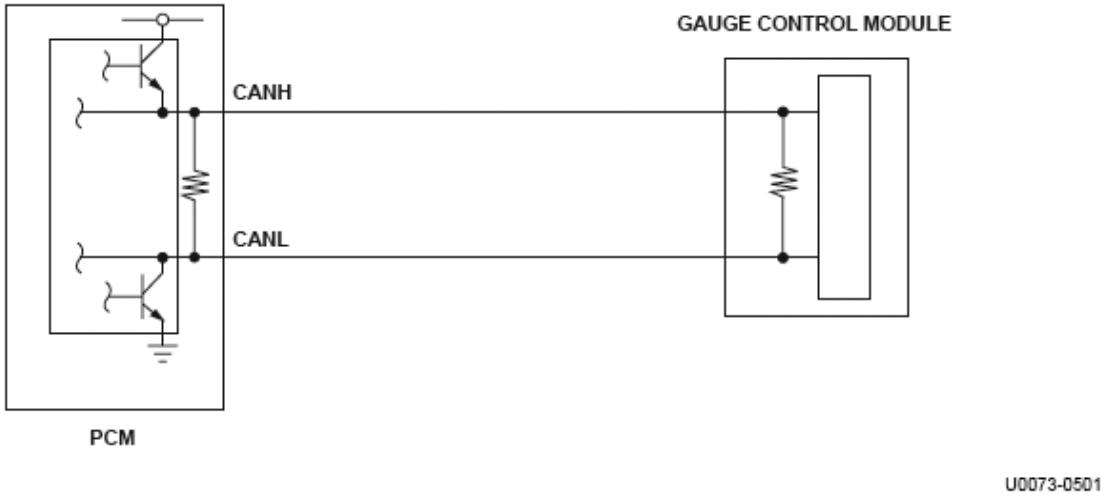


Fig. 127: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- With TPMS: Go to step 27.
- Without TPMS: Go to step 28.

NO - Repair open in the wire between the ECM (A37) and the EPS control unit.

27. Check for continuity between TPMS control unit 20P connector terminal No.11 and body ground.

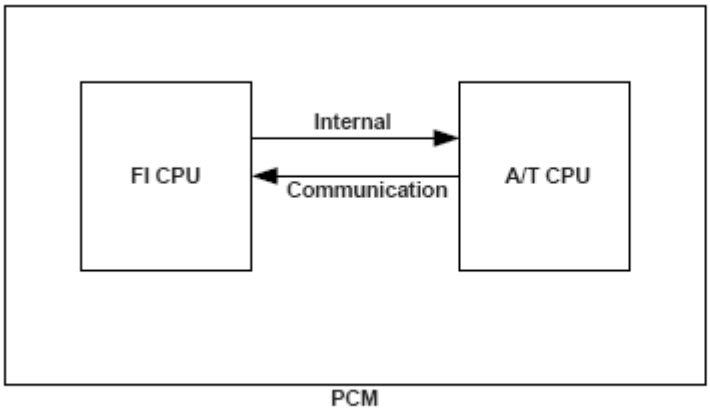


Fig. 128: Checking For Continuity Between TPMS Control Unit 20P Connector Terminal No.11 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM (A37) and the TPMS control unit.

28. Remove the jumper wire from ECM connector A (44P).
29. Reconnect the gauge control module (tach) 36P connector.
30. Measure resistance between ECM connector terminals A36 and A37.

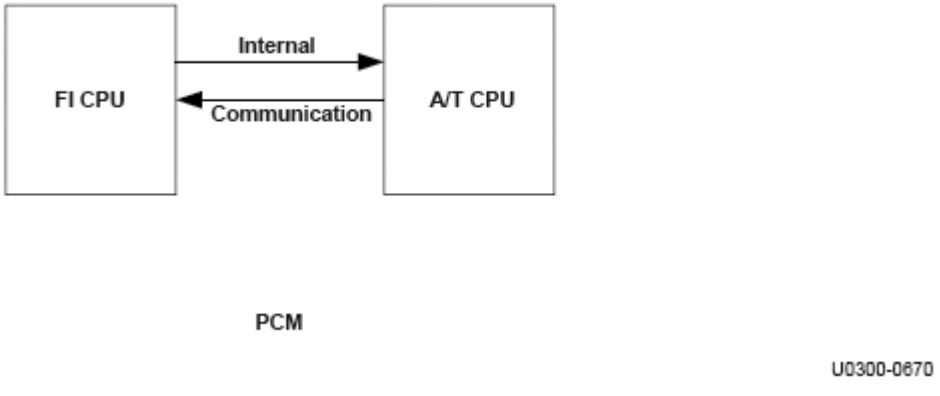


Fig. 129: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 108-132 ohms ?

YES -

- With ABS system: Go to step 31.
- With VSA system: Go to step 34.

NO - Substitute a known-good gauge control module (tach) (see **TACHOMETER**). If the HDS communicate identify the vehicle, replace the original gauge control module (tach) (see **TACHOMETER**).

31. Disconnect the gauge control module (tach) 36P connector.
32. Reconnect the ABS modulator-control unit 25P connector.
33. Measure resistance between ECM connector terminals A36 and A37.

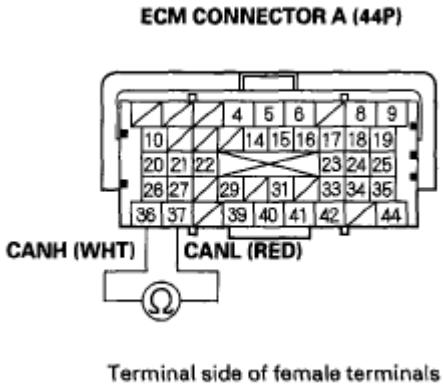


Fig. 130: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms?

YES - Go to step 40.

NO - Substitute a known-good ABS modulator-control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**). If the HDS identify the vehicle, replace the original ABS modulator-control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

34. Disconnect the gauge control module (tach) 36P connector.
35. Reconnect the VSA modulator-control unit 37P connector.
36. Measure resistance between ECM connector terminals A36 and A37.

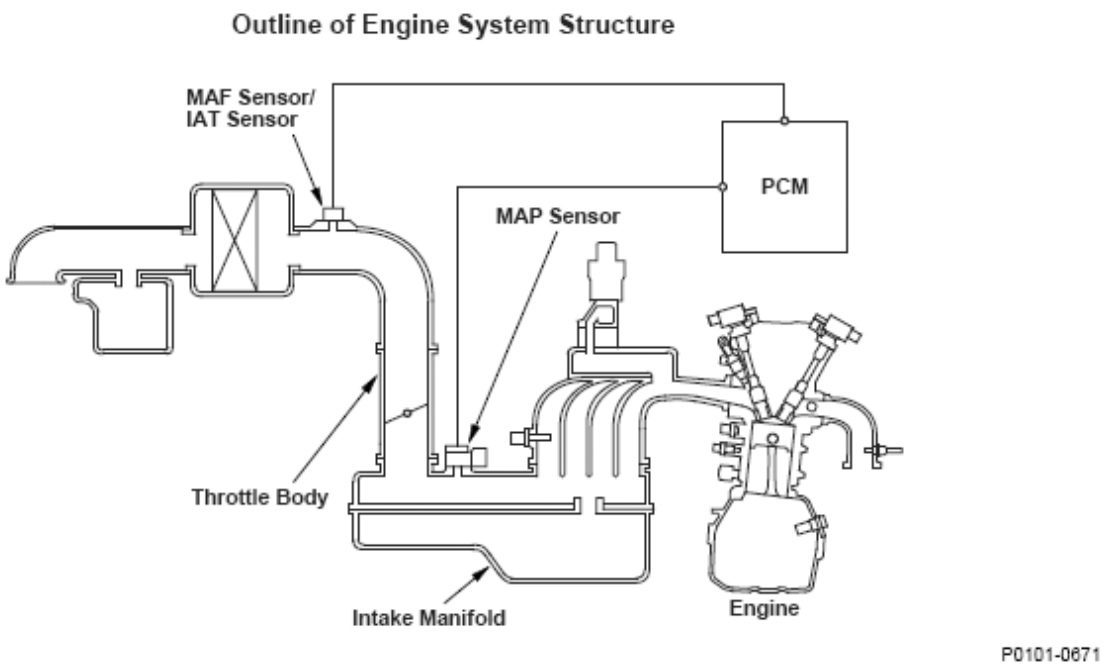


Fig. 131: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms,?

YES - Go to step 37.

NO - Substitute a known-good VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**). If the HDS identify the vehicle, replace the original VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

37. Disconnect the VSA modulator-control unit 37P connector.
38. Reconnect the yaw rate/lateral acceleration sensor 5P connector.
39. Measure resistance between ECM connector terminals A36 and A37.

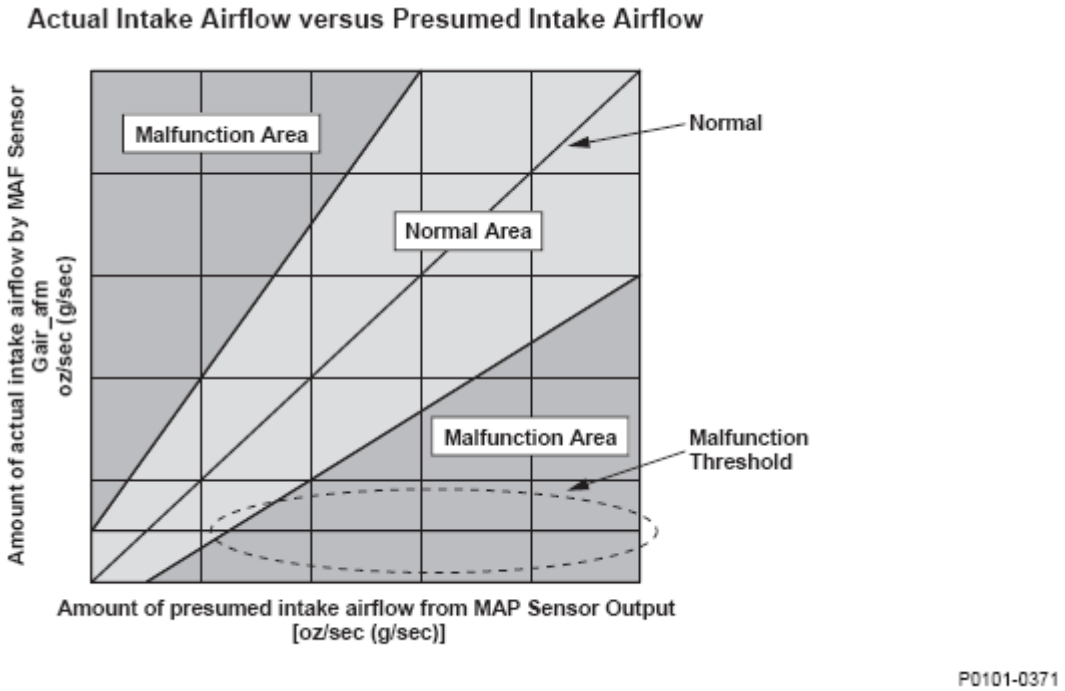


Fig. 132: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms?

YES - Go to step 40.

NO - Substitute a known-good yaw rate/lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**). If the HDS identify the vehicle, replace the original yaw rate/lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

40. Disconnect ABS modulator-control unit 25P connector (or the yaw rate/lateral acceleration sensor 5P connector).
41. Reconnect the SRS unit connector A (28P).
42. Measure resistance between ECM connector terminals A36 and A37.

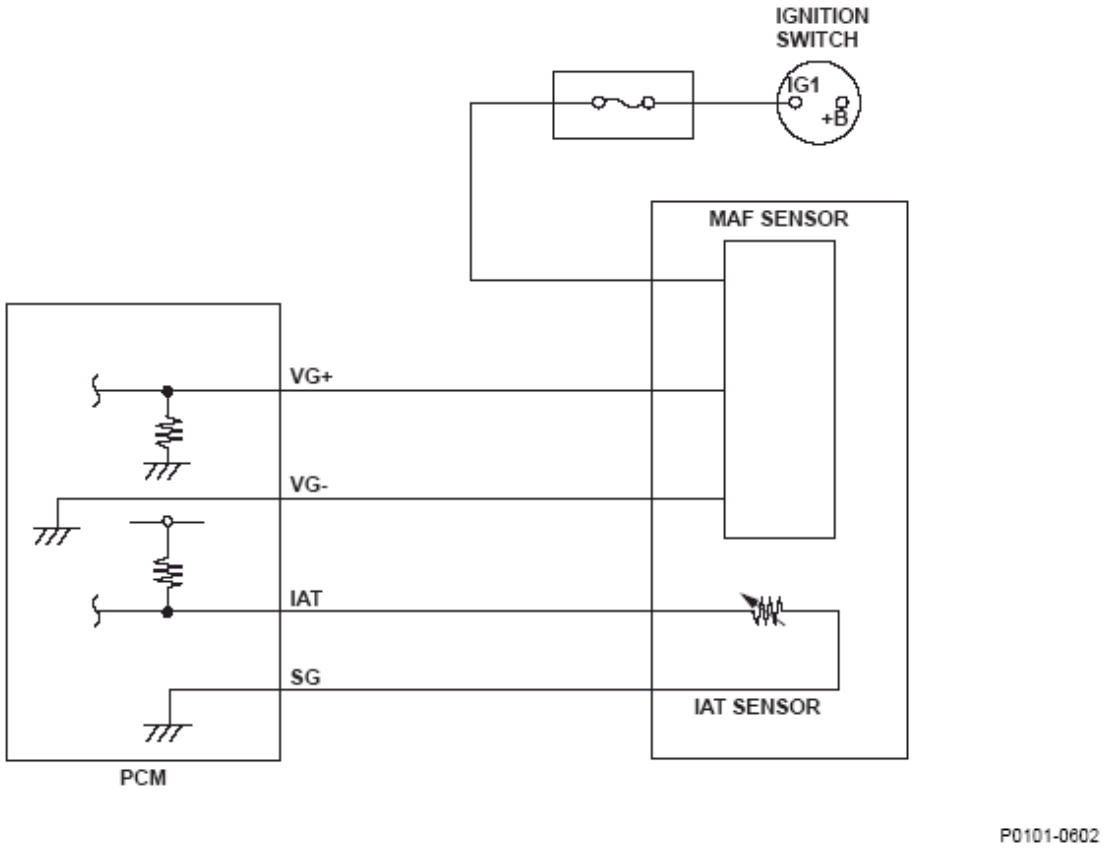


Fig. 133: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms 7

YES - Go to step 43.

NO - Substitute a known-good SRS unit (see **SRS UNIT REPLACEMENT**). If the HDS identify the vehicle, replace the original SRS unit (see **SRS UNIT REPLACEMENT**).

43. Disconnect SRS unit connector A (28P).
44. Reconnect EPS control unit connector D (28P).
45. Measure resistance between ECM connector terminals A36 and A37.

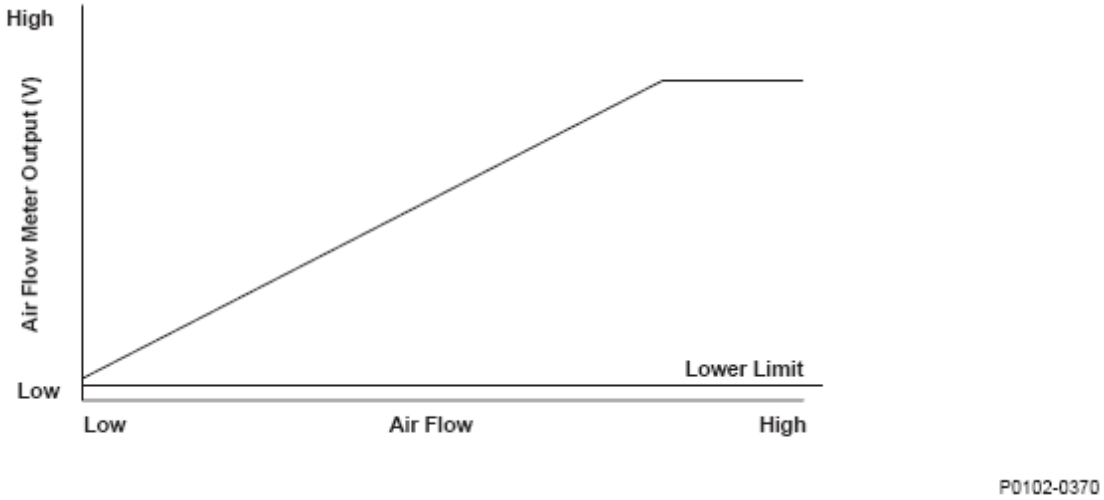


Fig. 134: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms?

YES -

- With TPMS: Go to step 46.
- Without TPMS: Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Substitute a known-good EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**). If the HDS identify the vehicle, replace the original EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

46. Disconnect EPS control unit connector D (28P).
47. Reconnect the TPMS control unit 20P connector.
48. Measure resistance between ECM connector terminals A36 and A37.

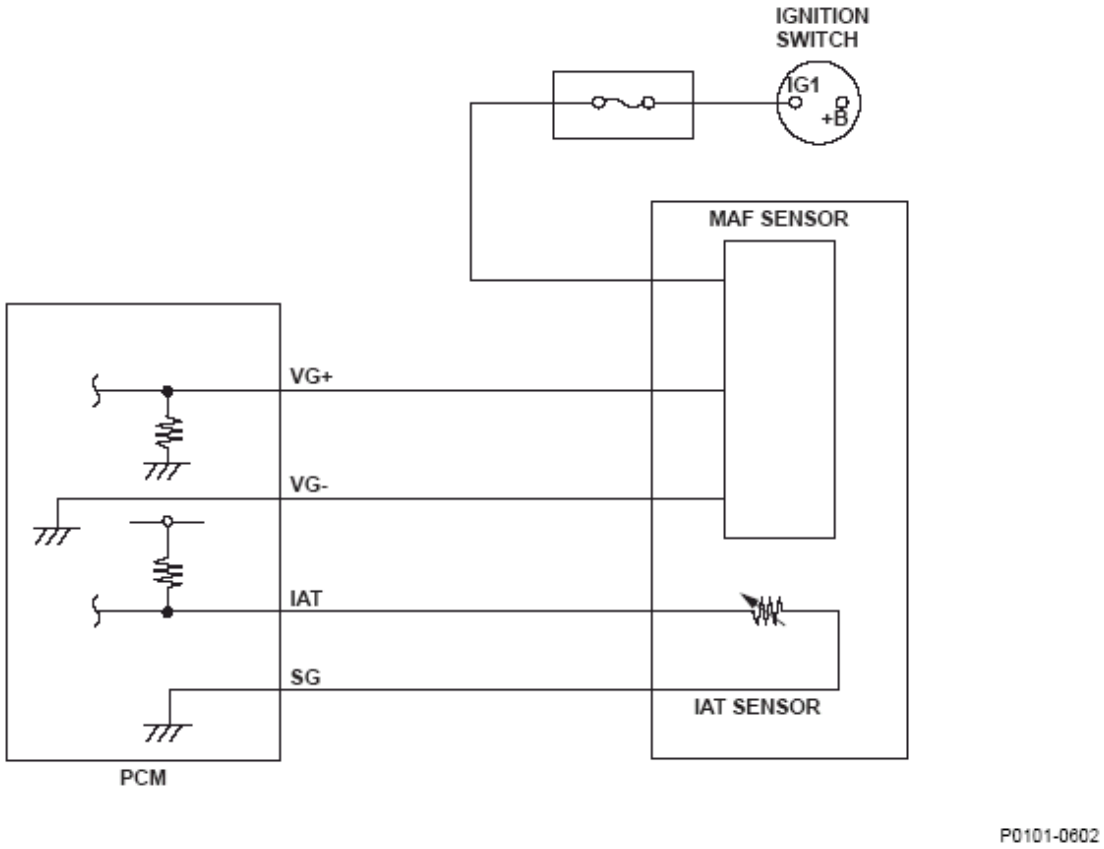


Fig. 135: Measuring Resistance Between ECM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86k ohms ?

YES - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Substitute a known-good TPMS control unit. If the HDS identifies the vehicle, replace the original TPMS control unit.

49. Disconnect the gauge control module (tach) 36P connector.
50. Disconnect the ABS modulator-control unit 25P connector (or the VSA modulator-control unit 37P connector and the yaw rate/lateral acceleration sensor 5P connector).
51. Disconnect SRS unit connector A (28P).
52. Disconnect EPS control unit connector D (28P).
53. With TPMS: Disconnect the TPMS control unit 20P connector.
54. Check for continuity between ECM connector terminal A36 and body ground.

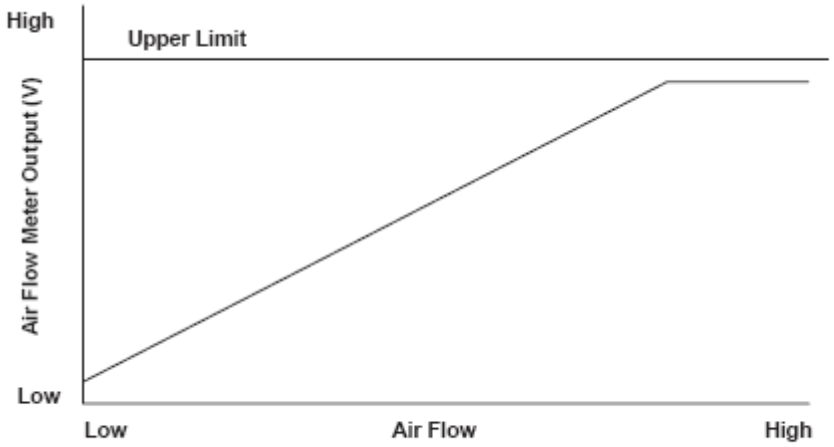


Fig. 136: Checking For Continuity Between ECM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM connector terminal A36 and the gauge control module, the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate/lateral acceleration sensor, the SRS unit, the EPS control unit, TPMS control unit (with TPMS), or the DLC.

NO - Go to step 55.

55. Check for continuity between ECM connector terminal A37 and body ground.

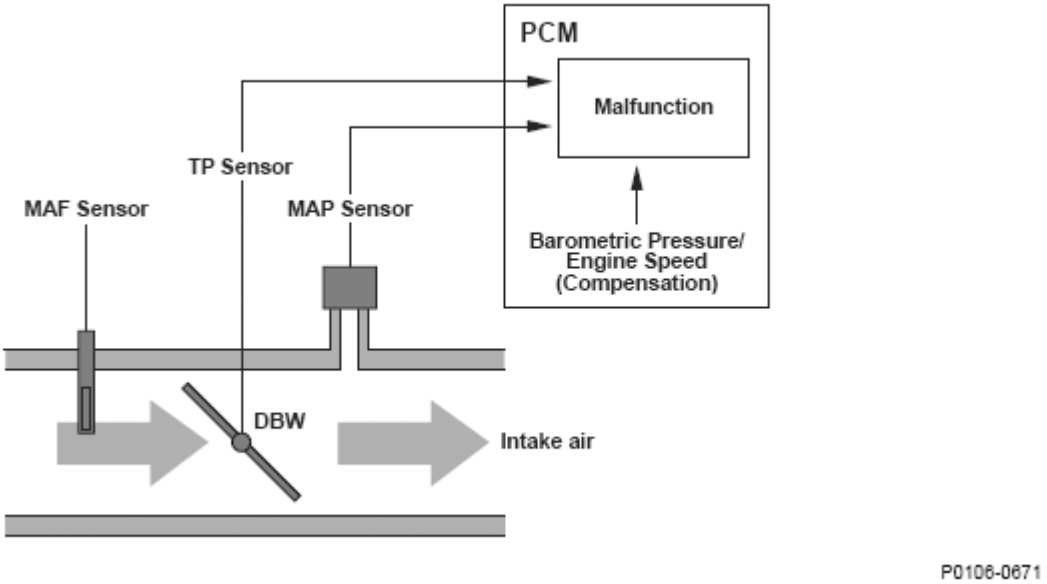


Fig. 137: Checking For Continuity Between ECM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM connector terminal A37 and the gauge control module,

the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate/lateral acceleration sensor, the SRS unit, the EPS control unit or the DLC.

NO - Go to step 56.

56. Reconnect all connectors.
57. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).
58. Disconnect the gauge control module (tach) 36P connector.
59. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the gauge control module (tach) (see **TACHOMETER**).

NO -

- With ABS system: Go to step 52.
- With VSA system: Go to step 64.

60. Turn the ignition switch OFF.
61. Reconnect the gauge control module (tach) 36P connector.
62. Disconnect the ABS modulator-control unit 25P connector.
63. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the ABS modulator-control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO - Go to step 72.

64. Turn the ignition switch OFF.
65. Reconnect the gauge control module (tach) 36P connector.
66. Disconnect the VSA modulator-control unit 37P connector.
67. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the VSA modulator-control unit (see **VSA MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO - Go to step 68.

68. Turn the ignition switch OFF.
69. Reconnect the VSA modulator-control unit 37P connector.
70. Disconnect the yaw rate/lateral acceleration sensor 5P connector.
71. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the yaw rate/lateral acceleration sensor (see **YAW RATE-LATERAL ACCELERATION SENSOR REPLACEMENT**).

NO - Go to step 72.

72. Turn the ignition switch OFF.
73. Reconnect the ABS modulator-control unit 25P connector (or yaw rate/lateral acceleration sensor 5P connector).
74. Disconnect SRS unit connector A (28P).
75. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the SRS unit (see **SRS UNIT REPLACEMENT**).

NO - Go to step 76.

76. Turn the ignition switch OFF.
77. Reconnect SRS unit connector A (28P).
78. Disconnect EPS control unit connector D (28P).
79. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -

- With TPMS: Go to step 80.
- Without TPMS: Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

80. Turn the ignition switch OFF.
81. Reconnect EPS control unit connector D (28P).
82. Disconnect the TPMS control unit 20P connector.
83. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the TPMS control unit.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

MIL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).

   Does the MIL indicator flash?

   YES - Go to step 3.

   NO - Substitute a known-good gauge control module (tach), and recheck. If the MIL circuit is OK, replace the original gauge control module (tach) (see **TACHOMETER**).

3. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).
4. Check the SCS in the DATA LIST with the HDS.

   Is a short indicated?

   YES - Go to step 5.

   NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

5. Turn the ignition switch OFF.
6. Disconnect ECM connector A (44P), then disconnect the HDS.
7. Check for continuity between ECM connector terminal A31 and body ground.

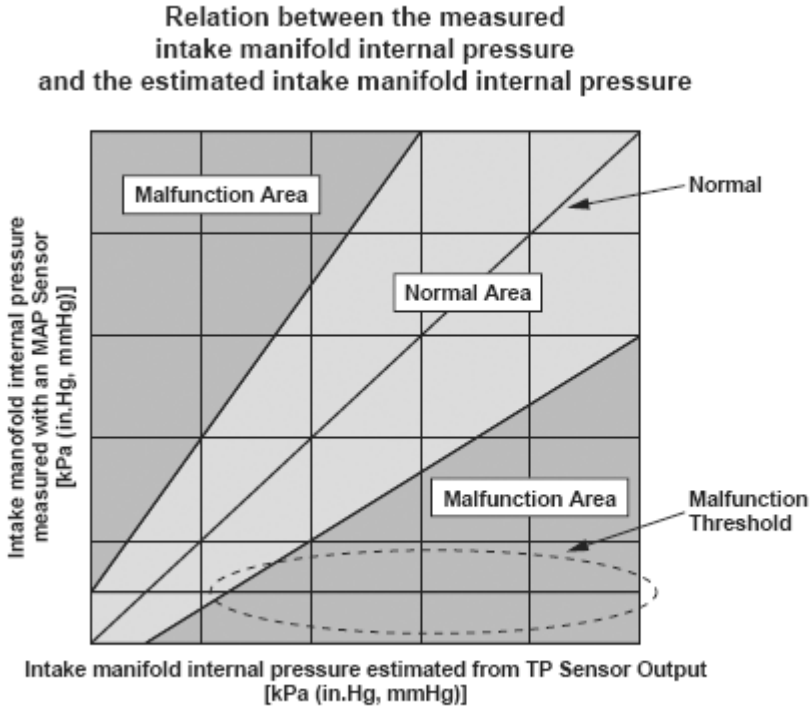


Fig. 138: Checking For Continuity Between ECM Connector Terminal A31 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (A31) and the SRS unit, the DLC.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

DLC CIRCUIT TROUBLESHOOTING

NOTE: Make sure the HDS and the DLC cable of the HDS is normal.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).

   NOTE: Make sure the HDS is properly connected to the DLC.

3. Turn the ignition switch ON (II), and read the HDS.

   Does the HDS identify the vehicle?

   YES - Go to step 4.

   NO - Go to step 25.

4. Check for Temporary DTCs or DTCs in the PGM-FI system with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES - Go to the indicated DTC's troubleshooting.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and watch the SRS indicator.

   Does the SRS indicator stay on?

   YES - Go to the SRS system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION**).

   NO -

   - With ABS system: Go to step 7.
   - With VSA system: Go to step 9.

7. Turn the ignition switch OFF.
8. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator stay on?

   YES - Go to the ABS system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION**).

   NO - Go to step 11.

9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II), and watch the VSA indicator.

    Does the VSA indicator stay on?

    YES - Go to the VSA system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION**).

    NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Start the engine, and watch the EPS indicator.

    Does the EPS indicator stay on?

    YES - Go to the EPS system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION**).

    NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Turn the ignition switch ON (II), and watch the immobilizer indicator.

    Does the immobilizer indicator stay on or flash?

    YES - Go to the immobilizer system's troubleshooting (see **SYMPTOM TROUBLESHOOTING INFORMATION**).

    NO -

    - With TPMS: Go to step 15.
    - Without TPMS: Go to step 17.

15. Turn the ignition switch OFF.
16. Turn the ignition switch ON (II), and watch the TPMS indicator.

    Does the TPMS indicator stay on?

    YES - Go to the TPMS indicator system's troubleshooting.

NO - Go to step 17.

17. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).
18. Check for B-CAN system DTCs without the HDS (see **GENERAL TROUBLESHOOTING INFORMATION**).

    Are any B-CAN DTCs indicated?

    YES - Go to the indicated DTC's troubleshooting.

    NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the HDS from the DLC.
21. Check for continuity between DLC terminal No. 7 and body ground.

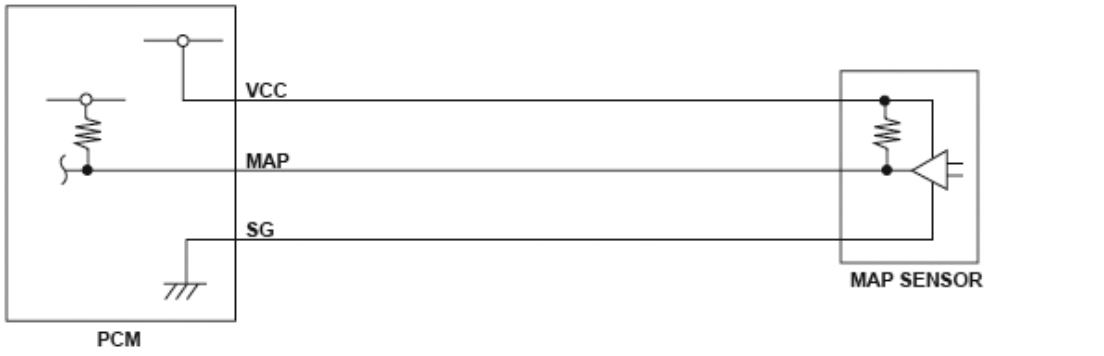


Fig. 139: Checking For Continuity Between DLC Terminal No. 7 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 5 ohms, or less?

YES - Go to step 22.

NO - Go to step 23.

22. Continue to check for continuity between DLC terminal No. 7 and body ground, while disconnecting these parts, one at a time:
    - SRS unit connector A (28P)
    - ABS modulator-control unit 25P connector (with ABS system)
    - VSA modulator-control unit 37P connector (with VSA system)
    - EPS control unit connector D (28P) (with electrical power steering)
    - Immobilizer-keyless control unit 7P connector
    - Audio unit 17P connector
    - Under-dash fuse/relay box (Q) (16P) connector

    Does continuity go away when one of the above components is disconnected?

YES - Replace the part that caused an open when it was disconnected.

NO - Repair short in the wire between the DLC (K-line) and the ABS modulator-control unit (with ABS system), the VSA modulator-control unit (with VSA system), the SRS unit, the EPS control unit, the immobilizer-keyless control unit, the audio unit, or the under-dash fuse/relay box.

23. Connect DLC terminal No. 7 to body ground with a jumper wire.

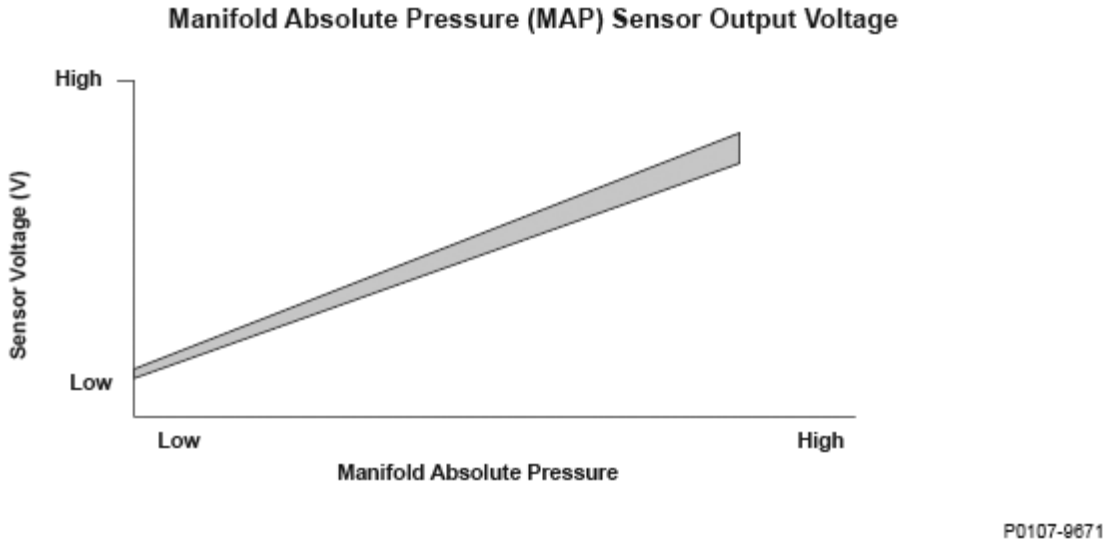


Fig. 140: Connecting DLC Terminal No. 7 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Check for continuity between body ground and these connector terminals:

BODY GROUND AND CONNECTOR TERMINALS

Connector	Terminal
SRS unit A (28P)	No. 24 (LT BLU)
ABS modulator-control unit 25P (with ABS system)	No. 10 (LT BLU)
VSA modulator-control unit 37P (with VSA system)	No. 26 (LT BLU)
EPS control unit D (28P)	No. 17 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
TPMS control unit 20P	N0. 7 (LT BLU)
Audio unit 17P	No. 6 (LT BLU)
Under-dash fuse/relay box (Q) (16P)	No. 8 (LT BLU)

Is there continuity between the DLC terminal and each of the terminals in the chart?

YES -Replace the unit which cannot communicate with the HDS.

NO -Repair open in the wire between the DLC (K-line) and the appropriate connector.

25. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).

26. Check for B-CAN system DTCs without the HDS (see **GENERAL TROUBLESHOOTING INFORMATION**).

    Is DTC B1168, B1169, and/or B1178 indicated?

    YES - Go to step 39.

    NO - Go to step 27.

27. Turn the ignition switch OFF.
28. Disconnect the HDS from the DLC.
29. Measure voltage between DLC terminal No. 16 and body ground.

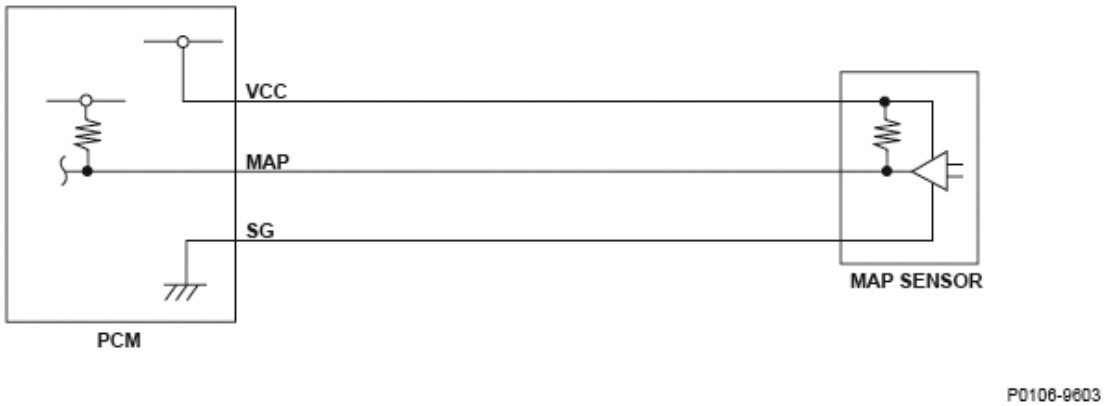


Fig. 141: Measuring Voltage Between DLC Terminal No. 16 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 30.

NO - Repair open in the wire between DLC terminal No. 16 and the No. 23 BACK UP (10 A) fuse in the under-hood fuse/relay box.

30. Measure voltage between DLC terminals No. 4 and No. 16.

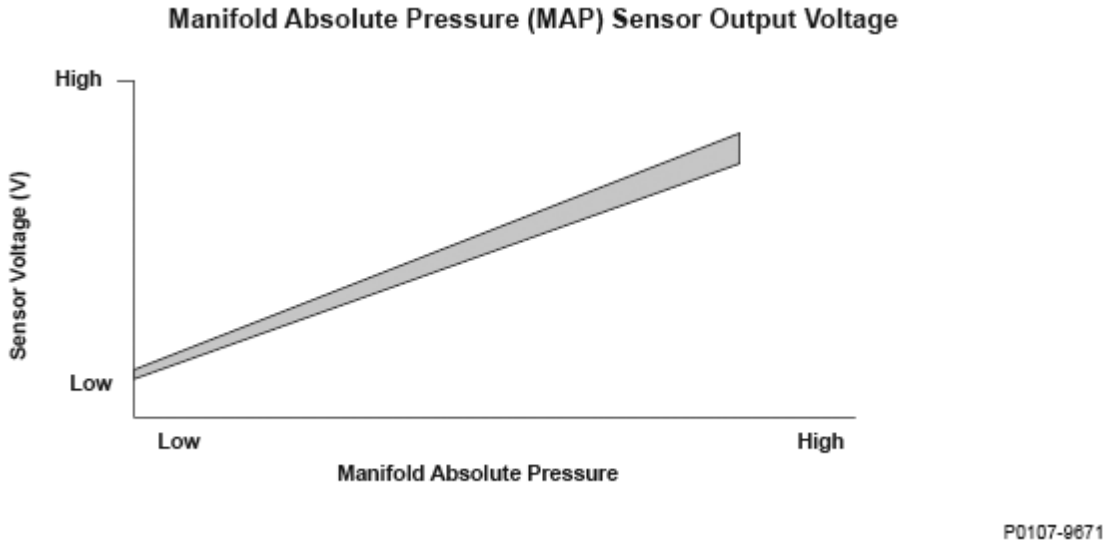


Fig. 142: Measuring Voltage Between DLC Terminals No. 4 And No. 16
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 31.

NO - Repair open in the wire between DLC terminal No. 4 and body ground (G502) (see **CONNECTOR TO HARNESS INDEX**).

31. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).
32. Jump the SCS line with the HDS.
33. Disconnect ECM connector A (44P).
34. Disconnect the HDS from the DLC.
35. Connect DLC terminal No. 6 to body ground with a jumper wire.

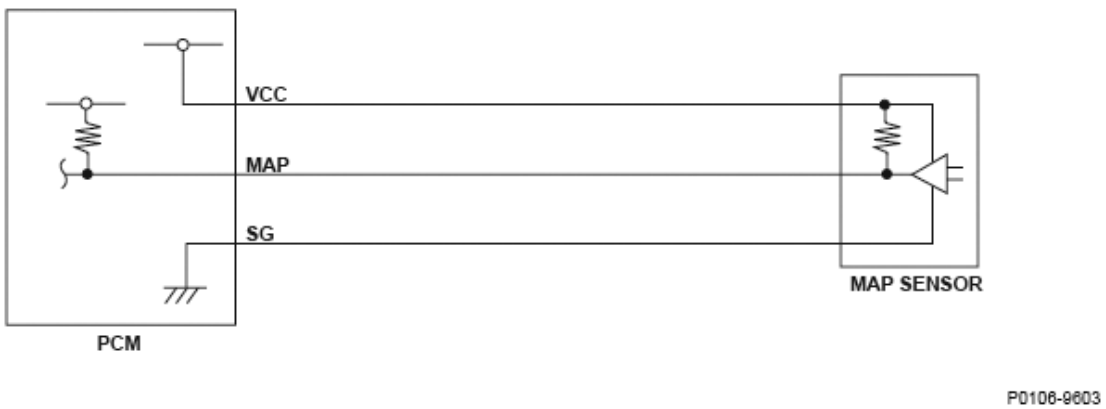


Fig. 143: Connecting DLC Terminal No. 6 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Check for continuity between ECM connector terminal A36 and body ground.

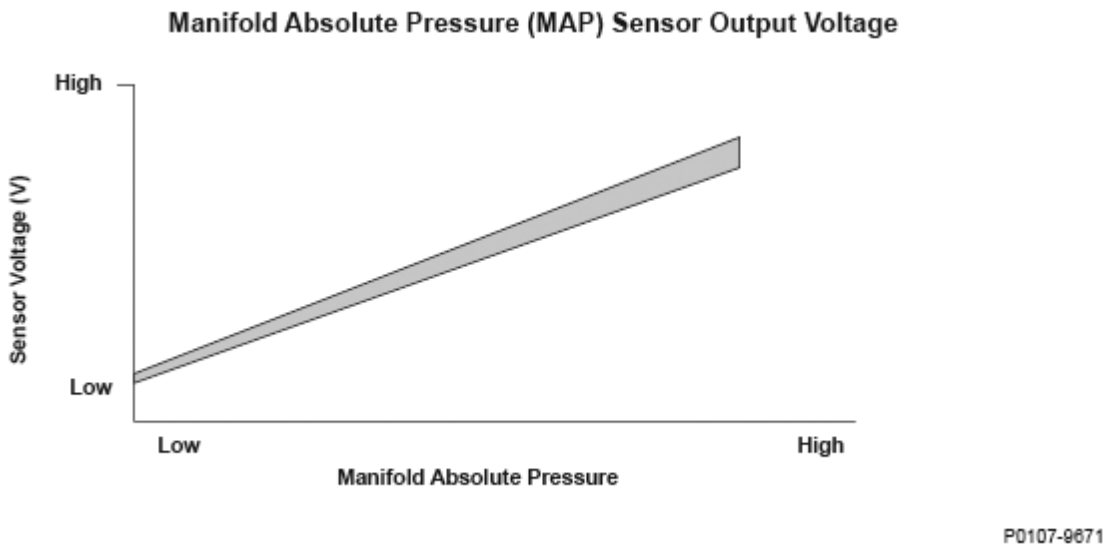


Fig. 144: Checking For Continuity Between ECM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 37.

NO - Repair open in the wire between the ECM (A36) and DLC terminal No. 6.

37. Connect DLC terminal No. 14 to body ground with a jumper wire.

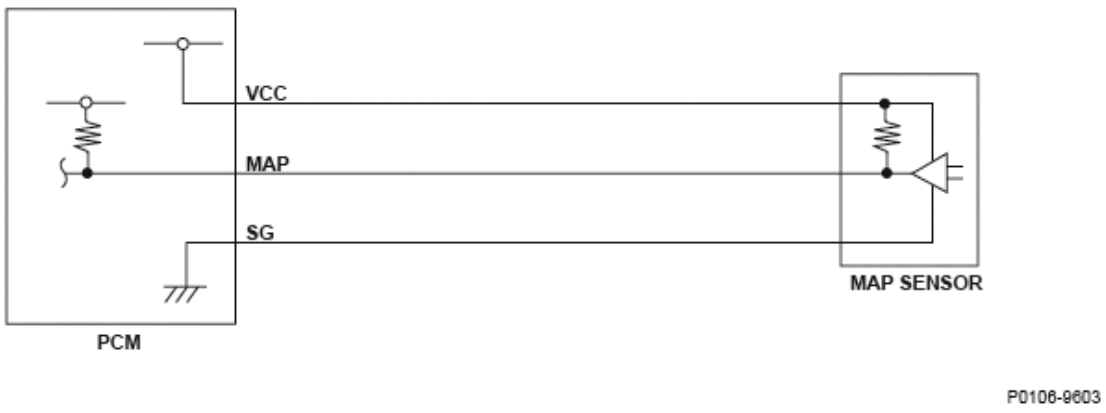


Fig. 145: Connecting DLC Terminal No. 14 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Check for continuity between ECM connector terminal A37 and body ground.

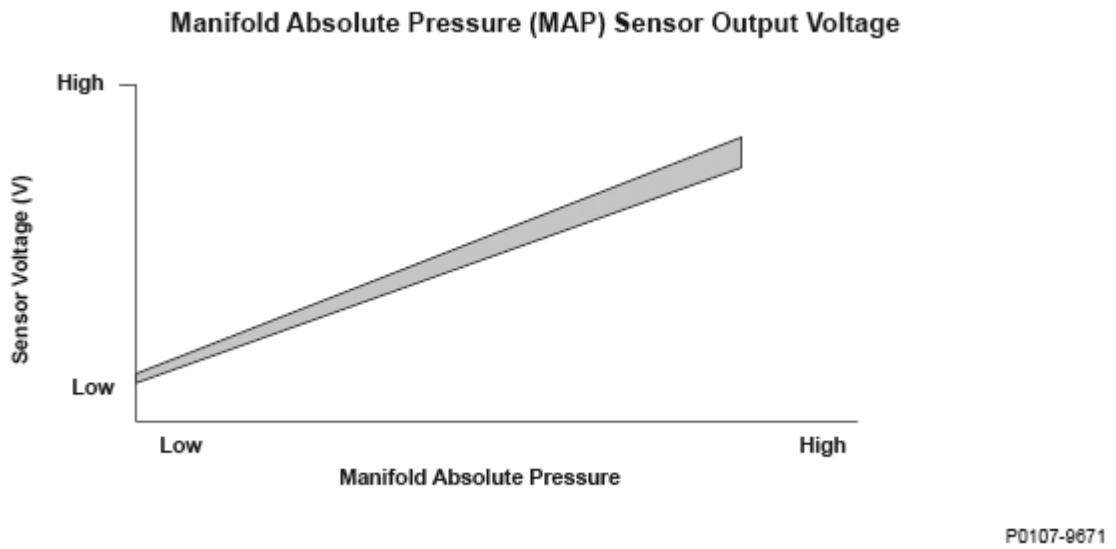


Fig. 146: Checking For Continuity Between ECM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Repair open in the wire between the ECM (A37) and DLC terminal No. 14.

39. Try to start the engine.

    Does the engine start and idle smoothly?

    YES - Go to **F-CAN CIRCUIT TROUBLESHOOTING** (see).

    NO - Go to step 40.

40. Turn the ignition switch OFF.
41. Check the No. 2 IG MAIN (50 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES - Repair open in the wire between the No. 2 IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 42.

    NO - Repair short in the wire between the No. 2 IG MAIN (50 A) fuse and the under-hood fuse/relay box. Also replace the No. 2 IG MAIN (50 A) fuse.

42. Inspect the No. 19 Fl MAIN (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

YES - Go to step 49.

NO - Go to step 43.

43. Remove the blown No. 19 Fl MAIN (15 A) fuse from the under-hood fuse/relay box.
44. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

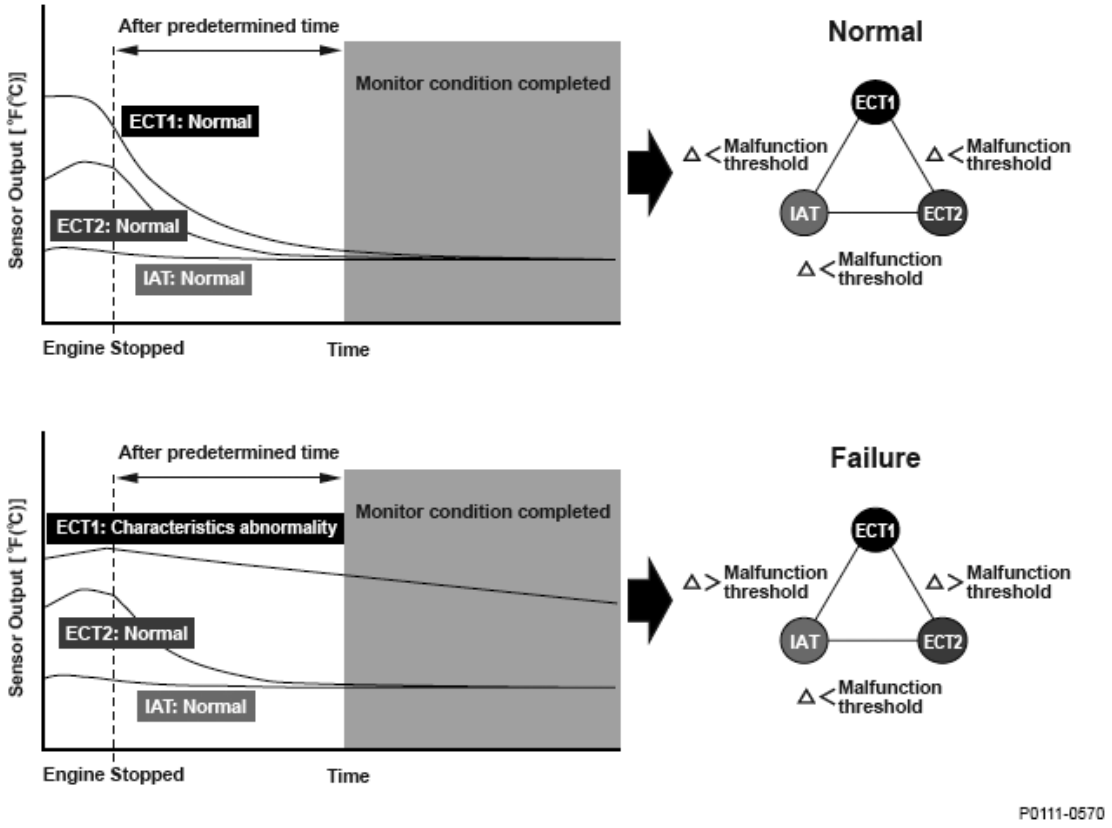


Fig. 147: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 1 and No. 3 individually.

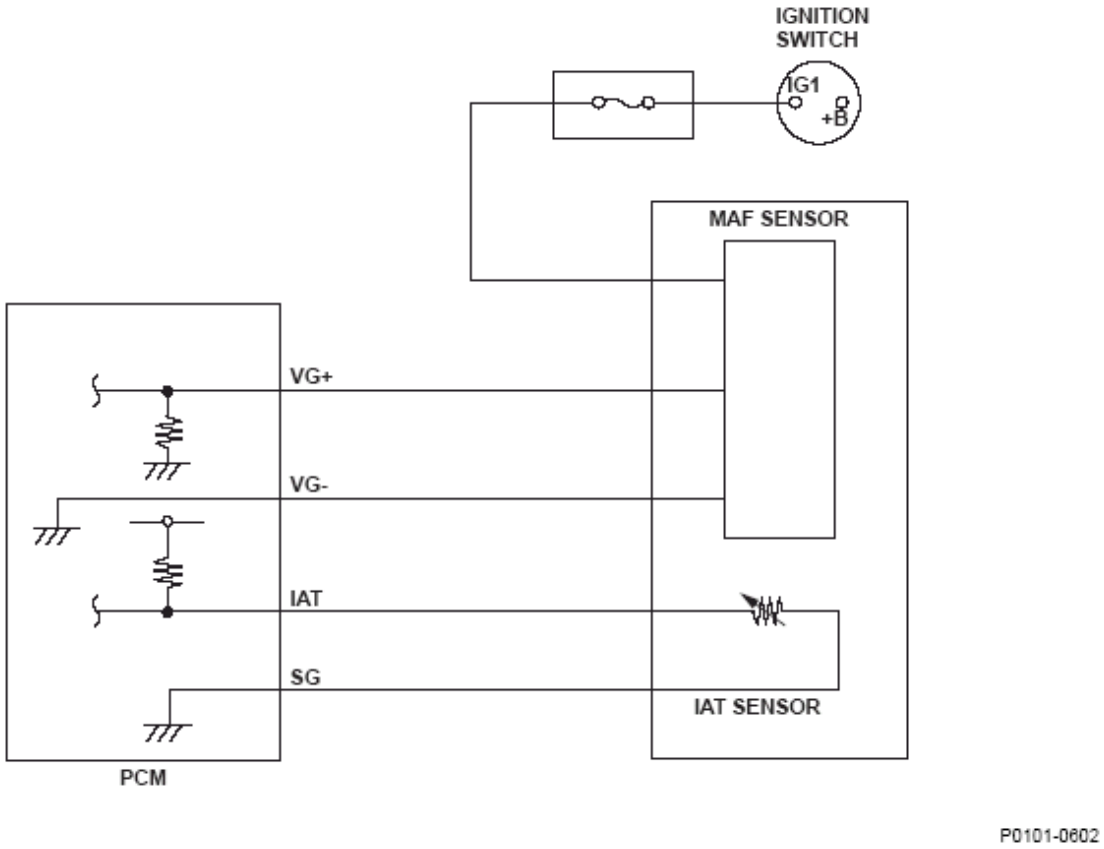


Fig. 148: Checking Continuity Between Body Ground And PGM-FI Main Relay 1 4P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**). Also replace the No. 19 Fl MAIN (15 A) fuse.

NO - Go to step 46.

46. Disconnect each of the components or connectors these components, one at a time, and check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM connector A (44P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor B 3P connector
    - Crankshaft position (CKP) sensor 3P connector
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay

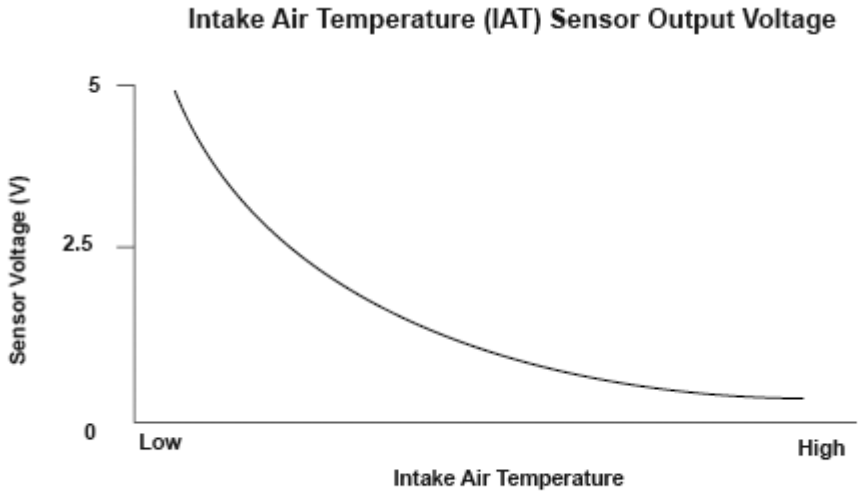


Fig. 149: Checking Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does continuity go away when one of the above components is disconnected?

YES - Replace the component that made the short to body ground go away when disconnected. If the item is the ECM, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**). Also replace the No. 19 Fl MAIN (15 A) fuse.

NO - Go to step 47.

47. Disconnect the all connectors from these components:
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM connector A (44P)
    - Injectors
    - Camshaft position (CMP) sensor B
    - Crankshaft position (CKP) sensor
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay
48. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

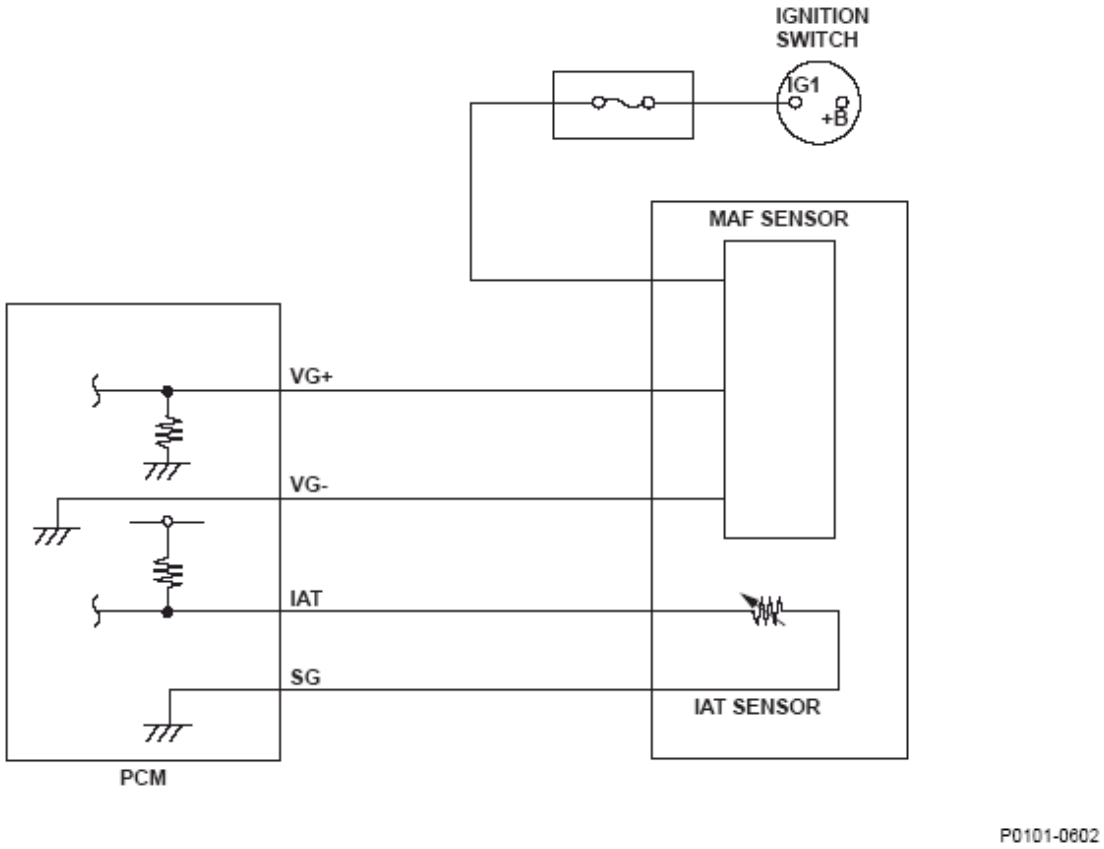


Fig. 150: Checking Continuity Between PGM-FI Main Relay 1 4P Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between PGM-FI main relay 1 and each item. Also replace the No. 19 Fl MAIN (15 A) fuse.

NO - Replace PGM-FI main relay 1. Also replace the No. 19 Fl MAIN (15 A) fuse.

49. Inspect the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES - Go to step 62.

    NO - Go to step 50.

50. Remove the blown No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.
51. Jump the SCS line with the HDS.
52. Disconnect ECM connector C (44P).
53. Check for continuity between ECM connector terminal C36 and body ground.

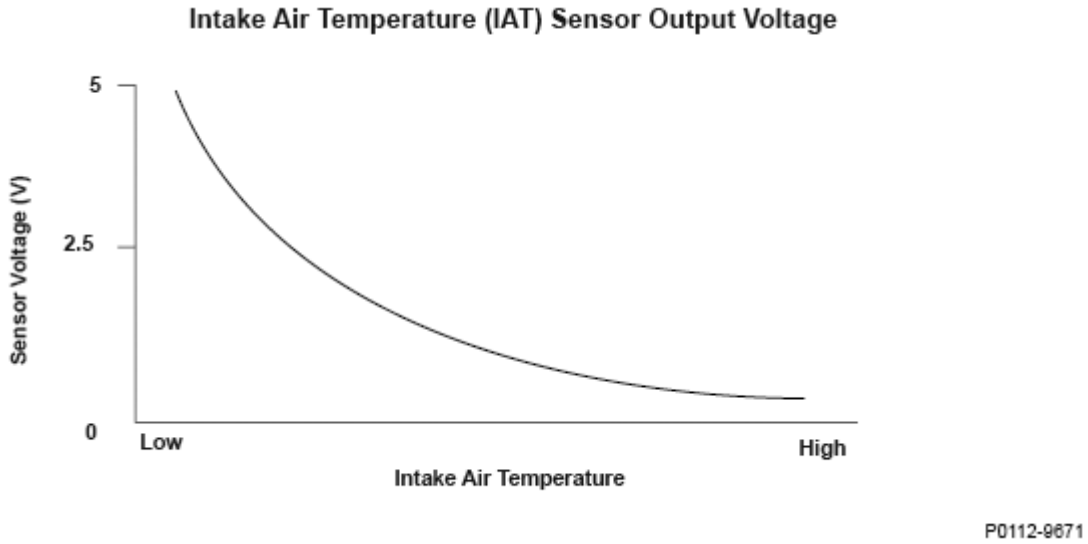


Fig. 151: Checking Continuity Between ECM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 54.

NO - Replace the No. 2 FUEL PUMP (15 A) fuse, and update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

54. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

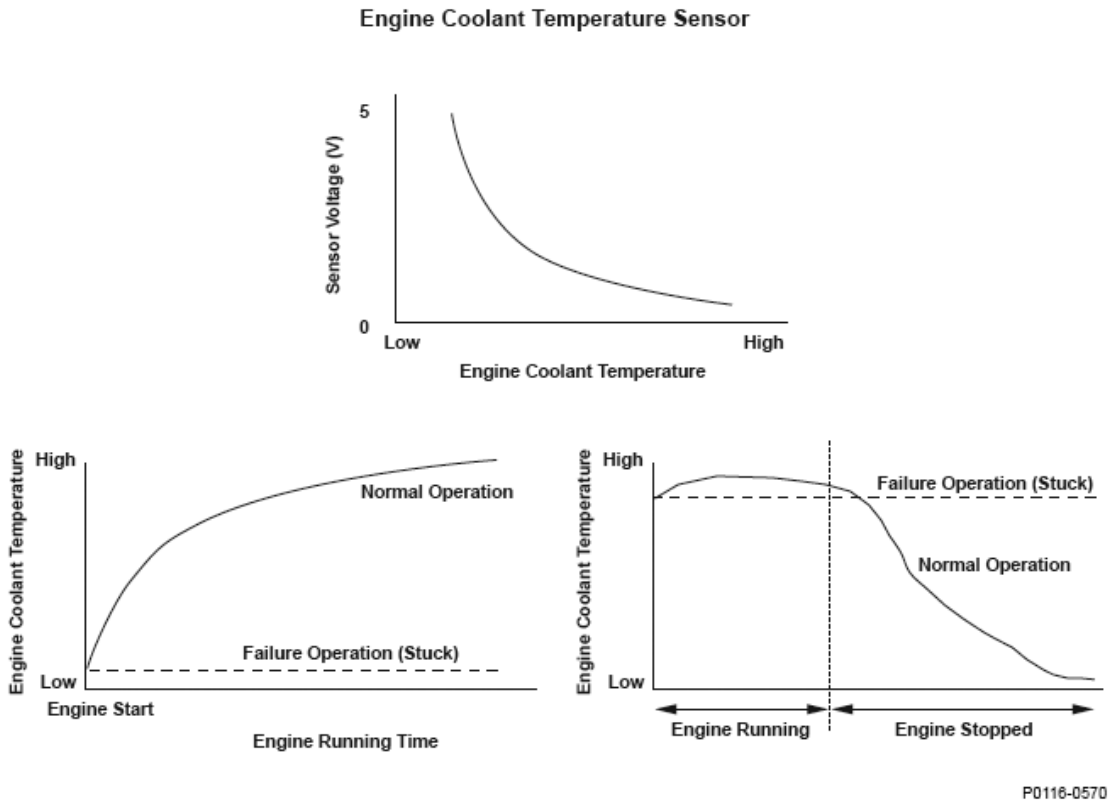


Fig. 152: Identifying PGM-FI Main Relay 2 (FUEL PUMP)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

55. Check for continuity between ECM connector terminal C36 and body ground.

Fig. 153: Checking For Continuity Between ECM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM (C36), between the No. 2 FUEL PUMP (15 A) fuse and PGM-FI main relay 2 (FUEL PUMP), or between the No. 2 FUEL PUMP (15 A) fuse and the immobilizer control unit. Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Go to step 56.

56. Remove the rear cushion seat (see **SEAT CUSHION**).

57. Remove the rear floor upper cross-member, and the access panel from the floor (see step 5 in **FUEL TANK UNIT REMOVAL/INSTALLATION**).
58. Disconnect the fuel pump 4P connector.
59. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

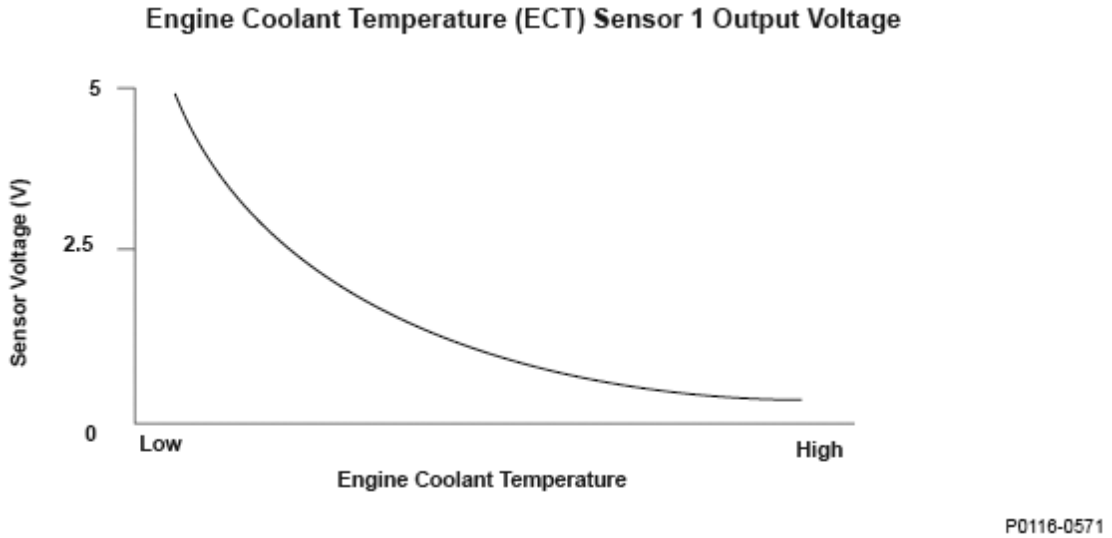


Fig. 154: Checking For Continuity Between Fuel Pump 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Go to step 60.

60. Reinstall PGM-FI main relay 2 (FUEL PUMP) (A).

Fig. 155: Identifying PGM-FI Main Relay 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

61. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

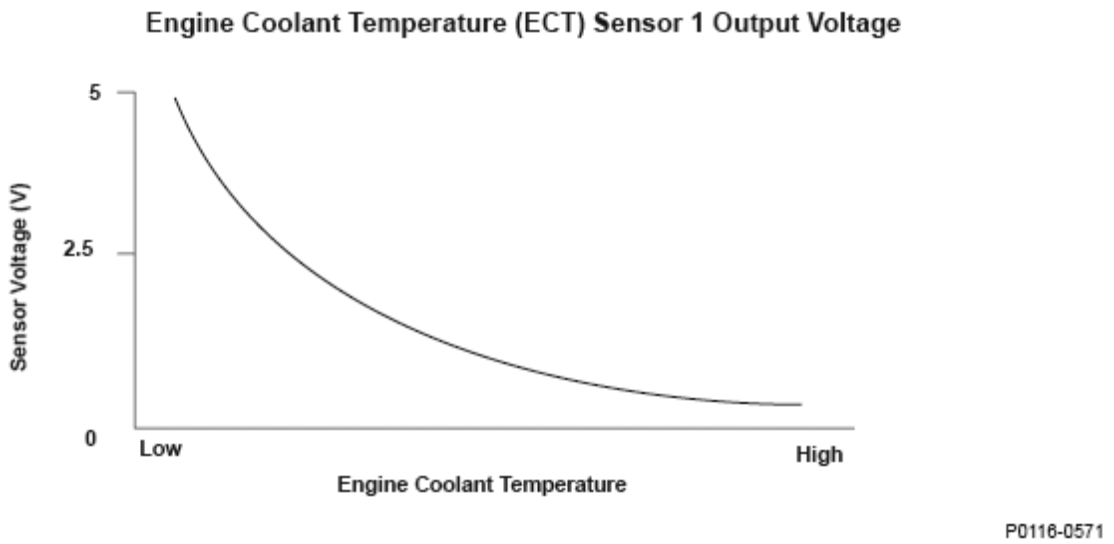


Fig. 156: Checking For Continuity Between Fuel Pump 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Check the fuel pump, and replace it if necessary (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**). Also replace the No. 2 FUEL PUMP (15 A) fuse.

62. Jump the SCS line with the HDS.
63. Disconnect ECM connectors A (44P) and C (44P).
64. Turn the ignition switch ON (II).
65. Measure voltage between ECM connector terminal C36 and body ground.

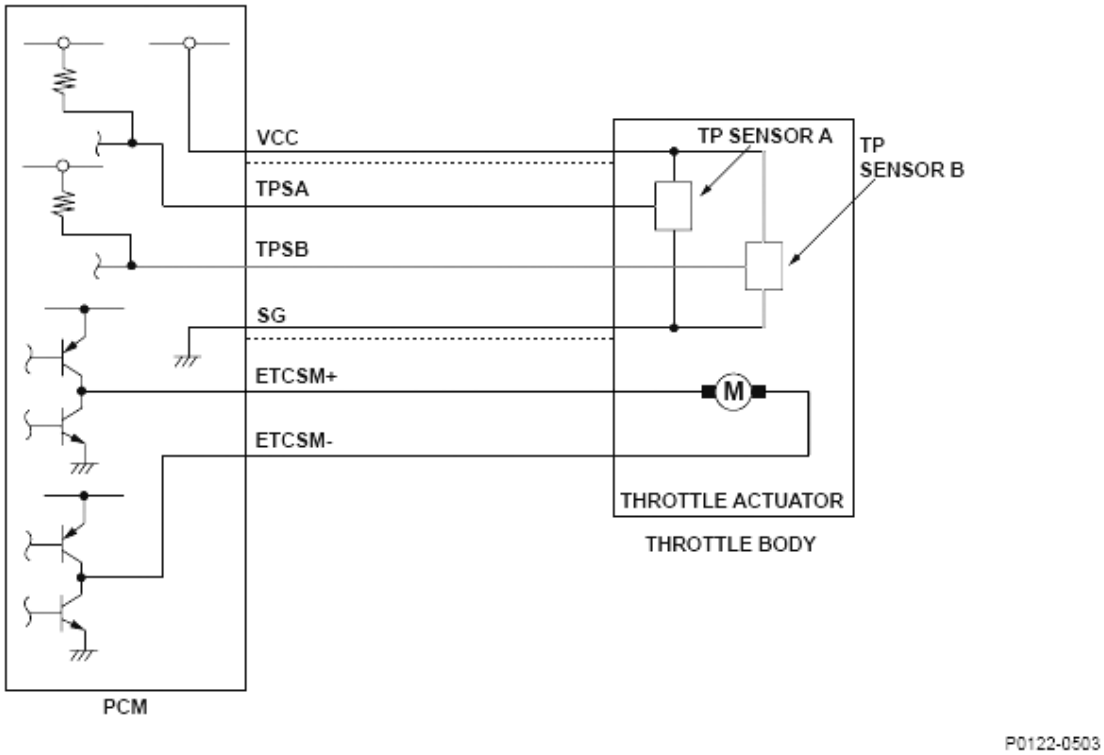


Fig. 157: Measuring Voltage Between ECM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 66.

NO - Repair open in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM (C36).

66. Measure voltage between ECM connector terminal A6 and body ground.

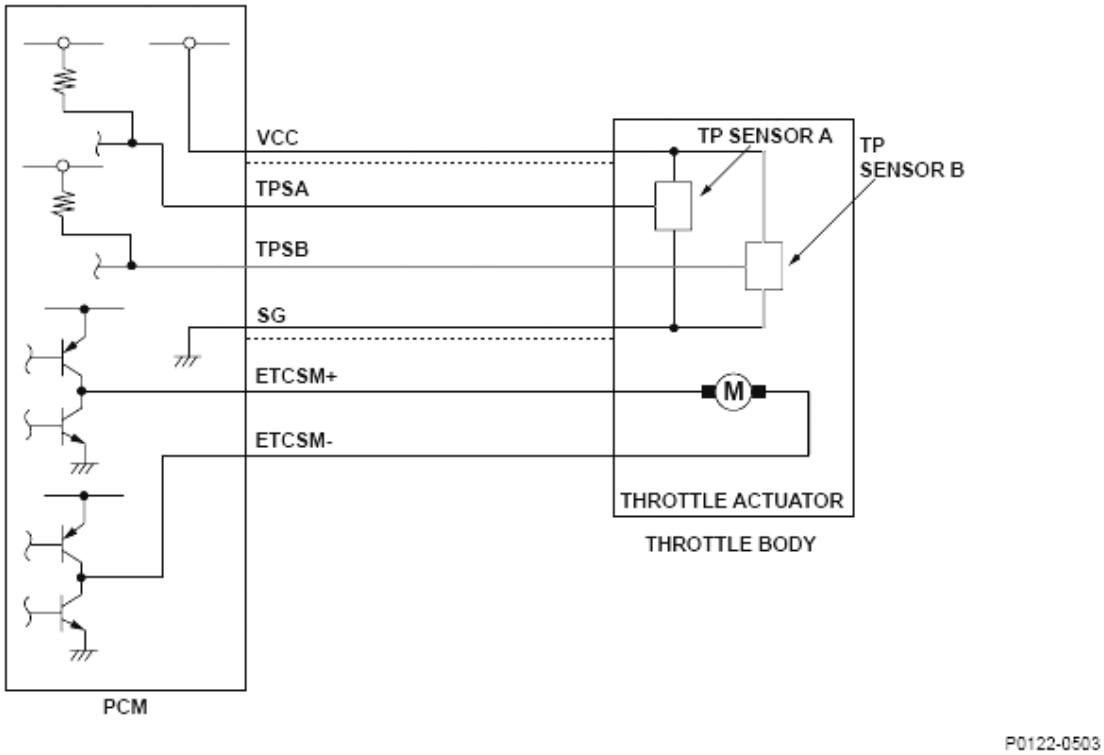


Fig. 158: Measuring Voltage Between ECM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 71.

NO - Go to step 67.

67. Turn the ignition switch OFF.
68. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

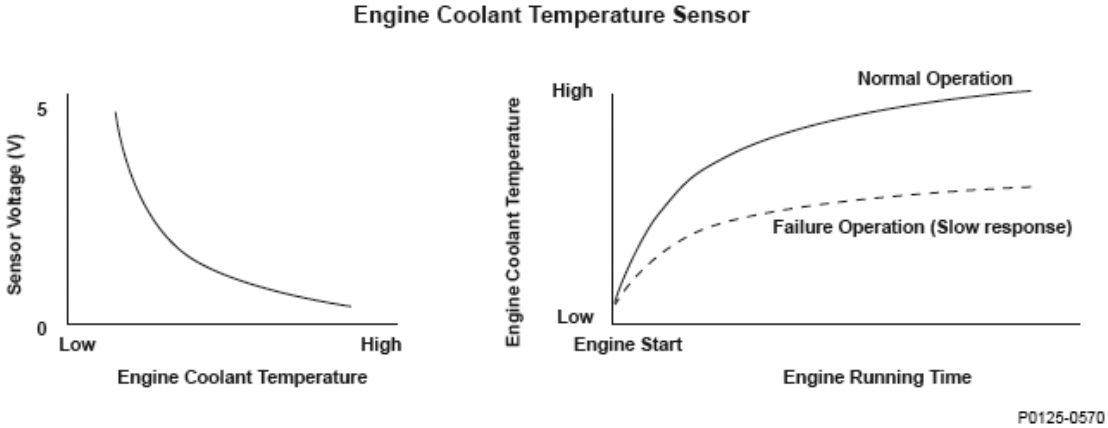


Fig. 159: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

69. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 3 and body ground.

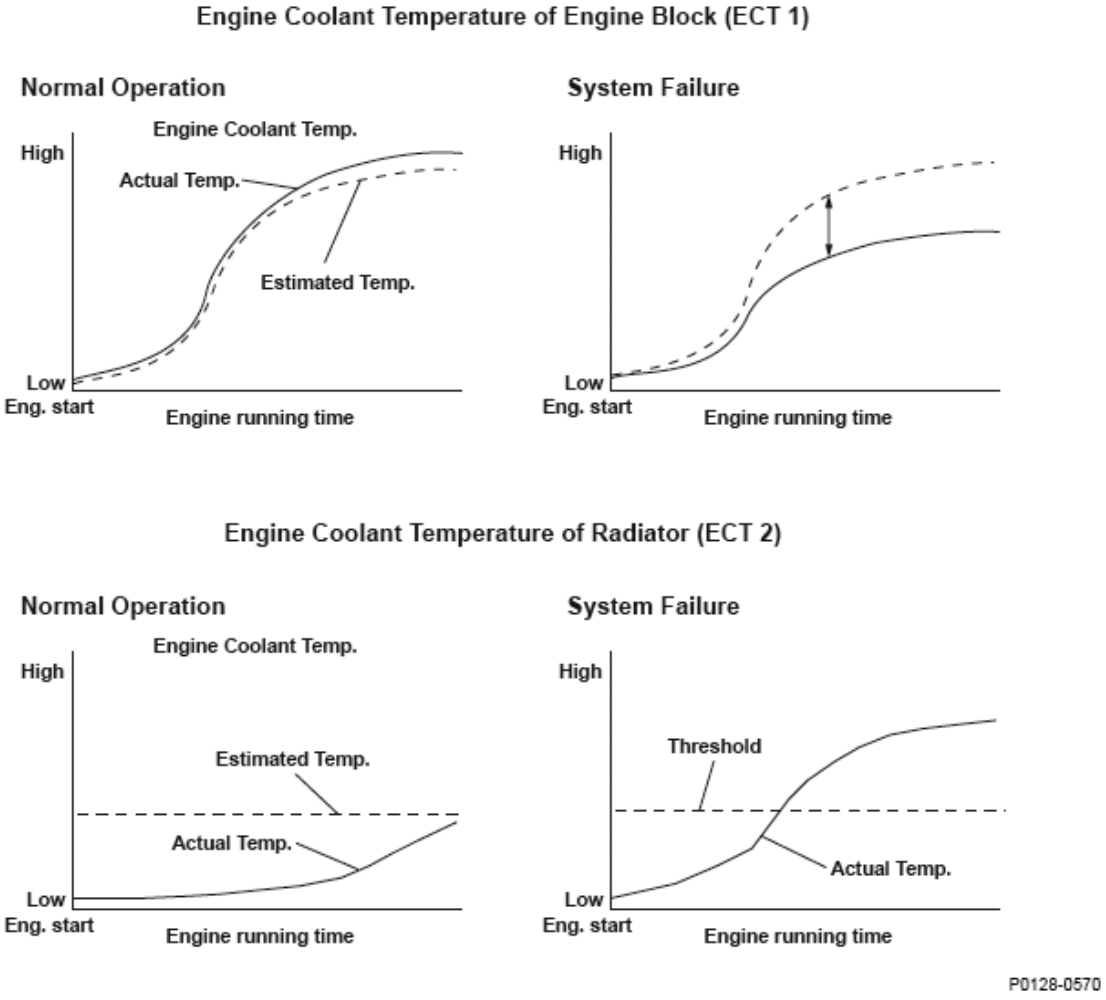


Fig. 160: Measuring Voltage Between PGM-FI Main Relay 1 4P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 70.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

70. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 4 and ECM connector terminal A6.

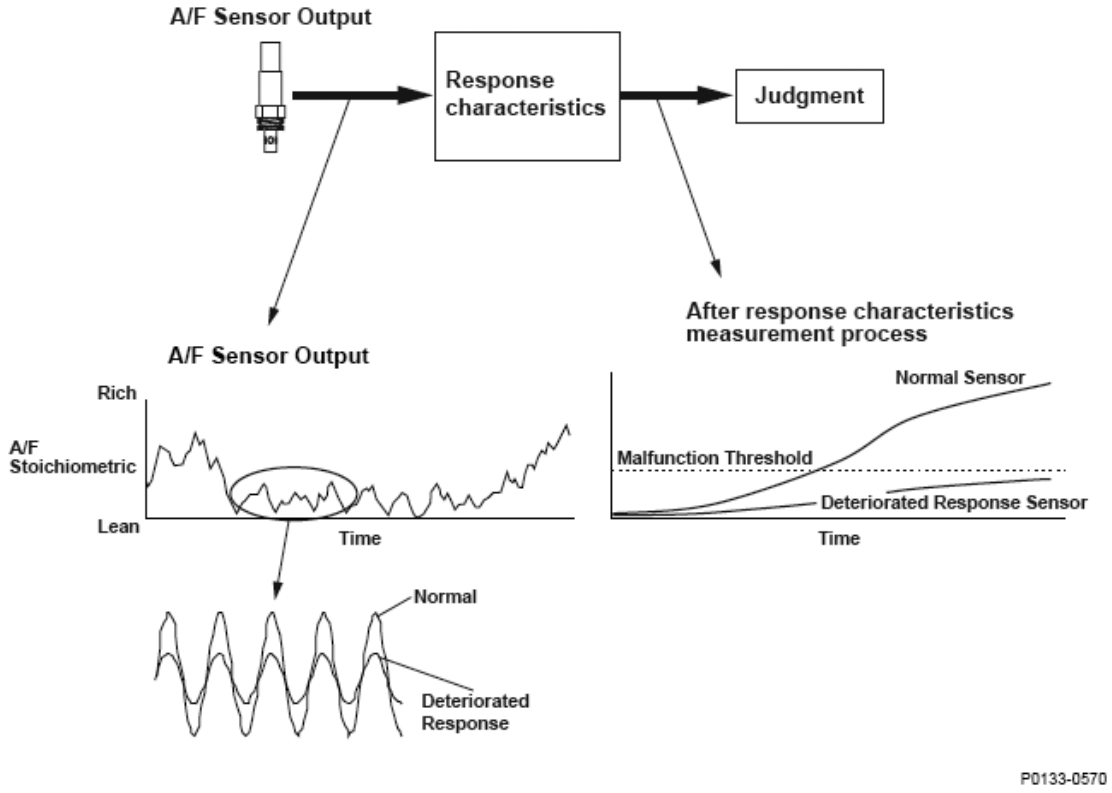


Fig. 161: Checking Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 4 And Terminal A6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Test PGM-FI main relay 1 (see **POWER RELAY TEST**). If the relay is OK, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Repair open in the wire between the ECM (A6) and PGM-FI main relay 1.

71. Turn the ignition switch OFF.
72. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

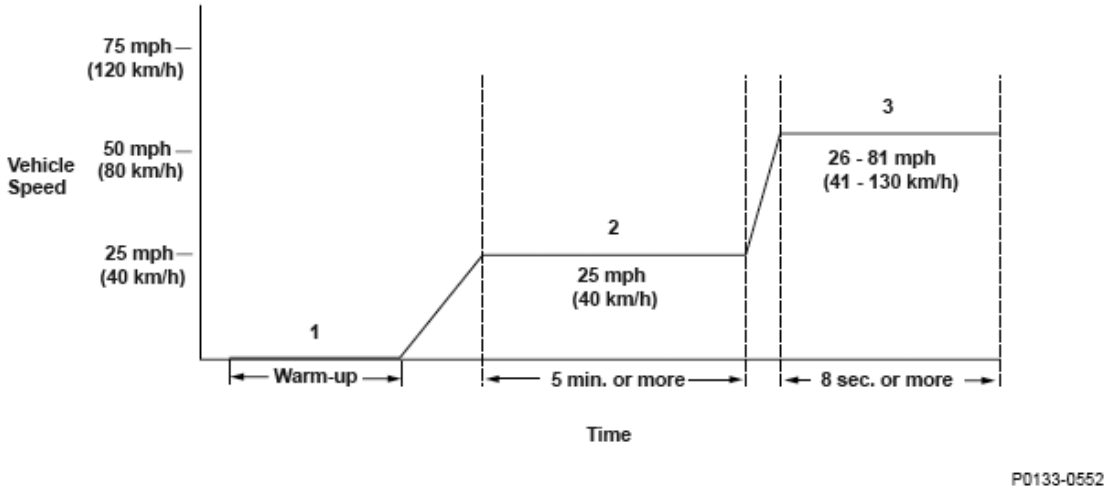


Fig. 162: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

73. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

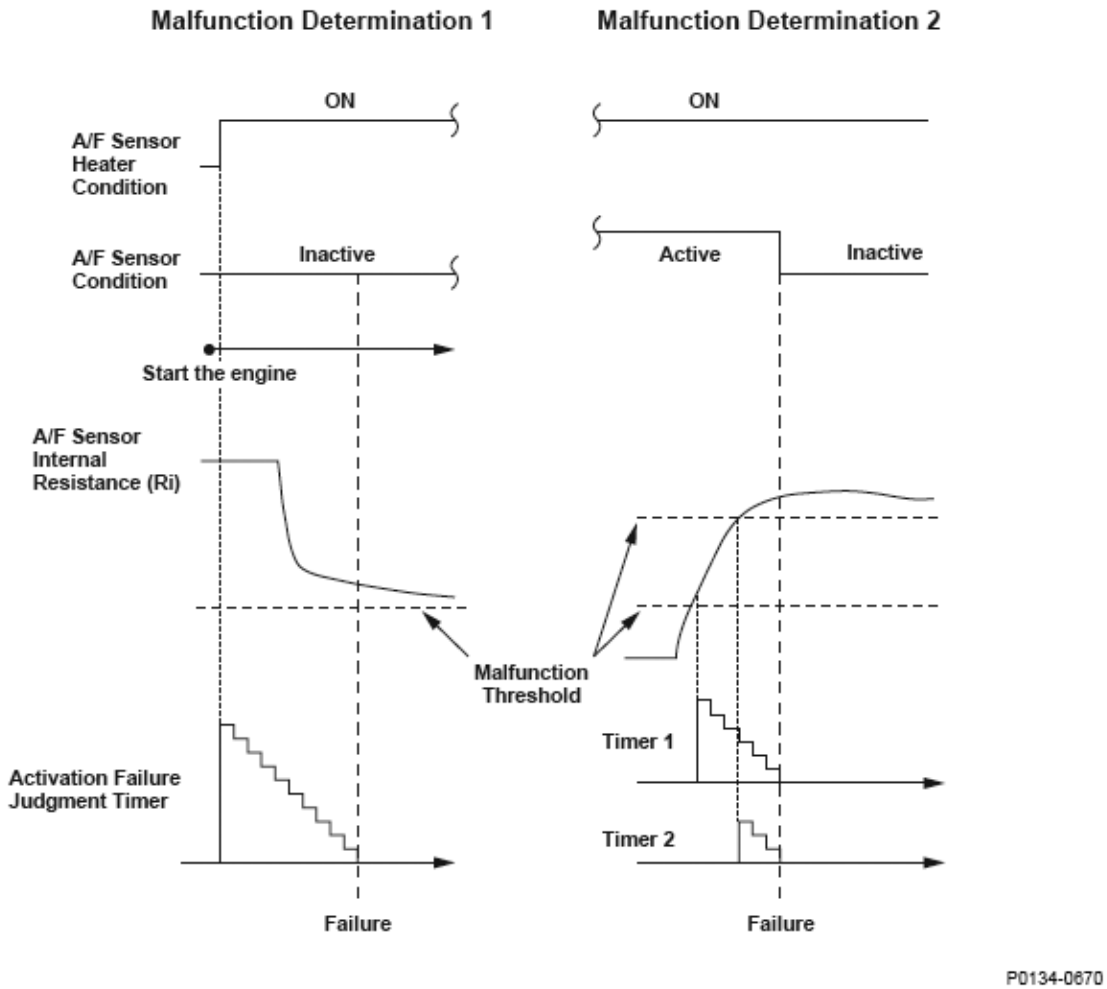


Fig. 163: Measuring Voltage Between PGM-FI Main Relay 1 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 74.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

74. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM connector terminal A8.

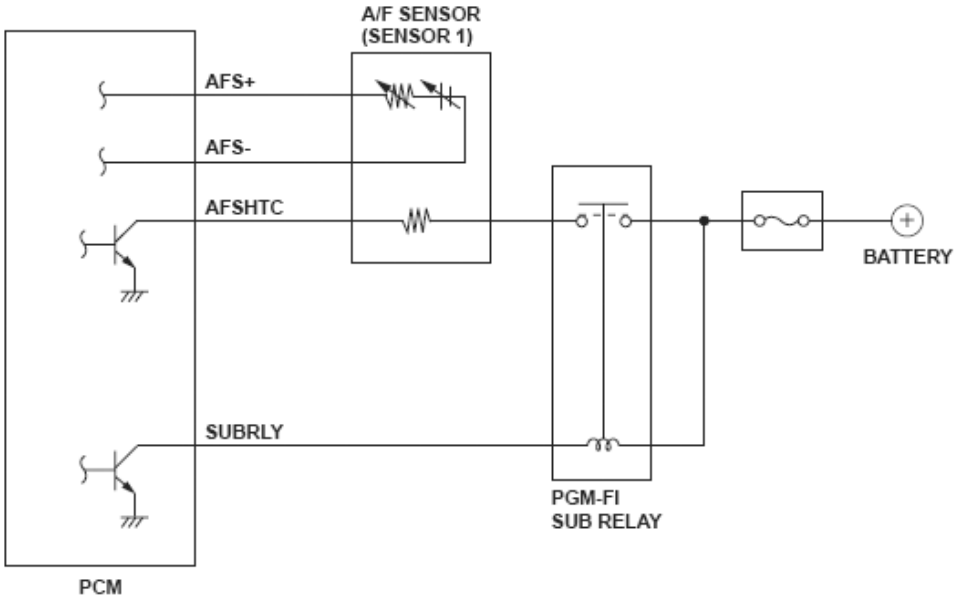


Fig. 164: Checking Continuity Between PGM-FI Main Relay 1 4P Connector Terminal 2 And Terminal A8
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 75.

NO - Repair open in the wire between the ECM (A8) and PGM-FI main relay 1.

75. Test PGM-FI main relay 1 (see **POWER RELAY TEST**).

Is PGM-FI main relay 1 OK?

YES - Go to step 76.

NO - Replace PGM-FI main relay 1.

76. Disconnect ECM connector B (44P).
77. Check for continuity between body ground and ECM connector terminals B1, B36, C2, C40, and C44 individually.

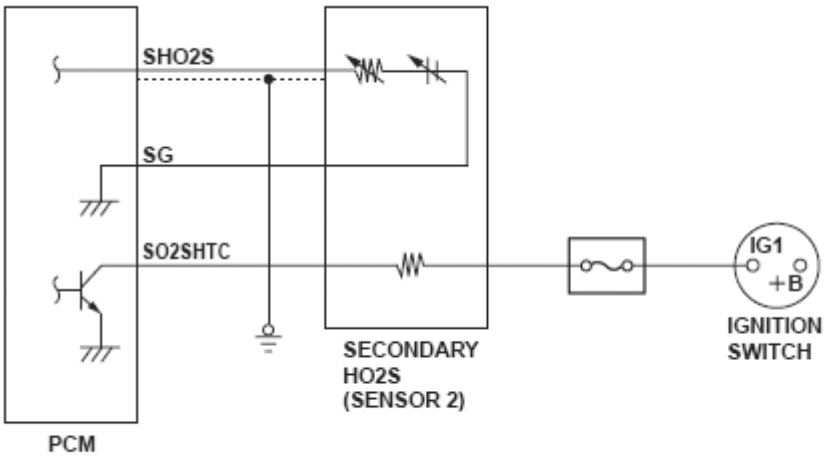


Fig. 165: Checking For Continuity Between Body Ground And ECM Connector Terminals B1, B36, C2, C40, And C44
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 78.

NO - Repair open in the wire between the ECM (B1, B36, C2, C40, C44) and G101 (see **CONNECTOR TO HARNESS INDEX**).

78. Check for continuity between ECM connector terminal C13 and body ground.

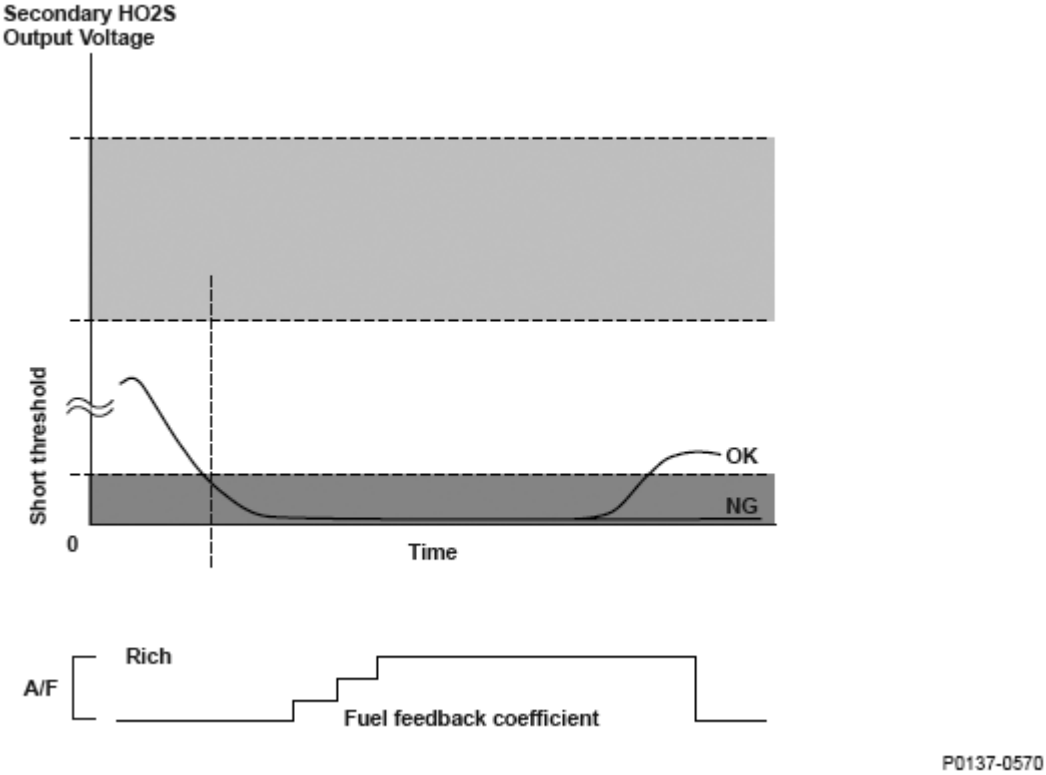


Fig. 166: Checking For Continuity Between ECM Connector Terminal C13 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 79.

NO - Go to step 80.

79. Continue to check for continuity between ECM connector terminal C13 and body ground, while disconnecting the MAP sensor 3P connector.

Is there continuity?

YES - Repair short in the wire between the ECM (C13) and the MAP sensor.

NO - Replace the MAP sensor (see **MAP SENSOR REPLACEMENT**).

80. Check for continuity between ECM connector terminal B18 and body ground.

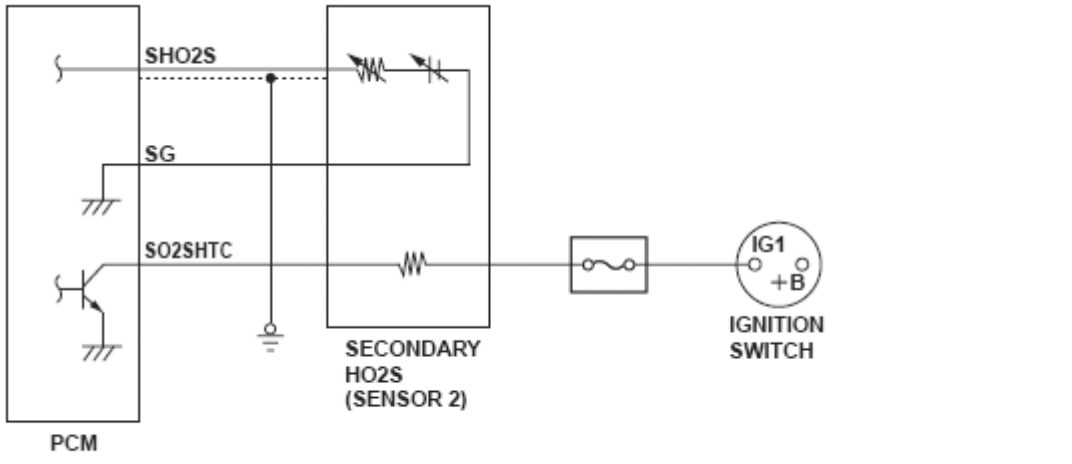


Fig. 167: Checking Continuity Between ECM Connector Terminal B18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 81.

NO - Go to step 82.

81. Continue to check for continuity between ECM connector terminal B18 and body ground, while disconnecting the output shaft (countershaft) speed sensor 3P connector.

Is there continuity?

YES - Repair short in the wire between the ECM (B18) and the output shaft (countershaft) speed sensor.

NO - Replace the output shaft (countershaft) speed sensor (see **KNOCK SENSOR REPLACEMENT**).

82. Check for continuity between ECM connector terminal C12 and body ground.

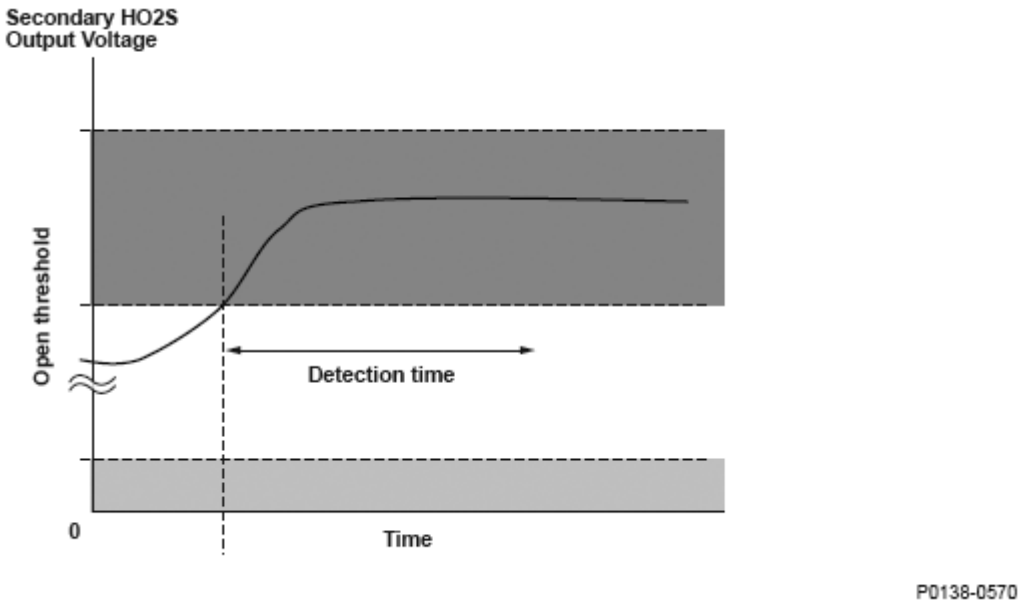


Fig. 168: Checking For Continuity Between ECM Connector Terminal C12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 83.

NO - Go to step 84.

83. Continue to check for continuity between ECM connector terminal C12 and body ground, while disconnecting the throttle body 6P connector.

Is there continuity?

YES - Repair short in the wire between the ECM (C12) and the throttle body.

NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

84. Check for continuity between ECM connector terminal A25 and body ground.

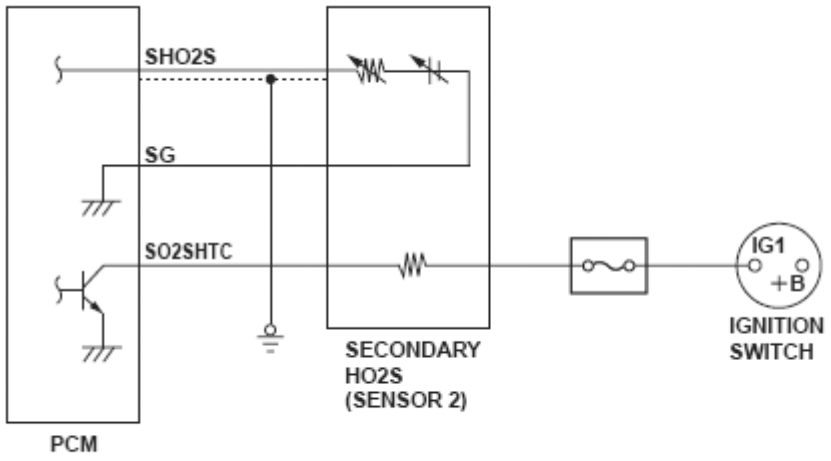


Fig. 169: Checking For Continuity Between ECM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 85.

NO - Go to step 86.

85. Continue to check for continuity between ECM connector terminal A25 and body ground, while disconnecting the APP sensor 6P connector.

    Is there continuity?

    YES - Repair short in the wire between the ECM (A25) and APP sensor A.

    NO - Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

86. Check for continuity between ECM connector terminal A24 and body ground.

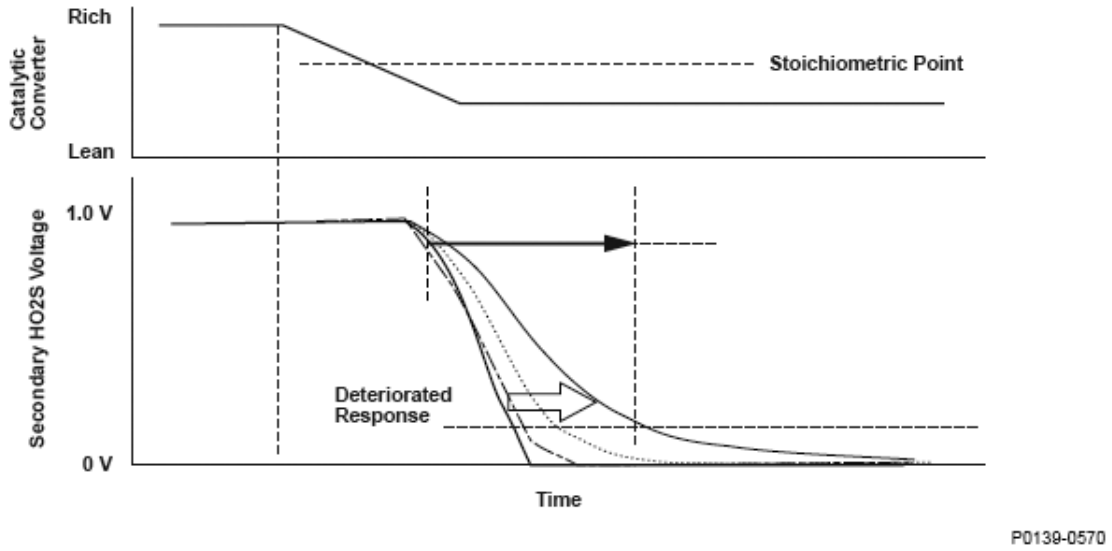


Fig. 170: Checking For Continuity Between ECM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 87.

NO - Go to step 88.

87. Continue to check for continuity between ECM connector terminal A24 and body ground, while disconnecting the APP sensor 6P connector.

    Is there continuity?

    YES - Repair short in the wire between the ECM (A24) and APP sensor B.

    NO - Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

88. Check for continuity between ECM connector terminal A19 and body ground.

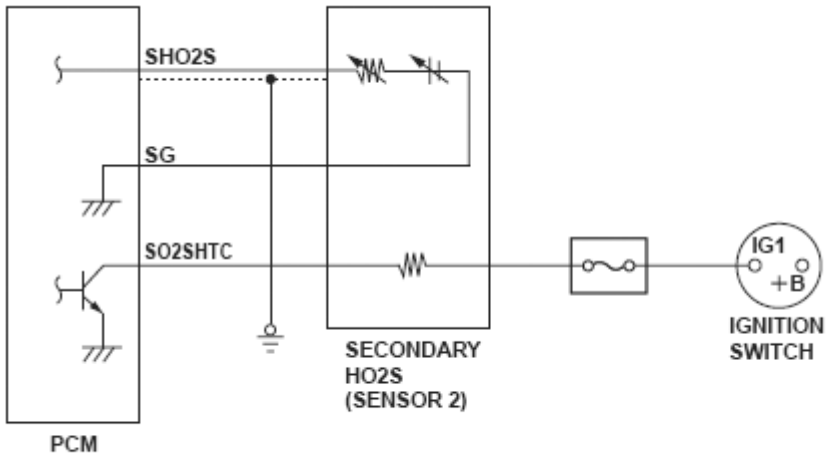


Fig. 171: Checking For Continuity Between ECM Connector Terminal A19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 89.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

89. Continue to check for continuity between ECM connector terminal A19 and body ground, while disconnecting these parts, one at a time:
    - A/C pressure sensor 3P connector
    - FTP sensor 3P connector

    Does continuity go away when one of the above components is disconnected?

    YES - Replace the part that caused an open when it was disconnected.

    NO - Repair short in the wire between the ECM (A19) and the A/C pressure sensor or the FTP sensor.

INJECTOR REPLACEMENT

1. Relieve fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the engine cover.
3. Disconnect the connectors (A) from the injectors.

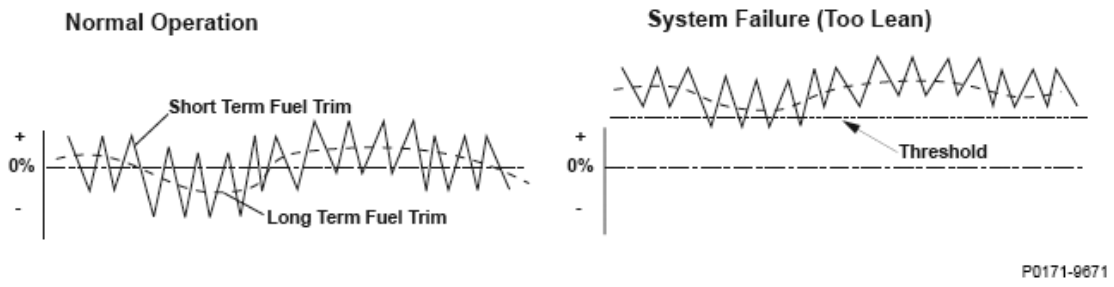


Fig. 172: Disconnecting Connector From Injectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the ground cable bolt (G101) (B).
5. Disconnect the quick-connect fitting (C).
6. Remove the fuel rail mounting nuts (D) from the fuel rail (E).
7. Remove the fuel rail and the injectors from the injector base.
8. Remove the injector clip (F) from the injector.
9. Remove the injector from the fuel rail.
10. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

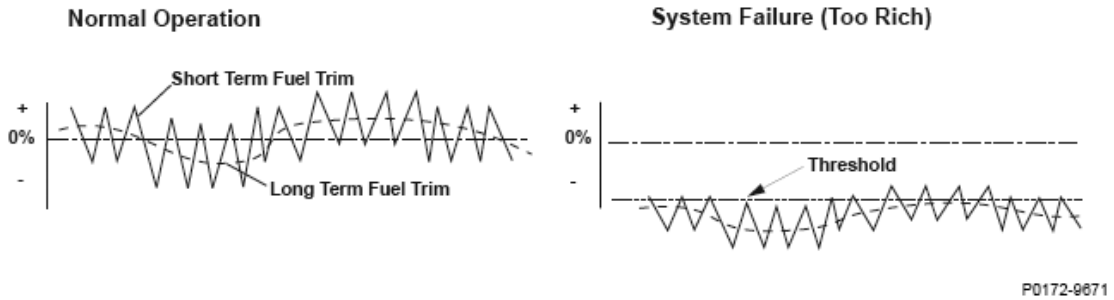


Fig. 173: Inserting Injectors Into Fuel Rail (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the injector clip (D).
12. Coat the injector O-rings (E) with clean engine oil.
13. Install the fuel rail and the injectors in the injector base (F).
14. Install the fuel rail mounting nuts (G).
15. Connect the connectors on the injectors, and reinstall the ground cable bolt(G101).
16. Connect the quick-connect fitting.
17. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail is pressurized. Repeat this two or three times, then check for fuel leakage.
18. Install the engine cover.

A/F SENSOR REPLACEMENT

Special Tools Required

02 sensor wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A), then remove the A/F sensor (B).

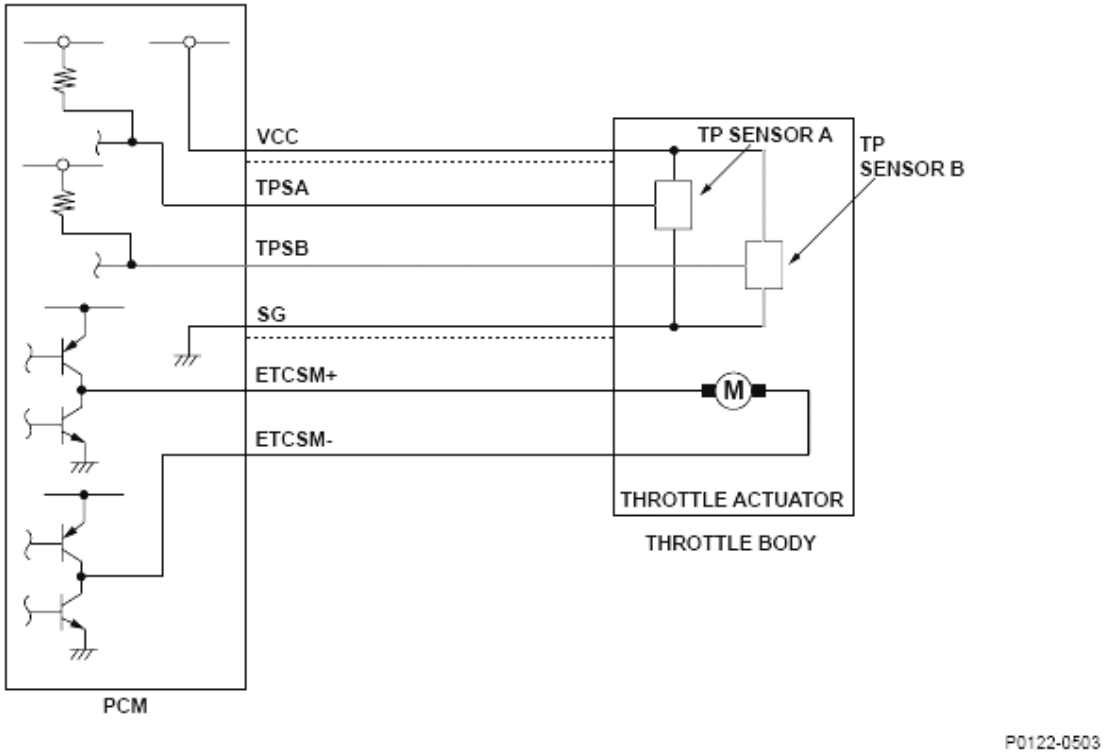


Fig. 174: Removing A/F Sensor (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the parts in the reverse order of removal.

SECONDARY HO2S REPLACEMENT

Special Tools Required

02 sensor wrench. Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).

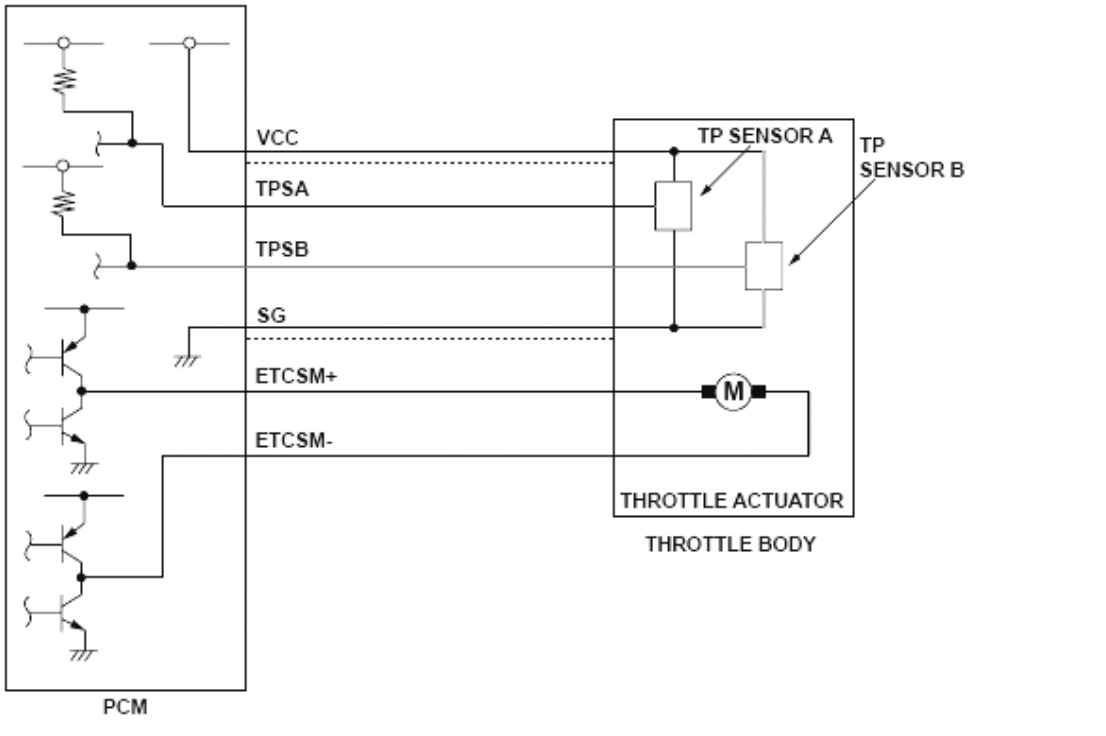


Fig. 175: Removing Secondary HO2S (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the parts in the reverse order of removal.

CMP SENSOR B REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Disconnect the CMP sensor B connector (A).

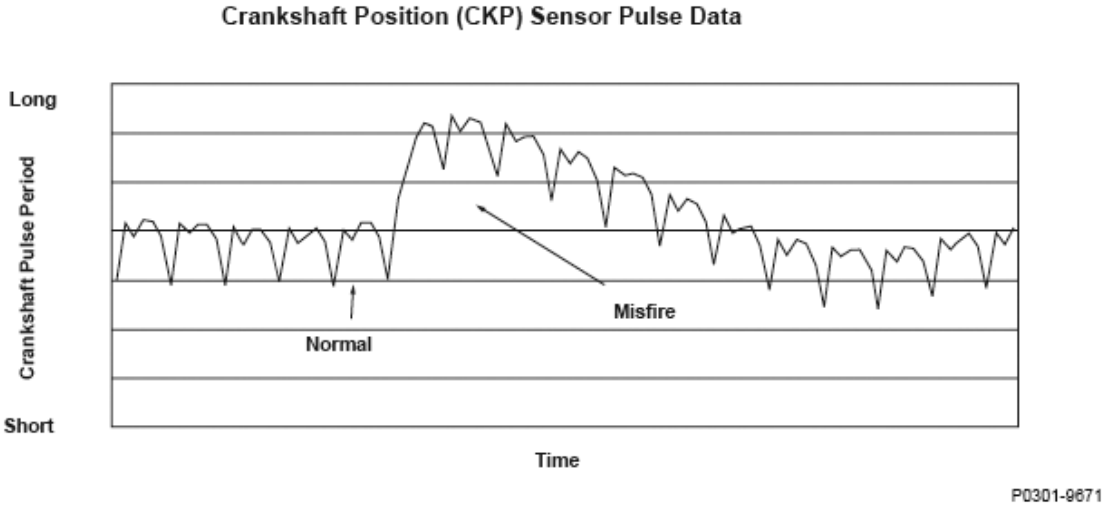


Fig. 176: Disconnecting CMP Sensor B Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove CMP sensor B (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

CKP SENSOR REPLACEMENT

1. Disconnect the CKP sensor connector (A).

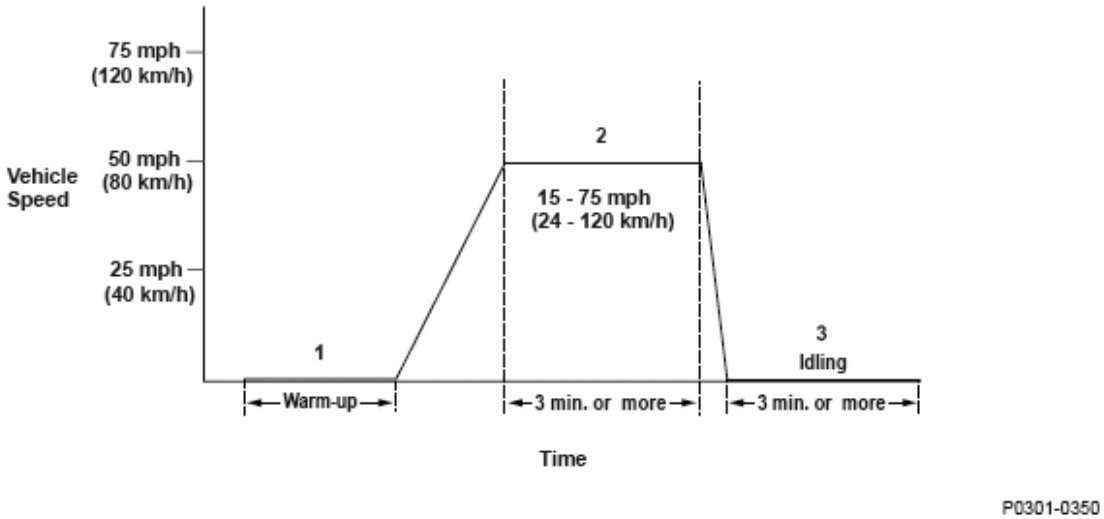


Fig. 177: Disconnecting CKP Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the CKP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).
4. Do the CKP pattern clear/CKP pattern learn procedure with the HDS (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT

1. Disconnect the output shaft (countershaft) speed sensor 3P connector (A).

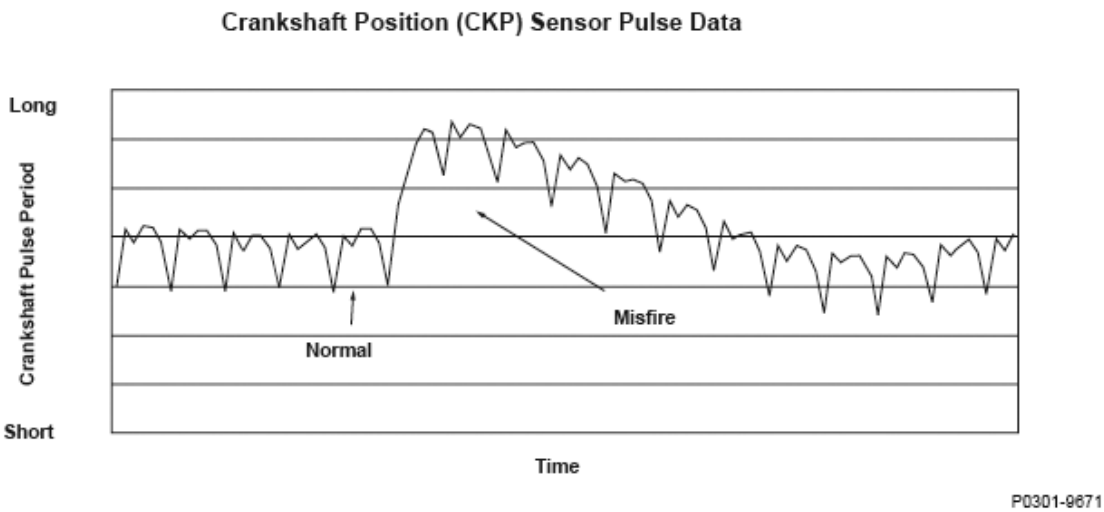


Fig. 178: Disconnecting Output Shaft (Countershaft) Speed Sensor 3P Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the output shaft (countershaft) speed sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

KNOCK SENSOR REPLACEMENT

1. Disconnect the knock sensor connector (A).

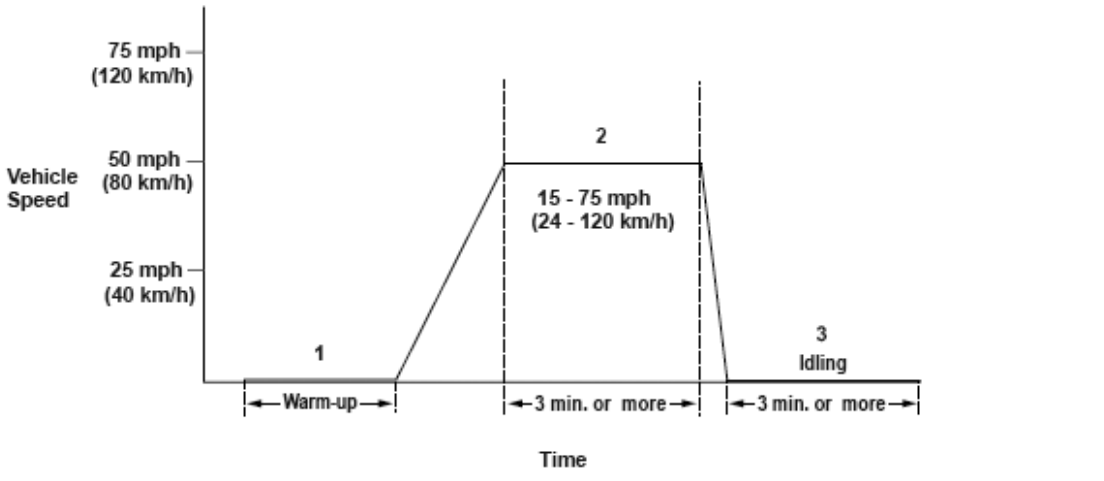


Fig. 179: Disconnecting Knock Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the knock sensor (B).
3. Install the parts in the reverse order of removal.

MAP SENSOR REPLACEMENT

1. Disconnect the MAP sensor connector (A).

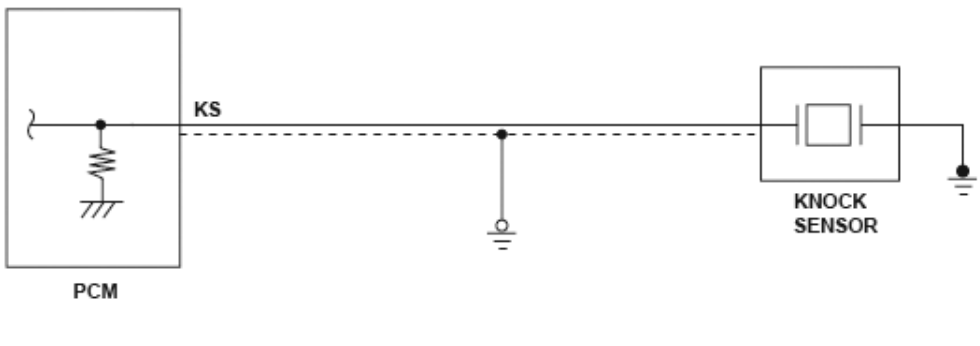


Fig. 180: Disconnecting MAP Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the MAP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

MAF SENSOR/IAT SENSOR REPLACEMENT

1. Disconnect the MAF sensor/IAT sensor connector (A).

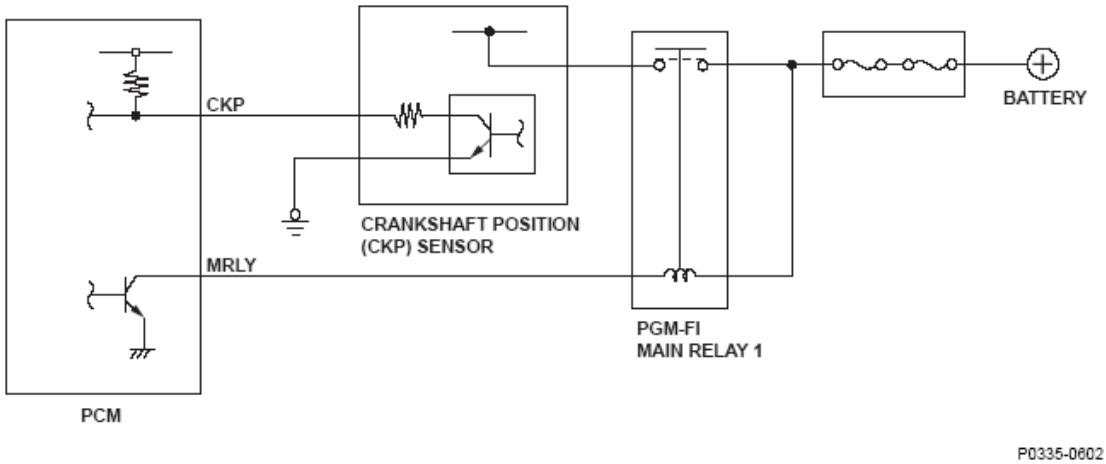


Fig. 181: Disconnecting MAP Sensor/IAT Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the screws (B).
3. Remove the MAF sensor/IAT sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

ECT SENSOR 1 REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
3. Disconnect the CMP sensor A connector (A), and the CMP sensor B connector (B).

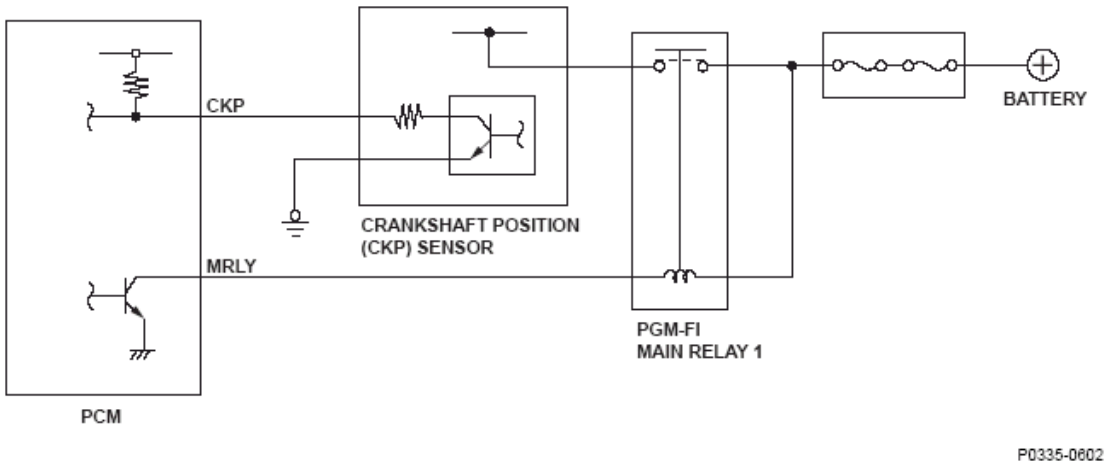


Fig. 182: Disconnecting CMP Sensor A Connector And CMP Sensor B Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the harness cover (C).
5. Disconnect the ECT sensor 1 connector (A).

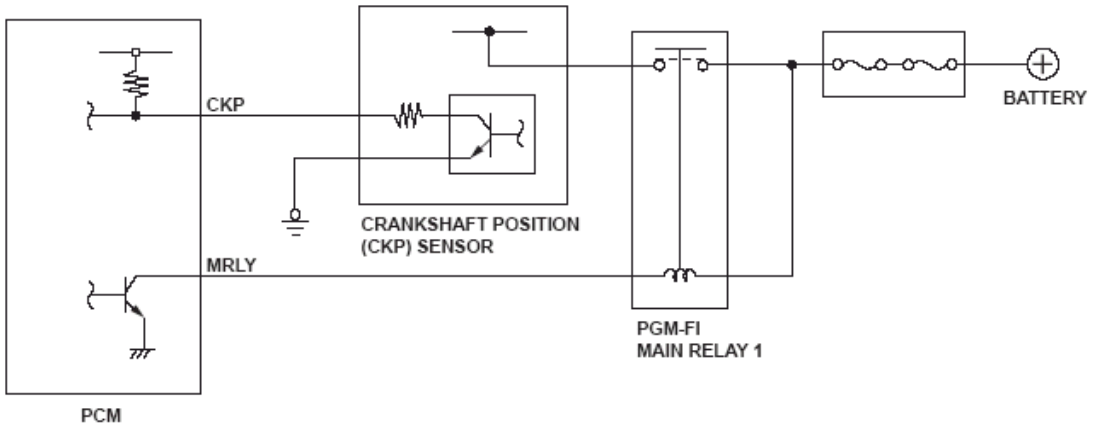


Fig. 183: Disconnecting ECT Sensor 1 Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove ECT sensor 1 (B).
7. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see **COOLANT REPLACEMENT**).

ECT SENSOR 2 REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the splash shield.
3. Disconnect the ECT sensor 2 connector (A), then remove ECT sensor 2 (B).

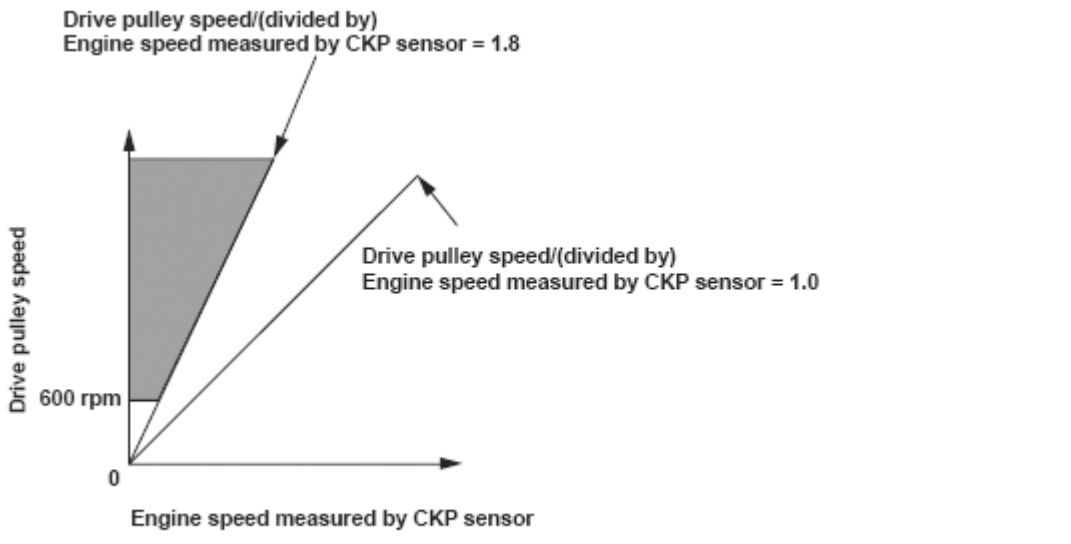


Fig. 184: Removing ECT Sensor 2 (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install parts in the reverse order of removal with a new O-ring (C).
5. Install the splash shield.
6. Refill the radiator with engine coolant (see **COOLANT REPLACEMENT**).

ELD REPLACEMENT

1. Remove the ECM (see **ECM REPLACEMENT**).
2. Remove the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).
3. Remove the screw (A).

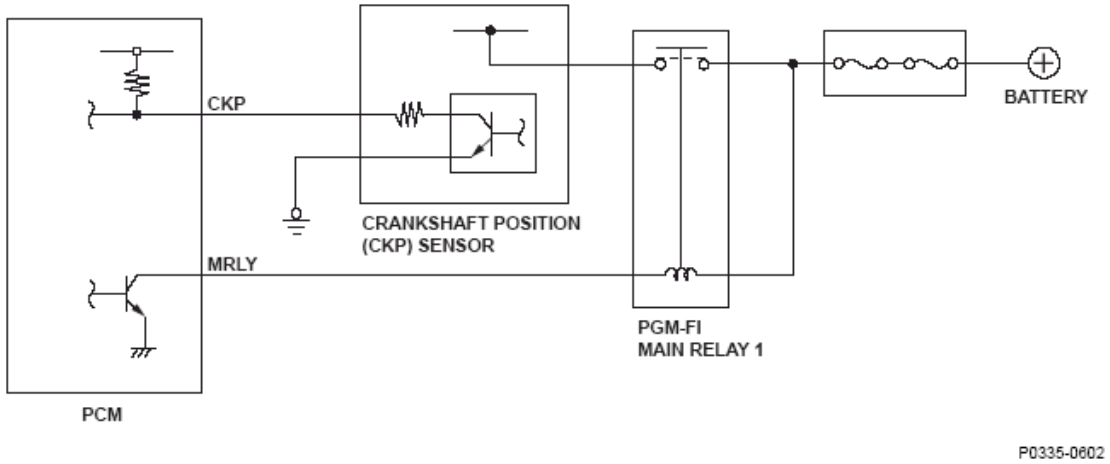


Fig. 185: Removing ELD Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the housing over, then remove the screw (A).

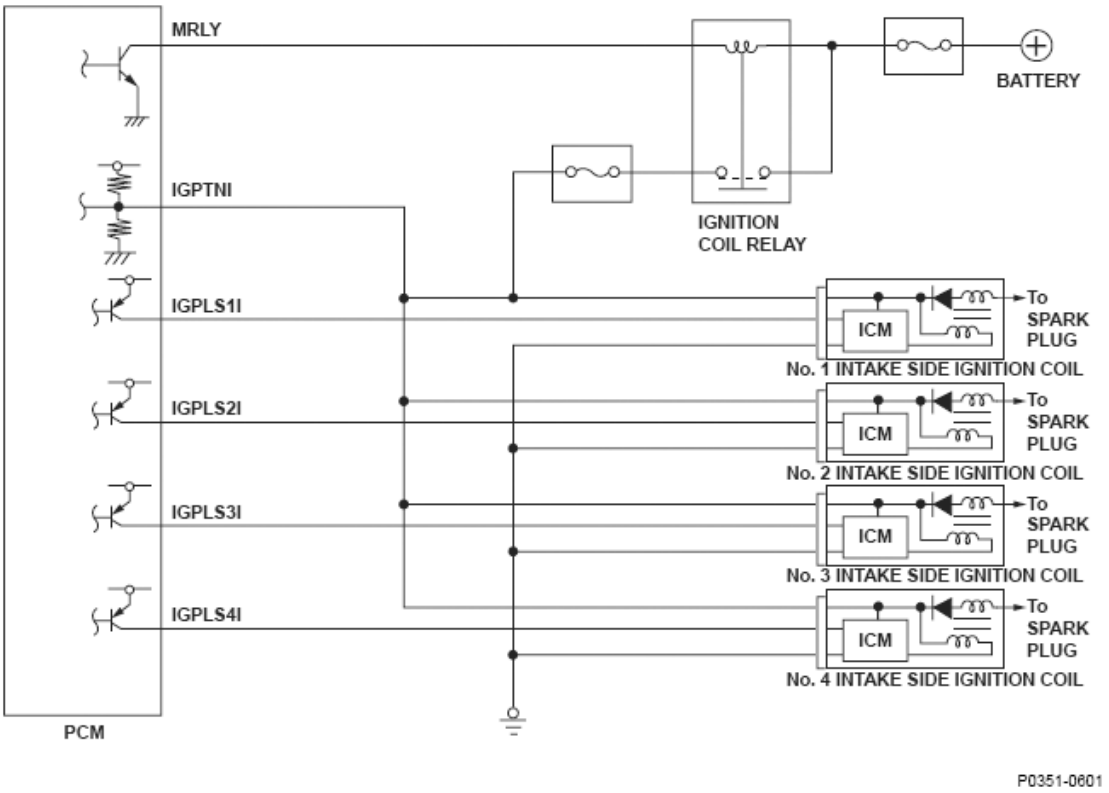


Fig. 186: Removing ELD Screw Turning Housing Over
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Turn the housing over again. Using two flat-tip screwdrivers, release the tabs (A), and pry up the fuse/relay box base (B) from the fuse/relay box housing (C).

NOTE: Make sure the terminals (D) are not bent or damaged.

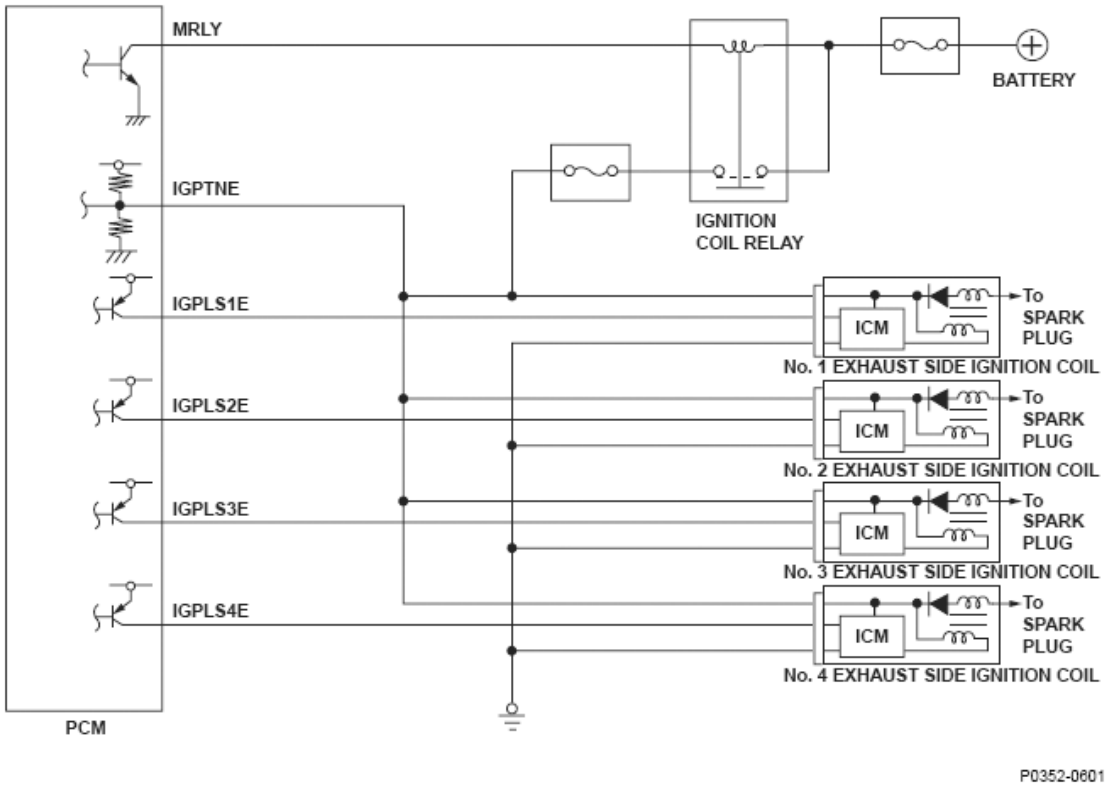


Fig. 187: Releasing Tabs And Prying Up Fuse/Relay Box Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the housing over again, then remove the ELD (A).

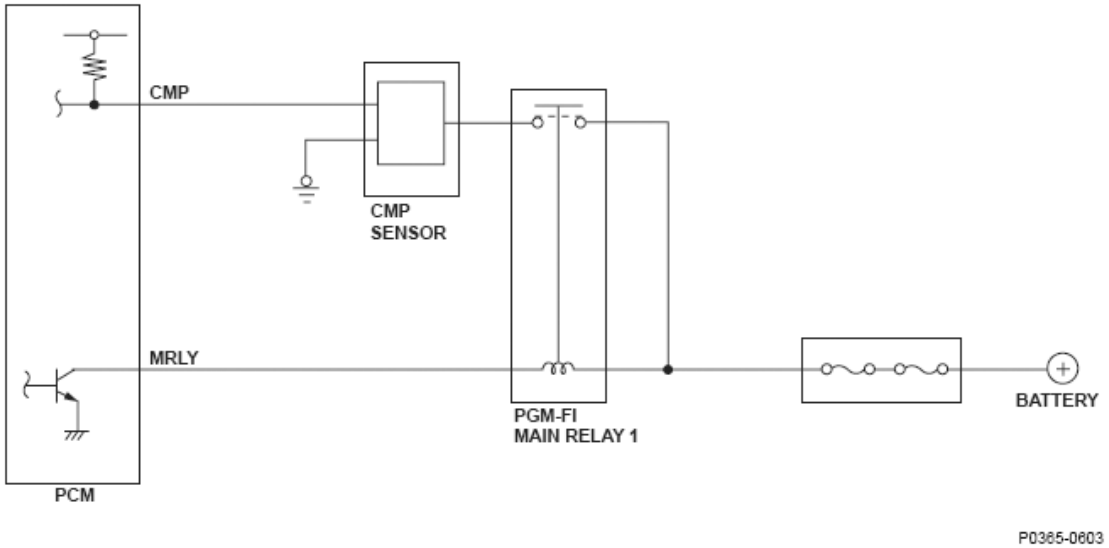


Fig. 188: Removing ELD
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the parts in the reverse order of removal.

ECM REPLACEMENT

NOTE:

- **Make sure the HDS is loaded with the latest software version.**
- **If you are replacing the ECM after substituting a known-good ECM, reinstall the original ECM, then do this procedure.**
- **During the procedure, if any READ DATA, WRITE DATA, or other data checks fail, note the failure, then continue.**

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

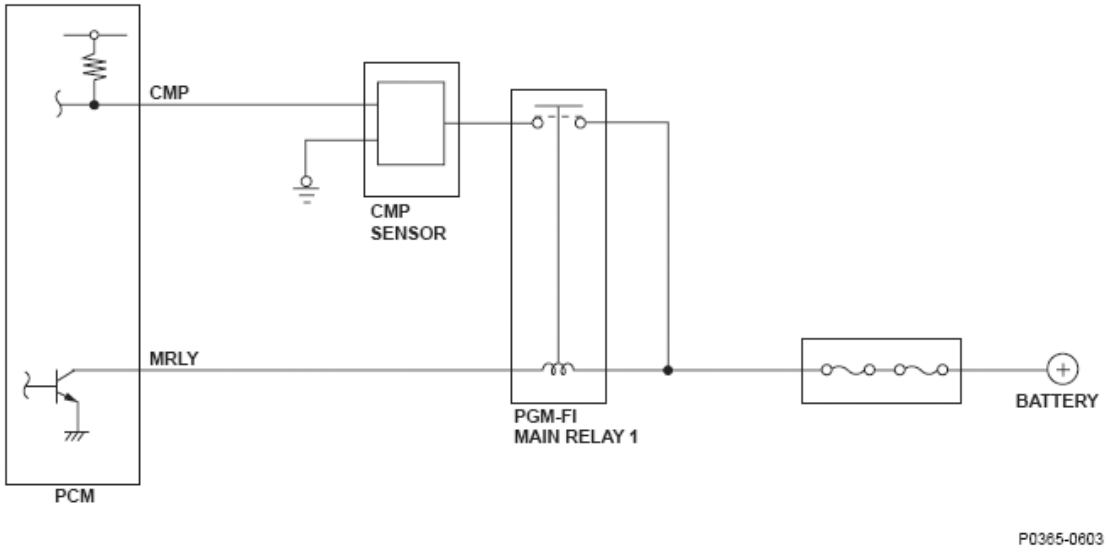


Fig. 189: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM. If it doesn't, go to the **DLC CIRCUIT TROUBLESHOOTING** . If you are returning from DLC circuit troubleshooting, skip steps 5 through 8, 17 through 19, 22, and 23, and do these procedures after replacing the ECM (USA, Canada models):
   - Replace the engine oil (see **ENGINE OIL REPLACEMENT**) and the engine oil filter (see **ENGINE OIL FILTER REPLACEMENT**).
   - Clean the throttle body (see **THROTTLE BODY CLEANING**).
5. USA, Canada models: Select the PGM-FI system with the HDS.
6. USA, Canada models: Select the INSPECTION MENU with the HDS.
7. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

8. USA, Canada models: Select the REPLACE ECM MENU, then READ DATA, and follow the screen prompts.

NOTE:

- **Doing this step copies (READS) the engine oil life data from the original ECM so you can later download (WRITES) it into the new ECM.**
- **If READ DATA indicates FAILED, continue with this procedure.**

9. Turn the ignition switch OFF.
10. Remove the battery.
11. Remove the cover (A).

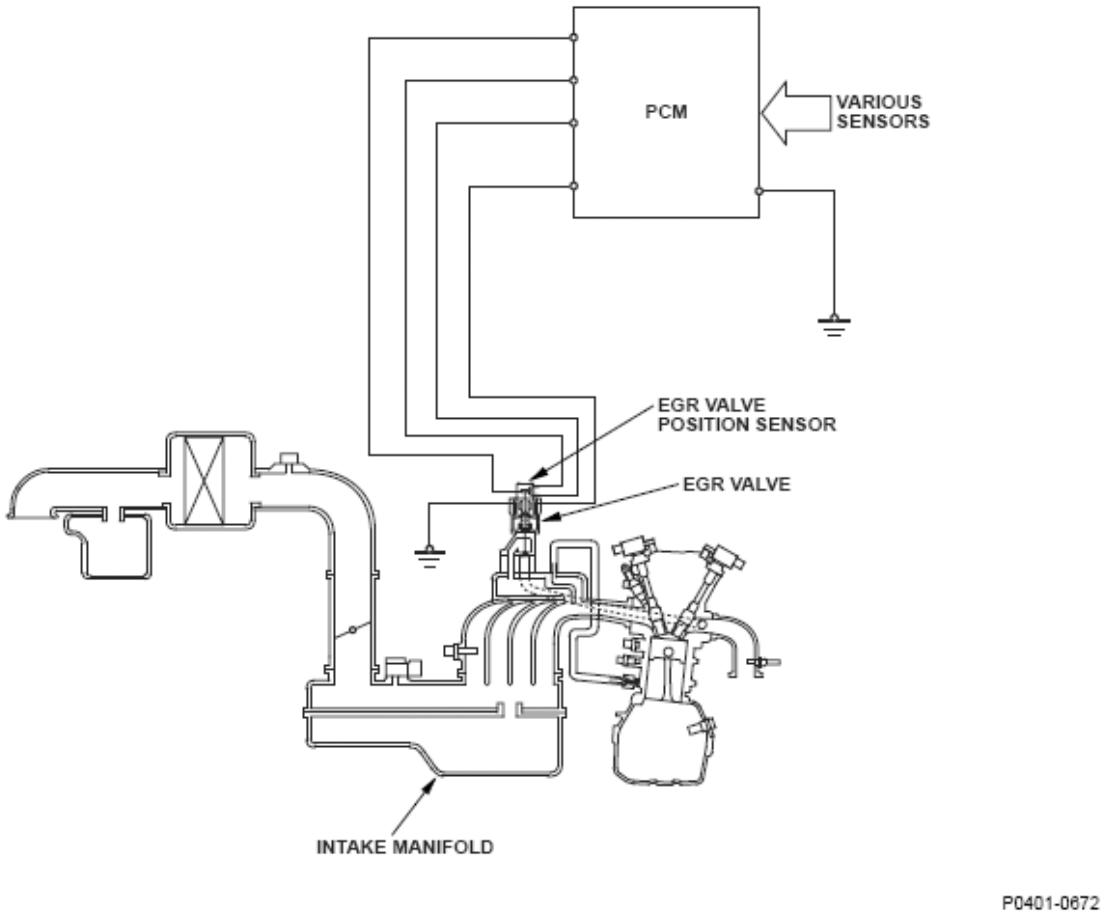


Fig. 190: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the bolts (D), then remove the ECM (E).

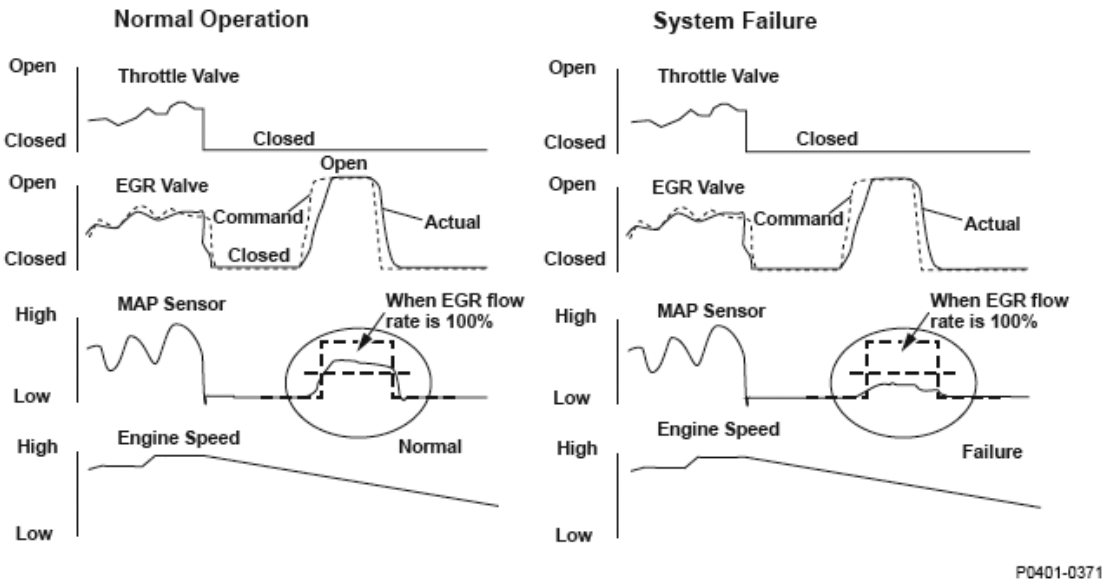


Fig. 191: Removing ECM (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Disconnect the ECM connectors A, B, and C.

NOTE: ECM connectors A, B, and C have symbols (A=[], B=delta, C=o) embossed on them for identification.

14. Install the ECM and the battery in the reverse order of removal.
15. Turn the ignition switch ON (II).
16. USA, Canada models: Manually input the VIN to the ECM with the HDS.

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the ECM; ignore it, and continue this procedure.

17. USA, Canada models: If the READ DATA (engine oil life) failed in step 8, go to step 20. Otherwise, go to step 18.
18. USA, Canada models: Select the PGM-FI system with the HDS.
19. USA, Canada models: Select the REPLACE ECM MENU, then WRITE DATA, and follow the screen prompts.

NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

20. Select IMMOBI system with the HDS.
21. Enter the immobilizer code with the ECM replacement procedure in the HDS; it allows you to start the engine.
22. USA, Canada models: If the TP POSITION CHECK failed in step 7 clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 23.
23. USA, Canada models: If the READ DATA failed in step 8 or the WRITE DATA failed in step 19, replace the engine oil (see **ENGINE OIL REPLACEMENT**) and engine oil filter (see **ENGINE**

OIL FILTER REPLACEMENT), then go to step 24.

24. Select PGM-FI system and reset the ECM with the HDS.
25. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**).
26. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
27. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
28. Enter the anti-theft code for the audio system and the navigation system (if equipped), then set the clock (if needed).

2006-09 ENGINE PERFORMANCE

PGM-FI System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: **Refer to the PGM-FI SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.**

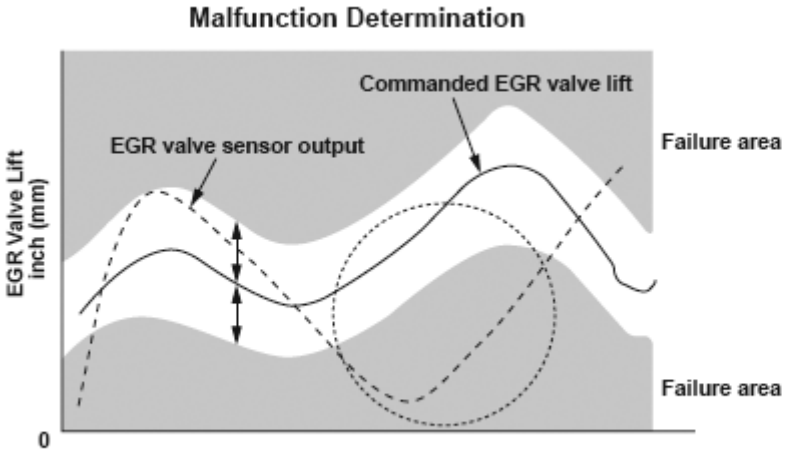


Fig. 1: Identifying PGM-FI System Component Location (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

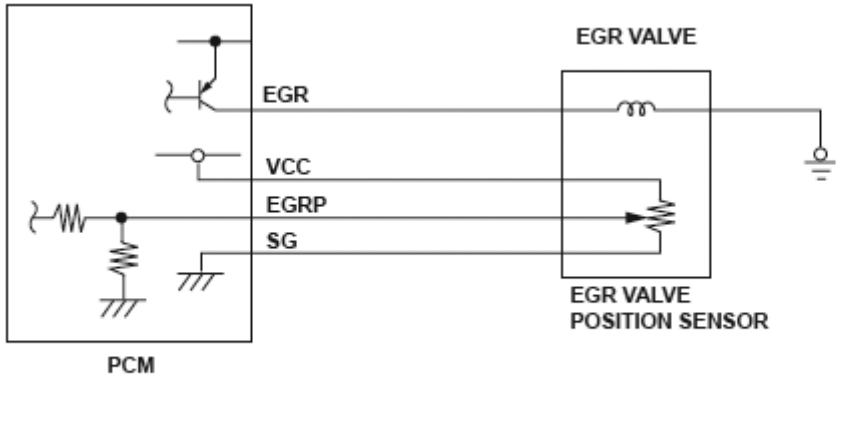


Fig. 2: Identifying PGM-FI System Component Location (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0101: MAF SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see**

GENERAL TROUBLESHOOTING INFORMATION).

- **If DTC P1128, P1129, P2228, and/or P2229 are stored at the same time as DTC P0101, troubleshoot those DTCs first, then recheck for DTC P0101.**

1. Check for poor connections or damage to these parts:
   - PCV hose
   - Intake air duct
   - Air cleaner
   - Purge (PCS) line
   - Brake booster hose

   Are the parts OK?

   YES - Go to step 2.

   NO - Repair or replace the damaged parts, then go to step 17.

2. Check for damage or looseness at the air duct in the air cleaner.

   Is it OK?

   YES - Go to step 3.

   NO - Reconnect or replace the air duct in the air cleaner, then go to step 15.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 15.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 0.2 gm/s or 0.5 V?

   YES - Go to step 7.

   NO - Go to step 13.

7. Start the engine.
8. Vary the engine speed between 2,000 rpm and 3,000 rpm.

9. Check the MAF SENSOR in the DATA LIST with the HDS.

   Does the reading change?

   YES - Go to step 10.

   NO - Go to step 13.

10. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR
12. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES - Go to step 13.

    NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 11 and recheck.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0101 indicated?

    YES - Check for poor connections or loose terminals at the MAF sensor and the ECM/PCM, then go to step 1.

    NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0102: MAF SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is about 0 gm/s, or 0.1 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM/PCM.

3. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES - Go to step 4.

   NO - Repair short in the wire between the MAF sensor and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 20.

4. Turn the ignition switch OFF.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

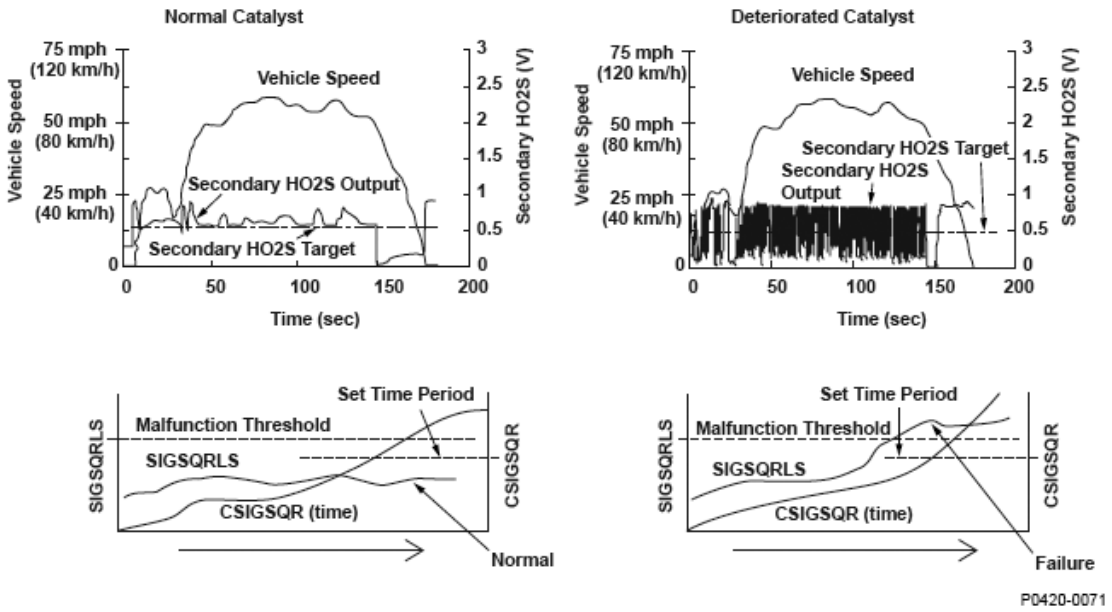


Fig. 3: Measuring Voltage Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 5 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 8.

NO - Repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the MAF sensor, then go to step 20.

8. Turn the ignition switch OFF.
9. Measure resistance between MAF sensor/IAT sensor 5P connector terminal No. 3 and body ground.

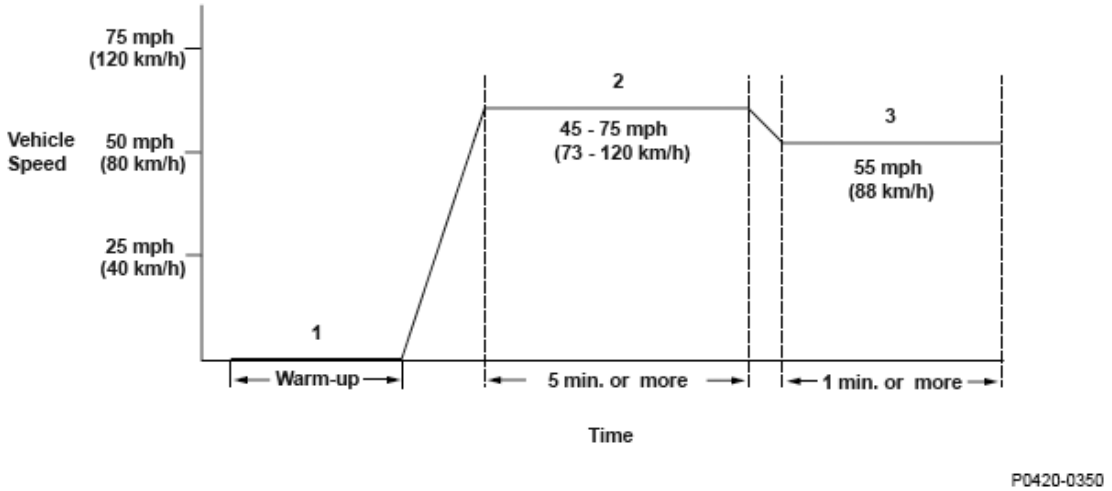


Fig. 4: Measuring Resistance Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 190-210 kohms?

YES - Go to step 14.

NO - Go to step 10.

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (44P).
12. Check for continuity between ECM/PCM connector terminal B30 and body ground.

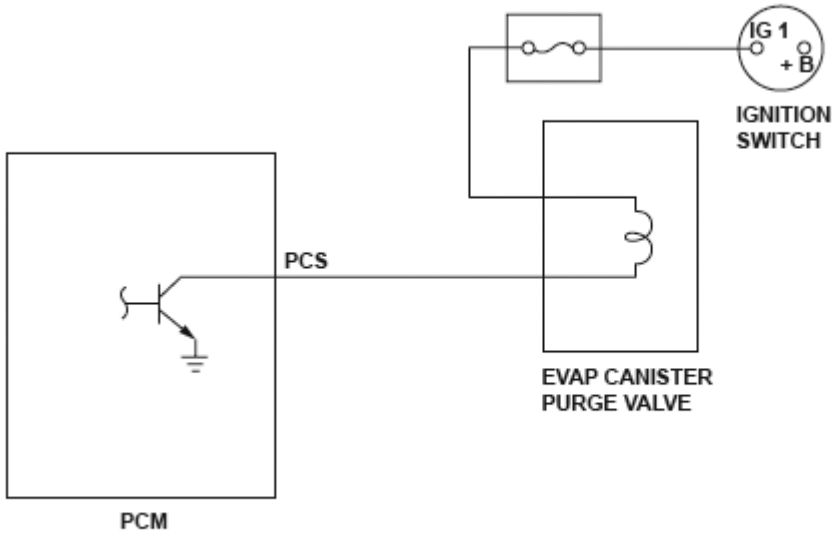


Fig. 5: Checking For Continuity Between ECM/PCM Connector Terminal B30 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (B30) and the MAF sensor, then go to step 21.

NO -Go to step 13.

13. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 3 and ECM/PCM connector terminal B30.

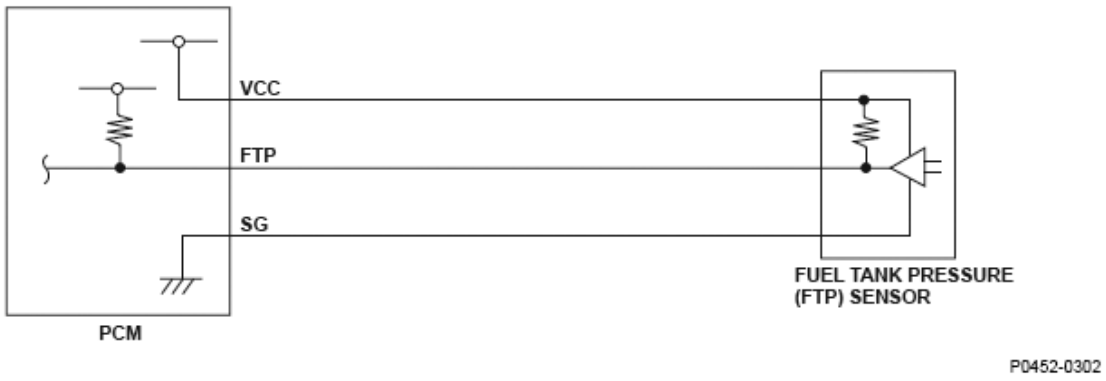


Fig. 6: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 3 And ECM/PCM Connector Terminal B30
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM/PCM (B30) and the MAF sensor, then go to step 21.

14. Substitute a known-good MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Start the engine. Hold the engine speed at 2,000 rpm without load (in Park or neutral).
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0102 indicated?

YES - Go to step 27.

NO - Replace the original MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0102 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO -If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0103: MAF SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is about 202 gm/s, or 4.89 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Disconnect ECM/PCM connector B (44P).
7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM/PCM connector terminal B32.

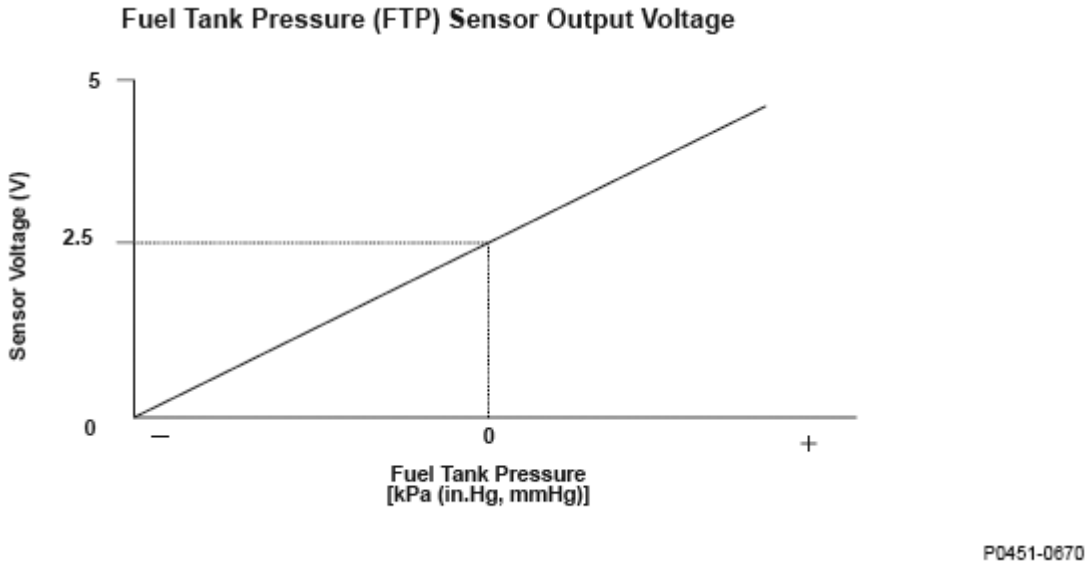


Fig. 7: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 4 And ECM/PCM Connector Terminal B32
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 8.

NO - Repair open in the wire between the ECM/PCM (B32) and the MAF sensor, then go to step 15.

8. Reconnect ECM/PCM connector B (44P).
9. Connect MAF sensor/IAT sensor 5P connector terminals No. 3 and No. 4 with a jumper wire.

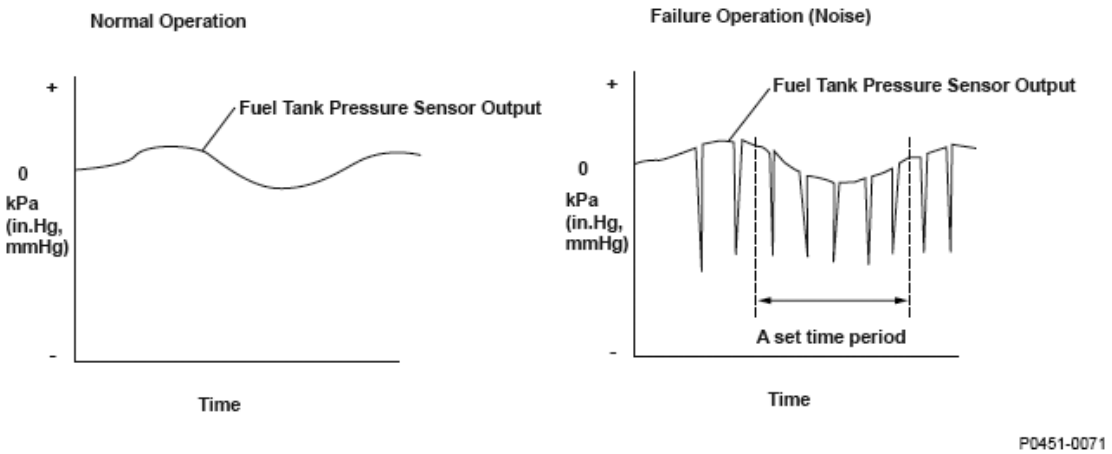


Fig. 8: Connecting MAF Sensor/IAT Sensor 5P Connector Terminals No. 3 And No. 4 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch ON (II).
11. Clear the DTC with the HDS.
12. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES - Go to step 20.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

   YES - Go to step 12.

   NO - Go to step 7.

7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

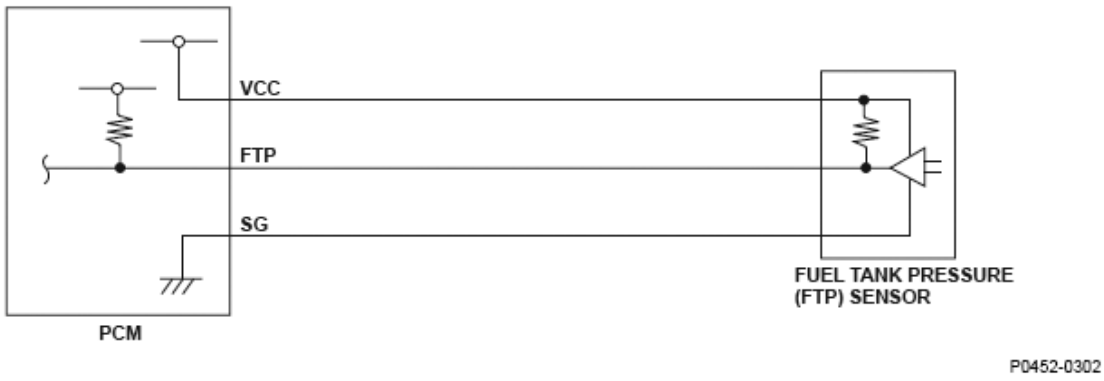


Fig. 9: Measuring Voltage Between Map Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there about 5 V?

   YES - Go to step 16.

   NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (44P).
11. Check for continuity between ECM/PCM connector terminal C13 and MAP sensor 3P connector terminal No. 1.

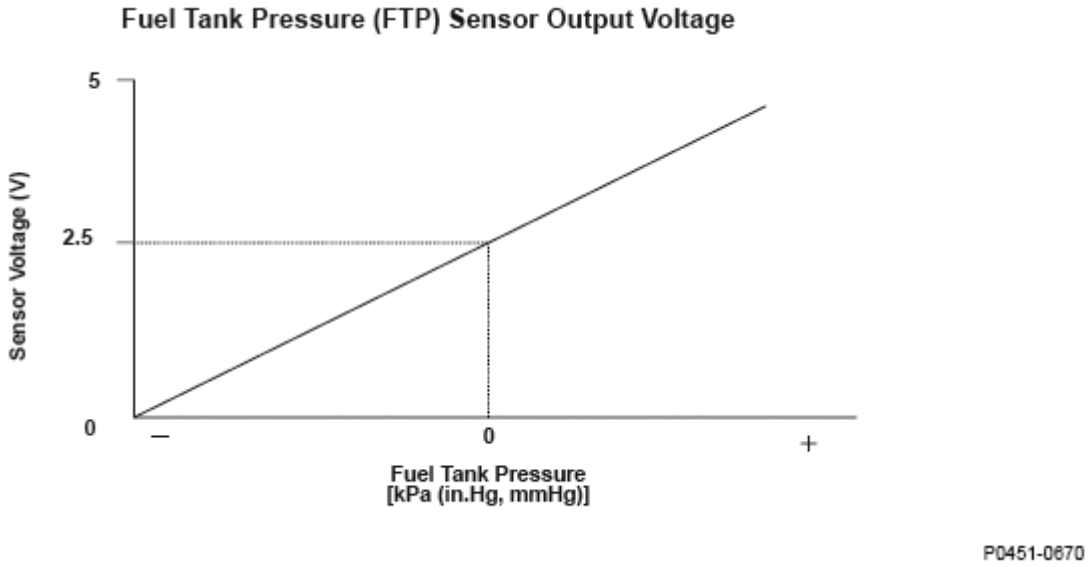


Fig. 10: Checking For Continuity Between ECM/PCM Connector Terminal C13 And Map Sensor 3P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the ECM/PCM (C13) and the MAP sensor, then go to step 18.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (44P).
15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

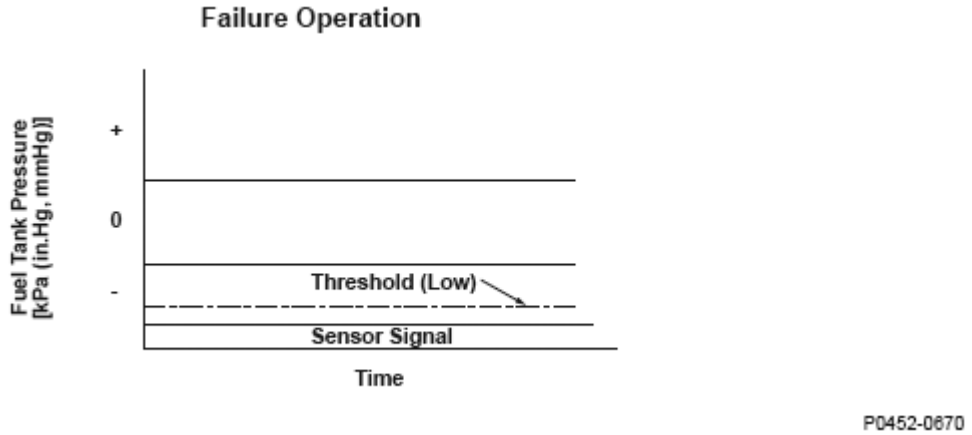


Fig. 11: Checking For Continuity Between Map Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C11) and the MAP sensor, then go to step 18.

NO - Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the MAP sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

   YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

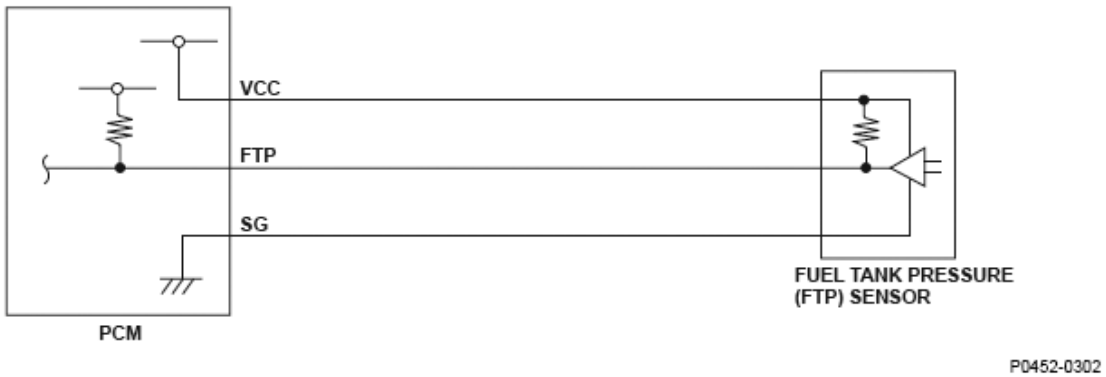


Fig. 12: Connecting Map Sensor 3P Connector Terminals No. 2 And No. 3 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

YES - Go to step 8.

NO - Go to step 18.

8. Remove the jumper wire from the MAP sensor 3P connector.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

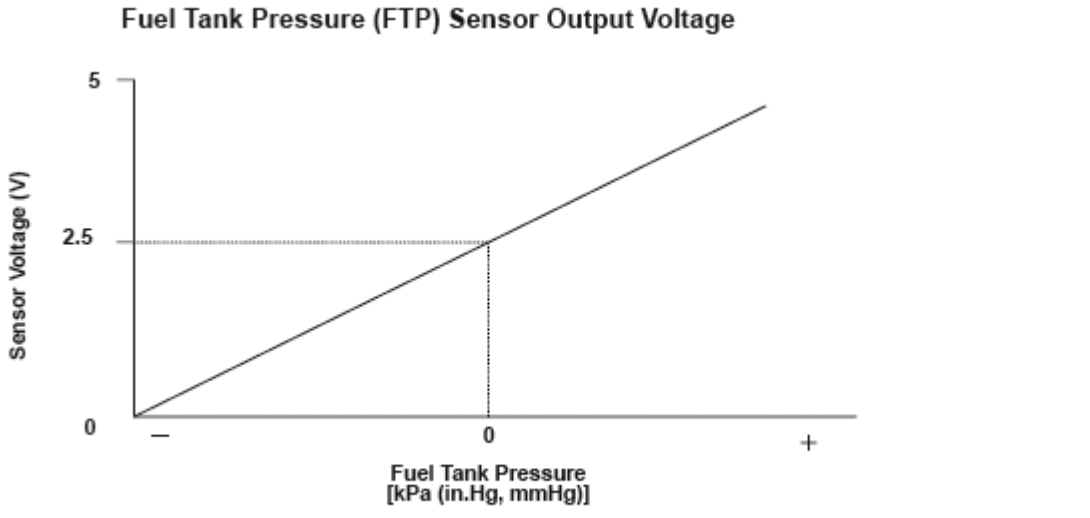


Fig. 13: Measuring Voltage Between Map Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 14.

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector C (44P).
13. Check for continuity between ECM/PCM connector terminal C14 and MAP sensor 3P connector terminal No. 3.

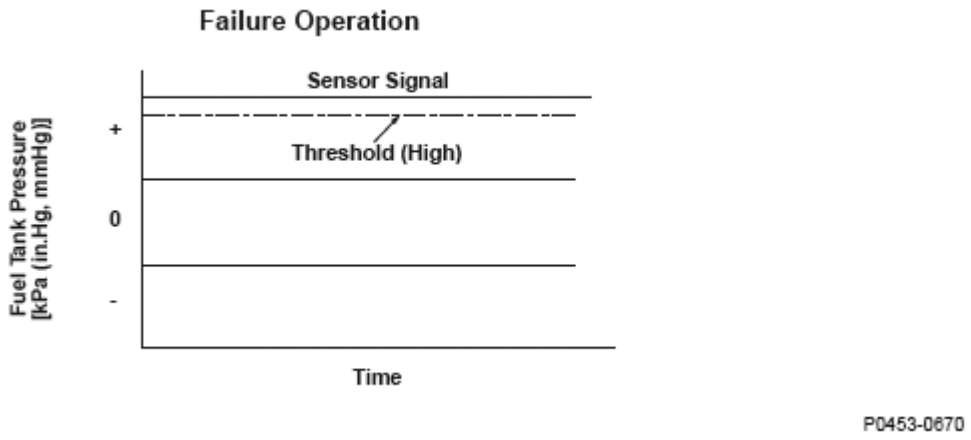


Fig. 14: Checking For Continuity Between ECM/PCM Connector Terminal C14 And Map Sensor 3P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM/PCM (C14) and the MAP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C11 and MAP sensor 3P connector terminal No. 2.

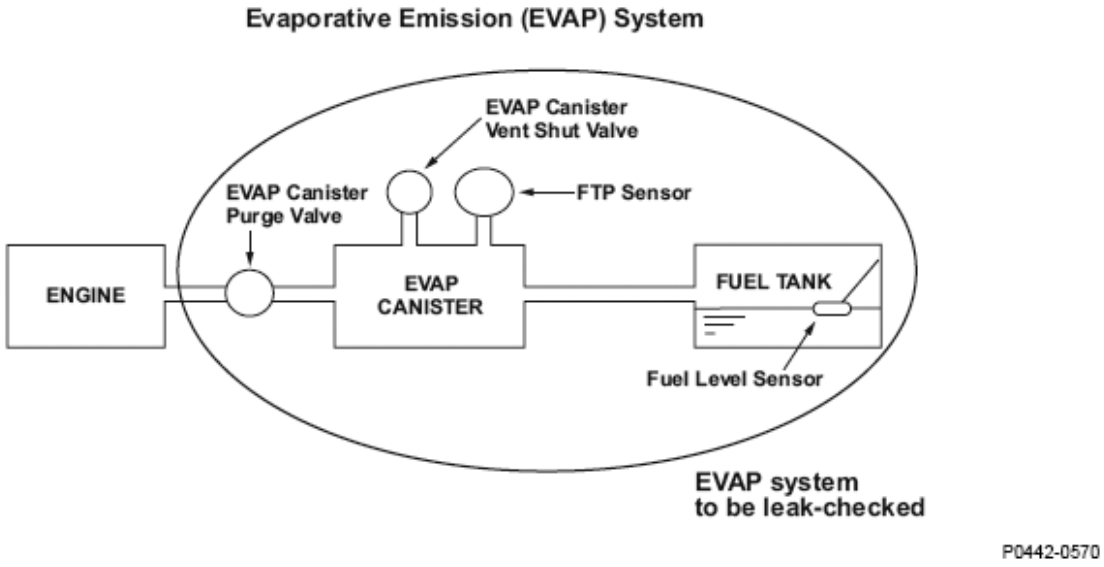


Fig. 15: Checking For Continuity Between ECM/PCM Connector Terminal C11 And Map Sensor 3P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM/PCM (C11) and the MAP sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the MAP sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0111: IAT SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for poor connections or loose terminals at the ECT sensor 1/2 and the IAT sensor.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 15.

2. Remove the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
3. Allow IAT sensor to cool to ambient temperature.
4. Note the ambient temperature.
5. Connect the MAF sensor/IAT sensor to the 5P connector, but do not install the sensor onto the air cleaner.
6. Turn the ignition switch ON (II).
7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.
8. Compare the value of IAT SENSOR and the ambient temperature.

   Does the value of IAT SENSOR differ 5.4°F (3°C) or more?

   YES - Go to step 13.

   NO - Go to step 9.

9. Disconnect the MAF sensor/IAT sensor from the 5P connector.
10. Using a heat gun, blow hot air on the MAF sensor/IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.
11. Connect the MAF sensor/IAT sensor to the 5P connector, but do not install the sensor onto the air cleaner.
12. Check the IAT SENSOR in the DATA LIST with the HDS.

    Does the IAT SENSOR change 81°F (45°C) or more?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM.

NO - Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0111 indicated?

YES - Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0112: IAT SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356°F (180°C) or more, or 0.08 V or less indicated?

YES - Go to step 3.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356°F (180°C) or more, or 0.08 V or less indicated?

YES - Go to step 7.

NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).

10. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and body ground.

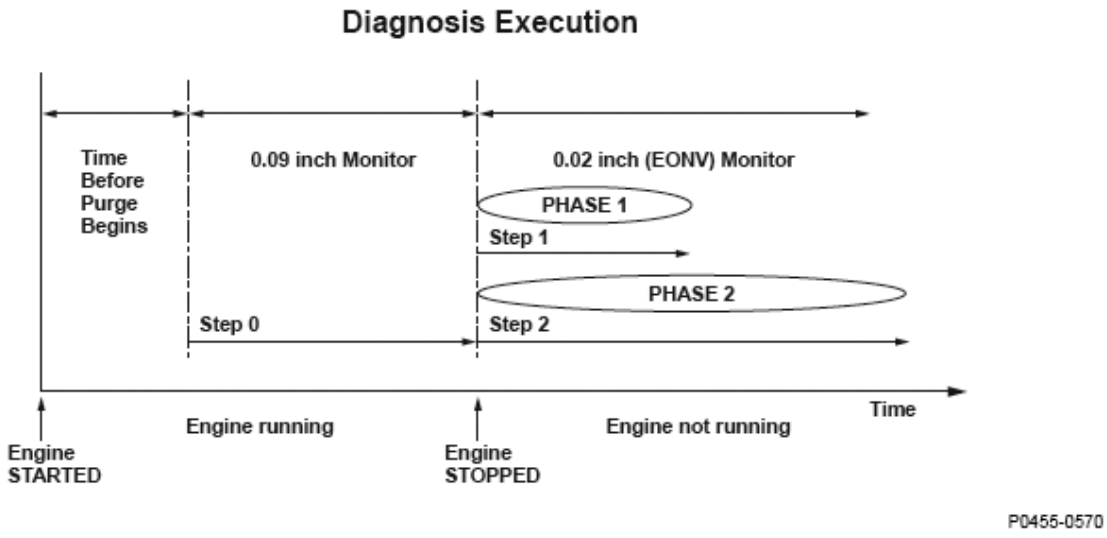


Fig. 16: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the IAT sensor and the ECM/PCM (B31), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0113: IAT SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Connect MAF sensor/IAT sensor 5P connector terminals No. 1 and No. 2 with a jumper wire.

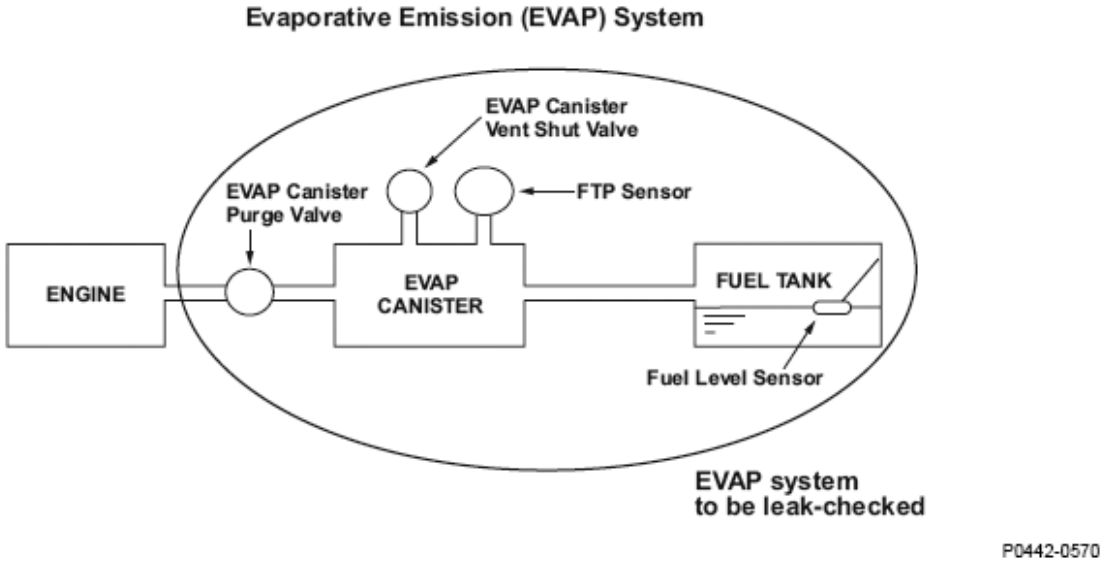


Fig. 17: Connecting MAF Sensor/IAT Sensor 5P Connector Terminals No. 1 And No. 2 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 8.

   NO - Go to step 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 2 and body ground.

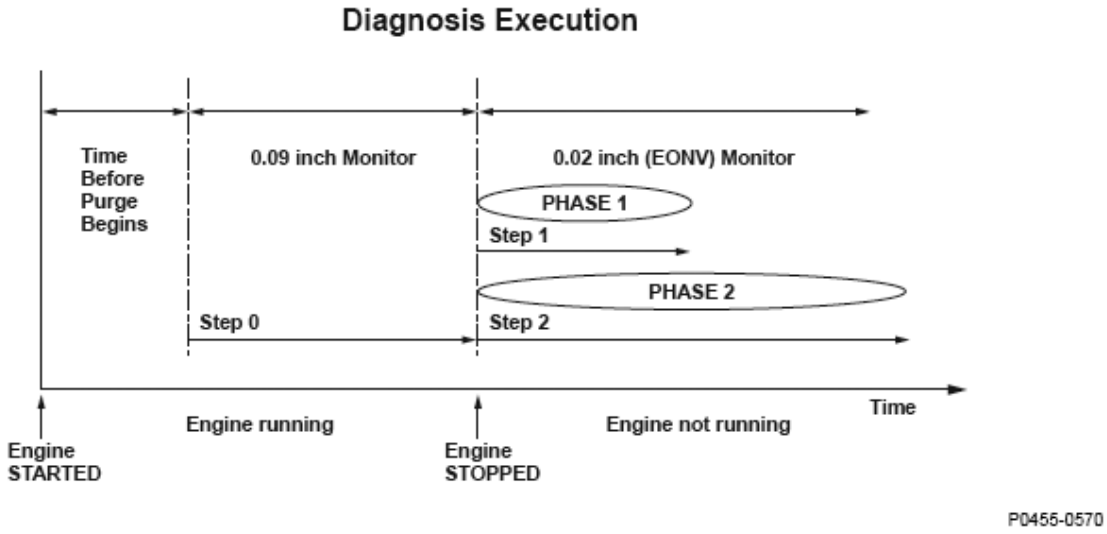


Fig. 18: Measuring Voltage Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 1 and ECM/PCM connector terminal B33.

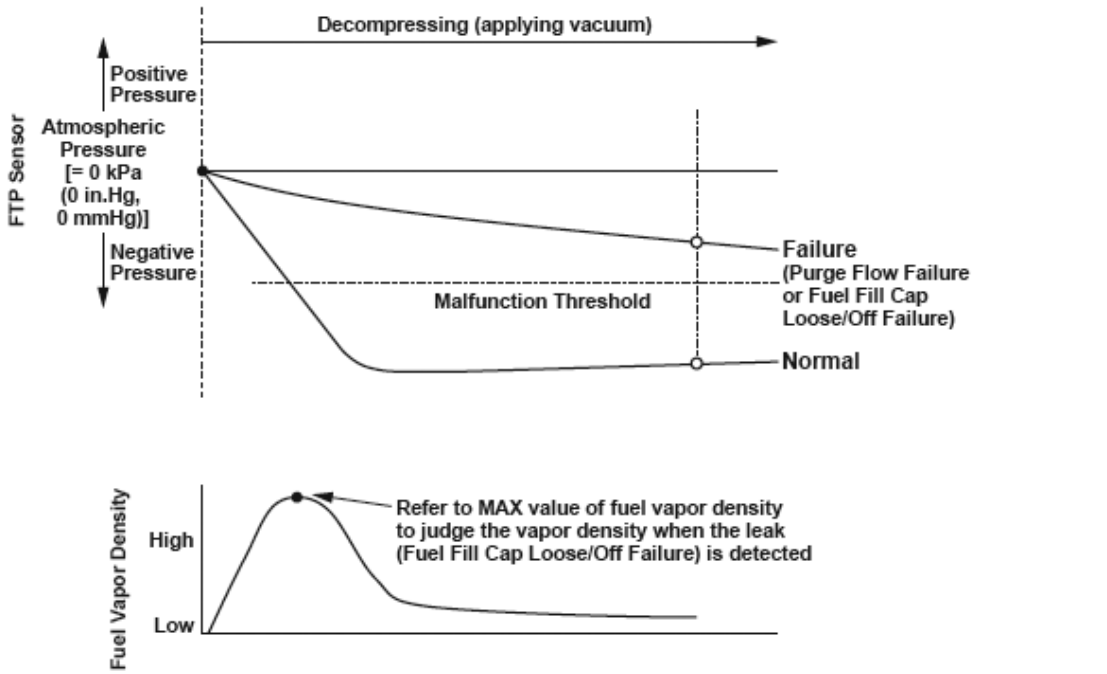


Fig. 19: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 1 And ECM/PCM Connector Terminal B33
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (B33) and the IAT sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and ECM/PCM connector terminal B31.

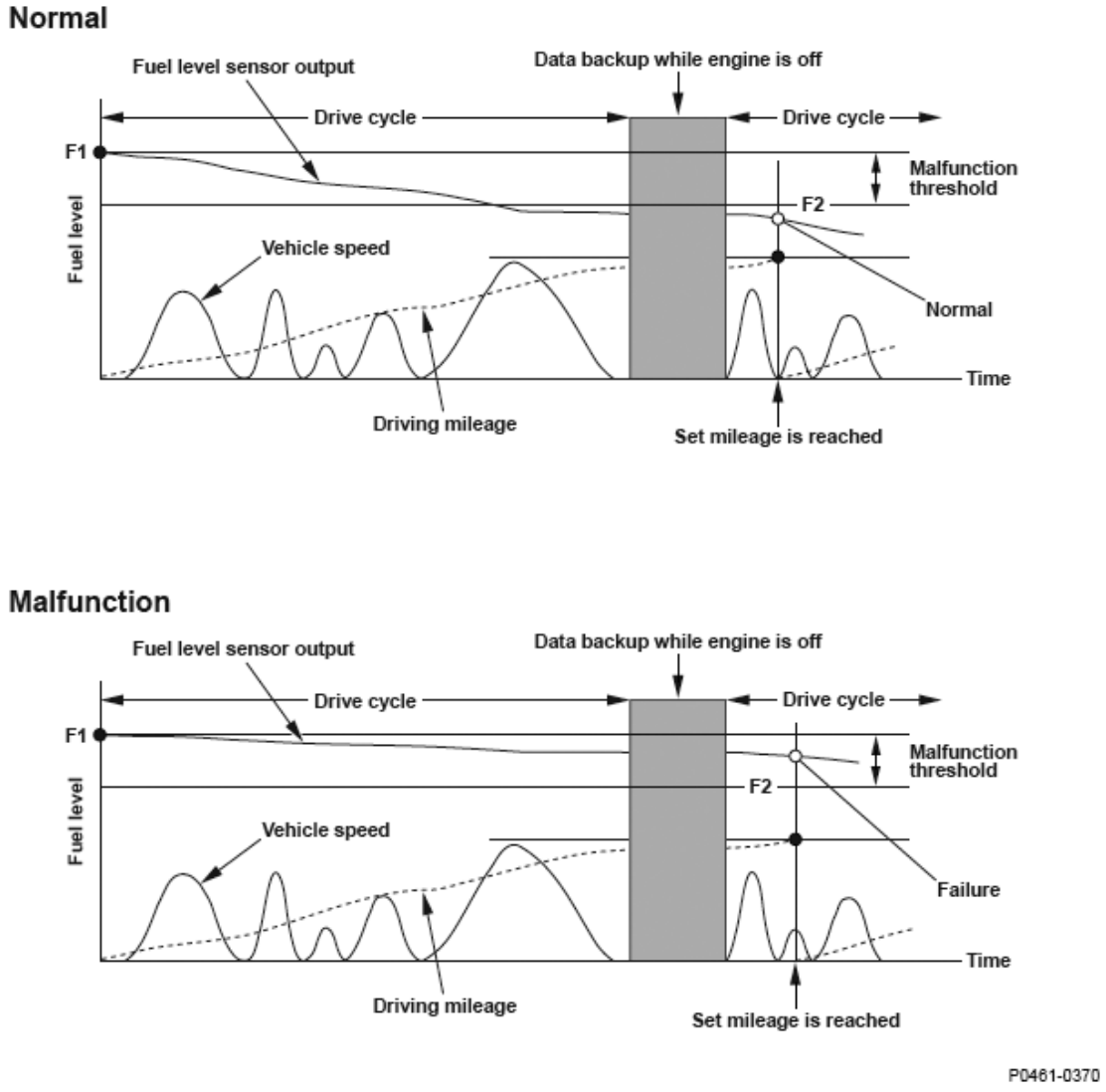


Fig. 20: Checking For Continuity Between MAF Sensor/IAT Sensor 5P Connector Terminal No. 2 And ECM/PCM Connector Terminal B31
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (B31) and the IAT sensor, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES - Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 176°F (80°C) or more, or 0.78 V or less indicated?

YES - Go to step 6.

NO - Go to step 3.

3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18°F (10°C) or more?

YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM.

NO - Go to step 11.

6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch ON (II).
10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Does ECT SENSOR 1 change 18°F (10°C) or more?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM.

    NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0117: ECT SENSOR 1 CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 356°F (180°C) or more, or 0.08 V or less indicated?

    YES - Go to step 3.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch ON (II).

6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between ECT sensor 1 2P connector terminal No. 2 and body ground.

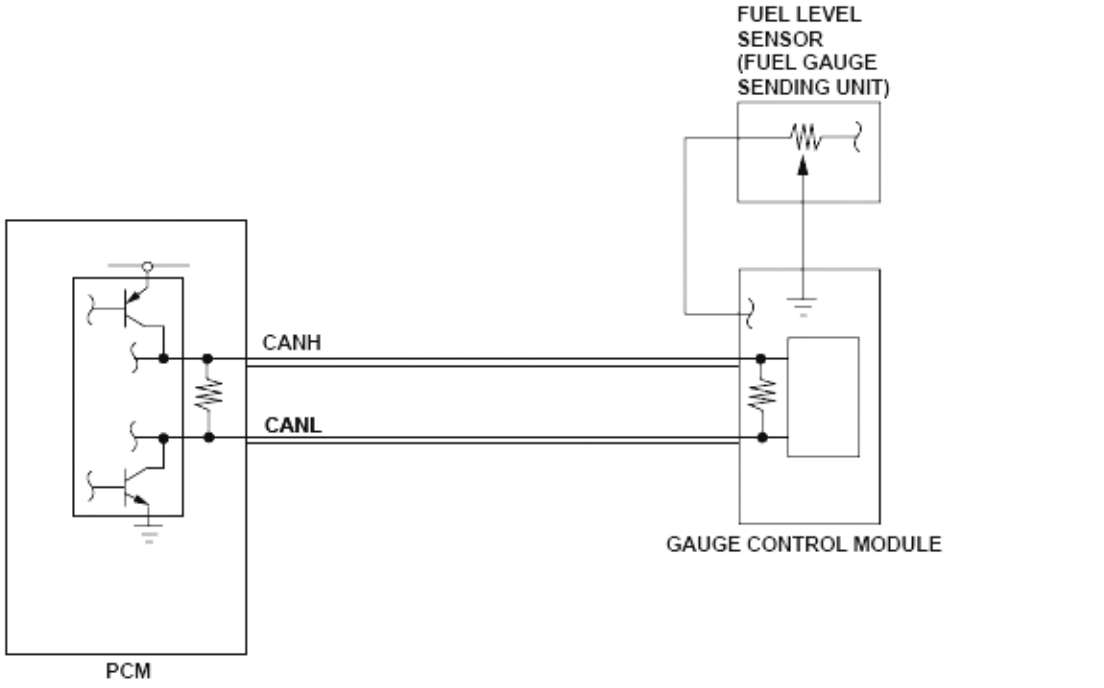


Fig. 21: Checking For Continuity Between ECT Sensor 1 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECT sensor 1 and the ECM/PCM (B23), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).

15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0118: ECT SENSOR 1 CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

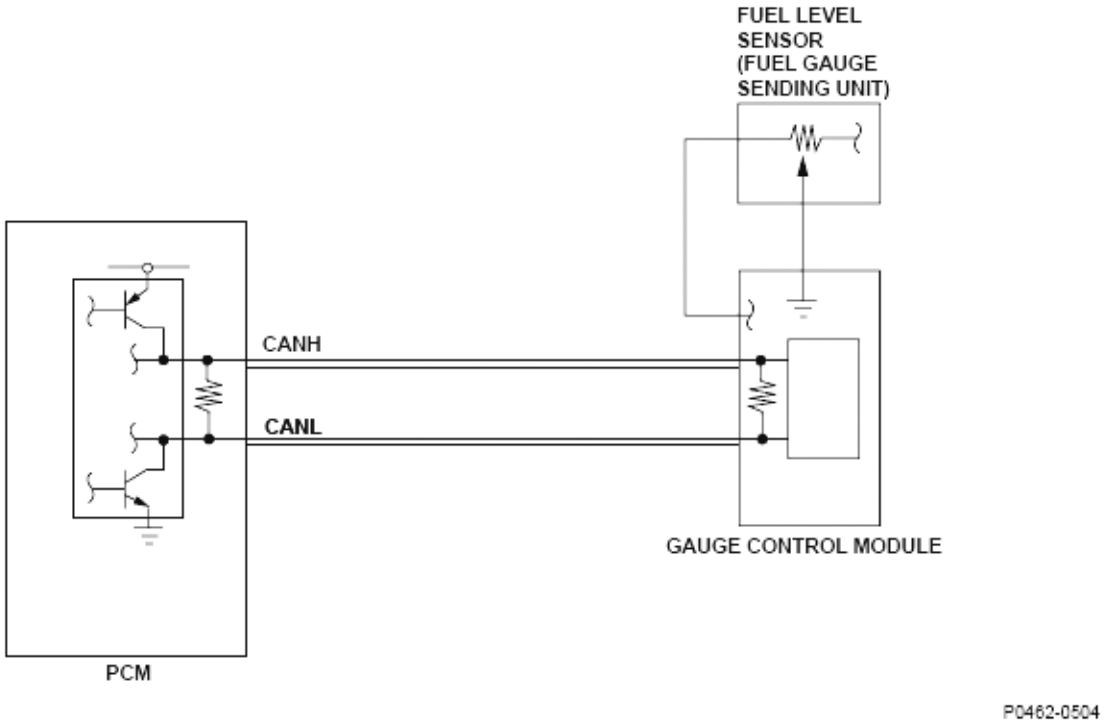


Fig. 22: Connecting ECT Sensor 1 2P Connector Terminals No. 1 And No. 2 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 8.

   NO - Go to step 20

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the ECT sensor 1 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between the ECT sensor 1 2P connector terminal No. 2 and body ground.

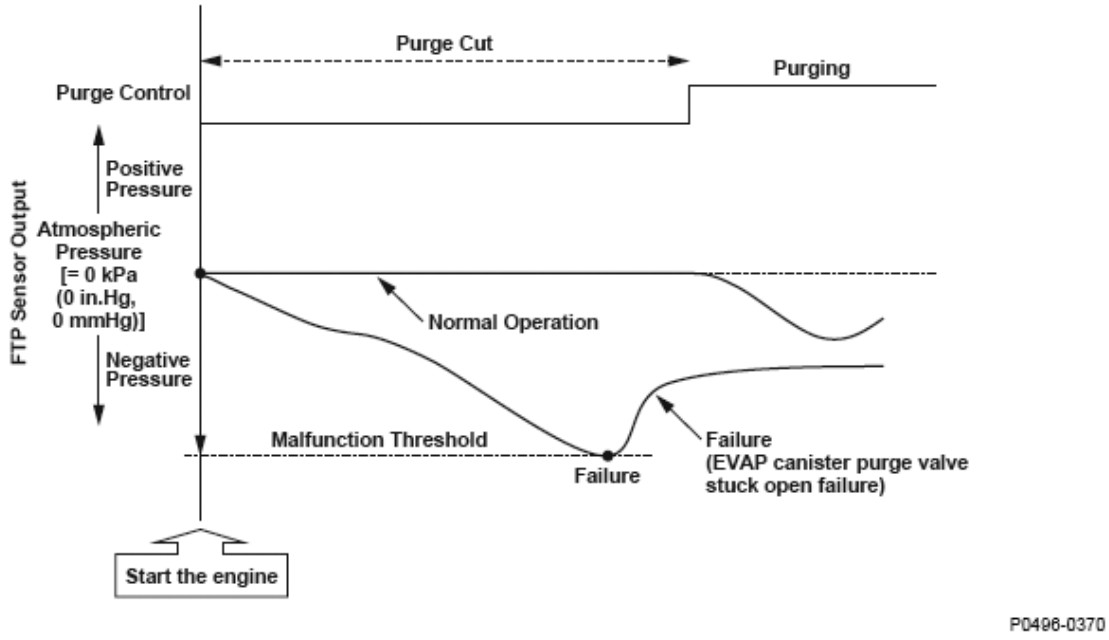


Fig. 23: Measuring Voltage Between ECT Sensor 1 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and ECM/PCM connector terminal B33.

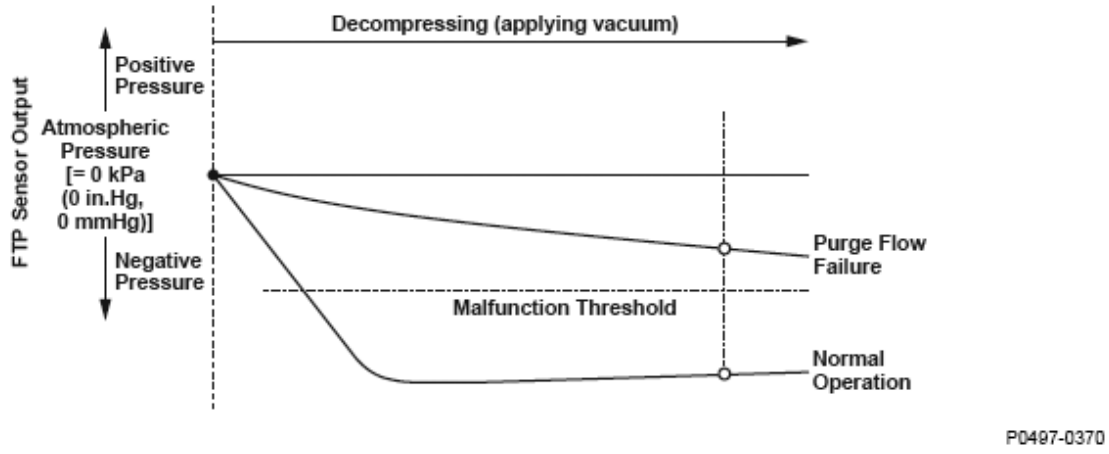


Fig. 24: Checking For Continuity Between ECT Sensor 1 2P Connector Terminal No. 1 And ECM/PCM Connector Terminal B33

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (B33) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECT sensor 1 2P connector terminal No. 2 and ECM/PCM connector terminal B23.

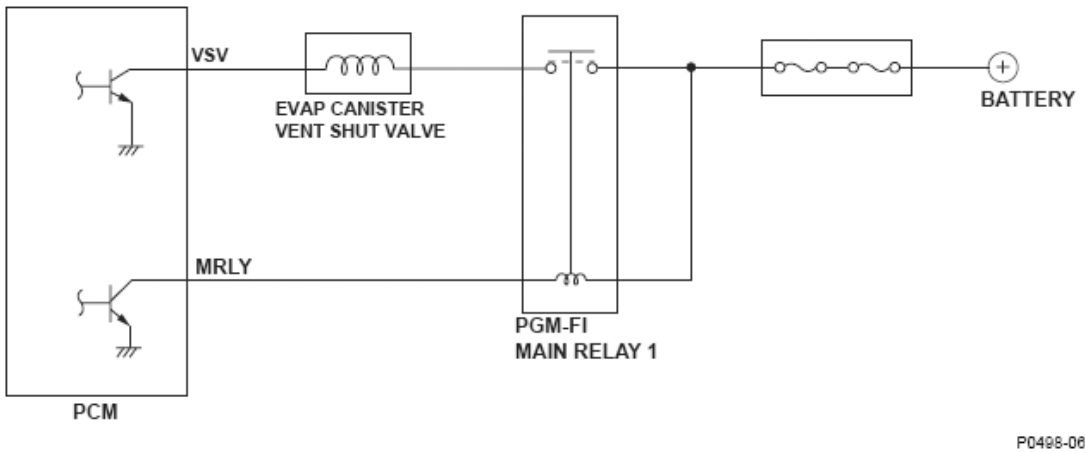


Fig. 25: Checking For Continuity Between ECT Sensor 1 2P Connector Terminal No. 2 And ECM/PCM Connector Terminal B23
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (B23) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0118 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to

step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0125: ECT SENSOR 1 MALFUNCTION/SLOW RESPONSE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 0°F (-18°C) or less indicated?

   YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and the terminals are OK, replace ECT sensor 1, then go to step8.

   NO - Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Allow the engine to cool to 104 °F (40 °C) or less.
5. Make sure the temperature difference between ECT SENSOR 1 and ECT SENSOR 2 is about 50 °F (10°C) in the DATA LIST with the HDS.
6. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 158 °F (70 °C).

   Does ECT SENSOR 2 also read about 158 °F (70 °C)?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

7. Check the thermostat.

   Is the thermostat OK?

   YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and the terminals are OK, replace ECT sensor 1, then go to step 7.

   NO - Replace the thermostat, then go to step 7.

8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Turn the ignition switch to LOCK (0).
11. Allow the engine to cool to 104 °F (40 °C) or less.
12. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 158 °F (70 °C).

    Does ECT SENSOR 2 also read about 158 °F (70 °C)?

    YES - Go to step 1 and recheck.

    NO - Troubleshooting is complete.

DTC P0128: COOLING SYSTEM MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Check the FAN CTRL in the DATA LIST with the HDS.

   Is it OFF?

   YES - Go to step 5.

   NO - Wait until the FAN CTRL is off, then go to step 6.

5. Check the radiator fan operation.

   Does the radiator fan keep running?

   YES - Check the radiator fan circuit (see **CIRCUIT DIAGRAM**), and the radiator fan relay (see **POWER RELAY TEST**). If the circuits and the relay is OK, go to step 19.

   NO - Go to step 6.

6. Let the engine cool until the coolant temperature is 104°F (40°C) or less.

7. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
8. Start the engine, and let it idle.
9. Let the engine idle until ECT SENSOR 1 goes up 40°F (22°C) or more from the recorded temperature.
10. Check ECT SENSOR 2 in the DATA LIST with the HDS.
11. Compare the value of recorded ECT SENSOR 2 and the present value of ECT SENSOR 2.

    Did temperature rise 14°F (8°C) or more?

    YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

    NO - Test the thermostat (see **FAN MOTOR TEST**), then go to step 12.

12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Let the engine cool until the coolant temperature is between 21°F (-6°C) and 104°F (40°C).
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Test-drive at a steady speed between 15-75 mph (24-120 km/h) for 10 minutes.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES - Check the cooling system, then go to step 1.

    NO - Go to step 18.

18. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check the cooling system, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Let the engine cool until the coolant temperature is between 21°F (-6°C) and 104°F (40°C).
21. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
22. Test-drive at a steady speed between 15-75 mph (24-120 km/h) for 10 minutes.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1.

NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P0133: A/F SENSOR (SENSOR 1) MALFUNCTION/SLOW RESPONSE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0139 is stored at the same time as DTC P0133, troubleshoot DTC P0139 first, then recheck for DTC P0133.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 3rd or 4th gear)
   - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26-81 mph (41-130 km/h).
5. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 3rd or 4th gear)
    - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26-81 mph (41-130 km/h).
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0133 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0134: A/F SENSOR (SENSOR 1) HEATER SYSTEM MALFUNCTION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0135 is stored at the same time as DTC P0134, troubleshoot DTC P0135 first, then recheck for DTC P0134.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral), until the radiator fan comes on.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0134 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0134 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

    NO - Go to step 11.

11. Monitor the OBD STATUS for DTC P0134 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: A/F SENSOR (SENSOR 1) HEATER CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 indicated?

    YES - Go to step 5.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Check the No. 11 FI SUB (15 A) fuse in the underhood fuse/relay box.

   Is the fuse OK?

   YES - Go to step 7.

   NO - Go to step 18.

7. Test the PGM-FI subrelay (E) in the under-hood fuse/relay box (see **POWER RELAY TEST**).

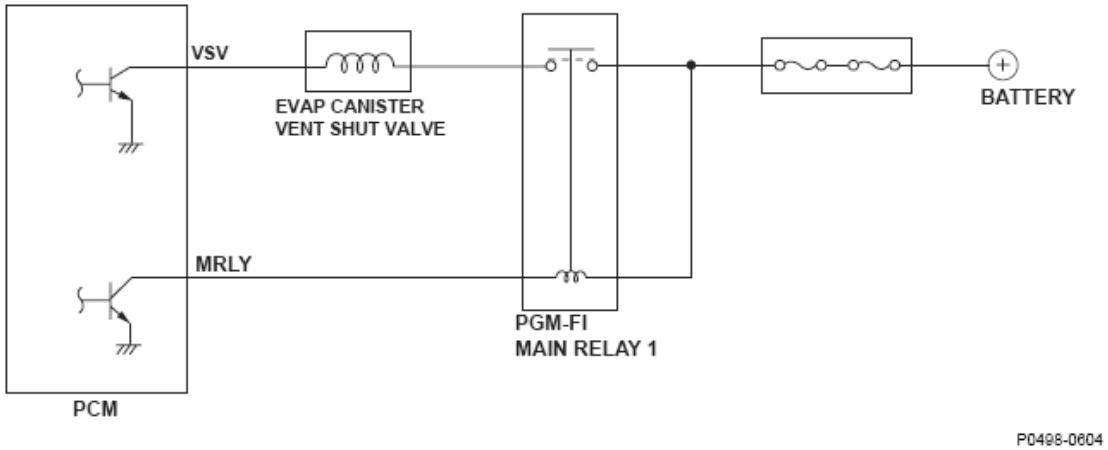


Fig. 26: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the PGM-FI subrelay OK?

YES - Go to step 8.

NO - Replace the PGM-FI subrelay, then go to step 23.

8. Disconnect the A/F sensor (Sensor 1) 4P connector.
9. At the sensor side, measure resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4.

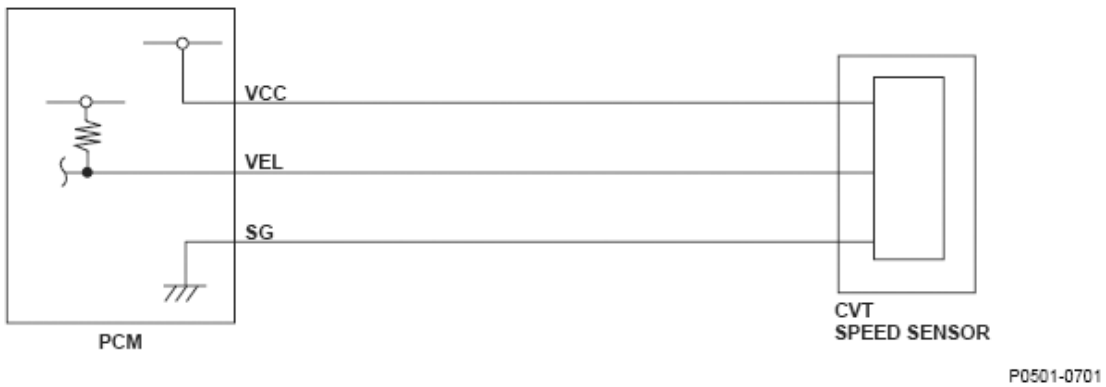


Fig. 27: Measuring Resistance Between A/F Sensor (Sensor 1) 4P Connector Terminals No. 3

And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 2.0-2.7 ohms at room temperature?

YES - Go to step 10.

NO - Go to step 22.

10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 3, and between terminals No. 1 and No. 4 individually.

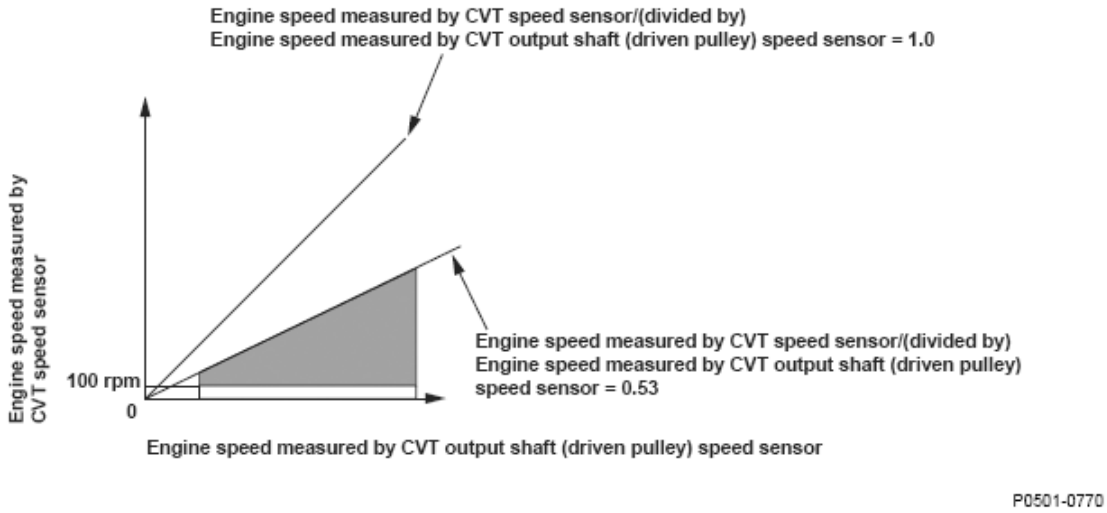


Fig. 28: Checking For Continuity Between A/F Sensor 4P Connector Terminals No. 1 & No. 3 And Between Terminals No. 1 & No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Go to step 11.

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector C (44P).
13. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 3 and ECM/PCM connector terminal C9.

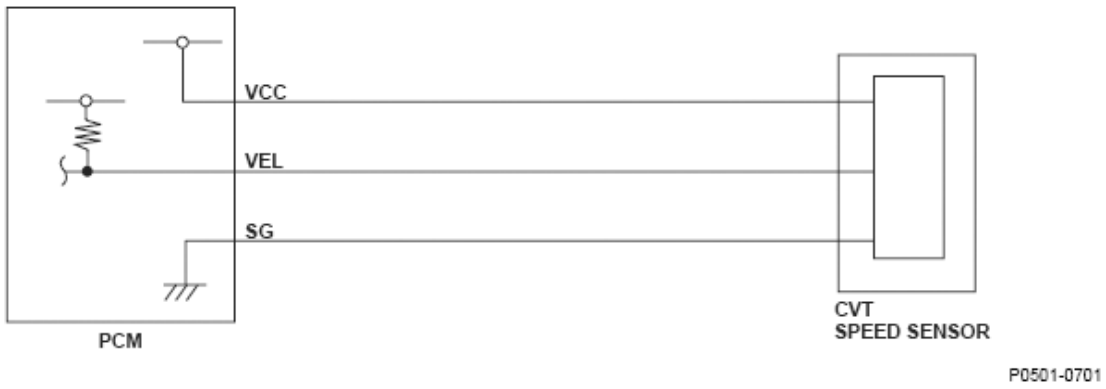


Fig. 29: Checking For Continuity Between A/F Sensor (Sensor 1) 4P Connector Terminal No. 3 And ECM/PCM Connector Terminal C9
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Repair open in the wire between the ECM/PCM (C9) and the A/F sensor (Sensor 1), then go to step 23.

14. Remove the PGM-FI subrelay (E) from the underhood fuse/relay box.

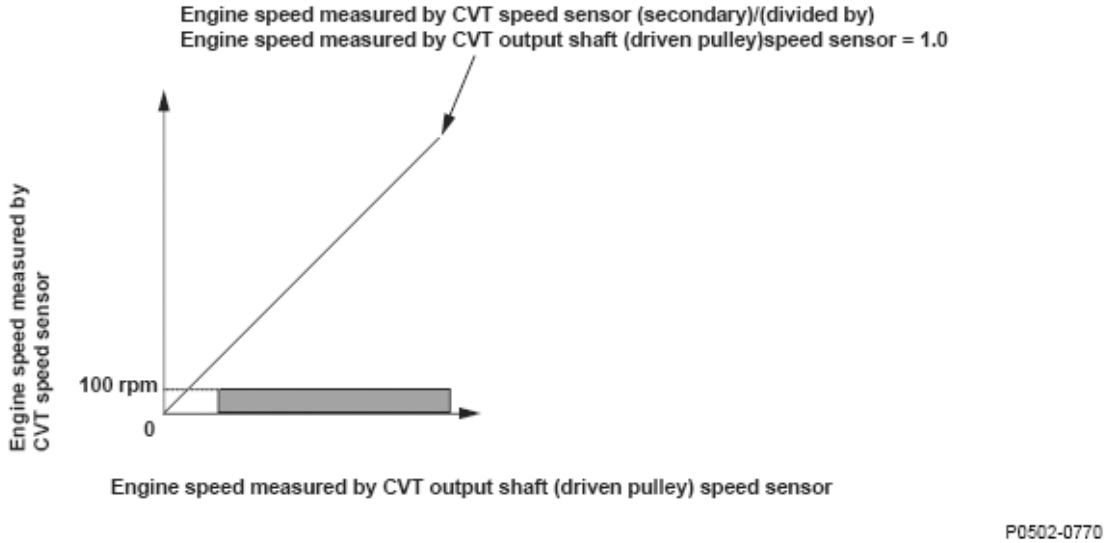


Fig. 30: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and PGM-FI subrelay 4P connector terminal No. 2.

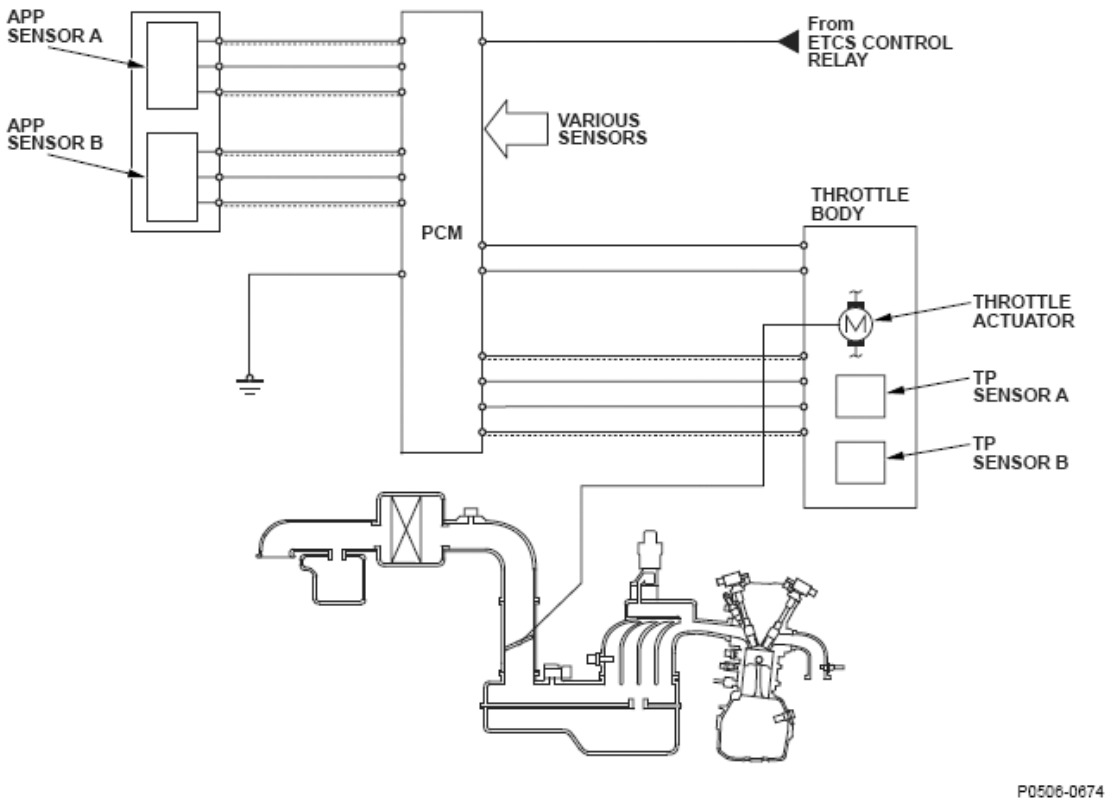


Fig. 31: Checking For Continuity Between A/F Sensor 4P Connector Terminal No. 4 And PGM-FI Subrelay 4P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 16.

NO - Repair open in the wire between the A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 23.

16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM/PCM connector terminal A21.

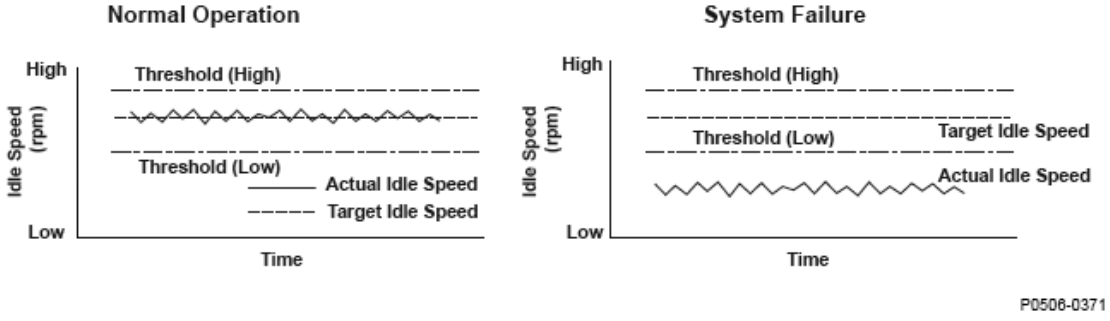


Fig. 32: Checking For Continuity Between PGM-FI Subrelay 4P Connector Terminal No. 3 And ECM/PCM Connector Terminal A21
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM (A21) and the PGM-FI subrelay, then go to step 23.

18. Remove the PGM-FI subrelay (E) from the underhood fuse/relay box.

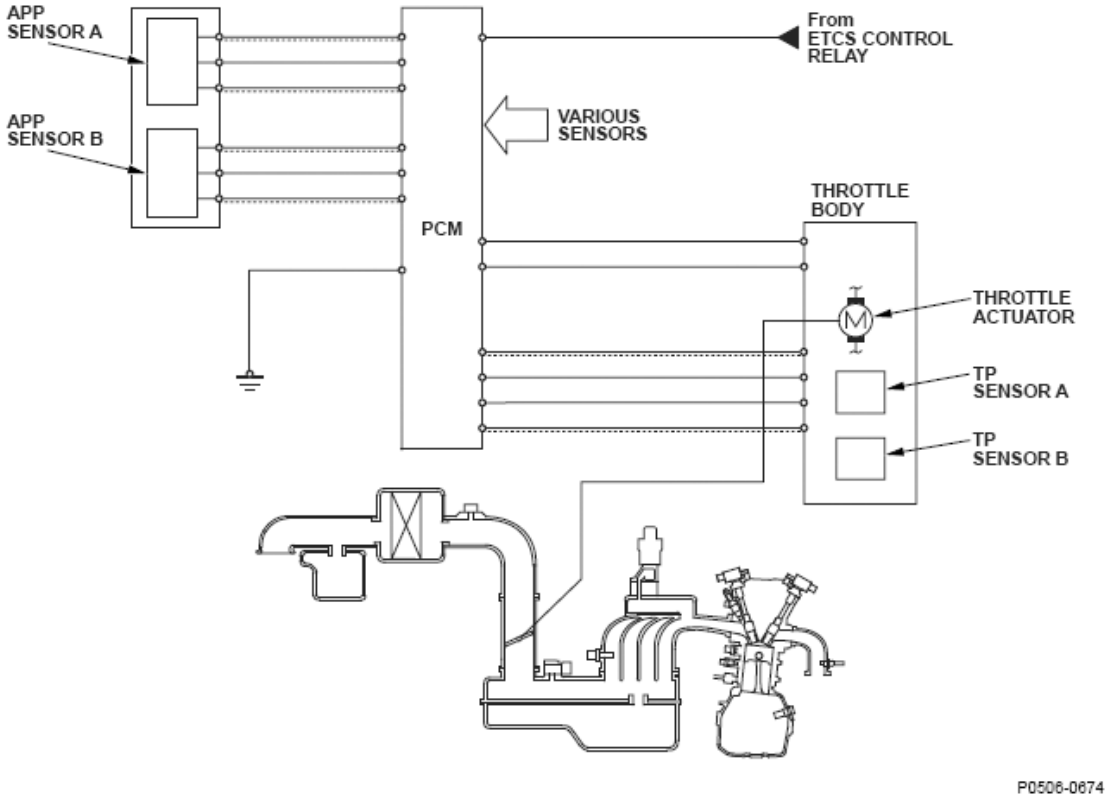


Fig. 33: Identifying PGM-FI Subrelay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Disconnect the A/F sensor (Sensor 1) 4P connector.
20. Disconnect the EVAP canister vent shut valve 2P connector.
21. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and body ground.

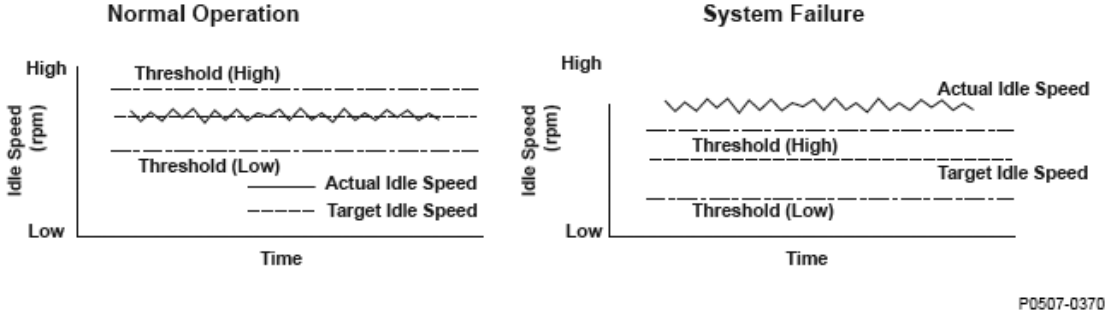


Fig. 34: Checking For Continuity Between A/F Sensor (Sensor 1) 4P Connector Terminal No. 4 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PGM-FI subrelay and the A/F sensor (Sensor 1), and the EVAP canister vent shut valve. Also replace the No. 11 FI SUB (15 A) fuse, then go to step 23.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 23.

22. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 indicated?

YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.
30. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
31. Start the engine, and let it idle.
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 indicated?

YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 31. If the ECM/PCM was substituted, go to step 1.

NO - Go to step 33.

33. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 31. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0137: SECONDARY HO2S (SENSOR 2) CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 V or less?

   YES - Go to step 9.

   NO - Go to step 13.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

12. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

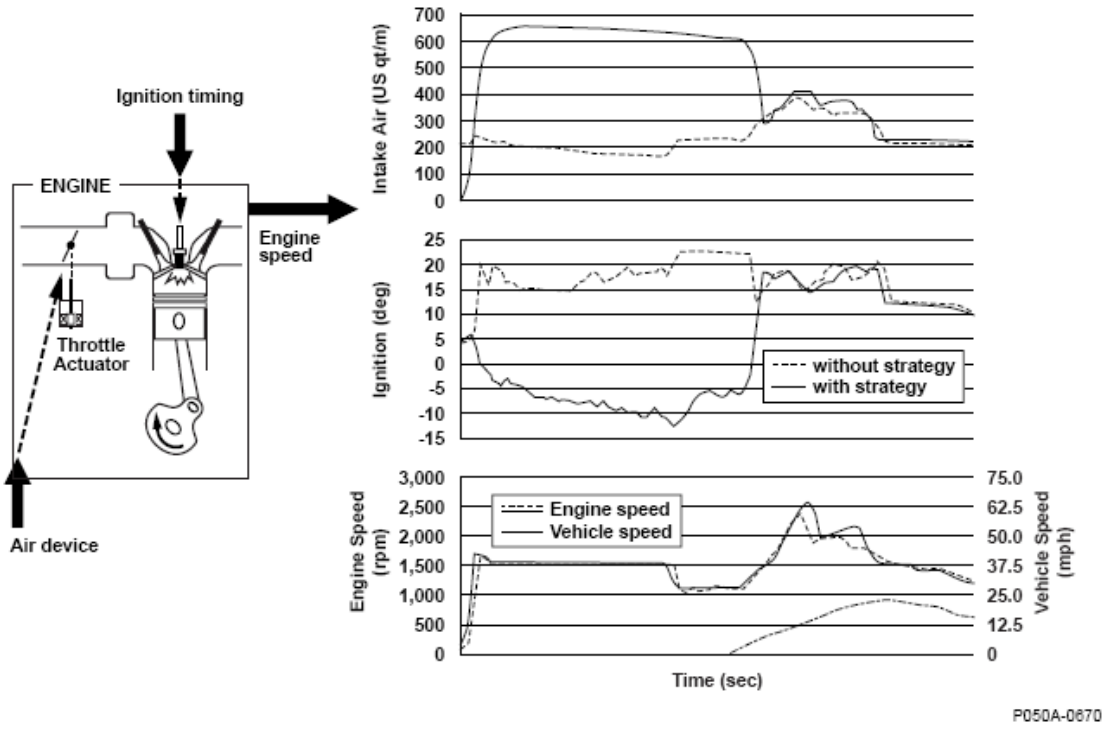


Fig. 35: Checking For Continuity Between Secondary HO2S (Sensor 2) 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 15.

NO - Go to step 23.

13. Turn the ignition switch OFF.
14. Replace the secondary HO2S (Sensor 2) (see **A/F SENSOR REPLACEMENT**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
19. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
20. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - ENGINE SPEED between 1,500-3,000 rpm
    - Drive about 1 minute or more

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO - Go to step 22.

22. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 19.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
26. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - ENGINE SPEED between 1,500-3,000 rpm
    - Drive 1 minute or more
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 25. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 25. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

DTC P0138: SECONDARY HO2S (SENSOR 2) CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.25 V or more?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

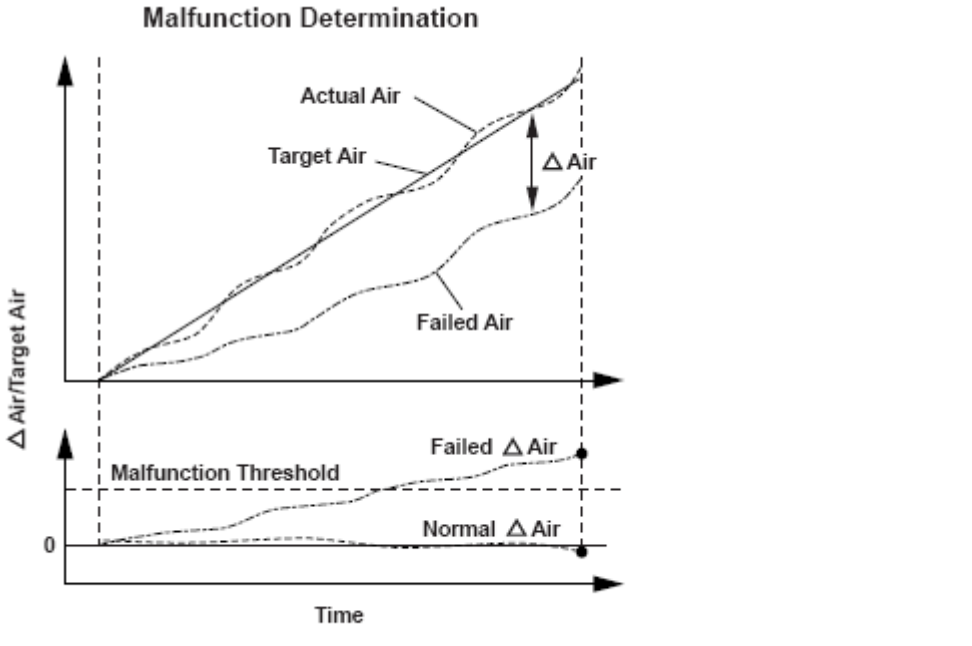


Fig. 36: Connecting Secondary HO2S (Sensor 2) 4P Connector Terminals No. 1 And No. 2 With

A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.25 V or more?

   YES - Go to step 10.

   NO - Go to step 19.

10. Turn the ignition switch OFF.
11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

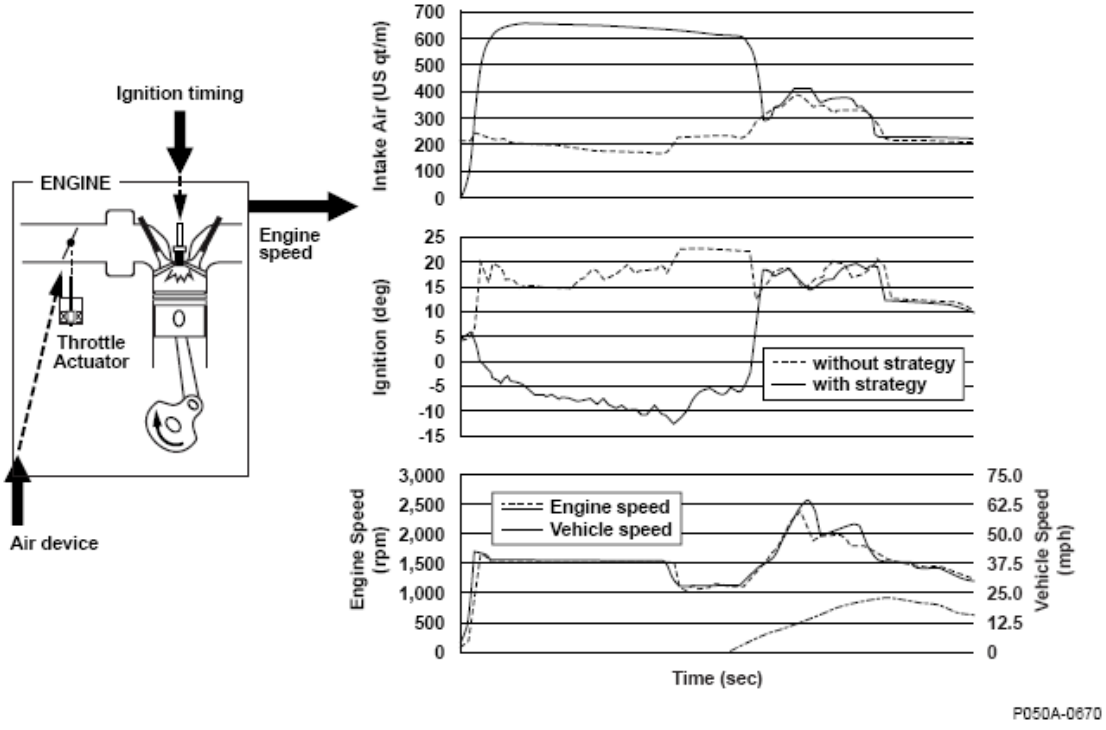


Fig. 37: Connecting Secondary HO2S (Sensor 2) 4P Connector Terminal No. 1 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Turn the ignition switch ON (II).
14. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.25 V or more?

   YES - Go to step 15.

   NO - Repair open in the wire between the ECM/PCM (B33) and the secondary HO2S (Sensor 2), then go to step 21.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector C (44P).
18. Check for continuity between ECM/PCM connector terminal C27 and body ground.

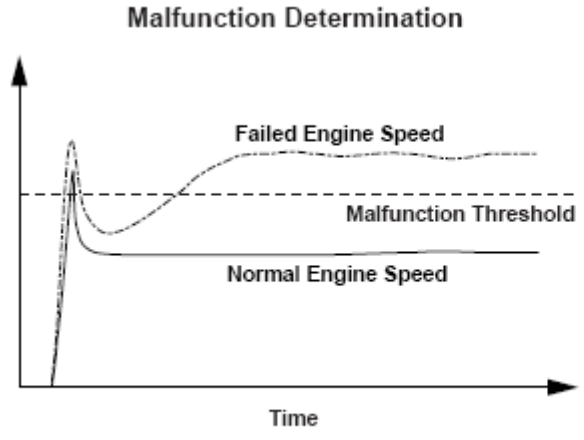


Fig. 38: Checking For Continuity Between ECM/PCM Connector Terminal C27 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 29.

NO - Repair open in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the secondary HO2S (Sensor 2) (see **A/F SENSOR REPLACEMENT**).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
26. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Engine speed between 1,500-3,000 rpm
    - Drive about 1 minute or more
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0138 indicated?

YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

29. Reconnect all connectors.
30. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
31. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
32. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - ENGINE SPEED between 1,500-3,000 rpm
    - Drive about 1 minute or more
33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 34.

34. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 31. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 31.

DTC P0139: SECONDARY HO2S (SENSOR 2) SLOW RESPONSE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - Vehicle speed at 35 mph (56 km/h) or more
   - Drive 20 seconds
5. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 4th gear)
    - Vehicle speed at 35 mph (56 km/h) or more
    - Drive 20 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0141: SECONDARY HO2S (SENSOR 2) HEATER CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0141 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES - Go to step 7.

   NO - Repair short in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 22.

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

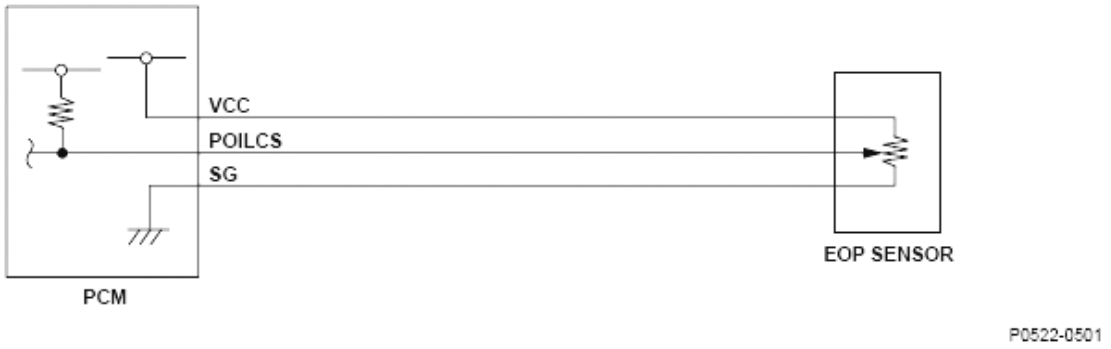


Fig. 39: Measuring Resistance Between Secondary HO2S (Sensor 2) 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 5.4-7.3 ohms at room temperature?

YES - Go to step 9.

NO - Go to step 21.

9. At the secondary HO2S (Sensor 2) side, check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

Fig. 40: Checking For Continuity Between Body Ground And Secondary HO2S (Sensor 2) 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Go to step 10.

10. Turn the ignition switch ON (II).
11. Measure voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

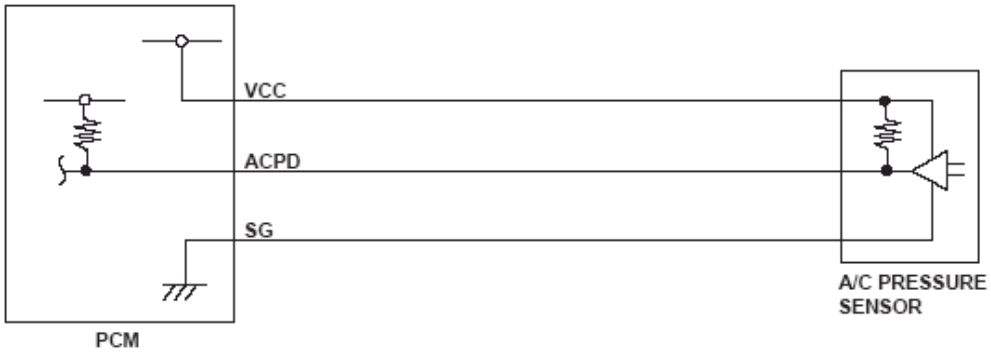


Fig. 41: Measuring Voltage Between Secondary HO2S (Sensor 2) 4P Connector Terminals No. 3 And No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between ECM/PCM connector terminal B4 and body ground.

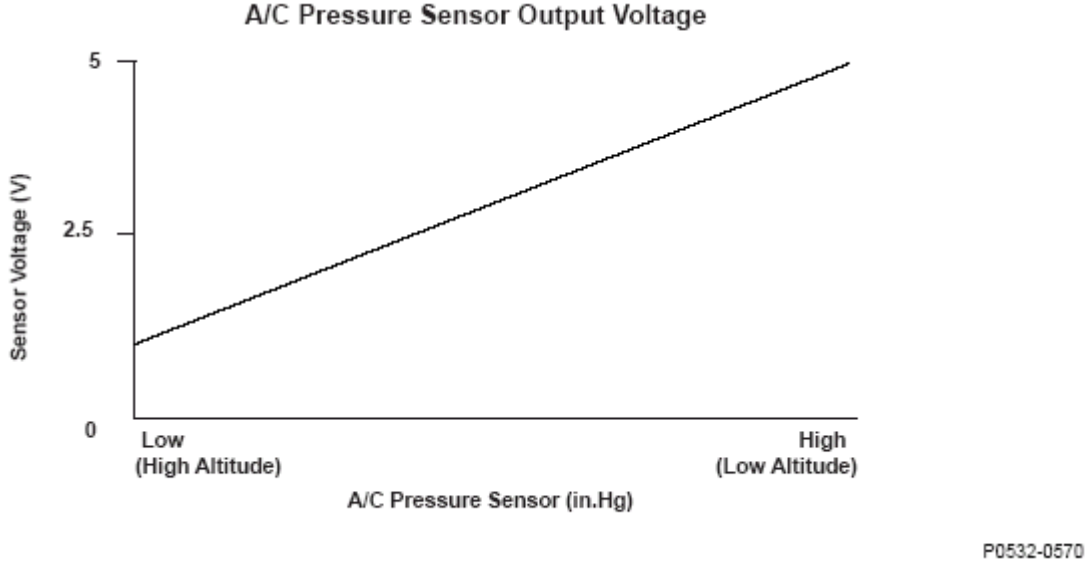


Fig. 42: Checking For Continuity Between ECM/PCM Connector Terminal B4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 22.

NO - Go to step 28.

16. Measure voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 3 and body ground.

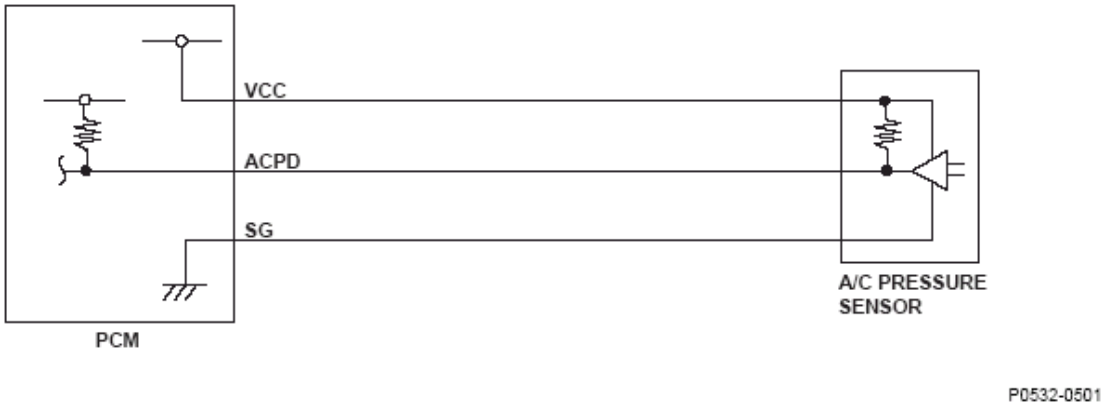


Fig. 43: Measuring Voltage Between Secondary HO2S (Sensor 2) 4P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 17.

NO - Repair open in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse, then go to step 22.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (44P).
20. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and ECM/PCM connector terminal B4.

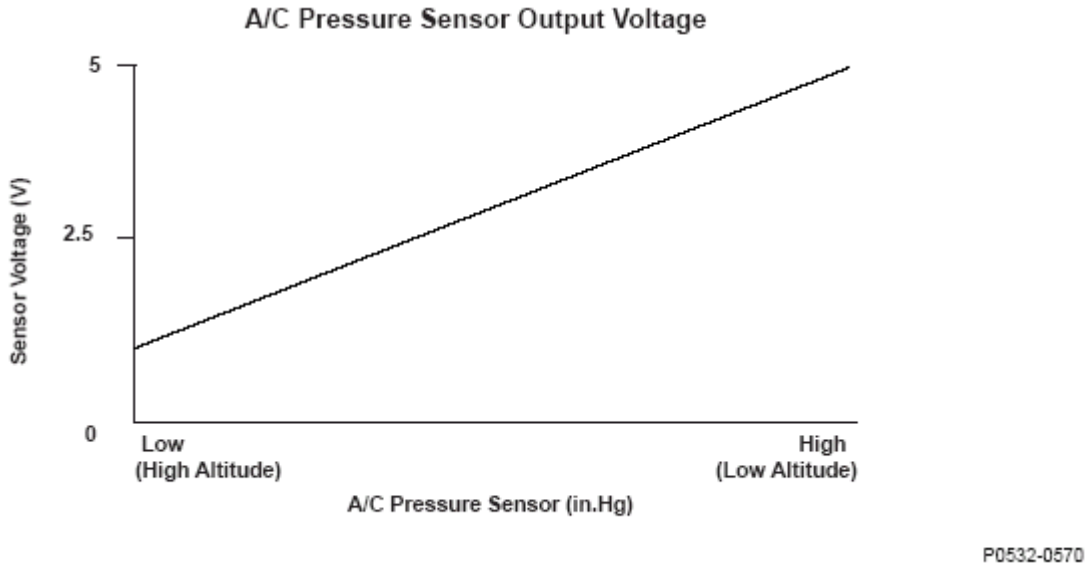


Fig. 44: Checking For Continuity Between Secondary HO2S (Sensor 2) 4P Connector Terminal No. 4 And ECM/PCM Connector Terminal B4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28.

NO - Repair open in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 22.

21. Replace the secondary HO2S (Sensor 2) (see **A/F SENSOR REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 indicated?

YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

NO - Go to step 27.

27. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary

HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
30. Start the engine, and let it idle.
31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was update, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substitute, go to step 1.

    NO - Go to step 32.

32. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 30. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0171: FUEL SYSTEM TOO LEAN; DTC P0172: FUEL SYSTEM TOO RICH

NOTE: Refer to the PGM-FI SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If any of the DTCs listed below are indicated at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.**

P0101, P0102, P0103: Mass air flow (MAF) sensor

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

P0133, P1172, P1157, P2195, P2238, P2252, P2A00: Air fuel ratio (A/F) sensor (Sensor 1)

P0134, P0135: Air fuel ratio (A/F) sensor (Sensor 1) heater

P0137, P0138, P0139, P2270, P2271: Secondary HO2S (Sensor 2)

P0141: Secondary HO2S (Sensor 2) heater

P2646, P2647, P2648, P2649: VTEC system

P0400, P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system

P0443, P0496: EVAP canister purge valve

1. Check the fuel pressure (see **FUEL PRESSURE TEST**).

   Is the fuel pressure OK?

   YES - Go to step 2.

   NO -

   - If the pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 7.
   - If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 7.
2. Check for vacuum leaks at these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - Brake booster hose
   - Intake air duct

   Are the parts OK?

   YES - Go to step 3.

   NO - Repair or replace parts with leaks, then go to step 7.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in Park or neutral (M/T in neutral)
   - All electrical loads off

5. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

   Did the engine speed vary more than 100 rpm from 4,500 rpm?

   YES - Repeat step 5.

   NO - Go to step 6.

6. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 5.4-7.8 (M/T model) or 5.9-8.5 (A/T model) gm/s?

   YES - Check the engine valve clearances and adjust if necessary (see **VALVE CLEARANCE ADJUSTMENT**). If the valve clearances are OK, replace the injectors (see **INJECTOR REPLACEMENT**), then go to step 7.

   NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 7.

7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 5th gear)
    - Drive at a steady speed between 15-75 mph (24-120 Km/h)

    NOTE: DTC P0171 and/or P0172 may take up to 80 minutes of test driving to set. Using the HDS, monitor the air fuel feed back average (AF FB AVE). If the long term fuel trim/air fuel feed back average stays within 0.80-1.25, there is no problem at this time.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0171 or P0172 indicated?

    YES - If DTC P0171 or P0172 is indicated, go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0300: RANDOM MISFIRE AND ANY COMBINATION OF THE FOLLOWING: DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE

DETECTED

NOTE: Refer to the PGM-FI SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored.**
- **If the misfire is frequent enough to damage the catalyst, the MIL will flash whenever the misfire occurs, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored. When the misfire stops, the MIL will remain on.**
- **If any of the DTCs listed below are indicated at the same time as the random misfire DTCs, troubleshoot those DTCs first, then recheck for random misfire DTCs:**

P0101, P0102, P0103: Mass air flow (MAF) sensor

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

P0171, P0172: Fuel system

P0335, P0339: Crankshaft position (CKP) sensor

P0365, P0369: Camshaft position (CMP) sensor

P2646, P2647, P2648, P2649: VTEC system

P0351, P0352, P0353, P0354: Ignition coil

P0506, P0507: Idle control system

P0400, P0401, P0404, P0416, P2413: Exhaust gas recirculation (EGR) system

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time.

9. Turn the ignition switch OFF.
10. Check the fuel quality.

    Is the quality good?

    YES - Go to step 11.

    NO - Drain the tank and fill with a known-good fuel, then go to step 24.

11. Inspect the spark plugs (see **SPARK PLUG INSPECTION**). If the spark plugs are fouled or worn, replace them.
12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 14.

    NO - Go to step 25.

14. Check the fuel pressure (see **FUEL PRESSURE TEST**).

    Is the fuel pressure OK?

    YES - Go to step 15.

    NO -

    - If the fuel pressure is too high, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 24.
    - If the fuel pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see **FUEL PRESSURE REGULATOR REPLACEMENT**), then go to step 24.
15. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
16. Check for these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - M/T in neutral (A/T in Park or neutral)

- All electrical loads off

17. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

    Did the engine speed vary more than 100 rpm from 2,500 rpm?

    YES - Repeat step 17.

    NO - Go to step 18.

18. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 5.4-7.8 (M/T model) or 5.9-8.5 (A/T model) gm/s?

    YES - Go to step 19.

    NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 24.

19. Turn the ignition switch OFF.
20. Remove the EOP sensor (A), and install the special tools as shown, then install the EOP sensor in the pressure gauge adapter (B).

    NOTE: Install the EOP sensor in the reverse order of removal with a new O-ring.

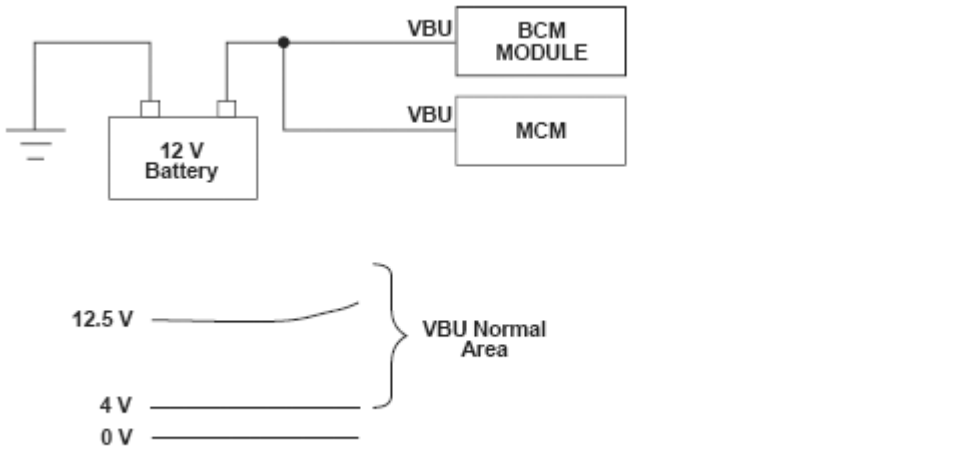


Fig. 45: Installing EOP Sensor In Pressure Gauge Adapter (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Reconnect the EOP sensor 3P connector.
22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
23. Check the oil pressure at engine speeds of 1,000 rpm and 2,000 rpm.

Is the oil pressure below 49 kPa (0.5 kgf/cm^2 , 7 psi)?

YES - Check for air in the fuel line, then go to step 24.

NO - Inspect the VTEC system, then go to step 24.

24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Clear the CKP pattern with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Do the CKP pattern learn procedure (see **ECM/PCM RESET**).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0300, P0301, P0302, P0303, or P0304 indicated?

    YES - Check for a poor connection or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to troubleshooting DTC P0301, P0302, P0303, or P0304 (see **DTC P0301: No. 1 Cylinder Misfire Detected; DTC P0302: No. 2 Cylinder Misfire Detected; DTC P0303: No. 3 Cylinder Misfire Detected; DTC P0304: No. 4 Cylinder Misfire Detected**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

    NO - Go to step 31.

31. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 29.

DTC P0301: NO. 1 CYLINDER MISFIRE DETECTED; DTC P0302: NO. 2 CYLINDER MISFIRE DETECTED; DTC P0303: NO. 3 CYLINDER MISFIRE DETECTED; DTC P0304: NO. 4 CYLINDER MISFIRE DETECTED

NOTE: Refer to the PGM-FI SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES - Go to step 9.

   NO - Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire

counts?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time. Check for loose wires or poor connections in the fuel system circuit.

9. Turn the ignition switch OFF.
10. Exchange the ignition coil from the problem cylinder with one from another cylinder.
11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
12. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 13.

    NO - Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). Check for poor connections or loose terminals at the ignition coil.

13. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was exchanged?

    YES - Replace the faulty ignition coil (see **IGNITION COIL REMOVAL/INSTALLATION**), then go to step 40.

    NO - Go to step 14.

14. Turn the ignition switch OFF.
15. Exchange the spark plug from the problem cylinder with one from another cylinder.
16. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
17. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

YES - Go to step 18.

NO - Intermittent misfire due to spark plug fouling (no misfire at this time).

18. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was exchanged?

    YES - Replace the faulty spark plug, then go to step 40.

    NO - Go to step 19.

19. Turn the ignition switch OFF.
20. Exchange the injector from the problem cylinder with one from the another cylinder.
21. Start the engine, and let it idle for 2 minutes.
22. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
23. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES - Go to step 24.

    NO - Intermittent misfire due to bad contact at the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector.

24. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was exchanged?

    YES - Replace the faulty injector (see **INJECTOR REPLACEMENT**), then go to step 40.

    NO - Go to step 25.

25. Do an engine compression and a cylinder leakdown test (see **ENGINE COMPRESSION INSPECTION**).

    Did the engine pass both tests?

YES - Go to step 26.

NO - Repair the engine, then go to step 40.

26. Do the VTEC rocker arm test (see **VTEC ROCKER ARM TEST**).

    Did the engine pass the test?

    YES - Go to step 27.

    NO - Repair the VTEC rocker arm (see **ROCKER ARM AND SHAFT DISASSEMBLY/REASSEMBLY**), then go to step 40.

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect ECM/PCM connector C (44P).
30. Turn the ignition switch ON (II).
31. Measure voltage between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see **BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL**).

BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

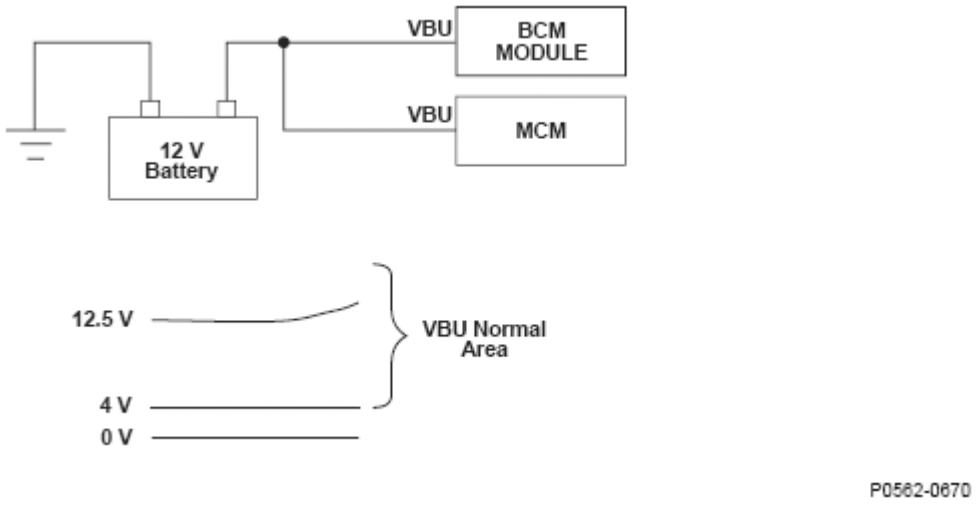


Fig. 46: Measuring Voltage Between Body Ground And Appropriate ECM/PCM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 39.

NO - Go to step 32.

32. Turn the ignition switch OFF.
33. Disconnect the injector 2P connector from the problem cylinder.
34. Turn the ignition switch ON (II).
35. Measure voltage between injector 2P connector terminal No. 1 and body ground.

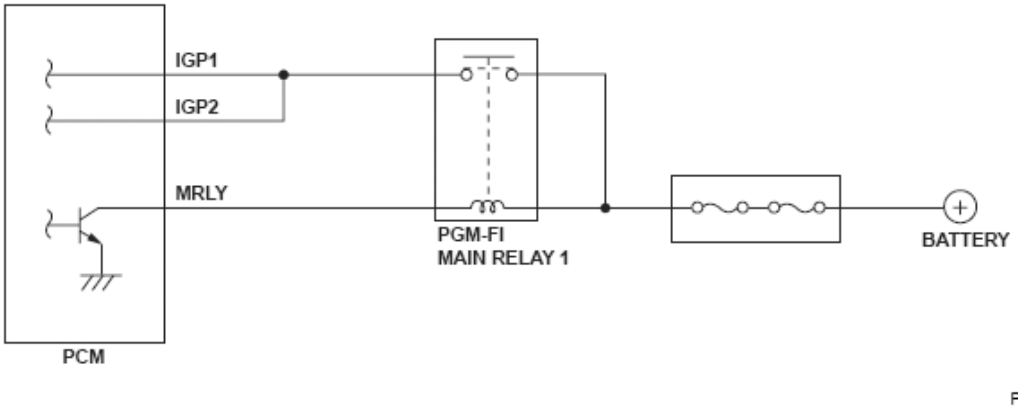


Fig. 47: Measuring Voltage Between Injector 2P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 36.

NO -Repair open in the wire between the injector and PGM-FI main relay 1 C, then go to step 40.

36. Turn the ignition switch OFF.
37. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see **BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL**).

BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

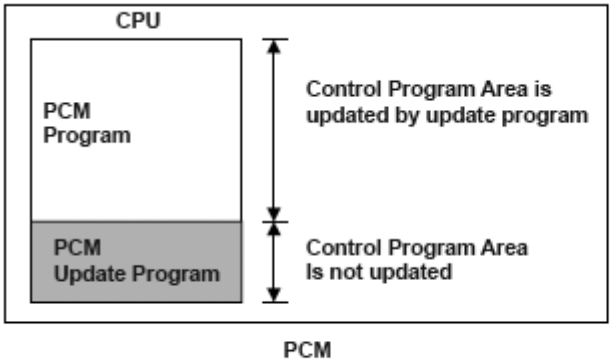


Fig. 48: Checking For Continuity Between Body Ground And Appropriate ECM/PCM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the injector, then go to step 40.

NO - Go to step 38.

38. Check for continuity between appropriate injector 2P connector terminal No. 2 and the appropriate ECM/PCM connector terminal of the problem cylinder (see **INJECTOR 2P CONNECTOR TERMINAL NO. 2 AND ECM/PCM CONNECTOR TERMINAL**).

INJECTOR 2P CONNECTOR TERMINAL NO. 2 AND ECM/PCM CONNECTOR TERMINAL

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

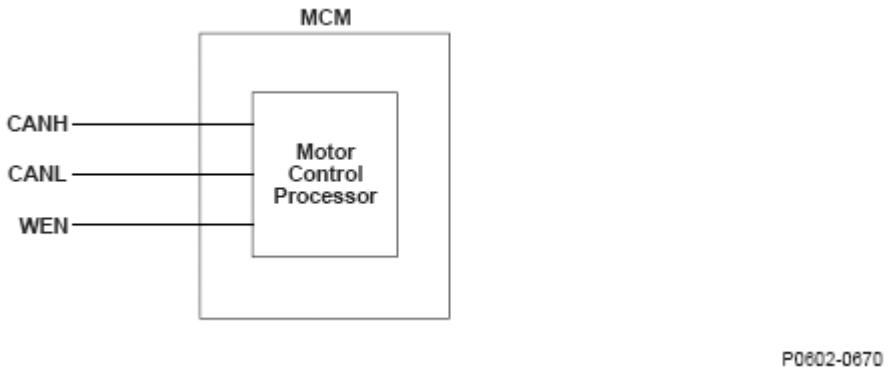


Fig. 49: Checking For Continuity Between Injector 2P Connector Terminal No. 2 And ECM/PCM Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 39.

NO - Repair open in the wire between the ECM/PCM and the injector, then go to step 40.

39. At injector side, measure resistance between injector 2P connector terminals No. 1 and No. 2.

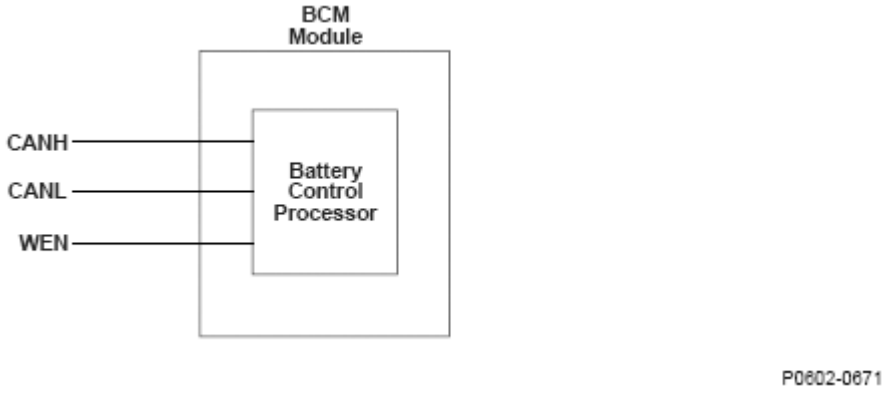


Fig. 50: Measuring Resistance Between Injector 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 10-13 ohms?

YES - Go to step 50.

NO - Replace the injector (see **INJECTOR REPLACEMENT**), then go to step 40.

40. Turn the ignition switch OFF.
41. Reconnect all connectors.
42. Turn the ignition switch ON (II).
43. Reset the ECM/PCM with the HDS.
44. Clear the CKP pattern with the HDS.
45. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
46. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
47. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
48. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0301, P0302, P0303, or P0304 indicated?

YES - Check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to troubleshooting DTC P0300, P0301, P0302, P0303, or P0304 (see **DTC P0300: Random Misfire and Any Combination of the Following: DTC P0301: No. 1 Cylinder Misfire Detected; DTC P0302: No. 2 Cylinder Misfire Detected; DTC P0303: No. 3 Cylinder Misfire Detected; DTC P0304: No. 4 Cylinder Misfire Detected**).

NO - Go to step 49.

49. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 48, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 47.

50. Reconnect all connectors.
51. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
52. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR
53. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 indicated?

    YES - Check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 52. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 54.

54. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 53, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 52. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 52.

DTC P0325: KNOCK SENSOR CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0325 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the ECM/PCM.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector (see **KNOCK SENSOR REPLACEMENT**).
9. Disconnect ECM/PCM connector C (44P).
10. Check for continuity between ECM/PCM connector terminal C42 and body ground.

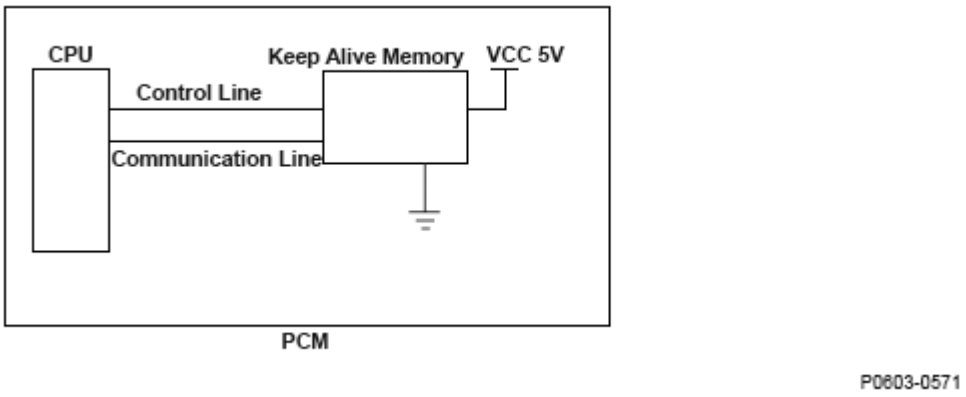


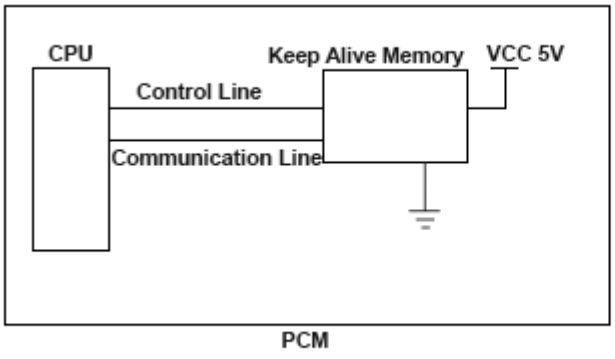
Fig. 51: Checking For Continuity Between ECM/PCM Connector Terminal C42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

NO - Go to step 11.

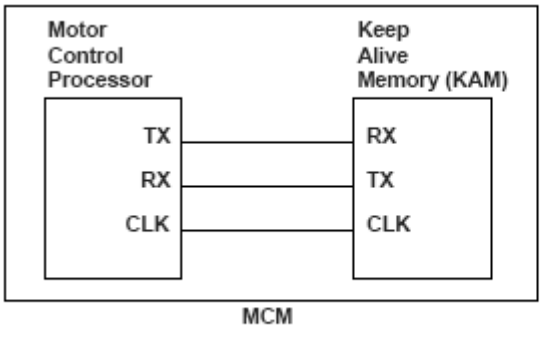
11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.



P0603-0571

Fig. 52: Connecting Knock Sensor 1P Connector Terminal To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal C42 and body ground.



P0603-0670

Fig. 53: Checking For Continuity Between ECM/PCM Connector Terminal C42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

13. Replace the knock sensor (see **KNOCK SENSOR REPLACEMENT**).
14. Reconnect all connectors.

15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0325 indicated?

    YES - Go to step 21.

    NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17.

21. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
22. Hold the engine speed between 3,000-4,000 rpm for at least 10 seconds.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0325 indicated?

    YES - Check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

DTC P0335: CKP SENSOR NO SIGNAL

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

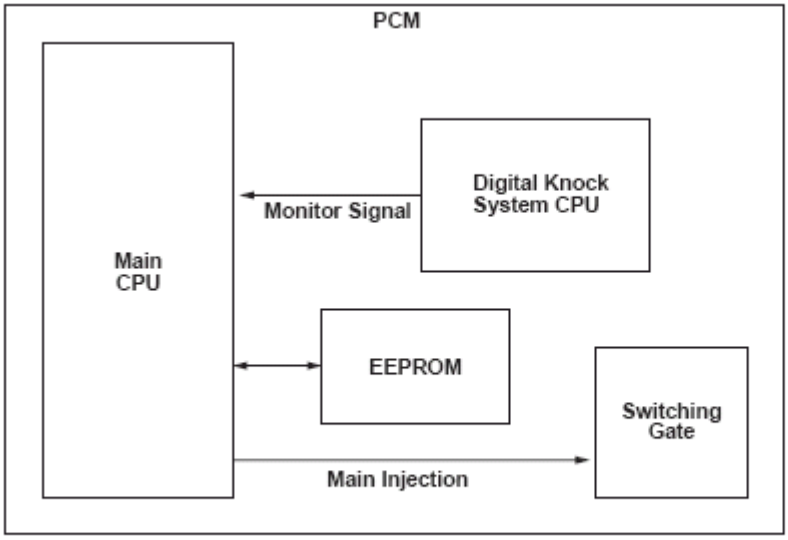
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0335 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the CKP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor 3P connector terminal No. 1 and body ground.



P0603-0671

Fig. 54: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19.

9. Measure voltage between CKP sensor 3P connector terminal No. 2 and body ground.

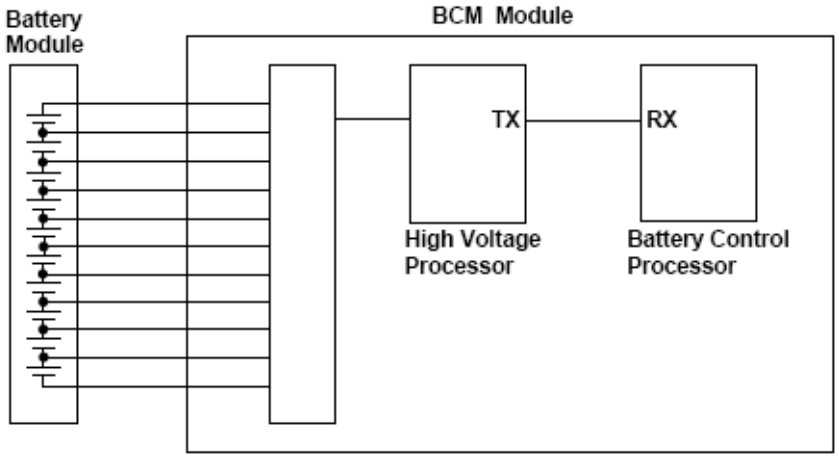


Fig. 55: Measuring Voltage Between CKP Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 11.

10. Measure voltage between CKP sensor 3P connector terminals No. 1 and No. 3.

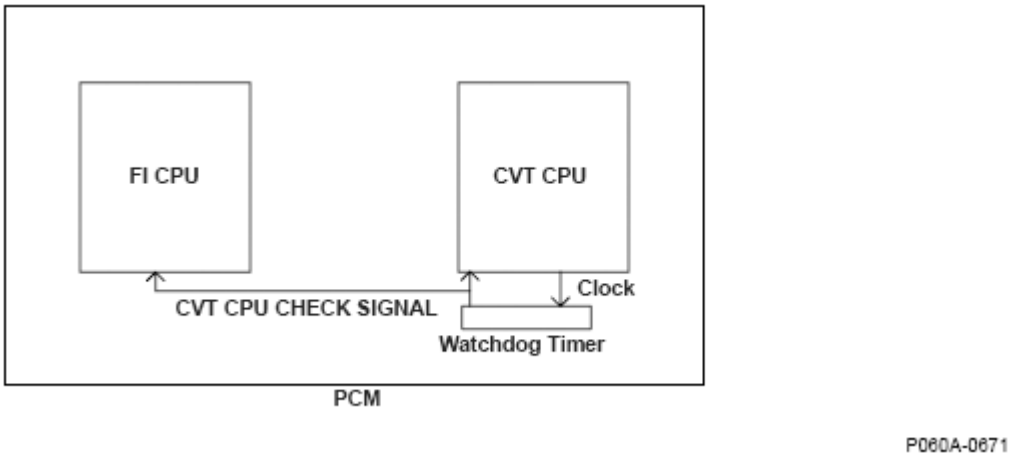


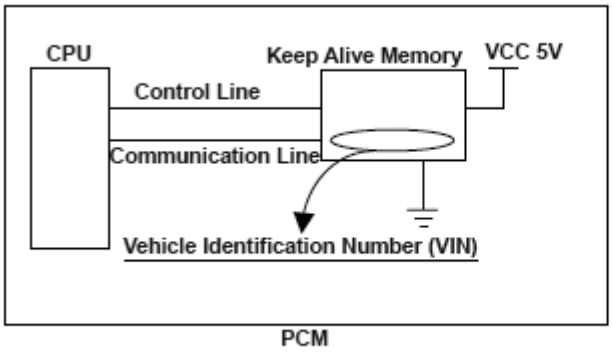
Fig. 56: Measuring Voltage Between CKP Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 17.

NO - Repair open in the wire between the CKP sensor and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**), then go to step 19.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Check for continuity between ECM/PCM connector terminal C32 and body ground.



P0630-0571

Fig. 57: Checking For Continuity Between ECM/PCM Connector Terminal C32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

NO - Go to step 15.

15. Connect CKP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

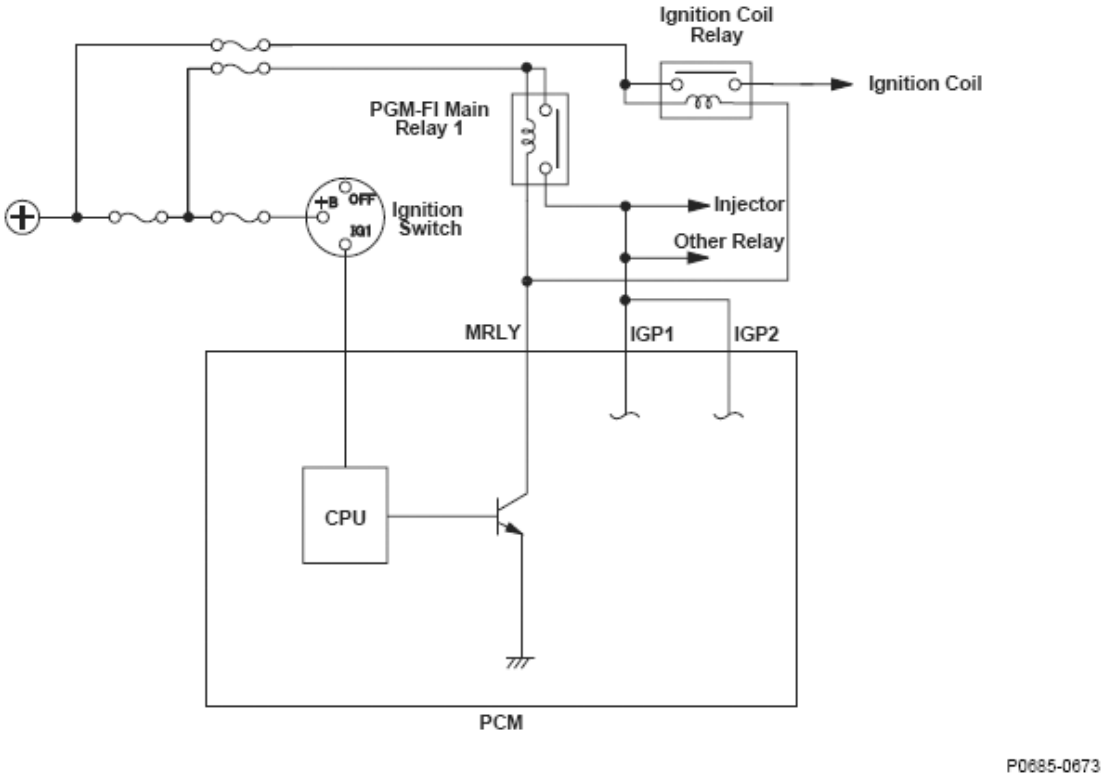


Fig. 58: Connecting CKP Sensor 3P Connector Terminal No. 2 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check for continuity between ECM/PCM connector terminal C32 and body ground.

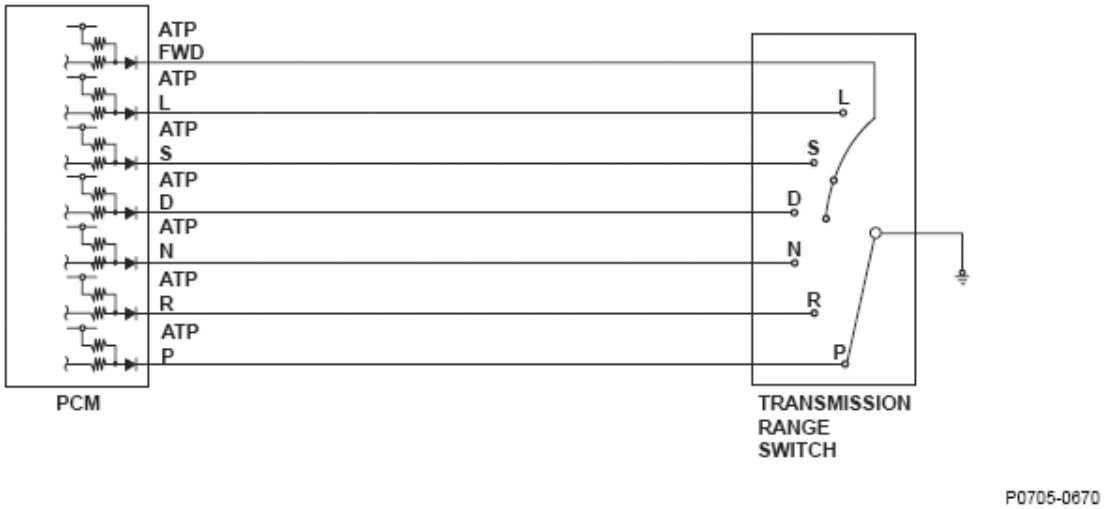


Fig. 59: Checking For Continuity Between ECM/PCM Connector Terminal C32 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

17. Turn the ignition switch OFF.
18. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**).
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Clear the CKP pattern with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Do the CKP pattern learn procedure (see **ECM/PCM RESET**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0335 indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0335 indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0339: CKP SENSOR INTERMITTENT INTERRUPTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE count in the DATA LIST with the HDS.

   Are 0 counts indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
6. Check the CKP NOISE count in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM.

7. Check for poor or loose connections and terminals at these locations:
   - CKP sensor
   - ECM/PCM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES - Go to step 8.

   NO - Repair the connectors or terminals, then go to step 10.

8. Remove the oil pan (see **OIL PAN REMOVAL**), and check for damage to the CKP sensor pulser plate.

   Is the pulser plate damaged?

   YES - Replace the CKP sensor pulser plate, then go to step 10.

   NO - Go to step 9.

9. Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**).
10. Turn the ignition switch ON (II).
11. Reset the ECM/PCM with the HDS.
12. Clear the CKP pattern with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
15. Start the engine, and let it idle for 10 seconds.
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0339 indicated?

YES - Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0351: NO. 1 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0352: NO. 2 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0353: NO. 3 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION; DTC P0354: NO. 4 CYLINDER IGNITION COIL CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0351, P0352, P0353 and/or P0354 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ignition coil and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Exchange the ignition coil from the problem cylinder with one from another cylinder.
7. Start the engine.
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC indicated at the exchanged cylinder?

   YES - Replace the faulty ignition coil (see **IGNITION COIL REMOVAL/INSTALLATION**), then go to step 25.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Check the No. 18 IG COIL (15 A) fuse in the underhood fuse/relay box.

    Is the fuse OK?

    YES - Go to step 11.

NO - Go to step 12.

11. Test the ignition coil relay (B) in the under-hood fuse/relay box (see **POWER RELAY TEST**).

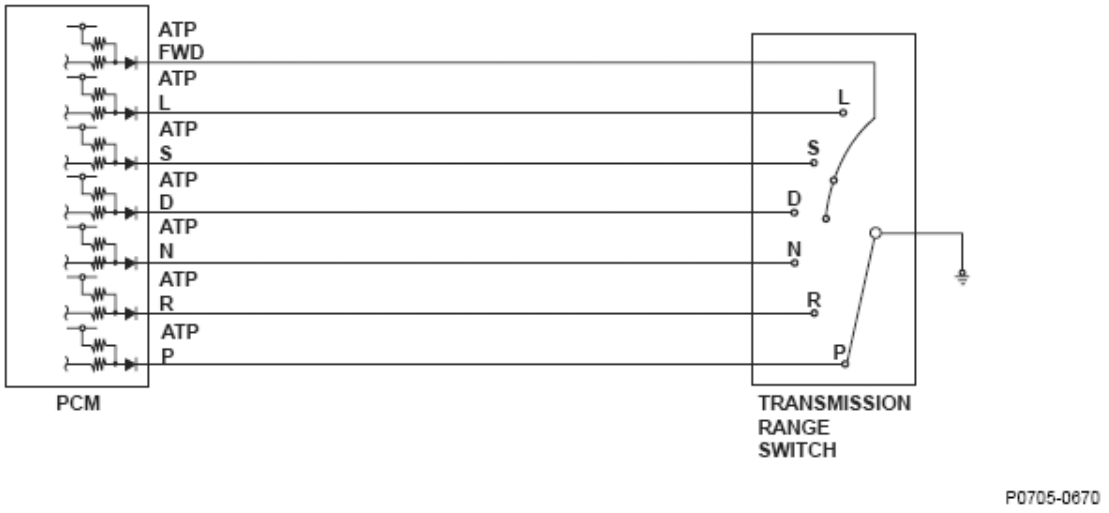


Fig. 60: Identifying Ignition Coil Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the ignition coil relay OK?

YES - Go to step 15.

NO - Replace the ignition coil relay, then go to step 25.

12. Remove the ignition coil relay (B) from the underhood fuse/relay box.

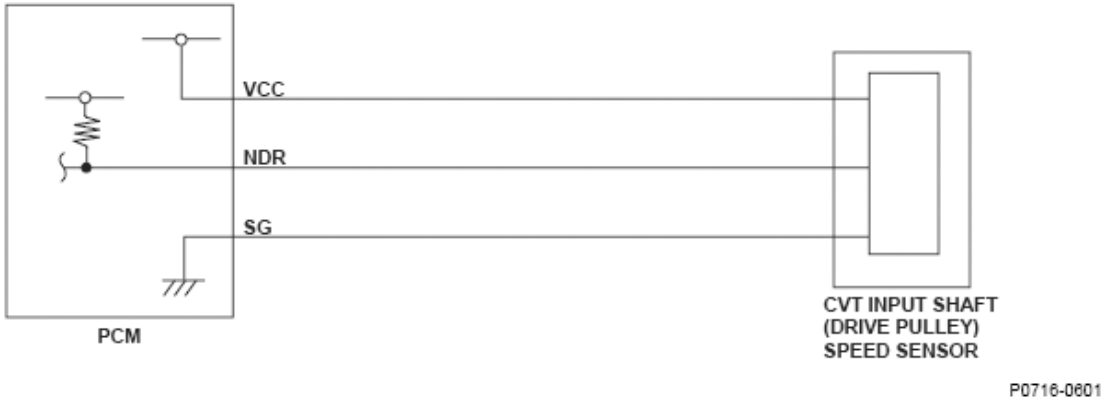


Fig. 61: Identifying Ignition Coil Relay
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Disconnect all ignition coil 3P connectors.
14. Check for continuity between No. 1 ignition coil 3P connector terminal No. 3 and body ground.

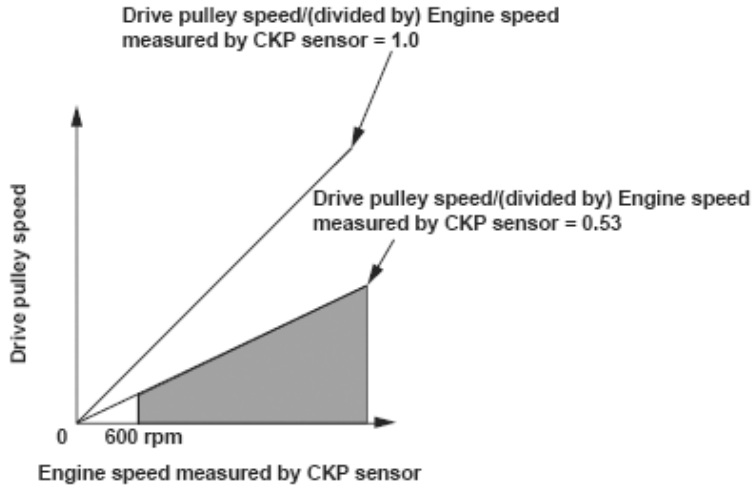


Fig. 62: Checking For Continuity Between No. 1 Ignition Coil 3P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ignition coils and the ignition coil relay. Also replace the No. 18 IG COIL (15 A) fuse, then go to step 25.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**), then go to step 25.

15. Reconnect the ignition coil relay.
16. Disconnect the ignition coil 3P connector from the problem cylinder.
17. Turn the ignition switch ON (II).
18. Measure voltage between ignition coil 3P connector terminal No. 3 of the problem cylinder and body ground (see **IGNITION COIL 3P CONNECTOR TERMINAL NO. 3 OF PROBLEM CYLINDER AND BODY GROUND**).

IGNITION COIL 3P CONNECTOR TERMINAL NO. 3 OF PROBLEM CYLINDER AND BODY GROUND

PROBLEM CYLINDER	DTC
No. 1	P0351
No. 2	P0352
No. 3	P0353
No. 4	P0354

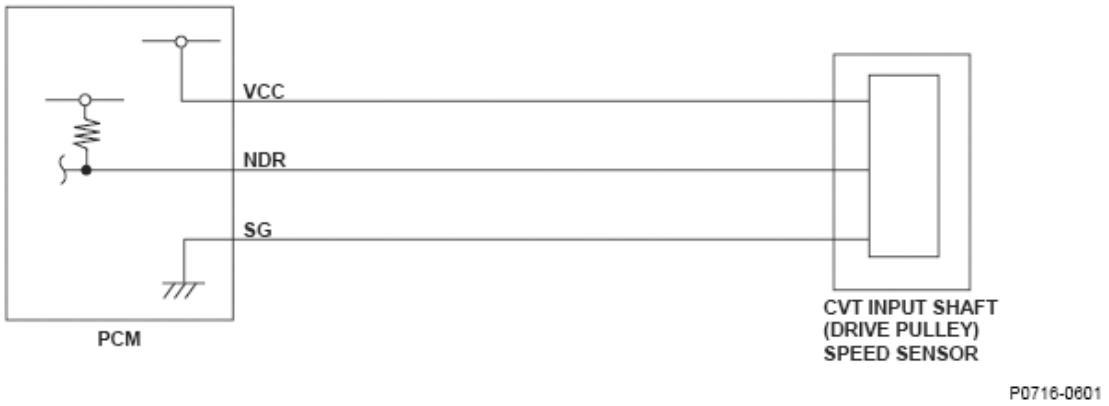


Fig. 63: Measuring Voltage Between Ignition Coil 3P Connector Terminal No. 3 Of Problem Cylinder And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 19.

NO - Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 25.

19. Turn the ignition switch OFF.
20. Check for continuity between ignition coil 3P connector terminal No. 2 of the problem cylinder and body ground (see **IGNITION COIL 3P CONNECTOR TERMINAL NO. 2 OF PROBLEM CYLINDER AND BODY GROUND**).

IGNITION COIL 3P CONNECTOR TERMINAL NO. 2 OF PROBLEM CYLINDER AND BODY GROUND

PROBLEM CYLINDER	DTC
No. 1	P0351
No. 2	P0352
No. 3	P0353
No. 4	P0354

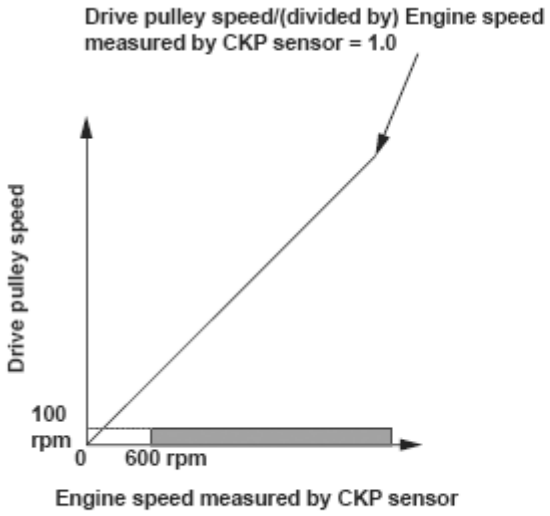


Fig. 64: Checking For Continuity Between Ignition Coil 3P Connector Terminal No. 2 Of Problem Cylinder And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the ignition coil and G101, then go to step 25.

21. Jump the SCS line with the HDS.
22. Disconnect ECM/PCM connector C (44P).
23. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see **BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL OF PROBLEM CYLINDER**).

BODY GROUND AND APPROPRIATE ECM/PCM CONNECTOR TERMINAL OF PROBLEM CYLINDER

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0351	C15	YEL/GRN
No. 2	P0352	C16	BLU/RED
No. 3	P0353	C17	WHT/BLU
No. 4	P0354	C18	BRN

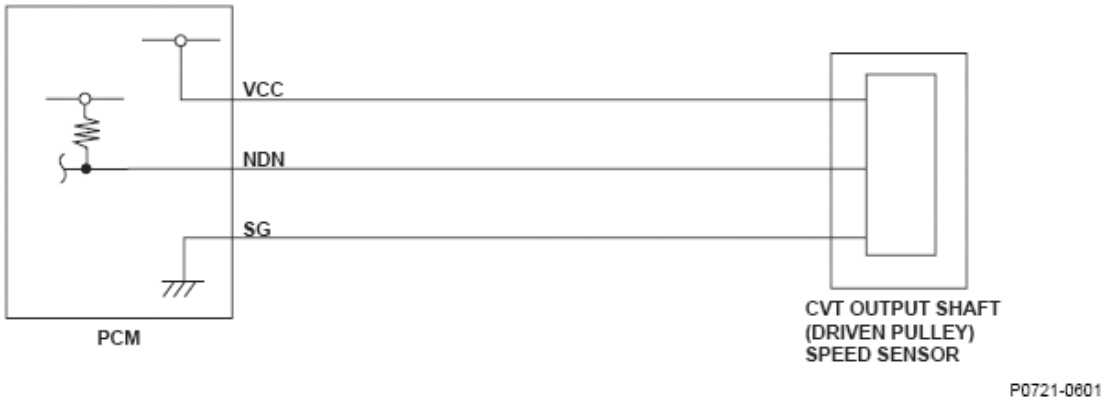


Fig. 65: Checking For Continuity Between Body Ground And Appropriate ECM/PCM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 25.

NO - Go to step 24.

24. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

IGNITION COIL 3P CONNECTOR TERMINAL NO. 1 AND ECM/PCM CONNECTOR TERMINAL OF PROBLEM CYLINDER

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0351	C15	YEL/GRN
No. 2	P0352	C16	BLU/RED
No. 3	P0353	C17	WHT/BLU
No. 4	P0354	C18	BRN

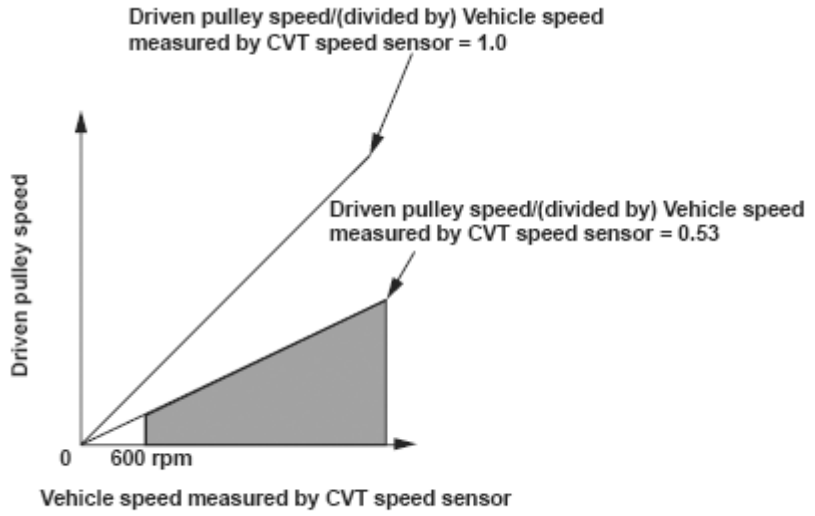


Fig. 66: Checking For Continuity Between Ignition Coil 3P Connector Terminal No. 1 And ECM/PCM Connector Terminal Of Problem Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 31.

NO - Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 25.

25. Turn the ignition switch OFF.
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0351, P0352, P0353, and/or P0354 indicated?

    YES - Check for poor connections or loose terminals at the ignition coil and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

31. Reconnect all connectors.
32. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0351, P0352, P0353, and/or P0354 indicated?

YES - Check for poor connections or loose terminals at the ignition coil and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0365: CMP SENSOR NO SIGNAL

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0365 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

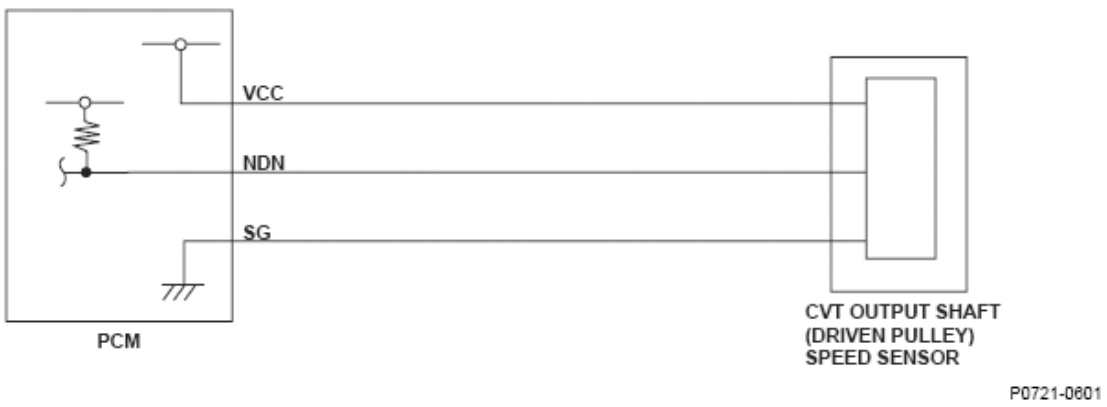


Fig. 67: Measuring Voltage Between CMP Sensor 3P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the CMP sensor and PGM-FI main relay 1, then go to step 18.

9. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

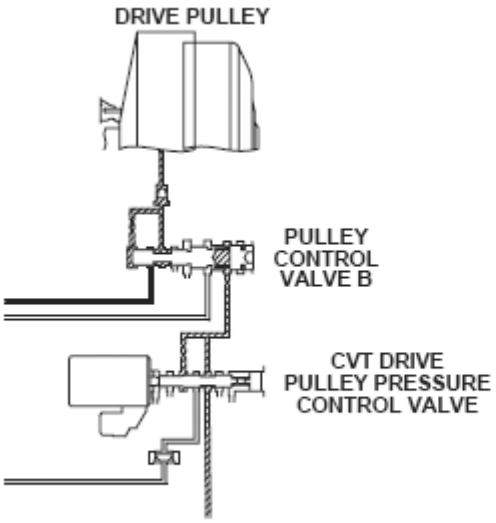


Fig. 68: Measuring Voltage Between CMP Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

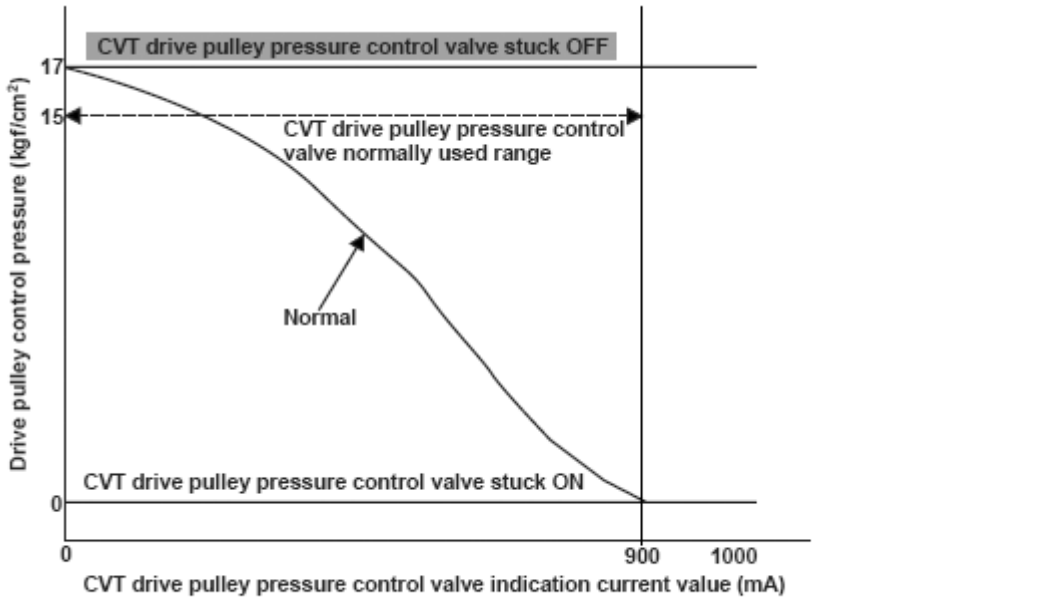


Fig. 69: Measuring Voltage Between CMP Sensor 3P Connector Terminals No. 2 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 16.

NO - Repair open in the wire between the CMP sensor and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**), then go to step 18.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Check for continuity between ECM/PCM connector terminal C31 and body ground.

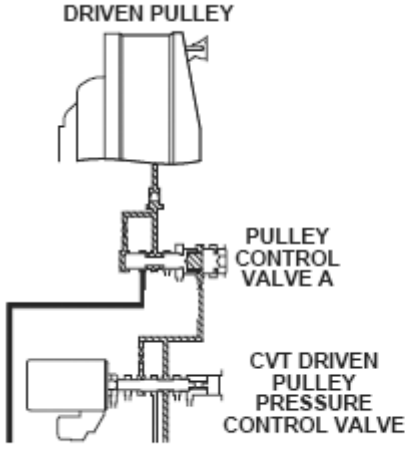


Fig. 70: Checking For Continuity Between ECM/PCM Connector Terminal C31 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C31) and the CMP sensor, then go to step 18.

NO - Go to step 15.

15. Check for continuity between CMP sensor 3P connector terminal No. 1 and ECM/PCM connector terminal C31.

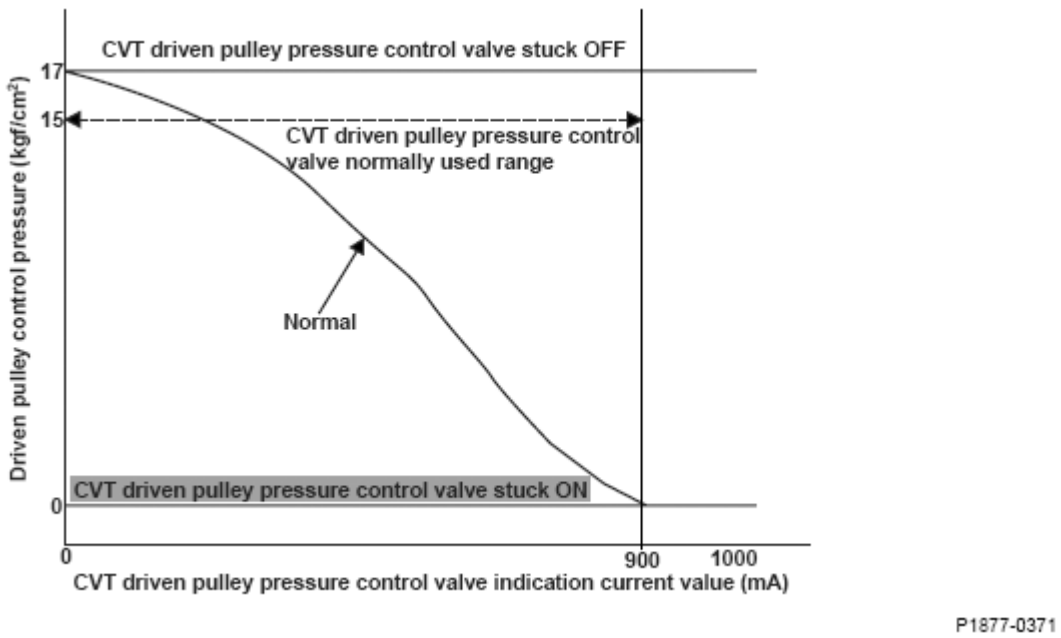


Fig. 71: Checking For Continuity Between CMP Sensor 3P Connector Terminal No. 1 And ECM/PCM Connector Terminal C31
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the ECM/PCM (C31) and the CMP sensor, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the CMP sensor (see **CMP SENSOR REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0365 indicated?

YES - Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0365 indicated?

YES - Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0369: CMP SENSOR CIRCUIT INTERMITTENT INTERRUPTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP NOISE count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
6. Check the CMP NOISE count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM.

7. Check for poor or loose connections and terminals at these locations:
   - CMP sensor
   - ECM/PCM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES - Go to step 8.

   NO - Repair the connectors or terminals, then go to step 11.

8. Check for damage to the CMP sensor pulser plate (see **CMP PULSE PLATE REMOVAL AND INSTALLATION**).

   Is the pulser plate damaged?

   YES - Replace the CMP sensor pulser plate (see **CMP PULSE PLATE REMOVAL AND INSTALLATION**), then go to step 11.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Replace the CMP sensor (see **CKP SENSOR REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0369 indicated?

    YES - Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P050A: COLD START IDLE AIR CONTROL SYSTEM PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050A indicated?

   YES - Go to the indicated DTC's troubleshooting.

   NO - Go to step 3.

3. Check for poor connections or blockage at the intake air duct.

   Is it OK?

   YES - Go to step 4.

   NO - Reconnect or repair the intake air duct, then go to step 20.

4. Check for damage at the air cleaner housing.

   Is it OK?

   YES - Go to step 5.

   NO - Replace the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**), then go to step 20.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element or remove the debris (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 20.

   NO - Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

10. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the THROTTLE ACTUATOR CONTROL VALVE normal?

YES - Go to step 11.

NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 20.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.
13. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 5.4-7.8 (M/T model) or 5.9-8.5 (A/T model) gm/s?

YES - Go to step 14.

NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

14. Turn the ignition switch OFF.
15. Allow the engine to cool to ambient temperature.
16. Note the ambient temperature.
17. Turn the ignition switch ON (II).
18. Note the value of IAT SENSOR quickly in the DATA LIST with the HDS.
19. Compare the value of the IAT SENSOR and the ambient temperature.

Does the value of the IAT SENSOR differ 5.4°F (3°C) or more?

YES - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 20.

NO - Check for dirt, carbon, or damage in the throttle bore. If there is dirt or carbon, clean the throttle body (see **THROTTLE BODY CLEANING**), then go to step 20. If there is damage in the throttle bore, replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 20.

20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
23. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
24. Start the engine, and let it idle for 10 seconds or more.
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P050A indicated?

YES - Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM, then go to step 1.

NO - Go to step 26.

26. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 23.

DTC P050B: COLD START IGNITION TIMING CONTROL SYSTEM PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050B indicated?

   YES - Go to the indicated DTC's troubleshooting.

   NO - Go to step 3.

3. Check for poor connections or blockage at the intake air duct.

   Is it OK?

   YES - Go to step 4.

   NO - Reconnect or repair the intake air duct, then go to step 25.

4. Check for damage at the air cleaner housing.

   Is it OK?

   YES - Go to step 5.

   NO - Replace the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**), then go to step 25.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES - Replace the air cleaner element or remove the debris (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 25.

   NO - Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 10.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

10. Inspect the ignition timing (see **IGNITION TIMING INSPECTION**).

    Is the ignition timing OK?

    YES - Go to step 12.

    NO - Go to step 11.

11. Check for damage at the CKP sensor (see **CKP SENSOR REPLACEMENT**) and the CKP sensor pulser plate (see **CRANKSHAFT INSTALLATION**).

    Is the CKP sensor and/or the CKP sensor pulser plate damaged?

    YES - Replace the CKP sensor (see **CKP SENSOR REPLACEMENT**) and/or the CKP sensor pulser plate (see **CRANKSHAFT INSTALLATION**), then go to step 6.

    NO - Go to step 31.

12. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES - Go to step 13.

    NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**), then go to step 25.

13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
14. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.
15. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 5.4-7.8 (M/T model) or 5.9-8.5 (A/T model) gm/s?

    YES - Go to step 16.

    NO - Replace the MAF sensor/IAT sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**), then go to step 25.

16. Turn the ignition switch OFF.
17. Drain the coolant (see **COOLANT REPLACEMENT**).
18. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), and ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
19. Allow the sensors to cool to ambient temperature.
20. Note the ambient temperature.
21. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.
22. Turn the ignition switch ON (II).
23. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
24. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does either sensor differ more than 5.4°F (3°C) from the ambient temperature?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the ambient temperature, then go to step 25.

    NO - Check and repair any problems with the following items, then go to step 25.

    - Engine compression and cylinder leakdown
    - VTEC system
    - Engine oil
    - A/C system
    - Power steering
25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
29. Start the engine, and let it idle 10 seconds or more.
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P050B indicated?

YES - Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

NO - Go to step 31.

31. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 28.

32. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
33. Let the engine cool until the value of ECT SENSOR 1 is 122°F (50°C) or less.
34. Start the engine, and let it idle 10 seconds or more.
35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES - Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 33. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 36.

36. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 33.

DTC P0562: CHARGING SYSTEM LOW VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If any high current load accessories are installed, this DTC can be set.**
- **If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0562 indicated?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see **BATTERY TEST**).

7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine.
11. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
12. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0562 indicated?

YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0563: ECM/PCM POWER SOURCE CIRCUIT UNEXPECTED VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0563 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Measure voltage between ECM/PCM connector terminal A6 and body ground.

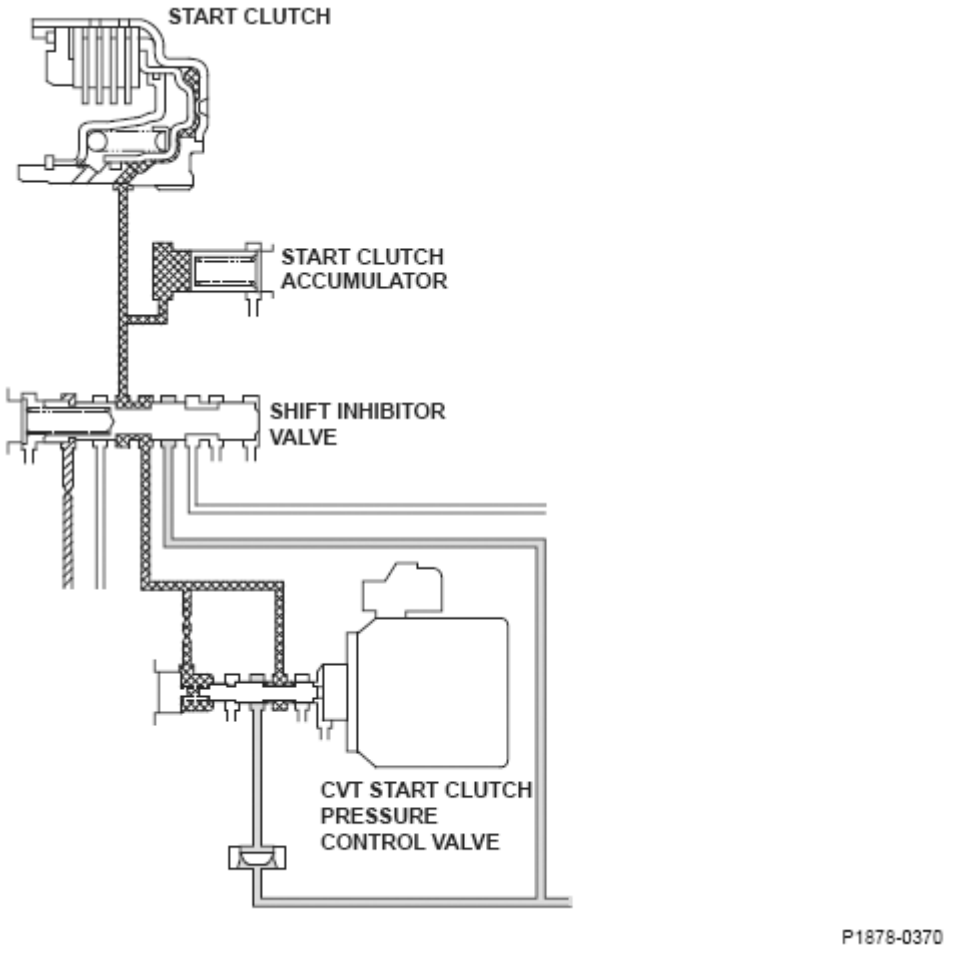


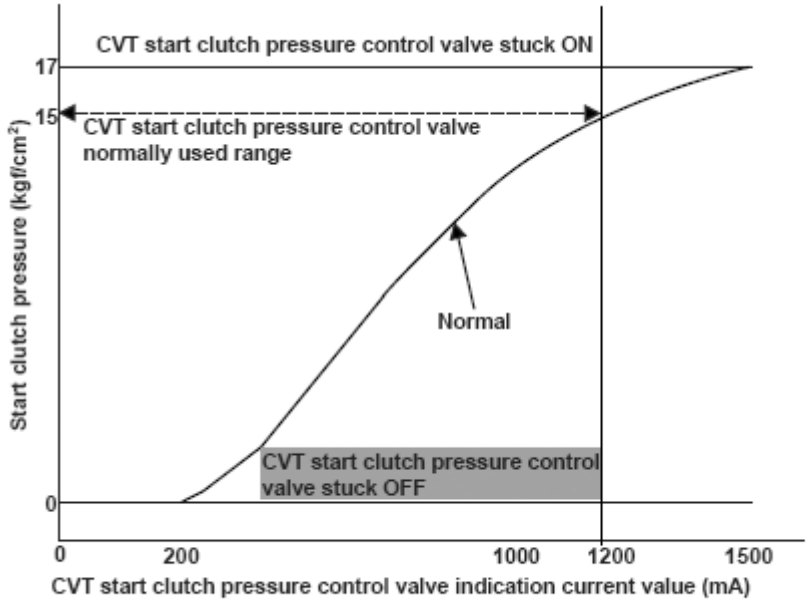
Fig. 72: Measuring Voltage Between ECM/PCM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO - Go to step 11.

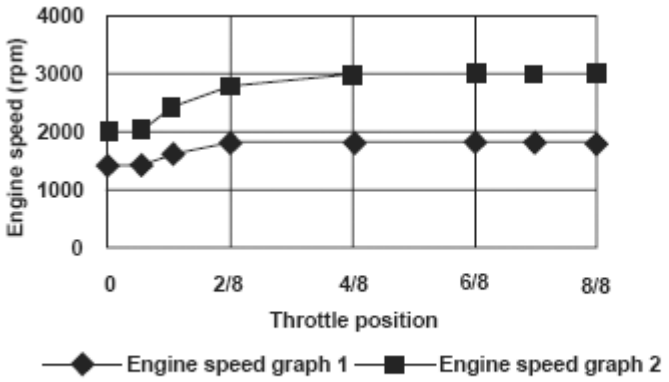
11. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



P1878-0371

Fig. 73: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A6 and body ground.



P1878-0372

Fig. 74: Checking For Continuity Between ECM/PCM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A6) and PGM-FI main relay 1, then go to step 16.

NO - Go to step 15.

13. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

Fig. 75: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Measure voltage between ECM/PCM connector terminal A8 and body ground.

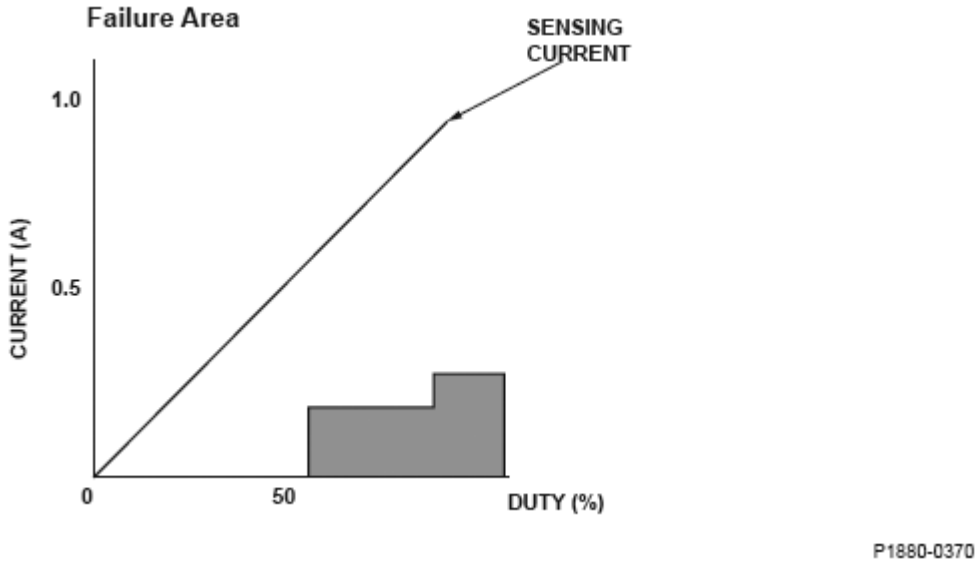


Fig. 76: Measuring Voltage Between ECM/PCM Connector Terminal A8 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair short to power in the wire between the ECM/PCM (A8) and PGM-FI main relay 1, then go to step 16.

NO - Go to step 15.

15. Test PGM-FI main relay 1 (see **POWER RELAY TEST**).

Is PGM-FI main relay 1 OK?

YES - Go to step 23.

NO - Replace PGM-FI main relay 1, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
20. Turn the ignition switch OFF.
21. Wait 10 seconds.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0563 indicated?

    YES - Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0563 indicated?

    YES - Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0602: ECM/PCM PROGRAMMING ERROR

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This DTC is indicated when a ECM/PCM update is not completed.**
- **Do not turn the ignition switch OFF while updating the ECM/PCM. If you turn the ignition switch OFF before completion, the ECM/PCM can be damaged.**

1. Do the ECM/PCM update procedure (see **UPDATING ECM/PCM**).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0602 indicated?

   YES - Replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Update is complete.

DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR; DTC P062F: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR ('09 MODEL)

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Information marked with an asterisk (*) applies to the '06-08 models.**
- **Information marked with a double asterisk (**) applies to the '09-10 models.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 indicated?

   YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0606: ECM/PCM PROCESSOR MALFUNCTION

NOTE: **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Wait 40 seconds.

6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0606 indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time.

7. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
8. Turn the ignition switch OFF.
9. Turn the ignition switch ON (II).
10. Wait 40 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0606 indicated?

    YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P060A: PCM (A/T SYSTEM) INTERNAL CONTROL MODULE MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P060A indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P060A indicated?

   YES - If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the PCM was substituted, go to step 1.

NO - If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0630: VIN NOT PROGRAMMED OR MISMATCH

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This DTC is stored only when the ECM/PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.**
- **Information marked with an asterisk (*) applies to the '06-08 models.**
- **Information marked with a doulbe asterisk (**) applies to the '09 model.**

1. Turn the ignition switch ON (II).
2. Check the VIN with the HDS.

   Does the HDS show the vehicle's VIN?

   YES - Go to step 5.

   NO - Go to step 3.

3. Input the VIN to the ECM/PCM with the HDS.

   Does the screen show COMPLETE?

   YES - Go to step 5.

   NO - Go to step 4.

4. Check for DTCs with the HDS.

   Is DTC P0603 (P062F)** indicated?*

   YES - Go to the **DTC P0603: ** ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR** troubleshooting.

   NO - Go to step 9.

5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait for 5 seconds.
8. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time.

9. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0630 indicated?

YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0685: ECM/PCM POWER CONTROL CIRCUIT/INTERNAL CIRCUIT MALFUNCTION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the problem doesn't return after you clear the DTC, or it this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the ECM/PCM.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, then let it idle for 30 seconds.
4. Turn the ignition switch LOCK (0).
5. Start the engine, then let it idle for 30 seconds.
6. Turn the ignition switch LOCK (0).
7. Turn the ignition switch ON (II).
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0685 indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time.

9. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
10. Start the engine, then let it idle for 30 seconds.
11. Turn the ignition switch LOCK (0).
12. Start the engine, then let it idle for 30 seconds.

13. Turn the ignition switch LOCK (0).
14. Turn the ignition switch ON (II).
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0685 indicated?

    YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 10. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0720: OUTPUT SHAFT (COUNTERSKHAFT) SPEED SENSOR CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0722 indicated?

   YES - Troubleshoot for DTC P0722 in the A/T system (see **DTC P0721: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT; DTC P0722: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)**).

   NO - Go to step 3.

3. Update the PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE ECM/PCM**).
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
   - Transmission in D position
   - ENGINE SPEED between 2,000-4,500 rpm
   - Drive for several minutes, then decelerate (with throttle fully closed) for 5 seconds or more
5. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0720 indicated?

   YES - Go to step 6.

   NO - Go to step 7.

6. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

Is DTC P0722 indicated?

YES - Troubleshoot for DTC P0722 in the AT system (see **DTC P0721: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT; DTC P0722: PROBLEM IN OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT (NO SIGNAL INPUT)**).

NO - If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 4. If the PCM was substituted, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

7. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES - If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**).

   NO - If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 4. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 4.

DTC P0720: OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several minutes.
3. Check the C SHAFT SPD in the DATA LIST with the HDS.

   Is any vehicle speed indicated?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the output shaft (countershaft) speed sensor 3P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 1 and body ground.

Fig. 77: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 8.

NO - Repair open in the wire between the ECM (C13) and the output shaft (countershaft) speed sensor, then go to step 18.

8. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 2 and body ground.

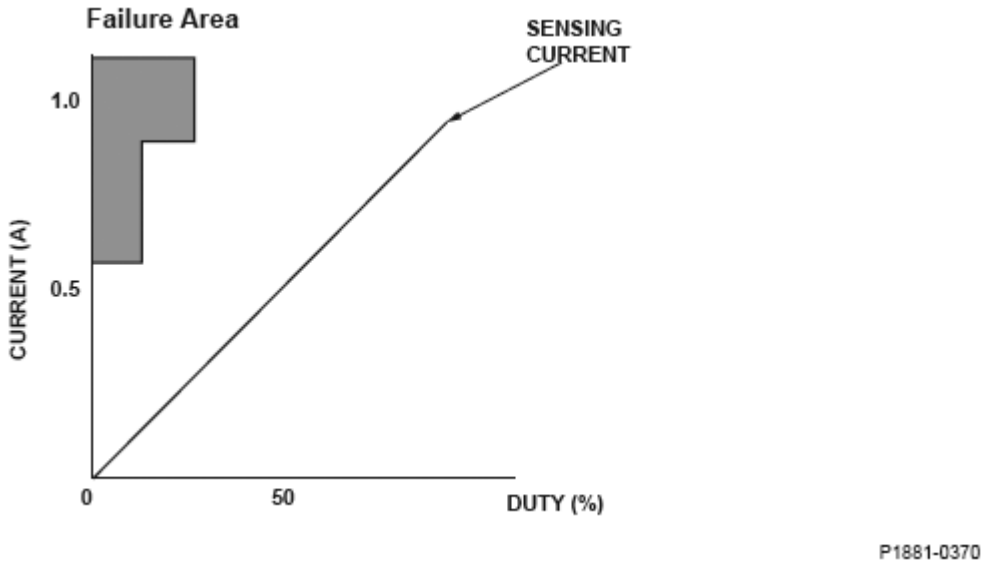


Fig. 78: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 9.

NO - Go to step 10.

9. Measure voltage between output shaft (countershaft) speed sensor 3P connector terminals No. 1 and No. 3.

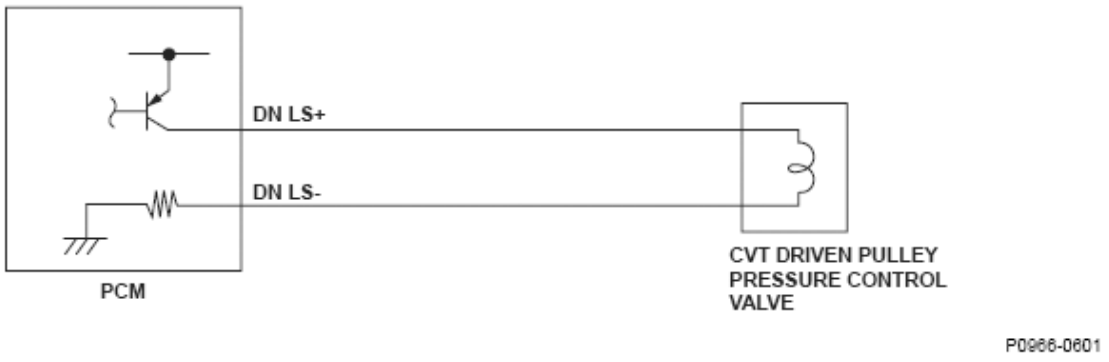


Fig. 79: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Repair open in the wire between the ECM (C14) and the output shaft (countershaft) speed sensor, then go to step 18.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between ECM connector terminal C43 and body ground.

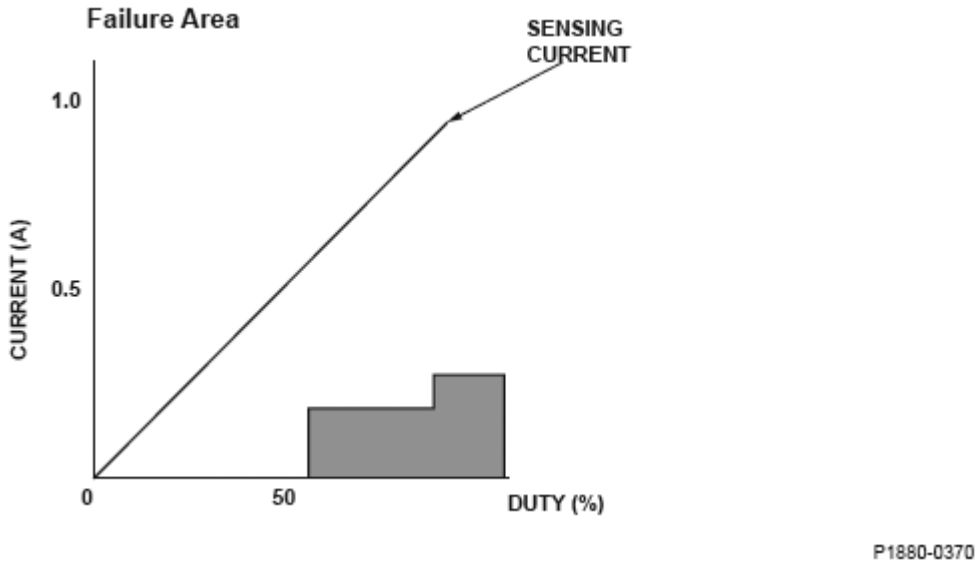


Fig. 80: Checking For Continuity Between ECM Connector Terminal C43 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

NO - Go to step 14.

14. Connect output shaft (countershaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

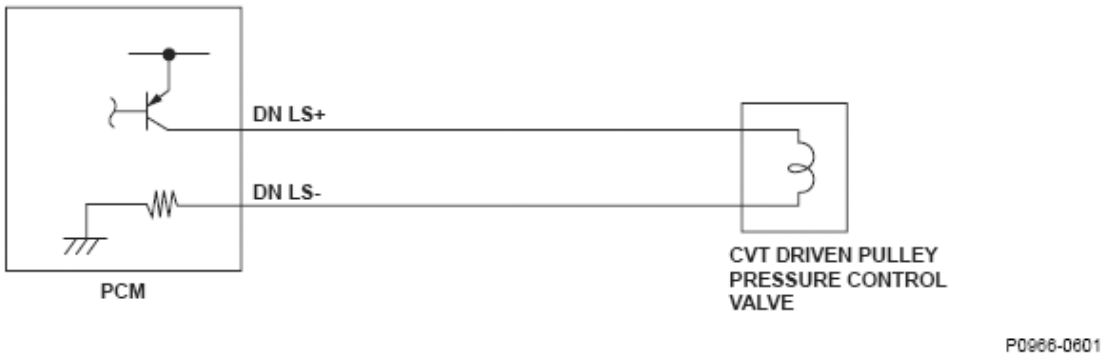


Fig. 81: Connecting Output Shaft (Countershaft) Speed Sensor 3P Connector Terminal No. 2 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between ECM connector terminal C43 and body ground.

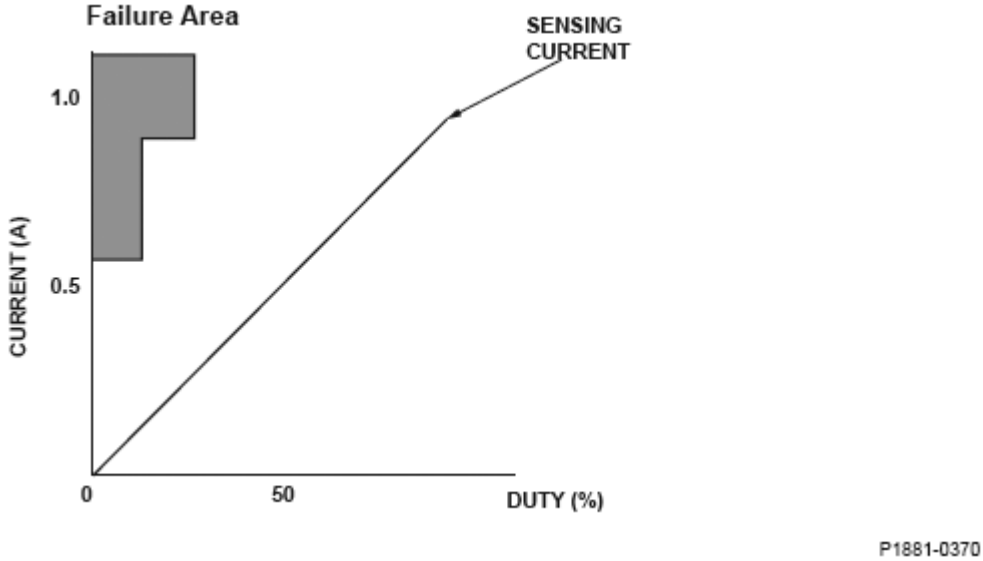


Fig. 82: Checking For Continuity Between ECM Connector Terminal C43 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 25.

NO - Repair open in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the output shaft (countershaft) speed sensor (see **OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - Transmission in 5th gear
    - ENGINE SPEED between 2,000-3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0720 indicated?

    YES - Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1.

    NO - Go to step 24.

24. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.
26. Update the ECM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM/PCM**).
27. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 176°F (80°C)
    - Transmission in 5th gear
    - ENGINE SPEED between 2,000-3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0720 indicated?

YES - Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM/PCM**), then go to step 27. If the ECM was substituted, go to step 1.

NO - Go to step 29.

29. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM/PCM**), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P1109: BARO SENSOR CIRCUIT OUT OF RANGE HIGH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Reset the ECM/PCM with the HDS.
2. Start the engine.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1116: ECT SENSOR 1 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.**

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 25.

2. Turn the ignition switch ON (II).
3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES - Go to step 13.

   NO - Go to step 4.

4. Start the engine, and let it idle for 10 minutes.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 95°F (35°C) or less indicated?

   YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 25.

   NO - Go to step 6.

6. Turn the ignition switch OFF.
7. Drain the coolant (see **COOLANT REPLACEMENT**).
8. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), and reconnect ECT sensor 1 to the 2P connector, but do not install it on the engine.
9. Remove the air cleaner cover, but keep the MAF sensor/IAT sensor connector connected.
10. Cool the engine for 1 hour.
11. Turn the ignition switch ON (II).
12. Compare the value of ECT SENSOR 1 and the IAT SENSOR in the DATA LIST with the HDS.

    Does the value of ECT SENSOR 1 differ 5.4°F (3°C) or more?

    YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 25.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

13. Start the engine, and let it idle for 10 minutes.
14. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 95°F (35°C) or less indicated?

    YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 25.

    NO - Go to step 15.

15. Let the engine idle for 10 minutes.
16. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 131°F (55°C) or less indicated?

    YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 25.

    NO - Go to step 17.

17. Turn the ignition switch OFF.
18. Drain the coolant (see **COOLANT REPLACEMENT**).
19. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**) and ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**). Then reconnect the sensors to their connectors, but do not install them on the engine.
20. Remove the air cleaner cover, but keep the MAF sensor/IAT sensor connector connected.
21. Cool the engine for 1 hour.
22. Turn the ignition switch ON (II).
23. Note the value of ECT SENSOR 1, ECT SENSOR 2, and the IAT SENSOR quickly in the DATA LIST with the HDS.
24. Compare the value of ECT SENSOR 1 and the IAT SENSOR, and the value of ECT SENSOR 2 and the IAT SENSOR individually.

    Does either sensor differ more than 5.4°F (3°C) from the IAT SENSOR?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the IAT SENSOR, then go to step 25.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

25. Turn the ignition switch ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1116 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the

ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1128: MAP SENSOR SIGNAL LOWER THAN EXPECTED

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Before starting this troubleshooting check for poor connections or blockage at the intake air duct.**

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is less than 54.1 kPa (16.0 in.Hg, 406 mmHg) or 1.61 V held for more than 5 seconds?

   YES - Go to step 7.

   NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - ENGINE SPEED between 1,200-5,400 rpm
   - A/T in D position (M/T in 3rd gear)
   - Vehicle speed accelerated from 16-31 mph (25-50 km/h) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 7.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the

radiator fan comes on, then let it idle.

13. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - ENGINE SPEED between 1,200-5,400 rpm
    - A/T in D position (M/T in 3rd gear)
    - Vehicle speed accelerated from 16-31 mph (25-50 km/h) under half throttle
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1128 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1129: MAP SENSOR SIGNAL HIGHER THAN EXPECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for vacuum leaks in these parts:
    - PCV valve
    - PCV hose
    - EVAP canister purge valve
    - Throttle body
    - Intake manifold
    - Brake booster
    - Brake booster hose

    Are there any vacuum leaks?

    YES - Repair or replace parts with vacuum leaks, then go to step 9.

    NO - Go to step 2.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is more than 36.9 kPa (11.0 in.Hg, 277 mmHg) or 1.1 V held for more than for 5 seconds?

   YES - Go to step 7.

   NO - Go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - ENGINE SPEED between 1,200-5,400 rpm
   - A/T in D position (M/T in 5th gear)
   - Maintain a vehicle speed of 55-75 mph (88-121 km/h) for 10 seconds
   - During the drive, decelerate (with throttle fully closed) for at least 5 seconds
6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 7.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see **MAF SENSOR/IAT SENSOR REPLACEMENT**).
9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - ENGINE SPEED between 1,200-5,400 rpm
    - A/T in D position (M/T in 5th gear)
    - Maintain a vehicle speed of 55-75 mph (88-121 km/h) for 10 seconds
    - During the drive, decelerate (with throttle fully closed) for at least 5 seconds
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1129 indicated?

    YES - Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go

to step 1.

NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1157: A/F SENSOR (SENSOR 1) AFS CIRCUIT MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait 1 minute.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1157 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 2 and ECM/PCM connector terminal C29.

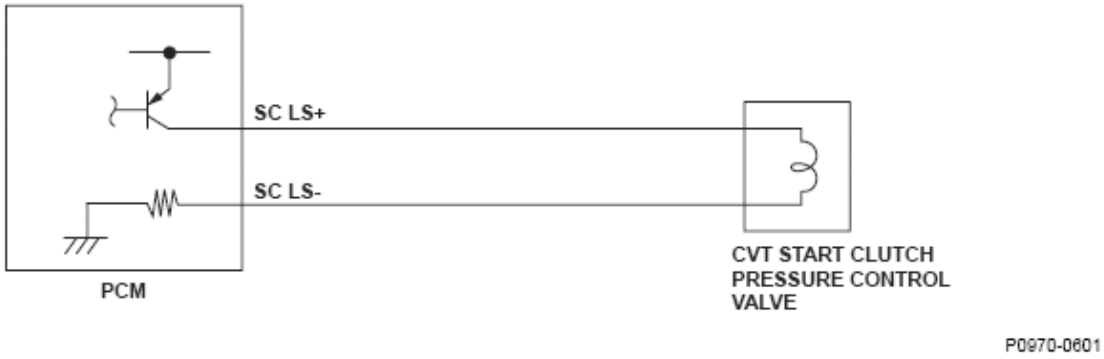


Fig. 83: Checking For Continuity Between A/F Sensor (Sensor 1) 4P Connector Terminal No. 2 And ECM/PCM Connector Terminal C29
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 12.

10. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 1 and ECM/PCM connector terminal C30.

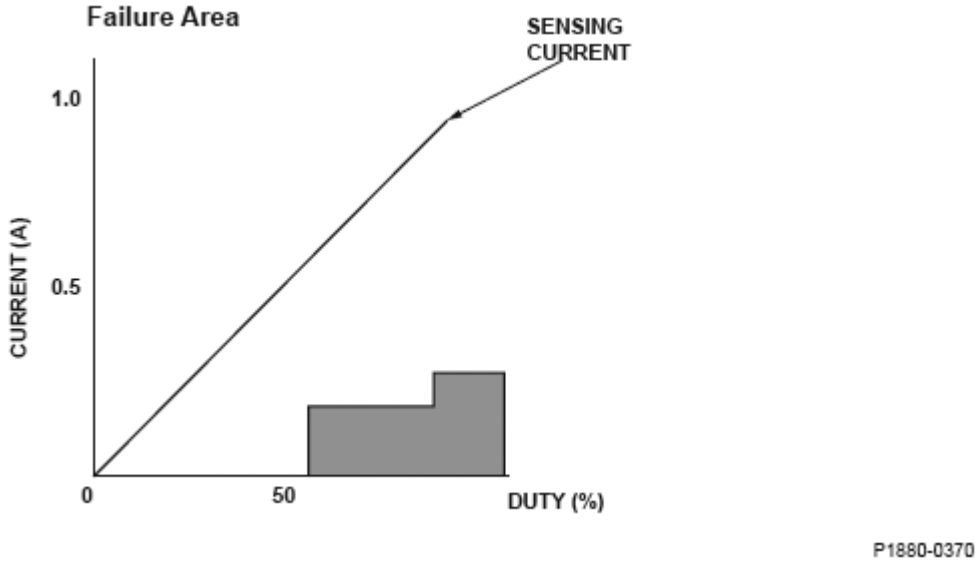


Fig. 84: Checking For Continuity Between A/F Sensor (Sensor 1) 4P Connector Terminal No. 1 And ECM/PCM Connector Terminal C30
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to

step 12.

11. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1157 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connector and terminal fits are OK, go to step 18.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

18. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
19. Start the engine, and let it idle.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1157 indicated?

    YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 19. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 21.

21. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 19. If the ECM/PCM

was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1172: A/F SENSOR (SENSOR 1) CIRCUIT OUT OF RANGE HIGH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 5.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1172 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor

(Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC P1297: ELD CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ECM/PCM connector terminal A23 and body ground.

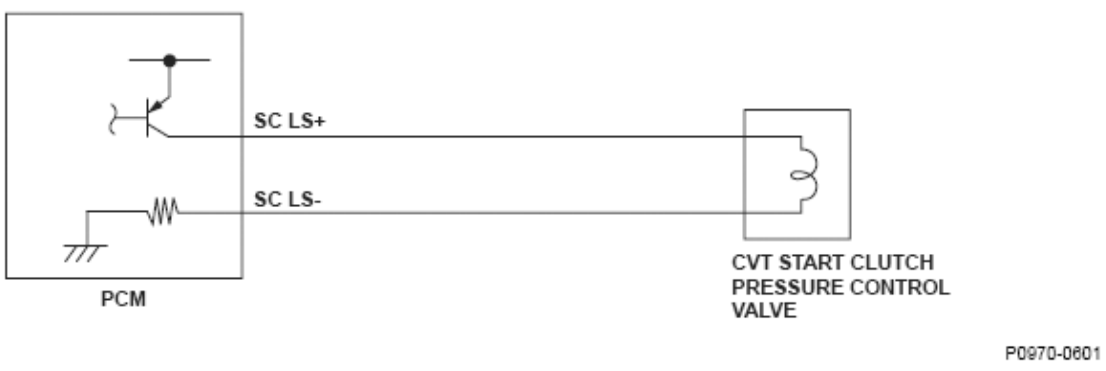


Fig. 85: Checking For Continuity Between ECM/PCM Connector Terminal A23 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A23) and the ELD, then go to step 13.

NO - Go to step 20.

11. Turn the ignition switch OFF.
12. Replace the ELD (see **ELD REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Start the engine.
18. Turn on the headlights.
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1297 indicated?

YES - Check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

20. Reconnect all connectors.
21. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
22. Start the engine.
23. Turn on the headlights.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1297 indicated?

YES - Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 22. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1298: ELD CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL

TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2 A or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

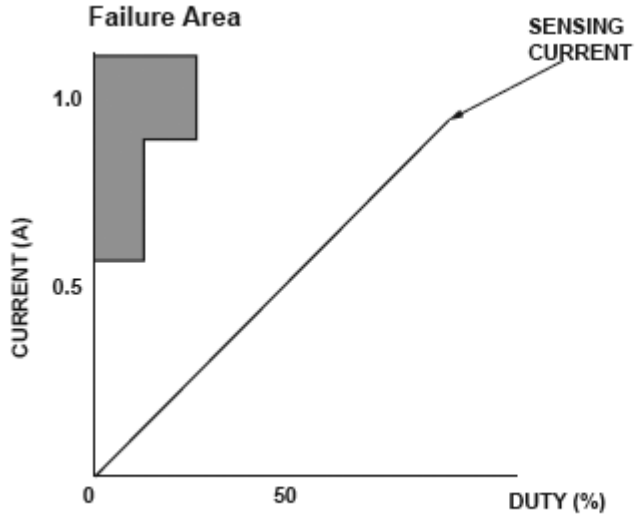


Fig. 86: Measuring Voltage Between ELD 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 7.

NO - Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the ELD, then go to step 12.

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Check for continuity between ELD 3P connector terminal No. 3 and ECM/PCM connector terminal A23.

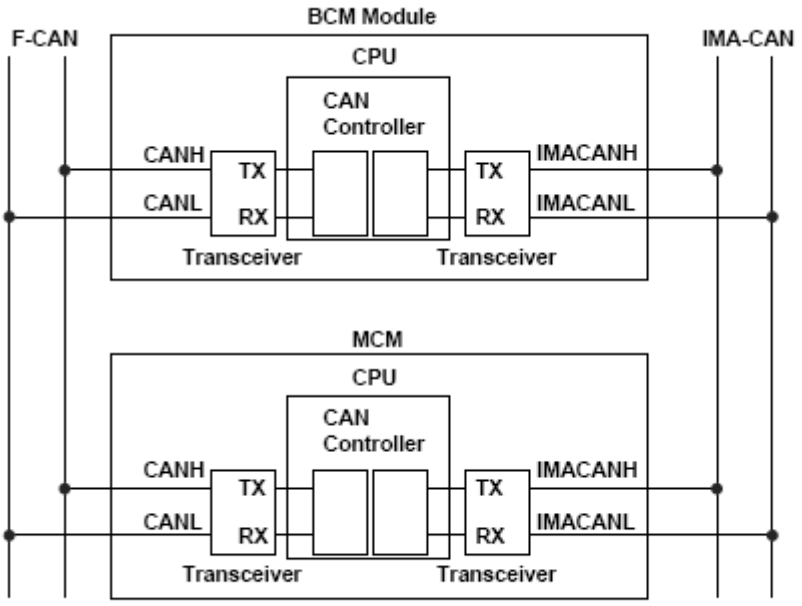


Fig. 87: Checking For Continuity Between ELD 3P Connector Terminal No. 3 And ECM/PCM Connector Terminal A23
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the ECM/PCM (A23) and the ELD, then go to step 12.

10. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

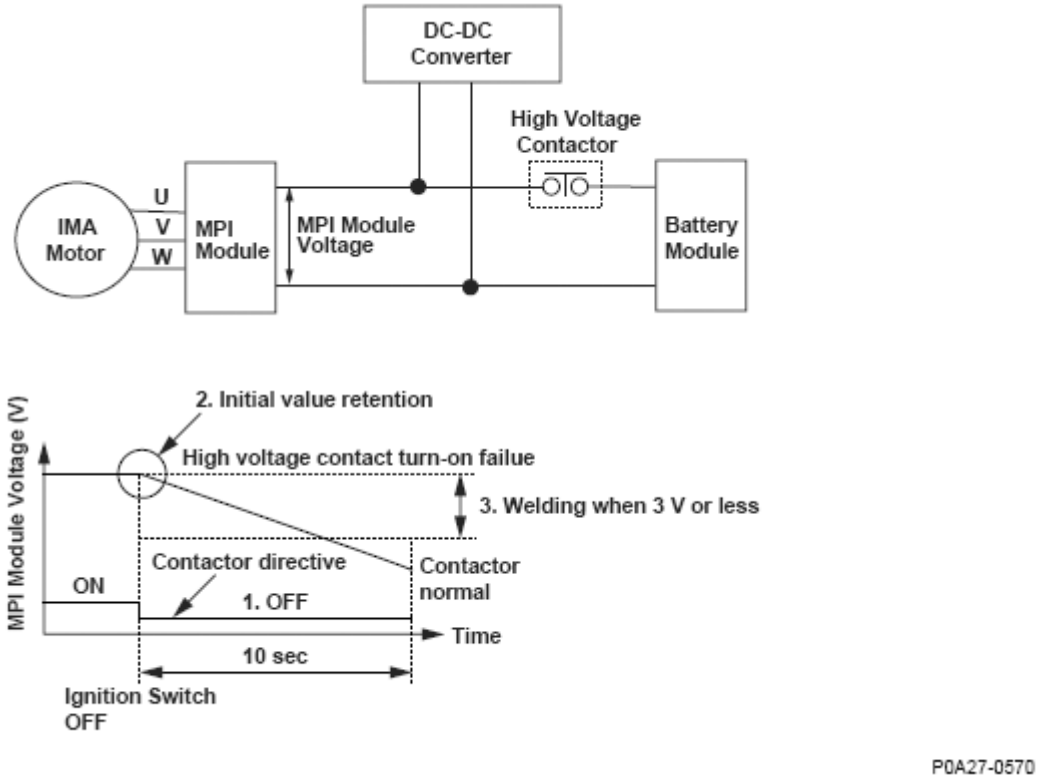


Fig. 88: Checking For Continuity Between ELD 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 11.

NO - Repair open in the wire between the ELD and G301 (see), then go to step 12.

11. Replace the ELD (see **ELD REPLACEMENT**).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1298 indicated?

    YES - Go to step 17.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

17. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1298 indicated?

    YES - Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P1549: CHARGING SYSTEM HIGH VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If a high voltage battery (24 V, etc.) is connected to the vehicle, this DTC can be stored.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
    - A/C off
    - Headlights off
    - Rear window defogger off
5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1549 indicated?

    YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 7.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box.

7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine.
11. Check under these conditions:
    - A/C off
    - Headlights off

- Rear window defogger off

12. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1549 indicated?

YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P16BB: ALTERNATOR B TERMINAL CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BB indicated?

YES - Go to step 7.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see **BATTERY TEST**).

7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

Are the connections and terminals OK?

YES - Go to step 8.

NO - Repair the connectors or terminals, then go to step 9.

8. Check for an open in the wire between the alternator and under-hood fuse/relay box at the starter subharness.

   Is the harness OK?

   YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 9.

   NO - Repair open in the wire between the alternator and the under-hood fuse/relay box, then go to step 9.

9. Turn the ignition switch ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
12. Start the engine.
13. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BB indicated?

    YES - Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P16BC: ALTERNATOR FR TERMINAL CIRCUIT/IGP CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check for poor connections or loose terminals at the alternator 4P connector.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 18.

2. Check the alternator mounting surface for corrosion.

Is the mounting surface corroded?

YES - Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**). Clean all mounting surface and reinstall the alternator, then go to step 18.

NO - Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Start the engine.
6. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
7. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES - Go to step 9.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator.

9. Turn the ignition switch OFF.
10. Disconnect the alternator 4P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between alternator 4P connector terminal No. 1 and body ground.

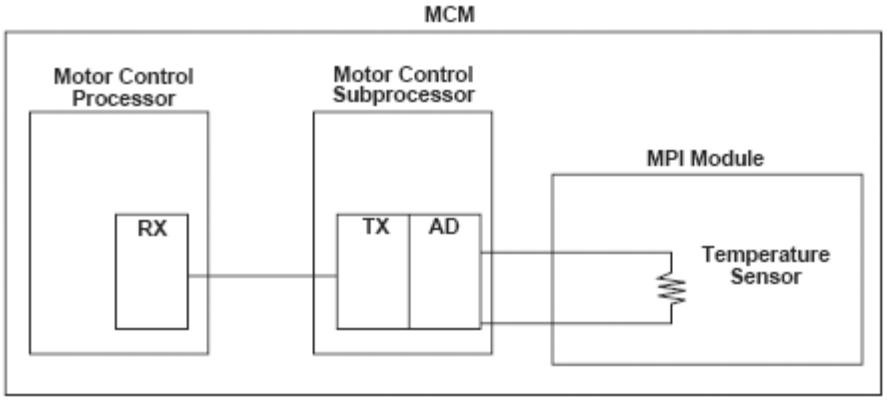


Fig. 89: Measuring Voltage Between Alternator 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 13.

NO - Repair open in the wire between the alternator (IG1 line) and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 18.

13. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

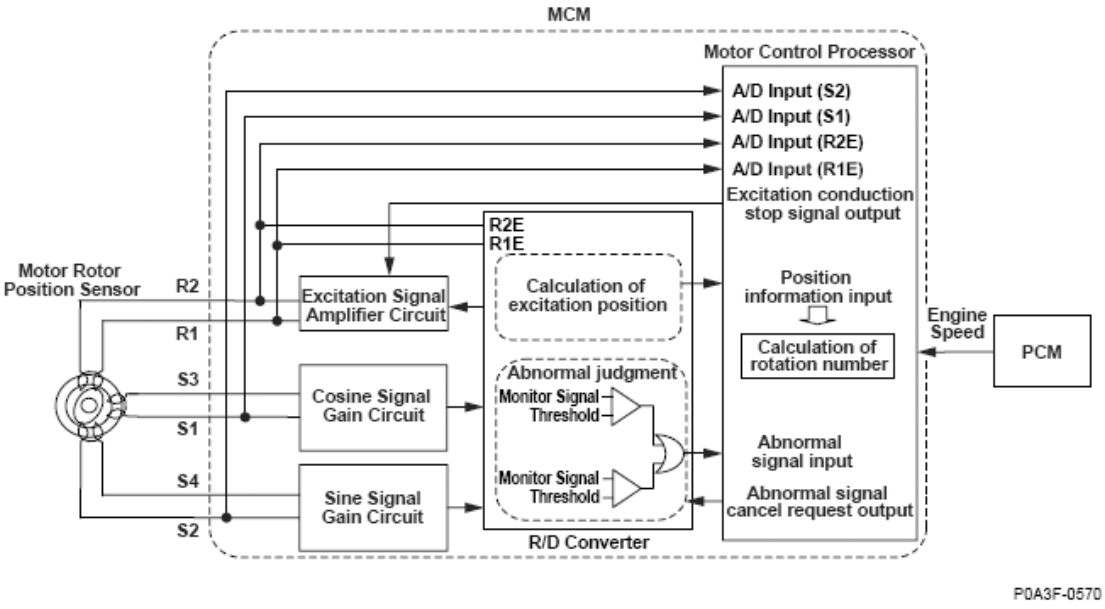


Fig. 90: Measuring Voltage Between Alternator 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), then go to step 18.

NO - Go to step 14.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector B (44P).
17. Check for continuity between alternator 4P connector terminal No. 4 and ECM/PCM connector terminal B43.

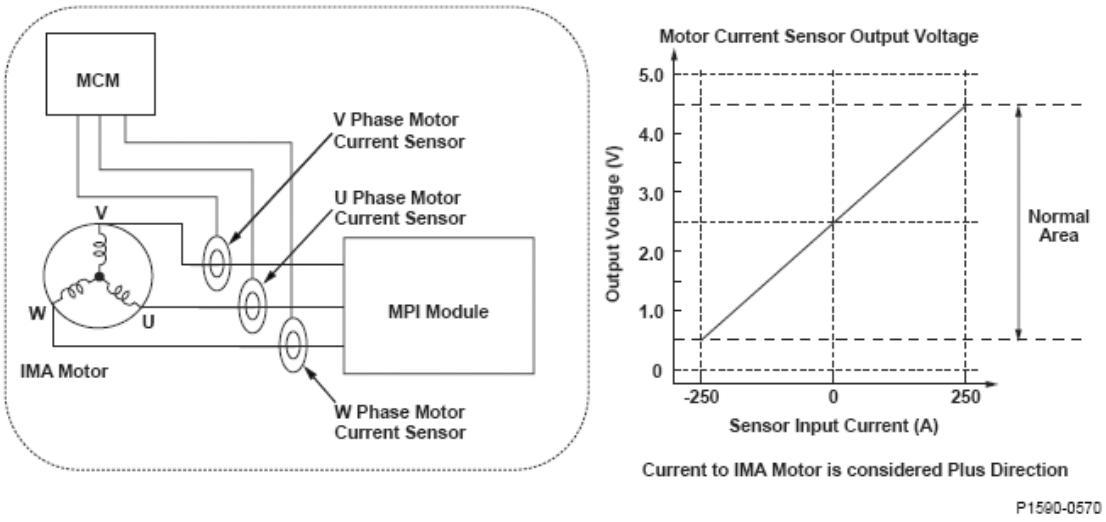


Fig. 91: Checking For Continuity Between Alternator 4P Connector Terminal No. 4 And ECM/PCM Connector Terminal B43
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (B43) and the alternator, then go to step 18.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
23. Start the engine.
24. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
25. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES - Check for poor connections or loose terminals at the alternator and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Start the engine.
30. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
31. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BC indicated?

    YES - Check for poor connections or loose terminals at the alternator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2183: ECT SENSOR 2 CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.**

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES - Go to step 2.

   NO - Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).
3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES - Go to step 15.

NO - Go to step 4.

4. Start the engine, and let it idle for 10 minutes.
5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 131°F (55°C) or less indicated?

   YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

   NO - Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Drain the coolant (see **COOLANT REPLACEMENT**).
8. Remove ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), and reconnect ECT sensor 2 to the 2P connector, but do not install it on the engine.
9. Allow ETC sensor 2 to cool to ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 2 to its 2P connector, but do not install it on the radiator.
12. Turn the ignition switch to ON (II).
13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 2 and the IAT SENSOR in the DATA LIST with the HDS.

    Does ECT SENSOR 2 differ 5.4°F (3°C) or more?

    YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

15. Start the engine, and let it idle for 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 95°F (35°C) or less indicated?

    YES - Replace ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**), then go to step 27.

    NO - Go to step 15.

17. Let the engine idle for 10 minutes.
18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 131°F (55°C) or less indicated?

    YES - Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), then go to step 27.

    NO - Go to step 17.

19. Turn the ignition switch OFF.
20. Drain the coolant (see **COOLANT REPLACEMENT**).
21. Remove ECT sensor 1 (see **ECT SENSOR 1 REPLACEMENT**) and ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**), and reconnect ECT sensor 1 to the 2P connector. Then reconnect the sensors to their connectors, but do not install them on the engine.
22. Remove the air cleaner cover, but keep the MAF sensor/IAT sensor connector connected.
23. Cool the engine for 1 hour.
24. Turn the ignition switch ON (II).
25. Note the value of ECT SENSOR 1, ECT SENSOR 2, and the IAT SENSOR quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the IAT SENSOR, and the value of ECT SENSOR 2 and the IAT SENSOR individually.

    Does either sensor differ more than 5.4°F (3°C) from the IAT SENSOR?

    YES - Replace the sensor that differed more than 5.4°F (3°C) from the IAT SENSOR.

    - ECT sensor 1 (see **ECT Sensor 1 Replacement**)
    - ECT sensor 2 (see **ECT Sensor 2 Replacement**)

    After replacing the sensor, go to step 29.

    NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.

27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2183 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Information marked with an asterisk (*) applies to '07-08 models.**

1. Turn the ignition switch ON (II).

2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356°F (180°C) or more, or 0.08 V or less indicated?

   YES - Go to step 7.

   NO - Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ECT sensor 2 2P connector terminal No. 2 (No. 1)* and body ground.

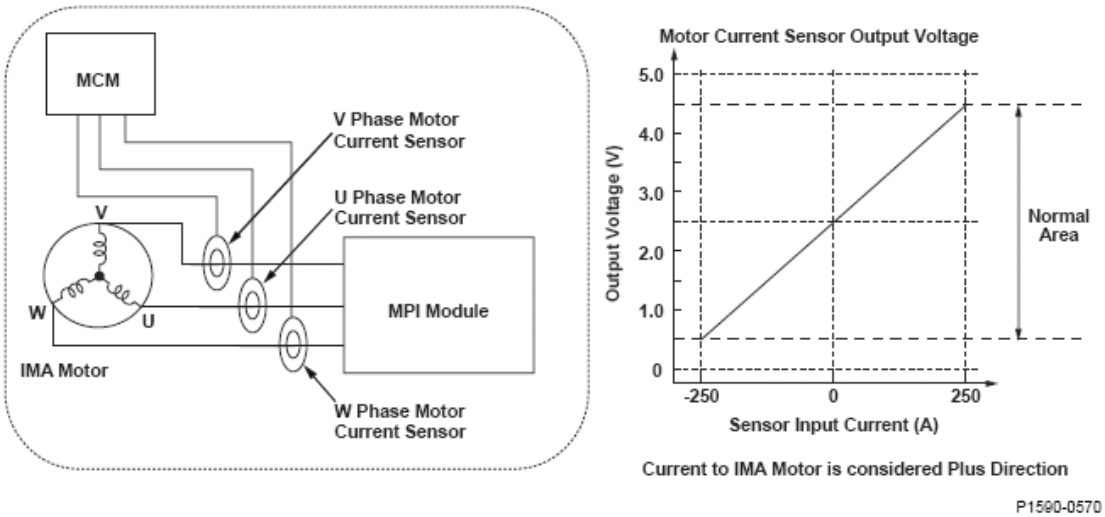


Fig. 92: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 2 And Body Ground ('06 model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

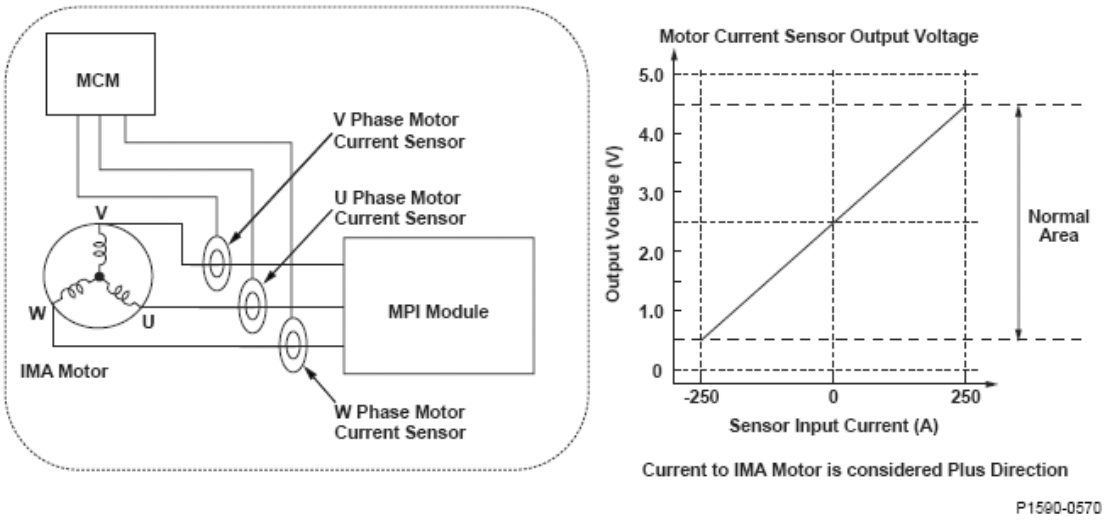


Fig. 93: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 1 And Body Ground ('07-09 models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECT sensor 2 and the ECM/PCM (A33), then go to step 13.

NO - Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Information marked with an asterisk (*) applies to '07-09 models.**

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

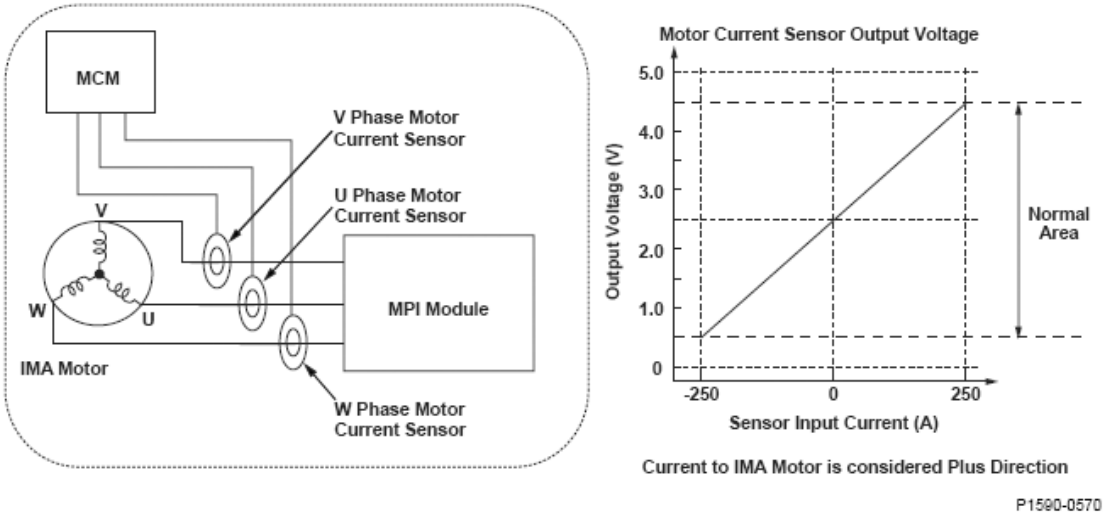


Fig. 94: Connecting ECT Sensor 2 2P Connector Terminals No. 1 And No. 2 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).

7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

   YES - Go to step 8.

   NO - Go to step 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from the ECT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2 2P connector terminal No. 2 (No. 1)* and body ground.

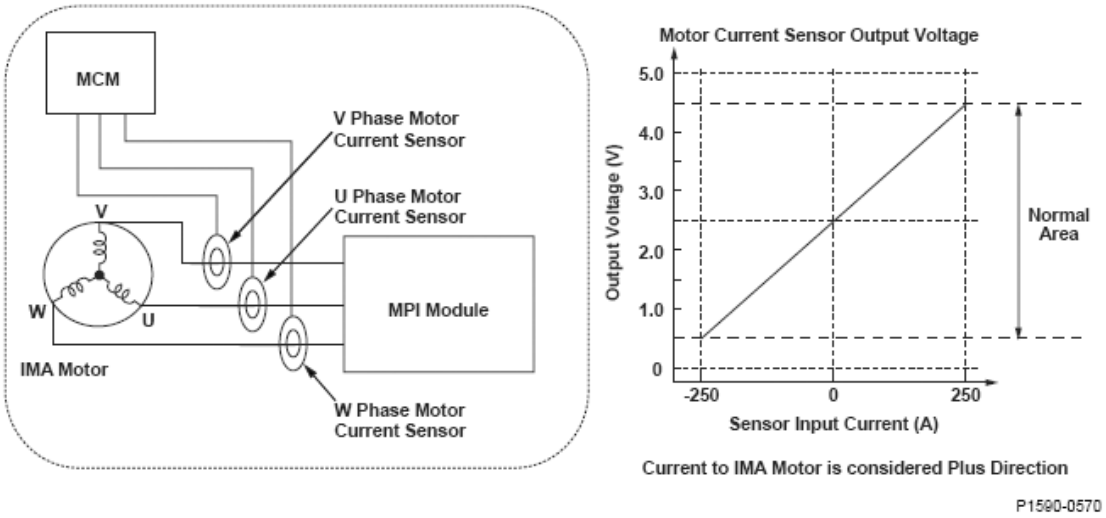


Fig. 95: Measuring Voltage Between ECT Sensor 2 2P Connector Terminal No. 2 And Body Ground ('06 model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

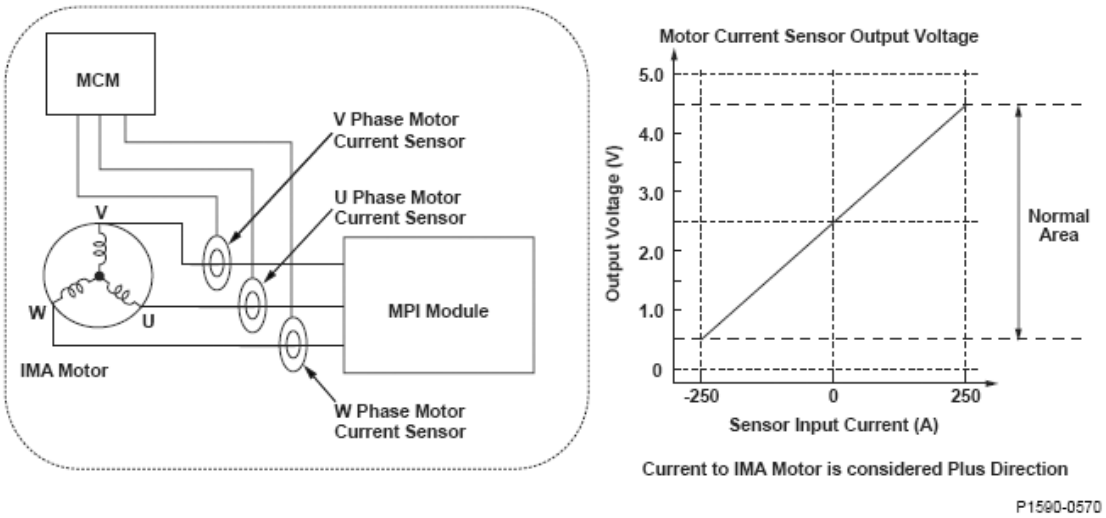


Fig. 96: Measuring Voltage Between ECT Sensor 2 2P Connector Terminal No. 1 And Body Ground ('07-09 models)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 12.

NO - Go to step 16.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (44P).
15. Check for continuity between ECT sensor 2 2P connector terminal No. 1 (No. 2)* and ECM/PCM connector terminal A9.

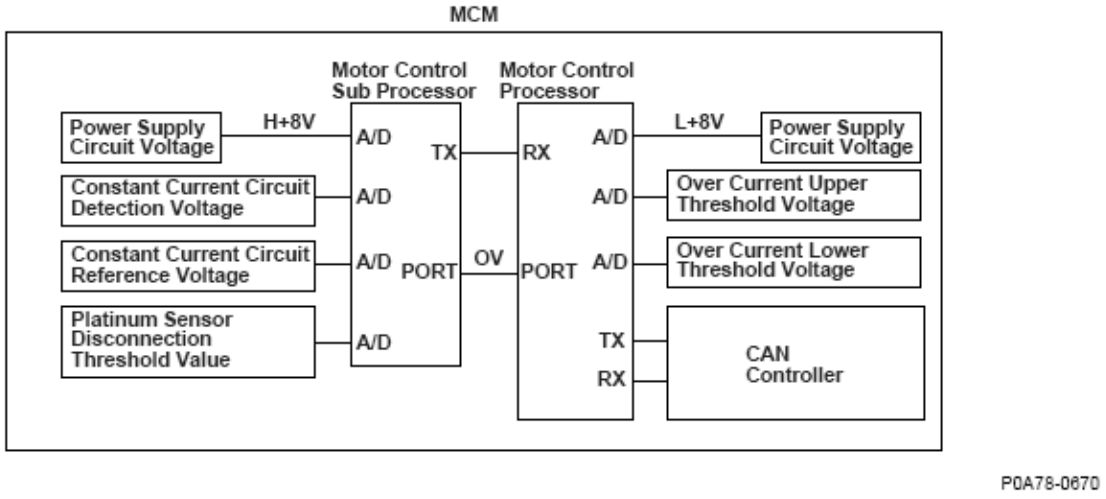


Fig. 97: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 1 And ECM/PCM Connector Terminal A9 ('06 model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

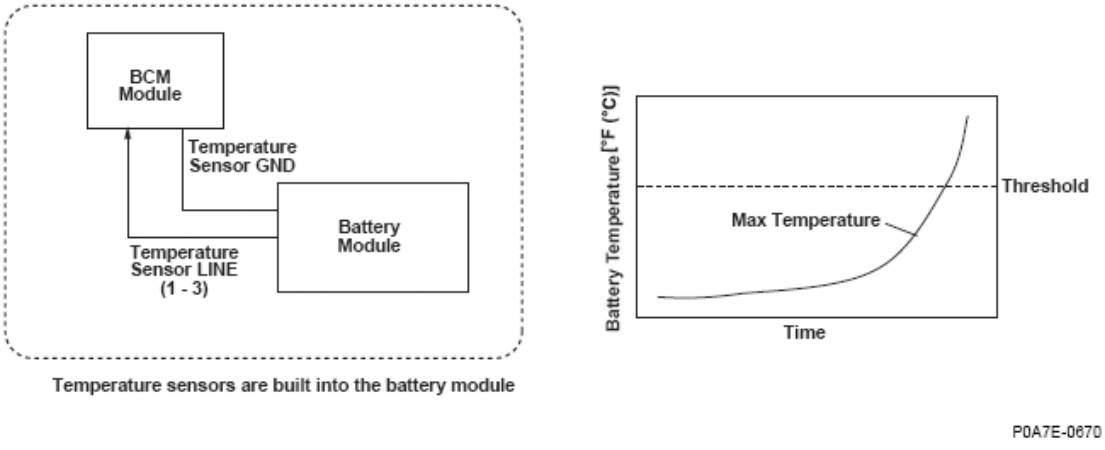


Fig. 98: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 2 And ECM/PCM Connector Terminal A9 ('07-09 models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (A9) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (44P).
19. Check for continuity between ECT sensor 2 2P connector terminal No. 2 (No. 1)* and ECM/PCM connector terminal A33.

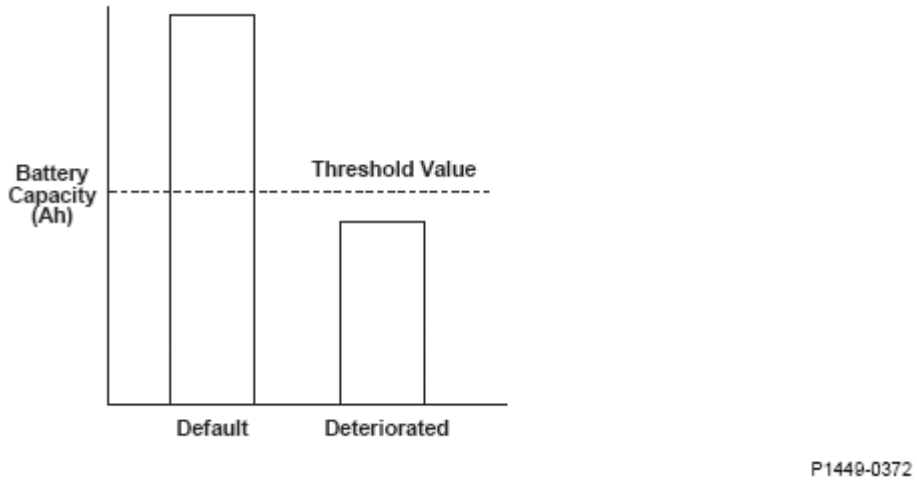


Fig. 99: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 2 And ECM/PCM Connector Terminal A33 ('06 model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

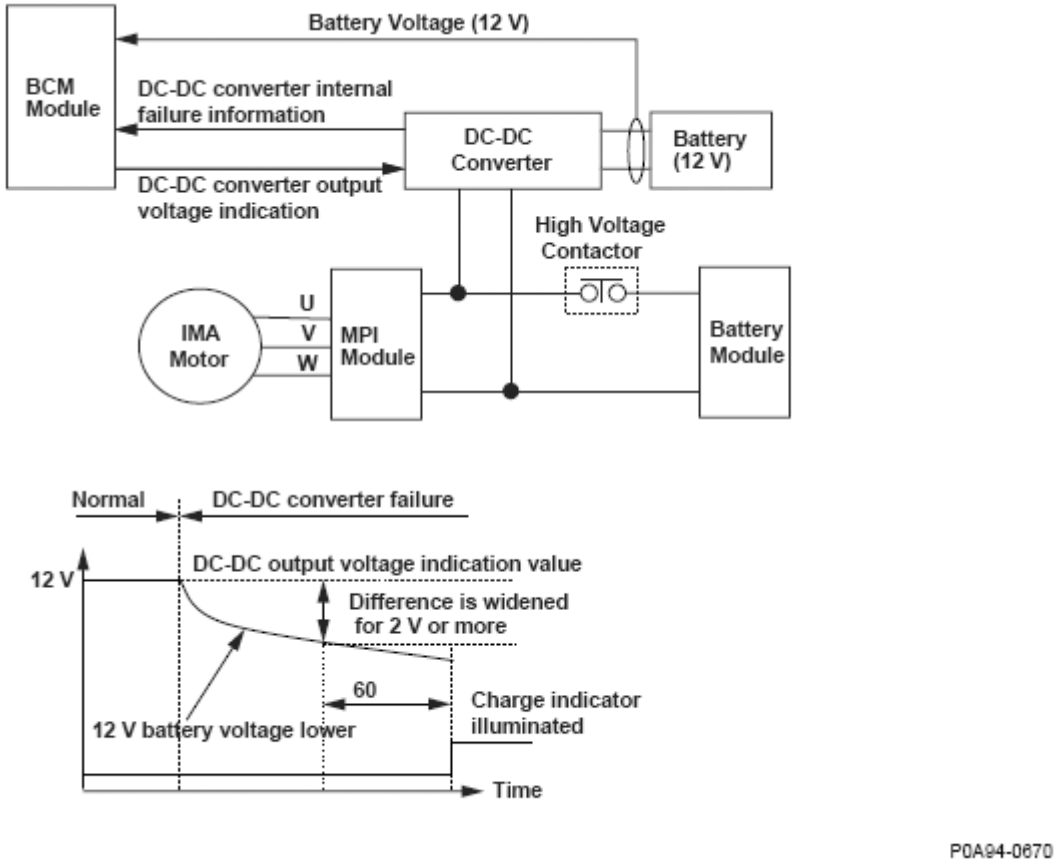


Fig. 100: Checking For Continuity Between ECT Sensor 2 2P Connector Terminal No. 1 And ECM/PCM Connector Terminal A33 ('07-09 models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 27.

NO - Repair open in the wire between the ECM/PCM (A33) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 2 (see **ECT SENSOR 2 REPLACEMENT**).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2185 indicated?

YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the

indicated DTC's troubleshooting.

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES - Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO -If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2195: A/F SENSOR (SENSOR 1) SIGNAL STUCK LEAN

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel, then clear the DTC with the HDS.**
- **If DTC P2101, P2118, P2135, P2138, P2176 or a combination of P2122 and P2127, P2122 and P2138, or P2127 and P2138 is stored at the same time, troubleshoot them first, then recheck for DTC P2195.**

1. Check the installation of the A/F sensor (Sensor 1).

   Is the A/F sensor loose or disconnected from the exhaust pipe?

   YES - Go to step 6.

   NO - Go to step 2.

2. Turn the ignition switch ON (II).
3. clear the DTC with the HDS.
4. Start the engine, and let it idle without load (in Park or neutral) for 2 minutes.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 indicated?

   YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 13.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If any other Temporary DTCs or DTCs are indicated,

go to the indicated DTC's troubleshooting.

6. Turn the ignition switch OFF.
7. Reinstall the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO - Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicated NOT COMPLETED, keep idling until a result comes on.

13. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
14. Start the engine, and let it idle without load (in Park or neutral) for 2 minutes.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 14. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor

(Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2227: BARO SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.**

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101 kPa (29.9 in.Hg, 760 mmHg), or about 2.9 V at sea level indicated?

   YES - Go to step 3.

   NO - Go to step 7.

3. clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - REL TP SENSOR between 12 deg and 20 deg for 5 seconds
6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 7.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
9. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 4th gear)
   - REL TP SENSOR between 12 deg and 20 deg for 5 seconds

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2227 indicated?

    YES - Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 11.

11. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.

    NO -If the screen indicates FAILED, check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 8. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 8.

DTC P2228: BARO SENSOR CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 53 kPa (15.6 in.Hg, 397 mmHg), or 1.58 V or less indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time.

3. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES - Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted,

replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2229: BARO SENSOR CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.2 in.Hg, 1,200 mmHg), or 4.5 V or more indicated?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time.

3. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES - Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2238: A/F SENSOR (SENSOR 1) AFS+ CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2238 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM/PCM connector C (44P).
8. Check for continuity between ECM/PCM connector terminal C29 and body ground.

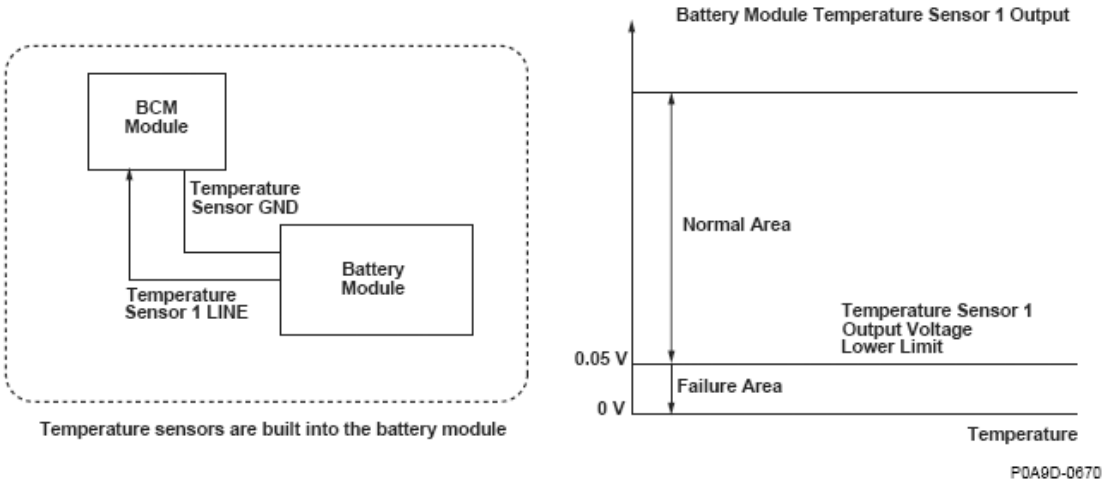


Fig. 101: Checking For Continuity Between ECM/PCM Connector Terminal C29 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 10.

NO - Go to step 9.

9. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
10. Reconnect all connectors.
11. Turn the ignition switch ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 indicated?

YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connector and terminal fits are OK, go to step 16.

NO - Go to step 15.

15. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

16. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
17. Start the engine, and let it idle.
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 17. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2252: A/F SENSOR (SENSOR 1) AFS-CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2252 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between ECM/PCM connector terminal C30 and body ground.

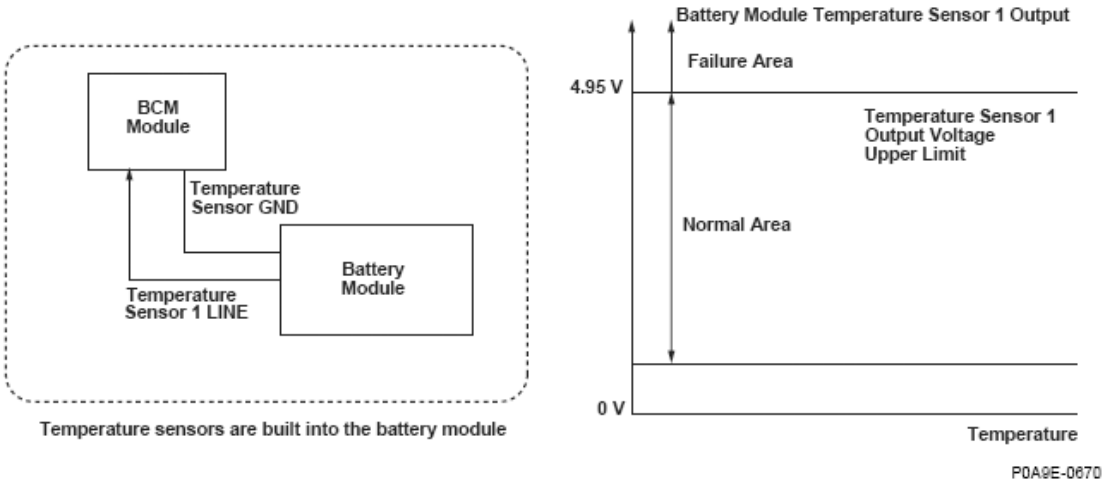


Fig. 102: Checking For Continuity Between ECM/PCM Connector Terminal C30 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 11.

NO - Go to step 10.

10. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 indicated?

YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connector and terminal fits are OK, go to step 17.

NO - Go to step 16.

16. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

17. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
18. Start the engine, and let it idle.
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2252 indicated?

    YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 18. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 20.

20. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 18. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2270: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK LEAN; DTC P2271: SECONDARY HO2S (SENSOR 2) CIRCUIT SIGNAL STUCK RICH

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - Vehicle speed above 35 mph (56 km/h)
   - Drive 20 seconds or more
5. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 6.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - Vehicle speed above 35 mph (56 km/h)
    - Drive 20 seconds or more
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270 or P2271 indicated?

    YES - Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO - Go to step 14.

14. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P2610: ECM/PCM IGNITION OFF INTERNAL TIMER MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES - If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P2A00: A/F SENSOR (SENSOR 1) CIRCUIT RANGE/PERFORMANCE PROBLEM

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
   - A/T in D position (M/T in 3rd gear)
   - Vehicle speed between 25-55 mph (40 - 88 km/h) for 5 minutes
   - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds, then decelerate (with throttle fully closed) for 4 seconds
5. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 6.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see **A/F SENSOR REPLACEMENT**).
8. Turn the ignition switch ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158°F (70°C)
    - A/T in D position (M/T in 3rd gear)
    - Vehicle speed between 25-55 mph (40 - 88 km/h) for 5 minutes
    - Drive at a steady speed between 55-75 mph (88-120 km/h) for 10 seconds, then decelerate (with throttle fully closed) for 4 seconds
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2A00 indicated?

    YES - Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO - Go to step 13.

13. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC U0028: F-CAN MALFUNCTION (BUS-OFF (ECM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC U0028 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time.

4. Update the ECM if it does not have the latest software, or substitute a known-good ECM.
5. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC U0028 indicated?

   YES - If the ECM was updated, substitute a known-good ECM, then recheck. If the ECM was substituted, go to step 1.

   NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0122: F-CAN MALFUNCTION (ECM/PCM-VSA MODULATOR-CONTROL UNIT)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Check for Pending or Confirmed DTCs with the HDS.

   Are DTC U0028 and U0122 indicated at the same time?

   YES - Go to the troubleshooting for DTC U0028.

   NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC U0122 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM.

5. Check for communication to the VSA system with the HDS.

   Does the HDS communicate with the VSA modulator-control unit?

   YES - Go to step 6.

   NO - Go to the VSA system symptom troubleshooting for ABS indicator, brake system indicator, and VSA indicator do not go off.

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.

8. Disconnect the VSA modulator-control unit 37P connector.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ECM/PCM connector terminal A36 and VSA modulator-control unit 37P connector terminal No. 15.

    Is there continuity?

    YES - Go to step 11.

    NO - Repair open in the wire between the ECM/PCM (A36) and the VSA modulator-control unit, then go to step 12.

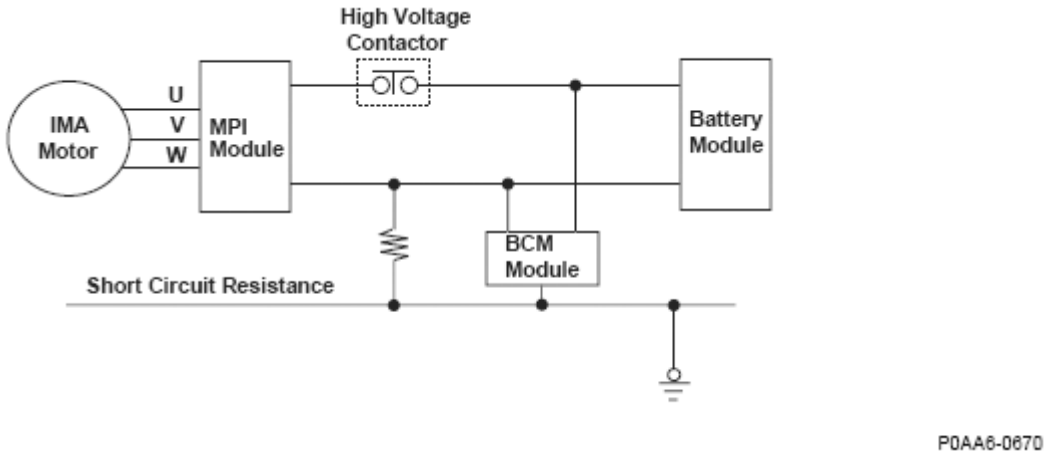


Fig. 103: VSA Modulator-Control Unit 37P Connector - White
Courtesy of TOYOTA

11. Check for continuity between ECM/PCM connector terminal A37 and VSA modulator-control unit 47P connector terminal No. 1.

    Is there continuity?

    YES - Substitute a known-good VSA modulator-control unit, then go to step 12 and recheck. If DTC U0122 is not indicated after substitution, replace the original VSA modulator-control unit, then go to step 12.

    NO - Repair open in the wire between the ECM/PCM (A37) and the VSA modulator-control unit, then go to step 12.

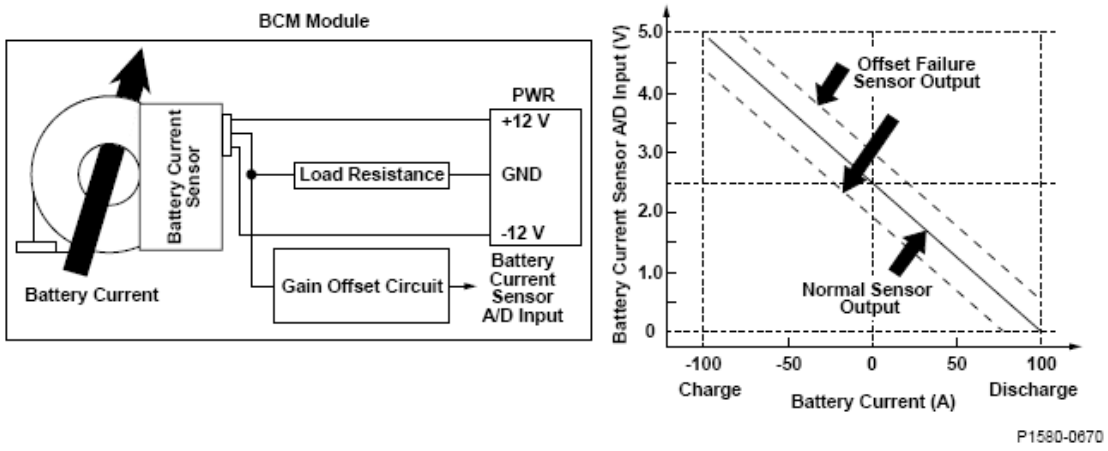


Fig. 104: VSA Modulator-Control Unit 37P Connector - Red
Courtesy of TOYOTA

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure.
16. Check for Pending or Confirmed DTCs with the HDS

    Is DTC U0122 indicated?

    YES - Check for poor connections or loose terminals at the VSA modulator unit and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0131: F-CAN MALFUNCTION (ECM-EPS CONTROL UNIT)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information.

1. Turn the ignition switch to ON (II).
2. Check for Pending or Confirmed DTCs with the HDS.

   Are DTC U0028 and U0131 indicated at the same time?

   YES - Go to troubleshooting for DTC U0028.

   NO - Go to step 3.

3. Clear the DTC with the HDS.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC U0131 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EPS control unit and the ECM.

5. Check for communication between the HDS and the EPS system.

   Does the HDS communicate with the EPS control unit?

   YES - Go to step 6.

   NO - Go to the EPS system symptom troubleshooting for EPS indicator does not go off, and no DTCs are stored.

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect EPS control unit connector D (28P).
9. Disconnect ECM connector A (44P).
10. Check for continuity between ECM/PCM connector terminal A36 and EPS control unit connector D (28P) terminal No. 1.

    Is there continuity?

    YES - Go to step 11.

    NO - Repair open in the wire between the ECM/PCM (A36) and the EPS control unit, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A37 and EPS control unit connector D (28P) terminal No. 15.

    Is there continuity?

    YES - Substitute a known-good EPS control unit, then go to step 12 and recheck. If DTC U0131 is not indicated after substitution, replace the original EPS control unit, then go to step 12.

    NO - Repair open in the wire between the ECM/PCM (A37) and the EPS control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM with the HDS.
15. Do the ECM idle learn procedure.
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC U0131 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module, the EPS control

unit, and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0155: F-CAN MALFUNCTION (ECM/PCM-GAUGE CONTROL MODULE)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0155 indicated?

   YES - Go to step 4.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the ECM/PCM.

4. Check for body electrical DTCs in the DTCs MENU with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES - Go to step 5.

   NO - Do the gauge control module input test (see **GAUGE CONTROL MODULE (TACH) INPUT TEST**).

5. Turn the ignition switch LOCK (0).
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (tach) (see **TACHOMETER**).
8. Disconnect ECM/PCM connector A (44P).
9. Connect gauge control module (tach) 36P connector terminal No. 1 to body ground with a jumper wire.

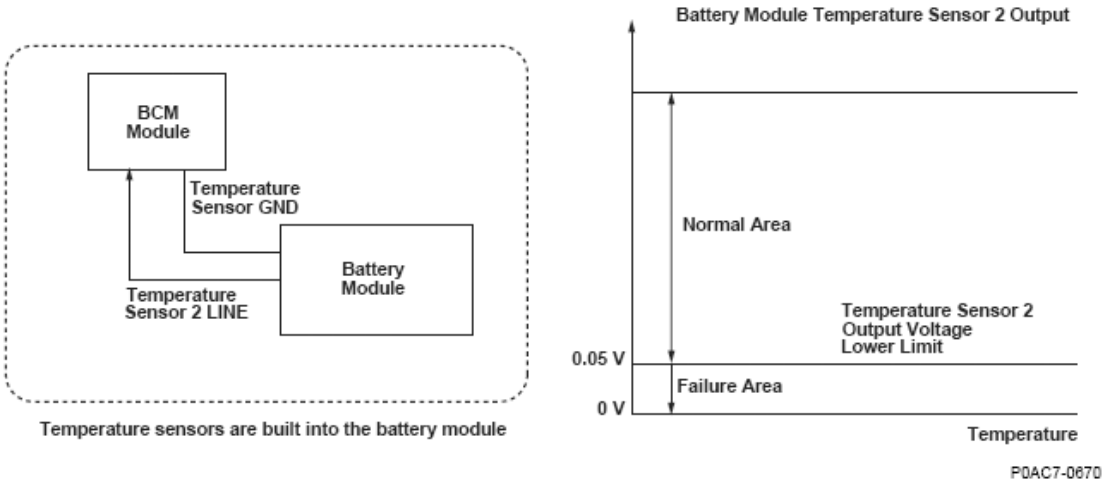


Fig. 105: Connecting Gauge Control Module (Tach) 36P Connector Terminal No. 1 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check for continuity between ECM/PCM connector terminal A36 and body ground.

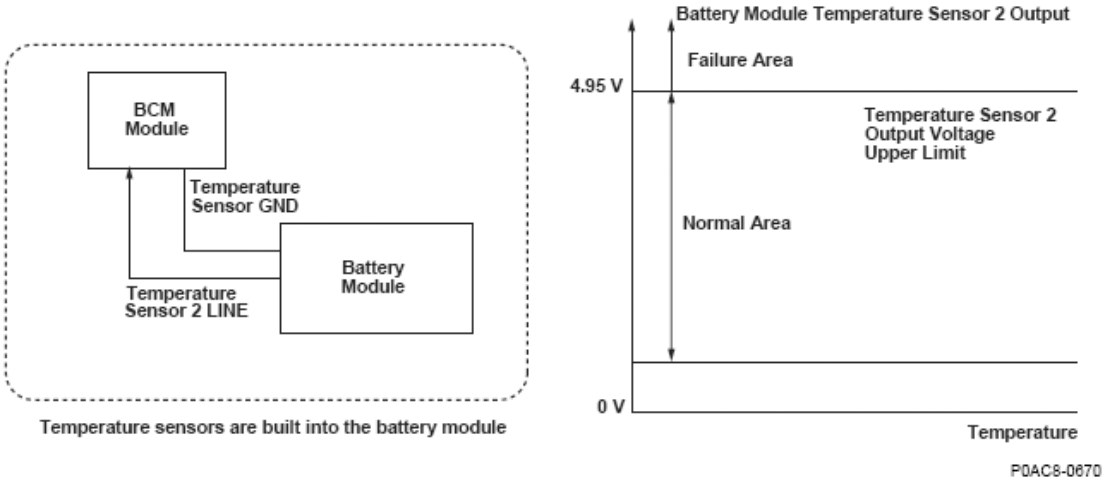


Fig. 106: Checking For Continuity Between ECM/PCM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A36) and gauge control module (tach), then go to step 13.

11. Connect gauge control module (tach) 36P connector terminal No. 19 to body ground with a jumper wire.

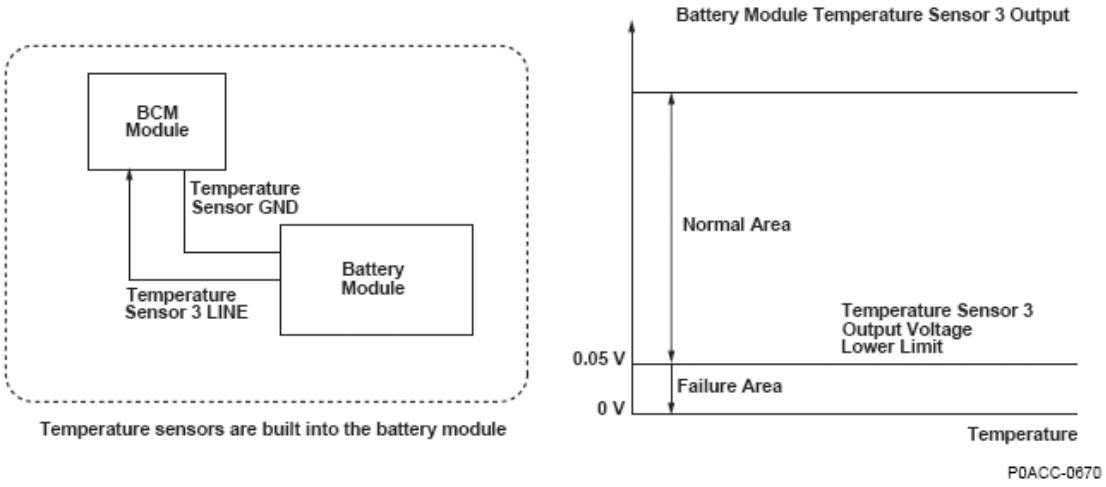


Fig. 107: Connecting Gauge Control Module (Tach) 36P Connector Terminal No. 19 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check for continuity between ECM/PCM connector terminal A37 and body ground.

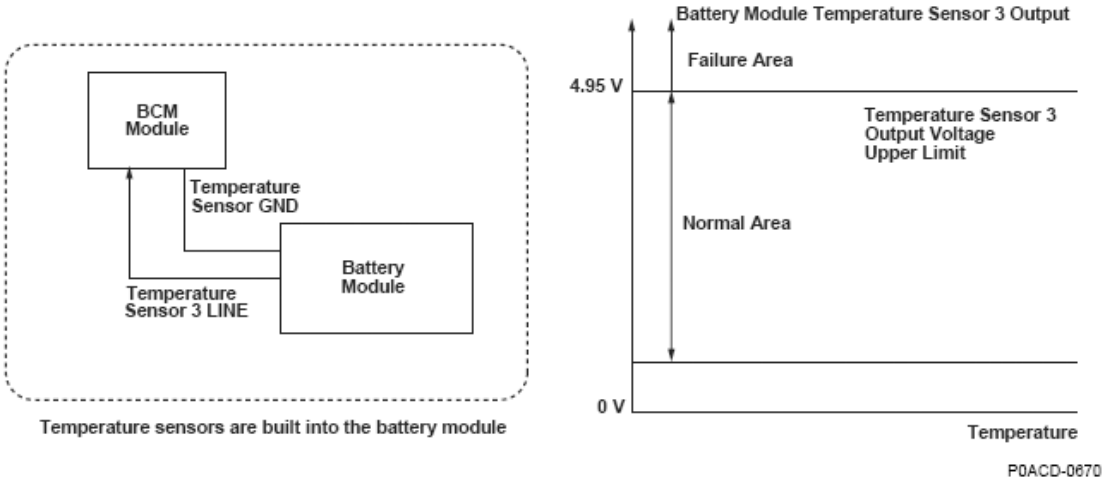


Fig. 108: Checking For Continuity Between ECM/PCM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Substitute a known-good gauge control module (tach), then go to step 14 and recheck. If no DTCs are indicated, replace the original gauge control module (tach), then go to step 14.

NO - Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach), then go to step 14.

13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC U0155 indicated?

    YES - Check for poor connections or loose terminals at the gauge control module (tach) and the ECM/PCM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC U0300: PGM-FI SYSTEM AND A/T SYSTEM PROGRAM VERSION MISMATCH

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM will be damaged.**

1. Do the PCM update procedure (PGM-FI system) (see **UPDATING ECM/PCM**).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0300 indicated?

   YES - Replace the original PCM (see **ECM/PCM REPLACEMENT**).

   NO - The update is complete.

F-CAN CIRCUIT TROUBLESHOOTING

NOTE: Information marked with an asterisk (*) applies to the CANL line.

1. Turn the ignition switch OFF.
2. Jump the SCS line with the HDS.
3. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
4. Measure resistance between ECM/PCM connector terminals A36 and A37.

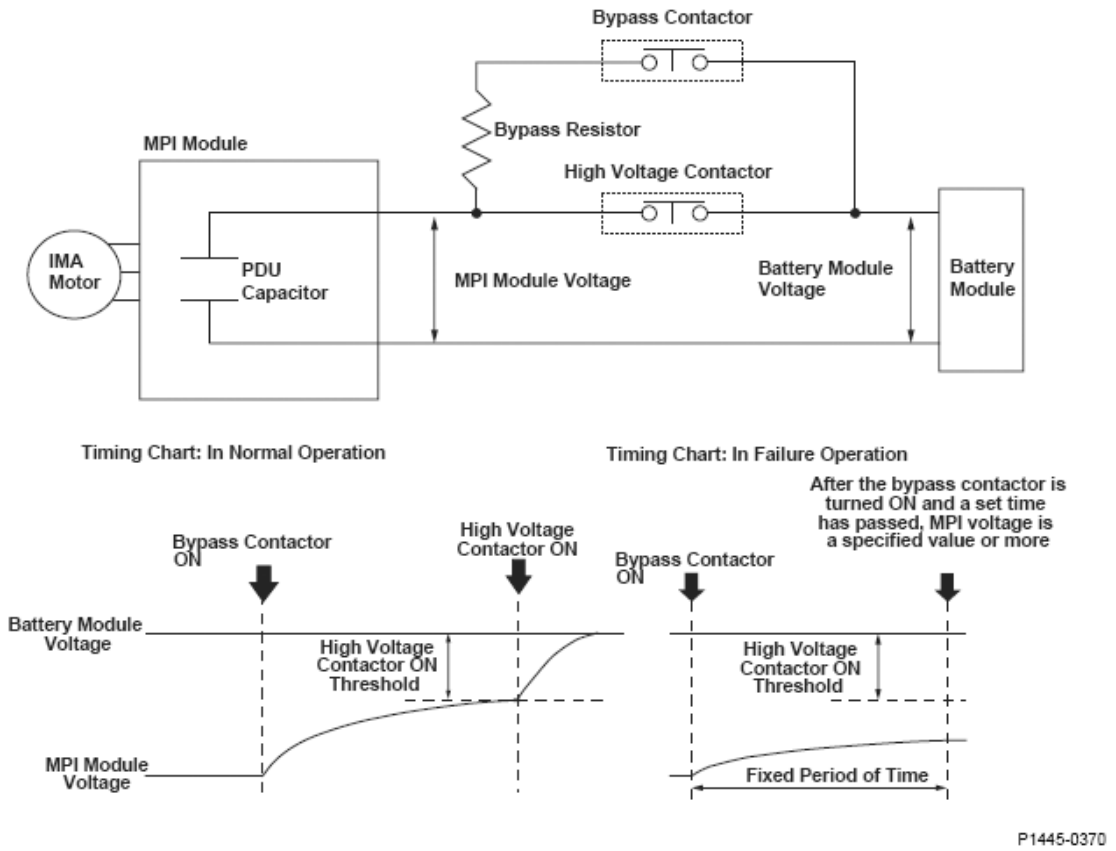


Fig. 109: Measuring Resistance Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 99-121 ohms?

YES - Go to step 33.

NO - Go to step 5.

5. Disconnect the gauge control module (tach) 36P connector (see **TACHOMETER**).
6. Disconnect the ABS modulator-control unit 25P connector (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
7. Disconnect SRS unit connector A (28P) (see **SRS UNIT REPLACEMENT**).
8. With TPMS: Disconnect TPMS control unit 20P connector.
9. Check for continuity between ECM/PCM connector terminals A36 and A37.

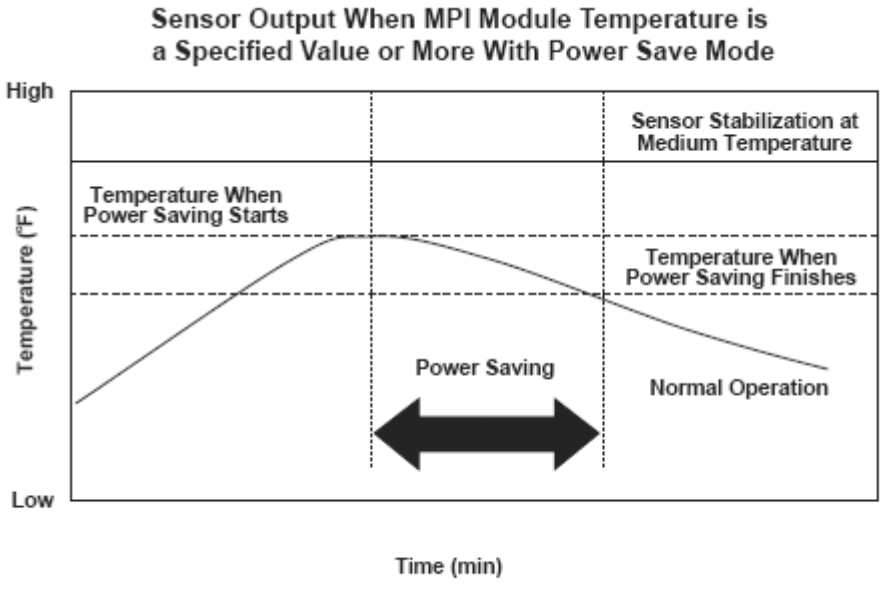


Fig. 110: Checking For Continuity Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wires between ECM/PCM connector terminals A36 and A37.

NO - Go to step 10.

10. Connect ECM/PCM connector terminal A36 to body ground with a jumper wire.

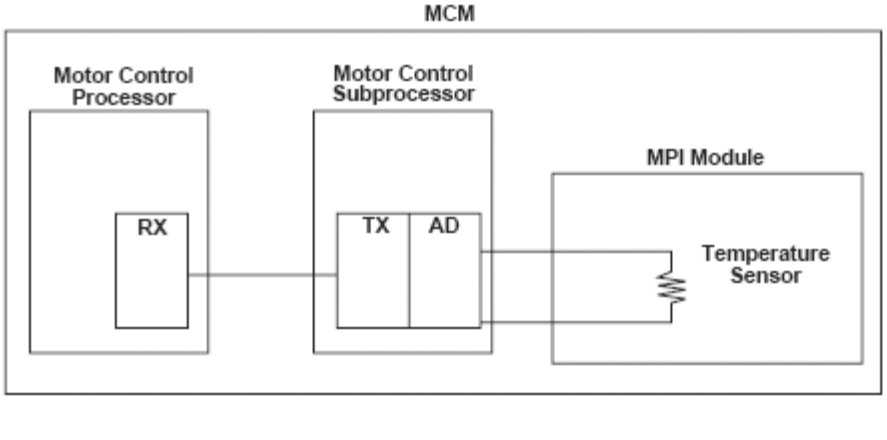


Fig. 111: Connecting ECM/PCM Connector Terminal A36 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between gauge control module (tach) 36P connector terminal No. 1 and body ground.

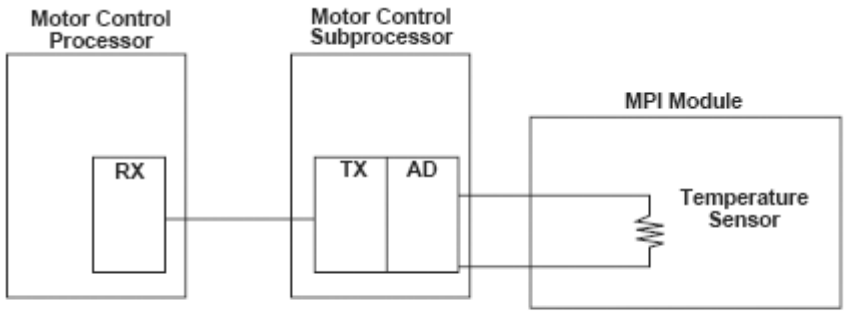


Fig. 112: Checking For Continuity Between Gauge Control Module (Tach) 36P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 12.

NO - Repair open in the wire between the ECM/PCM (A36) and the gauge control module (tach).

12. Check for continuity between ABS modulator-control unit 25P connector terminal No. 1 and body ground.

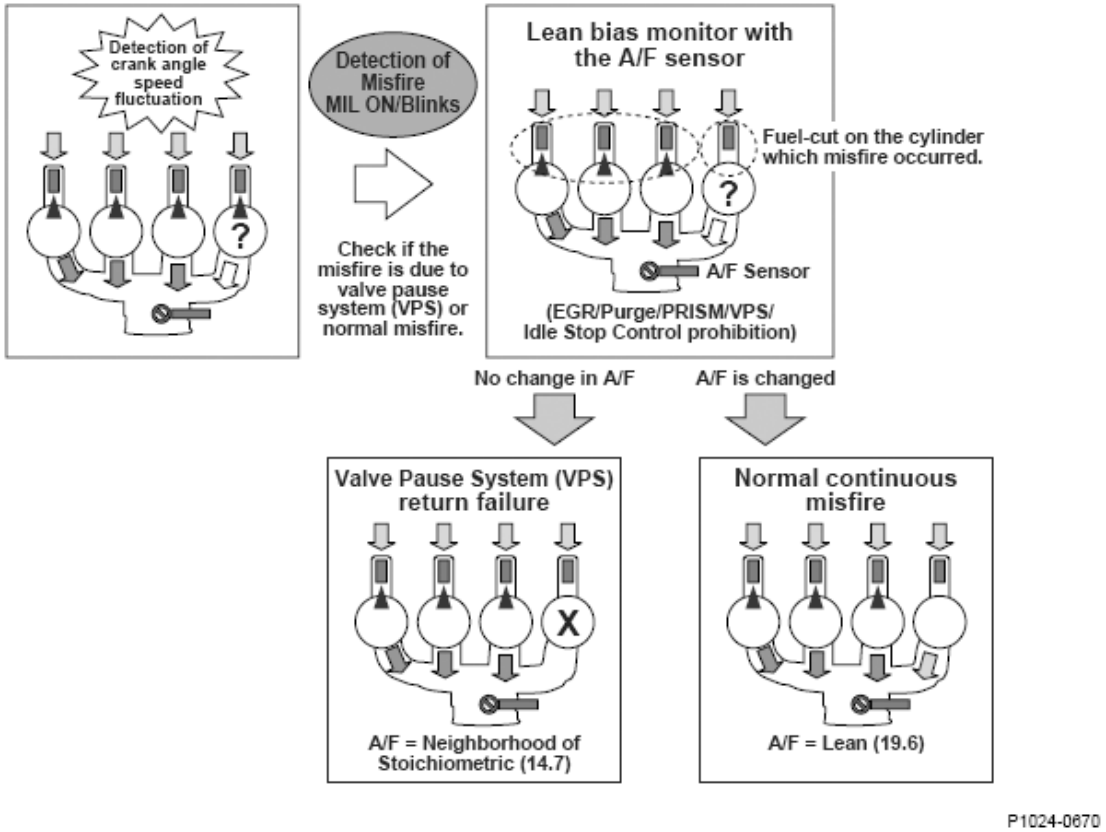


Fig. 113: Checking For Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 1 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 13.

NO - Repair open in the wire between the ECM/PCM (A36) and the ABS modulator-control unit.

13. Check for continuity between SRS unit connector A (28P) terminal No. 11 and body ground.

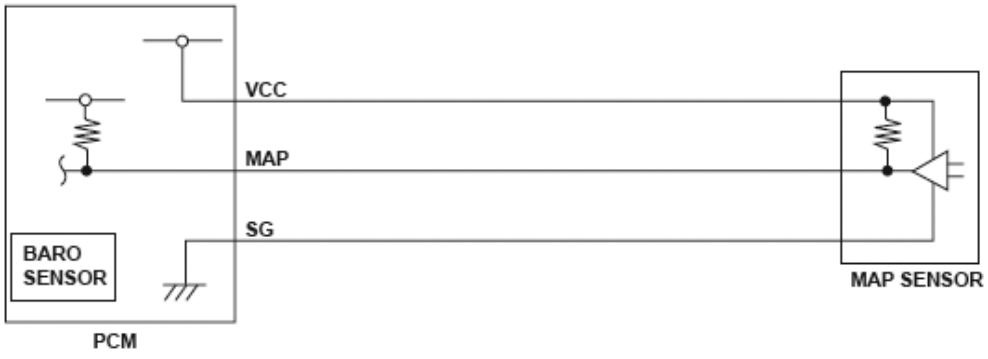


Fig. 114: Checking For Continuity Between SRS Unit Connector A (28P) Terminal No. 11 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 14.

NO - Repair open in the wire between the ECM/PCM (A36) and the SRS unit.

14. Check for continuity between TPMS control unit 20P connector terminal No. 2 and body ground.

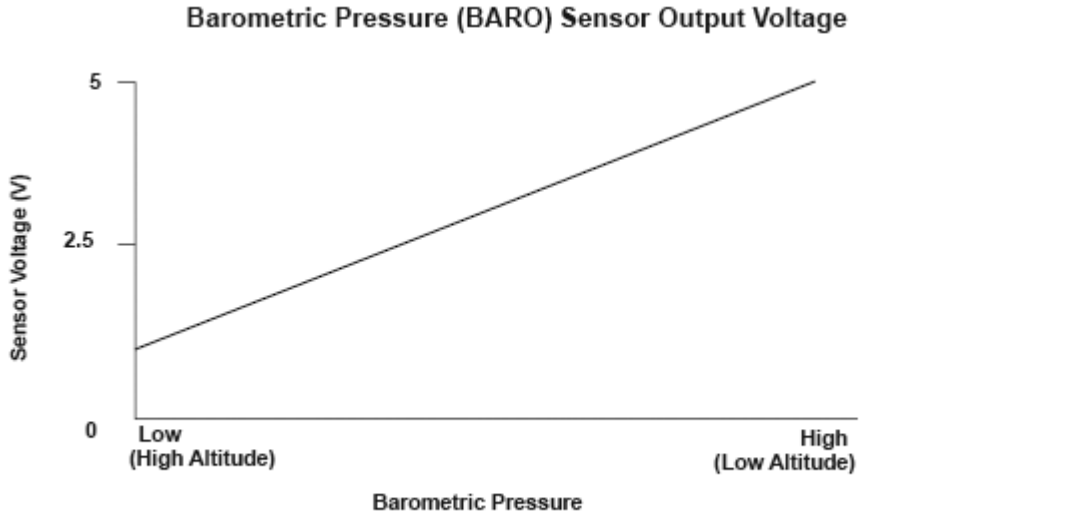


Fig. 115: Checking For Continuity Between TPMS Control Unit 20P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 15.

NO - Repair open in the wire between the ECM/PCM (A36) and the TPMS unit.

15. Remove the jumper wire from ECM/PCM connector A (44P).
16. Connect ECM/PCM connector terminal A37 to body ground with a jumper wire.

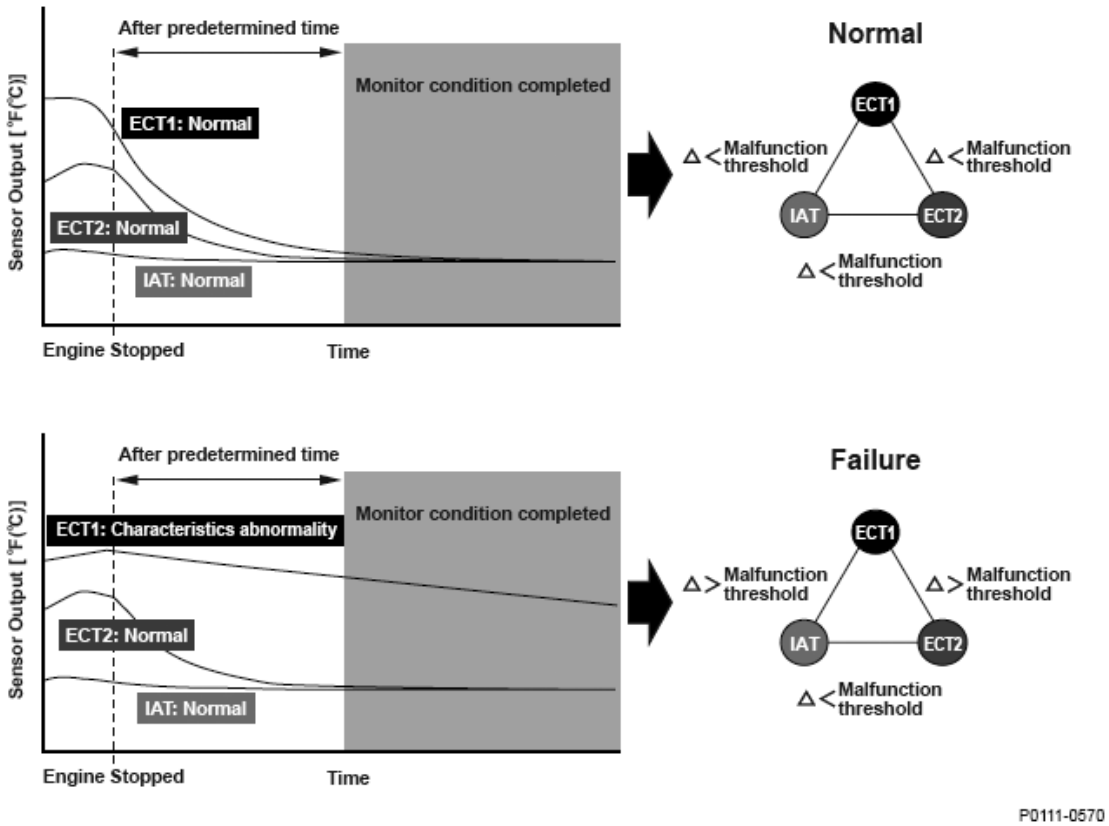


Fig. 116: Connecting ECM/PCM Connector Terminal A37 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check for continuity between gauge control module (tach) 36P connector terminal No. 19 and body ground.

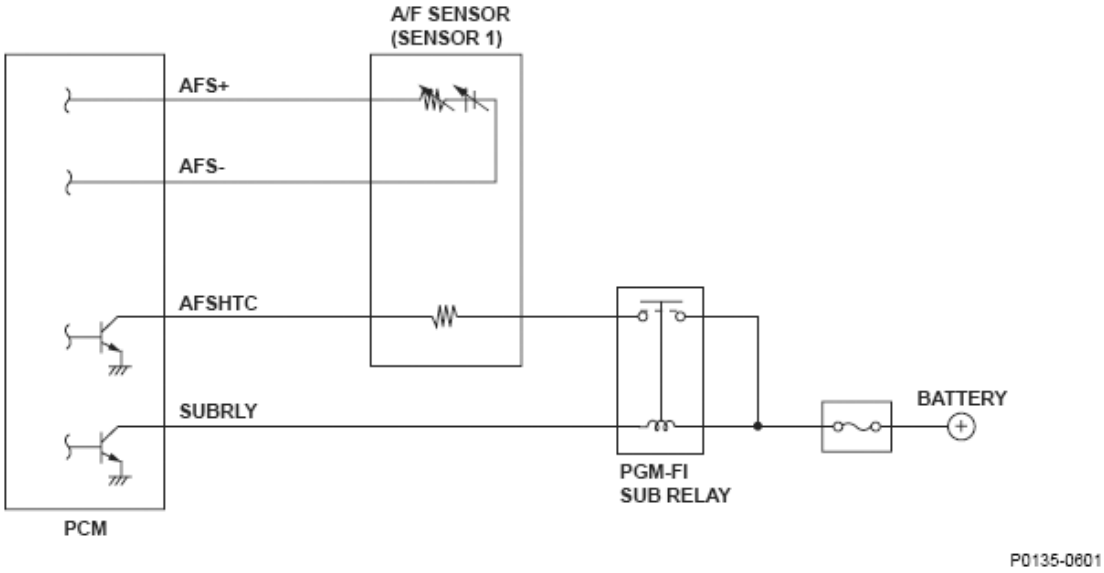


Fig. 117: Checking For Continuity Between Gauge Control Module (Tach) 36P Connector Terminal No. 19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18.

NO - Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach).

18. Check for continuity between ABS modulator-control unit 25P connector terminal No. 17 and body ground.

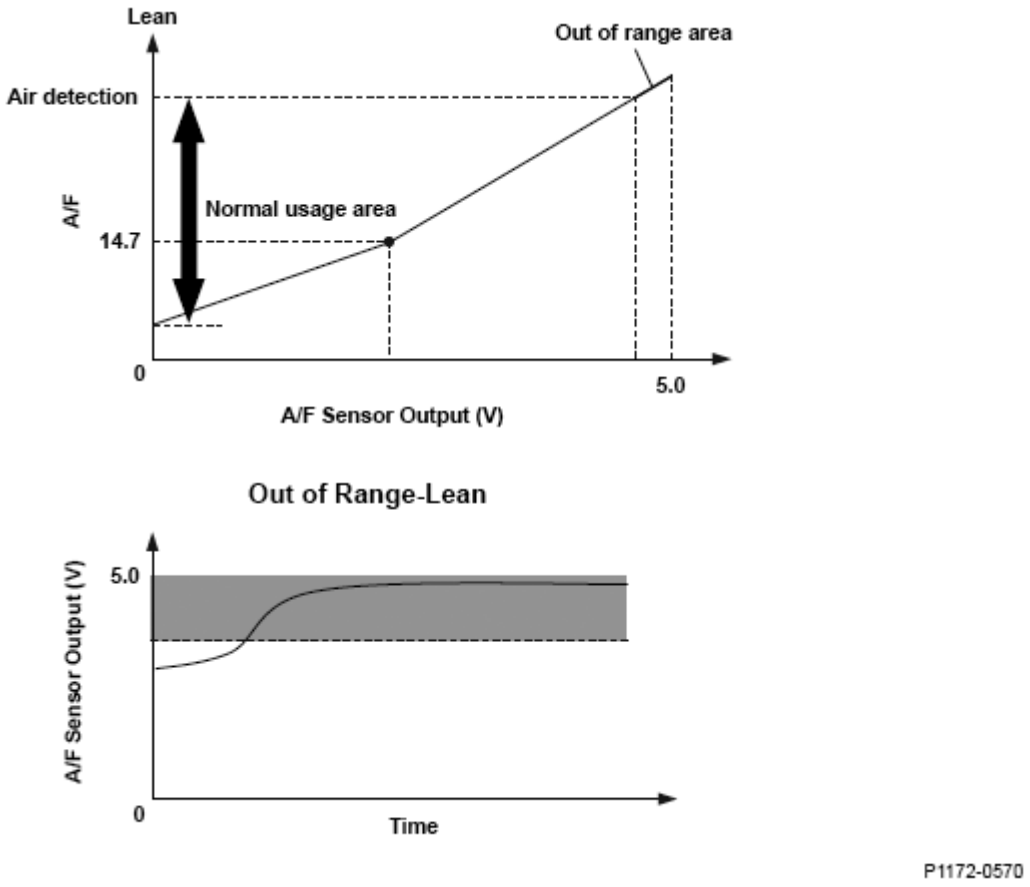


Fig. 118: Checking For Continuity Between ABS Modulator-Control Unit 25P Connector Terminal No. 17 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 17.

NO - Repair open in the wire between the ECM/PCM (A37) and the ABS modulator-control unit.

19. Check for continuity between SRS unit connector A (28P) terminal No. 12 and body ground.

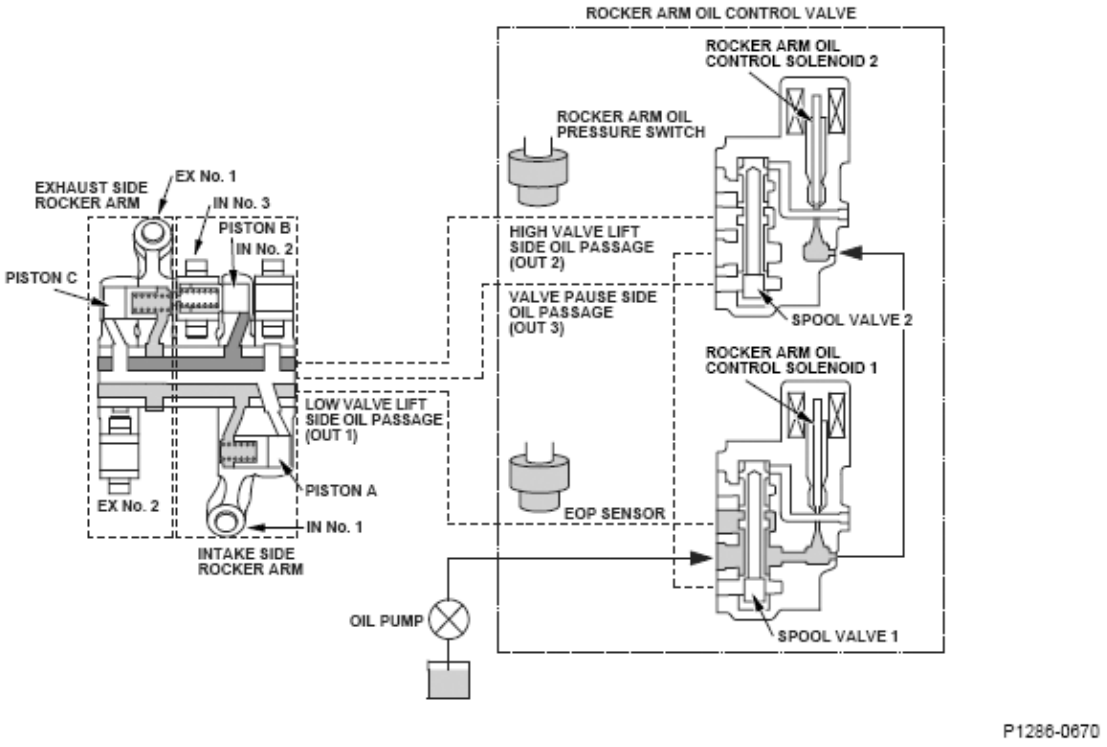


Fig. 119: Checking For Continuity Between SRS Unit Connector A (28P) Terminal No. 12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -

- With TPMS: Go to step 20.
- Without TPMS: Go to step 21.

NO - Repair open in the wire between the ECM/PCM (A37) and the SRS unit.

20. Check for continuity between TPMS control unit 20P connector terminal No. 11 and body ground.

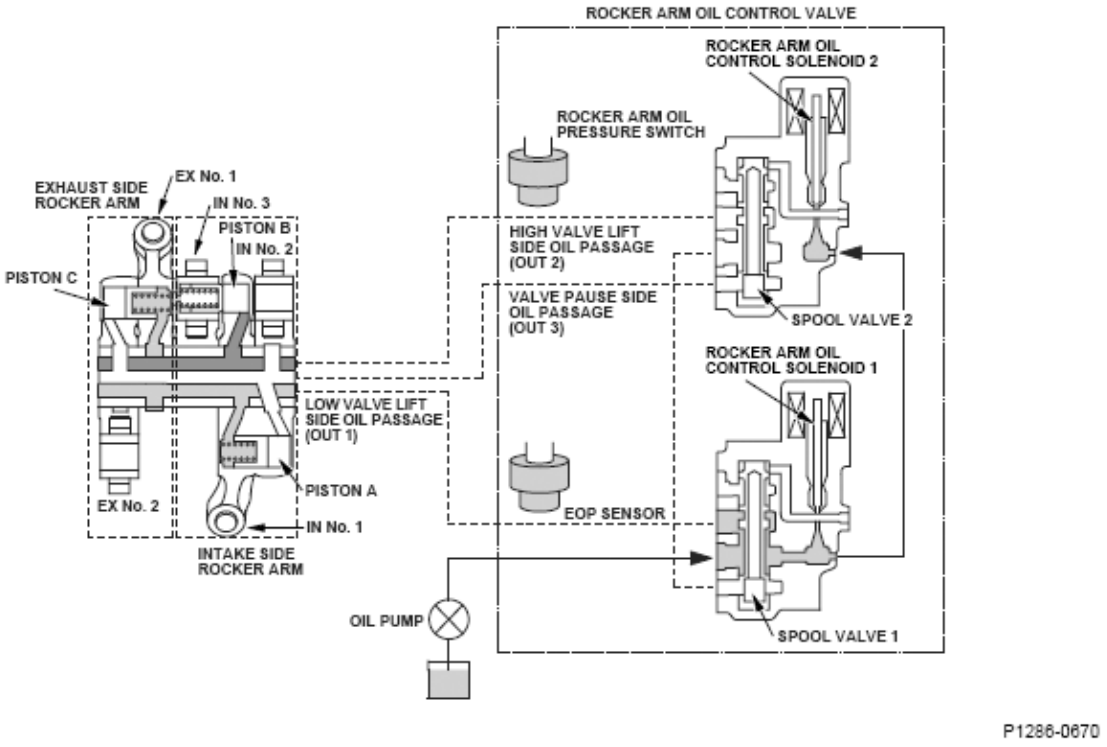


Fig. 120: Checking For Continuity Between TPMS Control Unit 20P Connector Terminal No. 11 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the ECM/PCM (A37) and the TPMS control unit.

21. Remove the jumper wire from ECM/PCM connector A (44P).
22. Reconnect the gauge control module (tach) 36P connector.
23. Measure resistance between ECM/PCM connector terminals A36 and A37.

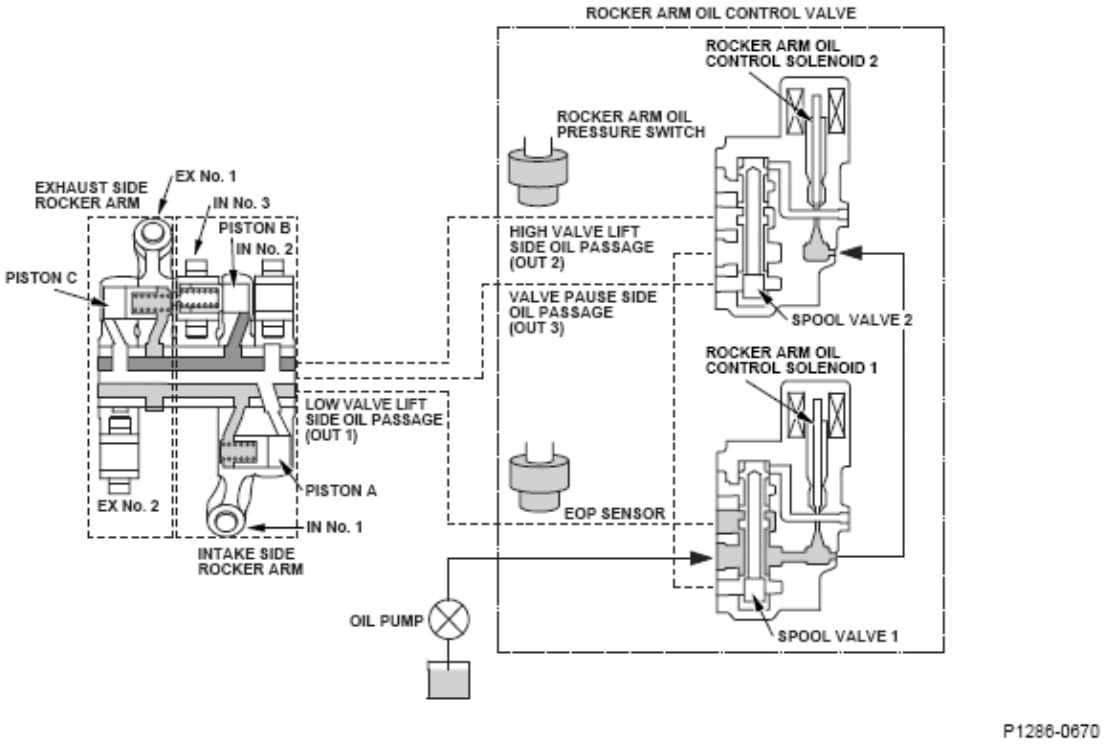


Fig. 121: Measuring Resistance Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 108-132 ohms ?

YES - Go to step 24.

NO - Substitute a known-good gauge control module (tach) (see **TACHOMETER**). If the HDS identifies the vehicle, replace the original gauge control module (tach) (see **TACHOMETER**).

24. Disconnect the gauge control module (tach) 36P connector.
25. Reconnect the ABS modulator-control unit 25P connector.
26. Measure resistance between ECM/PCM connector terminals A36 and A37.

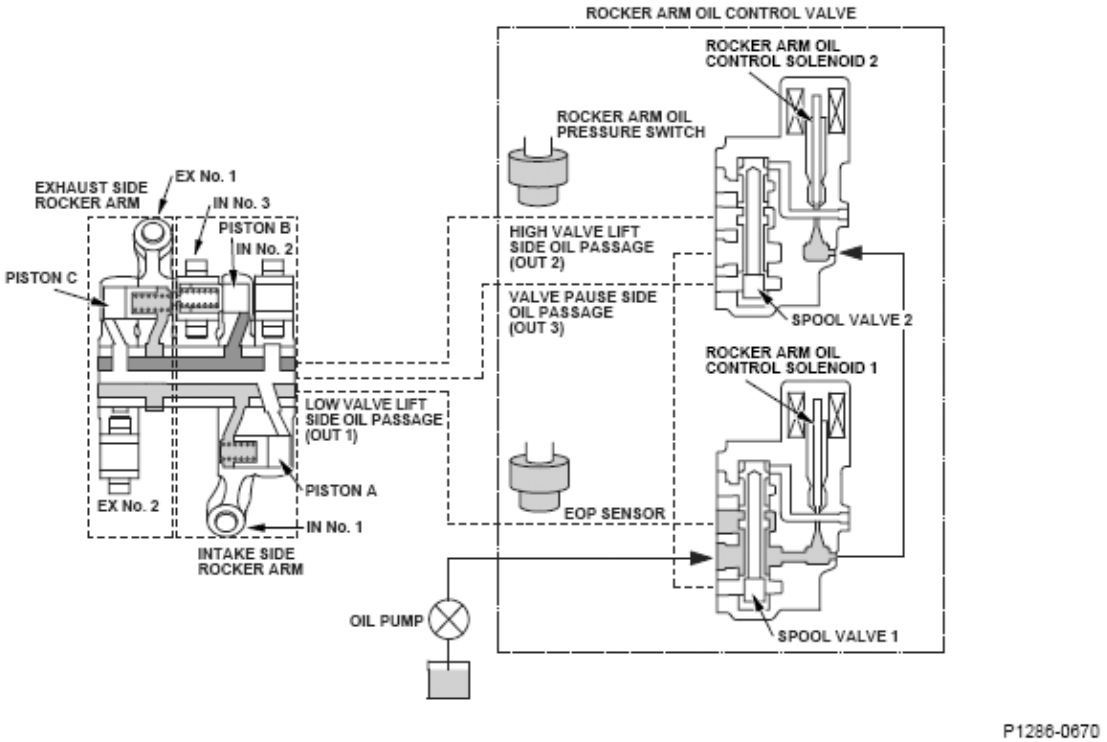


Fig. 122: Measuring Resistance Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms?

YES - Go to step 27.

NO - Substitute a known-good ABS modulator-control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**). If the HDS identifies the vehicle, replace the original ABS modulator-control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

27. Disconnect the ABS modulator-control unit 25P connector.
28. Reconnect SRS unit connector A (28P).
29. Measure resistance between ECM/PCM connector terminals A36 and A37.

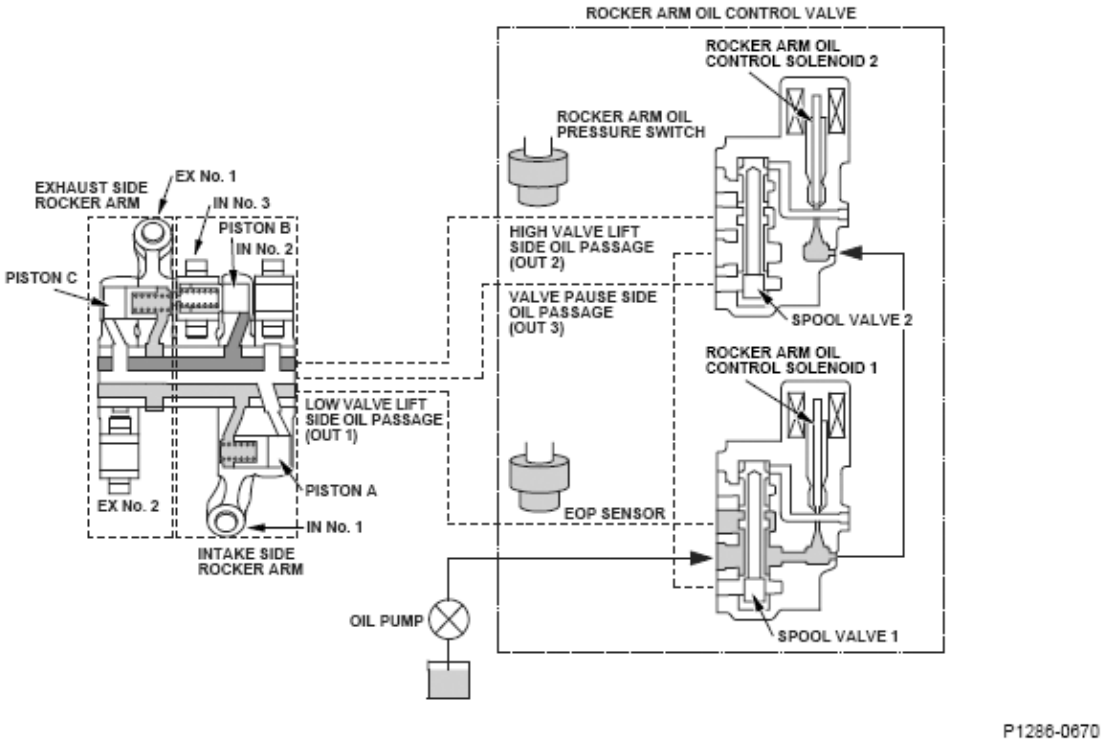


Fig. 123: Measuring Resistance Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34-2.86 kohms?

YES -

- With TPMS: Go to step 30.
- Without TPMS: Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Substitute a known-good SRS unit (see **SRS UNIT REPLACEMENT**). If the HDS identifies the vehicle, replace the original SRS unit (see **SRS UNIT REPLACEMENT**).

30. Disconnect SRS unit connector A (28P).
31. Reconnect TPMS control unit 20P connector.
32. Measure resistance between ECM/PCM connector terminals A36 and A37.

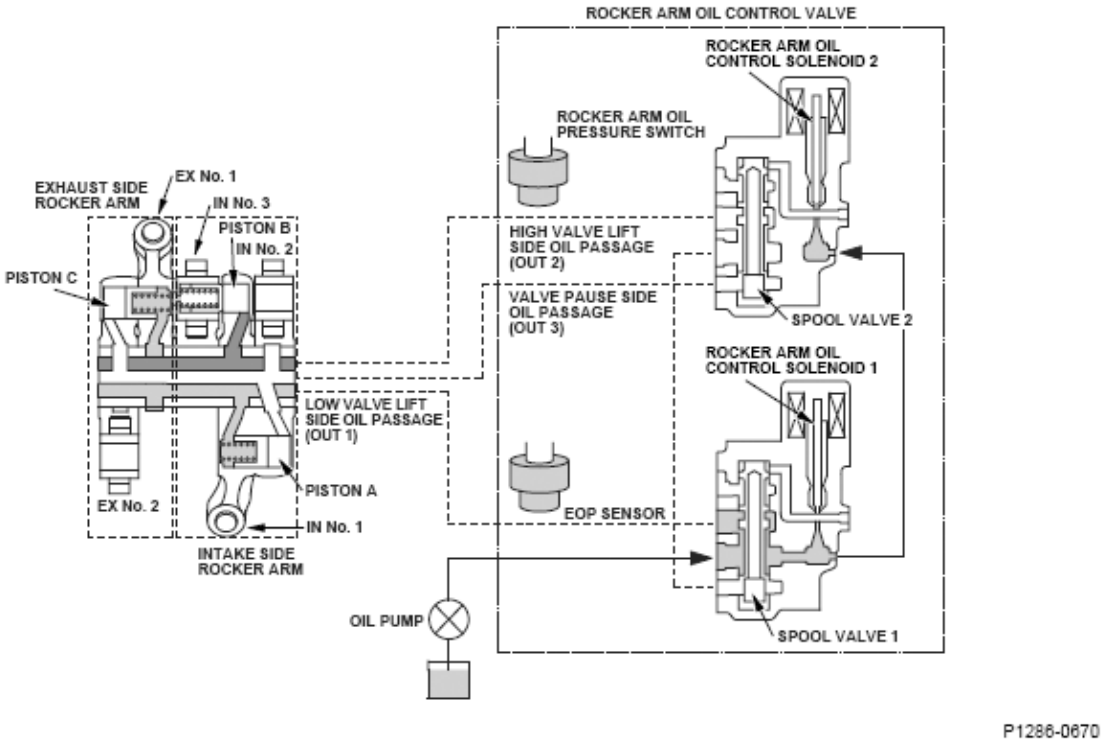


Fig. 124: Measuring Resistance Between ECM/PCM Connector Terminals A36 And A37
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 2.34 - 2.86 k ohms?

YES - Update the EMC/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good EMC/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Substitute a known-good TPMS control unit. If the HDS identifies the vehicle, replace the original TPMS control unit.

33. Disconnect the gauge control module (tach) 36P connector (see **TACHOMETER**).
34. Disconnect the ABS modulator-control unit 25P connector (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).
35. Disconnect SRS unit connector A (28P) (see **SRS UNIT REPLACEMENT**).
36. With TPMS: Disconnect the TPMS control unit 20P connector.
37. Check for continuity between ECM/PCM connector terminal A36 and body ground.

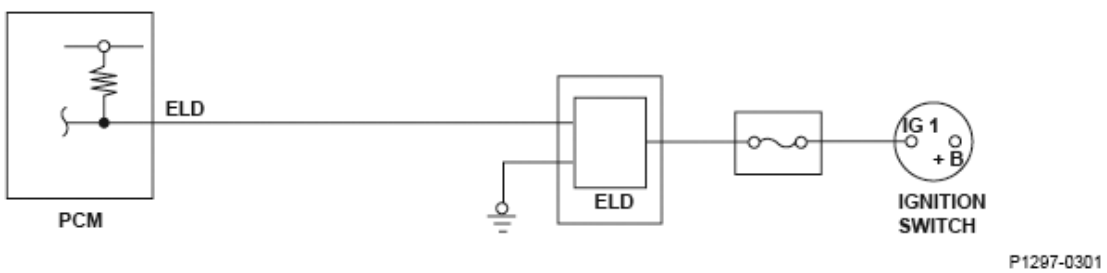


Fig. 125: Checking For Continuity Between ECM/PCM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM/PCM connector terminal A36 and the gauge control module (tach), the ABS modulator-control unit, the SRS unit or the DLC.

NO - Go to step 38.

38. Check for continuity between ECM/PCM connector terminal A37 and body ground.

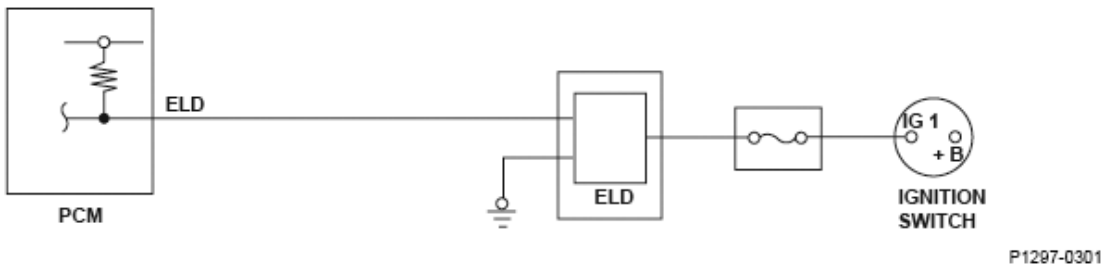


Fig. 126: Checking For Continuity Between ECM/PCM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between ECM/PCM connector terminal A37 and the gauge control module (tach), the ABS modulator-control unit, the SRS unit or the DLC.

NO - Go to step 39.

39. Reconnect all connectors.
40. Connect the HDS to the DLC (see **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
41. Disconnect the gauge control module (tach) 36P connector.
42. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the gauge control module (tach) (see **TACHOMETER**).

NO - Go to step 43.

43. Turn the ignition switch OFF.
44. Reconnect the gauge control module (tach) 36P connector.
45. Disconnect the ABS modulator-control unit 25P connector.
46. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the ABS control unit (see **ABS MODULATOR-CONTROL UNIT REMOVAL AND INSTALLATION**).

NO - Go to step 39.

47. Turn the ignition switch OFF.
48. Reconnect the ABS modulator-control unit 25P connector.
49. Disconnect SRS unit connector A (28P).
50. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the SRS unit (see **SRS UNIT REPLACEMENT**).

NO -

- With TPMS: Go to step 51.
- Without TPMS: Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

51. Turn the ignition switch OFF.
52. Reconnect SRS unit connector A (28P).
53. Disconnect the TPMS control unit 20P connector.
54. Turn the ignition switch ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES - Replace the TPMS control unit.

NO - Update the EMC/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good EMC/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

MIL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).
2. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).

Does the MIL indicator flash?

YES - Go to step 3.

NO - Substitute a known-good gauge control module (tach), and recheck. If the MIL circuit is OK, replace the original gauge control module (tach) (see **TACHOMETER**).

3. Connect the HDS to the DLC (see **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
4. Check the SCS in the DATA LIST with the HDS.

   Is a short indicated?

   YES - Go to step 5.

   NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

5. Turn the ignition switch OFF.
6. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
7. Check for continuity between ECM/PCM connector terminal A31 and body ground.

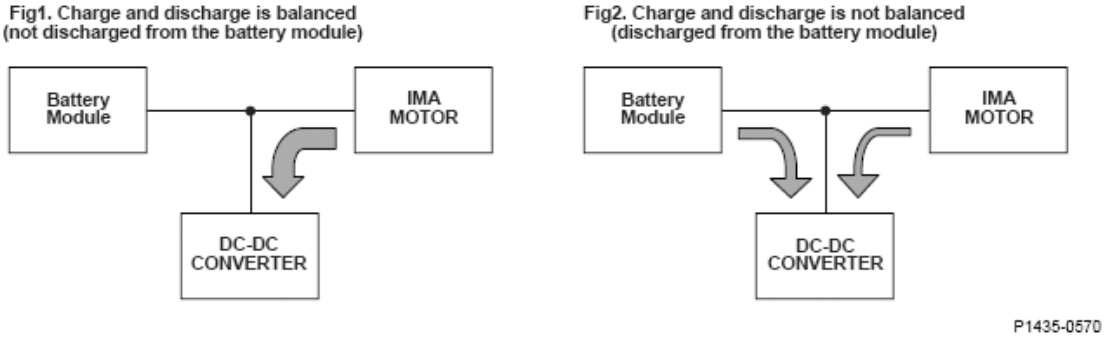


Fig. 127: Checking For Continuity Between ECM/PCM Connector Terminal A31 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (A31) and the SRS unit, the DLC.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

DLC CIRCUIT TROUBLESHOOTING

NOTE: Make sure the HDS and the DLC cable of the HDS is normal.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).

NOTE: Make sure the HDS is properly connected to the DLC.

3. Turn the ignition switch ON (II), and read the HDS.

   Does the HDS identify the vehicle?

   YES - Go to step 4.

   NO - Go to step 21.

4. Check for Temporary DTCs or DTCs in the PGM-FI system with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES - Go to the indicated DTC's troubleshooting.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and watch the SRS indicator.

   Does the SRS indicator stay on?

   YES - Go to the SRS system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION**).

   NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator stay on?

   YES - Go to the ABS system's general troubleshooting information (see **GENERAL TROUBLESHOOTING INFORMATION** .

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II), and watch the immobilizer indicator.

    Does the immobilizer indicator stay on or flash?

    YES - Go to the immobilizer system's troubleshooting (see **SYMPTOM TROUBLESHOOTING INFORMATION**).

    NO -

    - With TPMS: Go to step 11.
    - Without TPMS: Go to step 13.

11. Turn the ignition switch OFF.

12. Turn the ignition switch ON (II), and watch the TPMS indicator.

    Does the TPMS indicator stay on?

    YES - Go to the TPMS indicator system's troubleshooting.

    NO - Go to step 13.

13. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).
14. Check for B-CAN system DTCs without the HDS (see **GENERAL TROUBLESHOOTING INFORMATION**).

    Are any B-CAN DTCs indicated?

    YES - Go to the indicated DTC's troubleshooting.

    NO - Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect the HDS from the DLC.
17. Check for continuity between DLC terminal No. 7 and body ground.

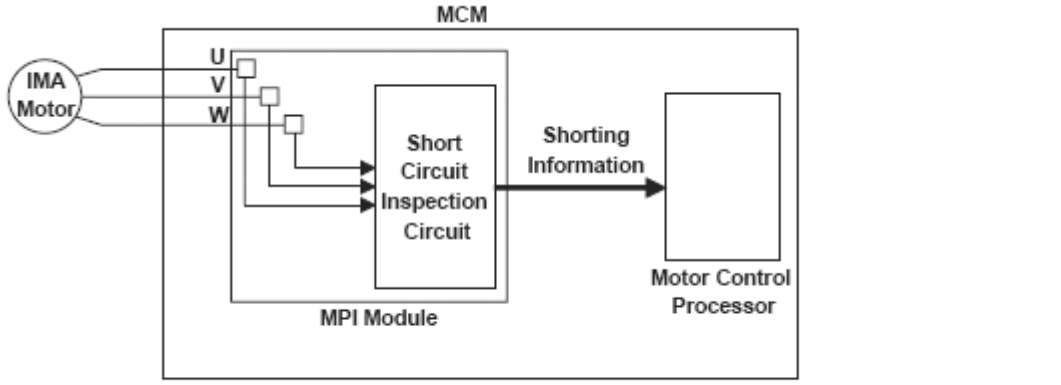


Fig. 128: Checking For Continuity Between DLC Terminal No. 7 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 5 ohms or less?

YES - Go to step 18.

NO - Go to step 19.

18. Continue to check for continuity between DLC terminal No. 7 and body ground, while disconnecting these parts, one at a time:
    - SRS unit connector A (28P)
    - ABS modulator-control unit 25P connector
    - Immobilizer-keyless control unit 7P connector

- Audio unit 17P connector
- Under-dash fuse/relay box Q 16P connector

Does continuity go away when one of the above components is disconnected?

YES - Replace the part that caused an open when it was disconnected.

NO - Repair short in the wire between the DLC (K-line) and the ABS modulator-control unit, the SRS unit, the immobilizer-keyless control unit, the audio unit, or the under-dash fuse/relay box.

19. Connect DLC terminal No. 7 to body ground with a jumper wire.

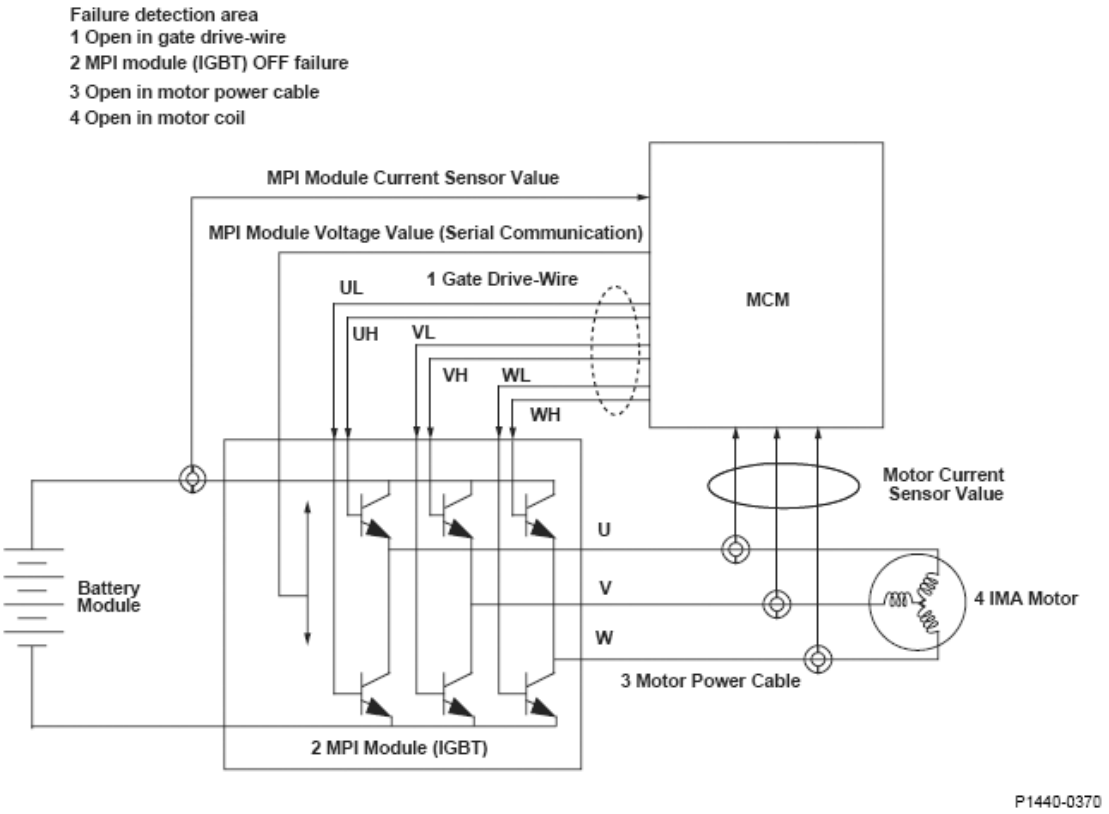


Fig. 129: Connecting DLC Terminal No. 7 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Check for continuity between body ground and these connector terminals:

BODY GROUND AND CONNECTOR TERMINALS

Connector	Terminal
SRS unit A (28P)	No. 24 (LT BLU)
ABS modulator-control unit 25P	No. 10 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
Audio unit 17P	No. 6 (LT BLU)
Under-dash fuse/relay box Q 16P	No. 8 (LT BLU)

Is there continuity between the DLC terminal and each of the terminals in the chart?

YES - Replace the unit that does not communicate with the HDS.

NO - Repair open in the wire between the DLC (K-line) and the appropriate connector.

21. Do the gauge self-diagnostic function (see **SELF-DIAGNOSTIC FUNCTION**).
22. Check for B-CAN system DTCs without the HDS (see **GENERAL TROUBLESHOOTING INFORMATION**).

    Is DTC B1168, B1169, and/or B1178 indicated?

    YES - Go to step 35.

    NO - Go to step 21.

23. Turn the ignition switch OFF.
24. Disconnect the HDS from the DLC.
25. Measure voltage between DLC terminal No. 16 and body ground.

Fig. 1

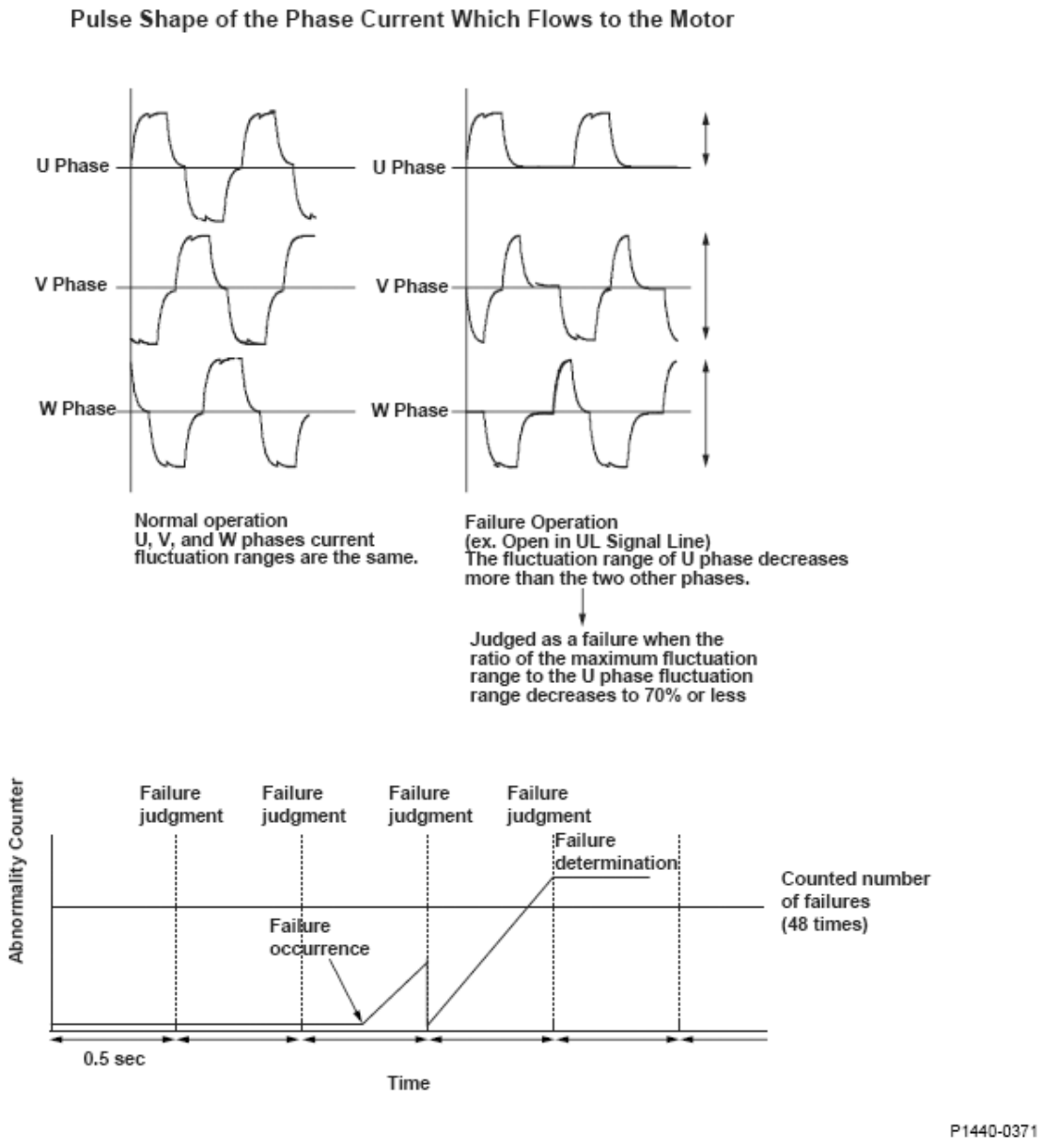


Fig. 130: Measuring Voltage Between DLC Terminal No. 16 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 26.

NO - Repair open in the wire between DLC terminal No. 16 and the No. 23 BACK UP (10 A) fuse in the under-hood fuse/relay box.

26. Measure voltage between DLC terminals No. 4 and No. 16.

Fig. 2

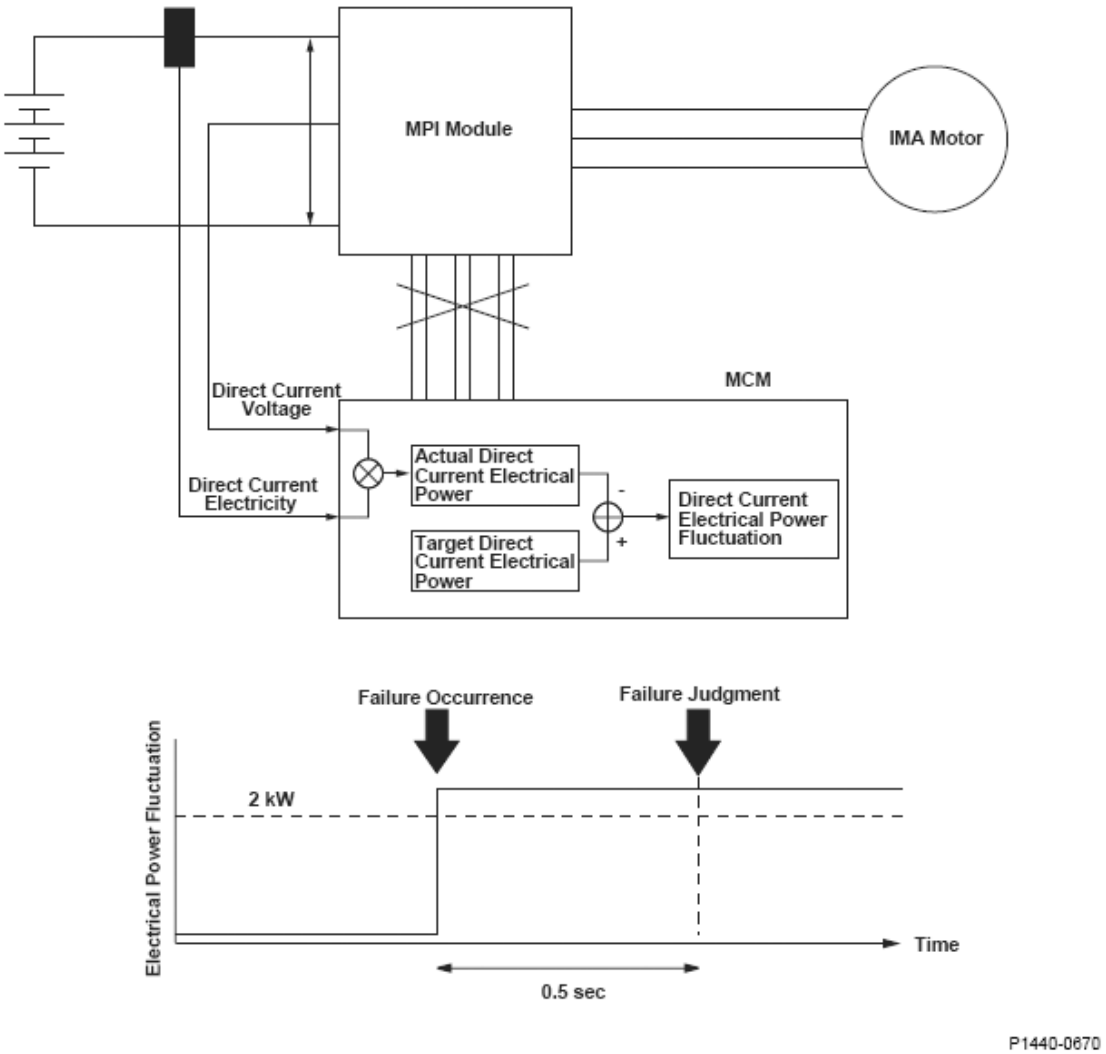


Fig. 131: Measuring Voltage Between DLC Terminals No. 4 And No. 16
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 25.

NO - Repair open in the wire between DLC terminal No. 4 and G502 (see **CONNECTOR TO HARNESS INDEX**).

27. Connect the HDS to the DLC (see **GENERAL TROUBLESHOOTING INFORMATION**).
28. Jump the SCS line with the HDS.
29. Disconnect ECM/PCM connector A (44P).
30. Disconnect the HDS from the DLC.
31. Connect DLC terminal No. 6 to body ground with a jumper wire.

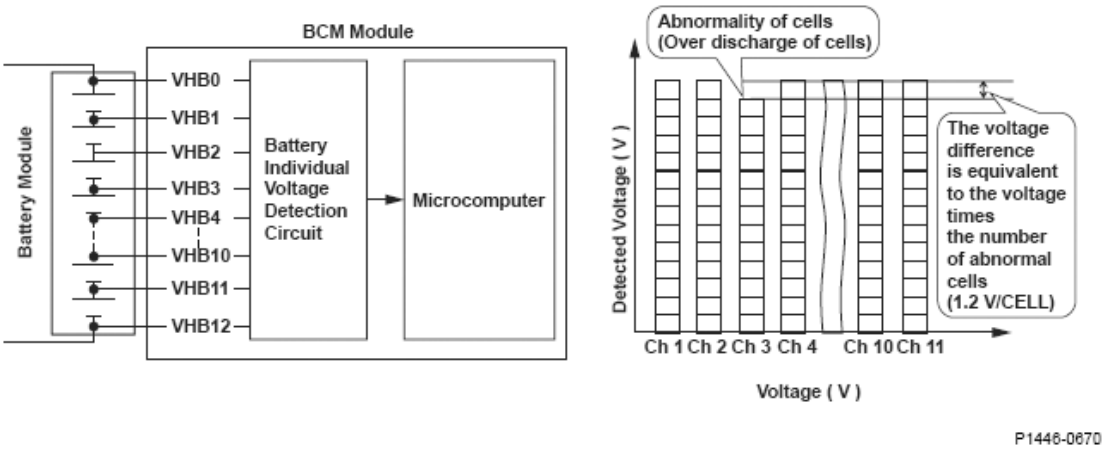


Fig. 132: Connecting DLC Terminal No. 6 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Check for continuity between ECM/PCM connector terminal A36 and body ground.

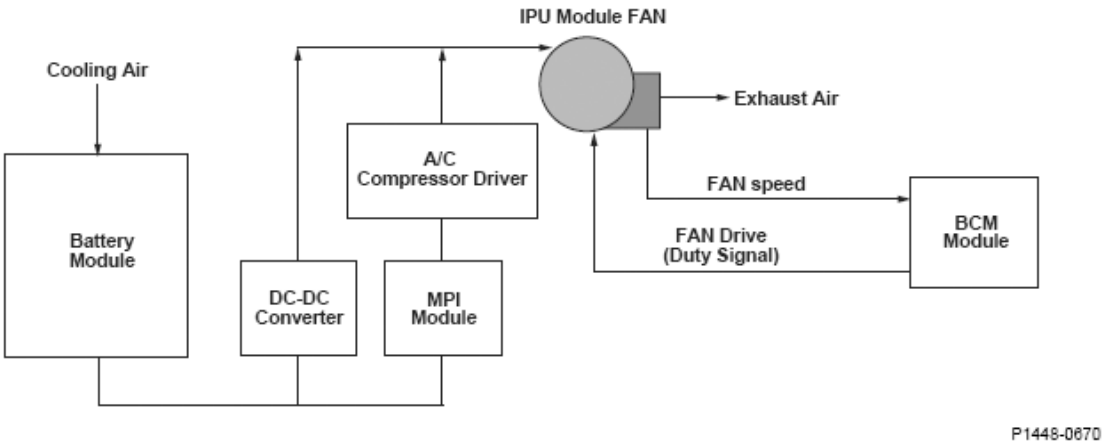


Fig. 133: Checking For Continuity Between ECM/PCM Connector Terminal A36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 33.

NO - Repair open in the wire between the ECM/PCM (A36) and DLC terminal No. 6.

33. Connect DLC terminal No. 14 to body ground with a jumper wire.

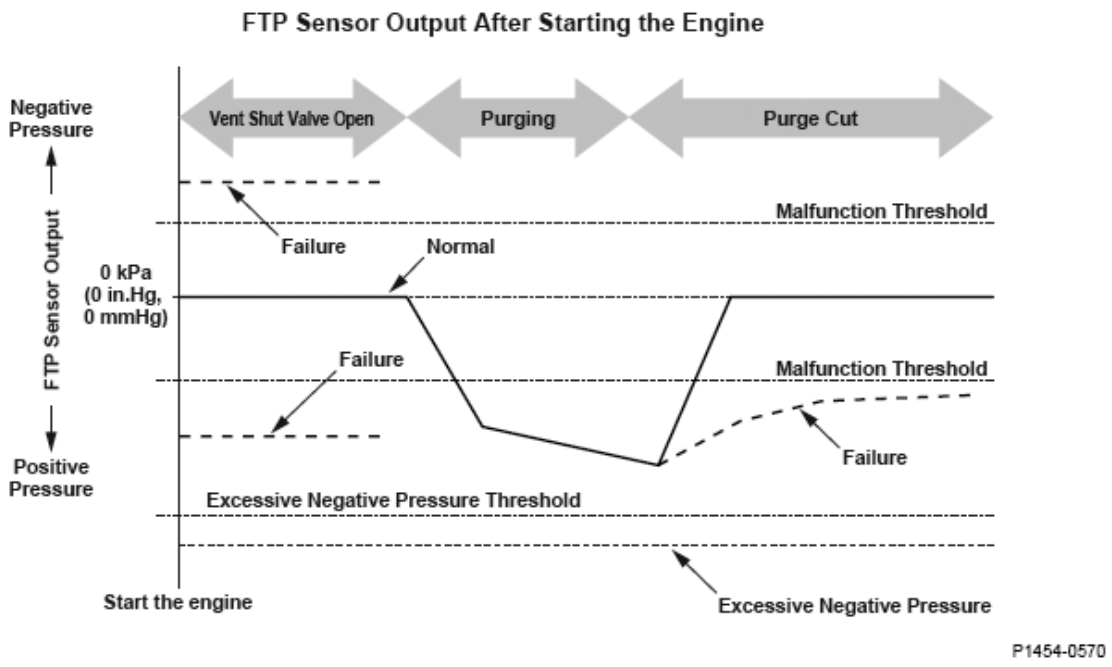


Fig. 134: Connecting DLC Terminal No. 14 To Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Check for continuity between ECM/PCM connector terminal A37 and body ground.

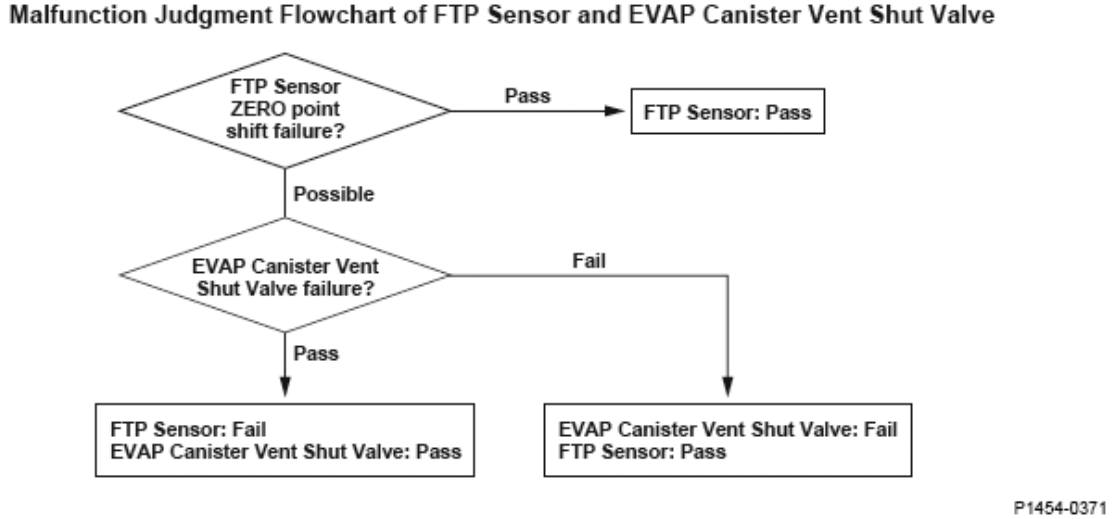


Fig. 135: Checking For Continuity Between ECM/PCM Connector Terminal A37 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Repair open in the wire between the ECM/PCM (A37) and DLC terminal No. 14.

35. Try to start the engine.

    Does the engine start and idle smoothly?

    YES - Go to F-CAN circuit troubleshooting (see **F-CAN CIRCUIT TROUBLESHOOTING**).

    NO - Go to step 36.

36. Turn the ignition switch OFF.
37. Check the No. 2 IG MAIN (50 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES - Repair open in the wire between the No. 2 IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 36.

    NO - Repair short in the wire between the No. 2 IG MAIN (50 A) fuse and the under-hood fuse/relay box. Also replace the No. 2 B MAIN (50 A) fuse.

38. Inspect the No. 19 Fl MAIN (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES - Go to step 45.

    NO - Go to step 39.

39. Remove the blown No. 19 Fl MAIN (15 A) fuse from the under-hood fuse/relay box.
40. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

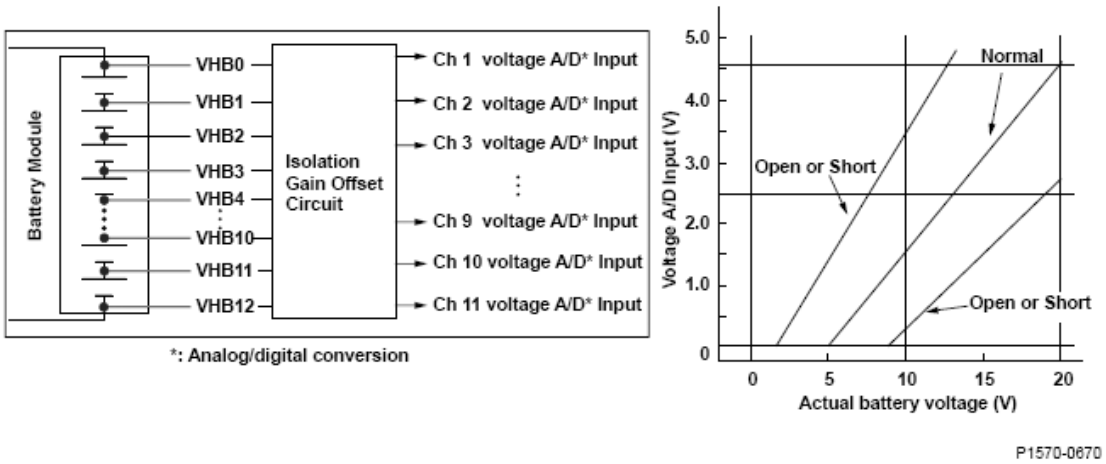


Fig. 136: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 1

and No. 3 individually.

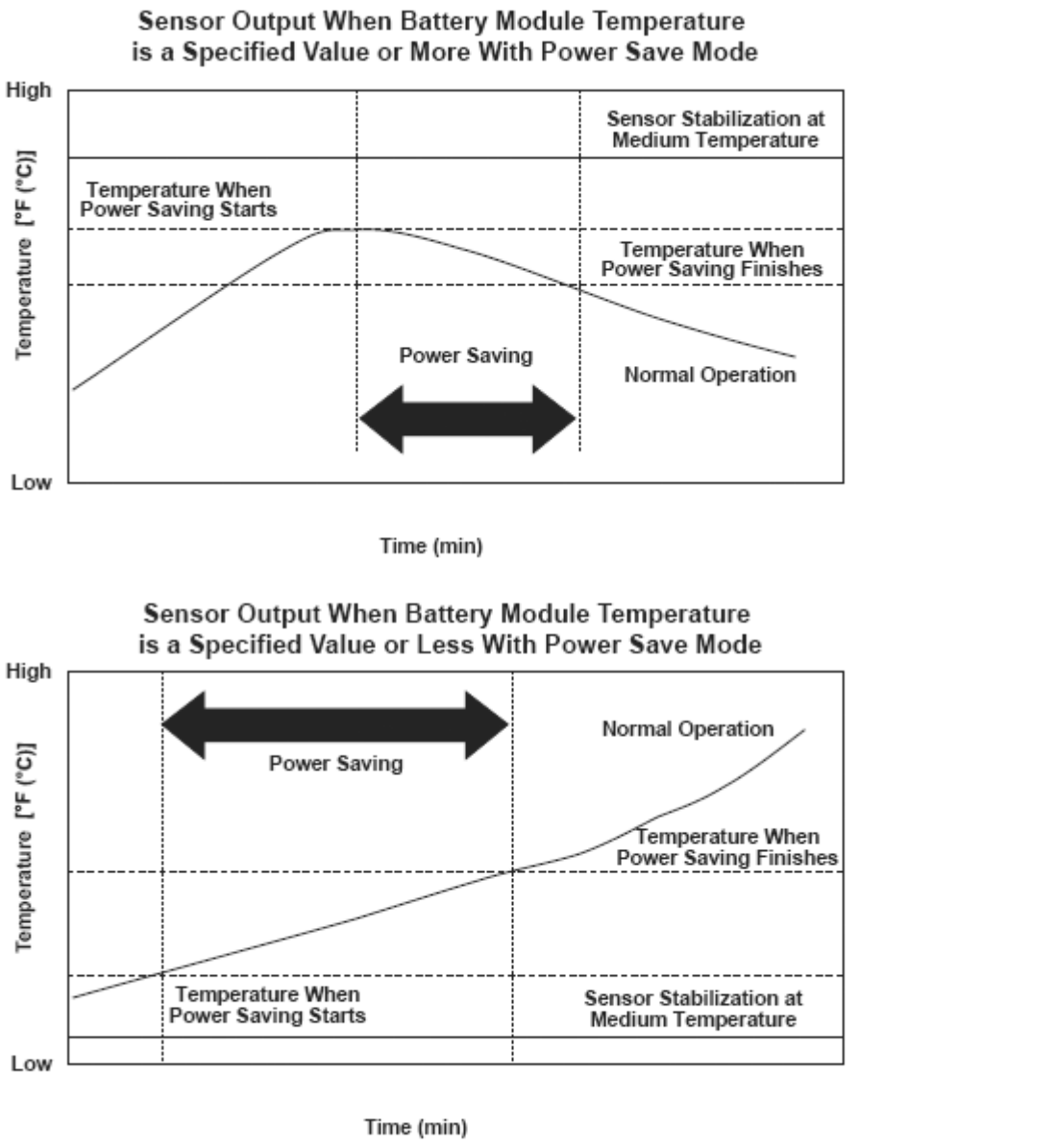


Fig. 137: Checking For Continuity Between Body Ground And PGM-FI Main Relay 1 4P Connector Terminals No. 1 And No. 3 Individually
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**). Also replace the No. 19 Fl MAIN (15 A) fuse.

NO - Go to step 42.

42. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.
    - PGM-FI main relay 2 (FUEL PUMP)

- ECM/PCM connector A (44P)
- Each injector 2P connector
- Camshaft position (CMP) sensor 3P connector
- Crankshaft position (CKP) sensor 3P connector
- Ignition coil relay
- Electronic throttle control system (ETCS) control relay

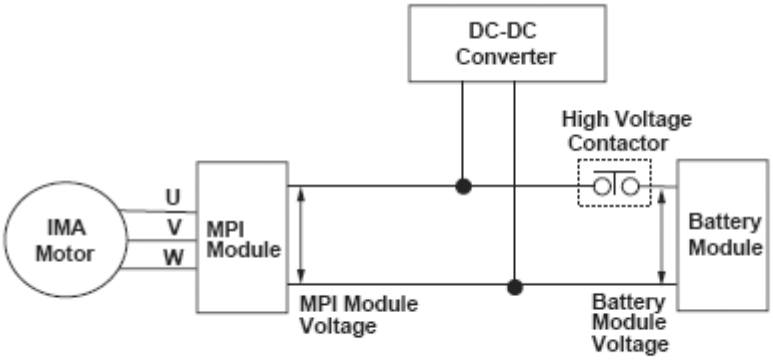


Fig. 138: Checking For Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does continuity go away when one of the above components is disconnected?

YES - Replace the component that made the short to body ground go away when disconnected. If the item is the ECM/PCM, update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). Also replace the No. 19 FI MAIN (15 A) fuse.

NO - Go to step 43.

43. Disconnect the all connectors from these components:
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (44P)
    - Injectors
    - Camshaft position (CMP) sensor
    - Crankshaft position (CKP) sensor
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay
44. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

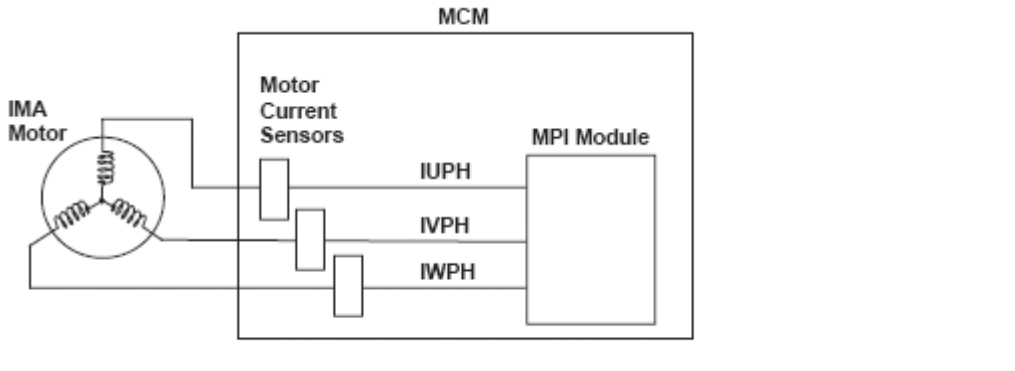


Fig. 139: Checking For Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between PGM-FI main relay 1 and each item. Also replace the No. 19 FI MAIN (15 A) fuse.

NO - Replace PGM-FI main relay 1. Also replace the No. 19 FI MAIN (15 A) fuse.

45. Inspect the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES - Go to step 58.

    NO - Go to step 46.

46. Remove the blown No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.
47. Jump the SCS line with the HDS.
48. Disconnect ECM/PCM connector C (44P).
49. Check for continuity between ECM/PCM connector terminal C36 and body ground.

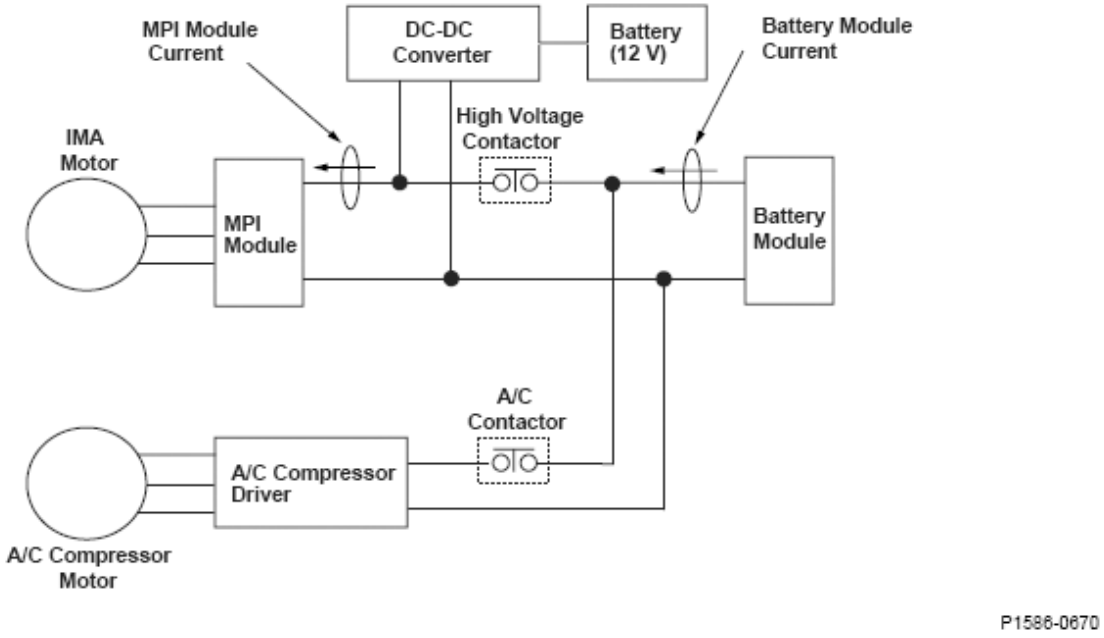


Fig. 140: Checking For Continuity Between ECM/PCM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 48.

NO - Replace the No. 2 FUEL PUMP (15 A) fuse, and update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

50. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.

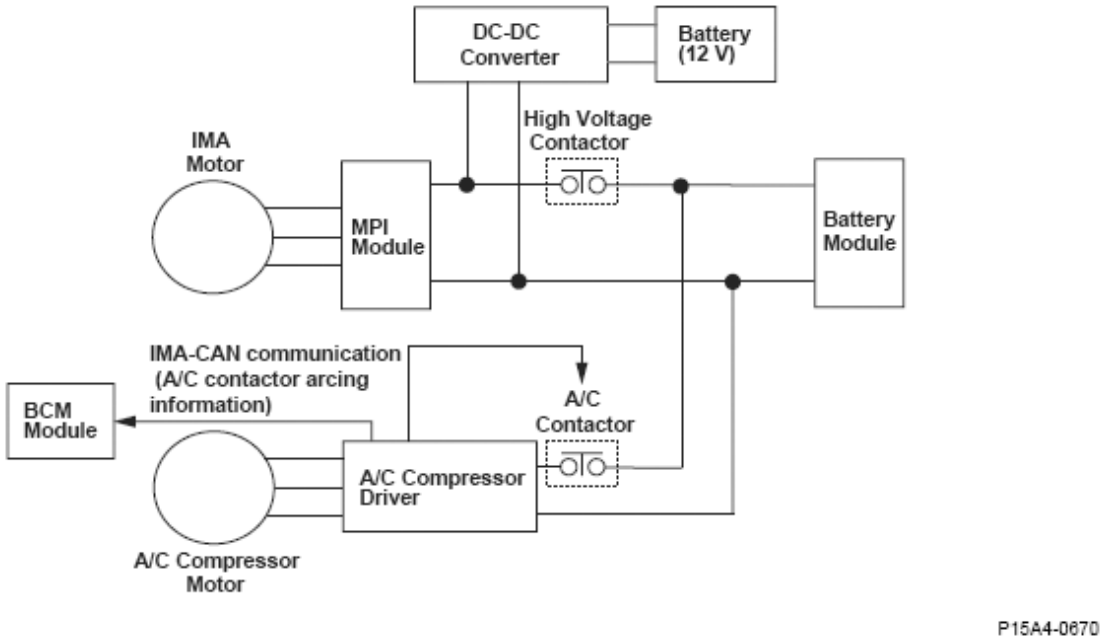


Fig. 141: Identifying PGM-FI Main Relay 2 (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

51. Check for continuity between ECM/PCM connector terminal C36 and body ground.

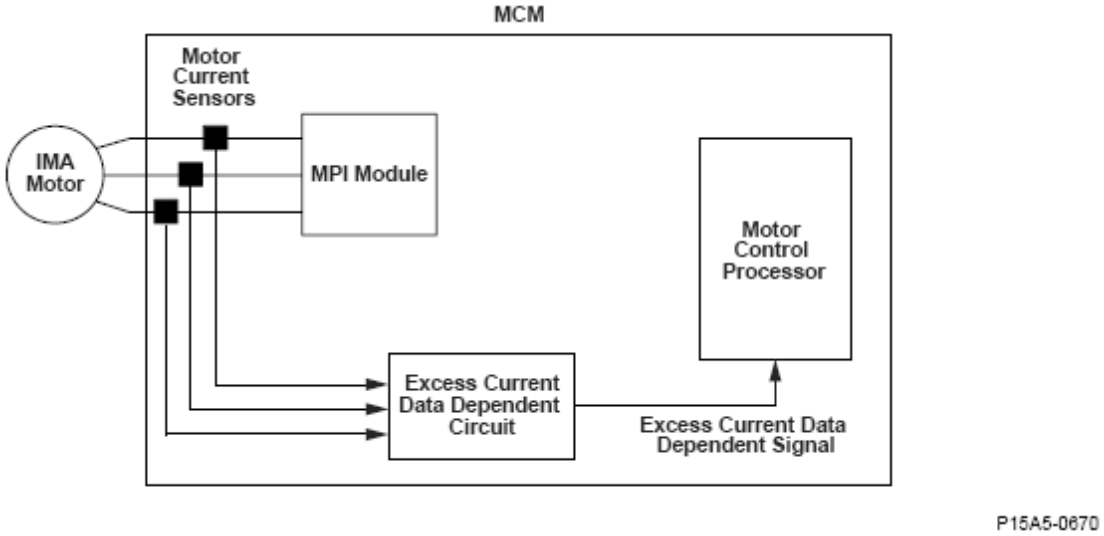


Fig. 142: Checking For Continuity Between ECM/PCM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36), between the No. 2 FUEL PUMP (15 A) fuse and PGM-FI main relay 2 (FUEL PUMP), or between the No. 2 FUEL PUMP (15 A) fuse and the immobilizer control unit. Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Go to step 52.

52. Remove the rear seat cushion (see **REAR SEAT REMOVAL/INSTALLATION**).
53. Remove the rear floor upper cross-member and the access panel from the floor (see **FUEL TANK UNIT REMOVAL/INSTALLATION**).
54. Disconnect the fuel pump 4P connector.
55. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

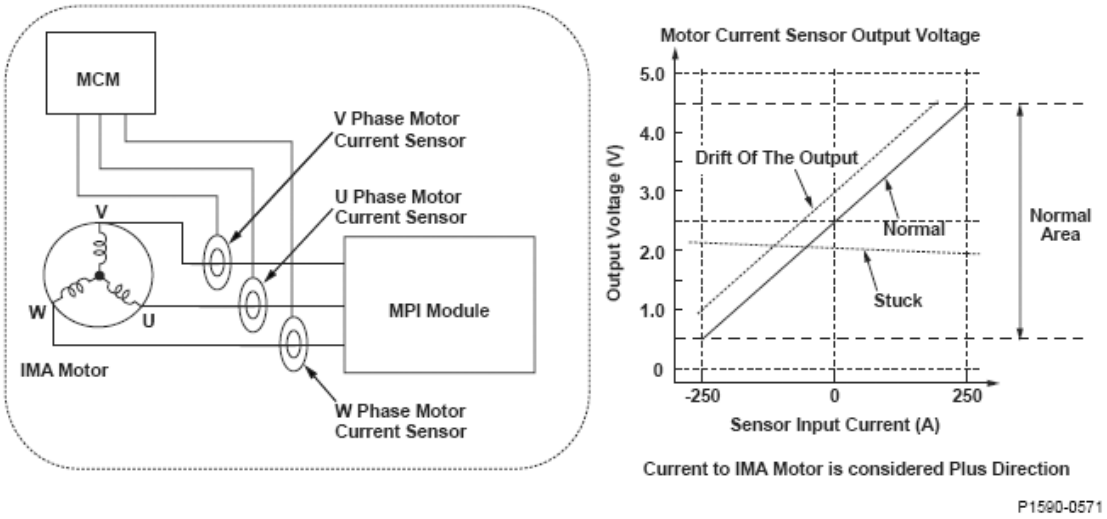


Fig. 143: Checking For Continuity Between Fuel Pump 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Go to step 54.

56. Reinstall PGM-FI main relay 2 (FUEL PUMP) (A).

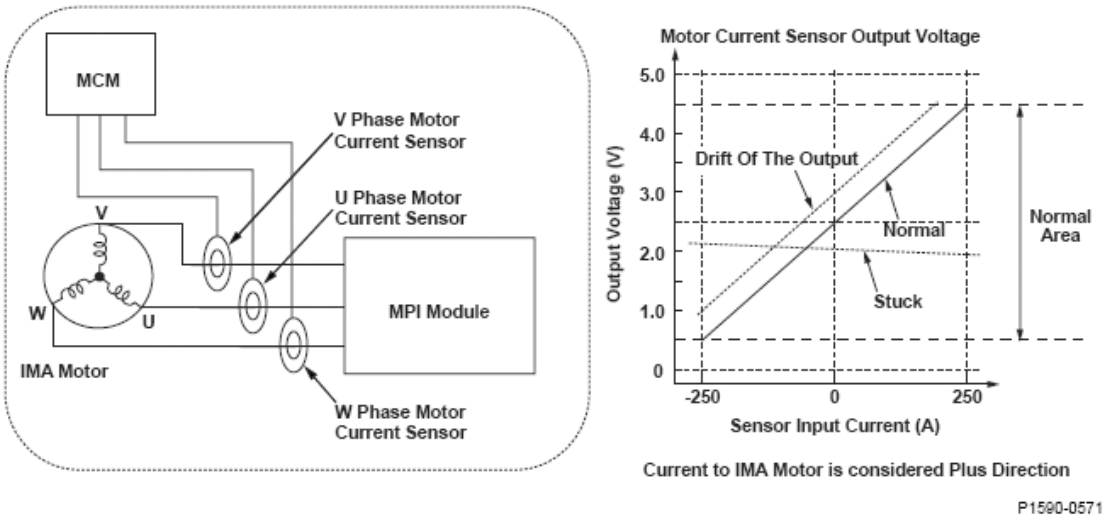


Fig. 144: Identifying PGM-FI Main Relay 2 (Fuel Pump)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

57. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

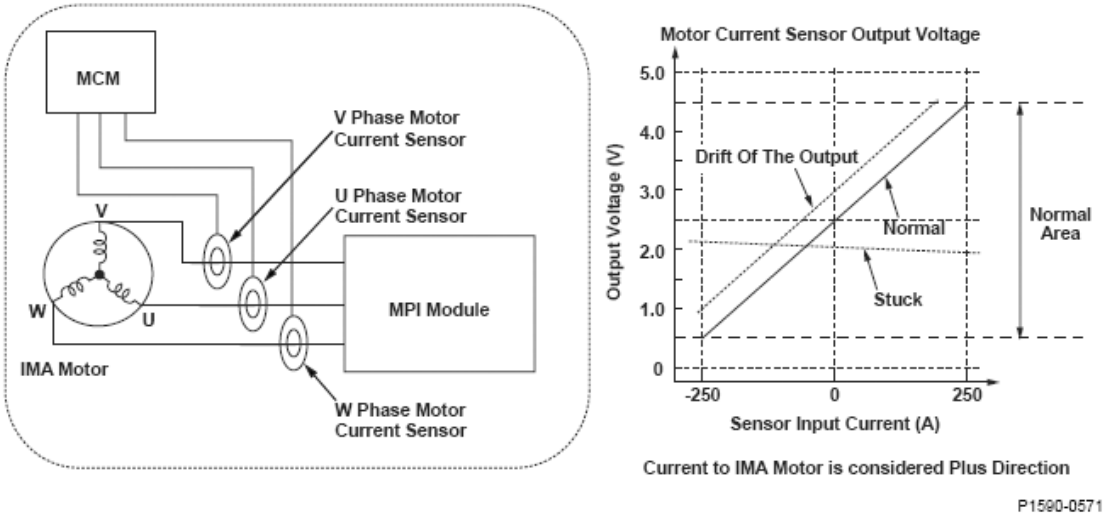


Fig. 145: Checking For Continuity Between Fuel Pump 4P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse.

NO - Check the fuel pump, and replace it if necessary (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**). Also replace the No. 2 FUEL PUMP (15 A) fuse.

58. Jump the SCS line with the HDS.
59. Disconnect ECM/PCM connectors A (44P) and C (44P).
60. Turn the ignition switch ON (II).

61. Measure voltage between ECM/PCM connector terminal C36 and body ground.

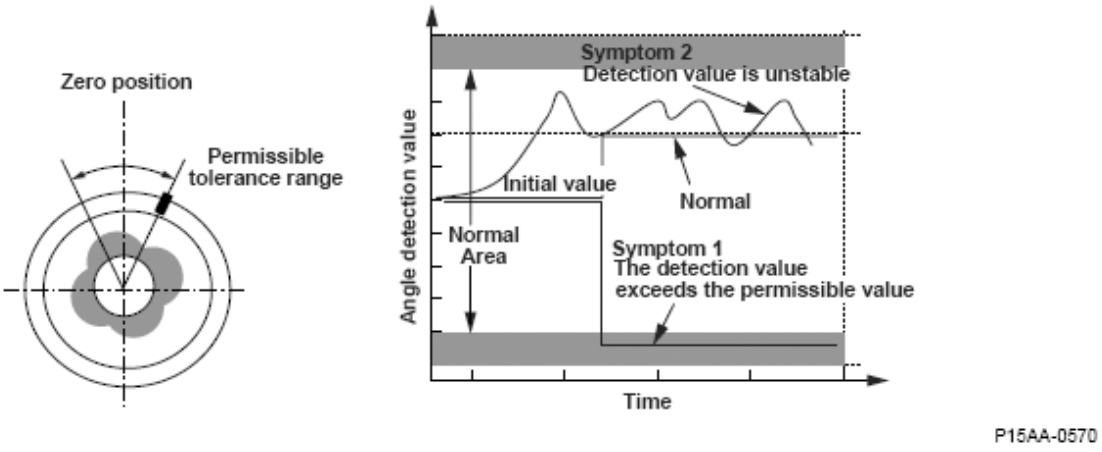


Fig. 146: Measuring Voltage Between ECM/PCM Connector Terminal C36 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 62.

NO - Repair open in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36).

62. Measure voltage between ECM/PCM connector terminal A6 and body ground.

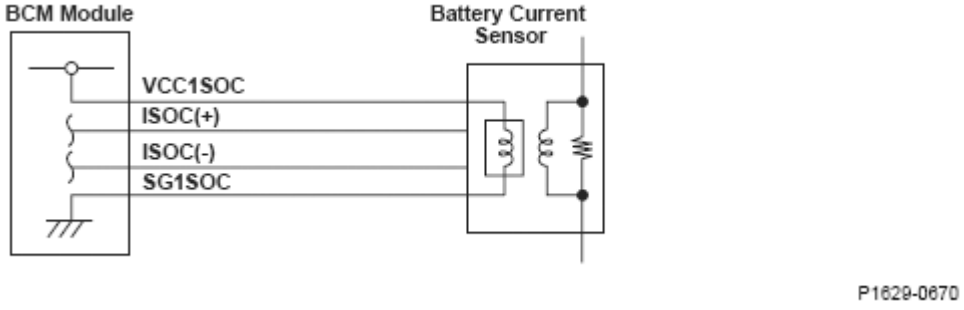


Fig. 147: Measuring Voltage Between ECM/PCM Connector Terminal A6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 67.

NO - Go to step 63.

63. Turn the ignition switch OFF.
64. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

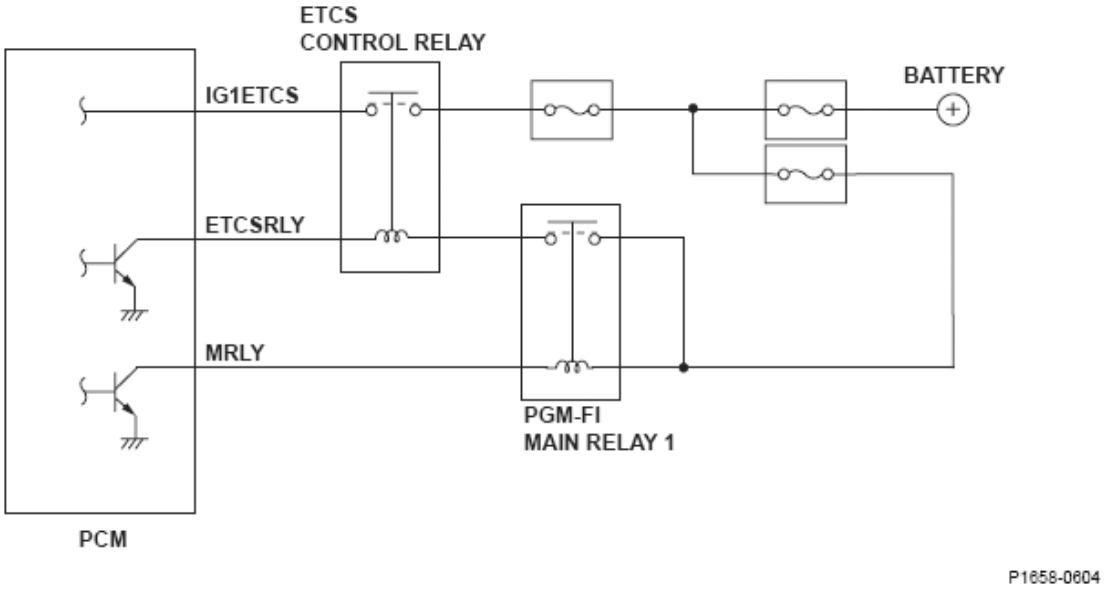


Fig. 148: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

65. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 3 and body ground.

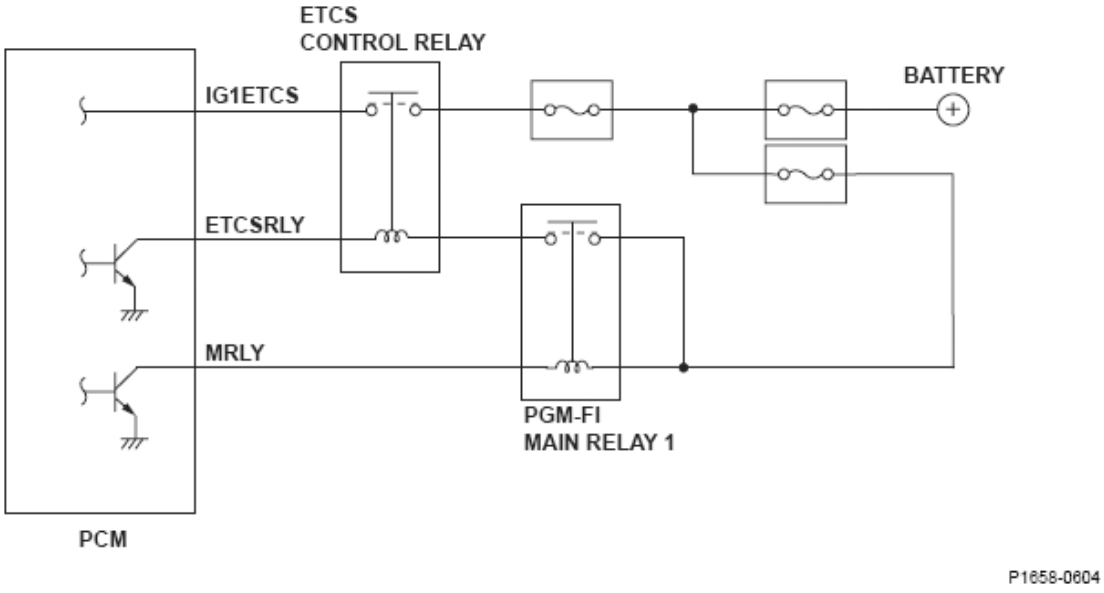


Fig. 149: Measuring Voltage Between PGM-FI Main Relay 1 4P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 66.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

66. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 4 and ECM/PCM

connector terminal A6.

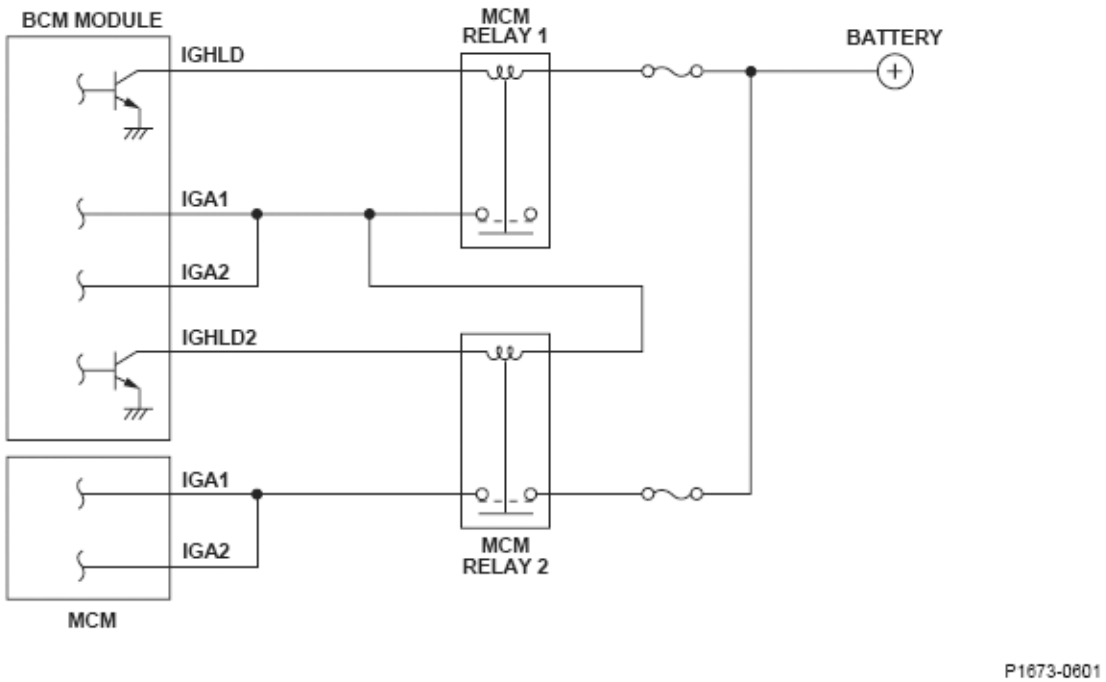


Fig. 150: Checking For Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 4 And ECM/PCM Connector Terminal A6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Test PGM-FI main relay 1 (see **POWER RELAY TEST**). If the relay is OK, update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO - Repair open in the wire between the ECM/PCM (A6) and PGM-FI main relay 1.

67. Turn the ignition switch OFF.
68. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.

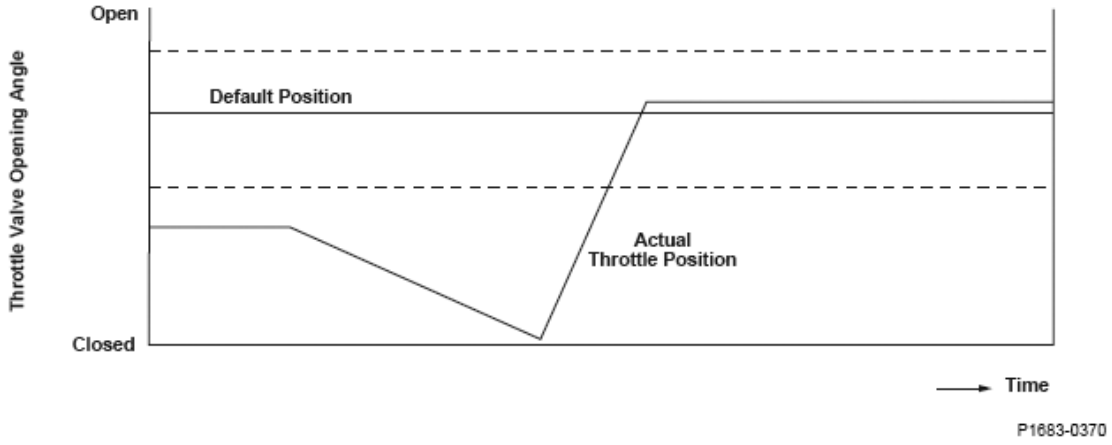


Fig. 151: Identifying PGM-FI Main Relay 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

69. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

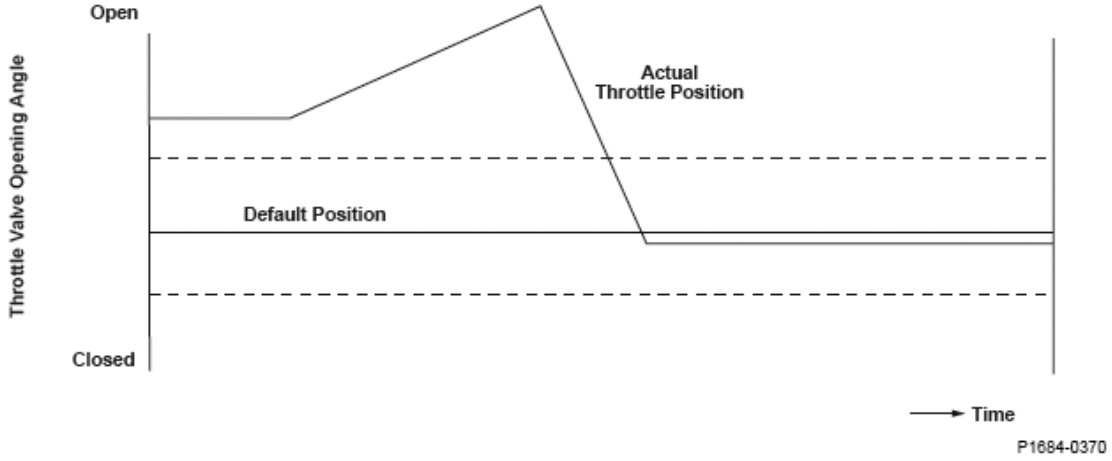


Fig. 152: Measuring Voltage Between PGM-FI Main Relay 1 4P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 68.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

70. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM/PCM connector terminal A8.

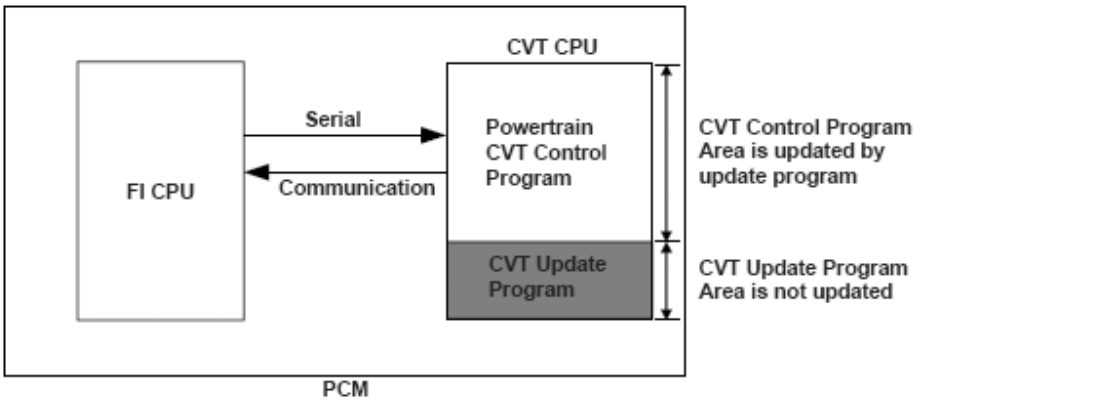


Fig. 153: Checking For Continuity Between PGM-FI Main Relay 1 4P Connector Terminal No. 2 And ECM/PCM Connector Terminal A8
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 71.

NO - Repair open in the wire between the ECM/PCM (A8) and PGM-FI main relay 1.

71. Test PGM-FI main relay 1 (see **POWER RELAY TEST**).

    Is PGM-FI main relay 1 OK?

    YES - Go to step 72.

    NO - Replace PGM-FI main relay 1.

72. Disconnect ECM/PCM connector B (44P).
73. Check for continuity between body ground and ECM/PCM connector terminals B1, B36, C2, C40, and C44 individually.

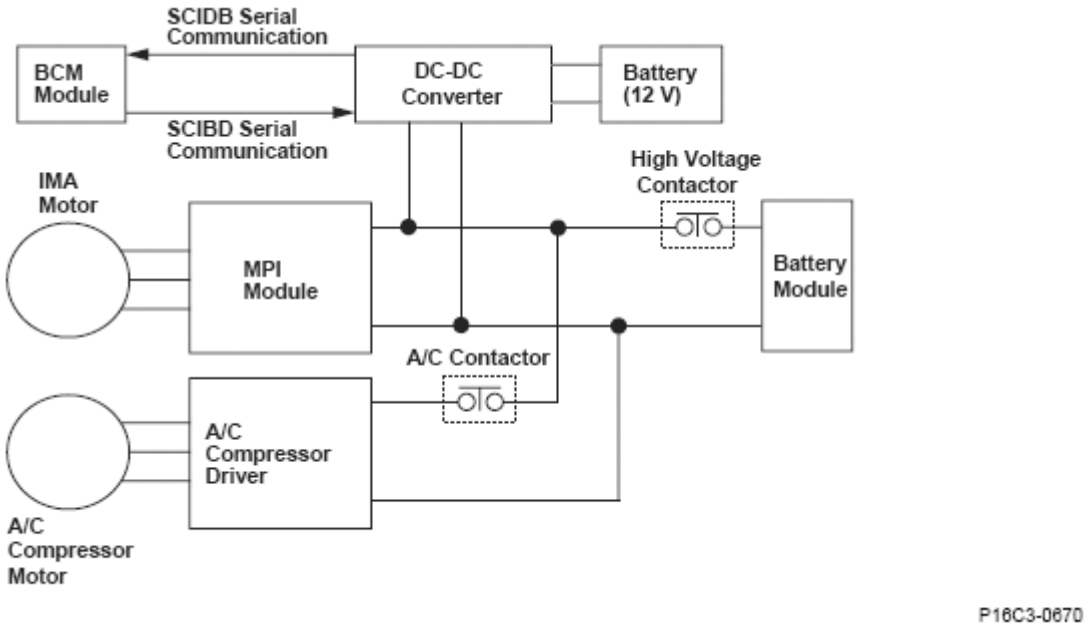


Fig. 154: Checking For Continuity Between Body Ground And ECM/PCM Connector Terminals B1, B36, C2, C40 And C44 Individually
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 74.

NO - Repair open in the wire between the ECM/PCM (B1, B36, C2, C40, C44) and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**).

74. Check for continuity between ECM/PCM connector terminal C13 and body ground.

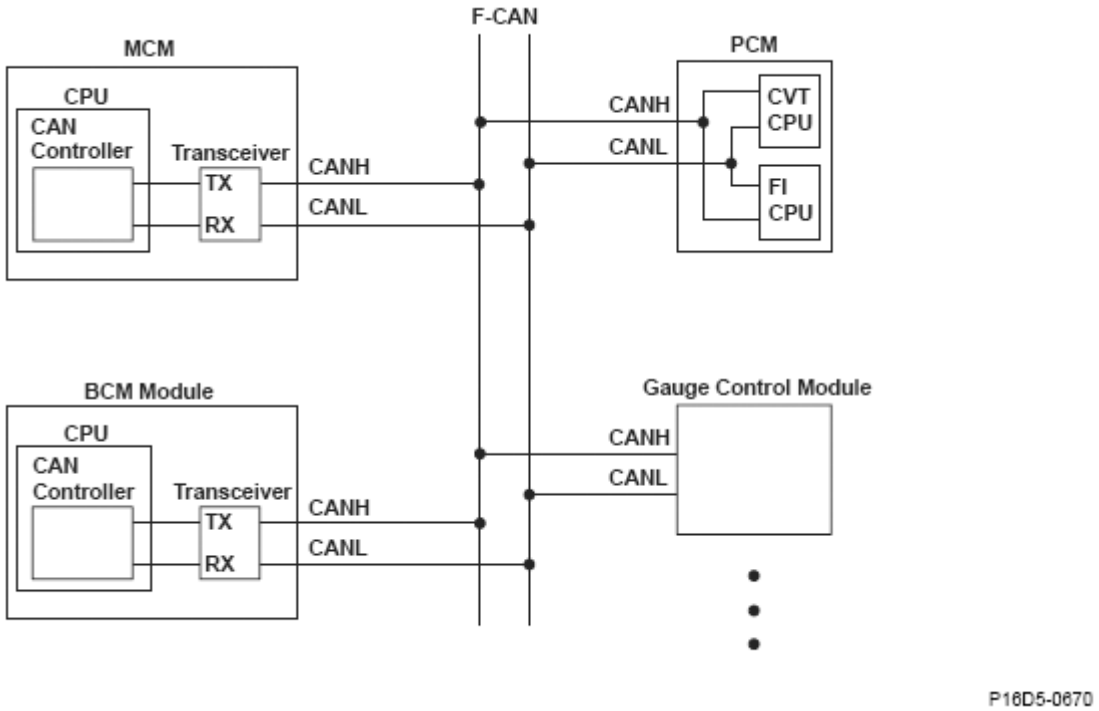


Fig. 155: Checking For Continuity Between ECM/PCM Connector Terminal C13 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 75.

NO - Go to step 76.

75. Continue to check for continuity between ECM/PCM connector terminal C13 and body ground, while disconnecting these parts, one at a time:
    - MAP sensor 3P connector
    - EOP sensor 3P connector ('06 model)
    - Output shaft (countershaft) speed sensor 3P connector

    Does continuity go away when one of the above components is disconnected?

    YES - Replace the part that caused an open when it was disconnected.

    NO - Repair short in the wire between the ECM/PCM (C13) and the MAP sensor, the EOP sensor ('06 model) or the output shaft (countershaft) speed sensor.

76. Check for continuity between ECM/PCM connector terminal B18 and body ground.

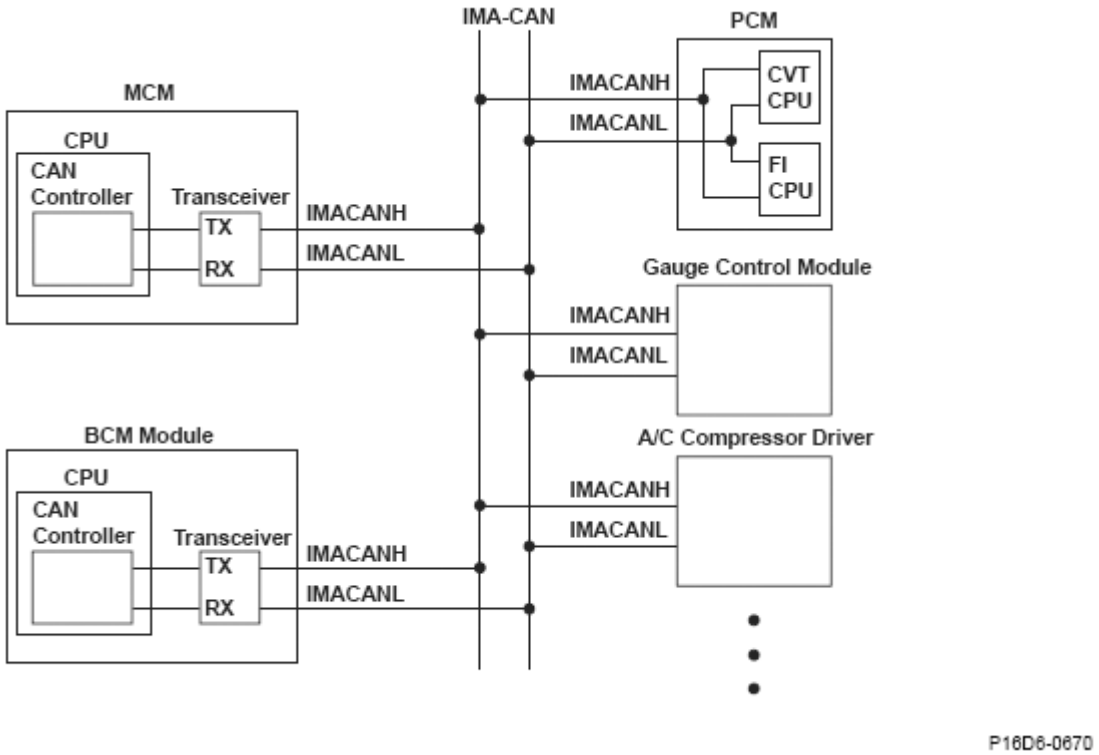


Fig. 156: Checking For Continuity Between ECM/PCM Connector Terminal B18 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 77.

NO - Go to step 78.

77. Continue to check for continuity between ECM/PCM connector terminal B18 and body ground, while disconnecting these parts, one at a time:
    - IMT actuator 5P connector
    - EGR valve 6P connector
    - EOP sensor 3P connector ('07 model)
    - Input shaft (mainshaft) speed sensor 3P connector

    Does continuity go away when one of the above components is disconnected?

    YES - Replace the part that caused an open when it was disconnected.

    NO - Repair short in the wire between the ECM/PCM (B18) and the IMT actuator, the EGR valve, the EOP sensor ('07 model) or the input shaft (mainshaft) speed sensor.

78. Check for continuity between ECM/PCM connector terminal C12 and body ground.

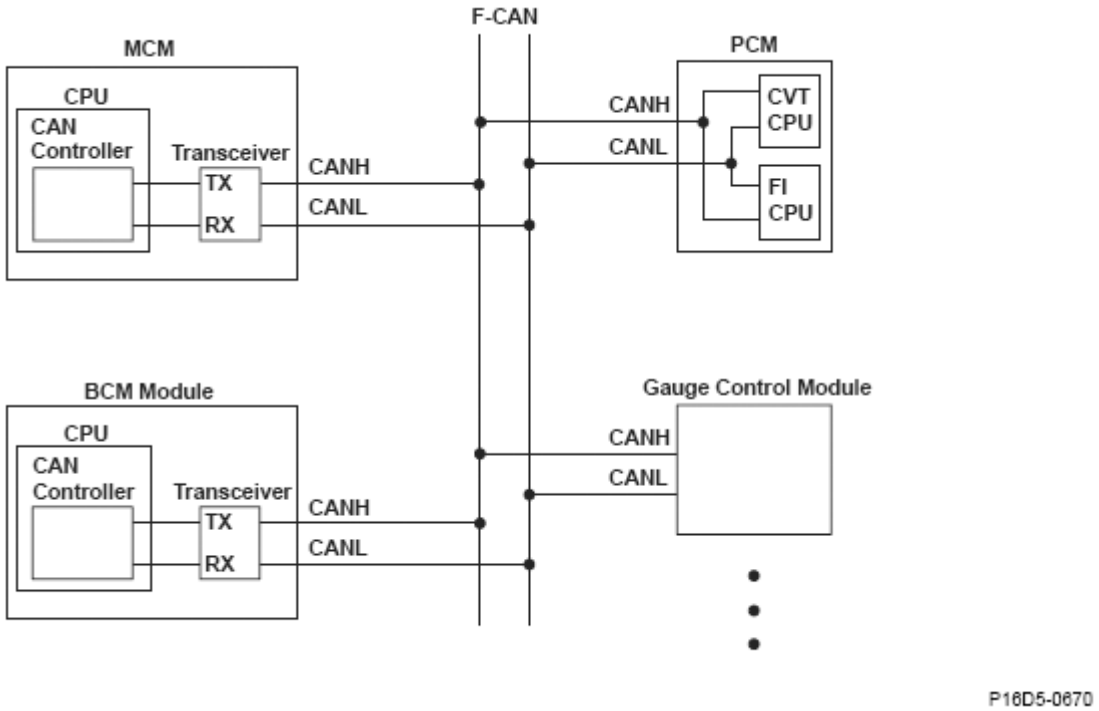


Fig. 157: Checking For Continuity Between ECM/PCM Connector Terminal C12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 79.

NO - Go to step 80.

79. Continue to check for continuity between ECM/PCM connector terminal C12 and body ground, while disconnecting the throttle body 6P connector.

    Is there continuity?

    YES - Repair short in the wire between the ECM/PCM (C12) and the throttle body.

    NO - Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

80. Check for continuity between ECM/PCM connector terminal A25 and body ground.

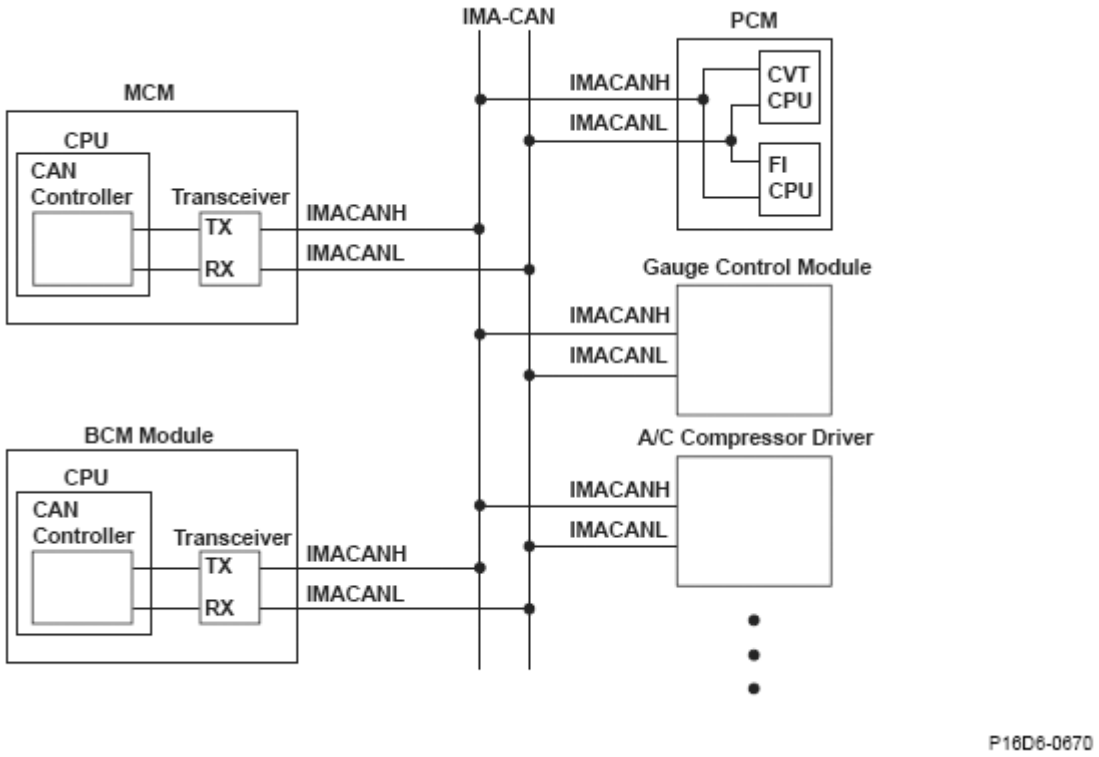


Fig. 158: Checking For Continuity Between ECM/PCM Connector Terminal A25 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 81.

NO - Go to step 82.

81. Continue to check for continuity between ECM/PCM connector terminal A25 and body ground, while disconnecting the APP sensor 6P connector.

    Is there continuity?

    YES - Repair short in the wire between the ECM/PCM (A25) and APP sensor A.

    NO - Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

82. Check for continuity between ECM/PCM connector terminal A24 and body ground.

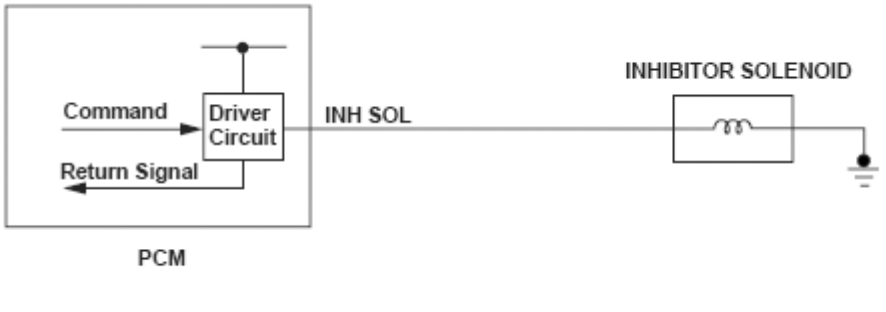


Fig. 159: Checking For Continuity Between ECM/PCM Connector Terminal A24 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 83.

NO - Go to step 84.

83. Continue to check for continuity between ECM/PCM connector terminal A24 and body ground, while disconnecting the APP sensor 6P connector.

    Is there continuity?

    YES - Repair short in the wire between the ECM/PCM (A24) and APP sensor B.

    NO - Replace the accelerator pedal module (see **ACCELERATOR PEDAL MODULE REMOVAL/INSTALLATION**).

84. Check for continuity between ECM/PCM connector terminal A19 and body ground.

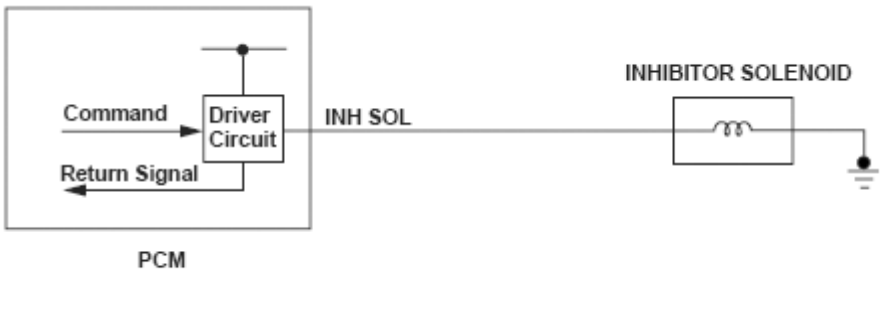


Fig. 160: Checking For Continuity Between ECM/PCM Connector Terminal A19 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 85.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or

substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

85. Continue to check for continuity between ECM/PCM connector terminal A19 and body ground, while disconnecting these parts, one at a time:
    - A/C pressure sensor 3P connector
    - FTP sensor 3P connector

    Did either part cause an open when it was disconnected?

    YES - Replace the part that caused an open when it was disconnected.

    NO - Repair short in the wire between the ECM/PCM (A19) and the A/C pressure sensor or the FTP sensor.

INJECTOR REPLACEMENT

1. Relieve fuel pressure (see **FUEL PRESSURE RELIEVING**).
2. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
3. Remove the fuel line cover (A).

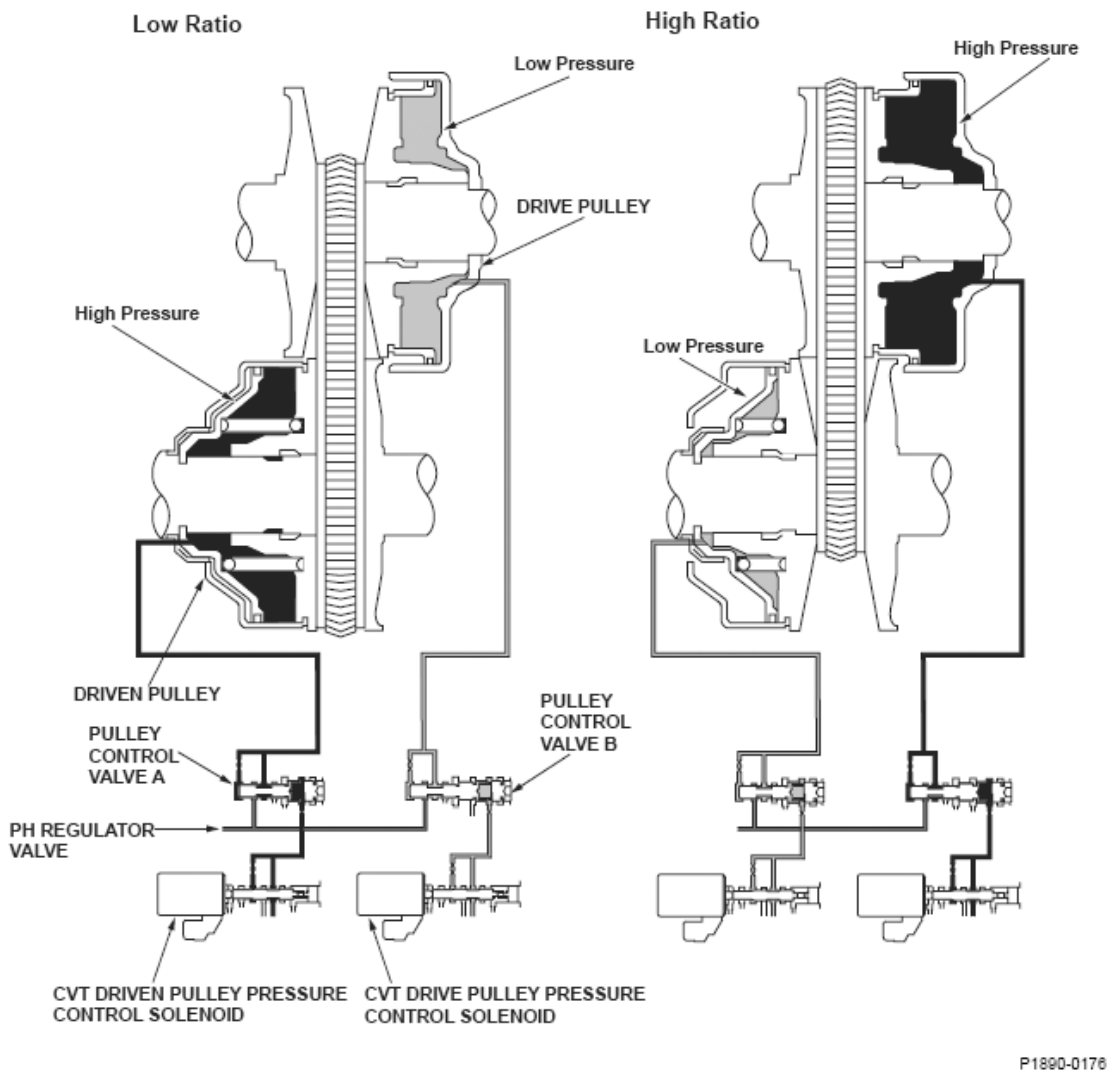


Fig. 161: Removing Fuel Line Cover (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the connectors (B) from the injectors and the rocker arm oil control valve.
5. Disconnect the quick-connect fitting (C).
6. Remove the fuel rail mounting nuts (D) from the fuel rail (E).
7. Remove the injector clip (F) from the injector.
8. Remove the injector from the fuel rail.
9. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

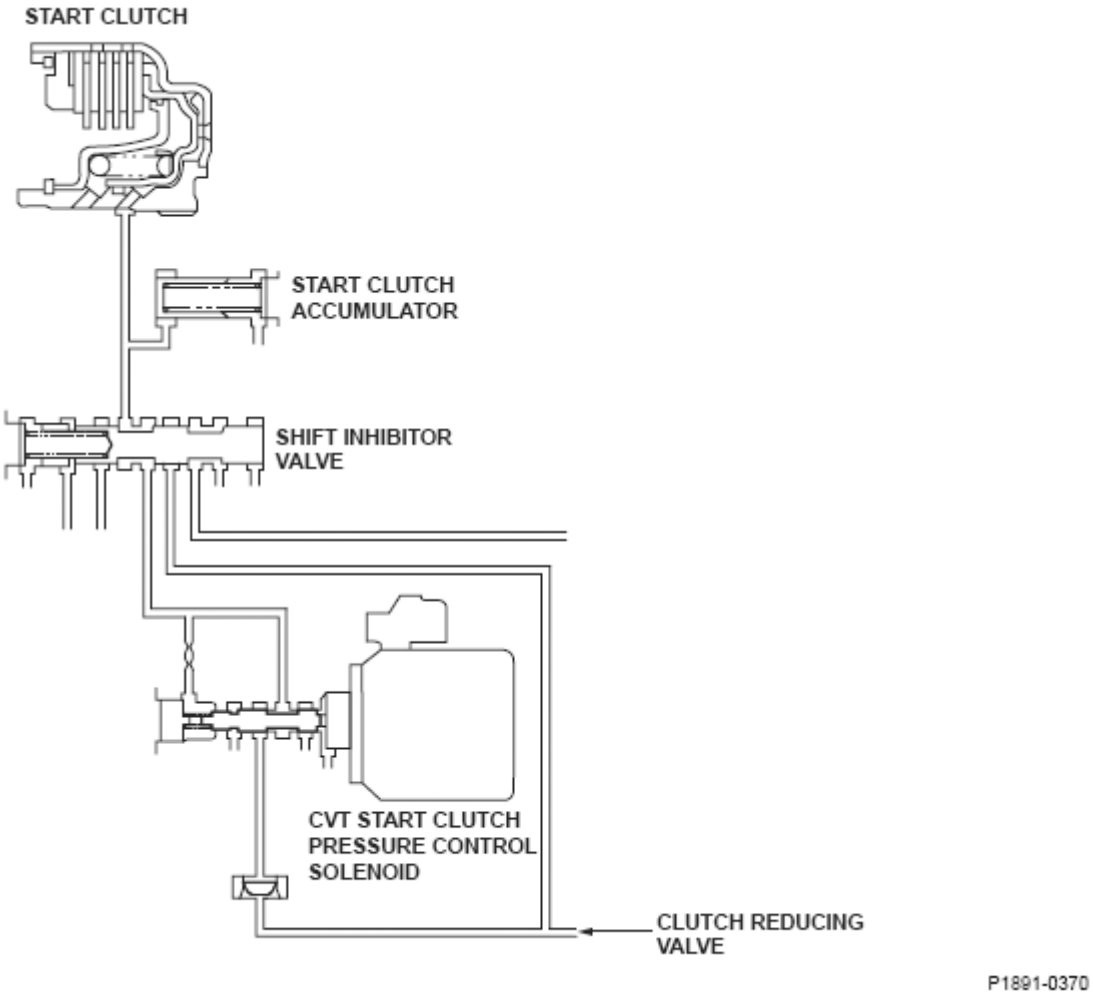


Fig. 162: Inserting Injectors Into Fuel Rail (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the injector clip (D).
11. Coat the injector O-ring (E) with clean engine oil.
12. Install the fuel rail and the injector into the cylinder head (F).
13. Install the fuel rail mounting nuts.
14. Connect the connectors on the injectors.
15. Connect the quick-connect fittings.
16. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail is pressurized. Repeat this two or three times, then check for fuel leakage.
17. Install the fuel line cover.
18. Install the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).

A/F SENSOR REPLACEMENT

Special Tools Required

O2 sensor wrench, Snap-on S6176, or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A), then remove the A/F sensor (B).

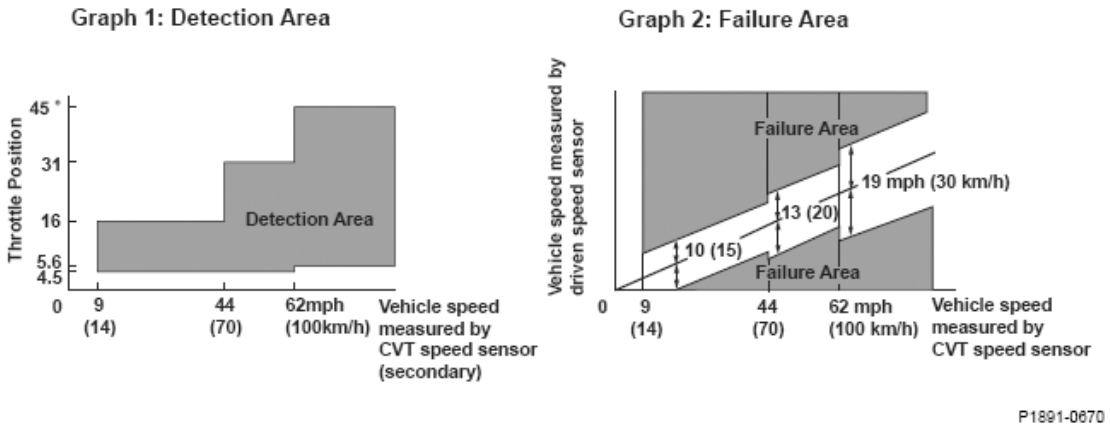


Fig. 163: Removing A/F Sensor (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the parts in the reverse order of removal.

SECONDARY HO2S REPLACEMENT

Special Tools Required

O2 sensor wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).

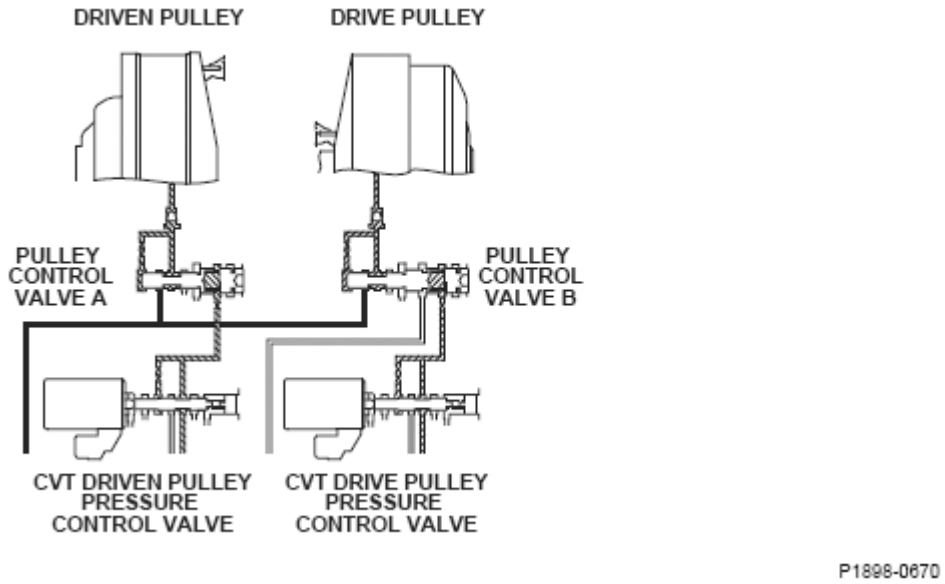


Fig. 164: Removing Secondary HO2S (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the parts in the reverse order of removal.

CKP SENSOR REPLACEMENT

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the CMP sensor connector (A).

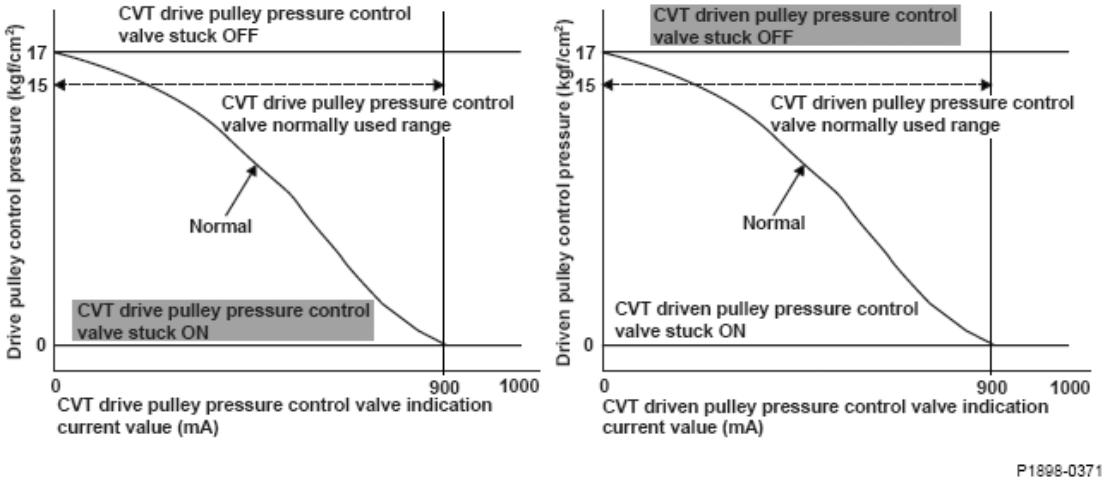


Fig. 165: Disconnecting CMP Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the CMP sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

CMP SENSOR REPLACEMENT

1. Remove the splash shield; 2-door (see **2-DOOR**), 4-door (see **4-DOOR**).
2. Disconnect the CKP sensor connector (A).

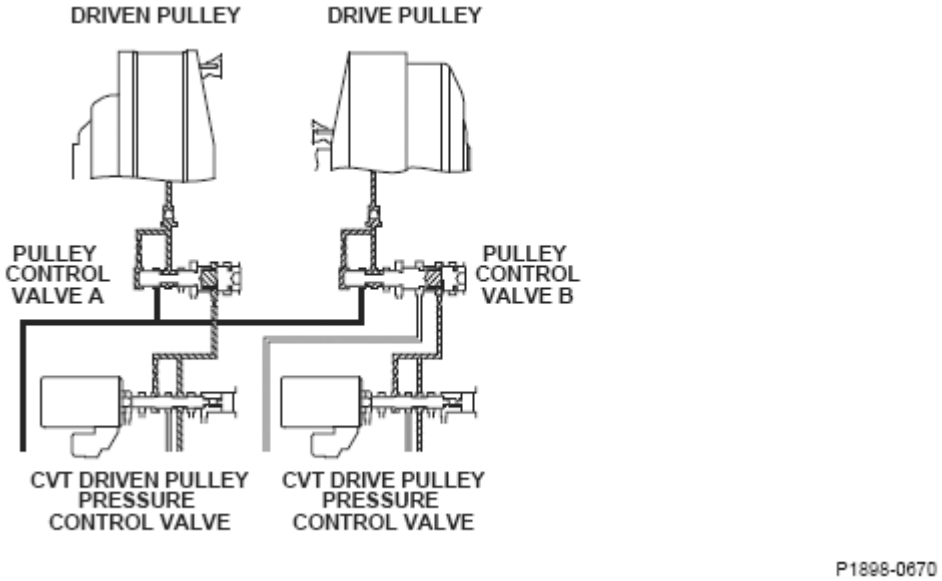


Fig. 166: Disconnecting CKP Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the CKP sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).
5. Do the CKP pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Disconnect the output shaft (countershaft) speed sensor 3P connector (A).

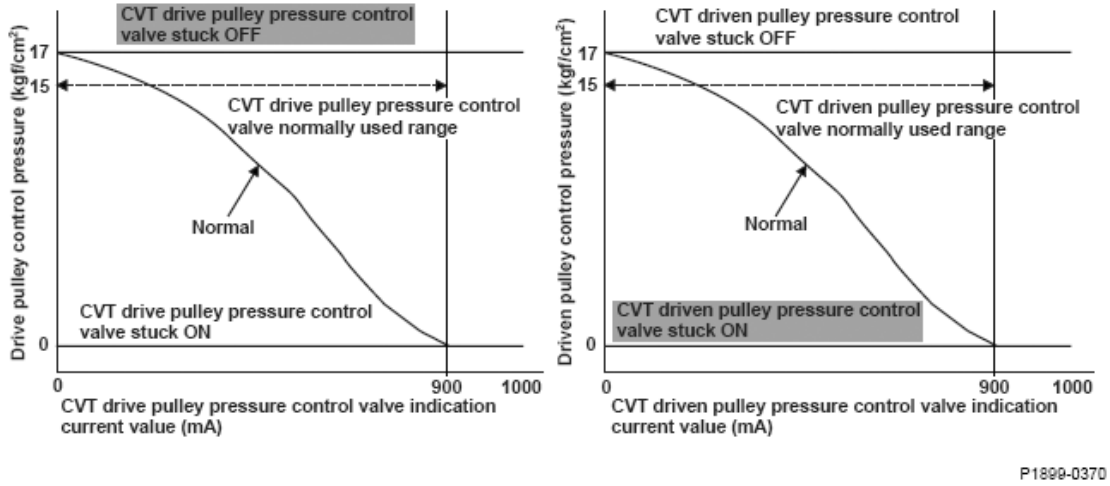


Fig. 167: Disconnecting Output Shaft (Countershaft Speed Sensor 3P Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the output shaft (countershaft) speed sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

KNOCK SENSOR REPLACEMENT

1. Remove the intake manifold (see **REMOVAL**).
2. Disconnect the knock sensor connector (A).

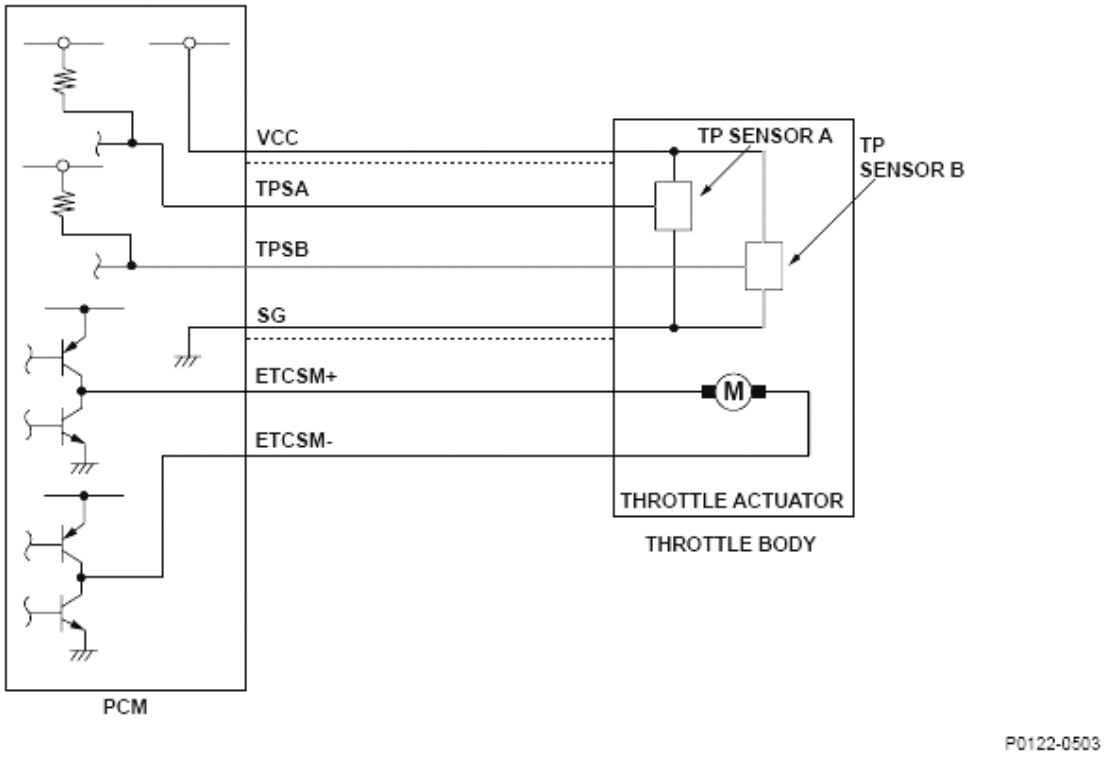


Fig. 168: Disconnecting Knock Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the knock sensor (B).
4. Install the parts in the reverse order of removal.

MAP SENSOR REPLACEMENT

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the MAP sensor connector (A).

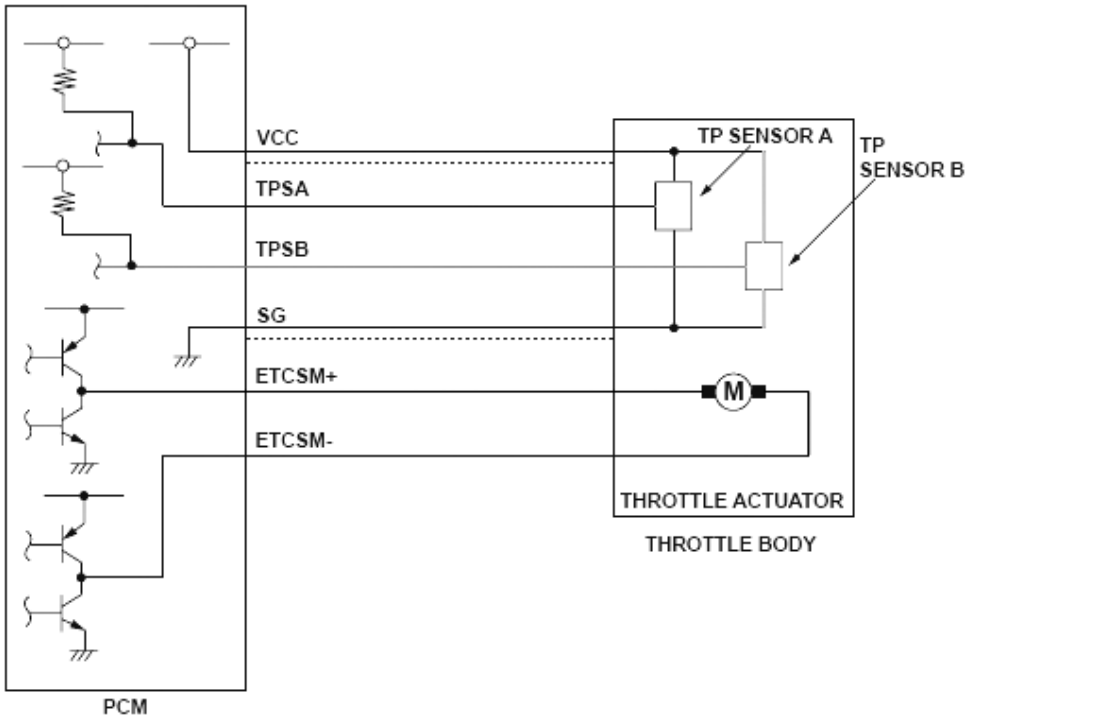


Fig. 169: Disconnecting MAP Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the MAP sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

MAF SENSOR/IAT SENSOR REPLACEMENT

1. Disconnect the MAF sensor/IAT sensor connector (A).

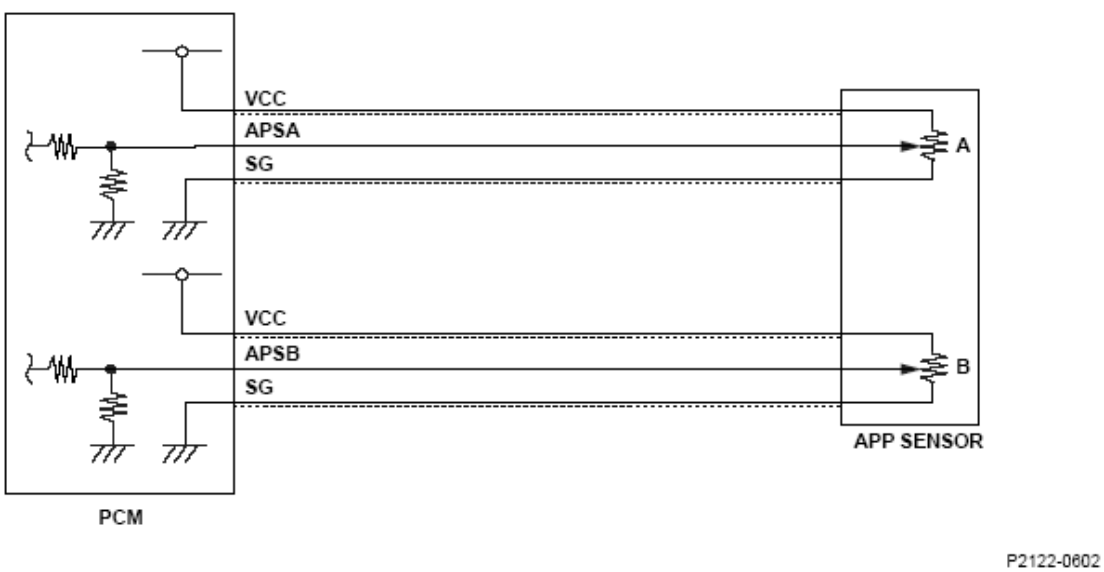


Fig. 170: Disconnecting MAF Sensor/IAT Sensor Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the bolts (B).
3. Remove the MAF sensor/IAT sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

ECT SENSOR 1 REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Disconnect the ECT sensor 1 connector (A).

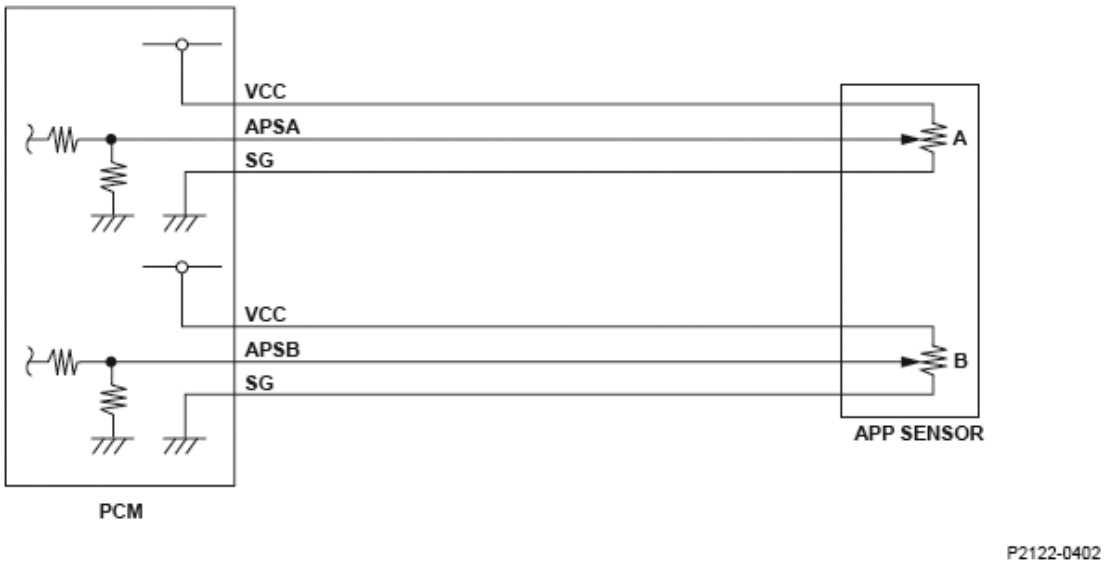


Fig. 171: Disconnecting ECT Sensor 1 Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove ECT sensor 1 (B).
4. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see **COOLANT REPLACEMENT**).

ECT SENSOR 2 REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the splash shield.
3. Disconnect the ECT sensor 2 connector (A).

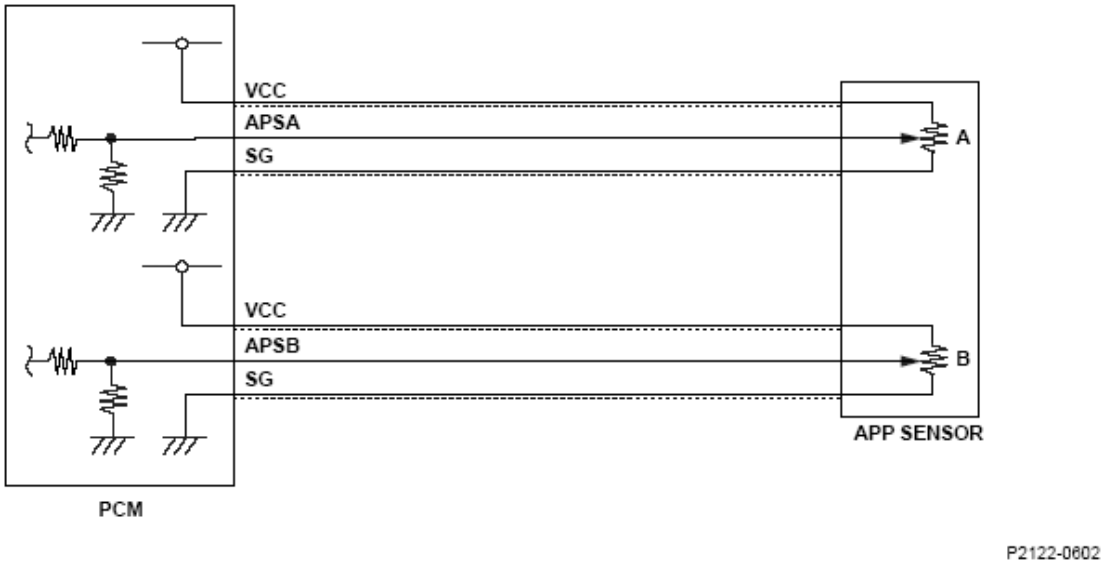


Fig. 172: Disconnecting ECT Sensor 2 Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove ECT sensor 2 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see **COOLANT REPLACEMENT**).
6. Install the splash shield.

ELD REPLACEMENT

1. Remove the ECM/PCM (see **ECM/PCM REPLACEMENT**).
2. Remove the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).
3. Remove the screw (A).

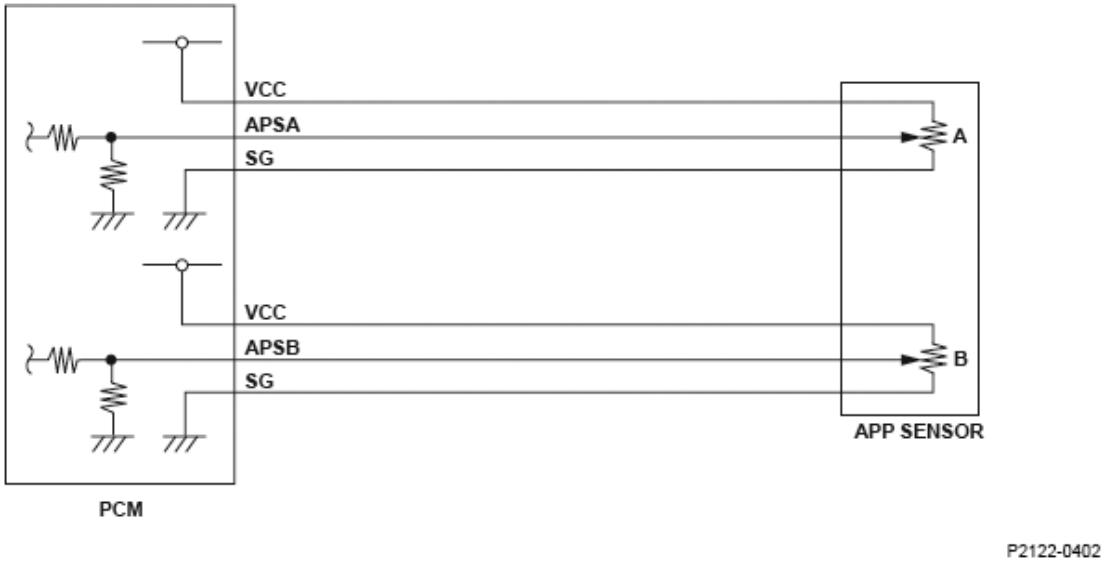


Fig. 173: Removing ELD Screw
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the housing over, then remove the screw (A).

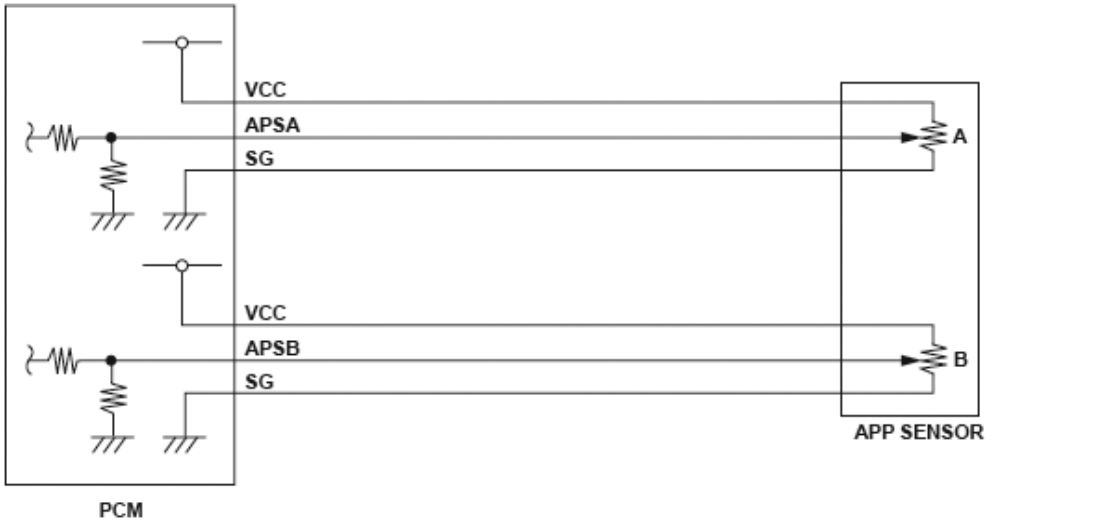


Fig. 174: Removing ELD Screw Turning Housing Over
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Turn the housing over again. Using two flat-tip screwdrivers, release the tabs (A), and pry up the fuse/relay box base (B) from the fuse/relay box housing (C).

NOTE: Make sure the terminals (D) are not bent or damaged.

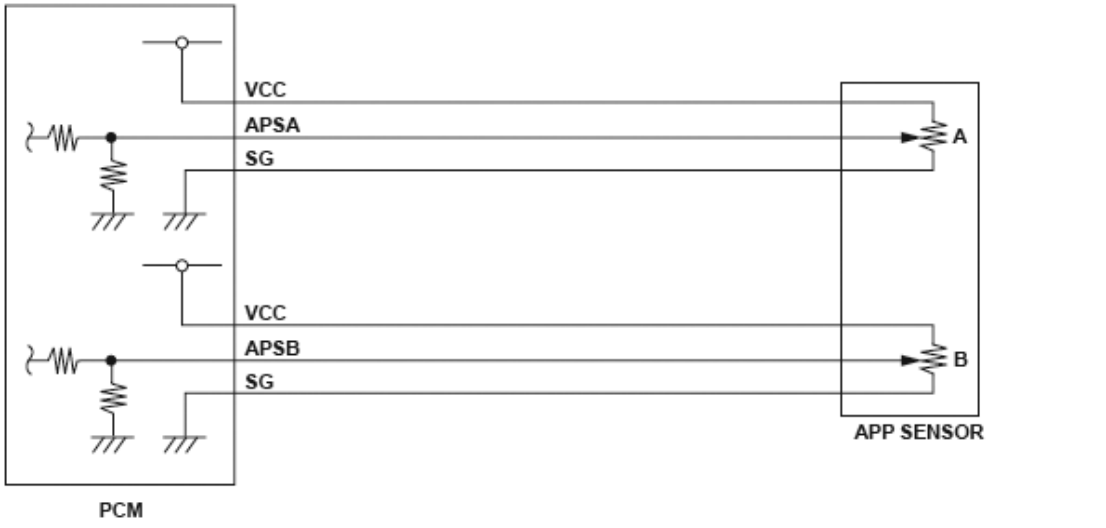


Fig. 175: Prying Fuse/Relay Box Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the ELD (A).

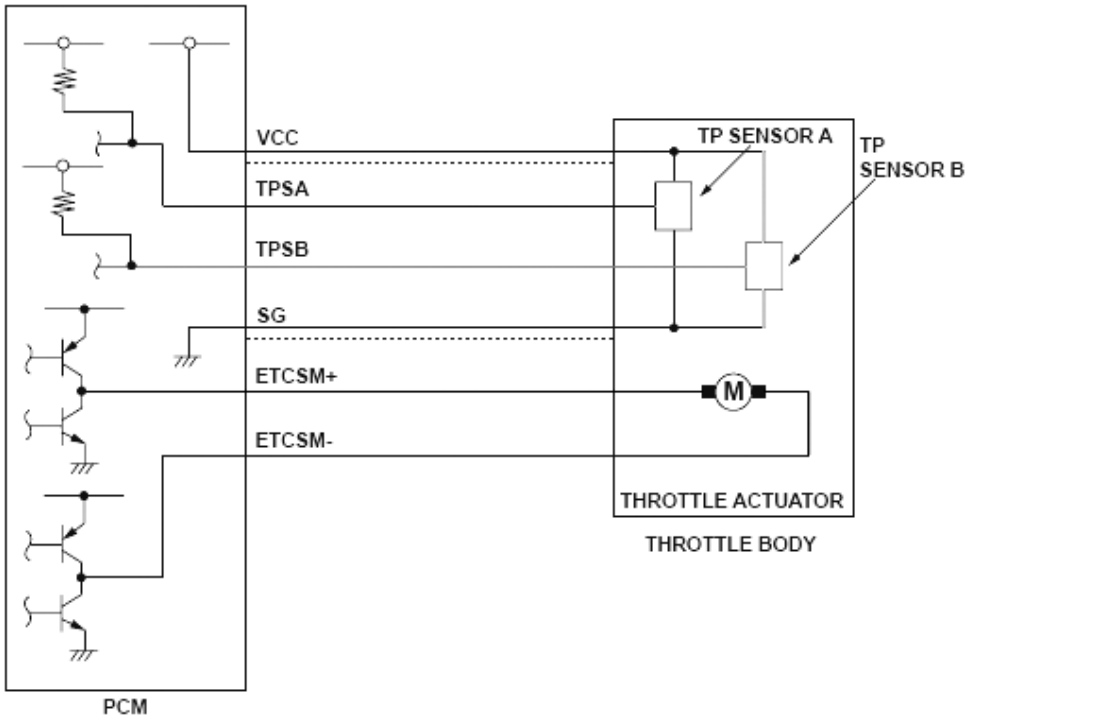


Fig. 176: Removing ELD
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the parts in the reverse order of removal.

ECM/PCM REPLACEMENT

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

  Any one of the above updating tools can be used.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.
2. Turn the ignition switch to ON (II).

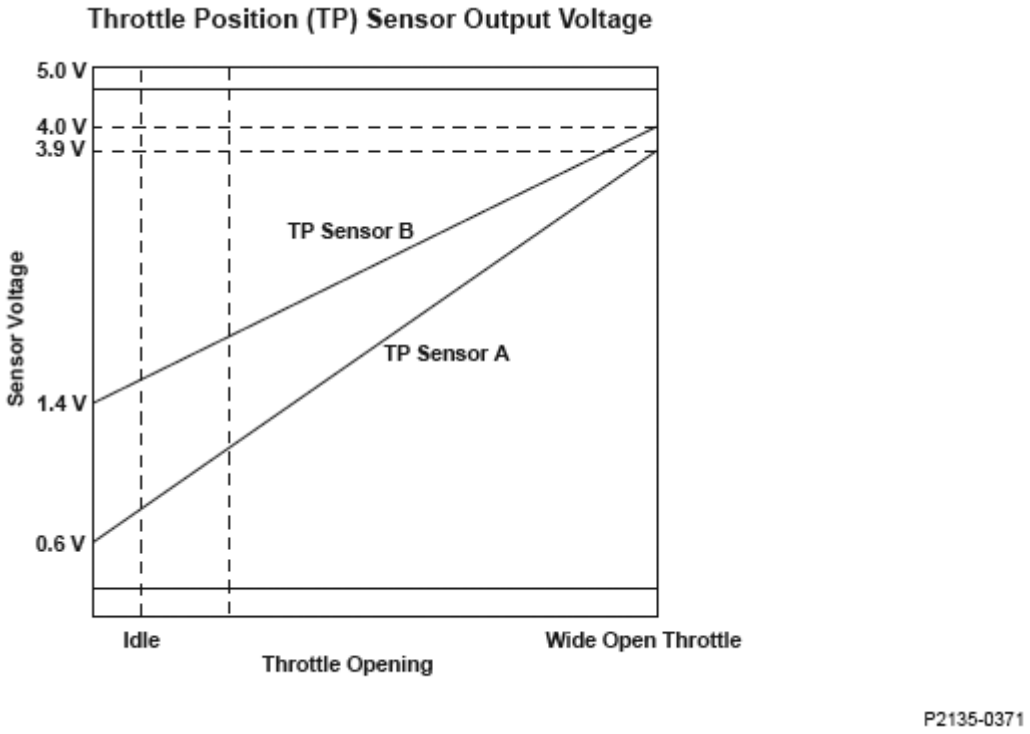


Fig. 177: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting. If you are returning from DLC circuit troubleshooting, skip steps 4 through 9, 20 through 25, and 28 through 30, and do this after replacing the ECM/PCM:
   - Replace the engine oil and the engine oil filter. (See **ENGINE OIL FILTER REPLACEMENT**).
   - Replace the ATF (A/T). (See **ATF REPLACEMENT**).
   - Clean the throttle body. (See **THROTTLE BODY CLEANING**).
4. Select the PGM-FI system with the HDS.
5. Select the INSPECTION MENU with the HDS.
6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: **If the TP POSITION CHECK indicates FAILED, continue with this procedure.**

7. Select the REPLACE ECM/PCM MENU, then select READ DATA, and follow the screen prompts.

NOTE:
- **Doing this step copies (READS) the engine oil life data from the original ECM/PCM so you can later download (WRITES) it into the new ECM/PCM.**
- **If READ DATA indicates FAILED, continue with this procedure.**

8. A/T: Select the A/T system with the HDS.

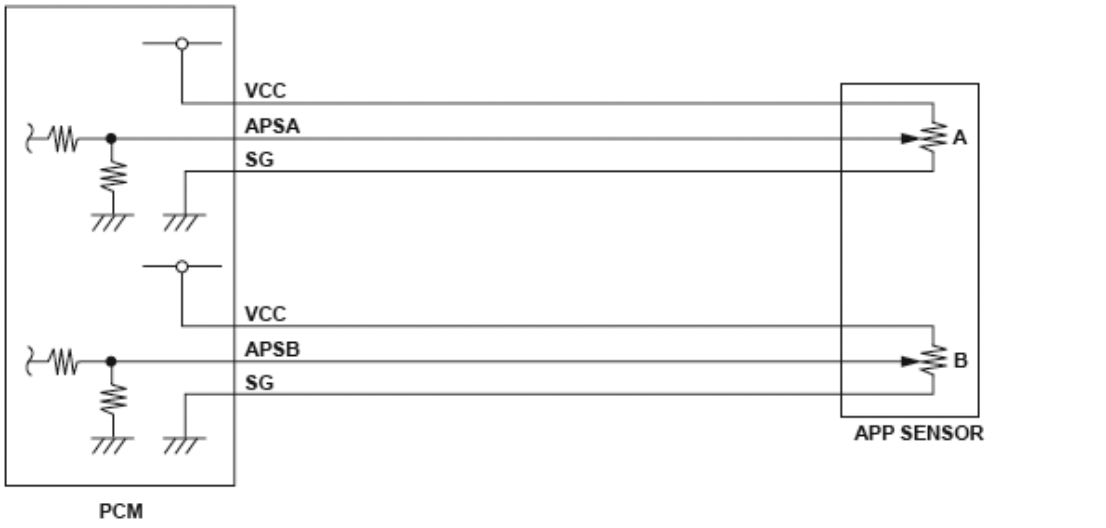


Fig. 178: Removing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. A/T: Select the REPLACE TCM/PCM MENU, then select READ DATA, and follow the screen prompts.
    - Doing this step copies (READS) the ATF life data from the original PCM so you can later download (WRITES) it into the new PCM.
    - If READ DATA indicates FAILED, continue with this procedure.
10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Do the battery removal procedure. (See **BATTERY REMOVAL AND INSTALLATION**).
13. Remove the cover (A).

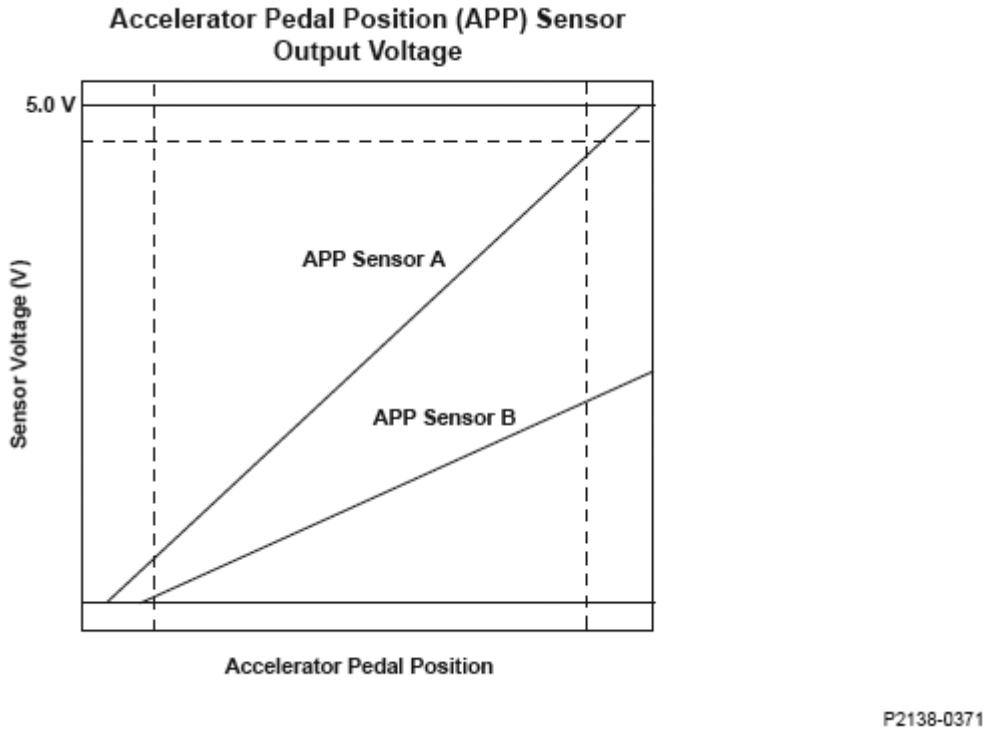


Fig. 179: Removing ECM/PCM (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the bolts (D), then remove the ECM/PCM (E).
15. Disconnect ECM/PCM connectors A, B, and C.

NOTE: ECM/PCM connectors A, B, and C have symbols (A=?, B=? , C=?) embossed on them for identification.

16. Install the ECM/PCM in the reverse order of removal.
17. Do the battery installation procedure.
18. Turn the ignition switch to ON (II).
19. Manually input the VIN to the ECM/PCM with the HDS.

NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.

20. If the READ DATA (engine oil life) failed in step 7, go to step 23 (A/T) or step 26 (M/T). Otherwise, go to step 21.
21. Select the PGM-FI system with the HDS.
22. Select the REPLACE ECM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

23. A/T: If the READ DATA (ATF life) failed in step 9, go to step 26. Otherwise go to step 24.
24. A/T: Select the A/T SYSTEM with the HDS.

25. A/T: Select the REPLACE TCM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

26. Select IMMOBI system with the HDS.
27. Enter the immobilizer ECM/PCM code that you got from the iN, and use the ECM/PCM replacement procedure in the IMMOBI MENU of the HDS; it allows you to start the engine.
28. If the TP POSITION CHECK failed in step 6, clean the throttle body, then go to step 29.
29. If the READ DATA failed in step 7 or the WRITE DATA failed in step 22, replace the engine oil and engine oil filter, then go to step 30 (A/T) or step 31 (M/T).
30. A/T: If the READ DATA failed in step 9 or the WRITE DATA failed in step 25, replace the ATF, then go to step 31.
31. Select PGM-FI system, and reset the ECM/PCM with the HDS.
32. Update the ECM/PCM if it does not have the latest software. (See **ECM/PCM Replacement**).
33. Do the CKP pattern clear/CKP pattern learn procedure. (See **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

2006-08 ENGINE PERFORMANCE

VTEC (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

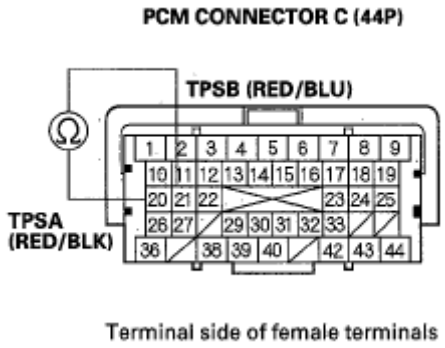


Fig. 1: Locating VTEC Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0522: EOP SENSOR CIRCUIT LOW VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Information marked with an asterisk (*) applies to '07-08 model.**

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.18 V or less?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM.

3. Turn the ignition switch OFF.
4. Disconnect the EOP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.18 V or less?

   YES - Go to step 8.

NO - Go to step 7.

7. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

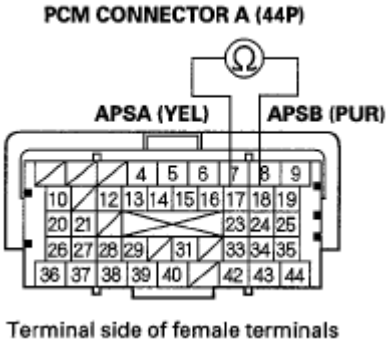


Fig. 2: Measuring Voltage Between EOP Sensor 3P Connector Terminals No. 1 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 16.

NO - Go to step 12.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (44P).
11. Check for continuity between EOP sensor 3P connector terminal No. 2 and body ground.

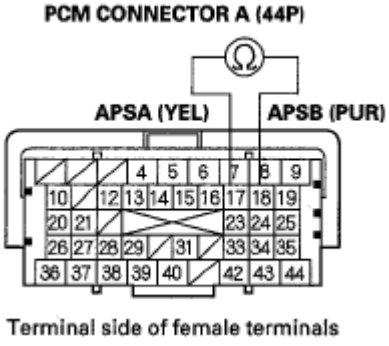


Fig. 3: Checking Continuity Between EOP Sensor 3P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (C22) and the EOP sensor, then go to step 18.

NO - Go to step 24.

12. Turn the ignition switch OFF.

13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (44P) (B (44P))\
15. Check for continuity between ECM/PCM connector terminal C13 (B18)* and EOP sensor 3P connector terminal No. 1.

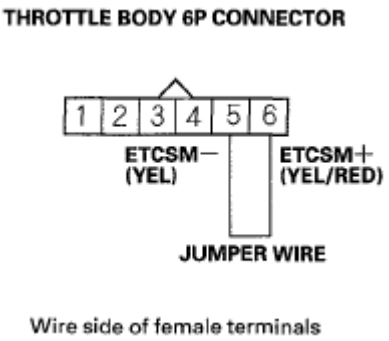


Fig. 4: Checking Continuity Between ECM/PCM Connector Terminal C13 (B18)* And EOP Sensor Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the ECM/PCM (C13) (B18)* and the EOP sensor, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the EOP sensor (see **EOP SENSOR REMOVAL/INSTALLATION**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0522 indicated?

YES - Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM, then go to step 1.

NO - Go to step 23.

23. Monitor the OBD STATUS for DTC P0522 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

24. Reconnect all connectors.
25. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
26. Start the engine, and let it idle.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0552 indicated?

    YES - Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 26. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 28.

28. Monitor the OBD STATUS for DTC P0522 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 26. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0523: EOP SENSOR CIRCUIT HIGH VOLTAGE

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **Information marked with an asterisk (*) applies to '07-08 model.**

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.79 V or more?

   YES - Go to step 3.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM.

3. Turn the ignition switch OFF.

4. Disconnect the EOP sensor 3P connector.
5. Connect EOP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

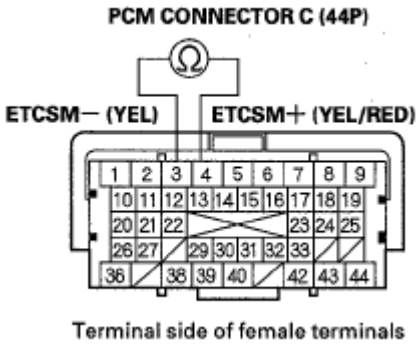


Fig. 5: Connecting EOP Sensor 3P Connector Terminals No. 2 And 3 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch ON (II).
7. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.79 V or more?

   YES - Go to step 8.

   NO - Go to step 18.

8. Remove the jumper wire.
9. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

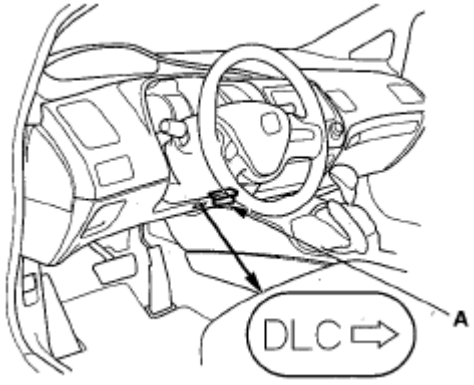


Fig. 6: Checking Voltage Between EOP Sensor 3P Connector Terminals No 1 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 14.

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector C (44P) (B (44P))*.
13. Check for continuity between ECM/PCM connector terminal C14 (B33)* and EOP sensor 3P connector terminal No. 3.

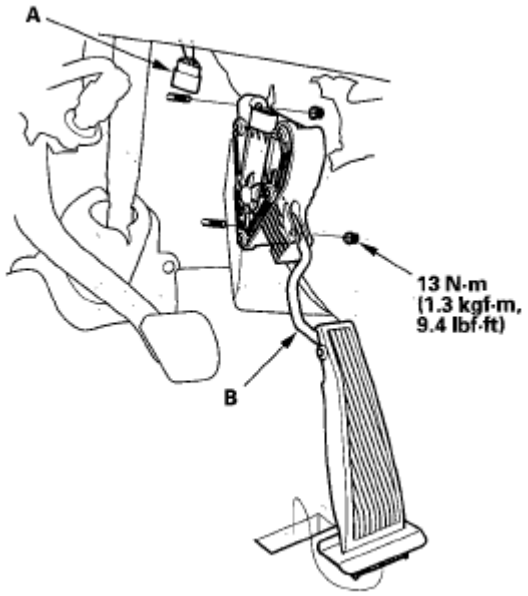


Fig. 7: Checking Continuity Between ECM/PCM Connector Terminal C14 (B33)* And EOP Sensor 3P Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM/PCM (C14) (B33) * and the EOP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C22 and EOP sensor 3P connector terminal No. 2.

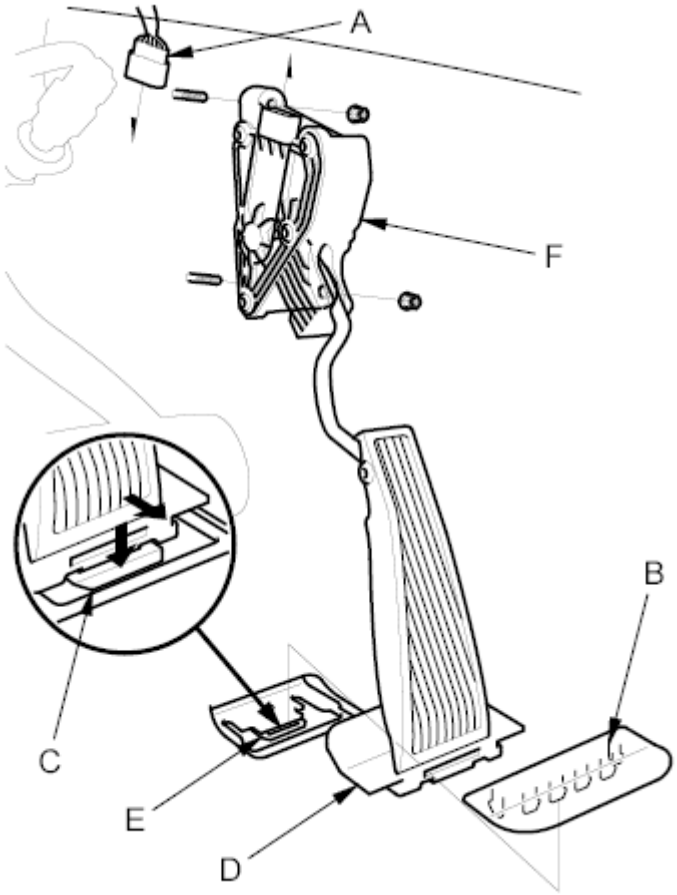


Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal C22 And EOP Sensor 3P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 26.

NO - Repair open in the wire between the ECM/PCM (C22) and the EOP sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the EOP sensor (see **EOP SENSOR REMOVAL/INSTALLATION**).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0523 indicated?

YES - Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM, then go to step 1.

NO - Go to step 25.

25. Monitor the OBD STATUS for DTC P0523 in the DTCs MENU with the HDS.

    Does the screen indicated PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
28. Start the engine, and let it idle.
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0523 indicated?

    YES - Check for poor connections or loose terminals at the EOP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 28. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 30.

30. Monitor the OBD STATUS for DTC P0523 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 28. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2646: VTEC SYSTEM STUCK OFF

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120

- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the engine oil level.

   Is the engine oil level OK?

   YES - Go to step 2.

   NO - Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the rocker arm oil control solenoid, and the ECM/PCM.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Remove the EOP sensor (A), install the special tools as shown, then attach the EOP sensor to the oil pressure gauge adapter (B).

   NOTE: Install the sensor in the reverse order of removal with a new O-ring.

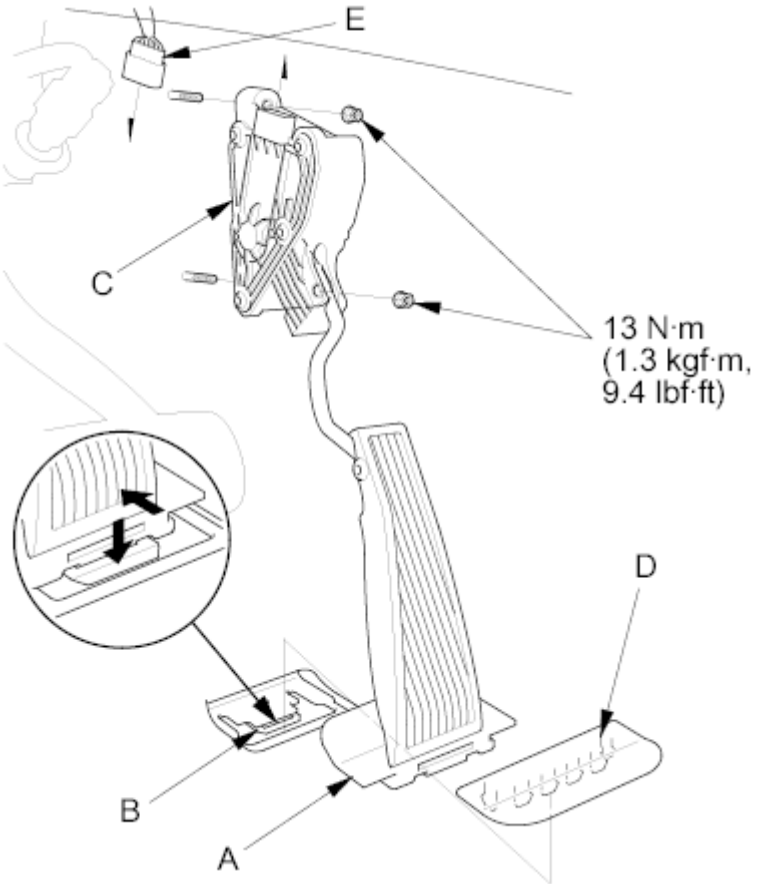


Fig. 9: Attaching EOP Sensor To Oil Pressure Gauge Adapter (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
8. Do the VTEC TEST in the INSPECTION MENU with the HDS.
9. Check the oil pressure.

   Does the oil pressure increase to at least 30 kPa (4.3 psi, 0.3 kgf/cm^2)?

   YES - Replace the EOP sensor (see **EOP SENSOR REMOVAL/INSTALLATION**), then go to step 10.

   NO - Replace the rocker arm oil control valve (see **EOP SENSOR REMOVAL/INSTALLATION**), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 167°F (75°C)

- A/T in D position (M/T in 3rd gear)
- ENGINE SPEED at 1,100-3,300 rpm

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid, the EOP sensor, and the ECM/PCM, then go to step 1.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen Indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid, the EOP sensor, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

DTC P2647: VTEC SYSTEM STUCK ON

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the engine oil level.

   Is the engine oil level OK?

   YES - Go to step 2.

   NO - Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the rocker arm oil control solenoid, and the ECM/PCM.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Remove the EOP sensor (A), install the special tools as shown, then install the EOP sensor in the oil pressure gauge adapter (B).

   NOTE: Install the sensor in the reverse order of removal with a new O-ring.

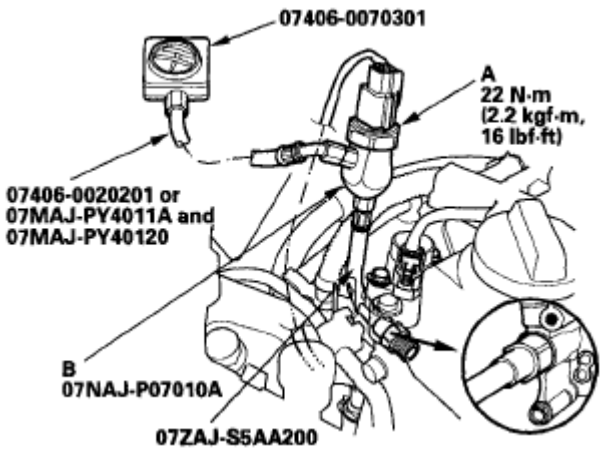


Fig. 10: Installing EOP Sensor In Oil Pressure Gauge Adapter (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
8. Do the VTEC TEST in the INSPECTION MENU with the HDS.
9. Check the oil pressure.

   Does the oil pressure increase to 392 kPa (56.9psi, 4.0 kgf/cm^2)?

   YES - Replace the EOP sensor (see **EOP SENSOR REMOVAL/INSTALLATION**), then go to step 10.

   NO - Replace the rocker arm oil control valve (see **EOP SENSOR REMOVAL/INSTALLATION**), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2647 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid, the EOP sensor, and the ECM/PCM, then go to step 1.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid, the EOP sensor, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid 2P connector.
6. At the solenoid side, measure resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

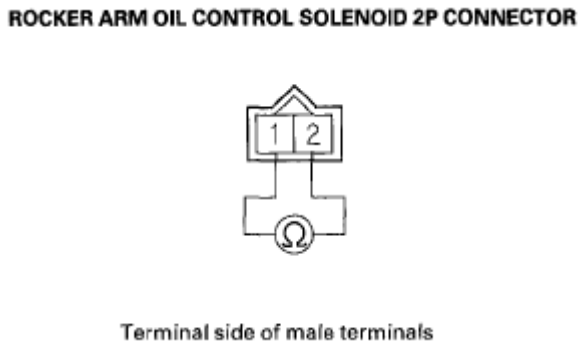


Fig. 11: Measuring Resistance Between Rocker Arm Oil Control Solenoid 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 14- 30 ohms at room temperature?

YES -Go to step 7.

NO -Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (44P).
9. Check for continuity between ECM/PCM connector terminal B34 and body ground.

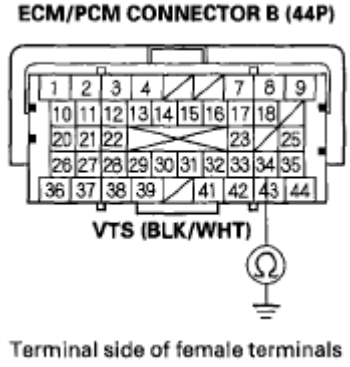


Fig. 12: Checking Continuity Between ECM/PCM Connector Terminal B34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 11.

NO - Go to step 18.

10. Replace the rocker arm oil control valve (see **EOP SENSOR REMOVAL/INSTALLATION**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Do the VTEC TEST in the INSPECTION MENU with the HDS.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2649 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid 2P connector.
7. At the solenoid side, measure resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

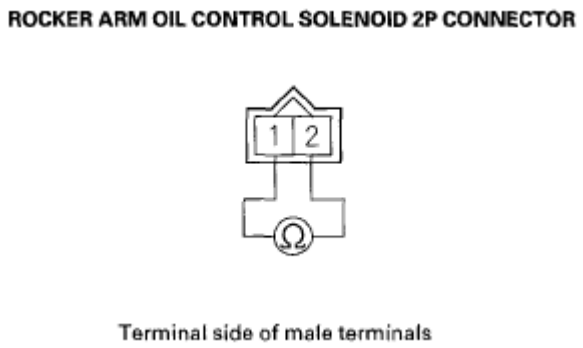


Fig. 13: Measuring Resistance Between Rocker Arm Oil Control Solenoid 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

   Is there 14-30 ohms, at room temperature?

   YES - Go to step 8.

   NO - Go to step 11.

8. Check for continuity between rocker arm oil control solenoid 2P connector terminal No. 2 and body ground.

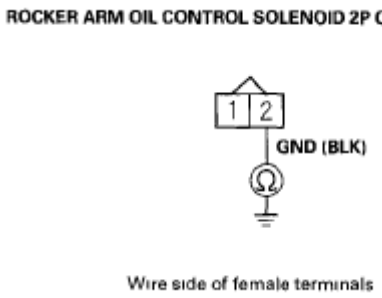


Fig. 14: Checking Continuity Between Rocker Arm Oil Control Solenoid Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the rocker arm oil control solenoid and G101; A/T model (see **CONNECTOR TO HARNESS INDEX**), M/T model (see **CONNECTOR TO HARNESS INDEX**), then go to step 13.

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (44P).
11. Check for continuity between ECM/PCM connector terminal B34 and rocker arm oil control solenoid 2P connector terminal No. 1.

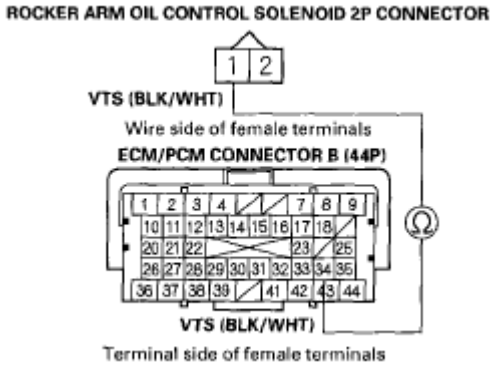


Fig. 15: Checking Continuity Between ECM/PCM Connector And Rocker Arm Oil Control Solenoid 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control valve (see **EOP SENSOR REMOVAL/INSTALLATION**).
13. Reconnect all connectors.

14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

    NO - Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
21. Start the engine, and let it idle.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 21. If the ECM/PCM was substituted, go to step 1.

    NO - Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then go to step 21. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes

on.

ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the rocker arm oil control valve connector (A) and the EOP sensor connector (B).

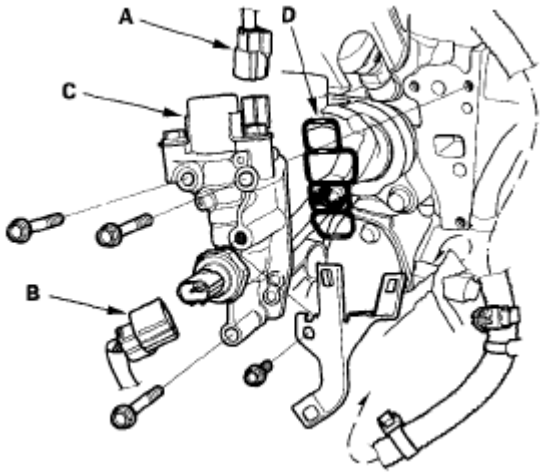


Fig. 16: Disconnecting Rocker Arm Oil Control Valve Connector And EOP Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the rocker arm oil control valve (C).
4. Install the parts in the reverse order of removal with a new rocker arm oil control valve filter (D).

EOP SENSOR REMOVAL/INSTALLATION

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the EOP sensor connector (A).

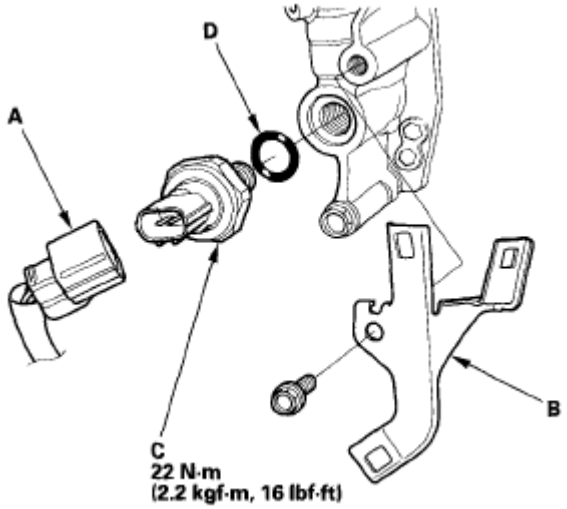


Fig. 17: Disconnecting EOP Sensor Connector (Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bracket (B) and the EOP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

2006-08 ENGINE PERFORMANCE

VTEC/VTC (K20Z3) - Civic (Except GX & Si)

COMPONENT LOCATION INDEX

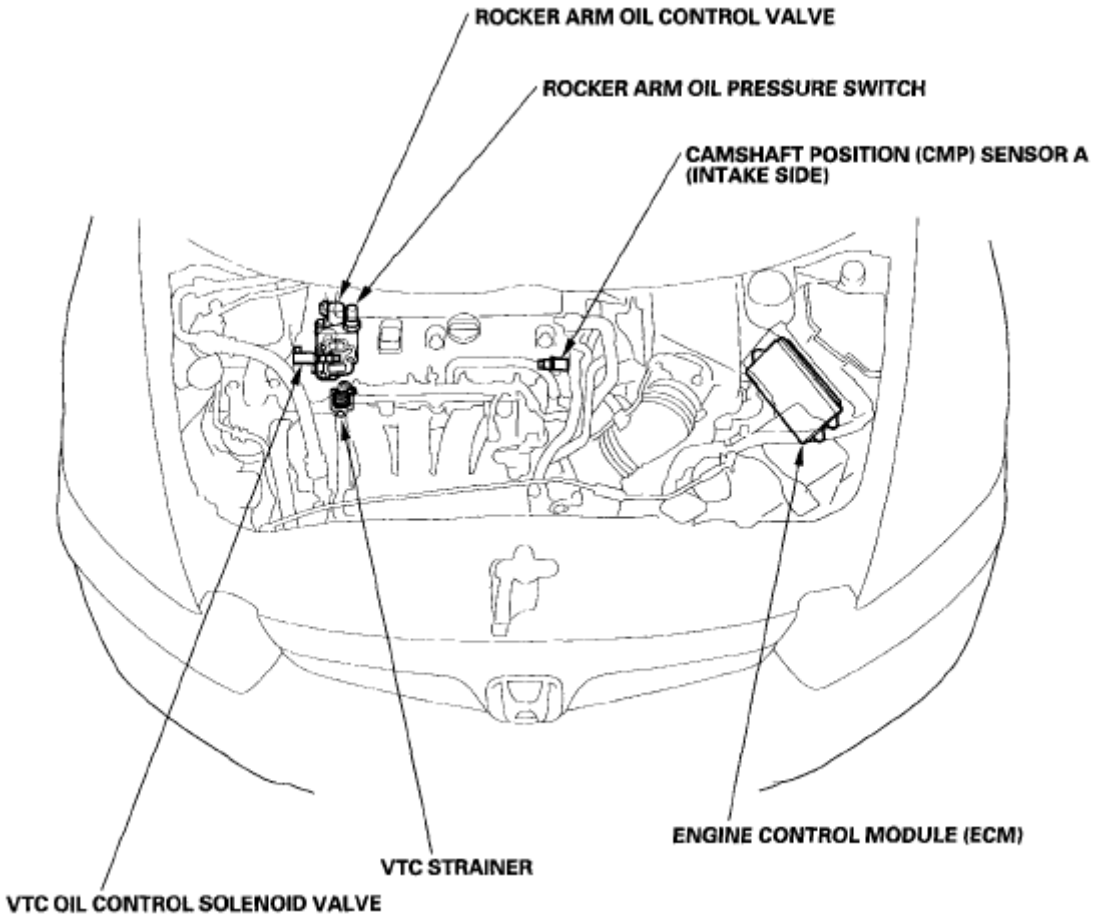


Fig. 1: Identifying VTEC/VTC Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0010: VTC OIL CONTROL SOLENOID VALVE MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Do the VTC TEST in the INSPECTION MENU with the HDS.

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0010 indicated?

   YES - Go to step 6.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM.

6. Turn the ignition switch OFF.
7. Disconnect the VTC oil control solenoid valve 2P connector.
8. At the solenoid valve side, measure resistance between VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2.

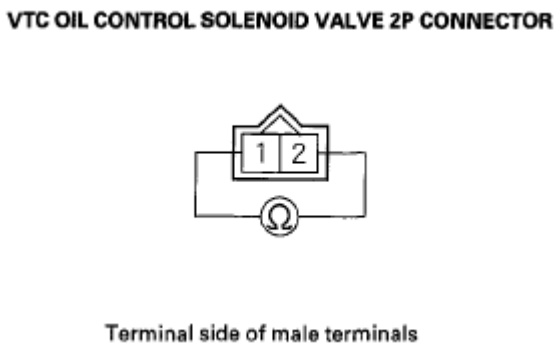


Fig. 2: Measuring Resistance Between VTC Oil Control Solenoid Valve 2P Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 6.75-8.25 ohms at room temperature?

YES - Go to step 9.

NO - Go to step 14.

9. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 1 and body ground.

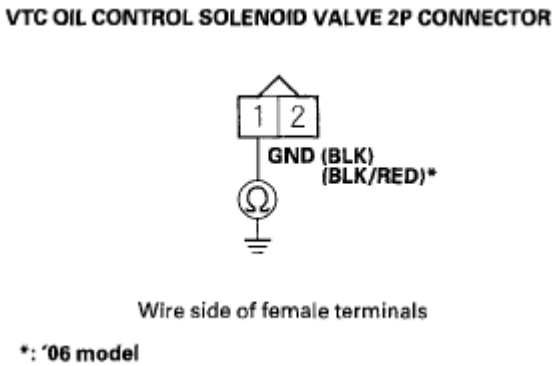


Fig. 3: Checking Continuity Between VTC Oil Control Solenoid Valve 2P Terminal No. 1 And

Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 10.

NO - Repair open in the wire between the VTC oil control solenoid valve and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 15.

10. Jump the SCS line with the HDS.
11. Disconnect ECM connector C (44P).
12. Check for continuity between ECM connector terminal C23 and body ground.

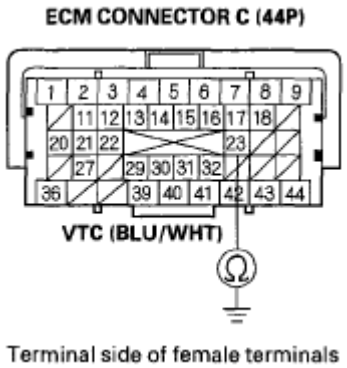


Fig. 4: Checking Continuity Between ECM Connector Terminal C23 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C23) and the VTC oil control solenoid valve, then go to step 15.

NO - Go to step 13.

13. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 2 and ECM connector terminal C23.

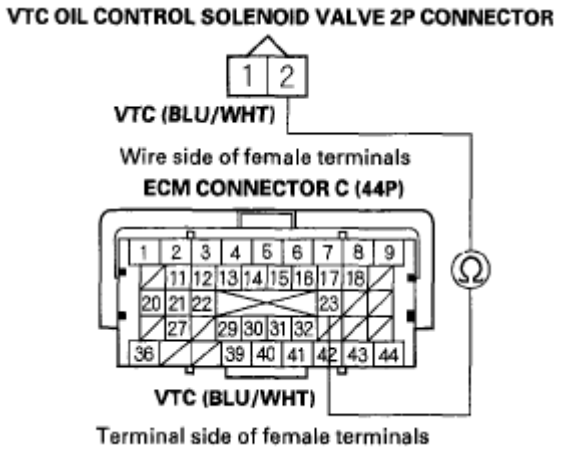


Fig. 5: Checking Continuity Between VTC Oil Control Solenoid Valve 2P Connector Terminal No. 2 And ECM Connector Terminal C23
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the ECM (C23) and the VTC oil control solenoid valve, then go to step 15.

14. Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the ECM with the HDS.
18. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
19. Do the VTC TEST in the INSPECTION MENU with the HDS.
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0010 indicated?

YES - Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1.

NO - Go to step 21.

21. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go

to step 19.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
24. Do the VTC TEST in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0010 indicated?

    YES - Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1.

    NO - Go to step 26.

26. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC P0011: VTC SYSTEM MALFUNCTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Watch the low oil pressure indicator with the engine running.

   Is the low oil pressure indicator on?

   YES - Check the oil pressure (see **OIL PRESSURE SWITCH TEST**), then go to step 15.

   NO - Go to step 5.

5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

YES - Go to step 6.

NO - Go to step 9.

6. Test-drive at a steady speed between 19-38 mph (30-60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES - Go to step 8.

   NO - Go to step 6 and recheck.

8. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

9. Turn the ignition switch OFF.
10. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
11. Remove the VTC strainer (A), and check it for clogging.

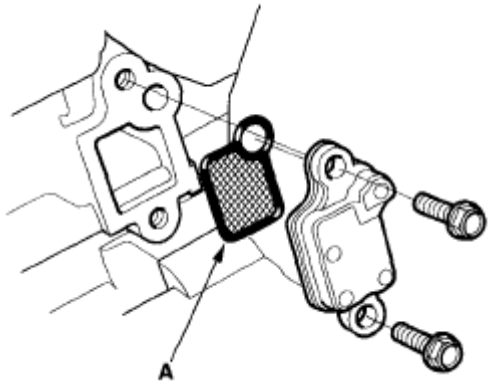


Fig. 6: Removing VTC Strainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the strainer OK?

YES - Go to step 12.

NO - Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 14.

12. Test the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).

Is the VTC oil control solenoid valve OK?

YES - Go to step 13.

NO - Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**), then go to step 14.

13. Inspect the VTC actuator (see **VTC ACTUATOR INSPECTION**).

    Is the VTC actuator OK?

    YES - Check the VTC system oil passages, then go to step 14.

    NO - Replace the VTC actuator (see **VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT**), then go to step 14.

14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
19. Do the VTC TEST in the INSPECTION MENU with the HDS.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0011 indicated?

    YES - Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1.

    NO - Go to step 21.

21. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0340: CMP SENSOR A NO SIGNAL

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0340 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor A and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor A 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor A 3P connector terminal No. 3 and body ground.

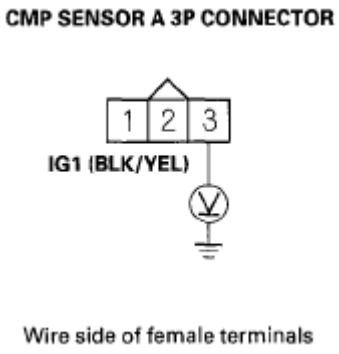


Fig. 7: Measuring Voltage Between CMP Sensor A 3P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between CMP sensor A and the No. 3 ALTERNATOR (10 A) fuse, then go to step 18.

9. Measure voltage between CMP sensor A 3P connector terminal No. 1 and body ground.

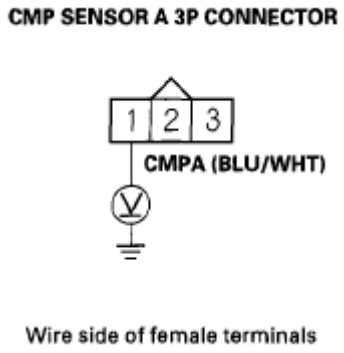


Fig. 8: Measuring Voltage Between CMP Sensor A 3P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 11.

10. Measure voltage between CMP sensor A 3P connector terminals No. 2 and No. 3.

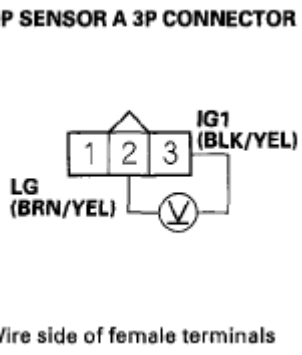


Fig. 9: Measuring Voltage Between CMP Sensor A 3P Connector Terminals No. 2 And No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Go to step 16.

NO - Repair open in the wire between CMP sensor A and G101 (see), then go to step 18.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between ECM connector terminal C41 and body ground.

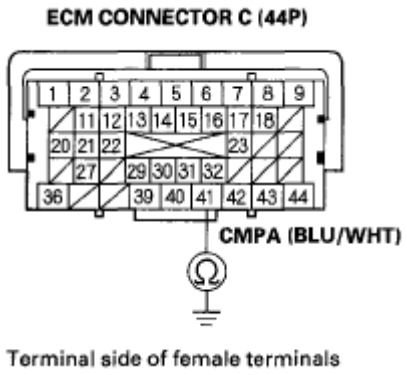


Fig. 10: Checking Continuity Between ECM Connector Terminal C41 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C41) and CMP sensor A, then go to step 18.

NO - Go to step 15.

15. Check for continuity between CMP sensor A 3P connector terminal No. 1 and ECM connector terminal C41.

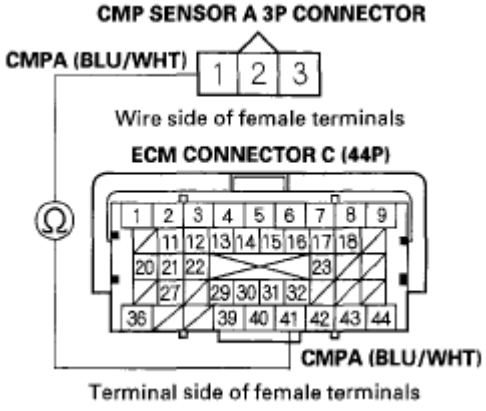


Fig. 11: Checking Continuity Between CMP Sensor A 3P Terminal No. 1 And ECM Terminal C41
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the ECM (C41) and CMP sensor A, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace CMP sensor A (see **CMP SENSOR A REPLACEMENT**).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).

20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES - Check for poor connections or loose terminals at CMP sensor A and the ECM, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES - Check for poor connections or loose terminals at CMP sensor A and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the ECM was substituted, go to step 1.

    NO - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P0341: CMP SENSOR A AND CKP SENSOR INCORRECT PHASE DETECTED

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive at a steady speed between 19-38 mph (30-60 km/h) for 10 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0341 indicated?

    YES - Go to step 9.

    NO - Go to step 5.

5. Do the VTC TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

YES - Go to step 6.

NO - Go to step 9.

6. Test-drive at a steady speed between 19-38 mph (30-60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES - Go to step 8.

   NO - Go to step 6 and recheck.

8. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES - Go to step 9.

   NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

9. Turn the ignition switch OFF.
10. Test the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).

    Is the VTC oil control solenoid valve OK?

    YES - Go to step 11.

    NO - Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**), then go to step 14.

11. Check the camshaft timing (see step 6 in **CAM CHAIN REMOVAL**).

    Is the camshaft timing OK?

    YES - Go to step 12.

    NO - Reset the camshaft timing (see step 6 in **CAM CHAIN REMOVAL**), then go to step 14.

12. Check for damage or stretch at the cam chain (see **CAM CHAIN INSPECTION**).

    Is the cam chain damaged?

    YES - Replace the cam chain and auto-tensioner (see **AUTO-TENSIONER REMOVAL AND INSTALLATION**), then go to step 14.

    NO - Go to step 13.

13. Inspect the VTC actuator (see **VTC ACTUATOR INSPECTION**).

    Is the actuator OK?

    YES - Go to step 14.

    NO - Replace the VTC actuator (see **VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT**), then go to step 14.

14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
18. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
19. Test-drive at a steady speed between 19-38 mph (30-60 km/h) for 10 minutes.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0341 indicated?

    YES - Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1.

    NO - Go to step 21.

21. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0344: CMP SENSOR A CIRCUIT INTERMITTENT INTERRUPTION

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP NOISE A count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES - Go to step 7.

NO - Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
6. Check the CMP NOISE A count in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES - Go to step 7.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor A and the ECM.

7. Check for poor or loose connections and terminals at these locations:
   - CMP sensor A
   - ECM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES - Go to step 8.

   NO - Repair the connectors or terminals, then go to step 11.

8. Check for damage on the CMP sensor A pulser plate (see **CMP PULSE PLATE A REPLACEMENT**),

   Is the pulser plate damaged?

   YES - Replace the CMP sensor A pulser plate (see **CMP PULSE PLATE A REPLACEMENT**), then go to step 11.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Replace CMP sensor A (see **CMP SENSOR A REPLACEMENT**).
11. Turn the ignition switch ON (II).
12. Reset the ECM with the HDS.
13. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0344 indicated?

YES - Check for poor connections or loose terminals at CMP sensor A and the ECM, then go to step 1.

NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P1009: VTC ADVANCE MALFUNCTION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0341 is stored at the same time as DTC P1009, troubleshoot DTC P1009 first, then recheck for DTC P0341.**

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1009 indicated?

YES - Go to step 5.

NO - Intermittent failure, the system is OK at this time.

5. Turn the ignition switch OFF.
6. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
7. Remove the VTC strainer (A), and check it for clogging.

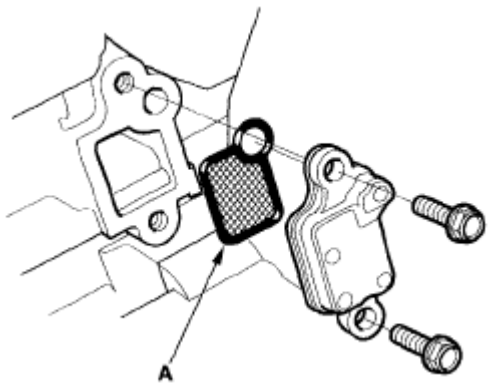


Fig. 12: Removing VTC Strainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is the strainer OK?

YES - Go to step 8.

NO - Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 10.

8. Test the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**).

   Is the valve OK?

   YES - Go to step 9.

   NO - Replace the VTC oil control solenoid valve (see **VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION**), then go to step 10.

9. Inspect the VTC actuator (see **VTC ACTUATOR INSPECTION**).

   Is the actuator OK?

   YES - Check the VTC system oil passages, then go to step 10.

   NO - Replace the VTC actuator (see **VTC ACTUATOR, EXHAUST CAMSHAFT SPROCKET REPLACEMENT**), then go to step 10.

10. Turn the ignition switch ON (II).
11. Reset the ECM with the HDS.
12. Clear the CKP pattern with the HDS.
13. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
14. Do the CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1009 indicated?

    YES - Check the oil passages at the VTC system, then go to step 1.

    NO - Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

DTC P2646: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT LOW VOLTAGE

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information {see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the engine oil level.

   Is the level OK?

   YES - Go to step 2.

   NO - Adjust the engine oil to the proper level, then go to step 21.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM.

   NO - Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil pressure switch 2P connector.
7. Turn the ignition switch ON (II).
8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is SWITCH ON indicated?

   YES - Go to step 16.

   NO - Go to step 9.

9. Turn the ignition switch OFF.
10. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
11. Remove the rocker arm oil pressure switch (A), and install the special tools as shown, then install the rocker arm oil pressure switch in the oil pressure gauge attachment (B).

NOTE: Install the switch in the reverse order of removal with a new O-ring.

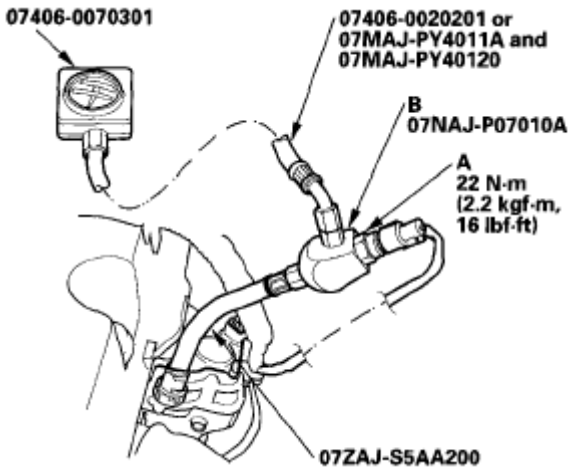


Fig. 13: Removing Rocker Arm Oil Pressure Switch (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Reconnect the rocker arm oil pressure switch 2P connector.
13. Start the engine.
14. Do the VTEC TEST in the INSPECTION MENU with the HDS.
15. Check the oil pressure.

    Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm^2 , 56.9psi)?

    YES - Replace the rocker arm oil pressure switch (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**), then go to step 20.

    NO - Inspect the VTEC system. If it is OK, replace the rocker arm oil control valve (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**), then go to step 20.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector C (44P).
19. Check for continuity between ECM connector terminal C22 and body ground.

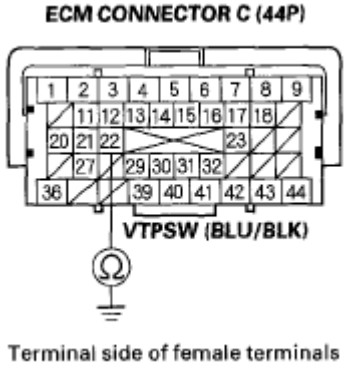


Fig. 14: Checking Continuity Between ECM Connector Terminal C22 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (C22) and the rocker arm oil pressure switch, then go to step 19.

NO - Go to step 27.

20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the ECM with the HDS.
23. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
24. Do the VTEC TEST in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES - Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid and the ECM, then go step 1.

NO - Go to step 25.

26. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 24.

27. Reconnect all connectors.
28. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
29. Do the VTEC TEST in the INSPECTION MENU with the HDS.
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES - Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 29. If the ECM was substituted, go to step 1.

NO - Go to step 30.

31. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 29. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 29.

DTC P2647: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Check the engine oil level.

   Is the level OK?

   YES - Go to step 2.

   NO - Adjust the engine oil to the proper level, then go to step 17.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM.

   NO - Go to step 5.

5. Check the result of step 4.
   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

   Is the test result any of above?

   YES - Go to step 6.

   NO - Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control valve (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**), then, go to step 15.

6. Turn the ignition switch OFF.

7. Disconnect the rocker arm oil pressure switch 2P connector.
8. At the rocker arm oil pressure switch side, check for continuity between rocker arm oil pressure switch 2P connector terminals No. 1 and No. 2.

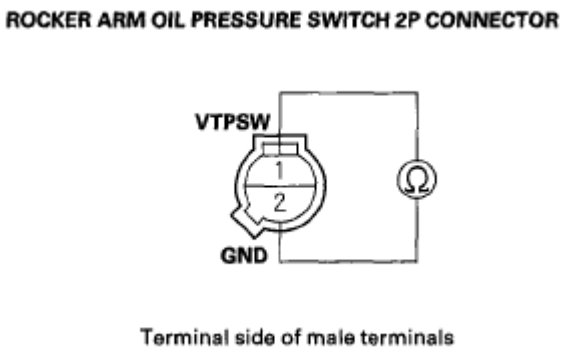


Fig. 15: Checking Continuity Between Rocker Arm Oil Pressure Switch 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 9.

NO - Replace the rocker arm oil pressure switch (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**), then go to step 16.

9. Turn the ignition switch ON (II).
10. Measure voltage between rocker arm oil pressure switch 2P connector terminal No. 1 and body ground.

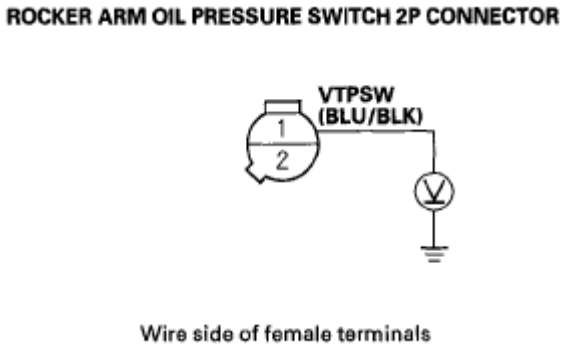


Fig. 16: Measuring Voltage Between Rocker Arm Oil Pressure Switch 2P Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES - Repair open in the wire between the rocker arm oil pressure switch and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 15.

NO - Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect ECM connector C (44P).
14. Check for continuity between rocker arm oil pressure switch 2P connector terminal No. 1 and ECM connector terminal C22.

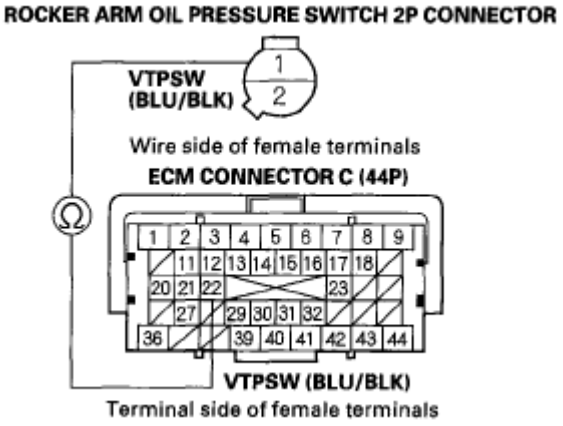


Fig. 17: Checking Continuity Between Rocker Arm Oil Pressure Switch 2P Terminal No. 1 And ECM Terminal C22
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 22.

NO - Repair open in the wire between the ECM (C22) and the rocker arm oil pressure switch, then go to step 22.

15. Turn the ignition switch OFF.
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Reset the ECM with the HDS.
19. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES - Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid and the ECM, then go to step 1.

NO - Go to step 21.

21. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
24. Start the engine, and let it idle.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2647 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1.

    NO - Go to step 26.

26. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 24. If the ECM was substituted, go to step 1. If the screen indicates (MOT COMPLETED, keep idling until a result comes on.

DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM.

   NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid 2P connector.
6. At the solenoid side, measure resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

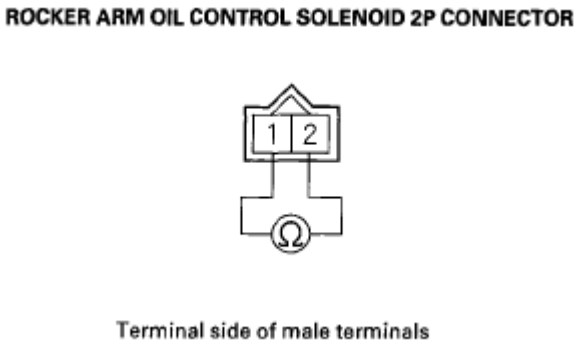


Fig. 18: Measuring Resistance Between Rocker Arm Oil Control Solenoid 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 14-30 ohms, at room temperature?

YES - Go to step 7.

NO - Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect ECM connector B (44P).
9. Check for continuity between ECM connector terminal B34 and body ground.

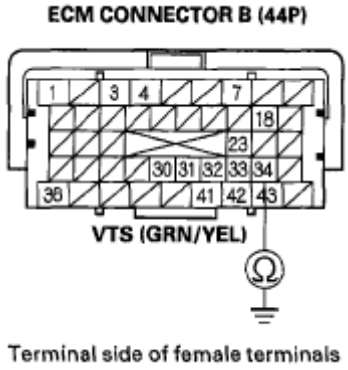


Fig. 19: Checking Continuity Between ECM Connector Terminal B34 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM (B34) and the rocker arm oil control solenoid, then go to step 11.

NO - Go to step 18.

10. Replace the rocker arm oil control valve (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM, then go to step 1.

    NO - Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
20. Do the VTEC TEST in the INSPECTION MENU with the HDS.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1.

    NO - Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 20. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2649 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid 2P connector.
7. At the solenoid side, measure resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

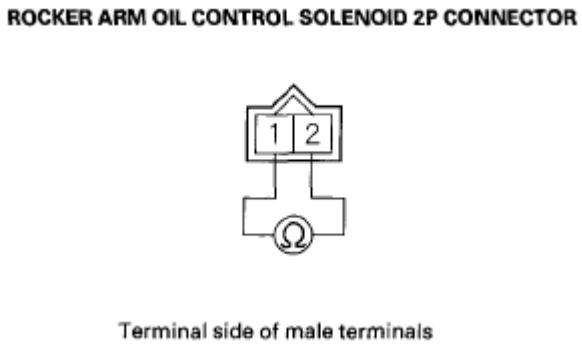


Fig. 20: Measuring Resistance Between Rocker Arm Oil Control Solenoid 2P Connector Terminals No. 1 And No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 14-30 ohms at room temperature?

YES - Go to step 8.

NO - Go to step 12.

8. Check for continuity between rocker arm oil control solenoid 2P connector terminal No. 1 and body ground.

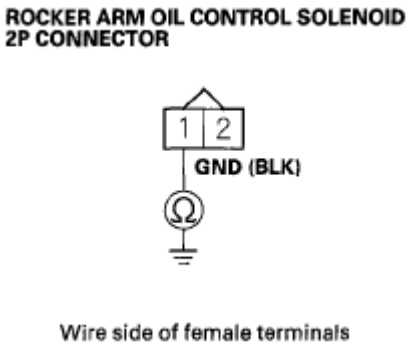


Fig. 21: Checking Continuity Between Rocker Arm Oil Control Solenoid 2P Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the rocker arm oil control solenoid and G101 (see **CONNECTOR TO HARNESS INDEX**), then go to step 13.

9. Jump the SCS line with the HDS.
10. Disconnect ECM connector B (44P).
11. Check for continuity between ECM connector terminal B34 and rocker arm oil control solenoid 2P connector terminal No. 2.

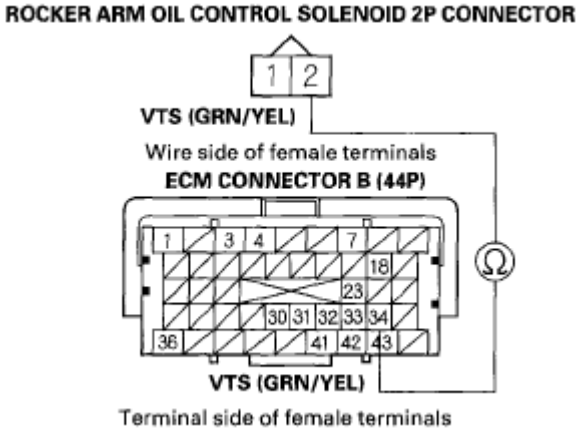


Fig. 22: Checking Continuity Between ECM Terminal B34 And Rocker Arm Oil Control Solenoid 2P Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the ECM (B34) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control valve (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM with the HDS.
16. Do the ECM idle learn procedure (see **ECM IDLE LEARN PROCEDURE**).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM, then go to step 1.

    NO - Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTCs troubleshooting.

    NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**).
21. Start the engine, and let it idle.
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES - Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 21. If the ECM was substituted, go to step 1.

    NO - Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES - If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see **ECM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated

in step 22, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM. If the ECM was updated, substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then go to step 21. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

VTC OIL CONTROL SOLENOID VALVE REMOVAL/TEST/INSTALLATION

1. Disconnect the VTC oil control solenoid valve 2P connector.
2. Remove the ground wire (A).

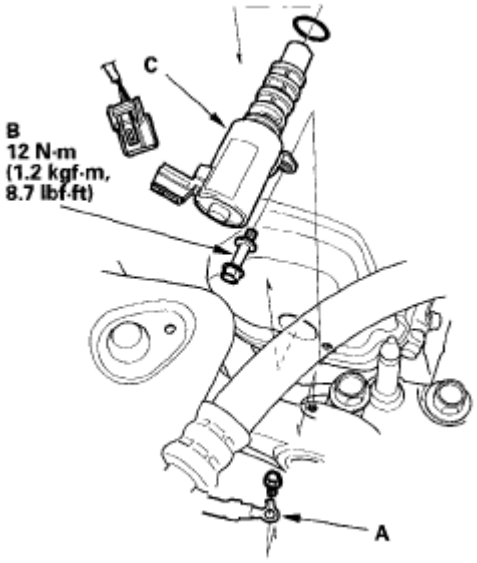


Fig. 23: Removing Ground Wire (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolt (B) and the VTC oil control solenoid valve (C).
4. Check the VTC oil control solenoid valve strainer for clogging. If the strainer is clogged, replace the VTC oil control solenoid valve.
5. Note the amount of valve opening by observing the position of the piston shoulder (A) through the valve retard drain port. If you see the shoulder of the piston, the valve is open and must be replaced.

Closed

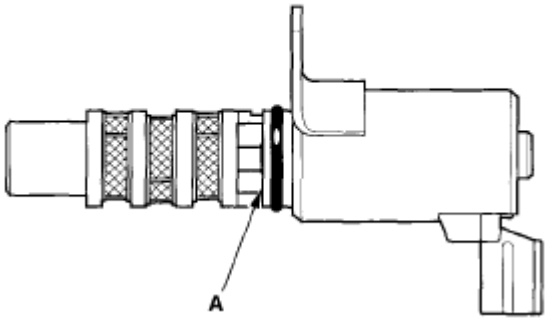


Fig. 24: Observing Position Of Piston Shoulder Through Valve Retard Drain Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

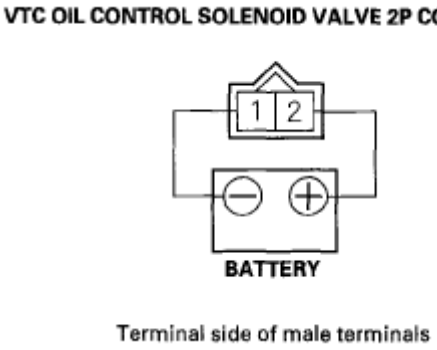


Fig. 25: Connecting Battery Positive Terminal To VTC Oil Control Solenoid Valve 2P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1. Appearance of inner valve (A) in the port should be at least 1/16 in. (1.2 mm). If the inner valve does not open, replace it; then go to step 7.

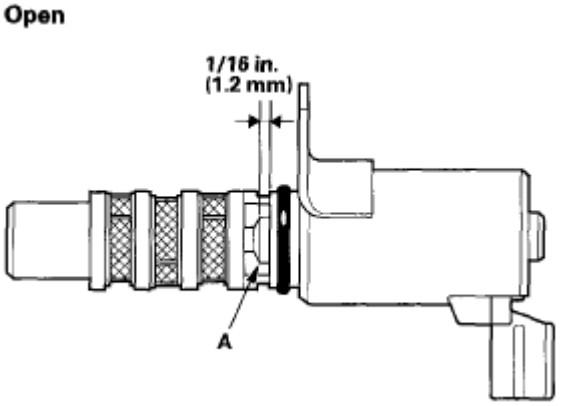


Fig. 26: Connecting Battery Negative Terminal To VTC Oil Control Solenoid Valve 2P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the VTC valve O-ring (A).

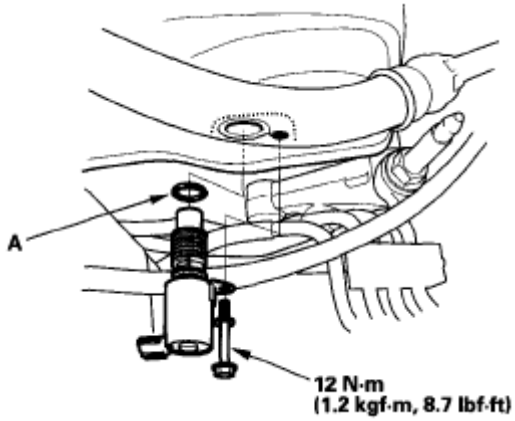


Fig. 27: Removing VTC Valve O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Coat a new O-ring (A) with engine oil, then install it on the valve.
10. Clean and dry the mating surface of the valve.
11. Install the valve.

NOTE: Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.

CMP SENSOR A REPLACEMENT

1. Remove the air cleaner (see **AIR CLEANER REMOVAL/INSTALLATION**).
2. Disconnect the CMP sensor A 3P connector (A).

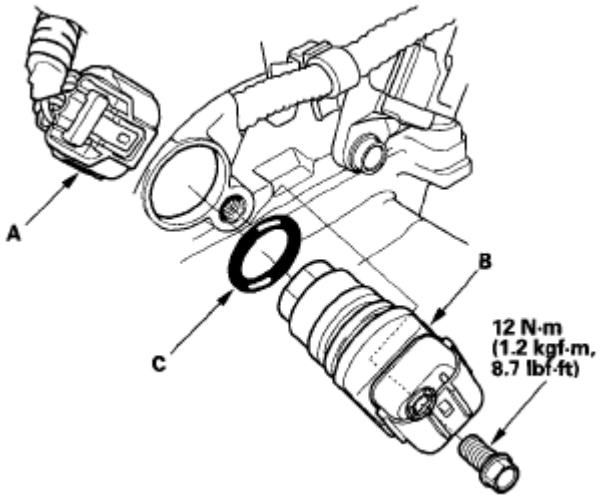


Fig. 28: Disconnecting CMP Sensor A 3P Connector (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove CMP sensor A (B) from the intake camshaft side of the cylinder head.
4. Install the parts in the reverse order of removal with a new O-ring (C).

ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION

1. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
2. Disconnect the rocker arm oil control valve connector (A) and the rocker arm oil pressure switch connector (B).

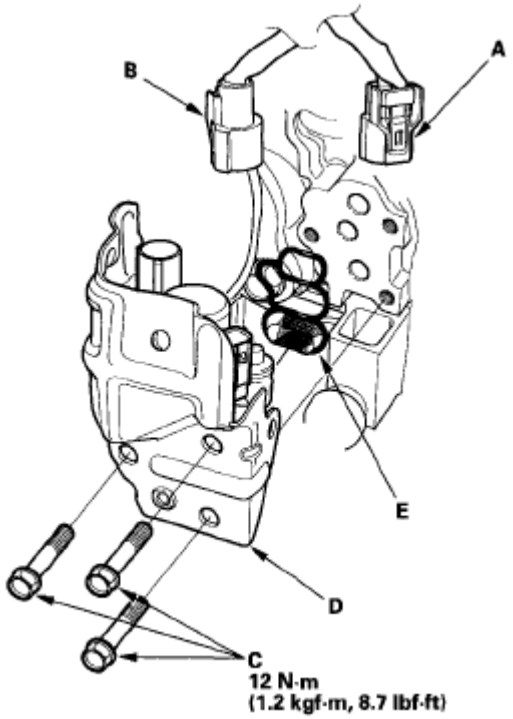


Fig. 29: Disconnecting Rocker Arm Oil Control Valve And Rocker Arm Oil Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts (C).
4. Remove the rocker arm oil control valve (D).
5. Install the parts in the reverse order of removal with a new rocker arm oil control valve filter (E).

ROCKER ARM OIL PRESSURE SWITCH REMOVAL/INSTALLATION

1. Remove the rocker arm oil control valve (see **ROCKER ARM OIL CONTROL VALVE REMOVAL/INSTALLATION**).
2. Remove the cover (A).

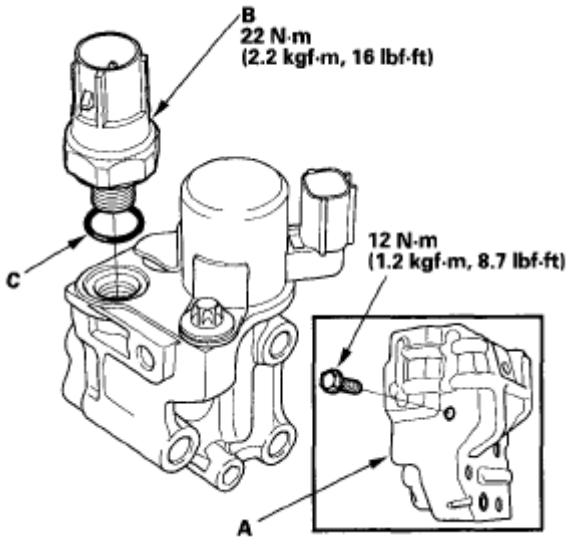


Fig. 30: Removing Cover (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the rocker arm oil pressure switch (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

CABIN AIR FILTERS

Dust & Pollen Filter - Civic, Civic Hybrid, CR-V

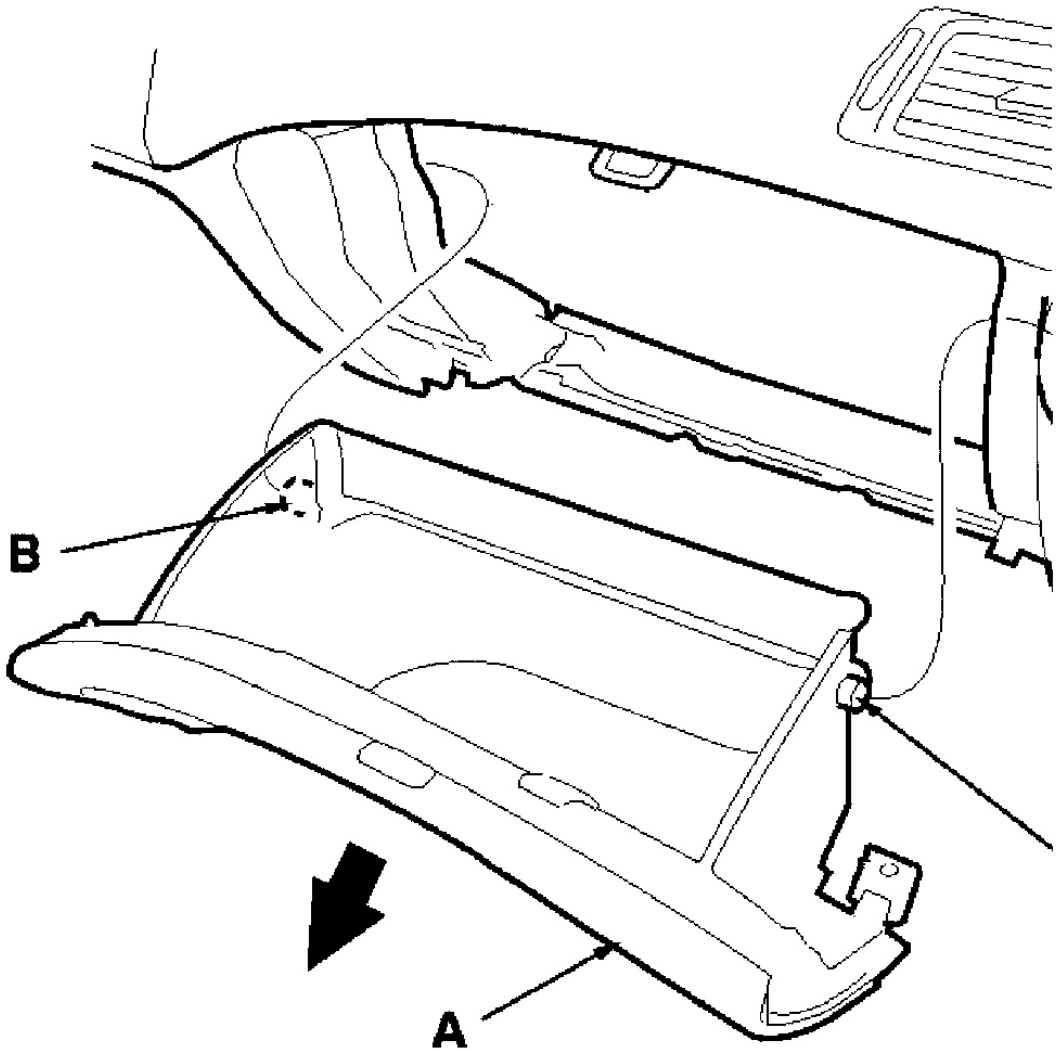
REMOVAL & INSTALLATION

NOTE: Manufacturer's terminology for this filter is dust and pollen filter.

CABIN AIR FILTER

Removal & Installation

1. Open the glove box. Remove the glove box stop (B) on each side, then let the glove box hang down. See **Fig. 1**.



G00401643

Fig. 1: Locating Glove Box Stops
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the dust and pollen filter assembly (A) from the evaporator. See **Fig. 2**.

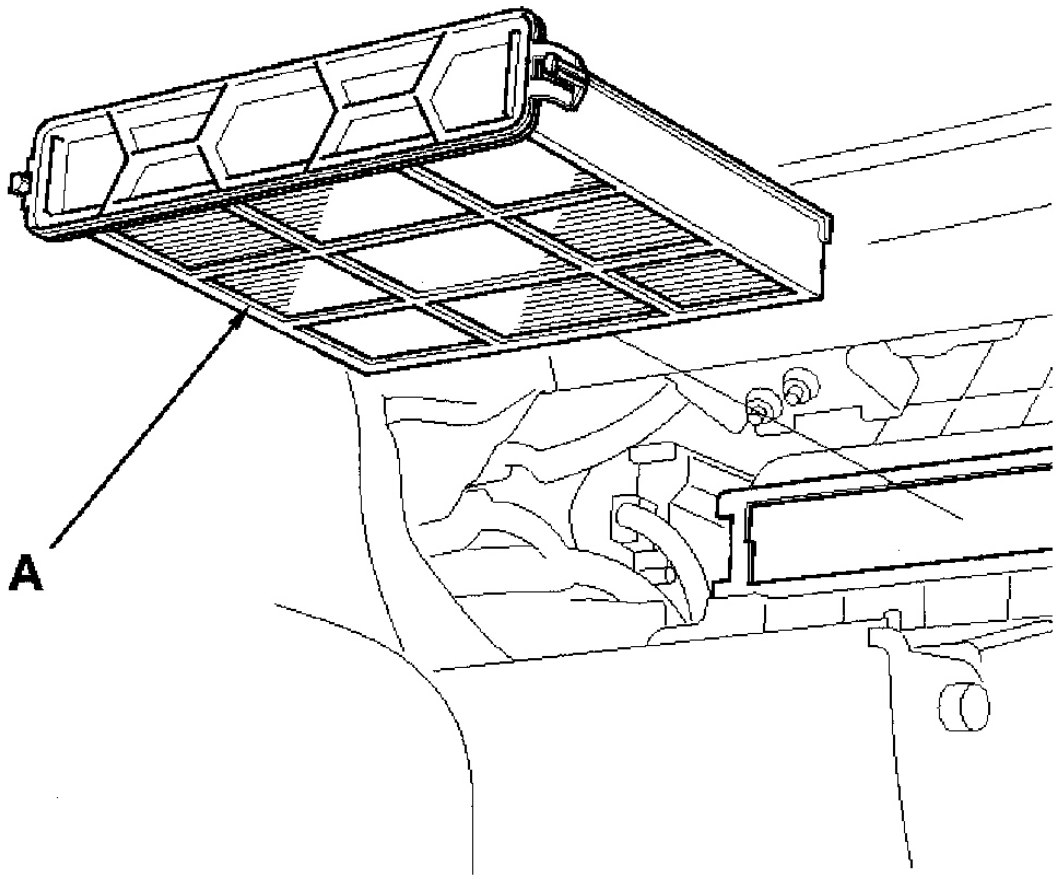


Fig. 2: Removing Dust & Pollen Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the filter (A) from the housing (B), and replace the filter. See **Fig. 3**. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

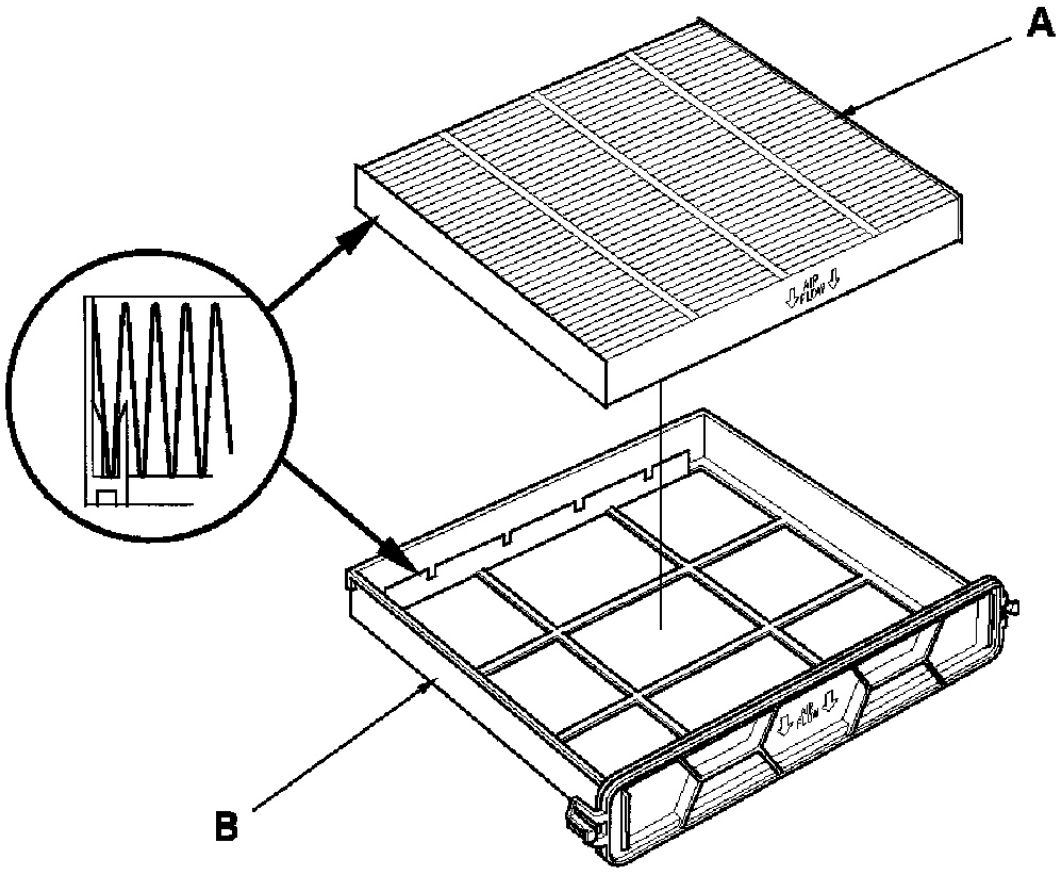


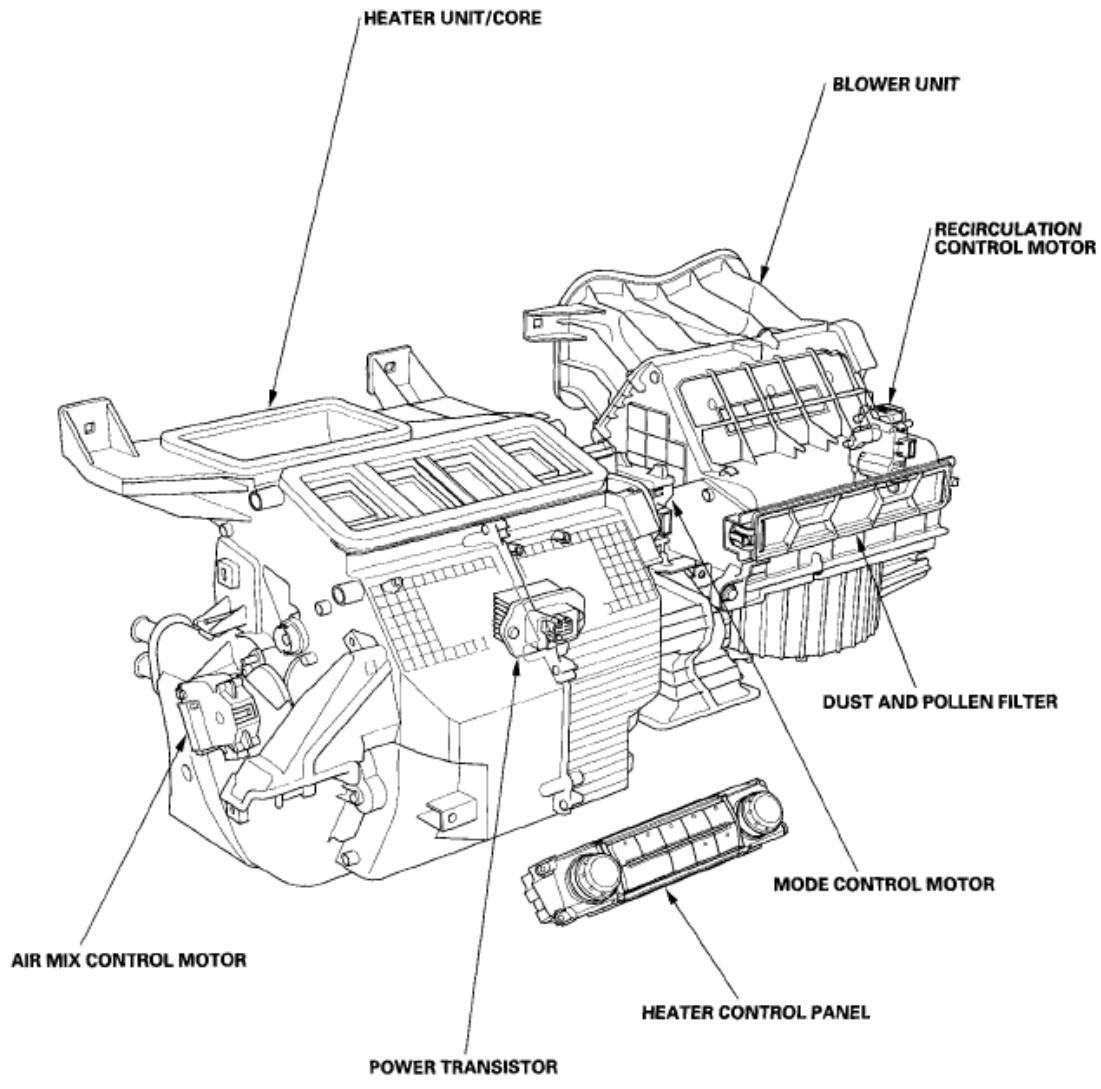
Fig. 3: Dust & Pollen Filter Installation Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If there was a maintenance reminder to replace the dust and pollen filter, reset the maintenance reminder, and this procedure is complete. Maintenance reminder can be reset using a factory scan tool, or equivalent aftermarket scan tool.

2006-09 HVAC

Heating - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX



4-door is shown, 2-door is similar.

Fig. 1: Identifying Heating Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

HOW TO USE THE SELF-DIAGNOSTIC FUNCTION

The heater control panel has a self-diagnostic function for heating and ventilation system. To run the self-diagnostic function, do the following:

1. Turn the ignition switch to LOCK (0).
2. Press and hold the recirculation control and rear window defogger buttons, and turn the ignition switch ON (II).
3. Recirculation indicator turns on for 2 seconds, then self-diagnostic function begins.

NOTE:

- **The blower motor will run at any speed regardless of the dial positioning.**
- **In the case of multiple problems, the recirculation indicator will blink the lowest number DTC only.**
- **If no DTCs are found, the indicator will not blink.**

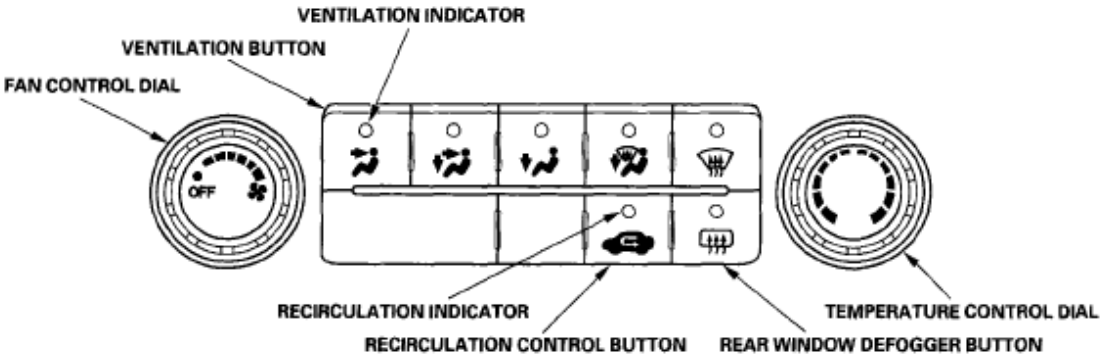


Fig. 2: Identifying Recirculation Control Button, Recirculation/Ventilation Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Example of DTC Indication Pattern (DTC 3)

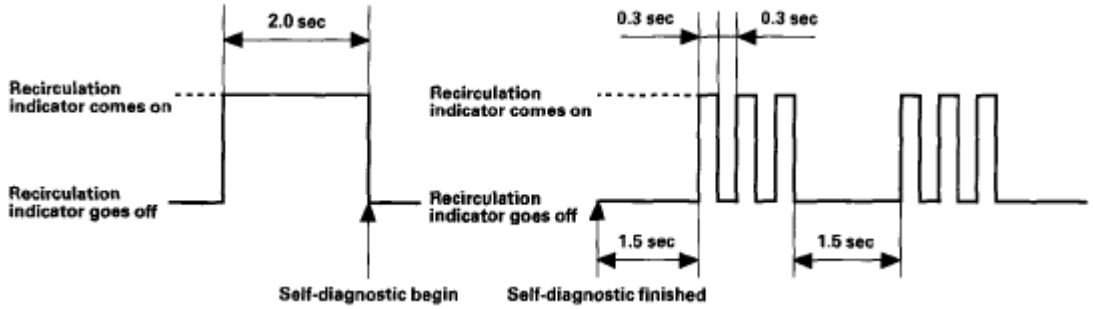


Fig. 3: Identifying DTC Indication Pattern (DTC 3)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DETECTION ITEM REFERENCE

DTC (Recirculation Indicator Blinks)	Detection Item
1	An open in the air mix control motor circuit (see **DTC INDICATOR 1: AN OPEN IN THE AIR MIX CONTROL MOTOR CIRCUIT**)
2	A short in the air mix control motor circuit (see **DTC INDICATOR 2: A SHORT IN THE AIR MIX CONTROL MOTOR CIRCUIT**)
3	A problem in the air mix control linkage, door, or motor (see **DTC INDICATOR 3: A PROBLEM IN THE AIR MIX CONTROL**

	LINKAGE, DOOR, OR MOTOR)
4	An open or short in the mode control motor circuit (see **DTC INDICATOR 4: AN OPEN OR SHORT IN THE MODE CONTROL MOTOR CIRCUIT**)
5	A problem in the mode control linkage, doors, or motor (see **DTC INDICATOR 5: A PROBLEM IN THE MODE CONTROL LINKAGE, DOORS, OR MOTOR**)
6	A problem in the blower motor circuit (see **DTC INDICATOR 6: A PROBLEM IN THE BLOWER MOTOR CIRCUIT**)
7	Heater control panel internal error (see **DTC INDICATOR 7: HEATER CONTROL PANEL INTERNAL ERROR**)

Clear the DTCs

When the problem is repaired, DTCs will automatically clear.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	**RECIRCULATION CONTROL MOTOR CIRCUIT TROUBLESHOOTING**	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 36 (10 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
Blower and heater controls do not work	**HEATER CONTROL POWER AND GROUND CIRCUIT TROUBLESHOOTING**	• HVAC DTCs (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**) • Blown fuse No. 36 (10 A) in the under-dash fuse/relay box • Poor ground at G504 (see **CONNECTOR TO HARNESS INDEX**) • Cleanliness and tightness of all terminals
Infufficient heating	1. Check the coolant level (see **COOLANT CHECK**) 2. Check the radiator cap (see **RADIATOR CAP TEST**) 3. Check the coolant temperature 4. Check the operation of the air mix control motor and door (see **Air Mix Control**	Damaged cylinder head gasket

	Motor Test) 5. Check the blower motor for obstructions 6. Check for air leaks around the ducts and vents 7. Check the inlet heater hose temperature • If it is COLD, check for restrictions in the hose, a damaged or leaking thermostat, and a damaged or leaking water pump. • If it is HOT, check for restrictions in the heater core. Back flush the heater core or replace heater core.	

SYSTEM DESCRIPTION

HEATING DOOR POSITIONS

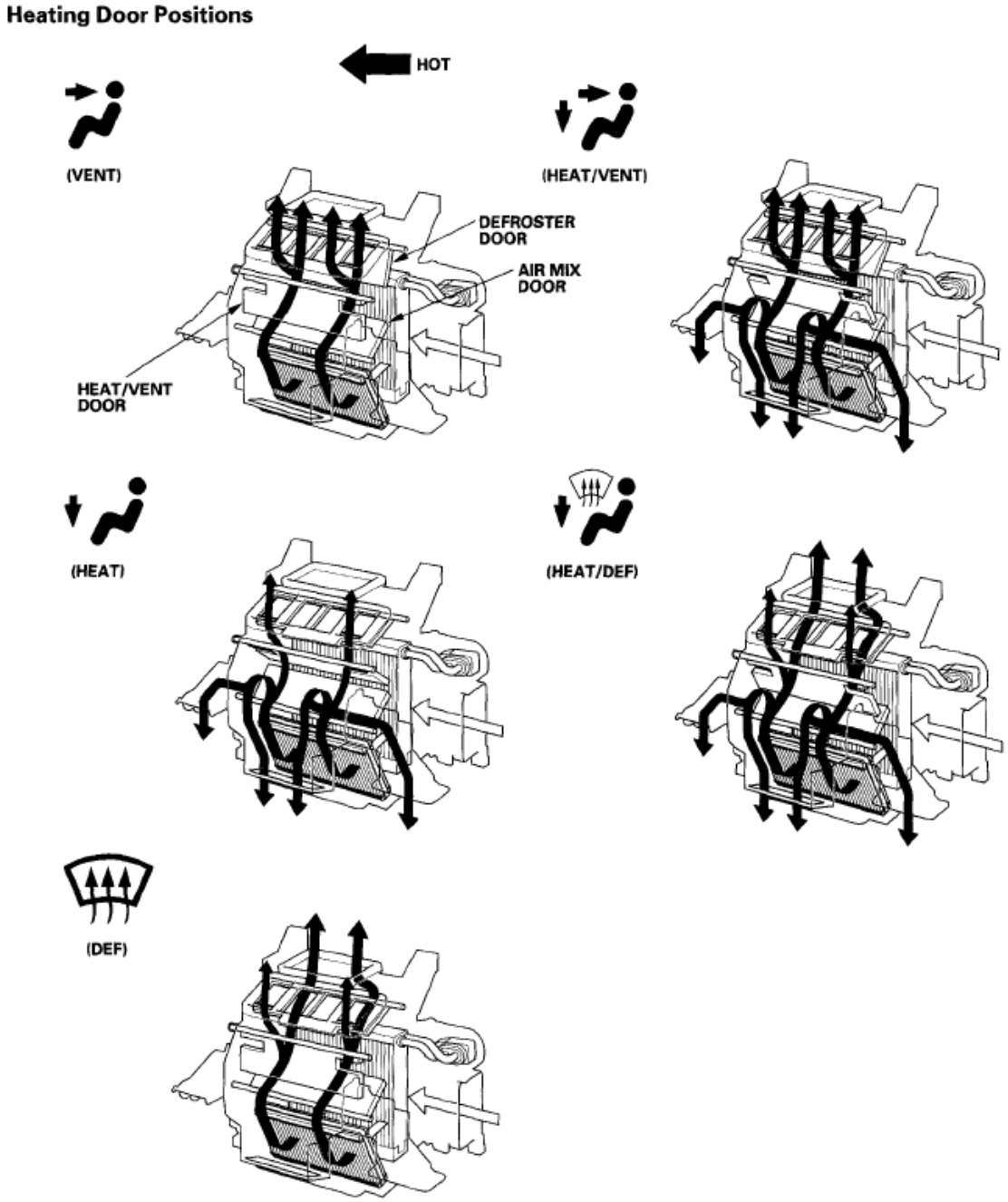


Fig. 4: Identifying Heating Door Positions
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HEATER CONTROL PANEL INPUTS AND OUTPUTS

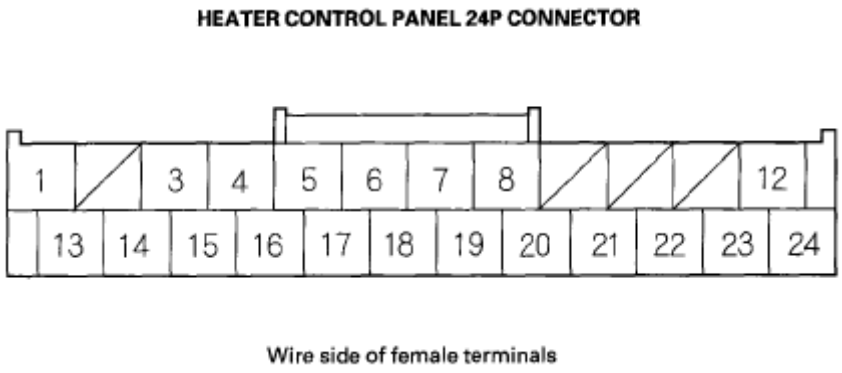


Fig. 5: Identifying Heater Control Panel 24P Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WIRE COLOR AND SIGNALS REFERENCE

Cavity	Wire color	Terminal name	Description	Signal
1	BLK	S5V	Sensor 5 V output	With ignition switch ON (II): about 5.0 V
3	ORN	MODE 1	Input for mode motor signal 1	With ignition switch ON (II): about 5.0 V or about 0 V, depending on mode control motor position
4	LT GRN	MODE 2	Input for mode motor signal 2	With ignition switch ON (II): about 5.0 V or about 0 V, depending on mode control motor position
5	PUR	MODE 3	Input for mode motor signal 3	With ignition switch ON (II): about 5.0 V or about 0 V, depending on mode control motor position
6	BLU	MODE 4	Input for mode motor signal 4	With ignition switch ON (II): about 5.0 V or about 0 V, depending on mode control motor position
7	BLU	BLW-V	Feedback signal of power transistor drain voltage	With ignition switch ON (II), blower OFF: between 5.0 V and 12.0 V. Voltage decreases as blower speed increases
8	YEL	BLW-G	Voltage output of power transistor g	With ignition switch ON (II), blower

				OFF: 0 V. Voltage increases as blower speed increases
12	RED	ILL-	Ground for illumination	With combination light switch ON: voltage decreases as dash lights brightness increases
13	RED	S-COM	Sensor ground	Less then 0.5 V at all times
14	WHT	M-VENT	Drives mode control motor to VENT	With ignition switch ON (II), mode control motor moving to VENT: battery voltage
15	GRN	M-DEF	Drives mode control motor to DEF	With ignition switch ON (II), mode control motor moving to DEF: battery voltage
16	ORN	REC	Drives recirculation control motor to REC	With ignition switch ON (II), recirculation control motor moving to REC: about 0 V
17	PUR	FRS	Drives recirculation control motor to FRESH	With ignition switch ON (II), recirculation control motor moving to FRESH: about 0 V
18	GRY	AMD-P	Detects air mix control motor position	With ignition switch ON (II), air mix door at HOT: about 4.5 V With ignition switch ON (II), air mix door at COOL: about 1.5 V
19	LT BLU	M-COOL	Drives the air mix control motor to COOL	With ignition switch ON (II), air mix control motor moving to COOL: battery voltage
20	PNK	M-HOT	Drives the air mix control motor to HOT	With ignition switch ON (II), air mix control motor moving to HOT: battery voltage
21	BLK	GND	Ground for heater	Less then 0.5 V at

			control panel	all times
22	BRN	RrDEF Ry	Signal for rear window defogger relay	With ignition switch ON (II), rear window defogger ON: about 0 V With ignition switch ON (II), rear window defogger OFF: battery voltage
23	LT GRN	IG2	IG2 power source	With ignition switch ON (II): battery voltage
24	GRY	ILL+	Power source for illumination	With Ignition switch ON (II): battery voltage

CIRCUIT DIAGRAM

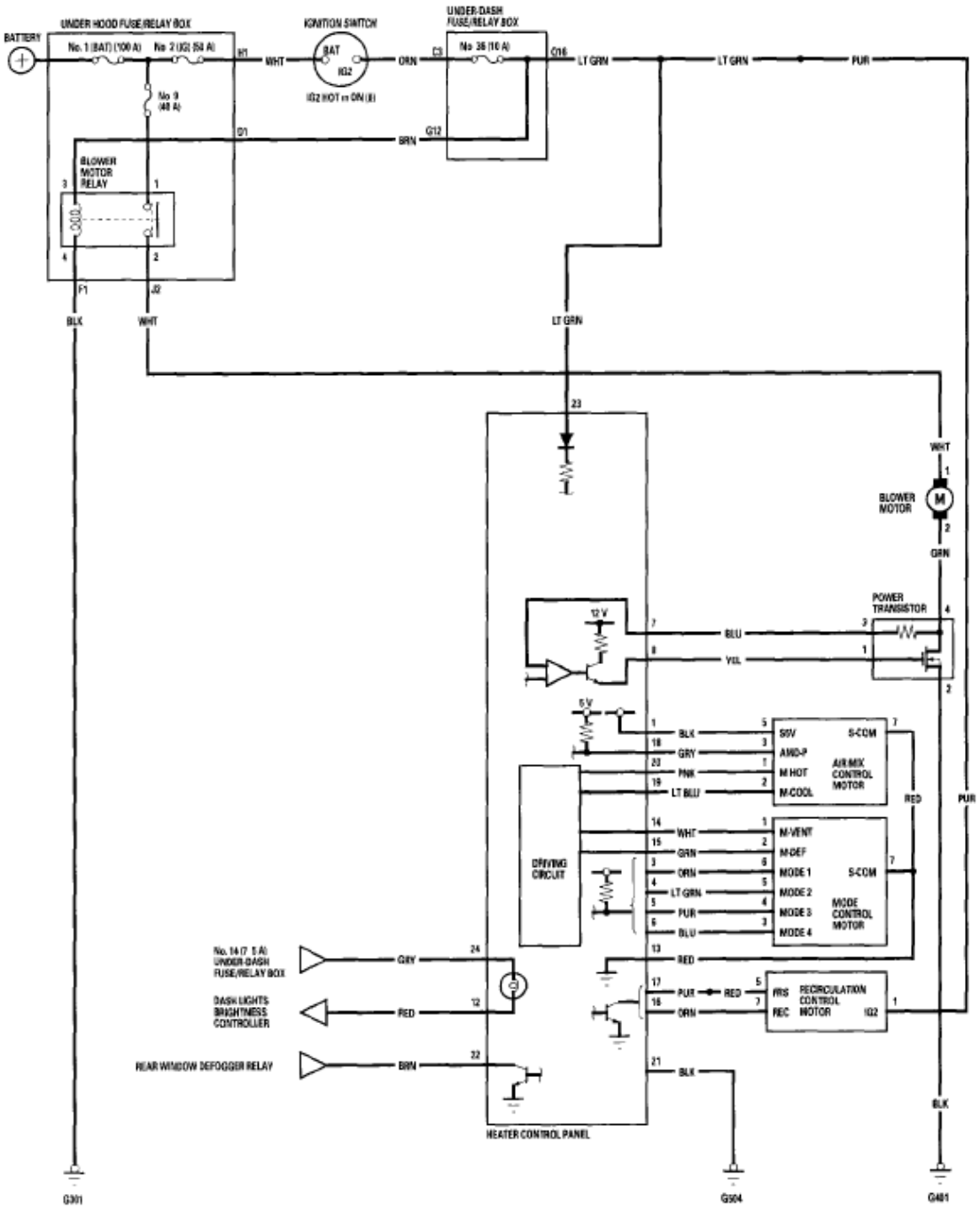


Fig. 6: Heater Control Panel - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC INDICATOR 1: AN OPEN IN THE AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).

4. Check for DTCs.

   Is DTC 1 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit.

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

   Is the air mix control motor OK?

   YES -Go to step 7.

   NO -Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

7. Disconnect the air mix control motor 7P connector.
8. Disconnect the heater control panel 24P connector.
9. Check for continuity between the following terminals of the heater control panel 24P connector and the air mix control motor 7P connector.

CONTINUITY CHECK INDEX

24P	7P
1	5
13	7
18	3

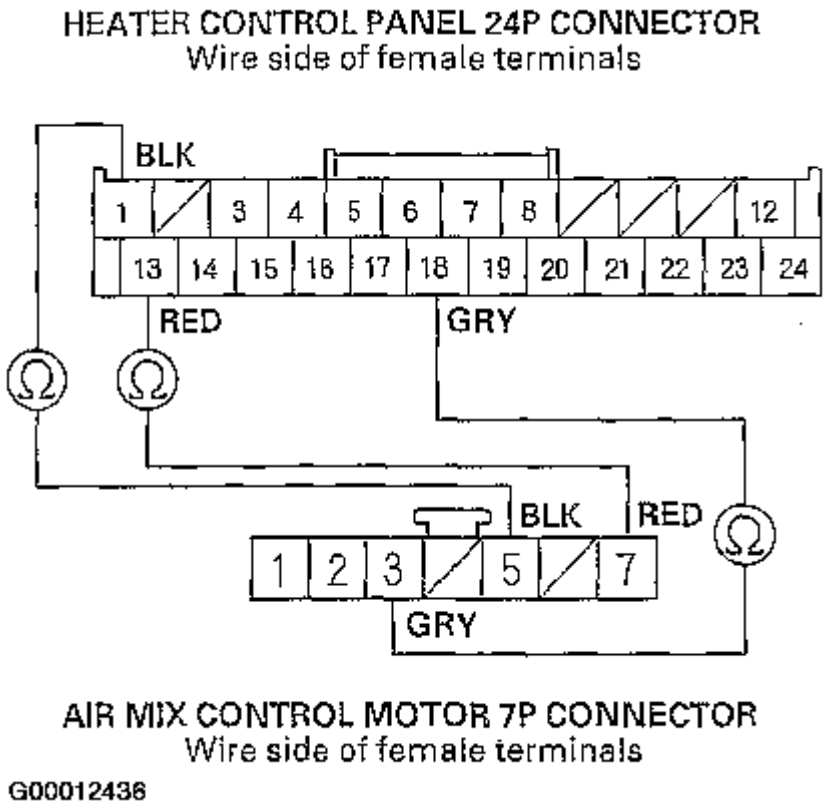


Fig. 7: Check Continuity Between Heater Control Panel Connector & Air Mix Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose wires or poor connections at the heater control panel 24P connector and at the air mix control motor 7P connector. If the connections are good, substitute a known-good heater control panel and recheck. If the symptom/indication goes away, replace the original heater control panel.

NO -Repair any open in the wires between the heater control panel and the air mix control motor.

DTC INDICATOR 2: A SHORT IN THE AIR MIX CONTROL MOTOR CIRCUIT

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

Is DTC 2 indicated?

YES -Go to step 5.

NO -Intermittent failure.

4. Turn the ignition switch to LOCK (0).
5. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

   Is the air mix control motor OK?

   YES -Go to step 7.

   NO -Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

6. Disconnect the air mix control motor 7P connector.
7. Disconnect the heater control panel 24P connector.
8. Check for continuity between body ground and the heater control panel 24P connector terminals No. 1, 13 and 18 individually.

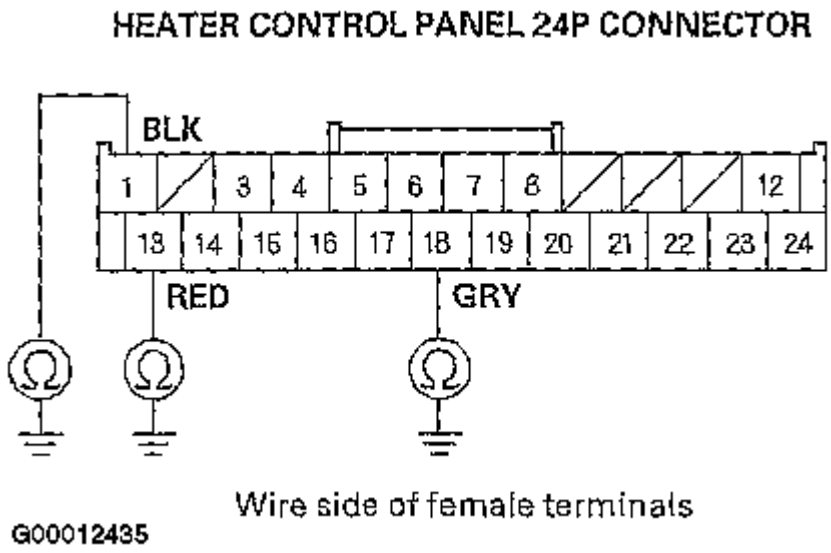


Fig. 8: Checking Continuity Between Ground & Heater Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the heater control panel and the air mix control motor.

NO -Go to step 10.

9. Check for continuity between the heater control panel 24P connector terminals as follows.

TERMINALS REFERENCE

From terminal	To terminals
1	13,18
13	18

Is there continuity between any of the terminals?

YES -Repair the short in the wires.

NO -Go to step 11.

10. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground. See **Fig. 8**.

    Is there battery voltage?

    YES -Repair any short to power in the wires between the heater control panel and the air mix control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.

    NO -Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

DTC INDICATOR 3: A PROBLEM IN THE AIR MIX CONTROL LINKAGE, DOOR, OR MOTOR

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

   Is DTC 3 indicated?

   YES -Go to step 5.

   NO -Intermittent failure.

4. Turn the ignition switch to LOCK (0).
5. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

   Is the air mix control motor OK?

   YES -Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

   NO -Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**), or repair the air mix control linkage or door.

6. Disconnect the air mix control motor 7P connector.
7. Disconnect the heater control motor 24P connector.
8. Check for continuity between the following terminals of the heater control panel 24P connector and the air mix control motor 7P connector.

   CONTINUITY CHECK INDEX

24P	7P
19	2
20	1

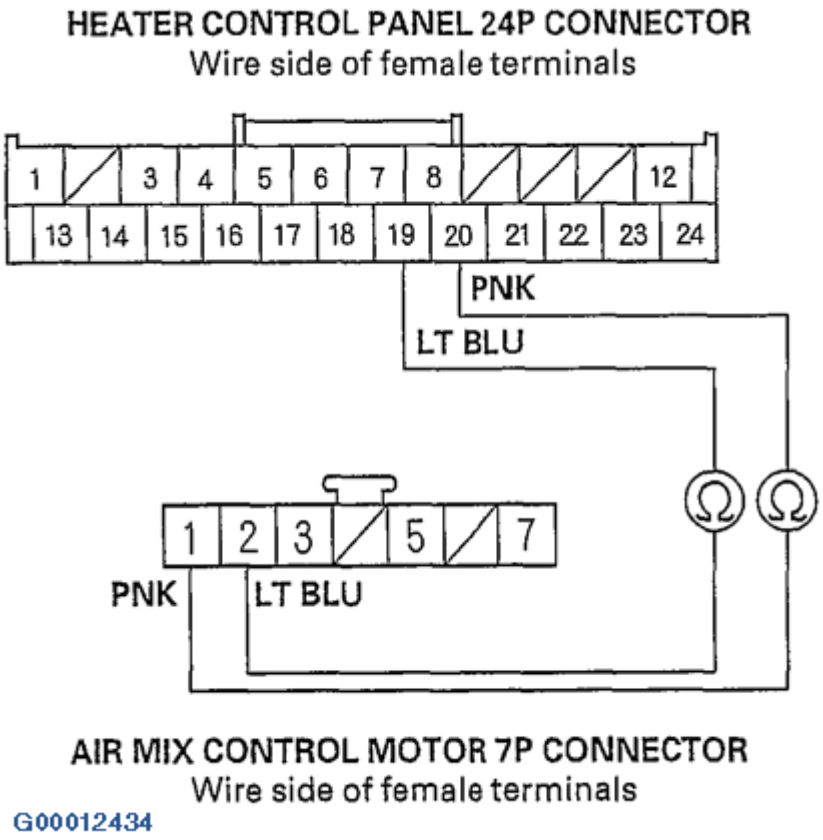


Fig. 9: Checking Continuity Between Heater Control Panel Connector & Air Mix Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 10.

NO -Repair any open in the wires between the heater control panel and the air mix control motor.

9. Check for continuity between body ground and the heater control panel 24P connector terminals No. 19 and 20 individually.

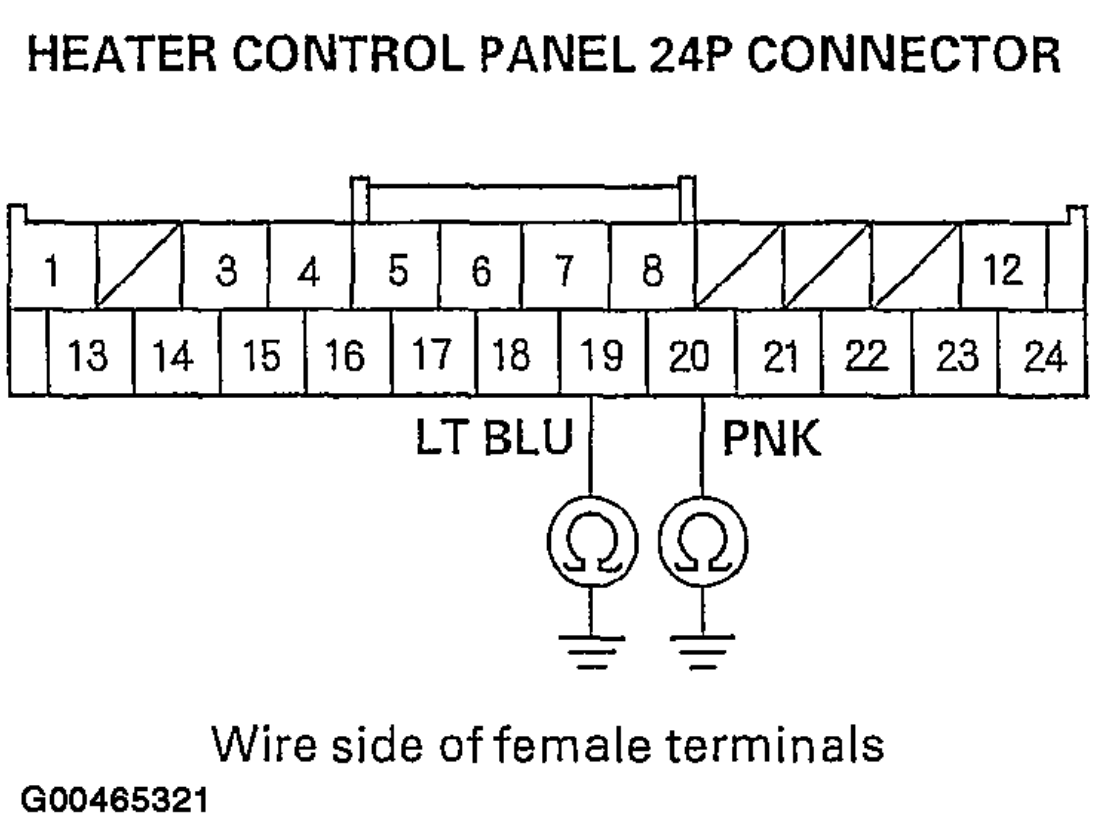


Fig. 10: Checking Continuity Between Ground & Heater Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wires between the heater control panel and the air mix control motor.

NO -Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

DTC INDICATOR 4: AN OPEN OR SHORT IN THE MODE CONTROL MOTOR CIRCUIT

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

   Is DTC 4 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, check for loose wires or poor connections on the mode control motor circuit.

4. Turn the ignition switch to LOCK (0).

5. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

   Is the mode control motor OK?

   YES -Go to step 7.

   NO -Replace the mode control motor (see **MODE CONTROL MOTOR TEST**).

6. Disconnect the mode control motor 7P connector.
7. Disconnect the heater control panel 24P connector.
8. Check for continuity between the following terminals of the heater control panel 24P connector and the mode control motor 7P connector.

CONTINUITY CHECK INDEX

24P	7P
3	6
4	5
5	4
6	3
13	7

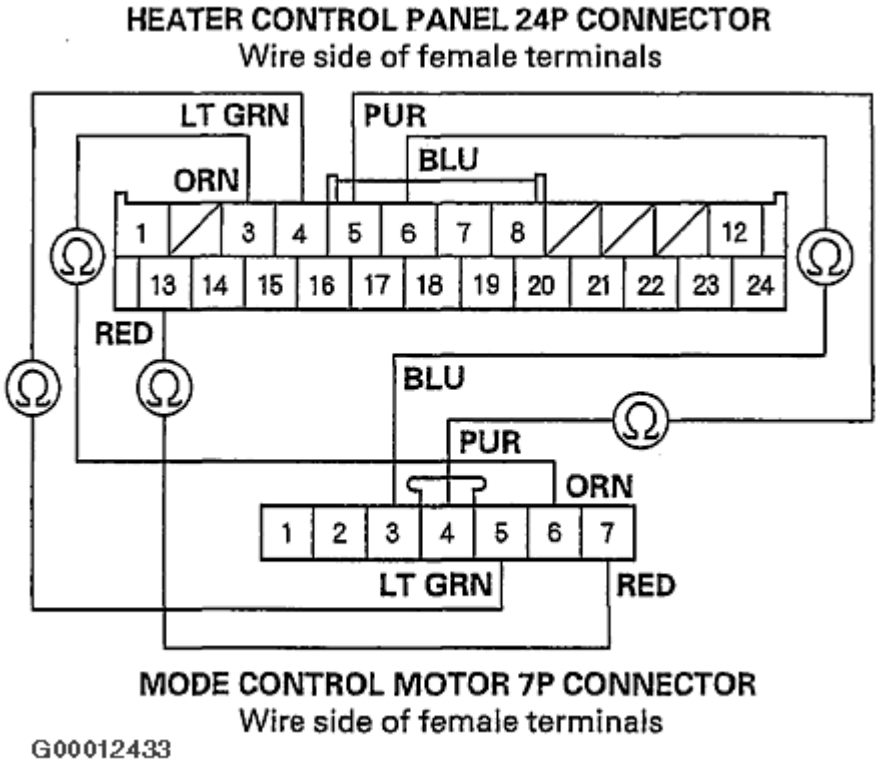


Fig. 11: Checking Continuity Between Heater Control Panel Connector & Mode Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 10.

NO -Repair any open in the wires between the heater control panel and the mode control motor.

9. Check for continuity between body ground and the heater control panel 24P connector terminals No. 3, 4, 5, 6, and 13 individually.

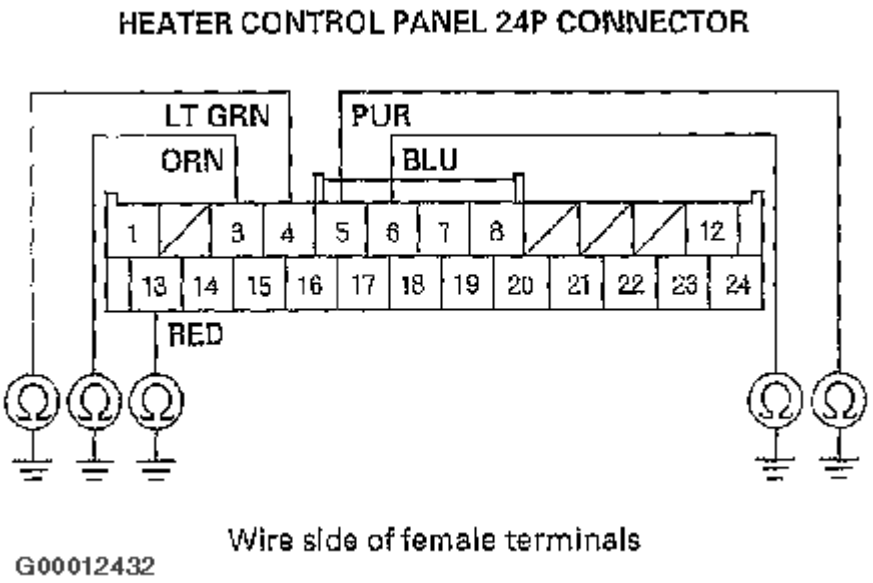


Fig. 12: Checking Continuity Between Ground & Heater Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the heater control panel and the mode control motor.

NO -Go to step 11.

10. Check for continuity between the heater control panel 24P connector terminals as follows.

TERMINALS REFERENCE

From terminal	To terminals
3	4, 5, 6, 13
4	5, 6, 13
5	6, 13
6	13

Is there continuity between any of the terminals?

YES -Repair the short in the wires.

NO -Go to step 12.

11. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground. See **Fig. 12**.

    Is there any voltage?

    YES -Repair any short to power in the wires between the heater control panel and the mode control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.

    NO -Check for loose wires or poor connections at the heater control panel 24P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

DTC INDICATOR 5: A PROBLEM IN THE MODE CONTROL LINKAGE, DOORS, OR MOTOR

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

   Is DTC 5 indicated?

   YES -Go to step 5.

   NO -Intermittent failure.

4. Turn the ignition switch to LOCK (0).
5. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

   Is the mode control motor OK?

   YES -

   NO -Replace the mode control motor (see **MODE CONTROL MOTOR TEST**), or repair the mode control linkage or doors.

6. Check for continuity between the following terminals of the heater control panel 24P connector and the mode control motor 7P connector.

   CONTINUITY CHECK INDEX

24P	7P
14	1
15	2

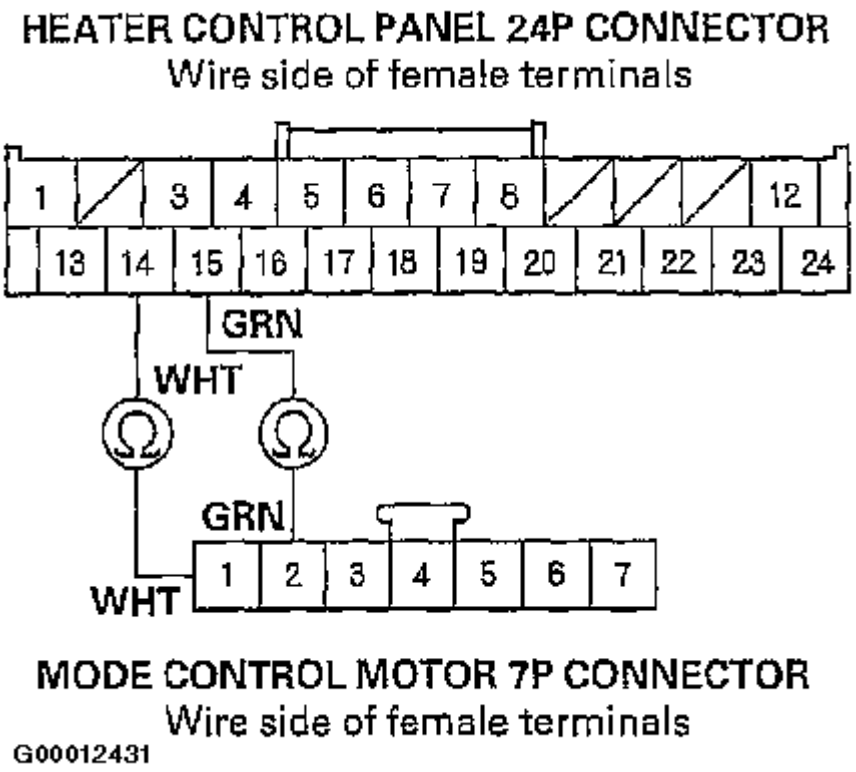


Fig. 13: Checing Continuity Between Heater Control Connector & Mode Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 8.

NO -Repair any open in the wires between the heater control panel and the mode control motor.

7. Check for continuity between body ground and the heater control panel 24P connector terminals No. 14 and 15 individually.

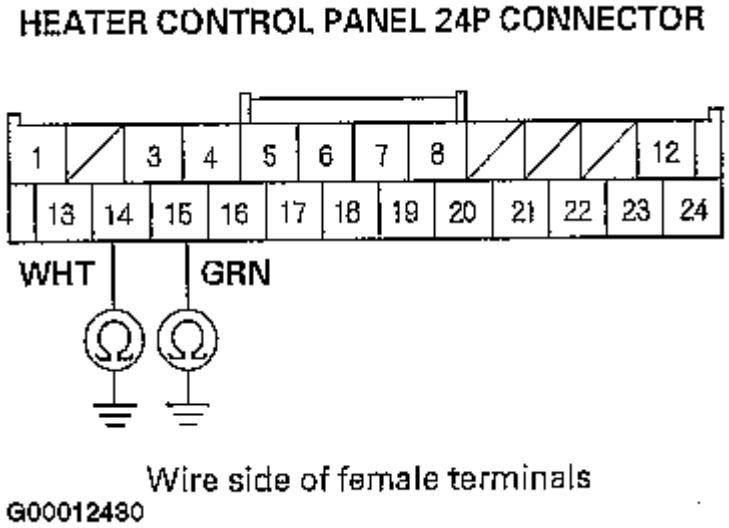


Fig. 14: Checking Continuity Between Ground & Heater Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wires between the heater control panel and the mode control motor.

NO -Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

DTC INDICATOR 6: A PROBLEM IN THE BLOWER MOTOR CIRCUIT

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

   Is DTC 6 indicated?

   YES -Go to step 5.

   NO -Intermittent failure, check for loose wires or poor connections on the blower motor circuit.

4. Turn the ignition switch to LOCK (0).
5. Check the No. 9 (40 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES -Go to step 7.

   NO -Replace the fuses, and recheck.

6. Connect the blower motor 2P connector terminal No. 2 to body ground with a jumper wire.

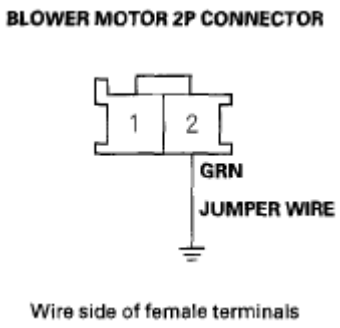


Fig. 15: Connecting Blower Motor 2P Connector Terminal No 2 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Turn the ignition switch ON (II).

   Does the blower motor run?

   YES -Go to step 9.

   NO -Go to step 24.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the jumper wire.
10. Disconnect the power transistor 4P connector.
11. Check for continuity between the power transistor 4P connector terminal No. 2 and body ground.

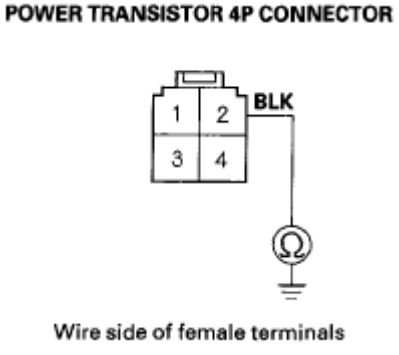


Fig. 16: Checking Continuity Between Power Transistor 4P Connector Terminal No 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 13.

NO -Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G401 (see **CONNECTOR TO HARNESS INDEX**).

12. Connect the power transistor 4P connector terminals No. 2 and No. 4 with a jumper wire.

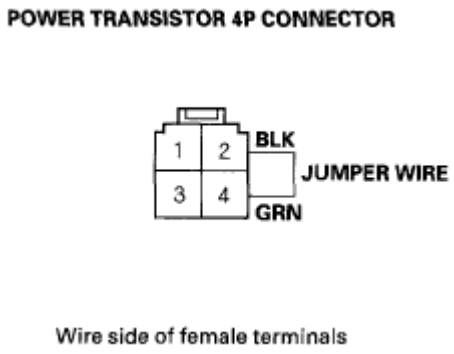


Fig. 17: Connecting Power Transistor 4P Connector Terminals No 2 And 4 With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Turn the ignition switch ON (II).

    Does the blower motor run at high speed?

    YES -Go to step 15.

    NO -Repair open in the GRN wire between the power transistor and the blower motor.

14. Turn the ignition switch to LOCK (0).
15. Disconnect the jumper wire.
16. Disconnect the heater control panel 24P connector.
17. Check for continuity between body ground and the heater control panel 24P connector terminals No. 7 and No. 8 individually.

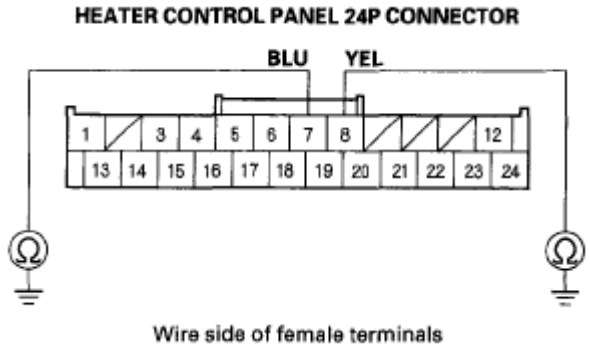


Fig. 18: Checking Continuity Between Body Ground And Heater Control Panel 24P Terminals No 7 And 8
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the heater control panel and the power transistor.

NO -Go to step 19.

18. Check for continuity between the following terminals of the heater control panel 24P connector and the power transistor 4P connector.

CONTINUITY CHECK INDEX

24P	4P
7	3
8	1

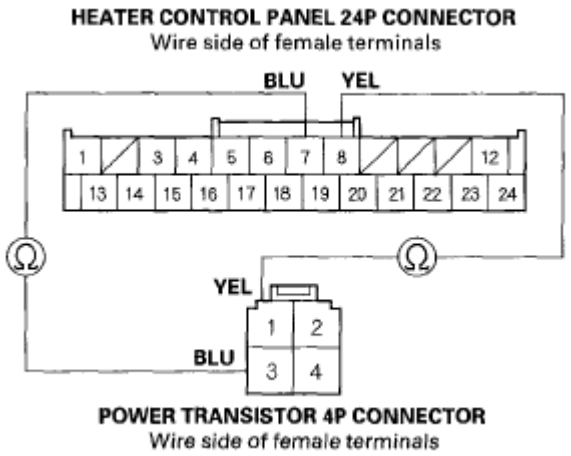


Fig. 19: Checking Continuity Between Heater Control Panel 24P And Power Transistor 4P Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 20.

NO -Repair any open in the wires between the heater control panel and the power transistor.

19. Turn the ignition switch ON (II).
20. Measure the voltage between body ground and the heater control panel 24P connector terminals No. 7 and No. 8 individually.

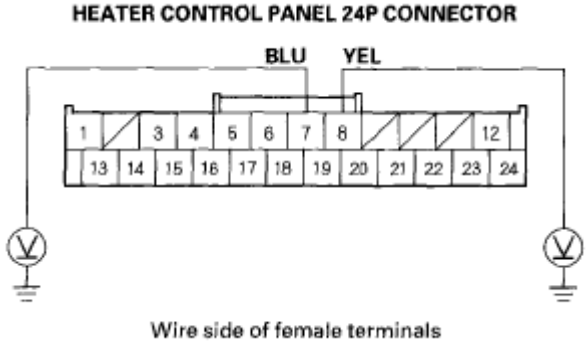


Fig. 20: Measuring Voltage Between Body Ground And Heater Control Panel 24P Connector Terminals No 7 And 8

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there voltage?

YES -Repair short to power in the wires.

NO -Go to step 22.

21. Turn the ignition switch to LOCK (0).
22. Reconnect the heater control panel 24P connector.
23. Test the power transistor (see **POWER TRANSISTOR TEST**).

Is the power transistor OK?

YES -Check for loose wires or poor connections at the heater control panel 24P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

NO -Replace the power transistor.

24. Turn the ignition switch to LOCK (0).
25. Disconnect the jumper wire.
26. Disconnect the blower motor 2P connector.
27. Turn the ignition switch ON (II).
28. Measure the voltage between the blower motor 2P connector terminal No. 1 and body ground.

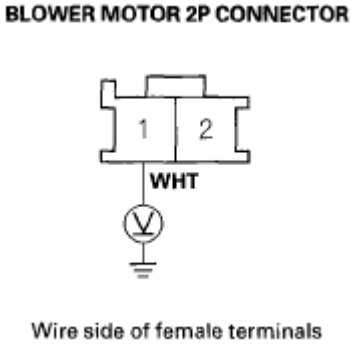


Fig. 21: Measuring Voltage Between Blower Motor 2P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Replace the blower motor.

NO -Go to step 30.

29. Turn the ignition switch to LOCK (0).
30. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see **POWER**

RELAY TEST).

Is the relay OK?

YES -Go to step 32.

NO -Replace the blower motor relay.

31. Measure the voltage between the blower motor relay 4P socket terminal No. 1 and body ground.

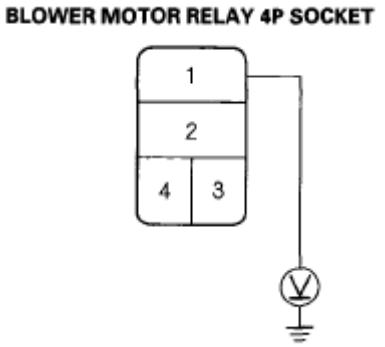


Fig. 22: Measuring Voltage Between Blower Motor Relay 4P Socket Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 33.

NO -Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

32. Turn the ignition switch ON (II).
33. Measure the voltage between the blower motor relay 4P socket terminal No. 3 and body ground.

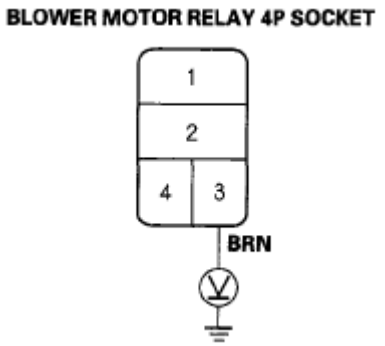


Fig. 23: Measuring Voltage Between Blower Motor Relay 4P Socket Terminal No 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 35.

NO -Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the blower motor relay.

34. Turn the ignition switch to LOCK (0).
35. Check for continuity between the blower motor relay 4P socket terminal No. 4 and body ground.

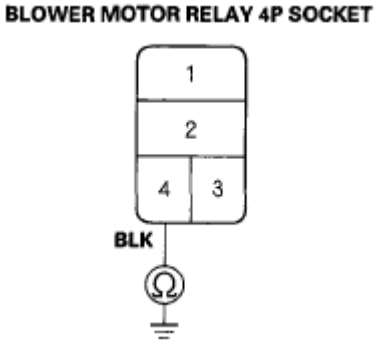


Fig. 24: Checking Continuity Between Blower Motor Relay 4P Socket Terminal No 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair open in the WHT wire between the blower motor relay and the blower motor.

NO -Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301 (see **CONNECTOR TO HARNESS INDEX**).

DTC INDICATOR 7: HEATER CONTROL PANEL INTERNAL ERROR

NOTE: Check the battery condition (see BATTERY TEST) and the charging system (see CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING).

1. Turn the ignition switch to LOCK (0), and then ON (II).
2. Do the self-diagnostic with the heater control panel (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
3. Check for DTCs.

Is DTC 7 indicated?

YES -The heater control panel is faulty, replace the heater control panel (see **HEATER CONTROL PANEL REMOVAL AND INSTALLATION**).

NO -Intermittent failure, the heater control panel is OK at this time.

RECIRCULATION CONTROL MOTOR CIRCUIT TROUBLESHOOTING

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES -Go to step 2.

NO -Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit.

2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the recirculation control motor 7P connector terminal No. 1 and body ground.

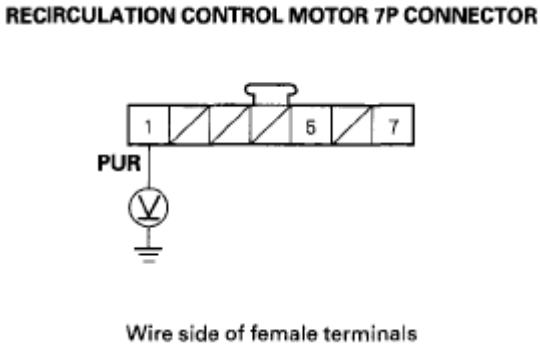


Fig. 25: Measuring Voltage Between Recirculation Control Motor 7P Connector Terminal No 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 5.

NO -Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the recirculation control motor.

5. Turn the ignition switch to LOCK (0).
6. Test the recirculation control motor (see **RECIRCULATION CONTROL MOTOR TEST**).

Is the recirculation control motor OK?

YES -Go to step 7.

NO -Replace the recirculation control motor (see **RECIRCULATION CONTROL MOTOR TEST**), or repair the recirculation control linkage or door.

7. Disconnect the heater control panel 24P connector.
8. Check for continuity between body ground and the heater control panel 24P connector terminals No. 16 and No. 17 individually.

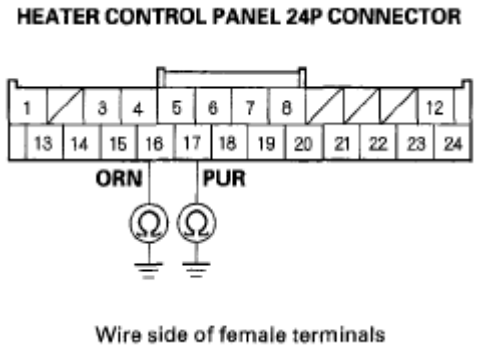


Fig. 26: Checking Continuity Between Body Ground And Heater Control Panel 24P Connector Terminals No 16 And 17
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the heater control panel and the recirculation control motor.

NO -Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

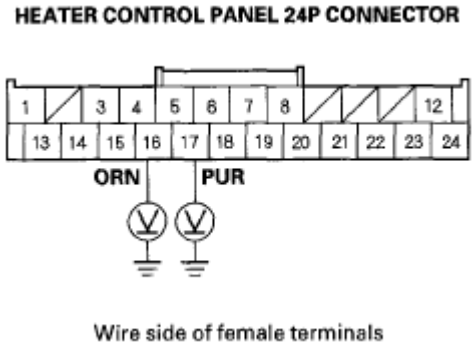


Fig. 27: Checking Voltage Between Body Ground And Heater Control Panel 24P Connector Terminals No 16 And 17
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there any voltage?

YES -Repair any short to power in the wires between the heater control panel and the recirculation control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.

NO -Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Check for continuity between the following terminals of the heater control panel 24P connector and the recirculation control motor IP connector.

CONTINUITY CHECK INDEX

24P	7P
16	7
17	5

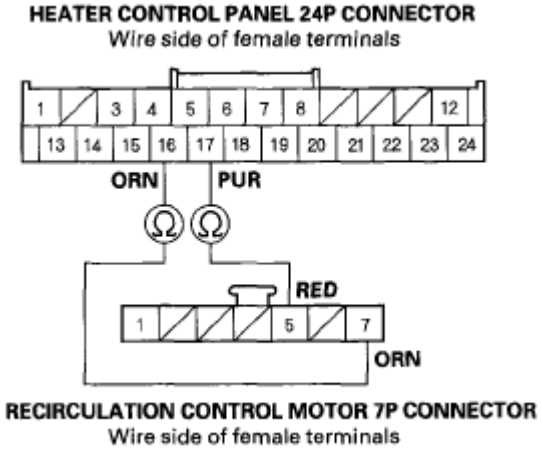


Fig. 28: Checking Continuity Between Heater Control Panel 24P And Recirculation Control Motor IP Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose wires or poor connections at the heater control panel 24P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.

NO -Repair any open in the wires between the heater control panel and the recirculation control motor.

HEATER CONTROL POWER AND GROUND CIRCUIT TROUBLESHOOTING

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES -Go to step 2.

   NO -Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit.

2. Disconnect the heater control panel 24P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the heater control panel 24P connector terminal No. 23 and body ground.

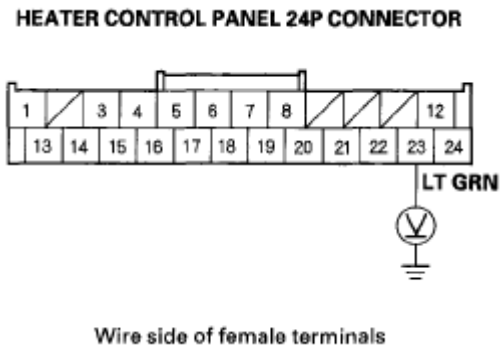


Fig. 29: Measuring Voltage Between Heater Control Panel 24P Connector Terminal No 23 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 5.

NO -Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the heater control panel.

5. Turn the ignition switch to LOCK (0).
6. Check for continuity between the heater control panel 24P connector terminal No. 21 and body ground.

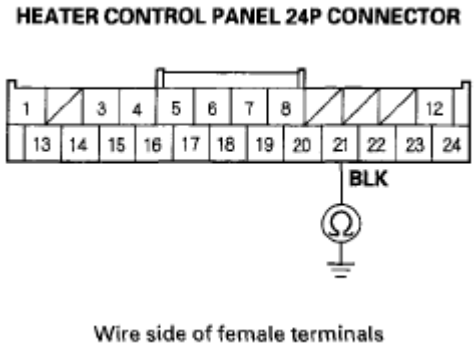


Fig. 30: Checking Continuity Between Heater Control Panel 24P Connector Terminal No 21 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose wires or poor connections at the heater control panel 24P connector. If the connections are good, substitute a known-good heater control panel, and recheck.

NO -Check for an open in the wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G504 (see **CONNECTOR TO HARNESS INDEX**).

POWER TRANSISTOR TEST

1. Remove the passenger's dashboard undercover (see **PASSENGER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
2. Disconnect the 4P connector from the power transistor.
3. Measure the resistance between the No. 3 and No. 4 terminals of the power transistor. It should be about 1.5 kohms.
   - If the resistance is within the specifications, go to step 4.
   - If the resistance is not within the specifications, replace the power transistor.

NOTE: Also check the blower motor. Power transistor failure can be caused by a defective blower motor.

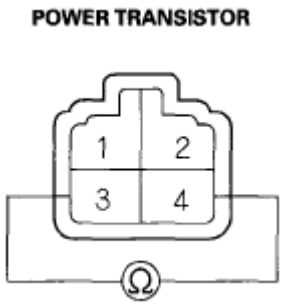


Fig. 31: Measuring Resistance Between No 3 And No 4 Terminals Of Power Transistor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Carefully release the lock tab on the No. 1 terminal (YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

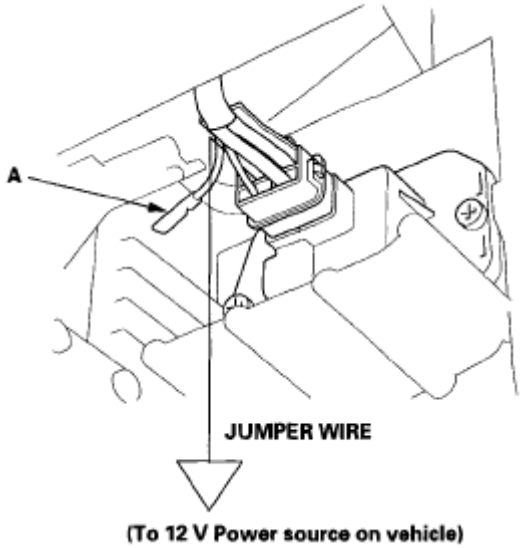


Fig. 32: Identifying 4P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Reconnect the 4P connector to the power transistor.
6. Make sure the YEL wire is completely isolated, then supply 12 V to the No. 1 cavity with a jumper wire.

7. Turn the ignition switch ON (II), and check that the blower motor runs.
   - If the blower motor does not run, replace the power transistor.
   - If the blower motor runs, the power transistor is OK.

AIR MIX CONTROL MOTOR TEST

NOTE: Before testing, check for HVAC DTCs (see HOW TO USE THE SELF-DIAGNOSTIC FUNCTION).

1. Disconnect the 7P connector from the air mix control motor.

   NOTE: Incorrectly applying power and ground to the air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the air mix control motor, and ground the No. 2 terminal; the air mix control motor should run, and stop at Max Hot. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Cool. When the air mix control motor stops running, disconnect battery power immediately.

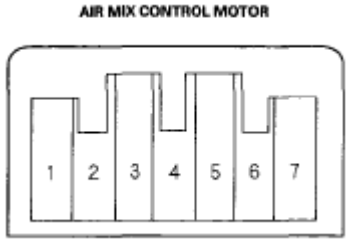


Fig. 33: Identifying Air Mix Control Motor Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the air mix control motor did not run in step 2, remove it, then check the air mix control linkage and door for smooth movement.
   - If the linkage and door move smoothly, replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the air mix control motor runs smoothly, go to step 4.
4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 kohms.
5. Reconnect the air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Using the backprobe set. Measure the voltage between the No. 3 and No. 7 terminals.

   Max Cool: about 0.5 V

   Max Hot: about 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

AIR MIX CONTROL MOTOR REPLACEMENT

1. Remove the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
2. Disconnect the 7P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit.

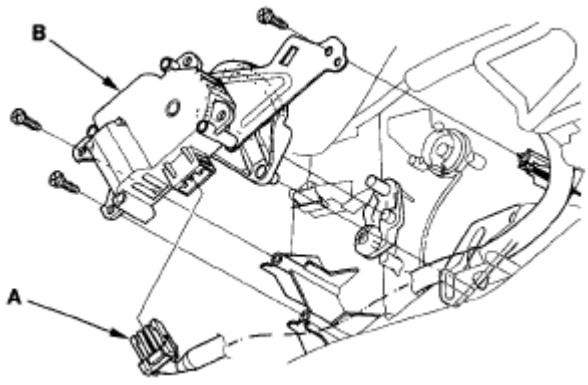


Fig. 34: Identifying 7P Connector And Air Mix Control Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

MODE CONTROL MOTOR TEST

NOTE: Before testing, check for HVAC DTCs (see HOW TO USE THE SELF-DIAGNOSTIC FUNCTION).

1. Disconnect the 7P connector from the mode control motor.

NOTE: Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the mode control motor, and ground the No. 2 terminal; the mode control motor should run smoothly, and stop at Vent. If it doesn't, reverse the connections; the mode control motor should run smoothly, and stop at Defrost. When the mode control motor stops running, disconnect battery power immediately.

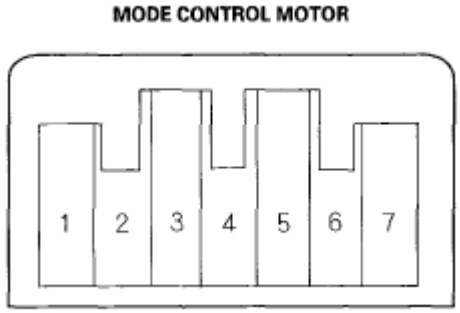


Fig. 35: Identifying Mode Control Motor Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.
   - If the linkage and doors move smoothly, replace the mode control motor (see **MODE CONTROL MOTOR TEST**).
   - If the linkage or doors stick or bind, repair them as needed.
   - If the mode control motor runs smoothly, go to step 4.
4. Use a digital multimeter with an output of 1 mA or less at the 20 k ohms range. With the mode control motor running as in step 2, check for continuity between the No. 3, 4, 5, and 6 terminals and the No. 7 terminal individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.
5. If there is no continuity for a moment at each terminal, replace the mode control motor (see **MODE CONTROL MOTOR TEST**).

MODE CONTROL MOTOR REPLACEMENT

1. Remove the glove box (see **PASSENGER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
2. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).

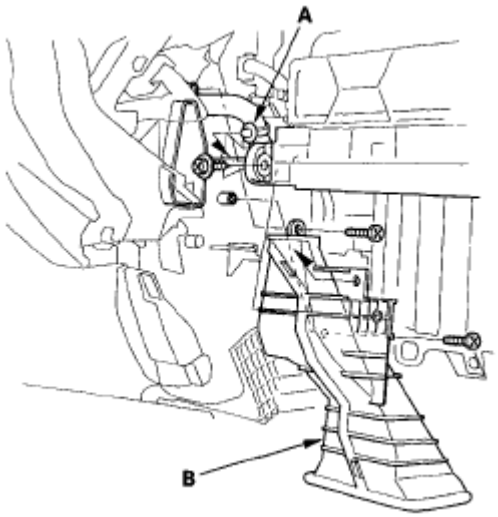


Fig. 36: Identifying Wire Harness Clip And Passenger's Heater Duct
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.

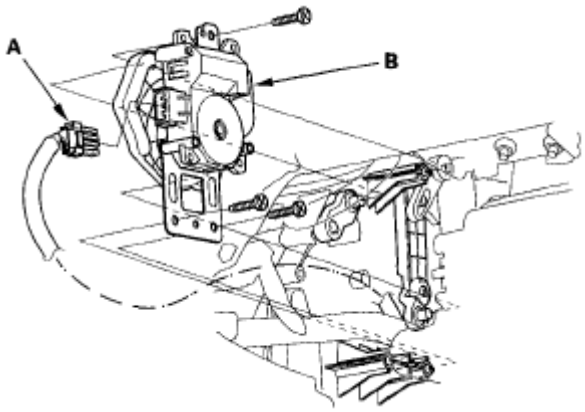


Fig. 37: Identifying 7P Connector And Mode Control Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

RECIRCULATION CONTROL MOTOR TEST

NOTE: Before testing, check for HVAC DTCs (see HOW TO USE THE SELF-DIAGNOSTIC FUNCTION).

1. Disconnect the 7P connector from the recirculation control motor.

NOTE: Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the recirculation control motor, and ground the No. 5 and No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the recirculation control motor should stop at Fresh (when the No. 5 terminal is disconnected) or Recirculate (when the No. 7 terminal is disconnected). Don't cycle the recirculation control motor for a long time.

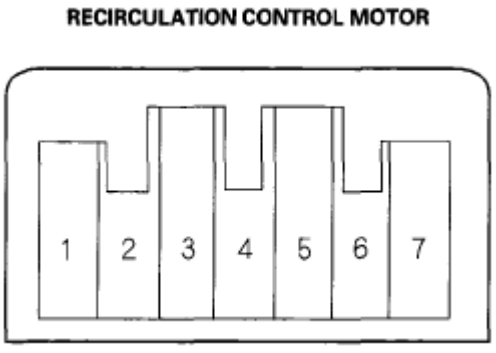


Fig. 38: Identifying Recirculation Control Motor Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control

linkage and door for smooth movement.

- If the linkage and door move smoothly, replace the recirculation control motor (see **RECIRCULATION CONTROL MOTOR TEST**).
- If the linkage or door stick or bind, repair them as needed.

RECIRCULATION CONTROL MOTOR REPLACEMENT

1. Remove the glove box (see **PASSENGER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**) and the passenger's kick panel, 2-door (see **TRIM REMOVAL/INSTALLATION - DOOR AREAS**), 4-door (see **FRONT DOOR SILL AREA - 4-DOOR**).
2. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.

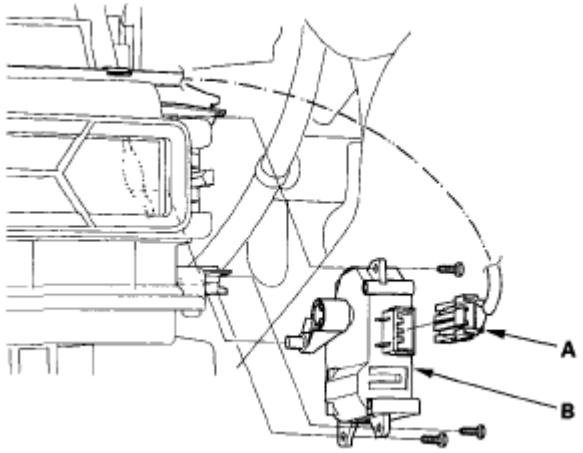


Fig. 39: Identifying 7P Connector And Recirculation Control Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

HEATER CONTROL PANEL REMOVAL AND INSTALLATION

1. Remove the center panel (see **AUDIO UNIT REMOVAL/INSTALLATION**).
2. Remove the dials (A), the self-tapping screws, and the heater control panel (B).

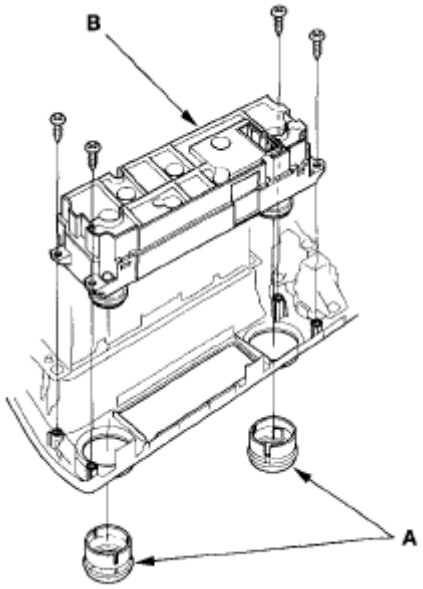


Fig. 40: Identifying Dials And Heater Control Panel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the control panel in the reverse order of removal. After installation, operate the various functions to make sure they work properly.
4. Run the self-diagnosis function to confirm that there are no problems in the system (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).

DUST AND POLLEN FILTER REPLACEMENT

1. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see **PASSENGER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
2. Remove the dust and pollen filter assembly (A) from the evaporator.

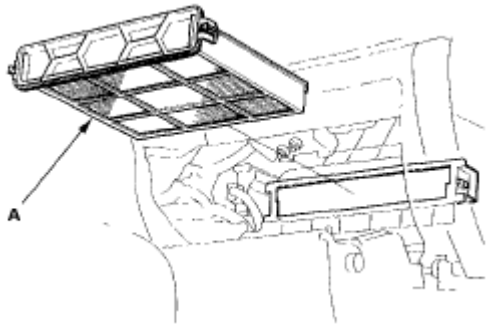


Fig. 41: Identifying Dust And Pollen Filter Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the filter (A) from the housing (B), and replace the filter.

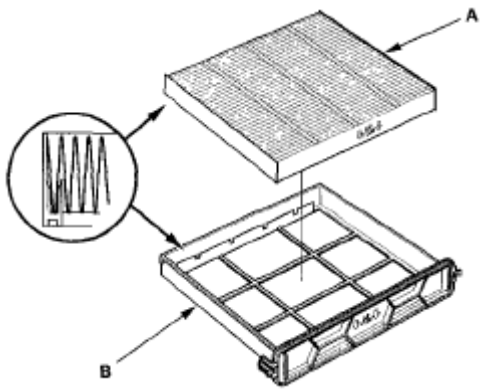


Fig. 42: Identifying Filter And Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

BLOWER UNIT REMOVAL AND INSTALLATION

1. Remove the glove box (see **PASSENGER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
2. Cut the plastic cross brace (A) in the glove box opening with diagonal cutters in the area shown, and discard it.

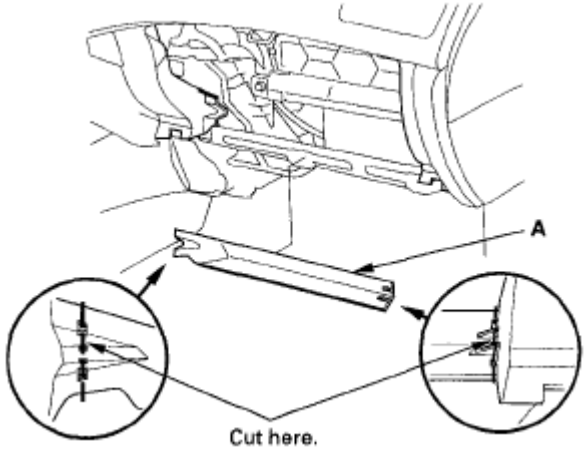


Fig. 43: Identifying Plastic Cross Brace
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts and the glove box frame (A).

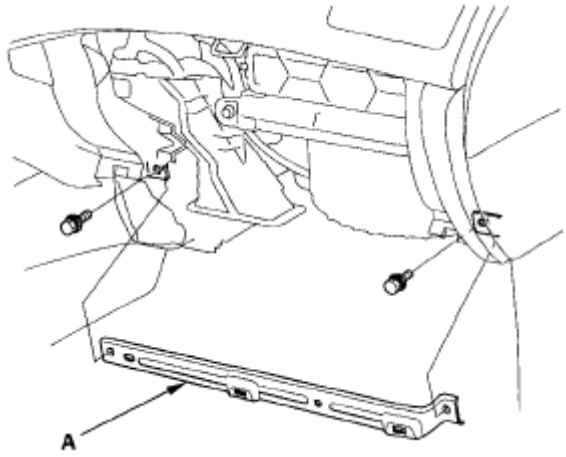


Fig. 44: Identifying Glove Box Frame
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).

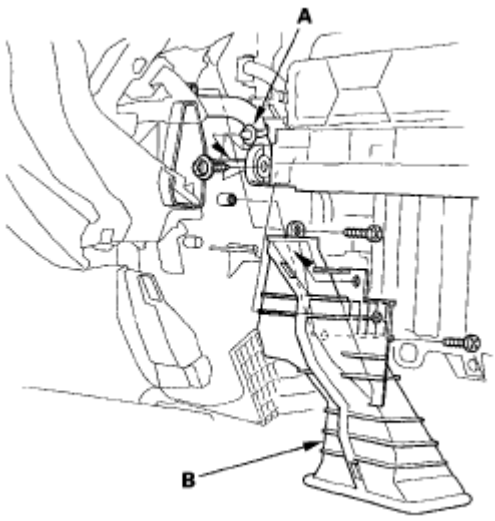


Fig. 45: Identifying Wire Harness Clip And Passenger's Heater Duct
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).

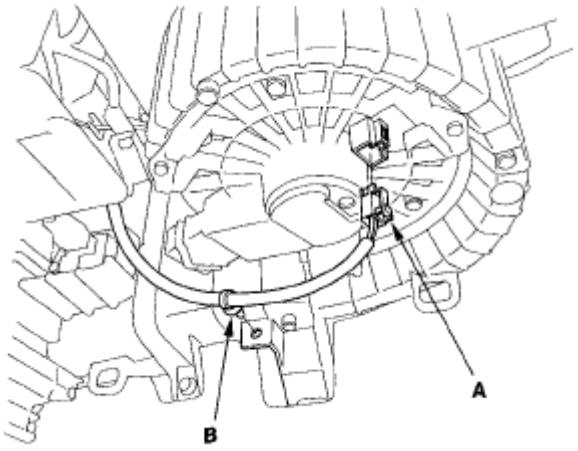


Fig. 46: Identifying Connector And Wire Harness Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the connector (A) from the recirculation control motor. Remove the self-tapping screws, the bolt, the mounting nuts, and the blower unit (B).

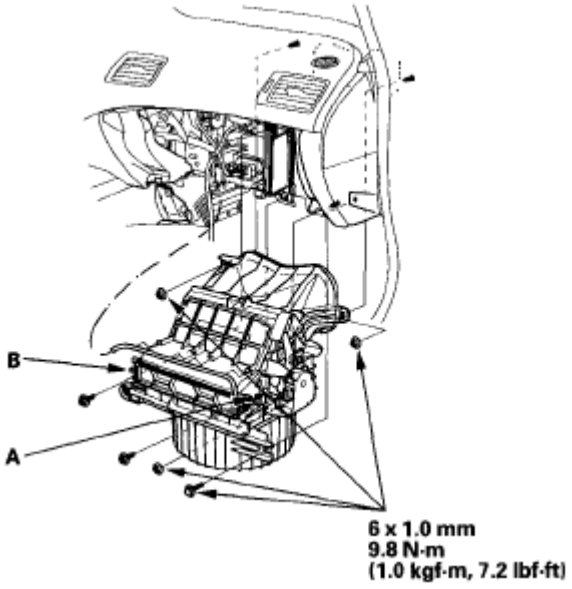


Fig. 47: Identifying Connector And Blower Unit (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

BLOWER UNIT COMPONENT REPLACEMENT

Note these items when overhauling the blower unit:

- The recirculation control motor (A), blower motor (B) and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.

- After reassembly, make sure the recirculation control motor runs smoothly (see **RECIRCULATION CONTROL MOTOR TEST**).

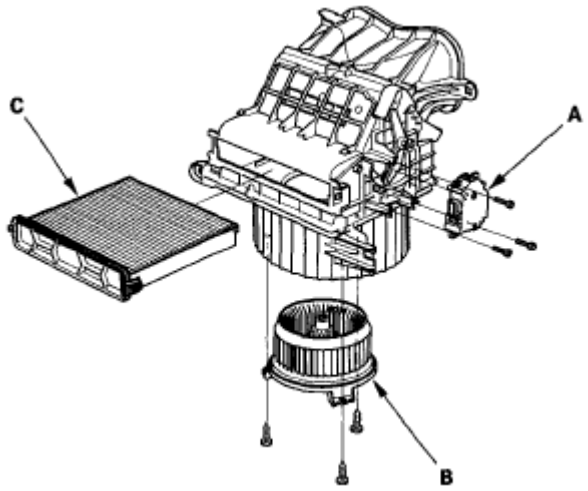


Fig. 48: Identifying Recirculation Control Motor, Blower Motor And Dust And Pollen Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HEATER UNIT/CORE REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
2. Make sure the ignition is OFF, then disconnect the negative cable from the battery.
3. Remove the air cleaner housing assembly (see **THROTTLE BODY CLEANING**).
4. When the engine is cool, drain the engine coolant from the radiator (see **COOLANT REPLACEMENT**).
5. From under the hood, slide the hose clamps (A) back. Disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Note the orientation of the hoses.

   Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

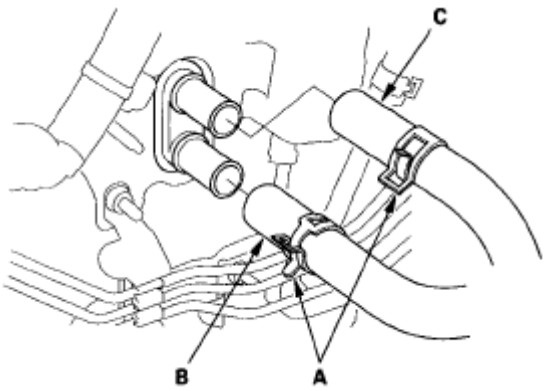


Fig. 49: Identifying Hose Clamps, Inlet Heater Hose And Outlet Heater Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines or brake lines, etc.

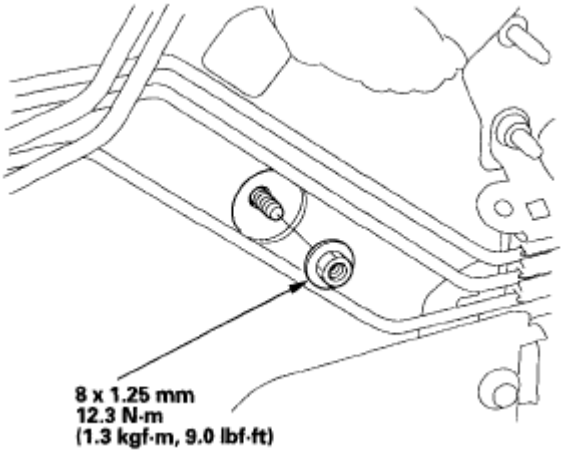


Fig. 50: Identifying Heater Unit Mounting Nut (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the dashboard (see **SIDE DEFOGGER VENT TRIM REMOVAL/INSTALLATION**).
8. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).

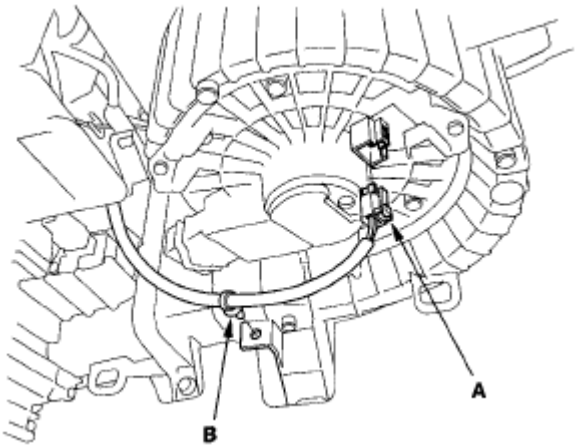


Fig. 51: Identifying Blower Motor Connector And Wire Harness Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the connector (A) from the recirculation control motor.

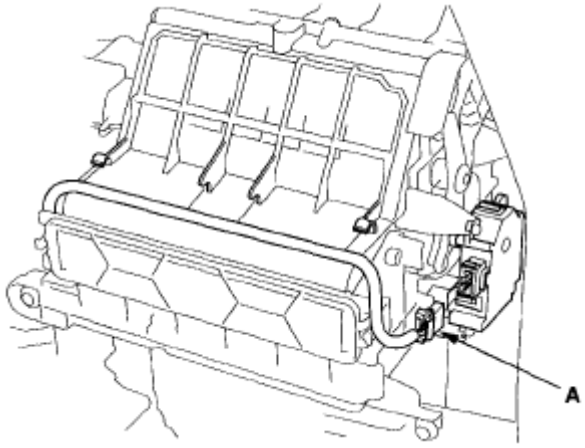


Fig. 52: Identifying Recirculation Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the connectors (A) from the mode control motor, the evaporator temperature sensor, and the power transistor. Remove the wire harness clip(B).

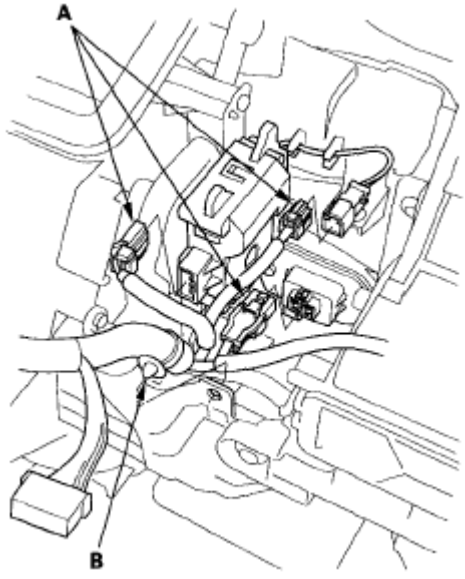


Fig. 53: Identifying Connectors And Wire Harness Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Disconnect the connectors (A) from the air mix control motor and A/C wire harness. Remove the connector clip (B), the wire harness clips (C), and the wire harness (D).

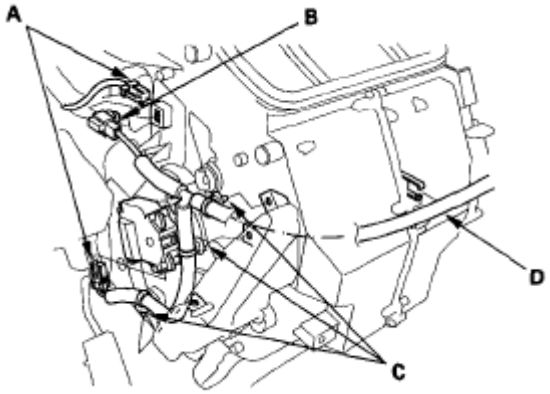


Fig. 54: Identifying Air Mix Control Motor Connector, Connector Clip And Wire Harness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the mounting bolt, mounting nuts, and blower-heater unit (A).

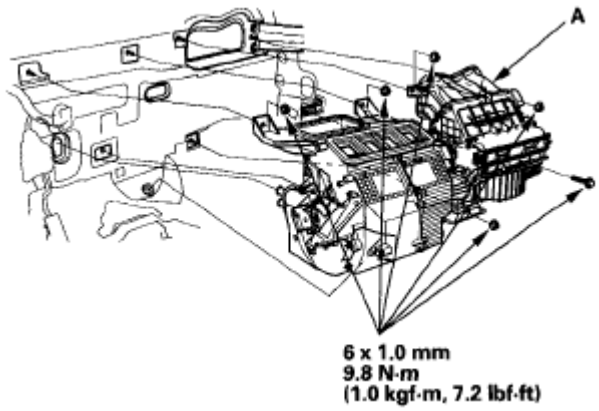


Fig. 55: Identifying Blower-Heater Unit Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the self-tapping screws, the heater core cover (A), the grommet (B), and carefully pull out the heater core (C).

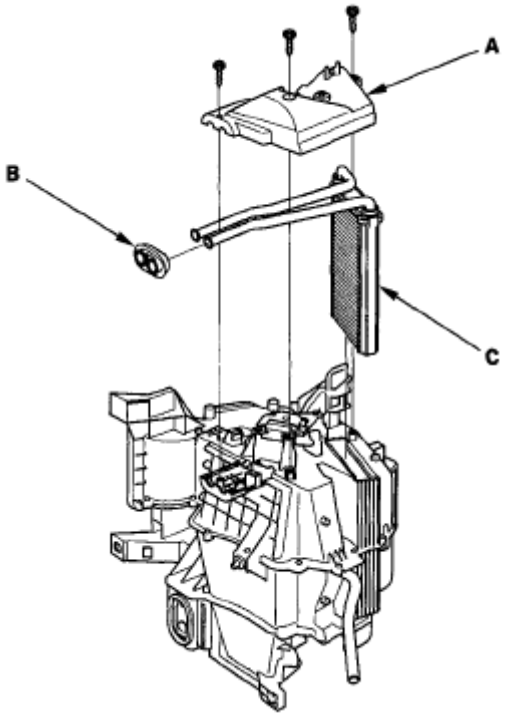


Fig. 56: Identifying Heater Core Cover, Grommet And Heater Core
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the heater core in the reverse order of removal.
15. Install the heater unit in the reverse order of removal, and note these items:
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see **COOLANT REPLACEMENT**).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
    - Set the clock.

2006-08 HVAC

Heating/Air Conditioning - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

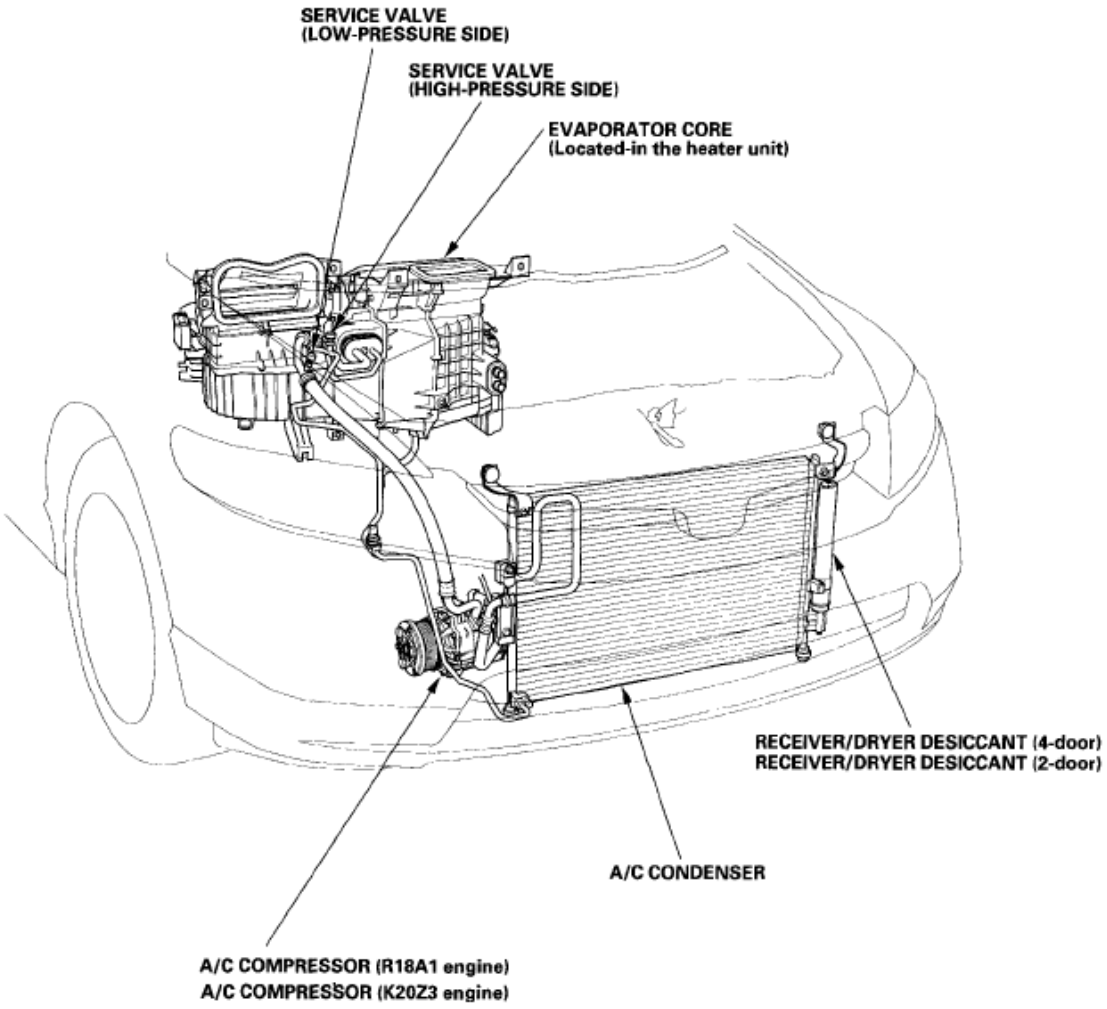


Fig. 1: Identifying Heating/Air Conditioning System Component Location (1 Of 3)

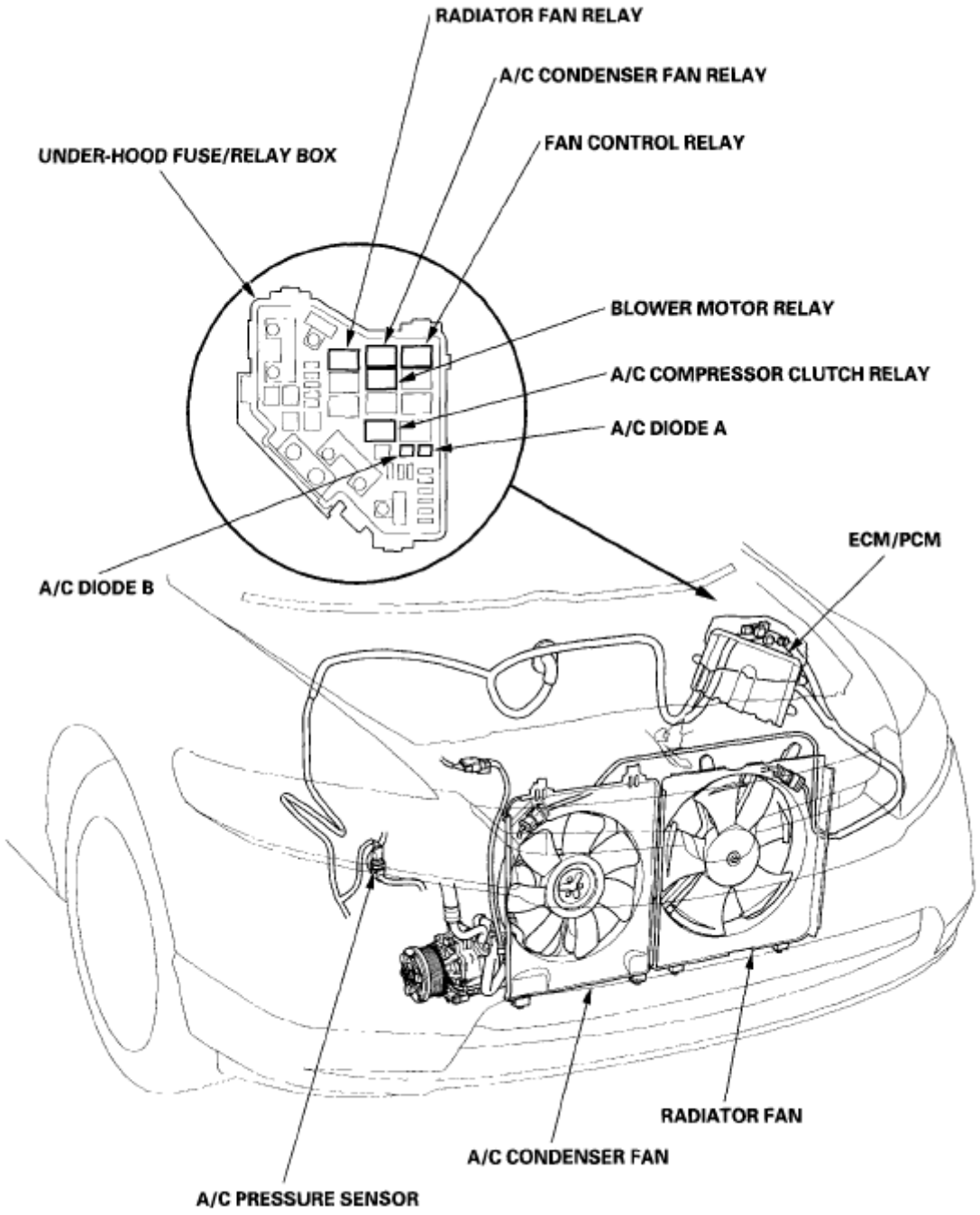


Fig. 2: Identifying Heating/Air Conditioning System Component Location (2 Of 3)

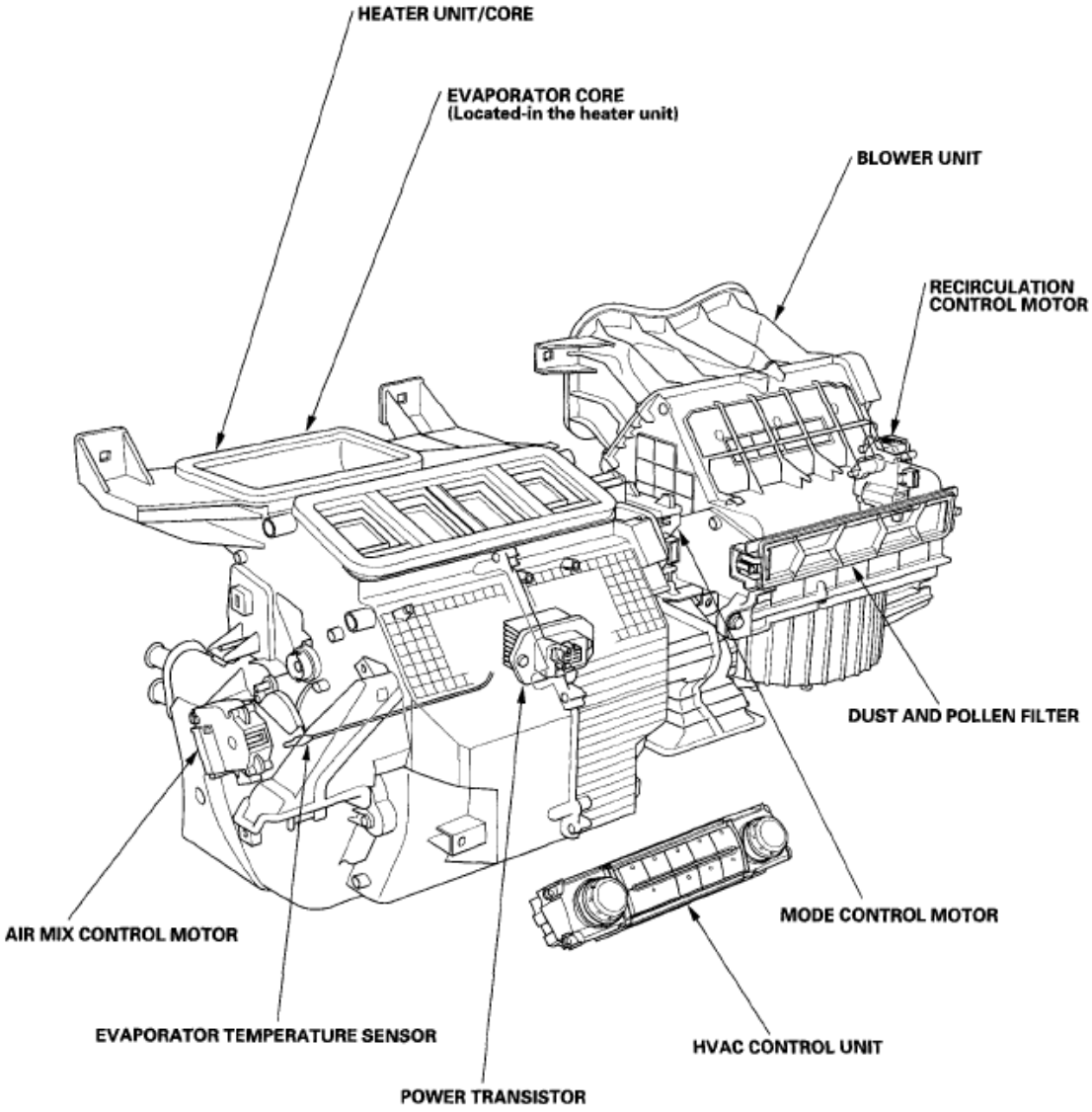


Fig. 3: Identifying Heating/Air Conditioning System Component Location (3 Of 3)

A/C SERVICE TIPS AND PRECAUTIONS

WARNING:

- **Compressed air mixed with the R-134a forms a combustible vapor.**
- **The vapor can burn or explode causing serious injury.**
- **Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.**

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant

oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result. Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C REFRIGERANT OIL REPLACEMENT

Recommended PAG oil: SP-10

- P/N 38897-P13-A01AH: 120 mL (4 fl-oz)
- P/N 38899-P13-A01: 40 mL (1 1/3 fl-oz)

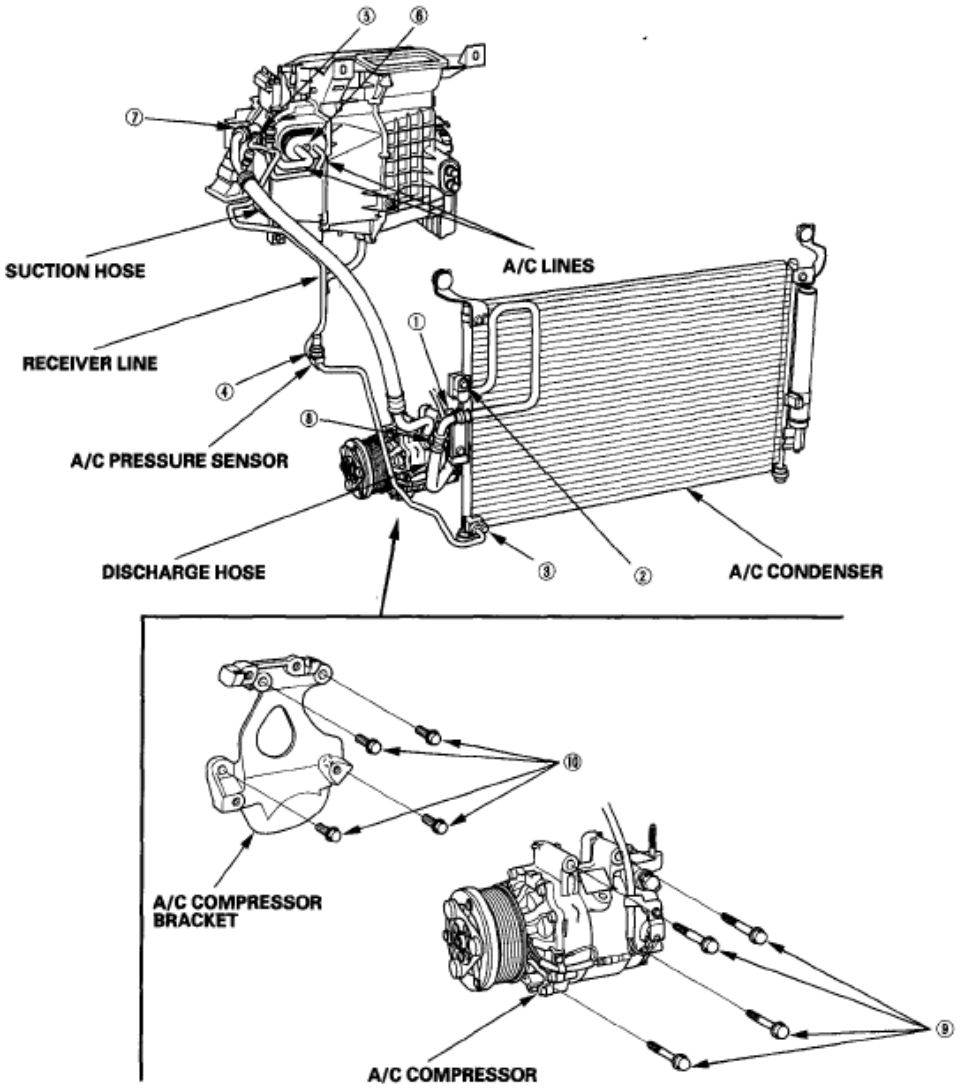
Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

A/C condenser	50 mL (1 2/3 fl-oz)
Evaporator	40 mL (1 1/3 fl-oz)
Line or hose	10 mL (1/3 fl-oz)
Receiver/Dryer	10 mL (1/3 fl-oz)
Leakage repair	25 mL (5/6 fl-oz)
A/C compressor	Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.

A/C compressor.....Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.

A/C LINE REPLACEMENT



① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ A/C pressure sensor to receiver line (11 x 1.0 mm): 11.3 N·m (1.2 kgf·m, 8.3 lbf·ft)
⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.3 N·m (1.4 kgf·m, 9.8 lbf·ft)
⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ A/C line to the suction hose (24 x 1.5 mm): 31.9 N·m (3.2 kgf·m, 23.5 lbf·ft)
⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑨ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑩ A/C compressor bracket to the engine block (8 x 1.25 mm): 24 N·m (2.4 kgf·m, 17.7 lbf·ft)

Fig. 4: Replacing A/C Line (With Specifications)

GENERAL TROUBLESHOOTING INFORMATION

How to Use the Self-diagnostic Function

The HVAC control unit has a self-diagnostic function for heating, ventilation, and air conditioning system. To run the self-diagnostic function, do the following:

1. Turn the ignition switch to LOCK (0).
2. Press and hold the recirculation control and rear window defogger buttons, turn the ignition switch

ON (II).

3. Recirculation indicator turns on for 2 seconds, then self-diagnostic function begins.

NOTE:

- **The blower motor will run at any speed regardless of the dial positioning.**
- **In the case of multiple problems, the recirculation indicator will blink the lowest number DTC only.**
- **If no DTCs are found, the indicator will not blink.**

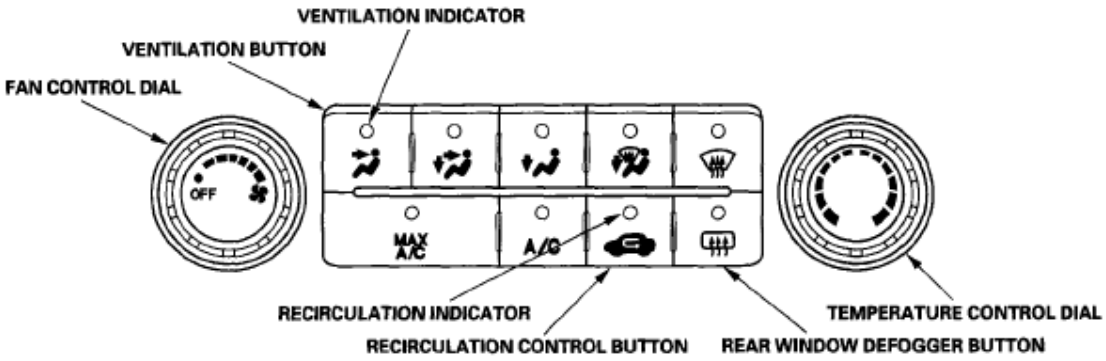


Fig. 5: Using Self-Diagnostic Function

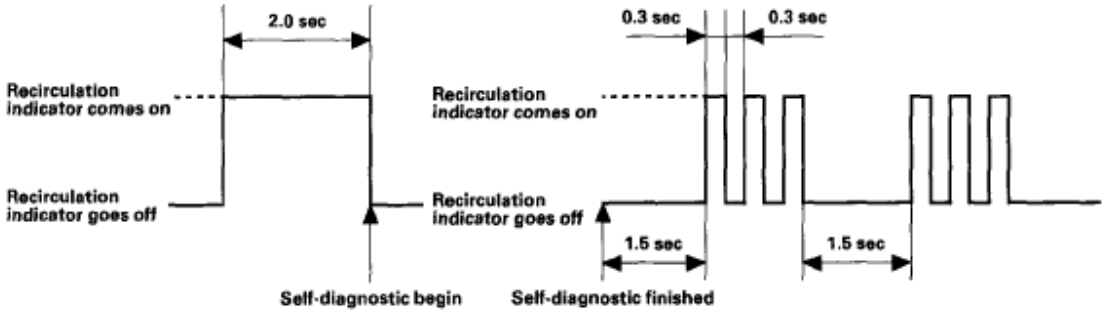


Fig. 6: Example Of DTC Indication Pattern (DTC3)

DETECTION ITEM REFERENCE

DTC (Recirculation Indicator Blinks)	Detection Item
1	An open in the air mix control motor circuit (see **DTC INDICATOR 1: AN OPEN IN THE AIR MIX CONTROL MOTOR CIRCUIT**)
2	A short in the air mix control motor circuit (see **DTC INDICATOR 2: A SHORT IN THE AIR MIX CONTROL MOTOR CIRCUIT**)
3	A problem in the air mix control linkage, door, or motor (see **DTC INDICATOR 3: A PROBLEM IN THE AIR MIX CONTROL LINKAGE, DOOR, OR MOTOR**)
4	An open or short in the mode control motor circuit (see **DTC INDICATOR 4: AN OPEN OR SHORT IN THE MODE CONTROL MOTOR CIRCUIT**)
5	A problem in the mode control linkage, doors, or motor (see **DTC INDICATOR 5: A PROBLEM IN THE MODE CONTROL LINKAGE, DOORS, OR MOTOR**)

6	A problem in the blower motor circuit (see **DTC INDICATOR 6: A PROBLEM IN THE BLOWER MOTOR CIRCUIT**)
7	HVAC control unit internal error (see **DTC INDICATOR 7: HVAC CONTROL UNIT INTERNAL ERROR**)
8	An open in the evaporator temperature sensor circuit (see **DTC INDICATOR 8: AN OPEN IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT**)
9	A short in the evaporator temperature sensor circuit (see **DTC INDICATOR 9: A SHORT IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT**)

CLEAR THE DTCS

When the problem is repaired, DTCs will automatically clear.

MAX COOL POSITION FUNCTION

When the mode control button is in the MAX A/C position, the HVAC control unit will automatically select the recirculation mode and turn the A/C on. If the recirculation switch is pressed when in MAX A/C, MAX A/C turns off. If A/C is pressed when in MAX A/C, the A/C turns off.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see **RECIRCULATION CONTROL MOTOR CIRCUIT TROUBLESHOOTING**)	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 36 (10 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	HVAC control power and ground circuit troubleshooting (see **HVAC CONTROL POWER AND GROUND CIRCUIT TROUBLESHOOTING**)	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 36 (10 A) in the under-dash fuse/relay box • Poor ground at G504 (see **CONNECTOR TO HARNESS INDEX**) • Cleanliness and tightness of all terminals
Both fans do not	Radiator and A/C condenser fan low speed	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 7 (20 A: M/T) or (30 A: A/T) in the under-

run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	circuit troubleshooting (see **RADIATOR AND A/C CONDENSER FAN LOW SPEED CIRCUIT TROUBLESHOOTING**)	hood fuse/relay box, and No. 36 (10 A) in the under-dash fuse/relay box • Poor ground at G301 (see **CONNECTOR TO HARNESS INDEX**) • Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see **A/C CONDENSER FAN HIGH SPEED CIRCUIT TROUBLESHOOTING**)	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 6 (20 A) and No. 15 (7.5 A) in the under-hood fuse/relay box • Poor ground at G301 (see **CONNECTOR TO HARNESS INDEX**) • Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C pressure sensor troubleshooting (R18A1 engine): A/C pressure sensor circuit low voltage (see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**), A/C pressure sensor circuit high voltage (see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**) A/C pressure sensor troubleshooting (K20Z3 engine): A/C pressure sensor circuit low voltage (see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**), A/C pressure sensor circuit high voltage (see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**) ECT troubleshooting (R18A1 engine): ECT sensor 2 circuit low voltage (see **DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE**), ECT sensor 2 circuit high voltage (see **DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE**) ECT troubleshooting (K20Z3 engine): ECT sensor circuit low voltage (see **DTC P2184: ECT SENSOR 2 CIRCUIT LOW VOLTAGE**), ECT sensor circuit high voltage (see **DTC P2185: ECT SENSOR 2 CIRCUIT HIGH VOLTAGE**)	• Powertrain DTCs, R18A1 engine (see **GENERAL TROUBLESHOOTING INFORMATION**), K20Z3 engine (see **GENERAL TROUBLESHOOTING INFORMATION**) • Cleanliness and tightness of all terminals

The A/C compressor clutch does not engage (but both fans run with the A/C on)	A/C compressor clutch circuit troubleshooting (see **A/C COMPRESSOR CLUTCH CIRCUIT TROUBLESHOOTING**)	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Blown fuse No. 12 (7.5 A) in the under-hood fuse/relay box, and No. 36 (10 A) in the under-dash fuse/relay box • Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C signal circuit troubleshooting (see **A/C SIGNAL CIRCUIT TROUBLESHOOTING**) A/C pressure sensor troubleshooting (R18A1 engine): A/C pressure sensor circuit low voltage (see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**), A/C pressure sensor circuit high voltage (see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**) A/C pressure sensor troubleshooting (K20Z3 engine): A/C pressure sensor circuit low voltage (see **DTC P0532: A/C PRESSURE SENSOR CIRCUIT LOW VOLTAGE**), A/C pressure sensor circuit high voltage (see **DTC P0533: A/C PRESSURE SENSOR CIRCUIT HIGH VOLTAGE**)	• HVAC DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**) • Powertrain DTCs, R18A1 engine (see **GENERAL TROUBLESHOOTING INFORMATION**), K20Z3 engine (see **GENERAL TROUBLESHOOTING INFORMATION**) • Cleanliness and tightness of all terminals

SYSTEM DESCRIPTION

The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system.

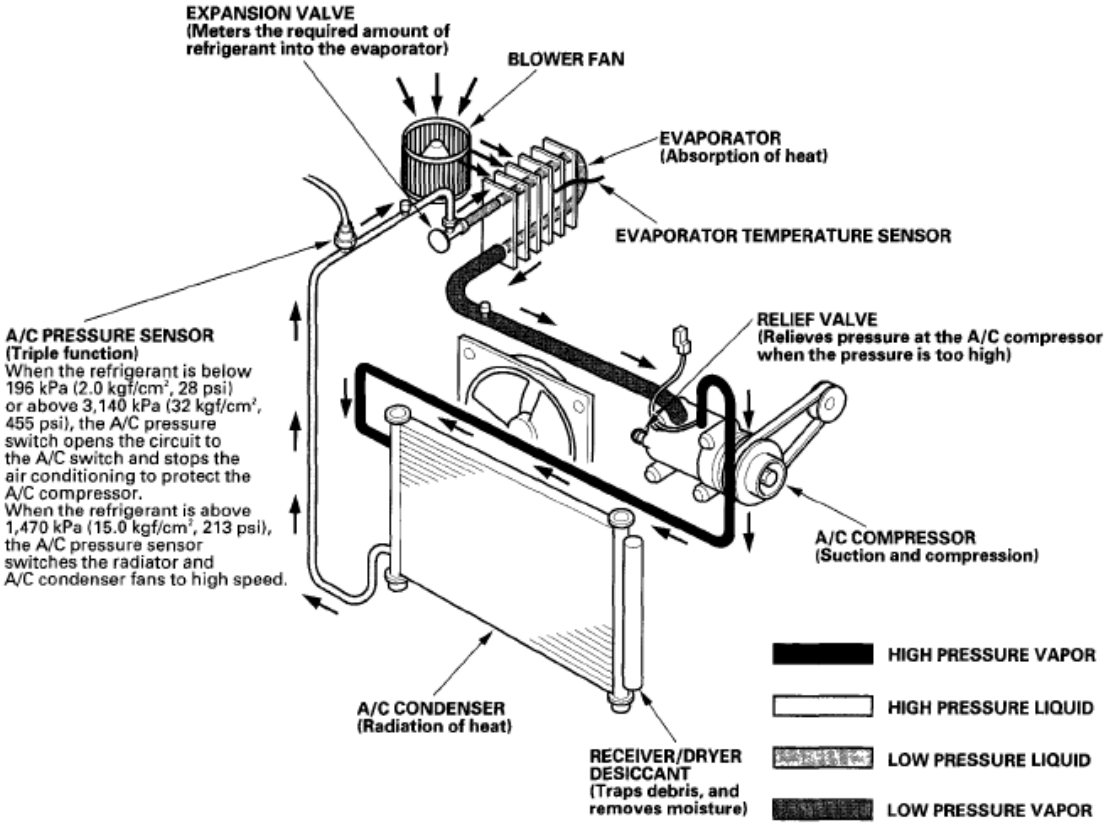


Fig. 7: Heating/Air Conditioning System Description

This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (SP-10) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

OIL SEPARATOR

Oil emission from the A/C compressor to the A/C line is reduced by placing the oil separator in the A/C compressor. This results in a thinner oil film inside of the heat exchanger (A/C condenser and evaporator). Air conditioning efficiency is increased without sacrificing engine performance.

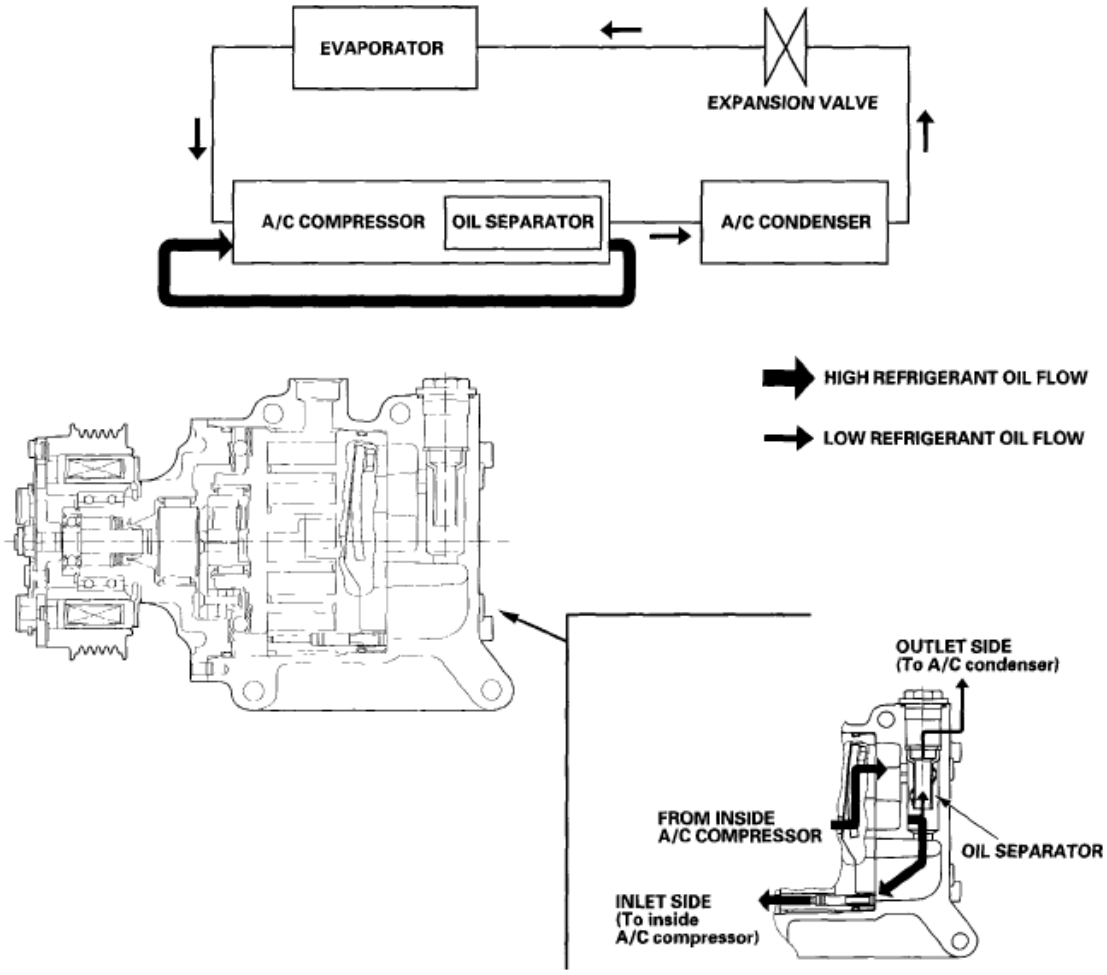


Fig. 8: Oil Separator System Description

A/C PRESSURE SENSOR

The A/C pressure sensor converts A/C pressure into electrical signals to the ECM/PCM.

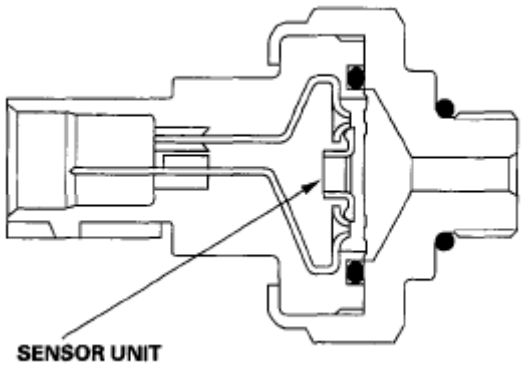


Fig. 9: A/C Pressure Sensor System Description (1 Of 2)

The response of the A/C pressure sensor is shown in **Fig. 10** .

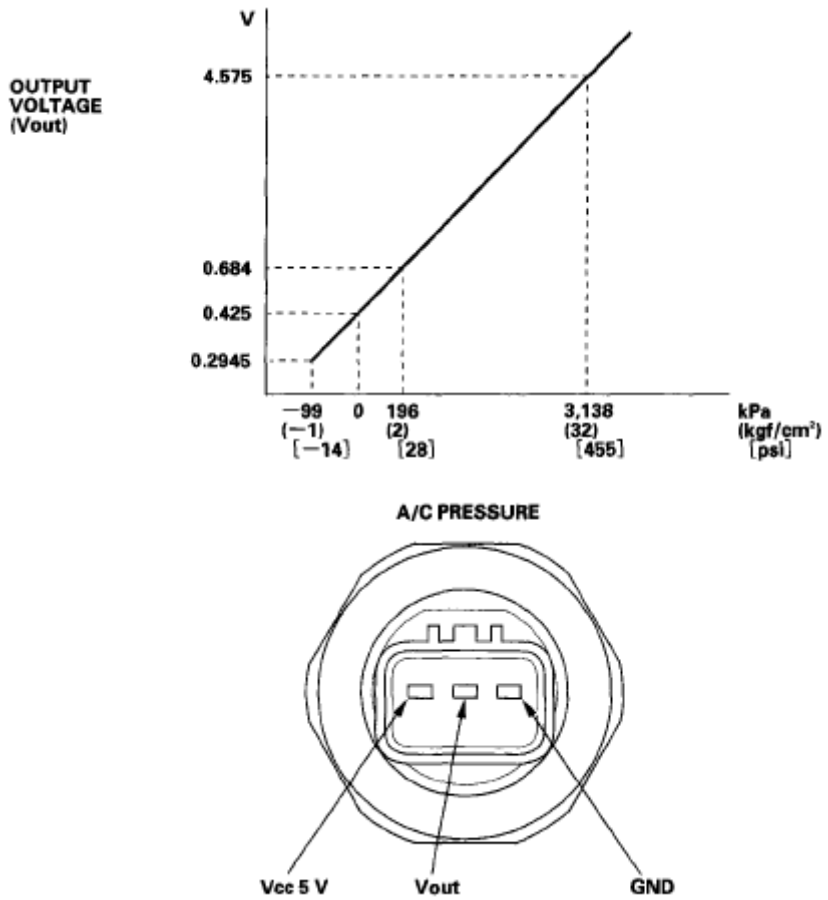


Fig. 10: A/C Pressure Sensor System Description (2 Of 2)

Heating/Air Conditioning Door Positions

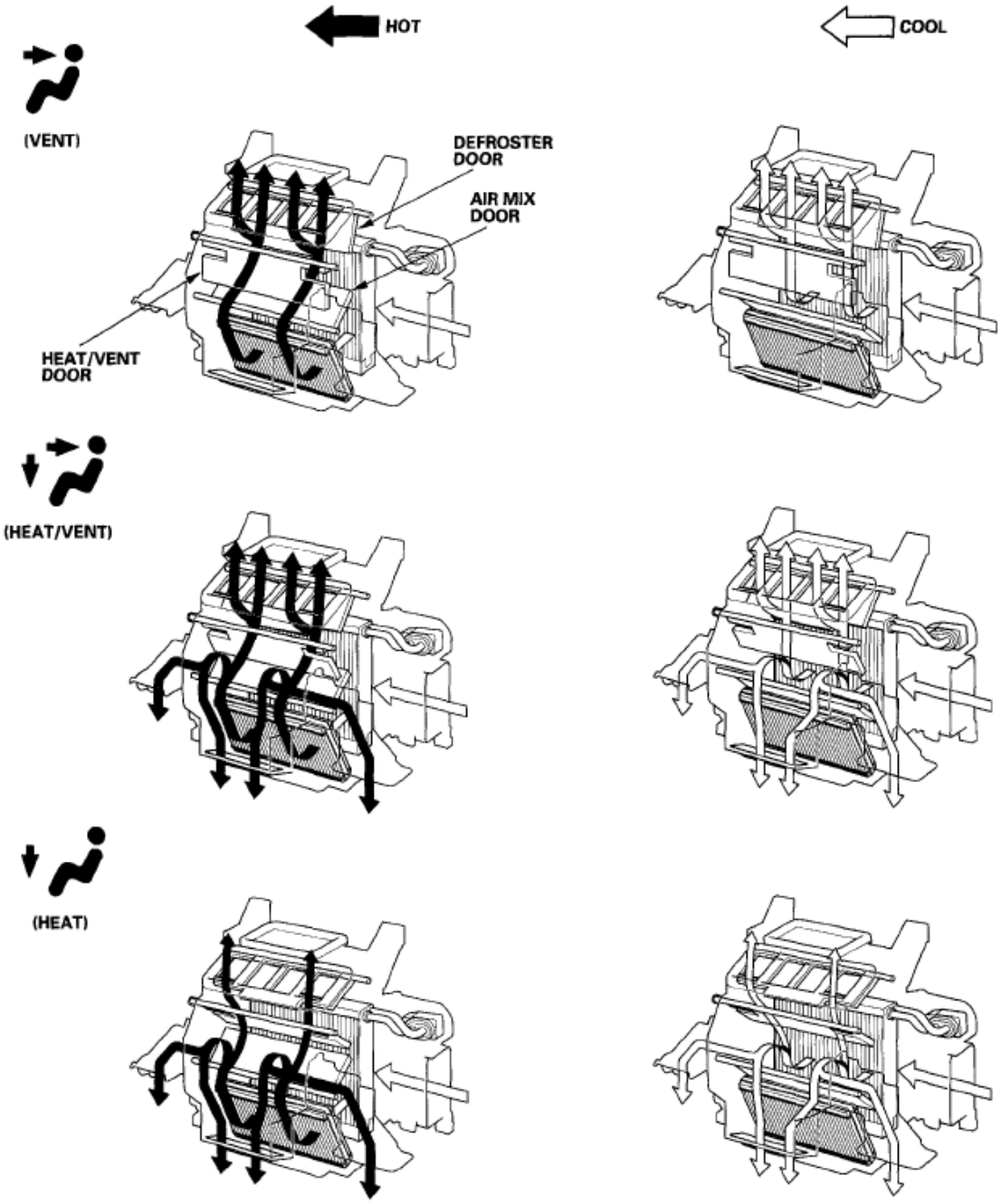


Fig. 11: Identifying Heating/Air Conditioning Door Positions (1 Of 2)

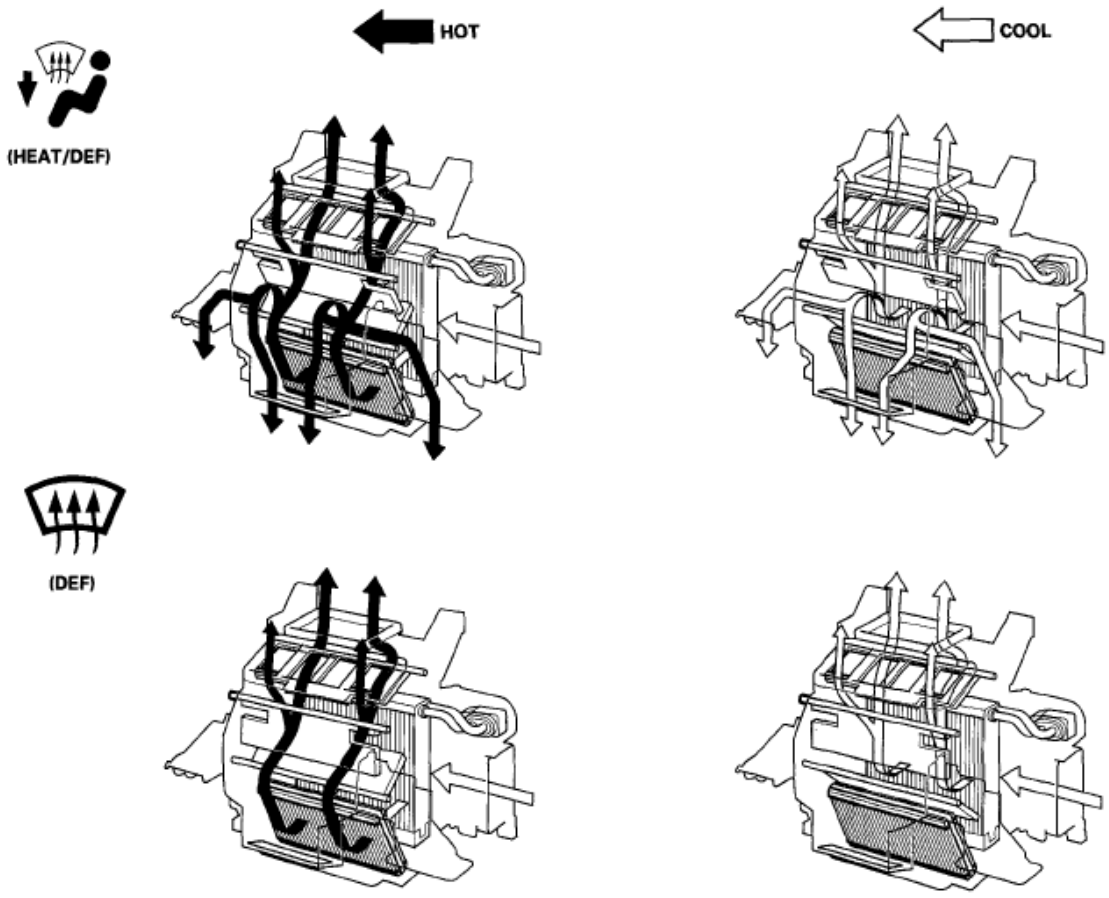


Fig. 12: Identifying Heating/Air Conditioning Door Positions (2 Of 2)

HVAC CONTROL UNIT INPUTS AND OUTPUTS

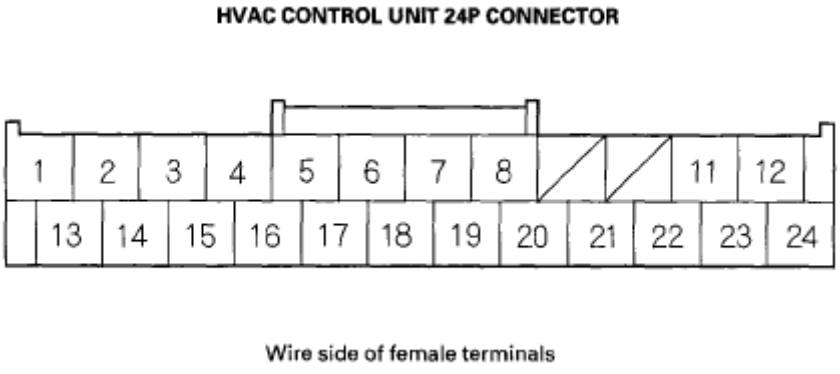


Fig. 13: Identifying HVAC Control Unit 24P Inputs And Outputs

HVAC CONTROL UNIT INPUTS AND OUTPUTS

Cavity	Wire color	Signal	
1	BLK	AIR MIX POTENTIAL +5V	OUTPUT
2	BRN	EVAPORATOR TEMPERATURE SENOR	OUTPUT
3	ORN	MODE 1	OUTPUT
4	LT GRN	MODE 2	OUTPUT
5	PUR	MODE 3	OUTPUT

6	BLU	MODE 4	OUTPUT
7	BLU	BLOWER FEEDBACK	INPUT
8	YEL	POWER TRANSISTOR CONTROL	OUTPUT
9	-	-	-
10	-	-	-
11	BRN	A/C SIGNAL	OUTPUT
12	RED	ILLUMI (-)	OUTPUT
13	RED	SENSOR COMMON GROUND	INPUT
14	WHT	MODE VENT	OUTPUT
15	GRN	MODE DEF	OUTPUT
16	ORN	RECIRCULATE	INPUT
17	PUR	FRESH	INPUT
18	GRY	AIR MIX POTENTIAL	OUTPUT
19	LT BLU	AIR MIX COOL	OUTPUT
20	PNK	AIR MIX HOT	OUTPUT
21	BLK	GROUND (G504)	OUTPUT
22	BRN	REAR WINDOW DEFOGGER RELAY	INPUT
23	LT GRN	IG2 (Power)	INPUT
24	GRY	ILLUMI (+)	INPUT

CIRCUIT DIAGRAM

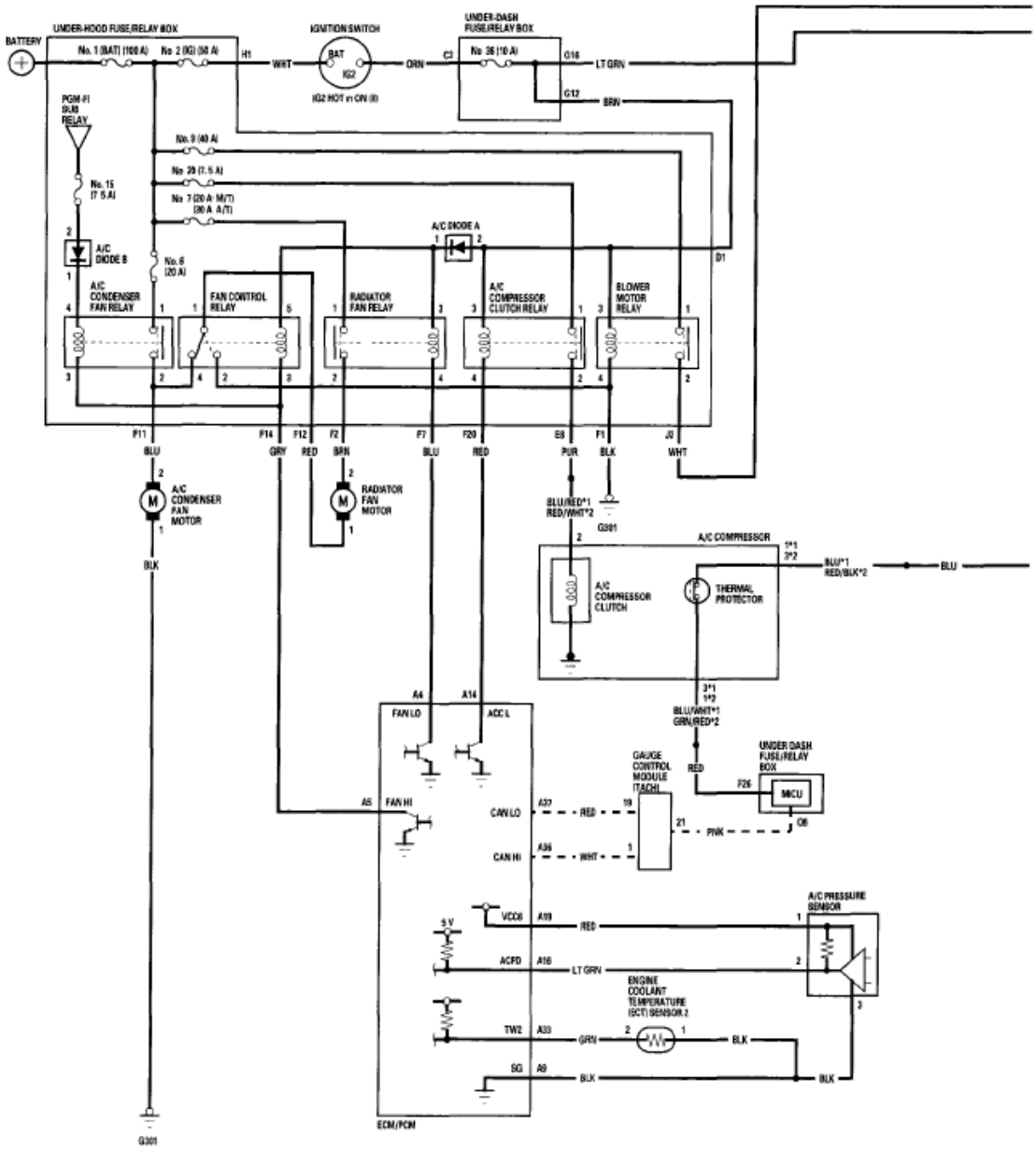


Fig. 14: Heating/Air Conditioning - Circuit Diagram (1 Of 2)

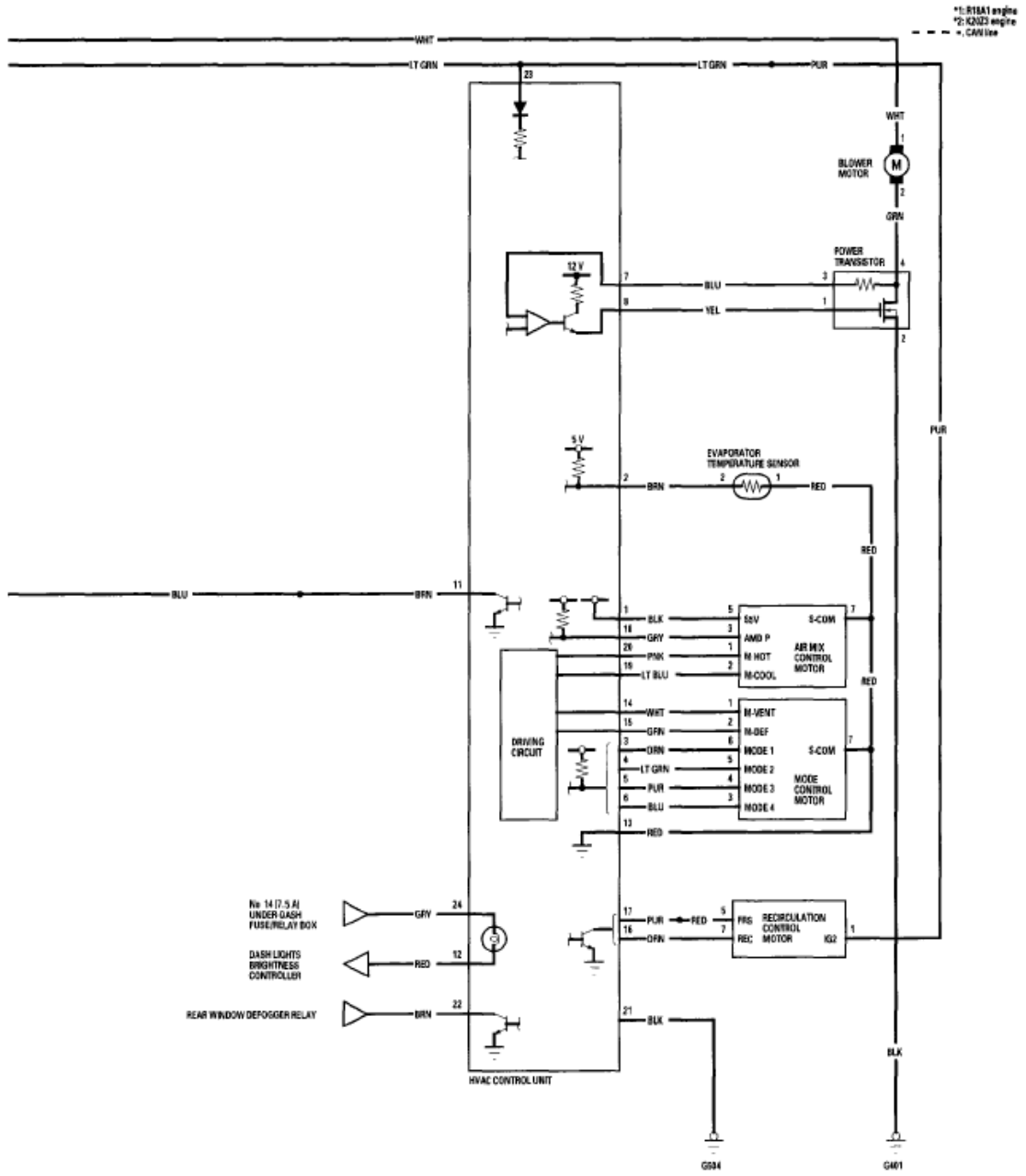


Fig. 15: Heating/Air Conditioning - Circuit Diagram (2 Of 2)

DTC TROUBLESHOOTING

DTC INDICATOR 1: AN OPEN IN THE AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

Is DTC 1 indicated?

YES - Go to step 5.

NO - Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit.

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

Is the air mix control motor OK?

YES - Go to step 7.

NO - Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

7. Disconnect the air mix control motor 7P connector.
8. Disconnect the HVAC control unit 24P connector.
9. Check for continuity between the following terminals of the HVAC controlpanel 24P connector and the air mix control motor 7P connector.

CONTINUITY CHECK INDEX

24P	7P
1	5
13	7
18	3

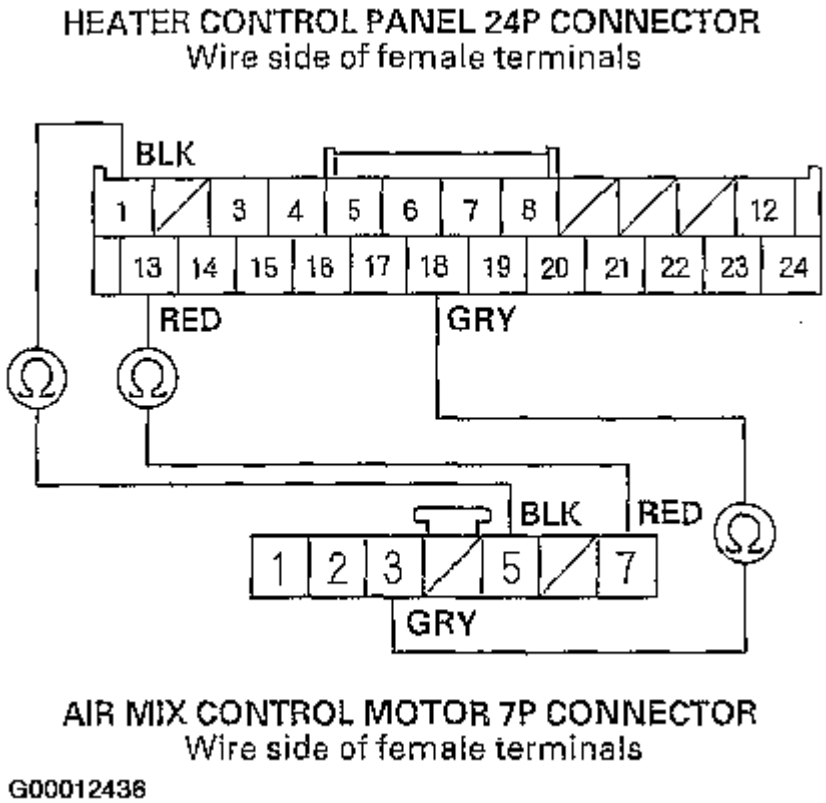


Fig. 16: Check Continuity Between HVAC Control Panel Connector & Air Mix Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Check for loose wires or poor connections at the HVAC control panel 24P connector and at the air mix control motor 7P connector. If the connections are good, substitute a known-good HVAC control panel and recheck. If the symptom/indication goes away, replace the original HVAC control panel.

NO -Repair any open in the wires between the HVAC control panel and the air mix control motor.

DTC INDICATOR 2: A SHORT IN THE AIR MIX CONTROL MOTOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

   Is DTC 2 indicated?

   YES - Go to step 5.

   NO - Intermittent failure.

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

   Is the air mix control motor OK?

   YES - Go to step 7.

   NO - Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

7. Disconnect the air mix control motor 7P connector.
8. Disconnect the HVAC control unit 24P connector.
9. Check for continuity between body ground and the HVAC control panel 24P connector terminals No. 1, 13 and 18 individually.

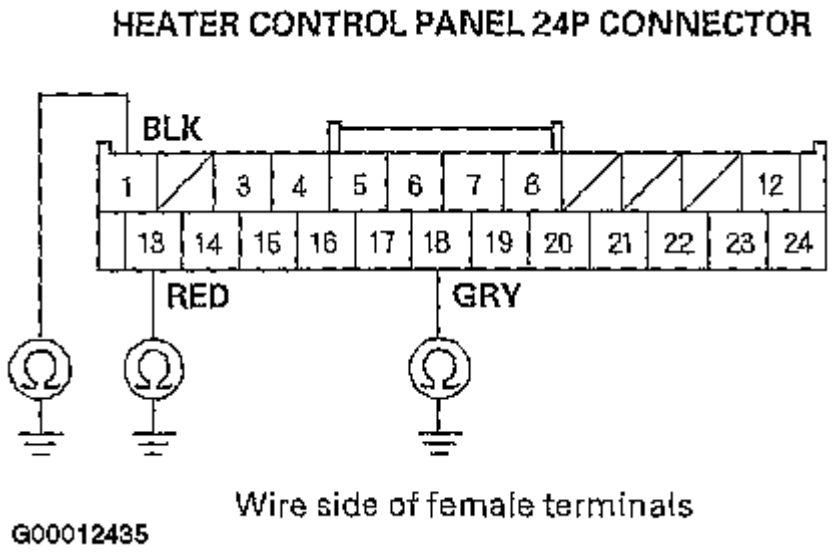


Fig. 17: Checking Continuity Between Ground & HVAC Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the HVAC control panel and the air mix control motor.

NO -Go to step 10.

10. Check for continuity between the HVAC control panel 24P connector terminals as follows.

TERMINALS REFERENCE

From terminal	To terminals
1	13,18
13	18

Is there continuity between any of the terminals?

YES -Repair the short in the wires.

NO -Go to step 11.

11. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground. See **Fig. 17**.

Is there battery voltage?

YES - Repair any short to power in the wires between the HVAC control unit and the air mix control motor. This short may also damage the HVAC control unit. Repair the short to power before replacing the HVAC control unit.

NO - Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes

away, replace the original HVAC control unit.

DTC INDICATOR 3: A PROBLEM IN THE AIR MIX CONTROL LINKAGE, DOOR, OR MOTOR

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

   Is DTC 3 indicated?

   YES - Go to step 5.

   NO - Intermittent failure.

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**).

   Is the air mix control motor OK?

   YES - Go to step 7.

   NO - Replace the air mix control motor (see **AIR MIX CONTROL MOTOR TEST**), or repair the air mix control linkage or door.

7. Check for continuity between the following terminals of the HVAC control panel 24P connector and the air mix control motor 7P connector.

   CONTINUITY CHECK INDEX

24P	7P
19	2
20	1

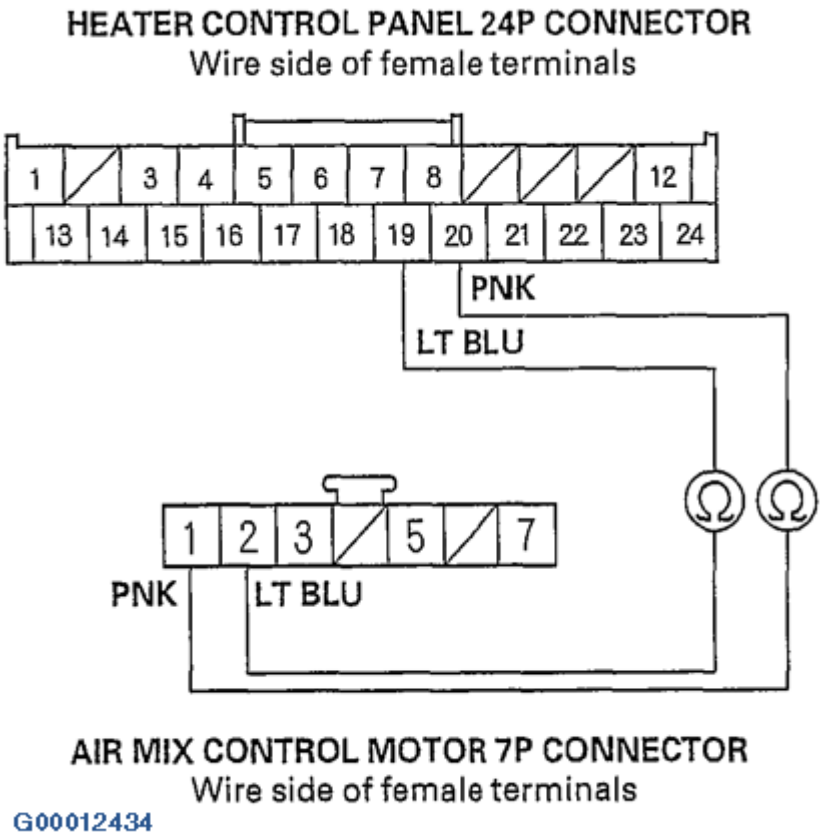


Fig. 18: Checking Continuity Between HVAC Control Panel Connector & Air Mix Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 8.

NO -Repair any open in the wires between the HVAC control panel and the air mix control motor.

8. Check for continuity between body ground and the HVAC control panel 24P connector terminals No. 19 and 20 individually.

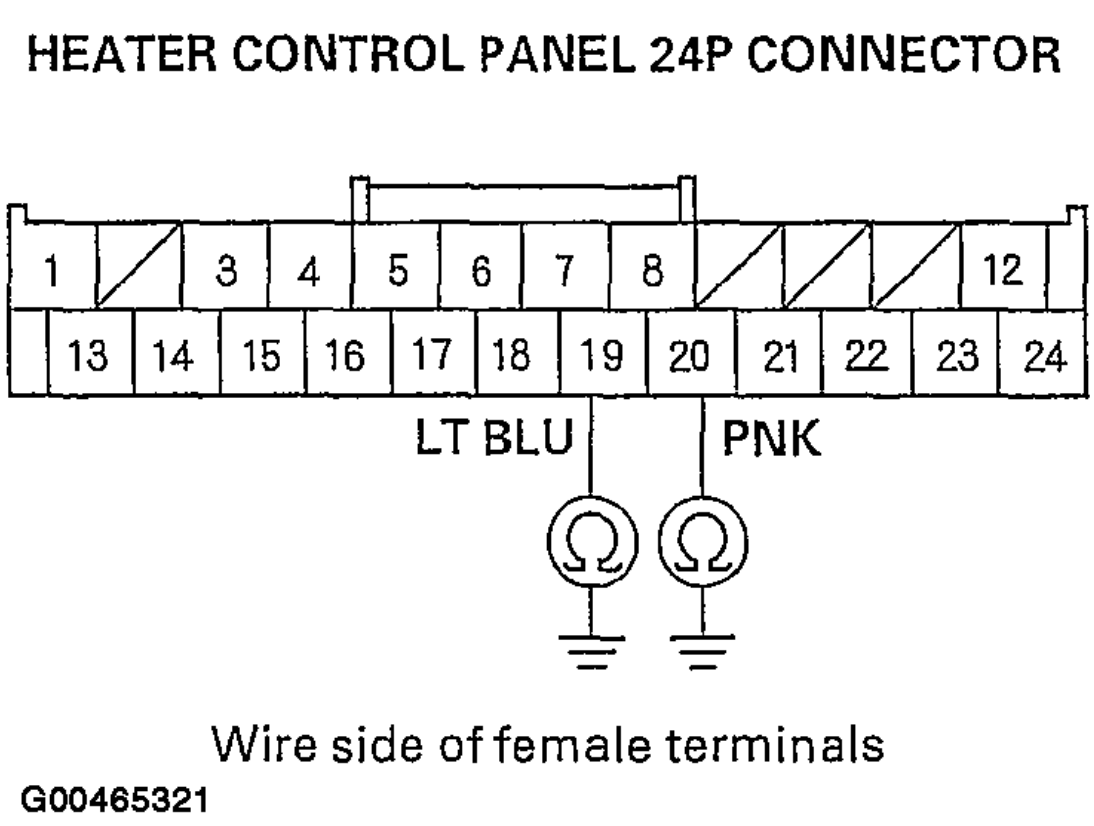


Fig. 19: Checking Continuity Between Ground & HVAC Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wires between the HVAC control panel and the air mix control motor.

NO -Substitute a known-good HVAC control panel, and recheck. If the symptom/indication goes away, replace the original HVAC control panel.

DTC INDICATOR 4: AN OPEN OR SHORT IN THE MODE CONTROL MOTOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

Is DTC 4 indicated?

YES - Go to step 5.

NO - Intermittent failure, check for loose wires or poor connections on the mode control motor circuit.

5. Turn the ignition switch to LOCK (0).
6. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

   Is the mode control motor OK?

   YES - Go to step 7.

   NO - Replace the mode control motor (see **AIR MIX CONTROL MOTOR REPLACEMENT**).

7. Disconnect the mode control motor 7P connector.
8. Disconnect the HVAC control unit 24P connector.
9. Check for continuity between the following terminals of the heater control panel 24P connector and the mode control motor 7P connector.

CONTINUITY CHECK INDEX

24P	7P
3	6
4	5
5	4
6	3
13	7

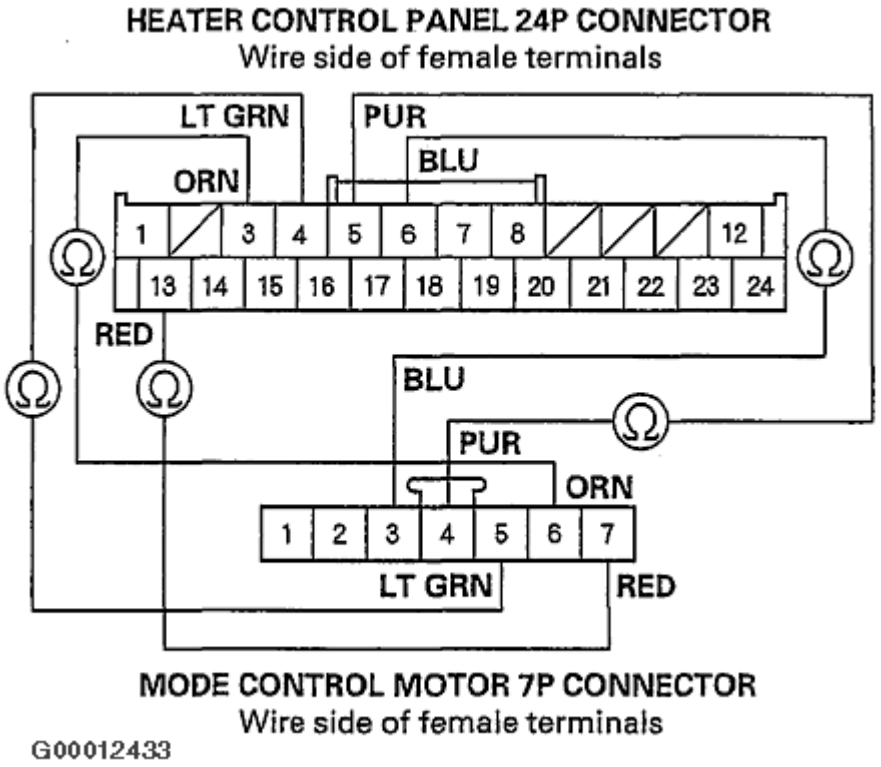


Fig. 20: Checking Continuity Between HVAC Control Panel Connector & Mode Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 10.

NO -Repair any open in the wires between the HVAC control panel and the mode control motor.

10. Check for continuity between body ground and the heater control panel 24P connector terminals No. 3, 4, 5, 6, and 13 individually.

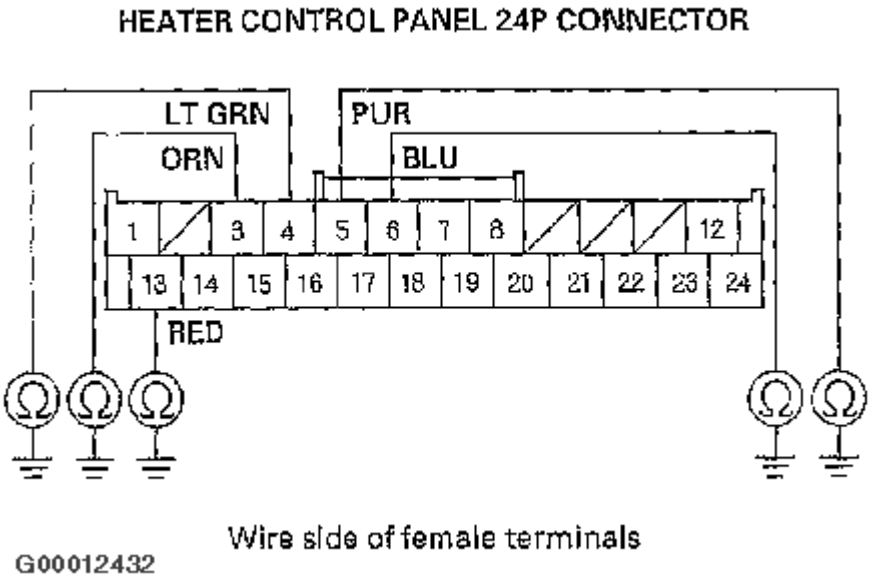


Fig. 21: Checking Continuity Between Ground & HVAC Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair any short to body ground in the wires between the HVAC control panel and the mode control motor.

NO -Go to step 11.

11. Check for continuity between the HVAC control unit 24P connector terminals as follows.

HVAC CONTROL UNIT 24P CONNECTOR TERMINALS

From terminal	To terminals
3	4, 5, 6, 13, 14
4	5, 6, 13, 14
5	6, 13, 14
6	13, 14

Is there continuity between any of the terminals?

YES - Repair the short in the wires.

NO - Go to step 12.

12. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground. See **Fig. 21**.

    Is there any voltage?

    YES -Repair any short to power in the wires between the HVAC control panel and the mode control motor. This short may also damage the HVAC control panel. Repair the short to power before replacing the HVAC control panel.

    NO -Check for loose wires or poor connections at the HVAC control panel 24P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good HVAC control panel, and recheck. If the symptom/indication goes away, replace the original HVAC control panel.

DTC INDICATOR 5: A PROBLEM IN THE MODE CONTROL LINKAGE, DOORS, OR MOTOR

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

   Is DTC 5 indicated?

   YES - Go to step 5.

   NO - Intermittent failure.

5. Turn the ignition switch to LOCK (0).
6. Test the mode control motor (see **MODE CONTROL MOTOR TEST**).

   Is the mode control motor OK?

   YES - Go to step 7.

   NO - Replace the mode control motor (see **AIR MIX CONTROL MOTOR REPLACEMENT**), or repair the mode control linkage or doors.

7. Check for continuity between the following terminals of the HVAC control panel 24P connector and the mode control motor 7P connector.

   CONTINUITY CHECK INDEX

24P	7P
14	1
15	2

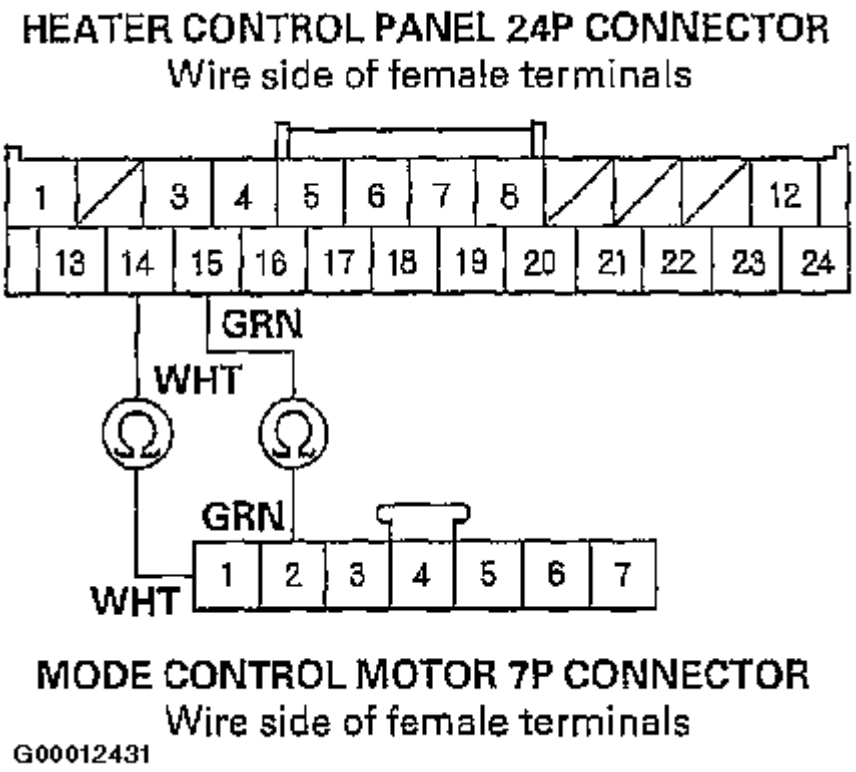


Fig. 22: Checing Continuity Between HVAC Control Connector & Mode Control Motor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 8.

NO -Repair any open in the wires between the HVAC control panel and the mode control motor.

8. Check for continuity between body ground and the HVAC control panel 24P connector terminals No. 14 and 15 individually.

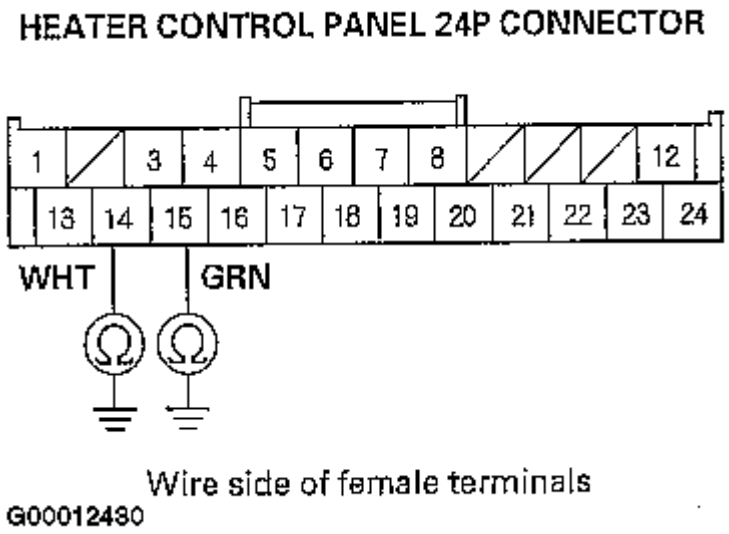


Fig. 23: Checking Continuity Between Ground & HVAC Control Panel Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wires between the HVAC control panel and the mode control motor.

NO -Substitute a known-good HVAC control panel, and recheck. If the symptom/indication goes away, replace the original HVAC control panel.

DTC INDICATOR 6: A PROBLEM IN THE BLOWER MOTOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

   Is DTC 6 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, check for loose wires or poor connections on the blower motor circuit.

5. Turn the ignition switch to LOCK (0).
6. Check the No. 9 (40 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES - Go to step 7.

NO - Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 9 (40 A) and No. 36 (10 A) fuses circuit.

7. Connect the blower motor 2P connector terminal No. 2 to body ground with a jumper wire.

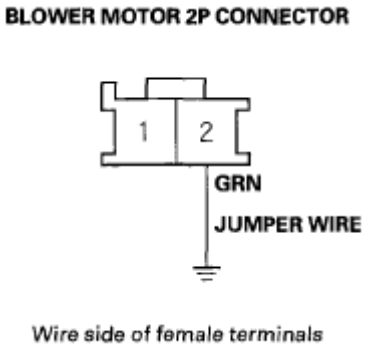


Fig. 24: Connecting Blower Motor 2P Connector Terminal No. 2 To Body Ground With Jumper Wire

8. Turn the ignition switch ON (II).

   Does the blower motor run?

   YES - Go to step 9.

   NO - Go to step 25.

9. Turn the ignition switch to LOCK (0).
10. Disconnect the jumper wire.
11. Disconnect the power transistor 4P connector.
12. Check for continuity between the power transistor 4P connector terminal No. 2 and body ground.

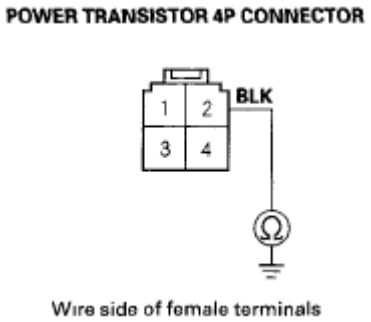


Fig. 25: Checking Continuity Between Power Transistor 4P Connector Terminal No. 2 And Body Ground

Is there continuity?

YES - Go to step 13.

NO - Check for an open in the wire between the power transistor and body ground. If the wire is OK,

check for poor ground at G401 (see **CONNECTOR TO HARNESS INDEX**).

13. Connect the power transistor 4P connector terminals No. 2 and No. 4 with a jumper wire.

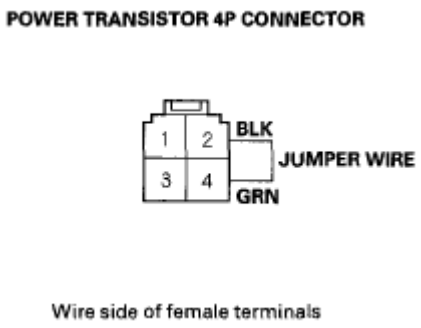


Fig. 26: Connecting Power Transistor 4P Connector Terminals No. 2 And No. 4 With Jumper Wire

14. Turn the ignition switch ON (II).

    Does the blower motor run at high speed?

    YES - Go to step 15.

    NO - Repair open in the GRN wire between the power transistor and the blower motor.

15. Turn the ignition switch to LOCK (0).
16. Disconnect the jumper wire.
17. Disconnect the HVAC control unit 24P connector.
18. Check for continuity between body ground and the HVAC control unit 24P connector terminals No. 7 and No. 8 individually.

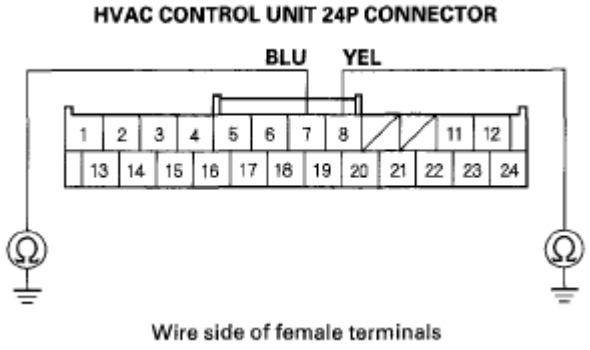


Fig. 27: Checking Continuity Between Body Ground And HVAC Control Unit 24P Connector Terminals No. 7 And No. 8

Is there continuity?

YES - Repair any short to body ground in the wires between the HVAC control unit and the power transistor.

NO - Go to step 19.

19. Check for continuity between the following terminals of the HVAC control unit 24P connector and the power transistor 4P connector.

HVAC CONTROL UNIT 24P CONNECTOR AND POWER TRANSISTOR 4P CONNECTOR

24P	4P
No. 7	No. 3
No. 8	No. 1

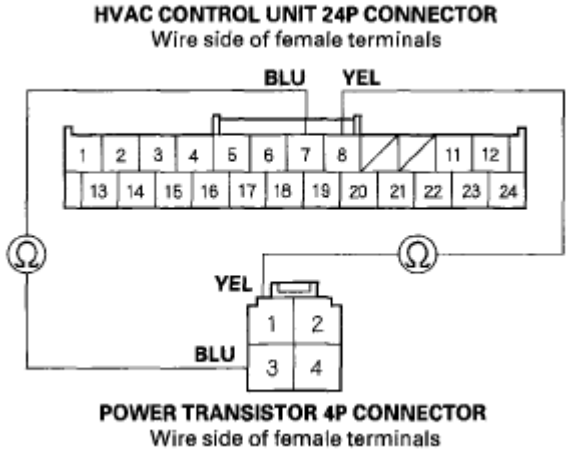


Fig. 28: Checking Continuity Between HVAC Control Unit 24P And Power Transistor 4P Connector Terminals

Is there continuity?

YES - Go to step 20.

NO - Repair any open in the wires between the HVAC control unit and the power transistor.

20. Turn the ignition switch ON (II).
21. Measure the voltage between body ground and the HVAC control unit 24P connector terminals No. 7 and No. 8 individually.

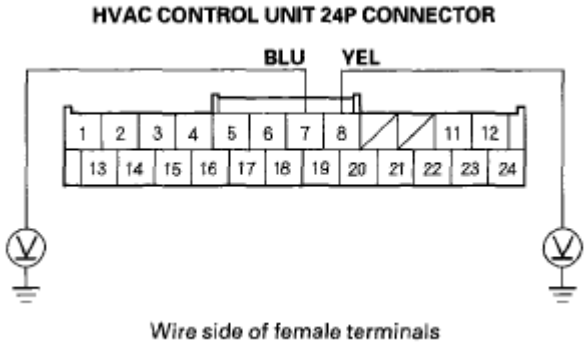


Fig. 29: Measuring Voltage Between Body Ground And HVAC Control Unit 24P Terminals No. 7 And No. 8

Is there voltage?

YES - Repair short to power in the wires.

NO - Go to step 22.

22. Turn the ignition switch to LOCK (0).
23. Reconnect the HVAC control unit 24P connector.
24. Test the power transistor (see **POWER TRANSISTOR TEST**).

Is the power transistor OK?

YES - Check for loose wires or poor connections at the HVAC control unit 24P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit.

NO - Replace the power transistor (see **POWER TRANSISTOR TEST**).

25. Turn the ignition switch to LOCK (0).
26. Disconnect the jumper wire.
27. Disconnect the blower motor 2P connector.
28. Turn ignition ON (II).
29. Measure the voltage between the blower motor 2P connector terminal No. 1 and body ground.

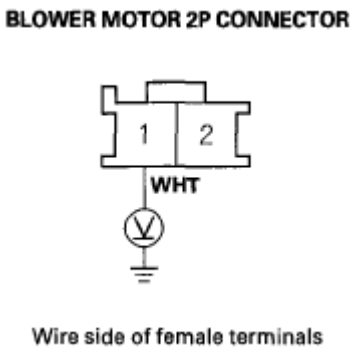


Fig. 30: Measuring Voltage Between Blower Motor 2P Connector Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Replace the blower motor (see **BLOWER UNIT COMPONENT REPLACEMENT**).

NO - Go to step 27.

30. Turn the ignition switch to LOCK (0).
31. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

Is the relay OK?

YES - Go to step 29.

NO - Replace the blower motor relay.

32. Measure the voltage between the blower motor relay 4P socket terminal No. 1 and body ground.

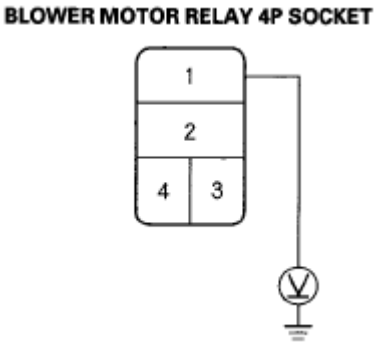


Fig. 31: Measuring Voltage Between Blower Motor Relay 4P Socket Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Go to step 30.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

33. Turn the ignition switch ON (II).
34. Measure the voltage between the blower motor relay 4P socket terminal No. 3 and body ground.

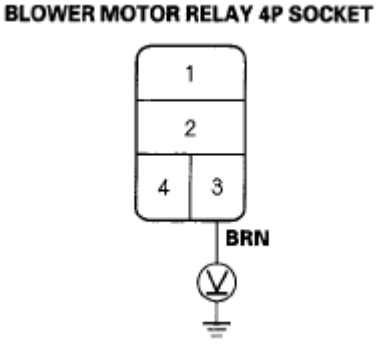


Fig. 32: Measuring Voltage Between Blower Motor Relay 4P Socket Terminal No. 3 And Body Ground

Is there battery voltage?

YES - Go to step 32.

NO - Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the blower motor relay.

35. Turn the ignition switch to LOCK (0).

36. Check for continuity between the blower motor relay 4P socket terminal No. 4 and body ground.

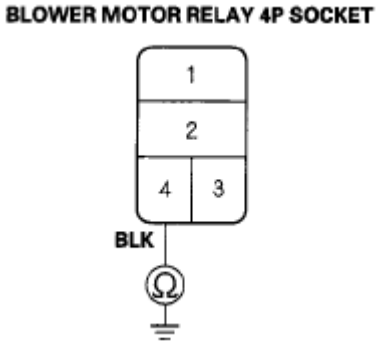


Fig. 33: Checking Continuity Between Blower Motor Relay 4P Socket Terminal No. 4 And Body Ground

Is there continuity?

YES - Repair open in the WHT wire between the blower motor relay and the blower motor.

NO - Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301 (see **CONNECTOR TO HARNESS INDEX**).

DTC INDICATOR 7: HVAC CONTROL UNIT INTERNAL ERROR

NOTE: Check the battery condition (see BATTERY TEST) and the charging system (see CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING).

1. Clear the DTC. (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit. (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

Is DTC 7 indicated?

YES - The HVAC control unit is faulty, replace the HVAC control unit (see **HVAC CONTROL UNIT REMOVAL AND INSTALLATION**).

NO - Intermittent failure, the HVAC control unit is OK at this time.

DTC INDICATOR 8: AN OPEN IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit. (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

Is DTC 8 indicated?

YES - Go to step 5.

NO - Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit.

5. Turn the ignition switch to LOCK (0).
6. Remove the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**) and test it (see **EVAPORATOR TEMPERATURE SENSOR TEST**).

Is the evaporator temperature sensor OK?

YES - Go to step 7.

NO - Replace the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**).

7. Disconnect the HVAC control unit 24P connector.
8. Check for continuity between the HVAC control unit 24P connector terminal No. 2 and the evaporator temperature sensor 2P connector terminal No. 2.

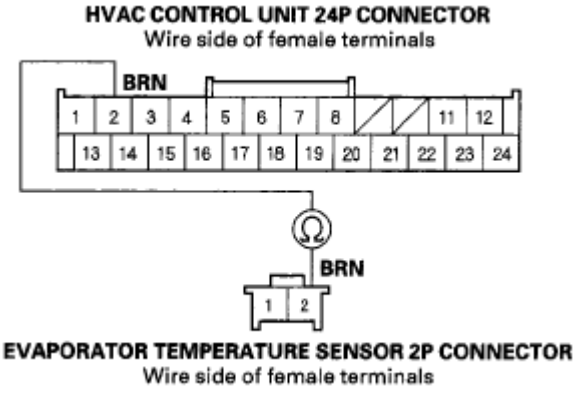


Fig. 34: Checking Continuity Between HVAC Control Unit 24P Terminal No. 2 And Evaporator Temperature Sensor 2P Terminal No. 2

Is there continuity?

YES - Go to step 9.

NO - Repair open in the wire between the HVAC control unit and the evaporator temperature sensor.

9. Check for continuity between the HVAC control unit 24P connector terminal No. 13 and the evaporator temperature sensor 2P connector terminal No. 1.

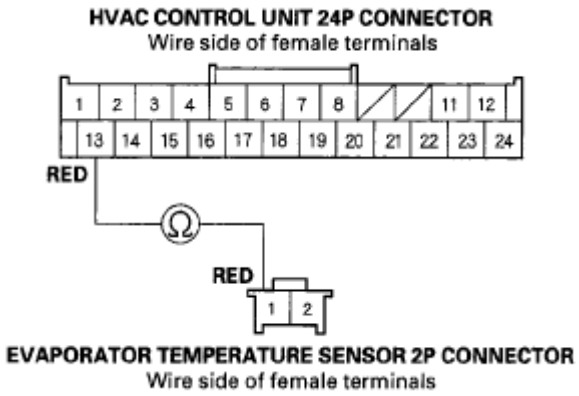


Fig. 35: Checking Continuity Between HVAC Control Unit 24P Terminal No. 13 And Evaporator Temperature Sensor 2P Terminal No. 1

Is there continuity?

YES - Check for loose wires or poor connections at the HVAC control unit 24P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit.

NO - Repair open in the wire between the HVAC control unit and the evaporator temperature sensor.

DTC INDICATOR 9: A SHORT IN THE EVAPORATOR TEMPERATURE SENSOR CIRCUIT

1. Clear the DTC (see **CLEAR THE DTCS**).
2. Turn the ignition switch to LOCK (0), and then ON (II).
3. Do the self-diagnostic with the HVAC control unit (see **HOW TO USE THE SELF-DIAGNOSTIC FUNCTION**).
4. Check for DTCs.

   Is DTC 9 indicated?

   YES - Go to step 4.

   NO - Intermittent failure.

5. Turn the ignition switch to LOCK (0).
6. Remove the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**) and test it (see **EVAPORATOR TEMPERATURE SENSOR TEST**).

   Is the evaporator temperature sensor OK?

   YES - Go to step 7.

   NO - Replace the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**).

7. Disconnect the HVAC control unit 24P connector.

8. Check for continuity between body ground and the HVAC control unit 24P connector terminals No. 2 and No. 13 individually.

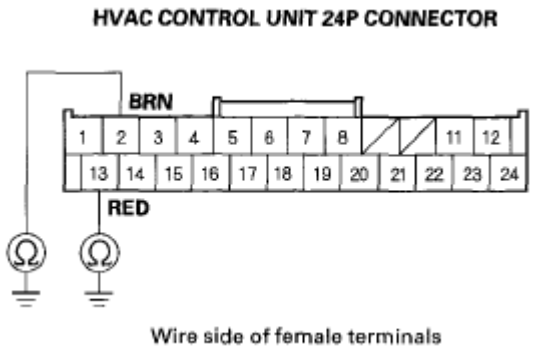


Fig. 36: Checking Continuity Between Body Ground And HVAC Control Unit 24P Connector Terminals No. 2 And No. 13

Is there continuity?

YES - Repair short to body ground in the wires between the HVAC control unit and the evaporator temperature sensor.

NO - Go to step 9.

9. Check for continuity between the HVAC control unit 24P connector terminals No. 2 and No. 13.

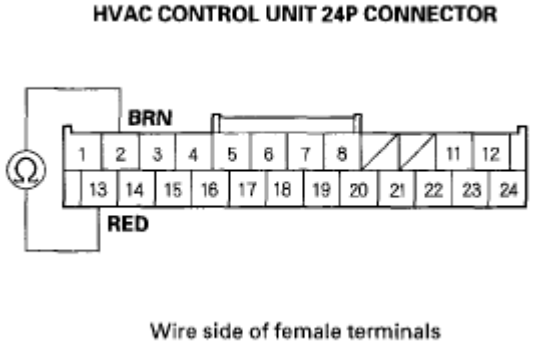


Fig. 37: Checking Continuity Between HVAC Control Unit 24P Connector Terminals No. 2 And No. 13

Is there continuity?

YES - Repair short in the wires between the HVAC control unit and the evaporator temperature sensor.

NO - Substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit.

RECIRCULATION CONTROL MOTOR CIRCUIT TROUBLESHOOTING

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES - Go to step 2.

NO - Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit.

2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the recirculation control motor 7P connector terminal No. 1 and body ground.

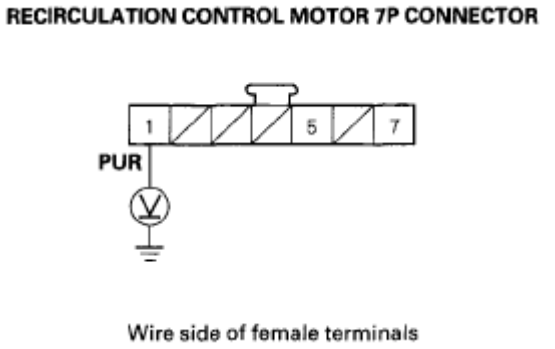


Fig. 38: Measuring Voltage Between Recirculation Control Motor 7P Connector Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the recirculation control motor.

5. Turn the ignition switch to LOCK (0).
6. Test the recirculation control motor (see **RECIRCULATION CONTROL MOTOR TEST**).

Is the recirculation control motor OK?

YES - Go to step 7.

NO - Replace the recirculation control motor (see **RECIRCULATION CONTROL MOTOR REPLACEMENT**), or repair the recirculation control linkage or door.

7. Disconnect the HVAC control unit 24P connector.
8. Check for continuity between body ground and the HVAC control unit 24P connector terminals No. 16 and No. 17 individually.

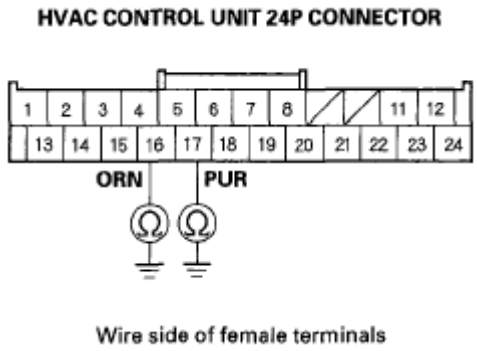


Fig. 39: Checking Continuity Between Body Ground And HVAC Control Unit 24P Connector Terminals No. 16 And No. 17

Is there continuity?

YES - Repair any short to body ground in the wires between the HVAC control unit and the recirculation control motor.

NO - Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage to body ground.

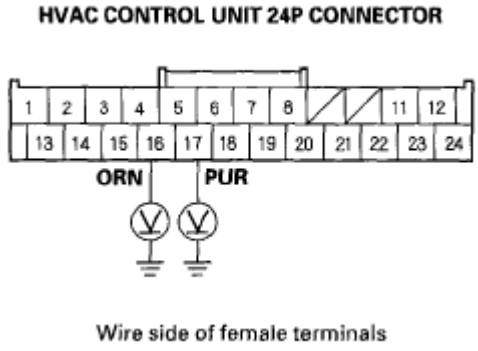


Fig. 40: Checking Voltage Between Body Ground And HVAC Control Unit 24P Connector Terminals No. 16 And No. 17

Is there any voltage?

YES - Repair any short to power in the wires between the HVAC control unit and the recirculation control motor. This short may also damage the HVAC control unit. Repair the short to power before replacing the HVAC control unit.

NO - Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Check for continuity between the following terminals of the HVAC control unit 24P connector and the recirculation control motor 7P connector.

HVAC CONTROL UNIT 24P CONNECTOR AND RECIRCULATION CONTROL MOTOR 7P CONNECTOR

24P	7P
No. 16	No. 7
No. 17	No. 5

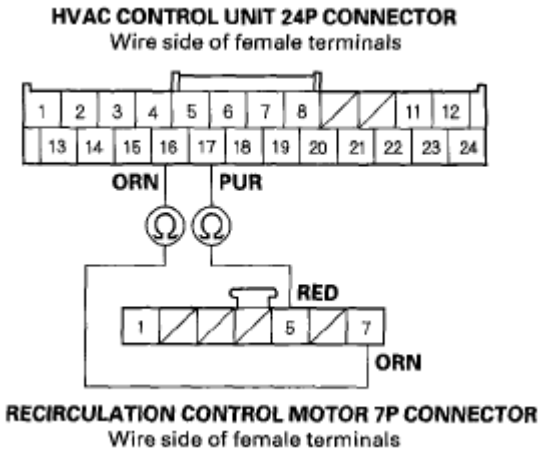


Fig. 41: Checking Continuity Between HVAC Control Unit 24P And Recirculation Control Motor 7P Connector

Is there continuity?

YES - Check for loose wires or poor connections at the HVAC control unit 24P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck. If the symptom/indication goes away, replace the original HVAC control unit.

NO - Repair any open in the wires between the HVAC control unit and the recirculation control motor.

HVAC CONTROL POWER AND GROUND CIRCUIT TROUBLESHOOTING

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES - Go to step 2.

   NO - Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit.

2. Disconnect the HVAC control unit 24P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the HVAC control unit 24P connector terminal No. 23 and body ground.

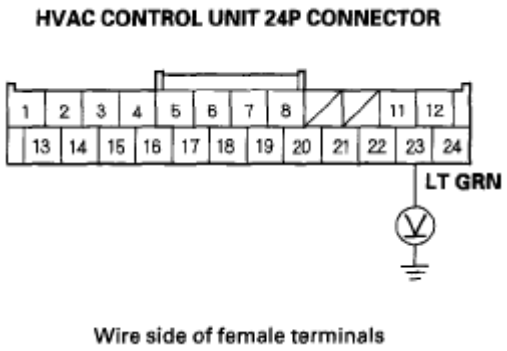


Fig. 42: Measuring Voltage Between HVAC Control Unit 24P Connector Terminal No. 23 And Body Ground

Is there battery voltage?

YES - Go to step 5.

NO - Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the HVAC control unit.

5. Turn the ignition switch to LOCK (0).
6. Check for continuity between the HVAC control unit 24P connector terminal No. 21 and body ground.

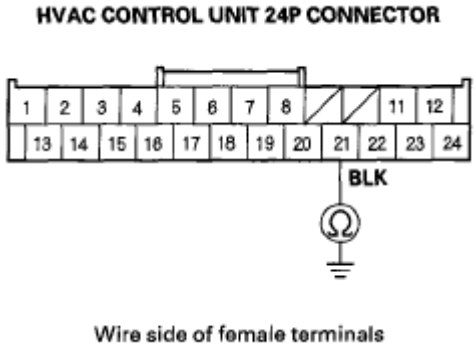


Fig. 43: Checking Continuity Between HVAC Control Unit 24P Connector Terminal No. 21 And Body Ground

Is there continuity?

YES - Check for loose wires or poor connections at the HVAC control unit 24P connector. If the connections are good, substitute a known-good HVAC control unit, and recheck.

NO - Check for an open in the wire between the HVAC control unit and body ground. If the wire is OK, check for poor ground at G504 (see **CONNECTOR TO HARNESS INDEX**).

RADIATOR AND A/C CONDENSER FAN LOW SPEED CIRCUIT TROUBLESHOOTING

NOTE:

- **Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the SYMPTOM TROUBLESHOOTING INDEX.**
- **Before performing symptom troubleshooting, check for powertrain DTCs, R18A1 engine (see GENERAL TROUBLESHOOTING INFORMATION), K20Z3 engine (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Check the No. 7 (20 A: M/T) or (30 A: A/T) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES - Go to step 2.

   NO - Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 7 (20 A: M/T) or (30 A: A/T) and No. 36 (10 A) fuses circuit.

2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see **REMOVAL AND INSTALLATION**).

   Is the relay OK?

   YES - Go to step 3.

   NO - Replace the radiator fan relay.

3. Connect the HDS to the DLC.
4. Turn the ignition switch ON (II).
5. Turn on the A/C on the HVAC control unit.
6. Check the FAN LOW CTRL in the PGM-FI Data List with the HDS.

   Is the FAN LOW CTRL on?

   YES - Go to step 7.

   NO - Substitute a known-good ECM/PCM, R18A1 engine (see **SUBSTITUTING THE ECM/PCM**), K20Z3 engine (see **SUBSTITUTING THE ECM**), and retest. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM, R18A1 engine (see **ECM/PCM REPLACEMENT**), K20Z3 engine (see **ECM REPLACEMENT**).

7. Measure the voltage between the radiator fan relay 4P socket terminal No. 1 and body ground.

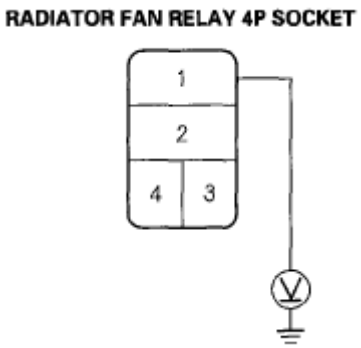


Fig. 44: Measuring Voltage Between Radiator Fan Relay 4P Socket Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Go to step 8.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

8. Connect the radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

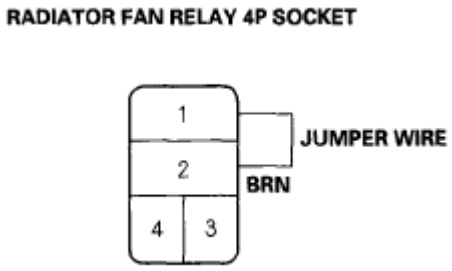


Fig. 45: Connecting Radiator Fan Relay 4P Socket Terminals No. 1 And No. 2 With Jumper Wire

Do the A/C condenser and radiator fans run on low?

YES - Go to step 9.

NO - Go to step 20.

9. Turn the ignition switch to LOCK (0).
10. Disconnect the jumper wire.
11. Turn the ignition switch ON (II).
12. Measure the voltage between the radiator fan relay 4P socket terminal No. 3 and body ground.

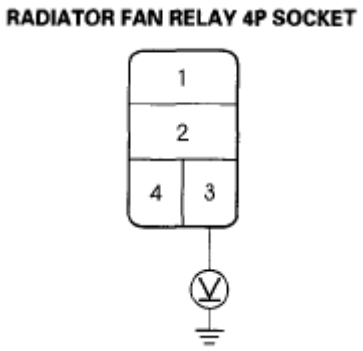


Fig. 46: Measuring Voltage Between Radiator Fan Relay 4P Socket Terminal No. 3 And Body Ground

Is there battery voltage?

YES - Go to step 12.

NO - Go to step 38.

13. Turn the ignition switch to LOCK (0).
14. Reinstall the radiator fan relay.
15. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).
17. Connect the ECM/PCM connector A (44P) terminal No. 4 to body ground with a jumper wire.

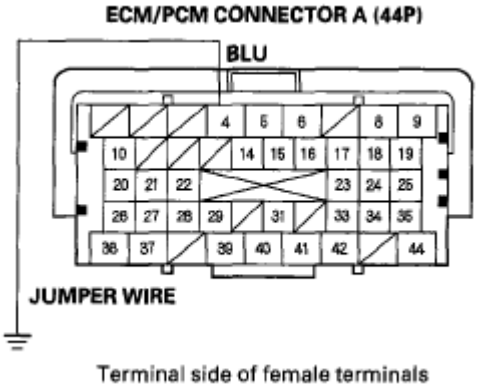


Fig. 47: Connecting ECM/PCM Connector A (44P) Terminal No. 4 To Body Ground With Jumper Wire

18. Turn the ignition switch ON (II).

Do the A/C condenser and radiator fans run on low?

YES - Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 4. If

the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM, R18A1 engine (see **ECM/PCM REPLACEMENT**), K20Z3 engine (see **ECM REPLACEMENT**).

NO - Repair open in the wire between the radiator fan relay and the ECM/PCM.

19. Turn the ignition switch to LOCK (0).
20. Disconnect the jumper wire.
21. Reinstall the radiator fan relay.
22. Disconnect the radiator fan 2P connector.
23. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.
24. Measure the voltage between the radiator fan 2P connector terminal No. 2 and body ground.

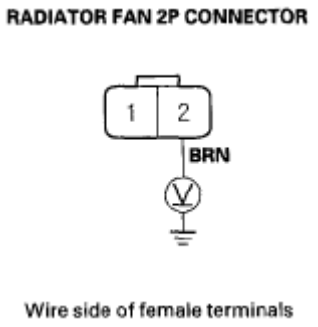


Fig. 48: Measuring Voltage Between Radiator Fan 2P Connector Terminal No. 2 And Body Ground

Is there battery voltage?

YES - Go to step 23.

NO - Repair open in the wire between the radiator fan relay and the radiator fan.

25. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).
26. Reconnect the radiator fan 2P connector.
27. Connect the radiator fan 2P connector terminal No. 1 to body ground with a jumper wire.

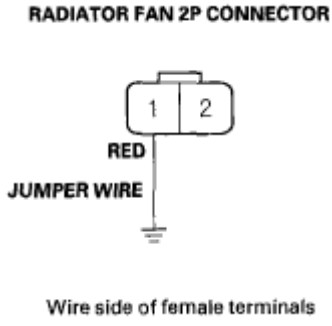


Fig. 49: Connecting Radiator Fan 2P Connector Terminal No. 1 To Body Ground With Jumper Wire

28. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.

    Does the radiator fan run?

    YES - Go to step 27.

    NO - Replace the radiator fan motor, R18A1 engine (see **RADIATOR AND FAN REPLACEMENT**), K20Z3 engine (see **RADIATOR AND FAN REPLACEMENT**).

29. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).
30. Disconnect the jumper wire.
31. Remove the fan control relay from the under-hood relay box, and test it (see **REMOVAL AND INSTALLATION**).

    Is the relay OK?

    YES - Go to step 30.

    NO - Replace the fan control relay.

32. Turn the ignition switch ON (II), then set the A/C button and fan control dial ON.
33. Measure the voltage between the fan control relay 5P socket terminal No. 1 and body ground.

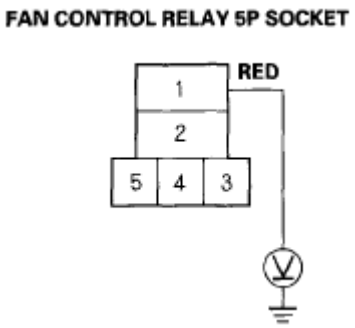


Fig. 50: Measuring Voltage Between Fan Control Relay 5P Socket Terminal No. 1 And Body Ground

    Is there battery voltage?

    YES - Go to step 32.

    NO - Repair open in the wire between the radiator fan and the fan control relay.

34. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).
35. Disconnect the A/C condenser fan 2P connector.
36. Check for continuity between the fan control relay 5P socket terminal No. 4 and the A/C condenser fan 2P connector terminal No. 2.

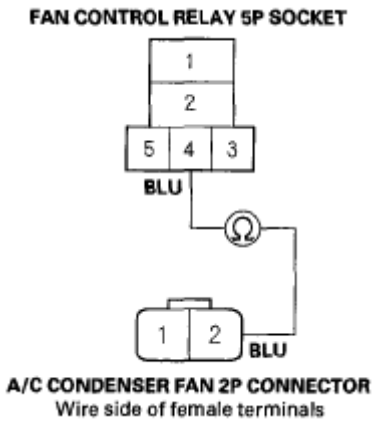


Fig. 51: Checking Continuity Between Fan Control Relay 5P Socket Terminal No. 4 And A/C Condenser Fan 2P Terminal No. 2

Is there continuity?

YES - Go to step 35.

NO - Repair open in the wire between the fan control relay and the A/C condenser fan.

37. Check for continuity between the A/C condenser fan 2P connector terminal No. 1 and body ground.

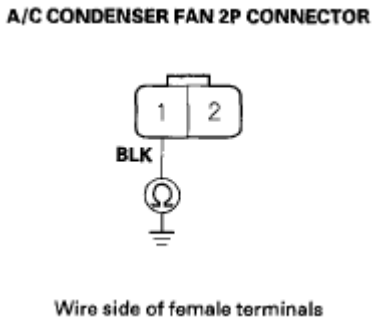


Fig. 52: Checking Continuity Between A/C Condenser Fan 2P Connector Terminal No. 1 And Body Ground

Is there continuity?

YES - Replace the A/C condenser fan motor, R18A1 engine (see **RADIATOR AND FAN REPLACEMENT**), K20Z3 engine (see **RADIATOR AND FAN REPLACEMENT**).

NO - Check for an open in the wire between the A/C condenser fan and body ground. If the wire is OK, check for poor ground at G301 (see **CONNECTOR TO HARNESS INDEX**).

38. Turn the ignition switch to LOCK (0).
39. Remove A/C diode A from the under-hood fuse/relay box.
40. Using the diode setting on a DVOM, check for current flow in both directions between the A/C diode A terminals No. 1 and No. 2.

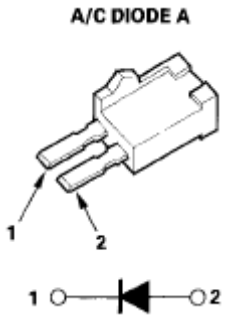


Fig. 53: Checking Current Flow In Both Directions Between A/C Diode A Terminals No. 1 And No. 2

Is there current flow in only one direction?

YES - Go to step 39.

NO - Replace A/C diode A.

41. Turn the ignition switch ON (II).
42. Measure the voltage between the A/C diode A 2P socket terminal No. 2 and body ground.

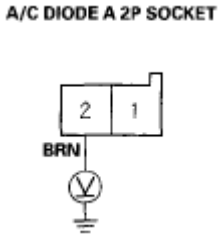


Fig. 54: Measuring Voltage Between A/C Diode A 2P Socket Terminal No. 2 And Body Ground

Is there battery voltage?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

NO - Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and A/C diode A.

A/C CONDENSER FAN HIGH SPEED CIRCUIT TROUBLESHOOTING

NOTE:

- **Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the SYMPTOM TROUBLESHOOTING INDEX.**
- **Before performing symptom troubleshooting, check for powertrain DTCs, R18A1 engine (see GENERAL TROUBLESHOOTING INFORMATION), K20Z3 engine (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Check the No. 6 (20 A) and No. 15 (7.5 A) fuses in the under-hood fuse/relay box.

Are the fuses OK?

YES - Go to step 2.

NO - Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 6 (20 A) and No. 15 (7.5 A) fuses circuit.

2. Remove the A/C condenser fan relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES - Go to step 3.

   NO - Replace the A/C condenser fan relay.

3. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 1 and body ground.

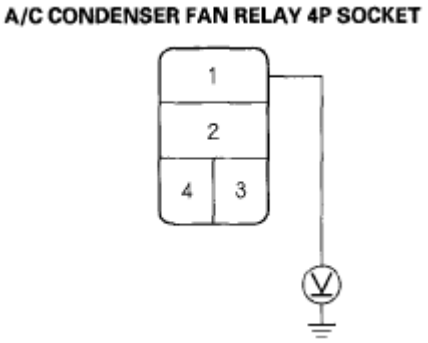


Fig. 55: Measuring Voltage Between A/C Condenser Fan Relay 4P Socket Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Go to step 4.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

4. Connect the A/C condenser fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

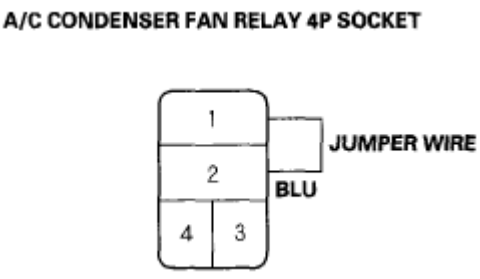


Fig. 56: Connecting A/C Condenser Fan Relay 4P Socket Terminals No. 1 And No. 2 With Jumper Wire

Does the A/C condenser fan run on high?

YES - Go to step 5.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

5. Disconnect the jumper wire.
6. Turn the ignition switch ON (II).
7. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 4 and body ground.

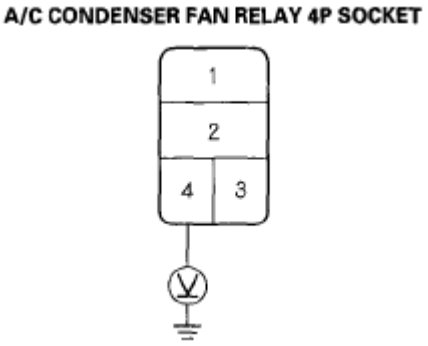


Fig. 57: Measuring Voltage Between A/C Condenser Fan Relay 4P Socket Terminal No. 4 And Body Ground

Is there battery voltage?

YES - Go to step 8.

NO - Go to step 16.

8. Turn the ignition switch to LOCK (0).
9. Check for continuity between the fan control relay 5P socket No. 2 terminal and body ground.

Is there continuity?

YES - Go to step 10.

NO - Check for an open in the wire between the fan control relay and body ground. If the wire is OK, check for poor ground at G301.

10. Reinstall the A/C condenser fan relay.
11. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

12. Disconnect ECM/PCM connector A (44P).
13. Connect the ECM/PCM connector A (44P) terminal No. 5 to body ground with a jumper wire.

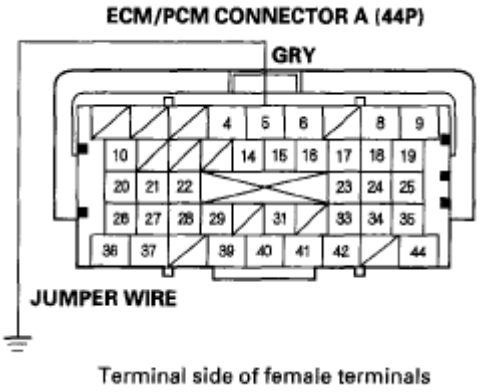


Fig. 58: Connecting ECM/PCM Connector A (44P) Terminal No. 5 To Body Ground With Jumper Wire

14. Turn the ignition switch ON (II).

    Does the A/C condenser fan run on high?

    YES - Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 5. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM, R18A1 engine (see **ECM/PCM REPLACEMENT**), K20Z3 engine (see **ECM REPLACEMENT**).

    NO - Repair open in the wire between the A/C condenser fan relay and the ECM/PCM.

15. Turn the ignition switch to LOCK (0).
16. Remove A/C diode B from the under-hood fuse/relay box.
17. Turn the ignition switch ON (II).
18. Measure the voltage between the A/C diode B 2P socket terminal No. 2 and body ground.

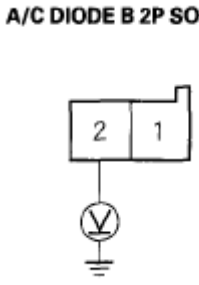


Fig. 59: Measuring Voltage Between A/C Diode B 2P Socket Terminal No. 2 And Body Ground

Is there battery voltage?

YES - Go to step 19.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

19. Using the diode setting on a DVOM, check for current flow in both directions between the A/C diode B terminals No. 1 and No. 2.

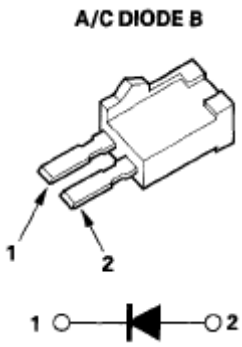


Fig. 60: Checking Current Flow In Both Directions Between A/C Diode B Terminals No. 1 And No. 2

Is there current flow in only one direction?

YES - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

NO - Replace A/C diode B.

A/C COMPRESSOR CLUTCH CIRCUIT TROUBLESHOOTING

NOTE:

- **It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, or hard acceleration.**
- **Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the SYMPTOM TROUBLESHOOTING INDEX.**
- **Before doing any symptom troubleshooting, check for powertrain DTCs, R18A1 engine (see GENERAL TROUBLESHOOTING INFORMATION), K20Z3 engine (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Check the No. 20 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES - Go to step 2.

   NO - Replace the fuses and recheck. If the fuses blow again, check for a short in the No. 20 (7.5 A) and No. 36 (10 A) fuses circuit.

2. Connect the HDS to the DLC.
3. Start the engine.
4. Turn on the A/C on the HVAC control unit.
5. Check the A/C CLUTCH in the PGM-FI Data List with the HDS at idle.

HDS A/C VALUES

ECT sensor 2	176-212 °F (80-100 °C)

TP sensor	About 0.5 V at idle
RPM	More than 670
A/C Switch	ON
A/C Clutch	ON

Are all the values within specifications?

YES - Go to step 6.

NO - Troubleshoot the value that is not within the specfications.

6. Turn the ignition switch to LOCK (0).
7. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see **POWER RELAY TEST**).

   Is the relay OK?

   YES - Go to step 8.

   NO - Replace the A/C compressor clutch relay.

8. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 1 and body ground.

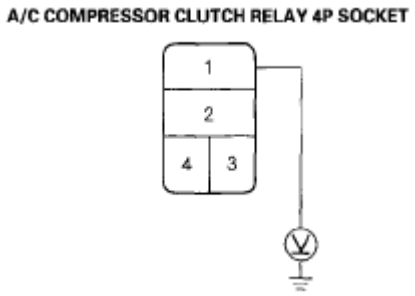


Fig. 61: Measuring Voltage Between A/C Compressor Clutch Relay 4P Socket Terminal No. 1 And Body Ground

Is there battery voltage?

YES - Go to step 9.

NO - Replace the under-hood fuse/relay box (see **REMOVAL AND INSTALLATION**).

9. Connect the A/C compressor clutch relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

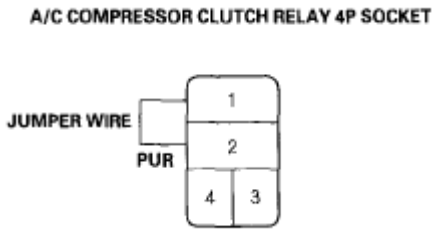


Fig. 62: Connecting A/C Compressor Clutch Relay 4P Socket Terminals No. 1 And No. 2 With Jumper Wire

Does the A/C compressor clutch click?

YES - Go to step 10.

NO - Go to step 19.

10. Disconnect the jumper wire.
11. Turn the ignition switch ON (II).
12. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 3 and body ground.

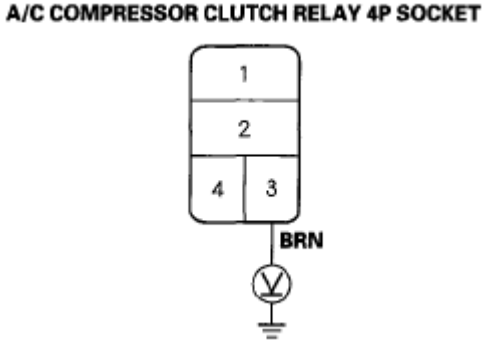


Fig. 63: Measuring Voltage Between A/C Compressor Clutch Relay 4P Socket Terminal No. 3 And Body Ground

Is there battery voltage?

YES - Go to step 13.

NO - Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay.

13. Turn the ignition switch to LOCK (0).
14. Reinstall the A/C compressor clutch relay.
15. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).
17. Connect the ECM/PCM connector A (44P) terminal No. 14 to body ground with a jumper wire.

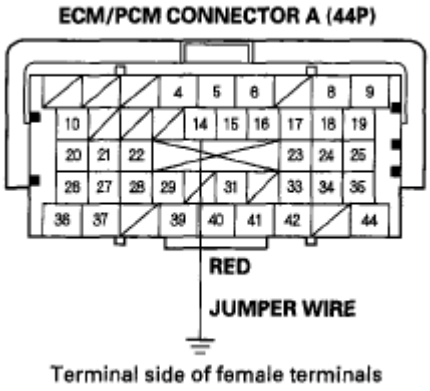


Fig. 64: Connecting ECM/PCM Connector A (44P) Terminal No. 14 To Body Ground With Jumper Wire

18. Turn the ignition switch ON (II).

    Does the A/C compressor click?

    YES - Check for loose wires or poor connections at ECM/PCM connector A (44P). If the connections are good, check the ECM/PCM grounds. If the grounds are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM, R18A1 engine (see **ECM/PCM REPLACEMENT**), K20Z3 engine (see **ECM REPLACEMENT**).

    NO - Repair open in the wire between the A/C compressor clutch relay and the ECM/PCM.

19. Disconnect the jumper wire.
20. Disconnect the A/C compressor clutch 3P connector.
21. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

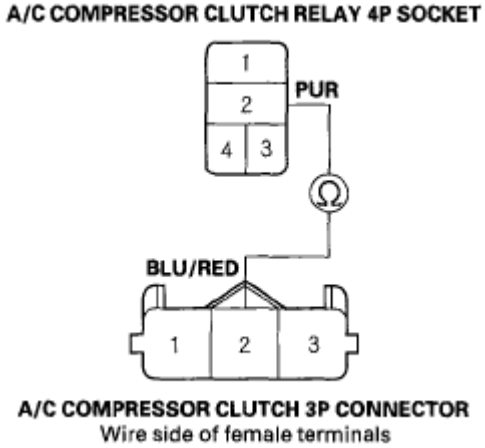


Fig. 65: Checking Continuity Between A/C Compressor Clutch Relay 4P Socket Terminal No. 2 And A/C Compressor Clutch 3P Terminal

Is there continuity?

YES - Check the A/C compressor clutch clearance, and the compressor clutch field coil (see **A/C COMPRESSOR CLUTCH CHECK**). Repair as needed.

NO - Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch.

A/C SIGNAL CIRCUIT TROUBLESHOOTING

NOTE:

- **Do not use this troubleshooting procedure if any of the following items are operative; A/C condenser fan, radiator fan, A/C compressor. Refer to the SYMPTOM TROUBLESHOOTING INDEX.**
- **Before performing symptom troubleshooting, check for powertrain DTCs, R18A1 engine (see GENERAL TROUBLESHOOTING INFORMATION), K20Z3 engine (see GENERAL TROUBLESHOOTING INFORMATION).**

1. Turn the ignition switch to LOCK (0).
2. Disconnect the HVAC control unit 24P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the HVAC control unit 24P connector terminal No. 11 and body ground.

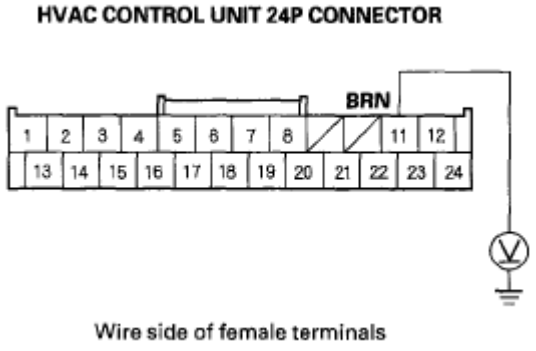


Fig. 66: Measuring Voltage Between HVAC Control Unit 24P Terminal No. 11 And Body Ground

Is there voltage?

YES - Go to step 11.

NO - Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the A/C compressor clutch 3P connector.
7. Turn the ignition switch ON (II).
8. R18A1 engine: Measure the voltage between the A/C compressor clutch 3P connector terminal No. 3 and body ground.

K20Z3 engine: Measure the voltage between the A/C compressor clutch 3P connector terminal No. 1 and body ground.

R18A1 engine

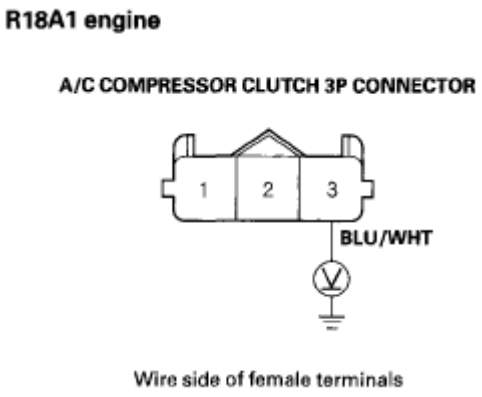


Fig. 67: Measuring Voltage Between A/C Compressor Clutch 3P Terminal No. 3 And Body Ground (R18A1 Engine)

K20Z3 engine

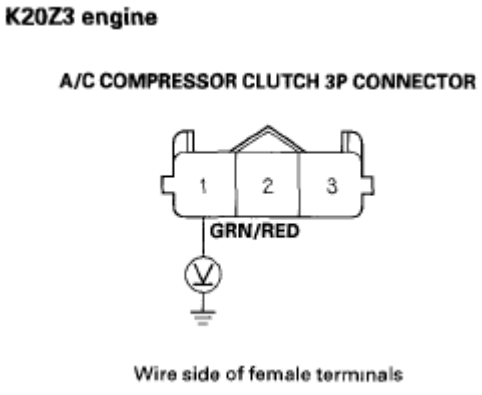


Fig. 68: Measuring Voltage Between A/C Compressor Clutch 3P Terminal No. 1 And Body Ground (K20Z3 Engine)

Is there battery voltage?

YES - Go to step 9.

NO - Repair open in the wire between the A/C compressor and the MICU. If the wire is OK, substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU.

9. Test the A/C compressor thermal protector (see **A/C COMPRESSOR CLUTCH CHECK**).

Is the A/C compressor thermal protector OK?

YES - Go to step 10.

NO - Replace the A/C compressor thermal protector (see **A/C COMPRESSOR THERMAL**

PROTECTOR REPLACEMENT).

10. R18A1 engine: Check for continuity between the HVAC control unit 24P connector terminal No. 11 and the A/C compressor clutch 3P connector terminal No. 1.

    K20Z3 engine: Check for continuity between the HVAC control unit 24P connector terminal No. 11 and the A/C compressor clutch 3P connector terminal No. 3.

    R18A1 engine

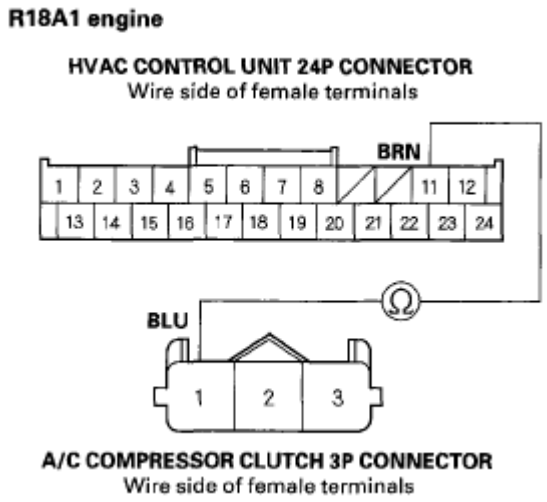


Fig. 69: Checking Continuity Between HVAC Control Unit 24P Terminal No. 11 And A/C Compressor Clutch 3P Terminal No. 1 (R18A1 Engine)

    K20Z3 engine

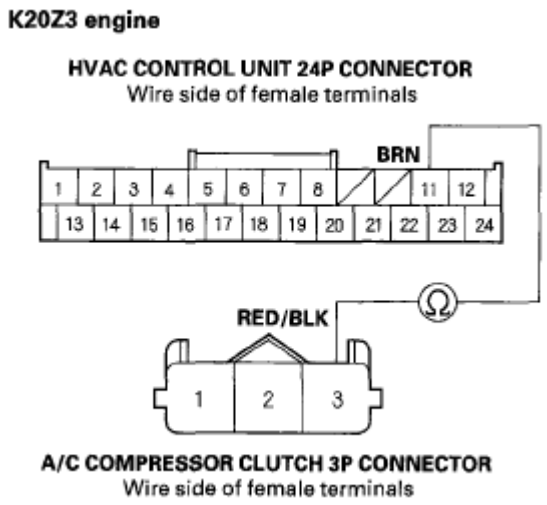


Fig. 70: Checking Continuity Between HVAC Control Unit 24P Terminal No. 11 And A/C Compressor Clutch 3P Terminal No. 3 (K20Z3 Engine)

    Is there continuity?

    YES - Check for loose wires or poor connections at the HVAC control unit 24P connector and at the

A/C compressor clutch 3P connector.

NO - Repair open in the wire between the HVAC control unit and A/C compressor.

11. Turn the ignition switch to LOCK (0).
12. Measure the evaporator temperature sensor resistance between the HVAC control unit 24P connector terminals No. 2 and No. 13.

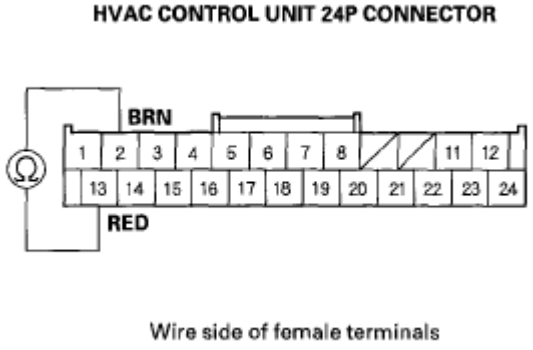


Fig. 71: Measuring Evaporator Temperature Sensor Resistance Between HVAC Control Unit 24P Connector Terminals No. 2 And No. 13

Is resistance less than 24 kohms ?

YES - Go to step 13.

NO - Test the evaporator temperature sensor (see **EVAPORATOR TEMPERATURE SENSOR TEST**).

13. Reconnect the HVAC control unit 24P connector.
14. Turn the ignition switch ON (II).
15. Check if the blower motor operates at all speeds.

Does the blower motor operates at all speeds?

YES - Check for loose wires or poor connections at the HVAC control unit 24P connector. If the connections are good, substitute a known-good HVAC control unit and recheck. If the symptom goes away, replace the original HVAC control unit.

NO - Repair the problem in the blower motor circuit.

EVAPORATOR TEMPERATURE SENSOR TEST

1. Remove the evaporator core and the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

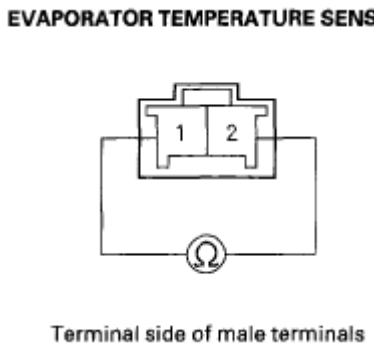


Fig. 72: Measuring Resistance Between Evaporator Temperature Sensor Terminals

3. Then pour warm water on the sensor, and check for a change in resistance.
4. Compare the resistance readings with the specifications shown in **Fig. 73** ; the resistance should be within the specifications.

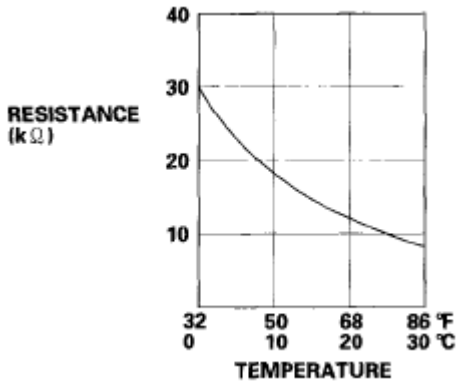


Fig. 73: Resistance To Temperature Graph

5. If the resistance is not as specified, replace the evaporator temperature sensor (see **EVAPORATOR CORE REPLACEMENT**).

HVAC CONTROL UNIT REMOVAL AND INSTALLATION

1. Remove the center panel (see **AUDIO UNIT REMOVAL/INSTALLATION**).
2. Remove the dials (A), the self-tapping screws, and the HVAC control unit (B).

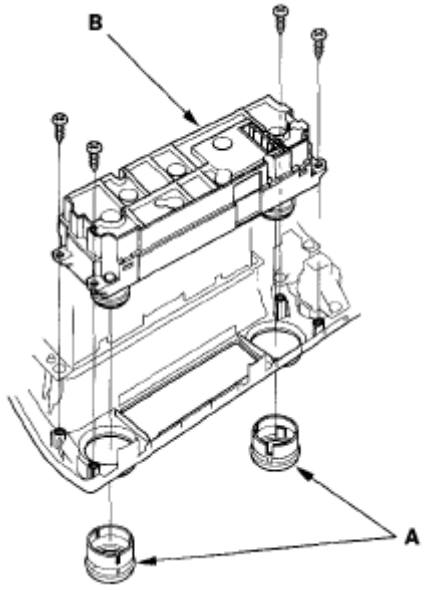


Fig. 74: Removing Dials, Self-Tapping Screws And HVAC Control Unit

3. Install the control unit in the reverse order of removal. After installation, operate the various functions to make sure they work properly.
4. Run the self-diagnostic function to confirm that there are no problems in the system (see **GENERAL TROUBLESHOOTING INFORMATION**).

EVAPORATOR CORE REPLACEMENT

1. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
2. Remove the bolt.

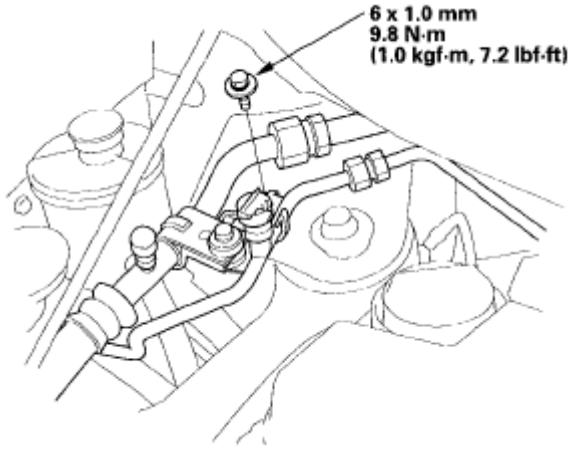


Fig. 75: Removing Evaporator Core Bolt (With Specifications)

3. Remove the nut, then disconnect the A/C lines (A) from the evaporator core.

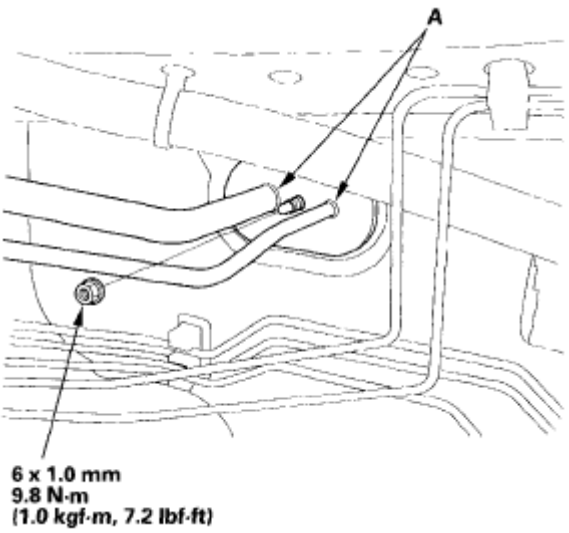


Fig. 76: Disconnecting A/C Lines From Evaporator Core (With Specifications)

4. Remove the stud bolt.

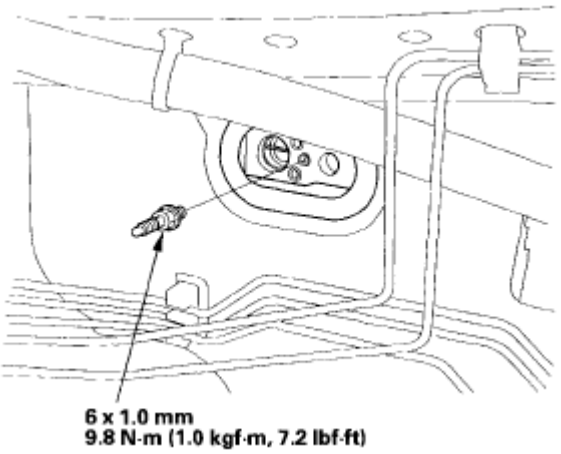


Fig. 77: Removing Stud Bolt (With Specifications)

5. Remove the blower unit (see **BLOWER UNIT REMOVAL AND INSTALLATION**).
6. Disconnect the connectors (A) from the evaporator temperature sensor and the power transistor, then remove the connector clip (B). Remove the self-tapping screws, the expansion valve cover (C), and the seal (D).

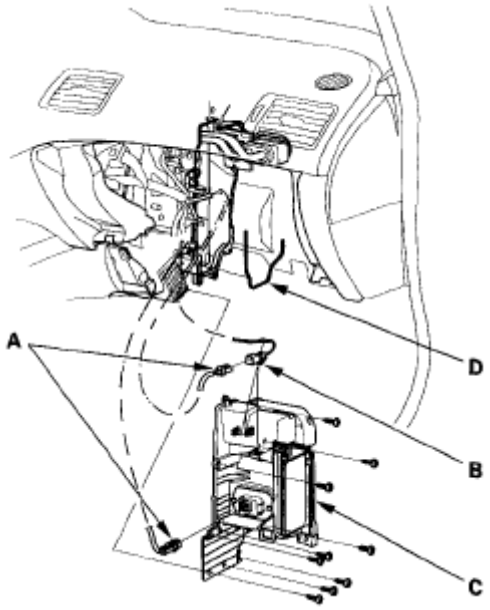


Fig. 78: Disconnecting Connectors From Evaporator Temperature Sensor And Power Transistor

7. Carefully pull out the evaporator core (A) without bending the lines, then remove the plate (B).

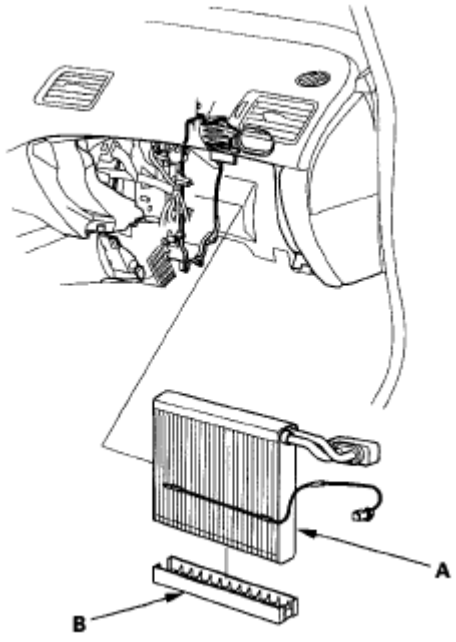


Fig. 79: Removing Evaporator Core Without Bending Lines

8. Remove the clips (A) and the evaporator temperature sensor (B).

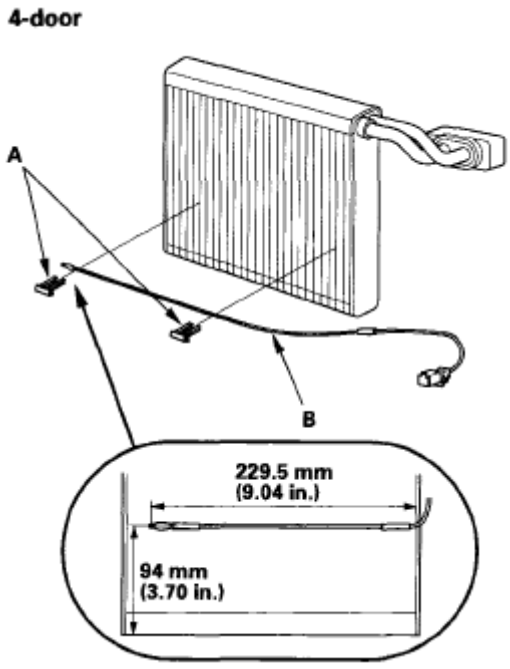


Fig. 80: Removing Clips And Evaporator Temperature Sensor (4-Door)

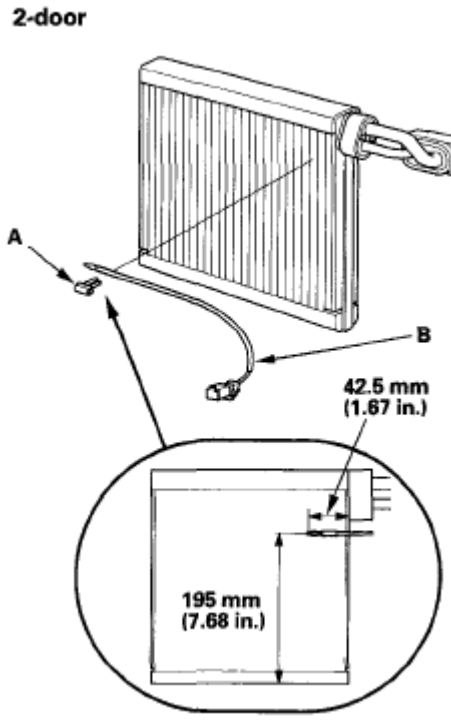


Fig. 81: Removing Clips And Evaporator Temperature Sensor (2-Door)

9. Install the core in the reverse order of removal and note these items:
   - If you're installing a new evaporator core, add refrigerant oil (SP-10) (see **A/C REFRIGERANT OIL REPLACEMENT**).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture

absorption.

- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Make sure that there is no air leakage.
- Charge the system (see **SYSTEM CHARGING**).

HEATER UNIT/CORE REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the audio presets.
2. Make sure the ignition is OFF, then disconnect the negative cable from the battery.
3. Disconnect the A/C line from the evaporator core (see **EVAPORATOR CORE REPLACEMENT**).
4. Remove the air cleaner housing assembly, R18A1 engine (see **THROTTLE BODY CLEANING**), K20Z3 engine (see **AIR CLEANER REMOVAL/INSTALLATION**).
5. When the engine is cool, drain the engine coolant from the radiator, R18A1 engine (see **COOLANT REPLACEMENT**), K20Z3 engine (see **COOLANT CHECK**).
6. From under the hood, slide the hose clamps (A) back. Disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Note the orientation of the hose.

   Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

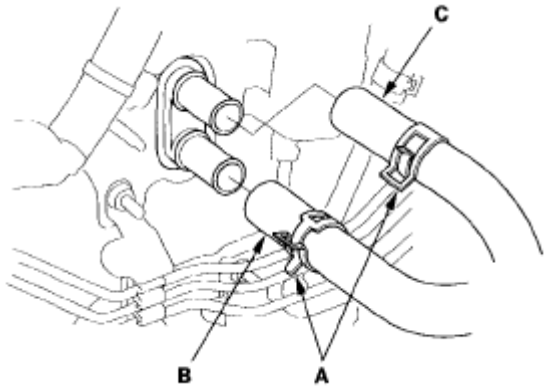


Fig. 82: Disconnecting Inlet And Outlet Heater Hose

7. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines or brake lines, etc.

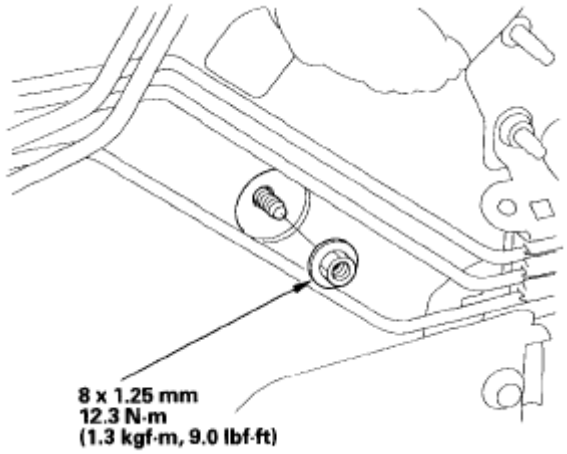


Fig. 83: Removing Heater Unit Nut (With Specifications)

8. Remove the dashboard (see **DASHBOARD/STEERING HANGER BEAM REMOVAL/INSTALLATION**).
9. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).

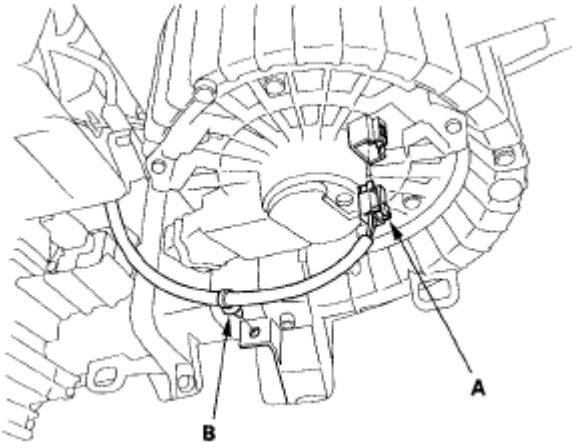


Fig. 84: Disconnecting Connector From Blower Motor

10. Disconnect the connector (A) from the recirculation control motor.

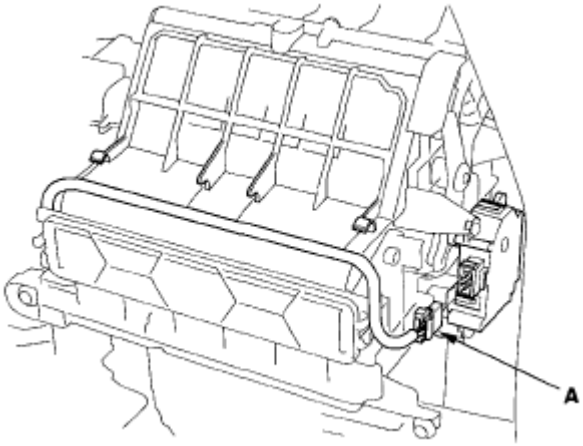


Fig. 85: Disconnecting Connector From Recirculation Control Motor

11. Disconnect the connectors (A) from the mode control motor, the evaporator temperature sensor, and the power transistor. Remove the wire harness clips (B).

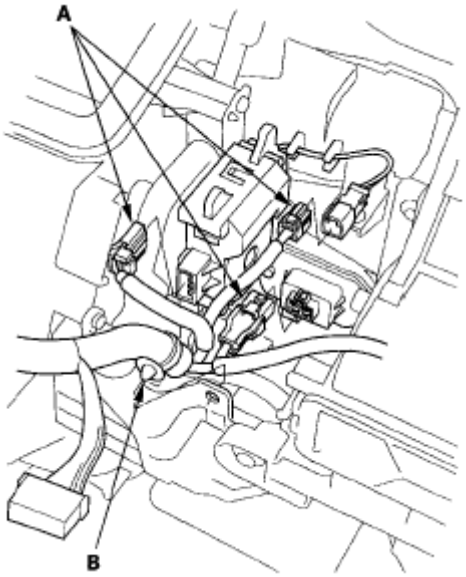


Fig. 86: Disconnecting Connector From Mode Control Motor

12. Disconnect the connectors (A) from the air mix control motor and A/C wire harness. Remove the connector clip (B), the wire harness clips (C), and the wire harness (D).

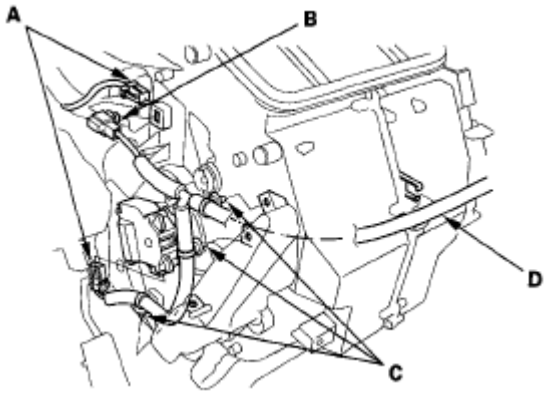


Fig. 87: Disconnecting Connectors From Air Mix Control Motor And A/C Wire Harness

13. Remove the mounting bolt, mounting nuts, and blower-heater unit (A).

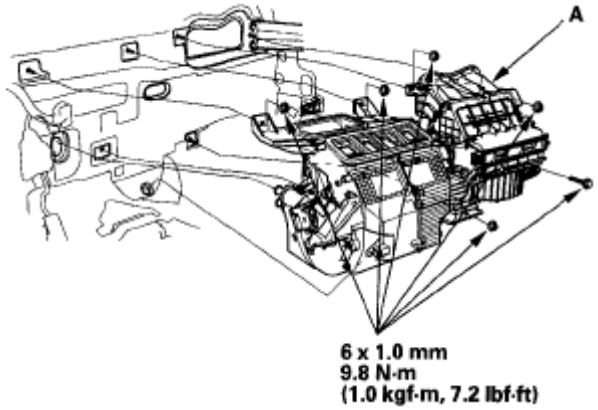


Fig. 88: Removing Blower-Heater Unit (With Specifications)

14. Remove the self-tapping screws, the heater core cover (A), the grommet (B), and carefully pull out the heater core (C).

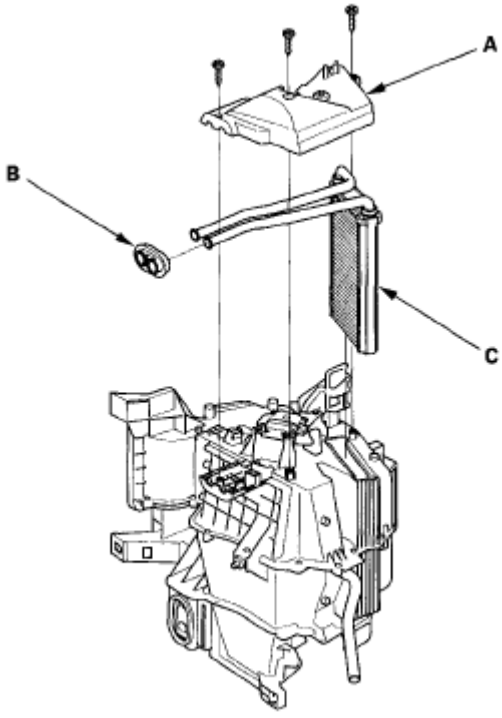


Fig. 89: Removing Heater Core Cover

15. Install the heater core and the evaporator core in the reverse order of removal.
16. Install the heater unit in the reverse order of removal, and note these items:
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant, R18A1 engine (see **COOLANT REPLACEMENT**), K20Z3 engine (see **COOLANT REPLACEMENT**).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to **EVAPORATOR CORE REPLACEMENT** .
    - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.

- Set the clock.

A/C COMPRESSOR REPLACEMENT

R18A1 ENGINE

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
3. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
4. Remove the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**) and the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
5. Disconnect the connector (A) from the A/C condenser fan motor. Remove the wire harness clip (B) and the connector clip (C). Remove the upper mounting bolts, and the A/C condenser fan shroud (D). Be careful not to damage the radiator fins when removing the A/C condenser fan shroud.

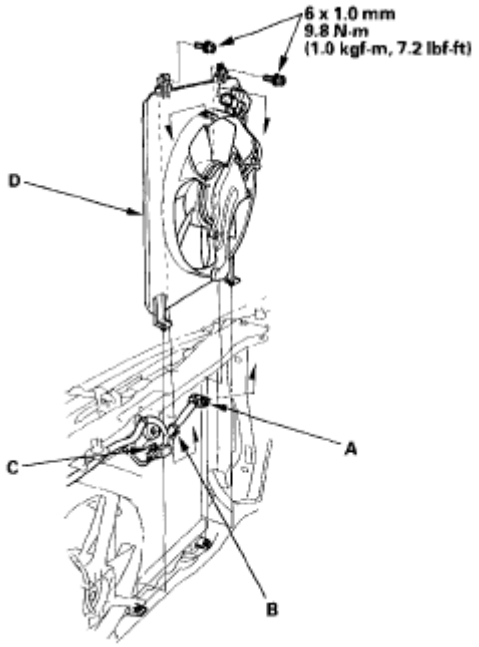


Fig. 90: Removing A/C Condenser Fan Shroud (With Specifications)

6. Remove the bolt and the nut, then disconnect the suction hose (A) and discharge hose (B) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

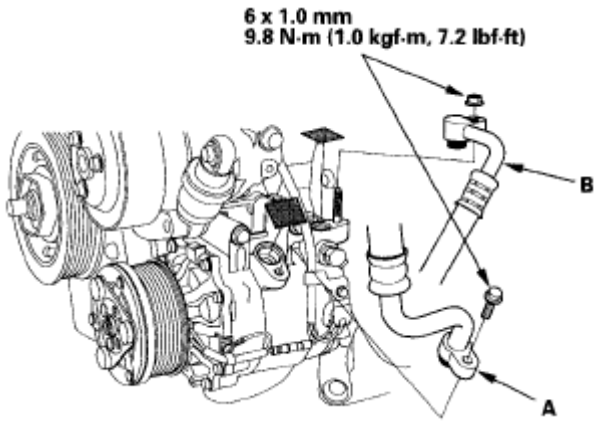


Fig. 91: Disconnecting Suction Hose And Discharge Hose (With Specifications)

7. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.

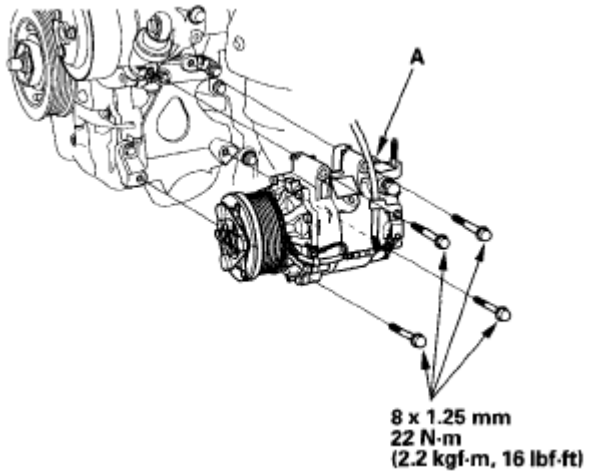


Fig. 92: Removing A/C Compressor (With Specifications)

8. Install the compressor in the reverse order of removal, and note these items:
   - Inspect the A/C lines for any signs of contamination.
   - If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see **A/C REFRIGERANT OIL REPLACEMENT**). A new A/C compressor comes with a full charge of oil.
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Use refrigerant oil (SP-10) for HFC-134a spiral type A/C compressor only.
   - To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see **SYSTEM CHARGING**).

- Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
- Set the clock.

K20Z3 ENGINE

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
3. Remove the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**) and the drive belt (see **DRIVE BELT INSPECTION**).
4. Remove the clips (A) and the bolts.

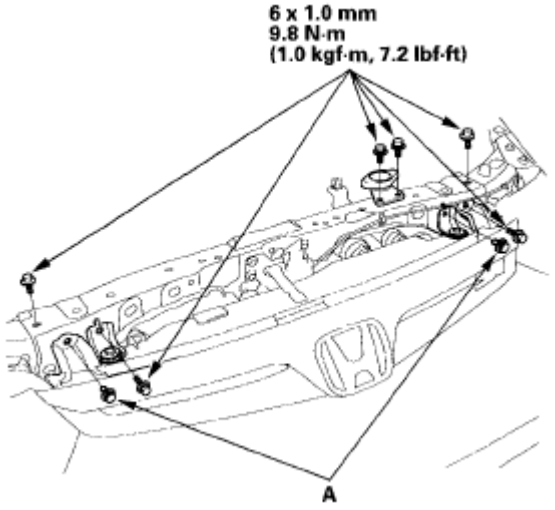


Fig. 93: Removing Clips And Bolts (With Specifications)

5. Remove the bolts, the connector (A), wire harness clips (B), and the bulkhead (C).

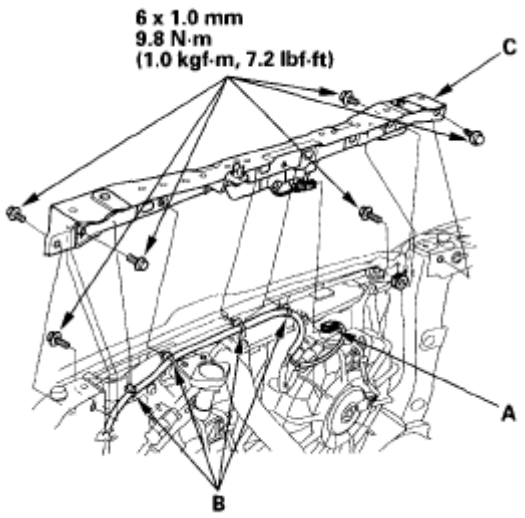


Fig. 94: Removing Bulkhead (With Specifications)

6. Disconnect the connector (A) from the A/C condenser fan motor. Remove the wire harness clip (B), the upper mounting bolts, and the A/C condenser fan shroud (C). Be careful not to damage the radiator fins when removing the A/C condenser fan shroud.

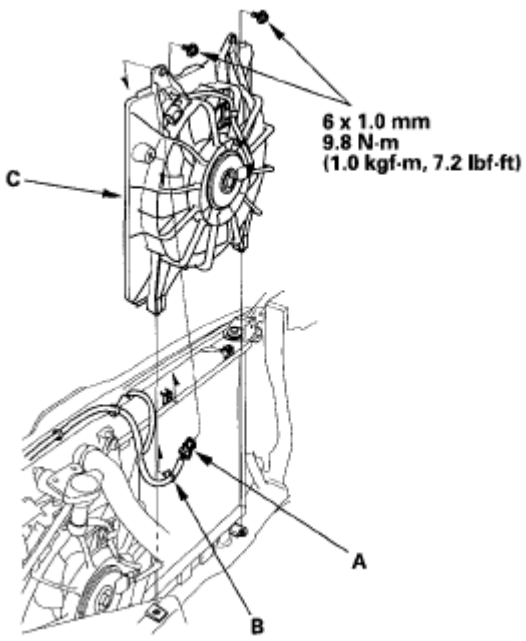


Fig. 95: Removing A/C Condenser Fan Shroud (With Specifications)

7. Remove the bolt.

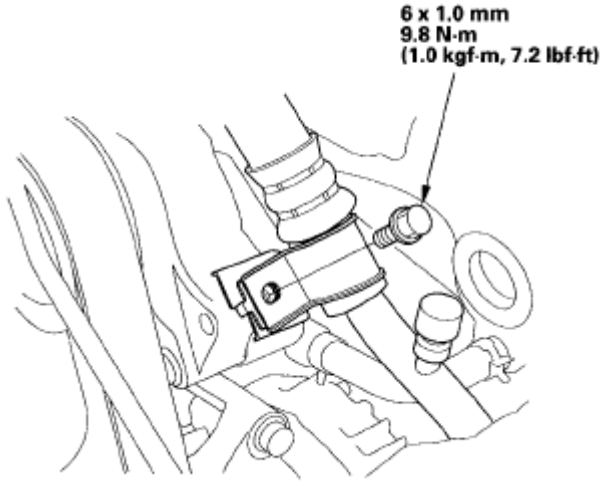


Fig. 96: Removing Bolt (With Specifications)

8. Remove the splash shield (see **FRONT SPLASH SHIELD REPLACEMENT**).
9. Disconnect the connector (A). Remove the bolt and the nut, then disconnect the suction hose (B) and discharge hose (C) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

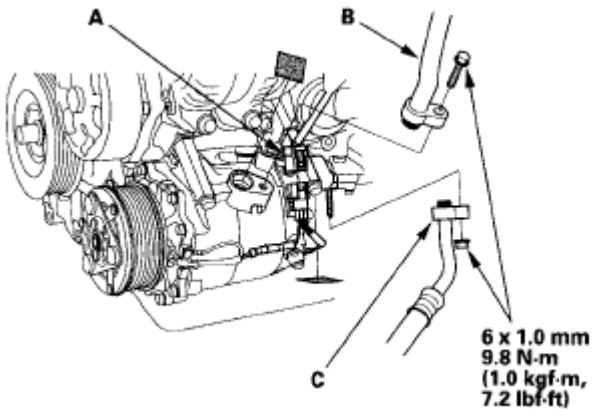


Fig. 97: Disconnecting Suction Hose And Discharge Hose From A/C Compressor (With Specifications)

10. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.

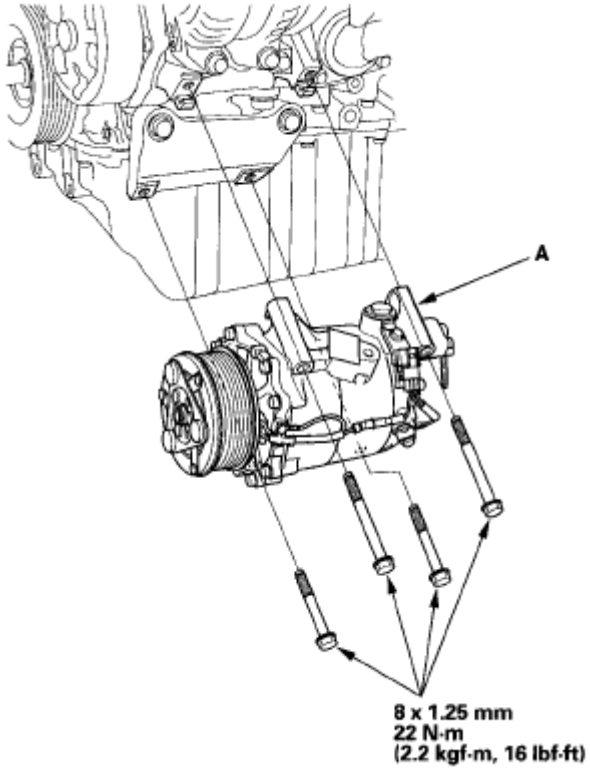


Fig. 98: Removing A/C Compressor (With Specifications)

11. Install the compressor in the reverse order of removal, and note these items:
    - Inspect the A/C lines for any signs of contamination.
    - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
    - Use refrigerant oil (SP-10) for HFC-134a SANDEN spiral type A/C compressor only.
    - To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
    - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
    - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
    - Charge the system (see **SYSTEM CHARGING**).

A/C COMPRESSOR CLUTCH CHECK

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see **A/C COMPRESSOR CLUTCH OVERHAUL**).
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see **A/C COMPRESSOR CLUTCH OVERHAUL**).

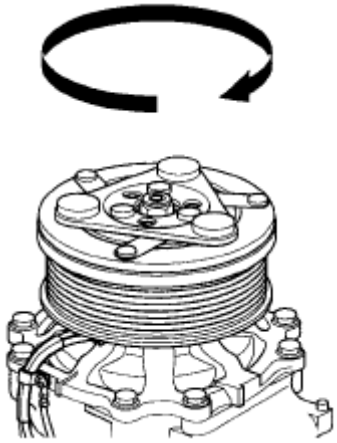


Fig. 99: Checking Rotor Pulley Bearing Play And Drag Rotating Rotor Pulley

3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see **A/C COMPRESSOR CLUTCH OVERHAUL**) and add or remove shims as needed to increase or decrease clearance.

   Clearance: 0.35-0.65 mm (0.014-0.026 in.)

   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.

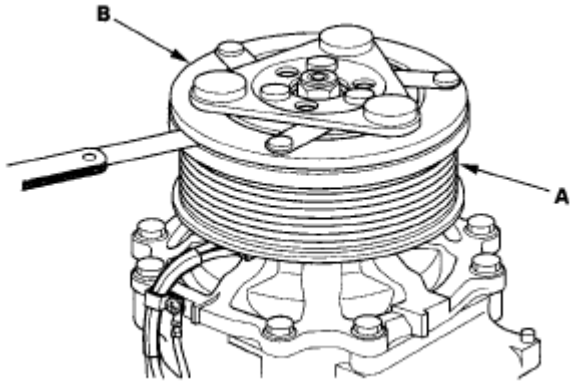


Fig. 100: Measuring Clearance Between Rotor Pulley And Armature Plate

4. Check for continuity between the A/C compressor clutch connector No. 1 and No. 3. If there is no continuity, replace the thermal protector (see **A/C COMPRESSOR THERMAL PROTECTOR REPLACEMENT**).

   NOTE: The thermal protector will have no continuity above about 252 to 262°F (122 to 128°C). When the temperature drops below about 241 to 219°F (116 to 104°C), the thermal protector will have continuity.

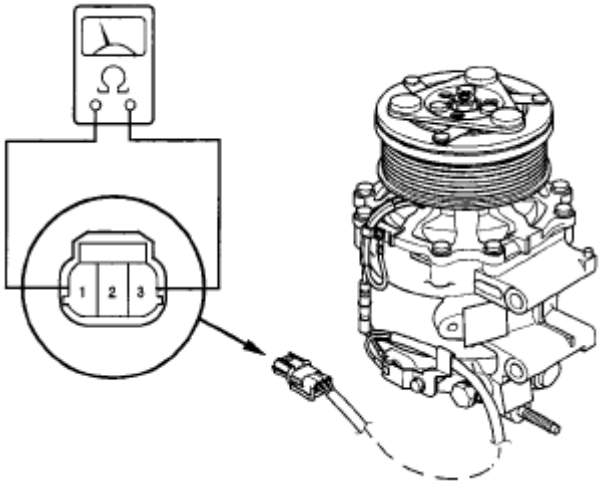


Fig. 101: Checking Continuity Between A/C Compressor Clutch Connector No. 1 And No. 3

5. Disconnect the field coil connector (A). Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see **A/C COMPRESSOR CLUTCH OVERHAUL**).

   Field Coil Resistance: 3.15-3.45 ohms 68°F (20°C)

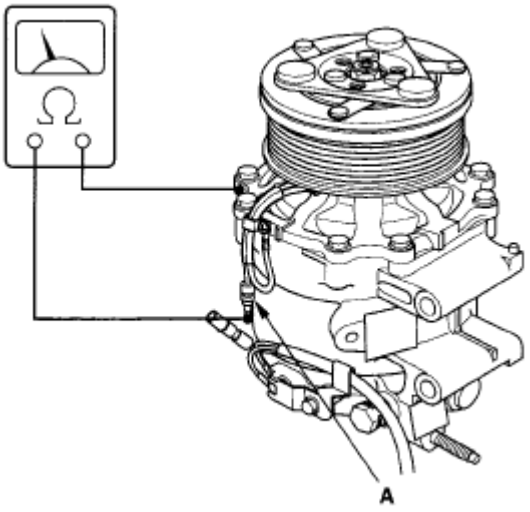


Fig. 102: Checking Resistance Of Field Coil

A/C COMPRESSOR CLUTCH OVERHAUL

Special Tools Required

A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut while holding the armature plate (A) with a commercially available A/C clutch holder (B).

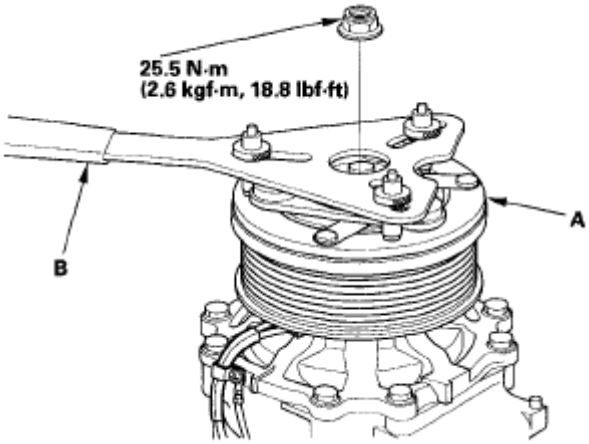


Fig. 103: Removing Center Nut Holding Armature Plate (With Specifications)

2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see **A/C COMPRESSOR CLUTCH OVERHAUL**).

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.

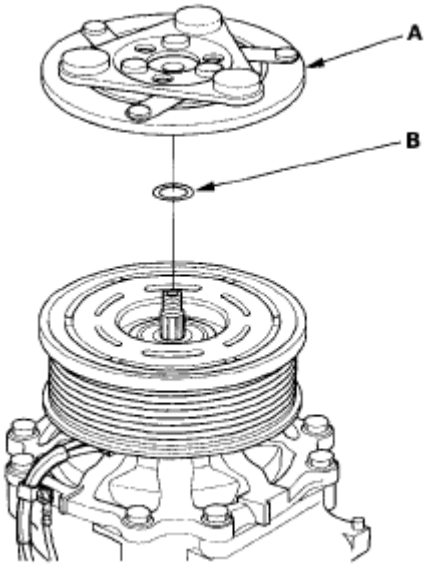


Fig. 104: Removing Armature Plate and Shim(s)

3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and A/C compressor.

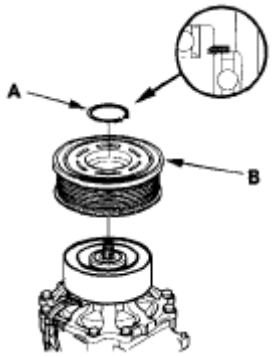


Fig. 105: Removing Snap Ring And Rotor Pulley

4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Remove the snap ring (C) with snap ring pliers, then remove the field coil (D). Be careful not to damage the field coil and A/C compressor.

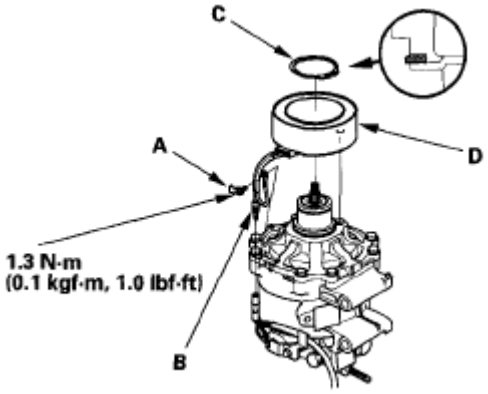


Fig. 106: Removing Field Coil (With Specifications)

5. Reassemble the clutch in the reverse order of disassembly, and note these items:
   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
   - Clean the rotor pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
   - Make sure that the rotor pulley turns smoothly after it's reassembled.
   - Route and clamp the wires properly or they can be damaged by the rotor pulley.

A/C COMPRESSOR THERMAL PROTECTOR REPLACEMENT

1. Remove the bolt and the holder (A). Disconnect the field coil connector (B), then remove the thermal protector (C).

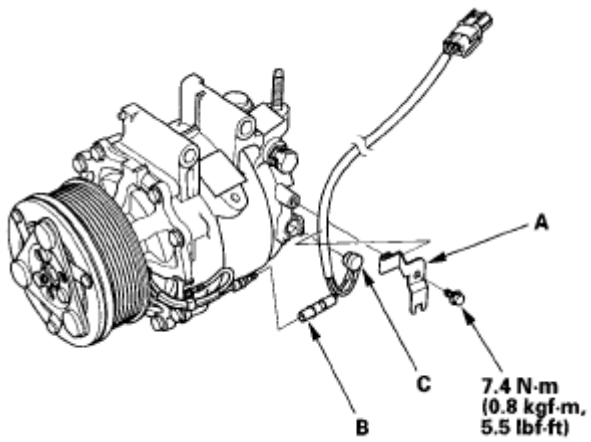


Fig. 107: Removing Thermal Protector (With Specifications)

2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.

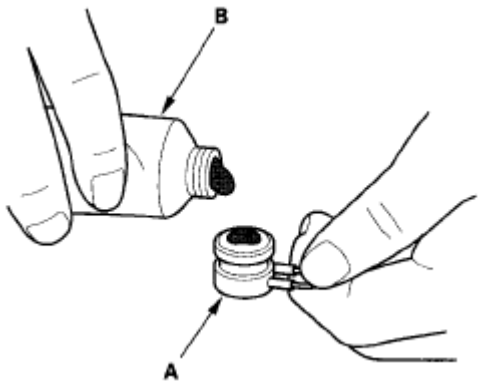


Fig. 108: Applying Silicone Sealant To Bottom Of Thermal Protector

3. Install the thermal protector in the reverse order of removal.

A/C COMPRESSOR RELIEF VALVE REPLACEMENT

1. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
2. Remove the relief valve cover (A), the relief valve (B), and the O-ring (C). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.

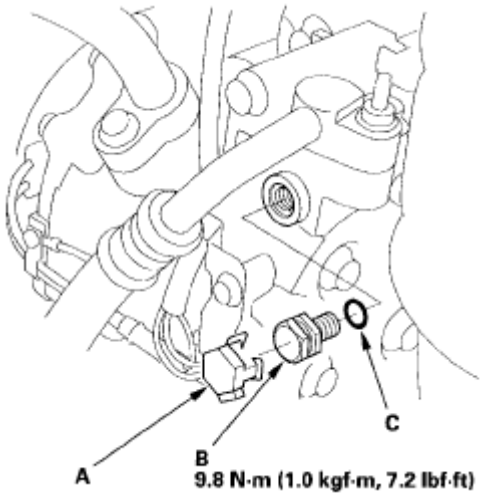


Fig. 109: Removing Relief Valve Cover, Relief Valve And O-Ring (With Specifications)

3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see **SYSTEM CHARGING**).

A/C CONDENSER REPLACEMENT

1. Recover the refrigerant with a recovery/recycling/charging station (see **REFRIGERANT RECOVERY**).
2. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
3. Remove the bolts, then disconnect the discharge hose (A) from the A/C condenser.

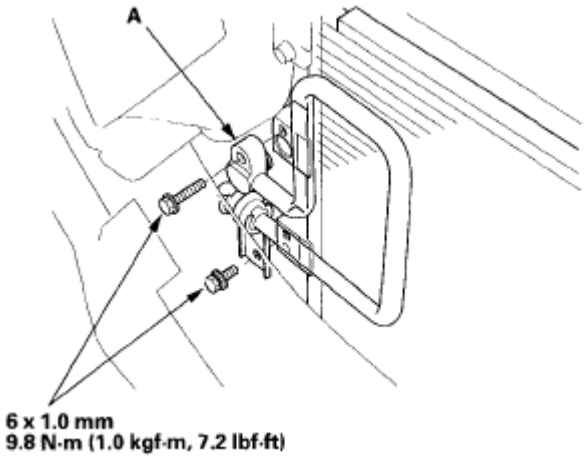


Fig. 110: Disconnecting Discharge Hose (With Specifications)

4. Remove the bolt, then disconnect the receiver line (A) from the A/C condenser.

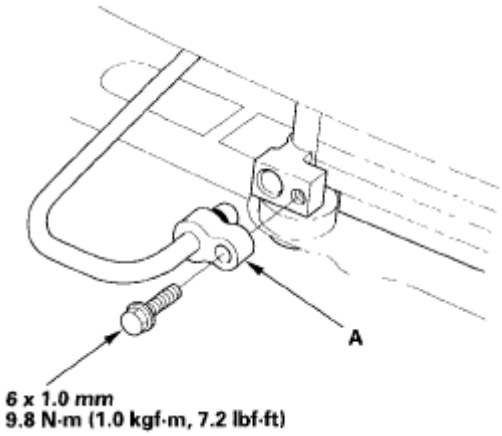


Fig. 111: Disconnecting Receiver Line (With Specifications)

5. Remove the bolts and the A/C condenser upper mount brackets (A).

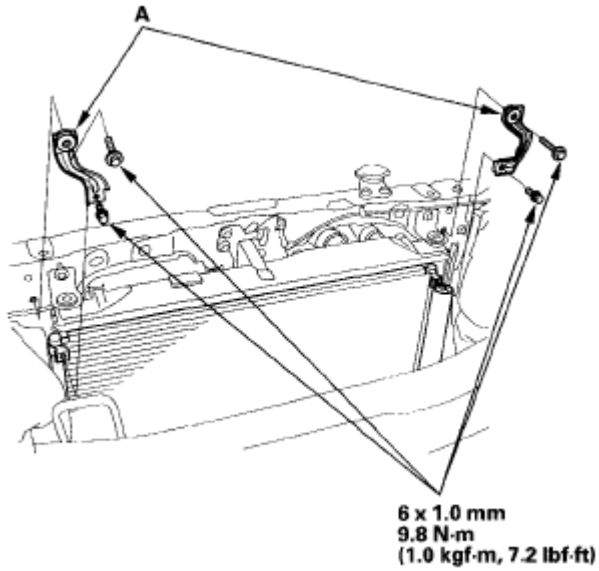


Fig. 112: Removing A/C Condenser Upper Mount Brackets (With Specifications)

6. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the receiver/dryer desiccant bracket. Disconnect the 2P connector (C) then remove the clip (D).

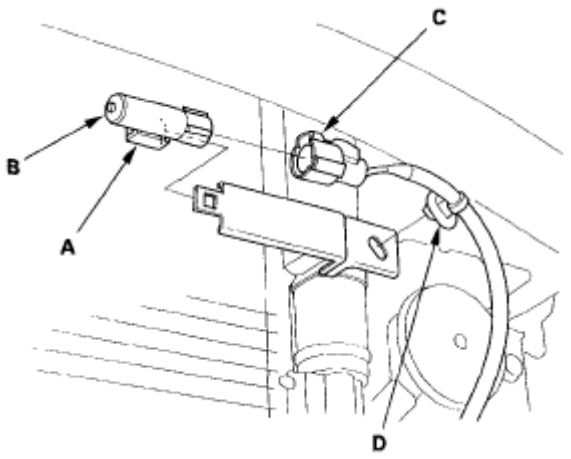


Fig. 113: Disconnecting 2P Connector And Removing Clip

7. Remove the A/C condenser (A). Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.

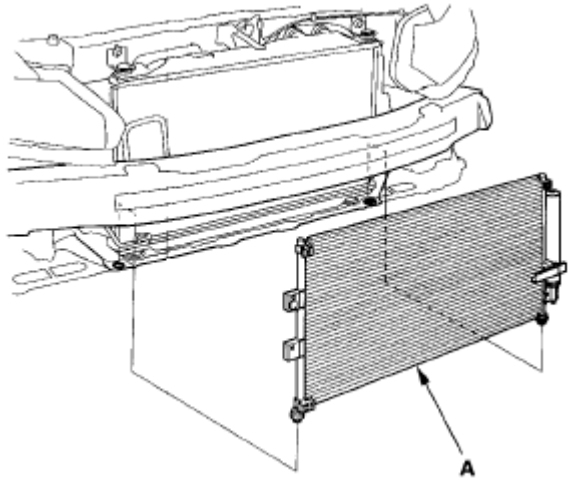


Fig. 114: Removing A/C Condenser

8. Install the A/C condenser in the reverse order of removal, and note these items:
   - If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see **A/C REFRIGERANT OIL REPLACEMENT**).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see **SYSTEM CHARGING**).

RECEIVER/DRYER DESICCANT REPLACEMENT

4-DOOR

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see **A/C CONDENSER REPLACEMENT**).
2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).

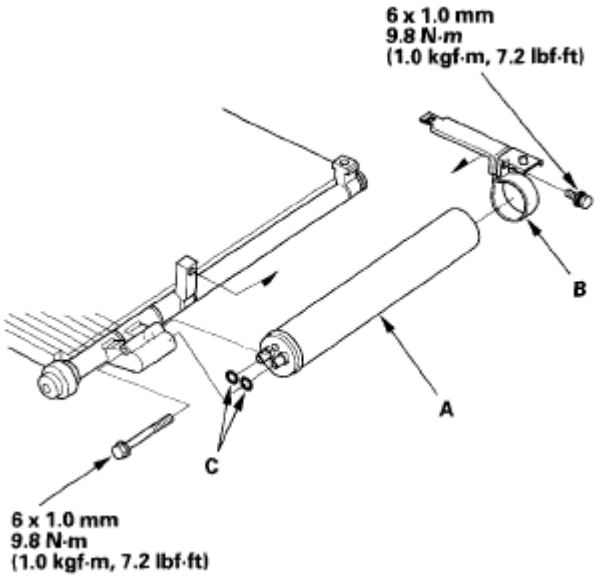


Fig. 115: Removing Receiver/Dryer, Bracket And O-Rings (With Specifications)

3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

2-DOOR

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see **A/C CONDENSER REPLACEMENT**).
2. Remove the cap (A) from the bottom of the A/C condenser. Remove the O-rings (B) and the desiccant (C).

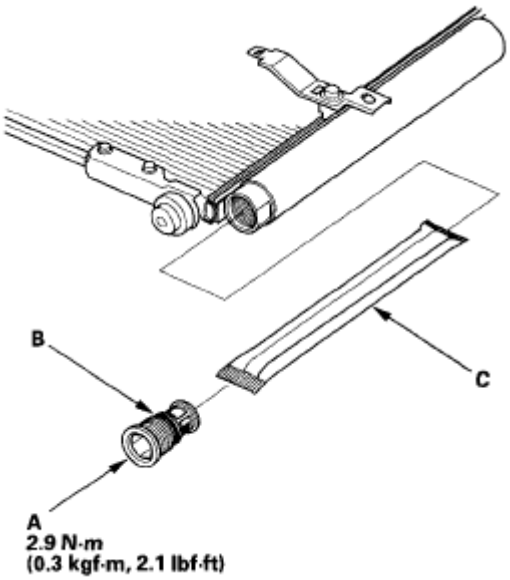


Fig. 116: Removing O-Rings And Desiccant (With Specifications)

3. Install the receiver/dryer in the reverse order of removal, and note these items:
   - Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Install the cap to the specified torque. It is made of resin a can be easily stripped.

REFRIGERANT RECOVERY

CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

NOTE:
- **If accidental system discharge occurs, ventilate work area before resuming service.**
- **Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.**

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

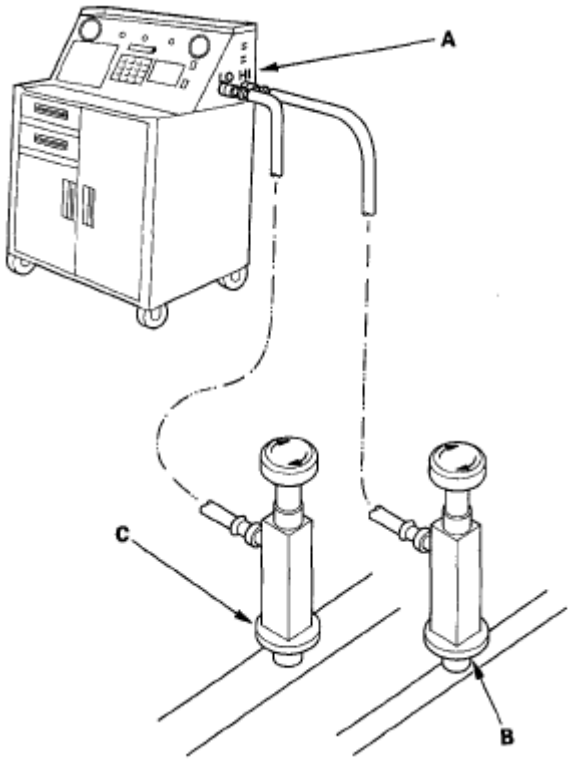


Fig. 117: Connecting Refrigerant Recovery/Recycling/Charging Station To High-Pressure And Low-Pressure Service Port

2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

SYSTEM EVACUATION

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

NOTE:

- **If accidental system discharge occurs, ventilate work area before resuming service.**
- **Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.**

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.
2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.

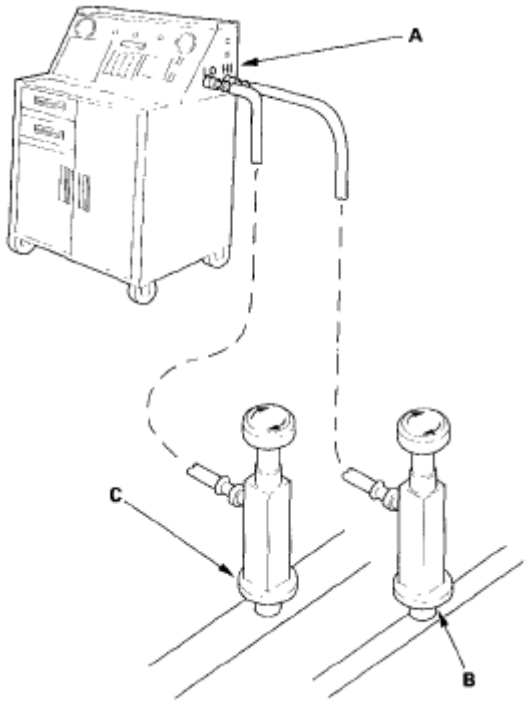


Fig. 118: Connecting Refrigerant Recovery/Recycling/Charging Station To High-Pressure And Low-Pressure Service Port

3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 in **REFRIGERANT LEAK TEST**).

SYSTEM CHARGING

CAUTION:
- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

NOTE:
- **If accidental system discharge occurs, ventilate work area before resuming service.**
- **Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.**

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

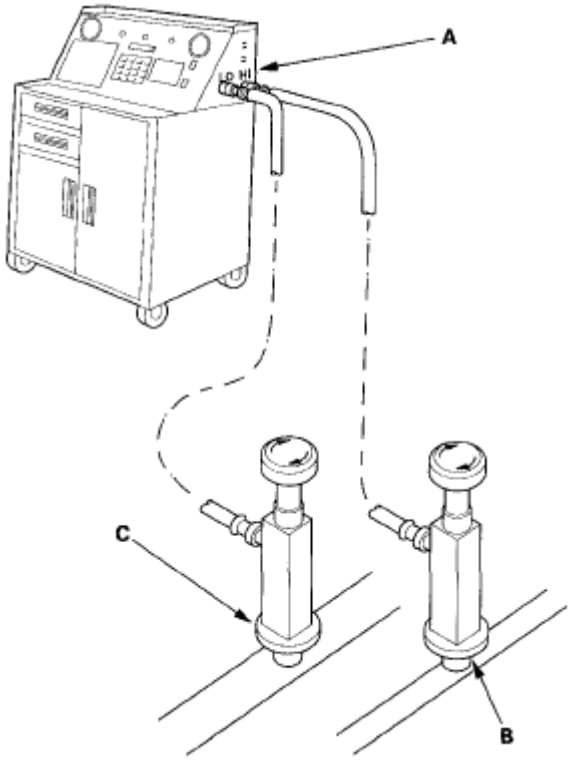


Fig. 119: Connecting Refrigerant Recovery/Recycling/Charging Station To High-Pressure And Low-Pressure Service Port

2. Evacuate the system (see **SYSTEM EVACUATION**).
3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only SP-10 refrigerant oil.
4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the A/C compressor will be damaged.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity:

   400 to 450 g
   0.40 to 0.45 kg
   0.9 to 1.0 lbs
   14.1 to 15.9 oz
5. Check for refrigerant leaks (see **REFRIGERANT LEAK TEST**).
6. Check the system performance (see **A/C SYSTEM TEST**).

REFRIGERANT LEAK TEST

Special Tools Required

Leak detector, Honda Tool and Equipment YGK-H-10PM or commercially available

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

NOTE:

- **If accidental system discharge occurs, ventilate work area before resuming service.**
- **Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.**

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.

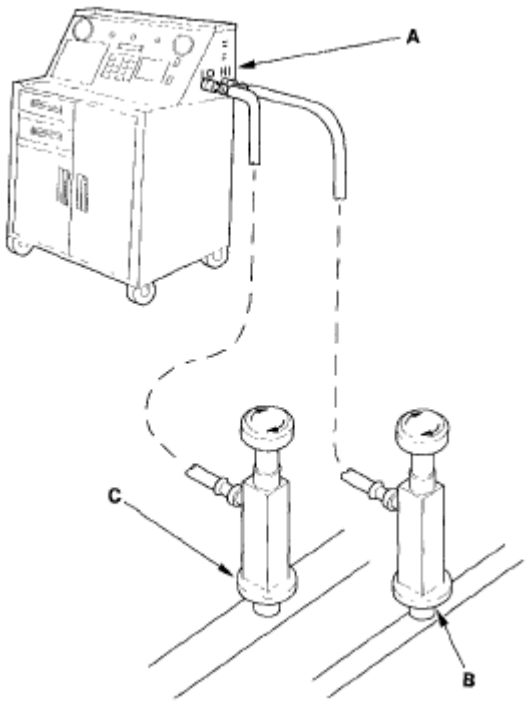


Fig. 120: Connecting Refrigerant Recovery/Recycling/Charging Station To High-Pressure And Low-Pressure Service Port

2. Open high pressure valve to charge the system to the specified capacity, then close the supply valve, and disconnect the charging station fittings.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity:

   400 to 450 g
   0.40 to 0.45 kg
   0.9 to 1.0 lbs

14.1 to 15.9 oz

3. Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.
4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), recover the system.
5. After checking and repairing leaks, the system must be evacuated.

A/C SYSTEM TEST

PERFORMANCE TEST

CAUTION:

- **Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.**
- **Be careful when connecting service equipment.**
- **Do not breathe refrigerant or vapor.**

The performance test will help determine if the A/C system is operating within specifications.

NOTE:

- **If accidental system discharge occurs, ventilate work area before resuming service.**
- **Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.**

1. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
2. Determine the relative humidity and air temperature.
3. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see **GLOVE BOX REMOVAL/INSTALLATION**).
4. Insert a thermometer (A) in the center vent.

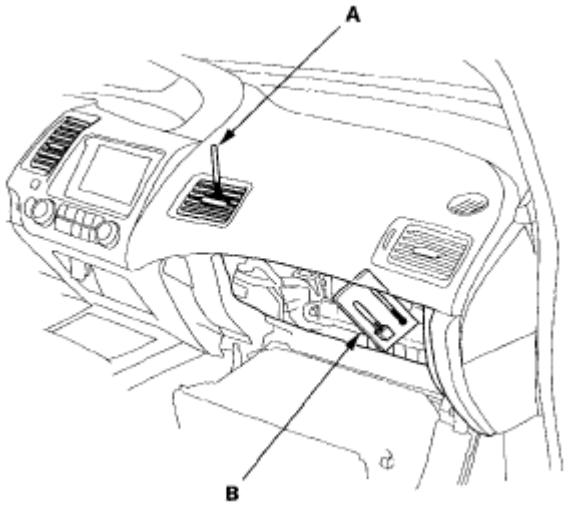


Fig. 121: Inserting Thermometer In Center Vent

5. Place a thermometer (B) near the blower unit's recirculation inlet duct.
6. Test conditions:
   - Avoid direct sunlight.
   - Open hood.
   - Open front doors.
   - Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control switch to Recirculate.
   - Turn the A/C switch ON and the fan switch to Max.
   - Hold the engine speed at 1,500 rpm.
   - No driver or passengers in vehicle.
7. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.
8. To complete the charts:
   - Mark the delivery temperature along the vertical line.
   - Mark the intake temperature (ambient air temperature) along the bottom line.
   - Draw a line straight up from the air temperature to the humidity.
   - From each point, draw a horizontal line across the delivery temperature.
   - The delivery temperature should fall between the two lines.
   - Complete the low-side pressure test and high-side pressure test in the same way.
   - Any measurements outside the line may indicate the need for further inspection.

   Example

   Intake temperature (dry): 86°F (30°C) Humidity level 70%
   Intake temperature (wet): 77.9°F (25.5°C)
   Delivery temperature: 61°F (15.9°C)
   Intake pressure: 261 kPa (2.7 kgf/cm^2 (38psi)
   Delivery pressure: 1,780 kPa (18.2 kgf/cm^2 (258 psi)

   Results: Within normal range

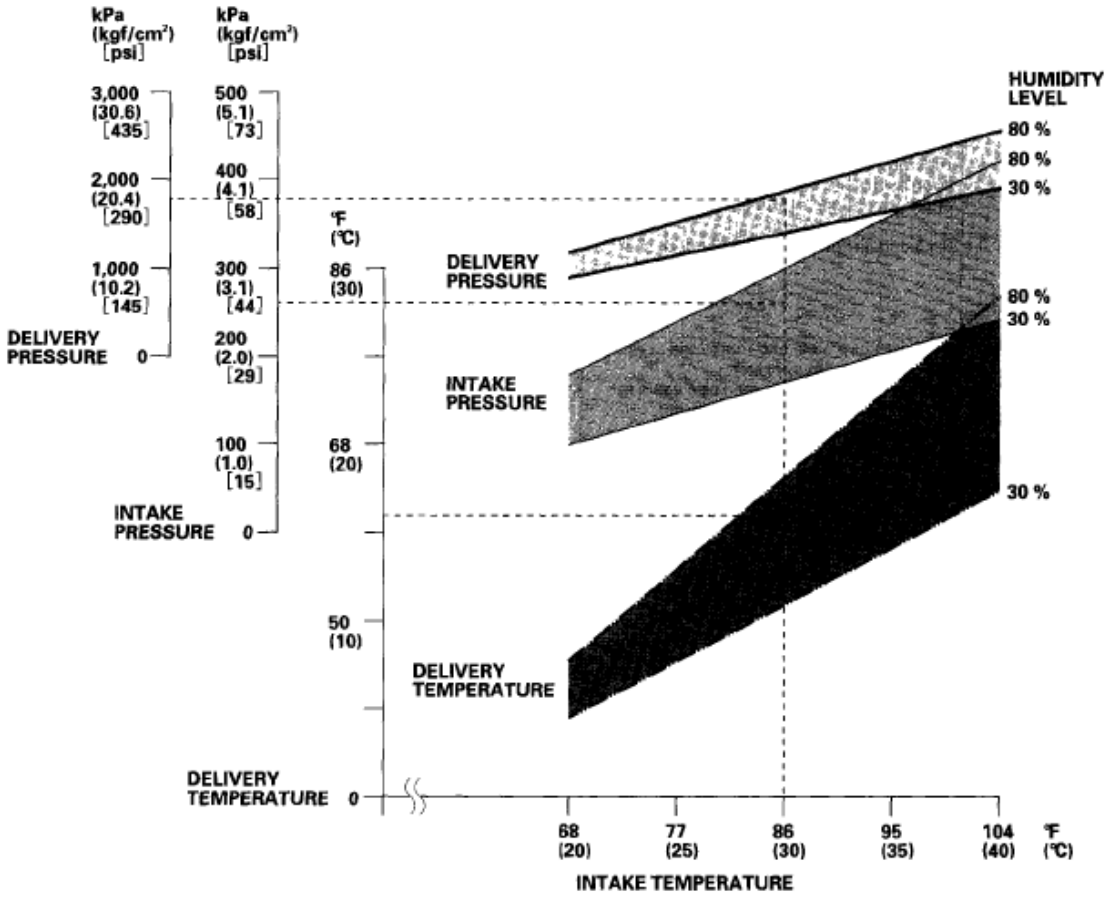


Fig. 122: A/C System Test Graph

PRESSURE TEST

PRESSURE TEST DESCRIPTION

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping A/C compressor, pressure drops about 196 kPa (2.0 kgf/cm^2 ,28 psi) quickly, and then falls gradually.	Air in system	Recover, evacuate (see **REFRIGERANT RECOVERY**), and recharge with specified amount (see **SYSTEM CHARGING**).
	Reduced or no airflow through A/C condenser.	• Clogged condenser or radiator fins • A/C condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
	Line to A/C condenser is excessively hot.	Restricted flow of refrigerant in system	Restricted lines.
	High and low-pressures are balanced soon after stopping A/C compressor. Low side	• Faulty A/C compressor discharge valve	Replace the A/C compressor.

Discharge pressure abnormally low	is higher than normal.	• Faulty A/C compressor seal	
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace. • Recover, evacuate, and recharge with specified amount.
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Recover, evacuate, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the airflow from vents is restricted.	Frozen evaporator	Run the fan with A/C compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when A/C condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	High and low-pressures are equalized as soon as the A/C compressor is stopped, and both gauges fluctuate while running.	• Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve	Replace the A/C compressor.
Suction and discharge pressures abnormally high	Reduced airflow through A/C condenser.	• Clogged A/C condenser or radiator fins • A/C condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
Suction and discharge pressures abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
	A/C compressor clutch is dirty.	A/C compressor shaft seal leaking	Replace the A/C compressor.

Refrigerant leaks	A/C compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace A/C compressor.
	A/C compressor gasket is wet with oil.	Gasket leaking	Replace the A/C compressor.
	A/C fitting is dirty.	Leaking O-ring	Clean the A/C fitting and replace the O-ring.

2006-08 ACCESSORIES & EQUIPMENT

Exterior Lights - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

4-door except Si model

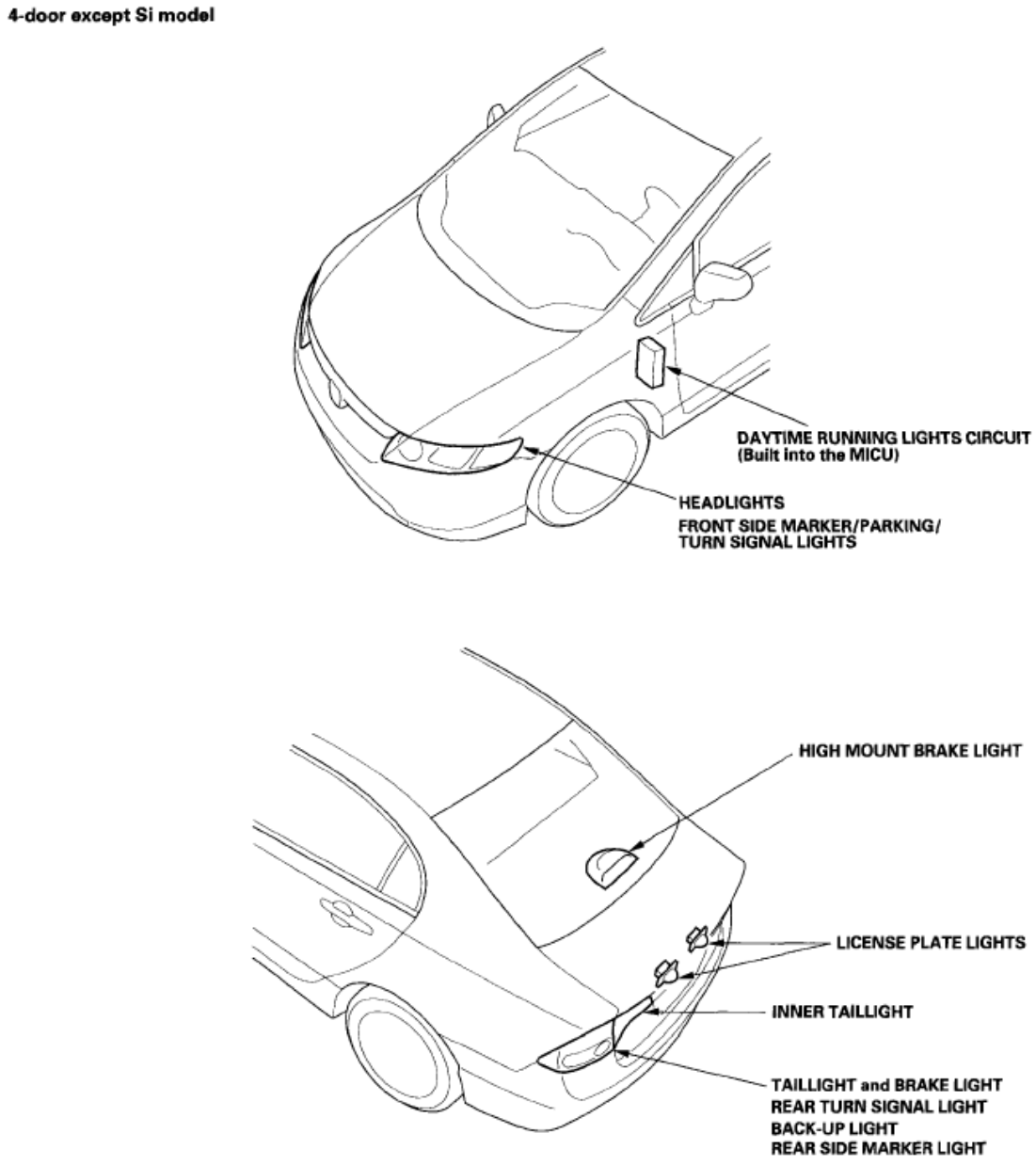


Fig. 1: Locating Exterior Lights Components (4-Door Except Si Model - 1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

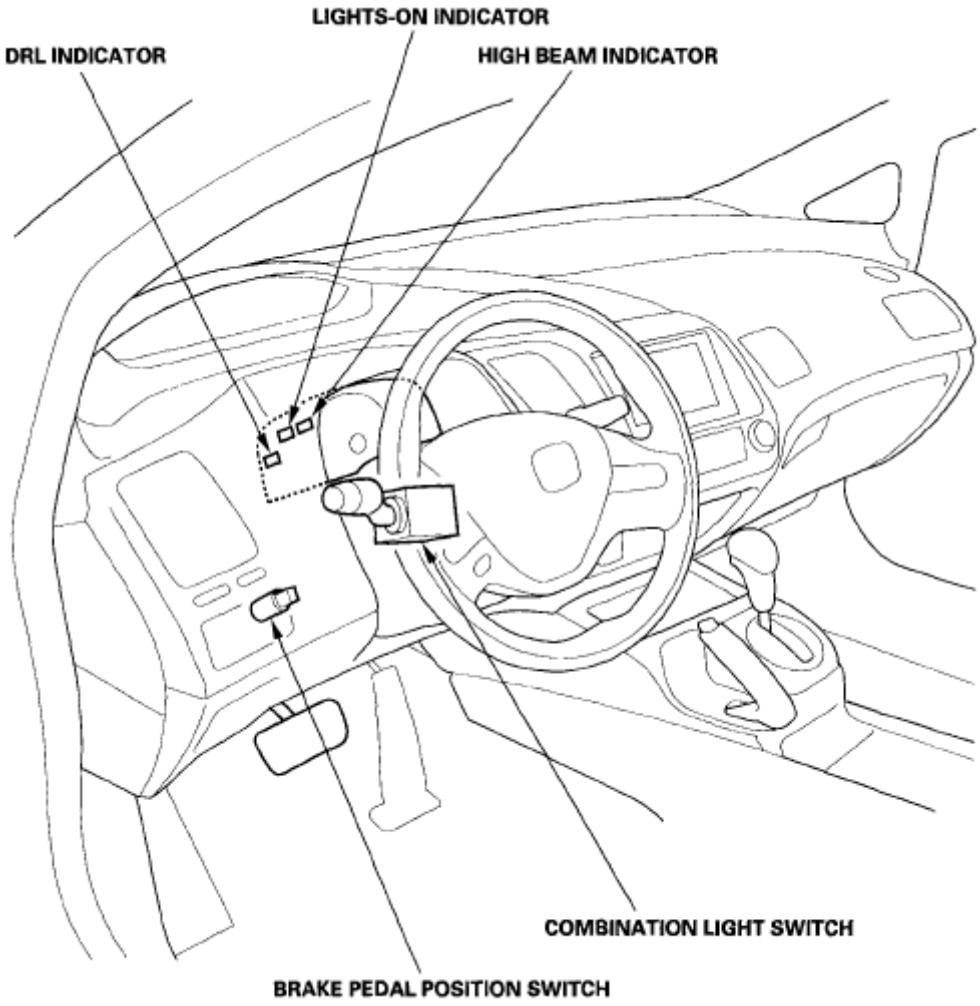


Fig. 2: Locating Exterior Lights Components (4-Door Except Si Model - 2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door except Si model

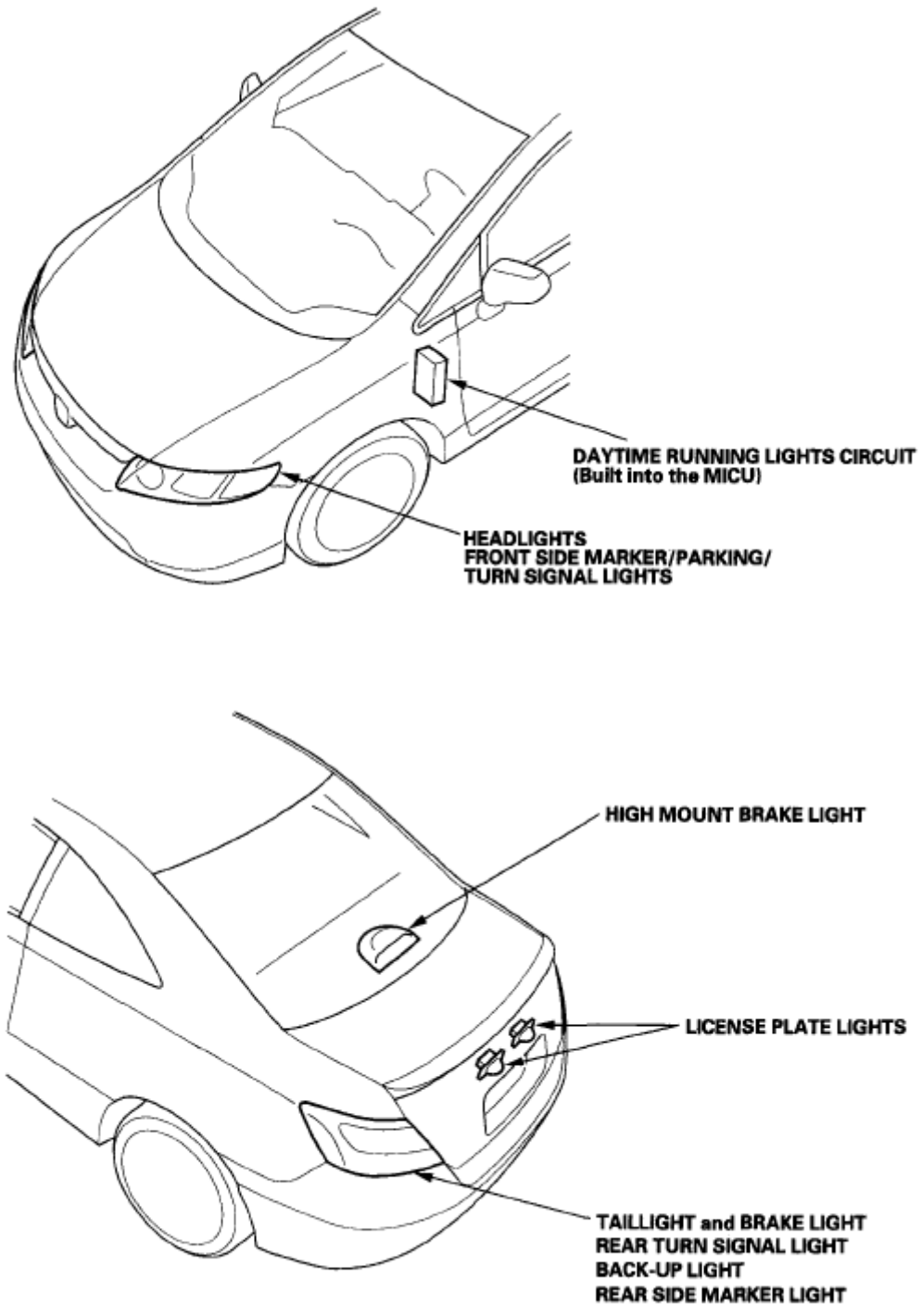


Fig. 3: Locating Exterior Lights Components (2-Door Except Si Model - 1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

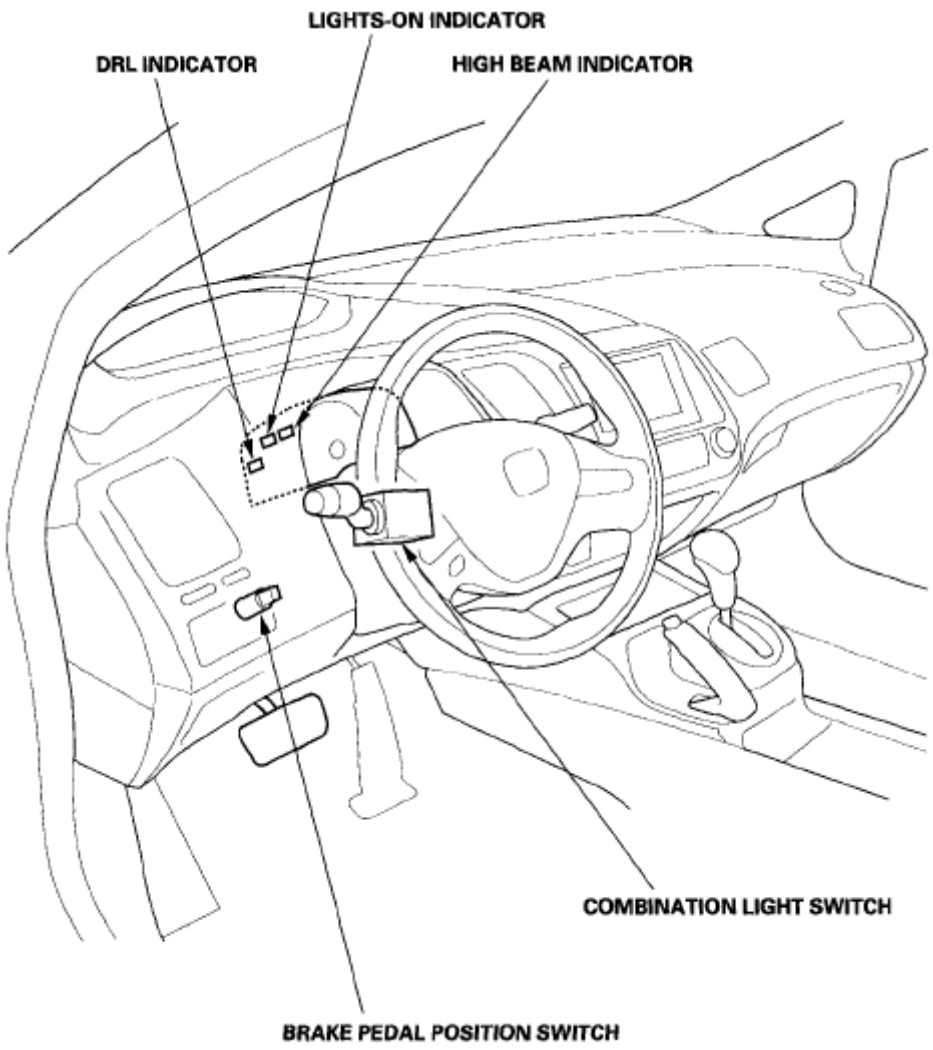


Fig. 4: Locating Exterior Lights Components (2-Door Except Si Model - 2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

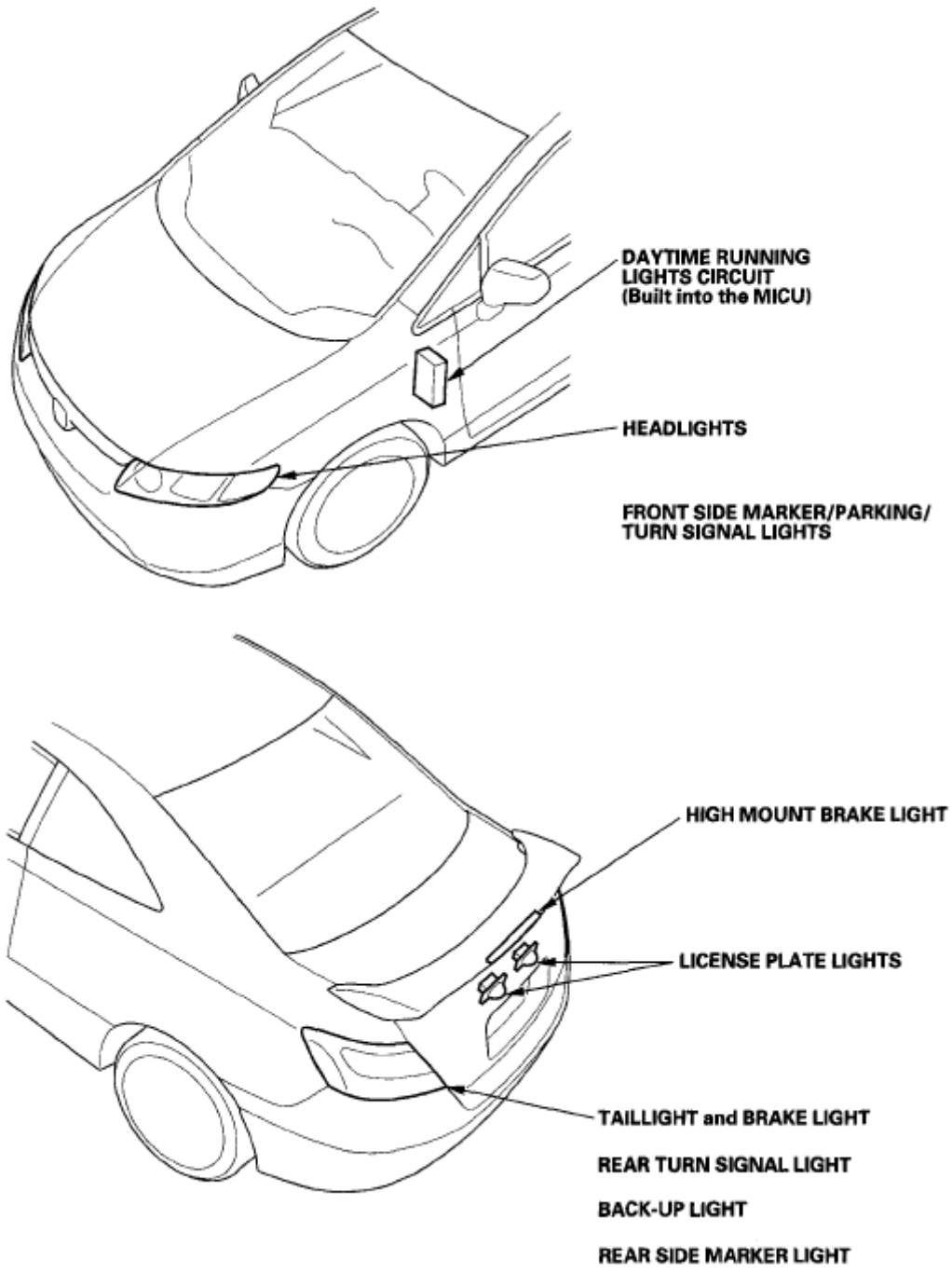


Fig. 5: Locating Exterior Lights Components (2-Door Si Model - 1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Si model

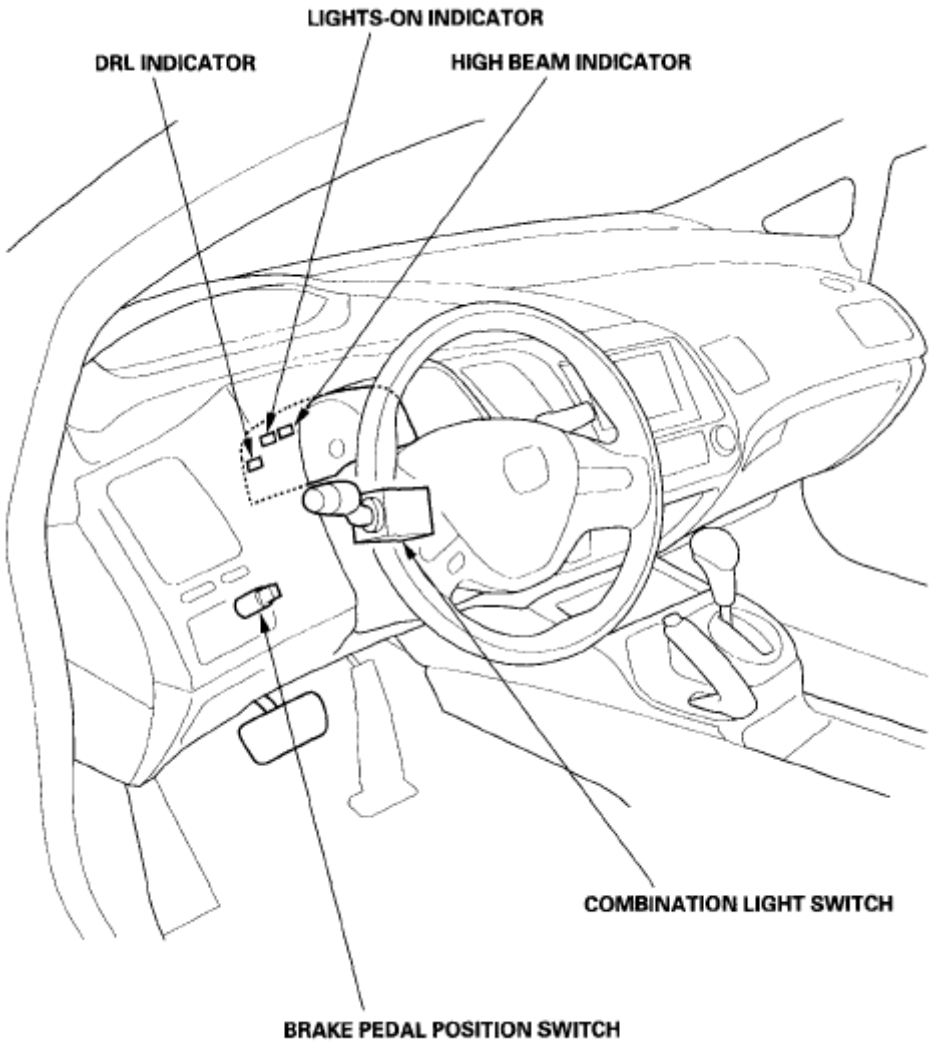


Fig. 6: Locating Exterior Lights Components (2-Door Si Model - 2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

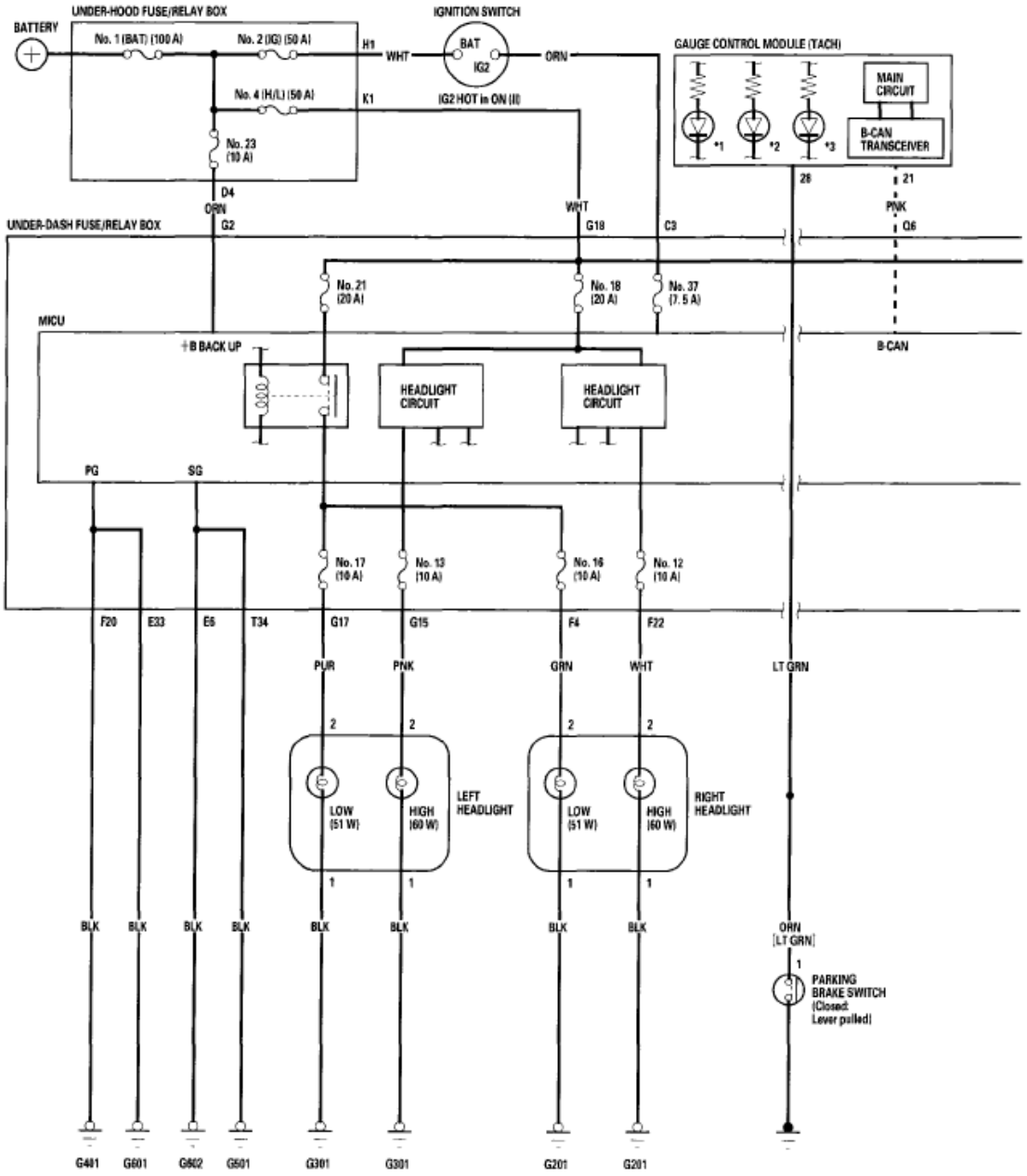


Fig. 7: Exterior Light - Circuit Diagram (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

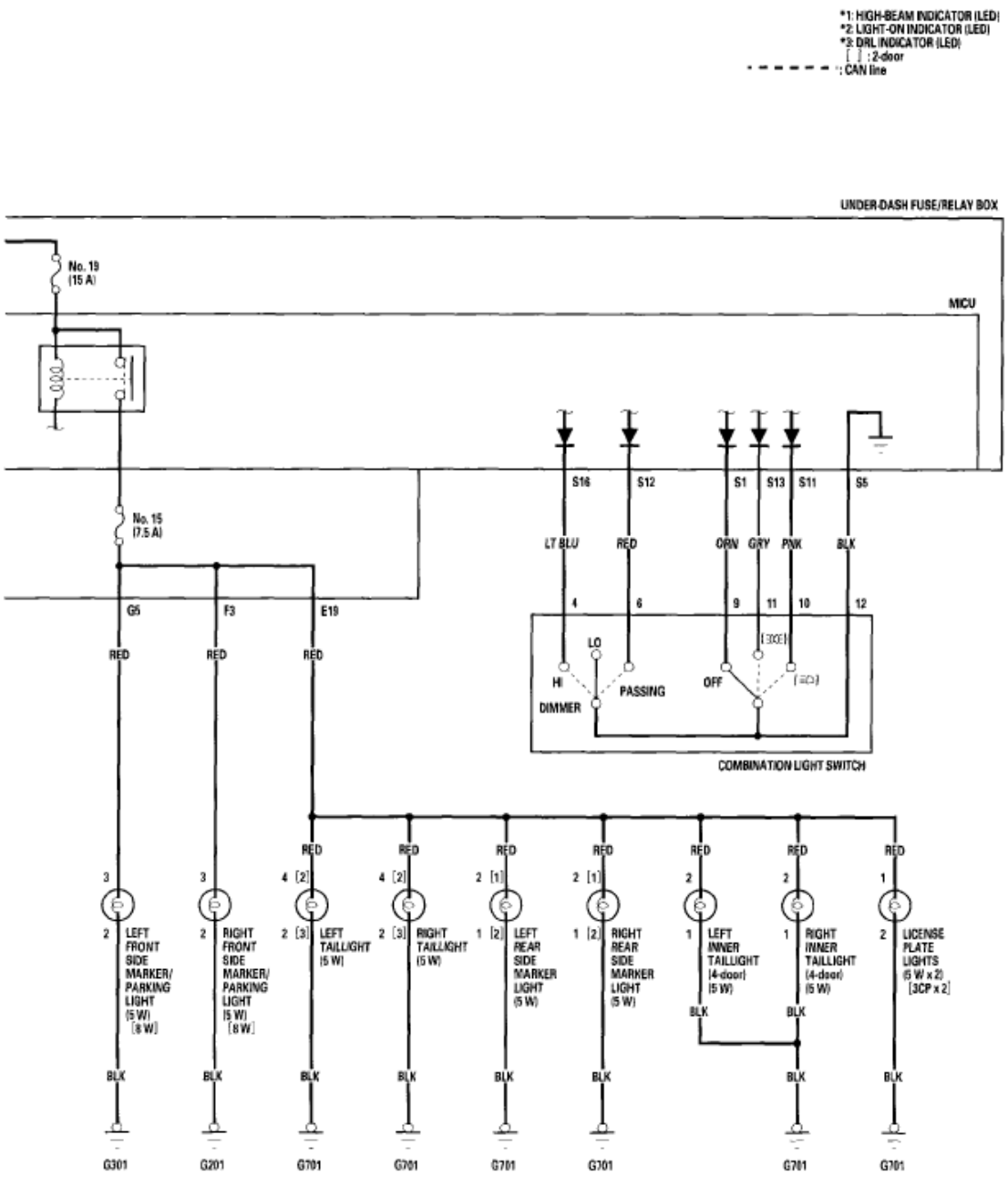


Fig. 8: Exterior Light - Circuit Diagram (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

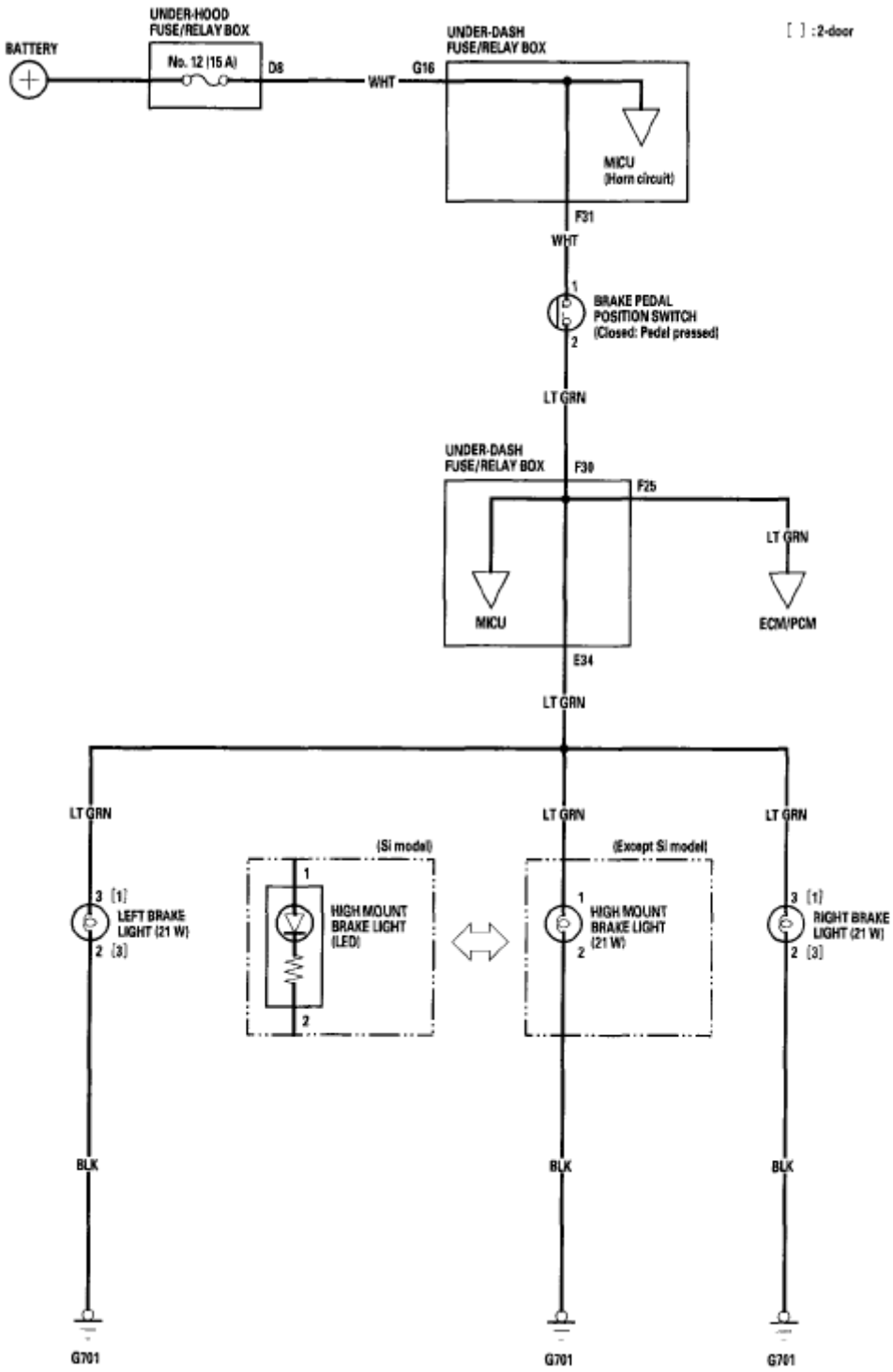


Fig. 9: Brake Lights - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

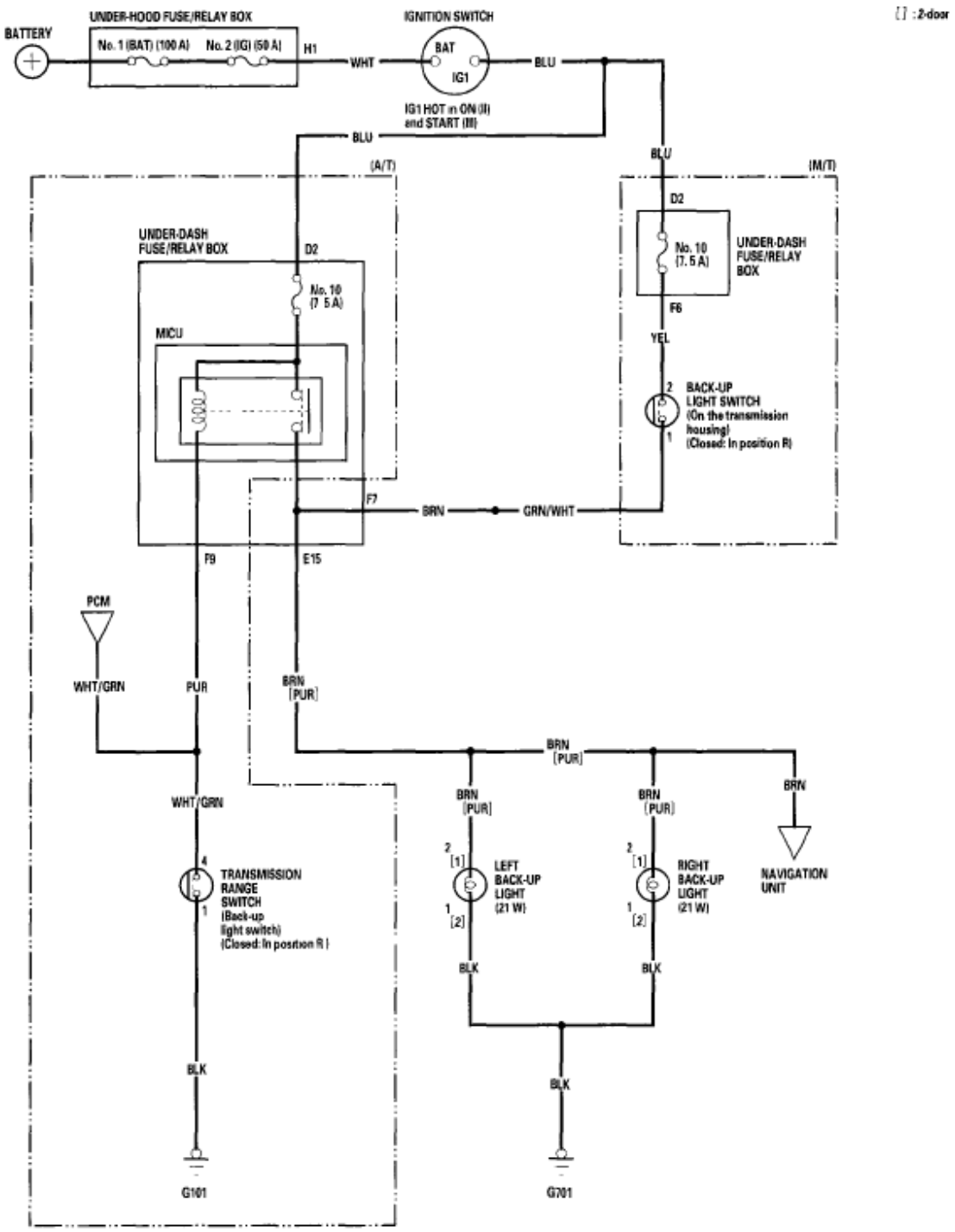


Fig. 10: Back-Up Lights - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC B1078: DAYTIME RUNNING LIGHTS SIGNAL ERROR (CANADA); DTC B1079: DAYTIME RUNNING LIGHTS SIGNAL ERROR (USA)

NOTE: **If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see TROUBLESHOOTING - B-CAN**

SYSTEM DIAGNOSIS TEST MODE A).

1. Turn the ignition switch ON (II).
2. Pull the parking brake lever.
3. Clear the DTCs with the HDS.
4. Release the parking brake lever.
5. Turn the ignition switch OFF, and then back ON (II).
6. Check for DTCs with the HDS.

   Is DTC B1078 indicated?

   YES - Go to step 7.

   NO - Intermittent failure. The daytime running lights system is OK at this time. Check for loose or poor connections.

7. Turn the headlight switch ON (high beam).

   Do both headlights (high beam) come on?

   YES - Go to step 8.

   NO - Go to step 10.

8. Turn the ignition switch OFF.
9. Check the voltage between the No. 6 and No. 33 terminals of the under-dash fuse/relay box connector E (42P) and body ground, and between the No. 20 terminal of the under-dash fuse/relay box connector F (34P) and body ground individually.

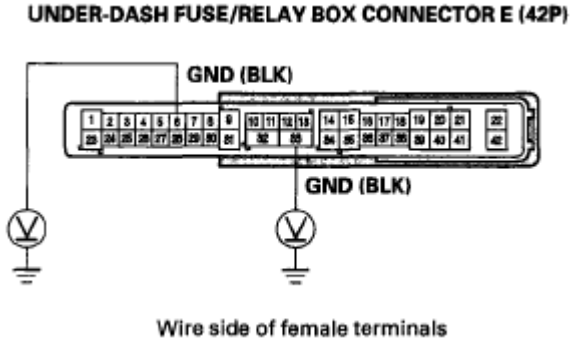


Fig. 11: Checking Voltage Between No. 6 Terminal Of Under-Dash Fuse/Relay Box Connector E (42P) And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

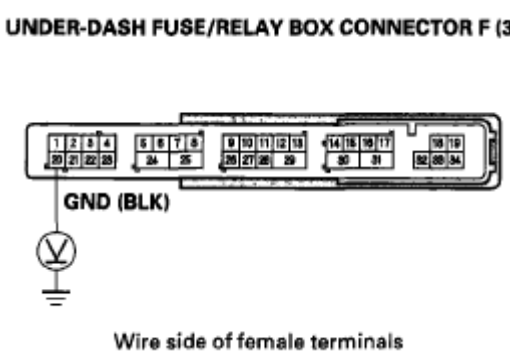


Fig. 12: Checking Voltage Between No. 20 Terminal Of Under-Dash Fuse/Relay Box Connector F (34P) And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 0.5 V?

YES - Faulty MICU; replace the under-dash fuse/relay box.

NO - Repair an open in the BLK wire or poor ground (G401, G501, G601, G602).

10. Turn the ignition and headlight switches OFF.
11. Check the No. 12, No. 13, and No. 18 fuses in the under-dash fuse/relay box.

    Are all fuses OK?

    YES - Go to step 12.

    NO - Replace the blown fuse and recheck. If the No. 18 (30 A) fuse is blown again, replace the under-dash fuse/relay box. If the No. 12(10 A) or No. 13 (10 A) fuse is blown again, repair a short in the wire between the under-dash fuse/relay box and appropriate headlight (high beam).

12. Check the headlight bulbs.

    Are the headlight bulbs OK?

    YES - Go to step 13.

    NO - Replace the faulty bulb.

13. Disconnect the under-dash fuse/relay box connectors F (34P) and G (21P).
14. Disconnect both of the headlight (high beam) 2P connectors.
15. Check for continuity between the No. 2 terminal of the right headlight (high beam) 2P connector and No. 22 terminal of the under-dash fuse/relay box connector F (34P).

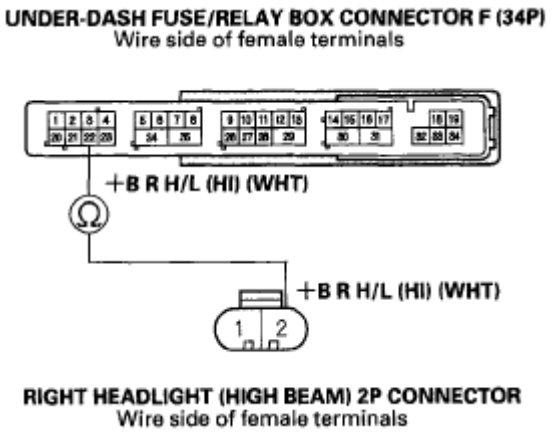


Fig. 13: Checking Continuity Between Right Headlight 2P Connector Terminal And Under-Dash Fuse/Relay Box Connector F Terminal (34P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 16.

NO - Repair an open in the wire between the right headlight (high beam) and the under-dash fuse/relay box.

16. Check for continuity between the No. 2 terminal of the left headlight (high beam) 2P connector and No. 15 terminal of the under-dash fuse/relay box connector G (21P).

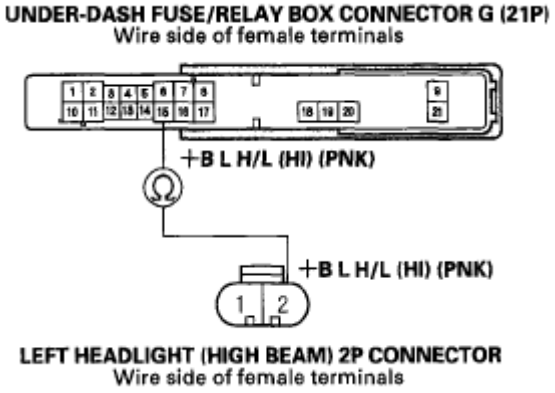


Fig. 14: Checking Continuity Between Left Headlight 2P Connector Terminal And Under-Dash Fuse/Relay Box Connector G Terminal (21P)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 17.

NO - Repair an open in the wire between the left headlight (high beam) and the under-dash fuse/relay box.

17. Check for continuity between the No. 1 terminal of each headlight (high beam) 2P connector and

body ground.

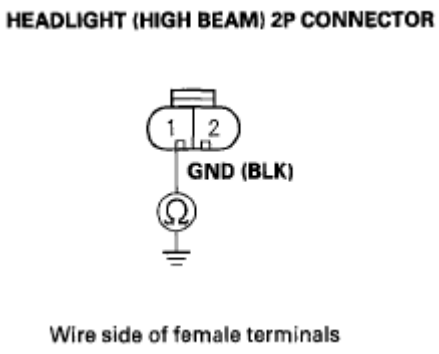


Fig. 15: Checking Continuity Between No 1 Terminal Of Headlight (High Beam) 2P Connector And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Faulty MICU; replace the under-dash fuse/relay box.

NO - Repair an open in the BLK wire or poor ground (G201-right side, G301-left side).

MICU INPUT TEST

NOTE:

- **The MICU turns on the headlights (high beams) in a dimming mode for the Daytime Running Lights under the following conditions:**
  - **With the ignition switch ON (II)**
  - **The headlight switch OFF**
  - **The parking brake is released (parking brake switch OFF)**
- **The DRL indicator will come when one of the headlight (high beams) bulbs is blown, or if the high beam wiring has an open circuit with the daytime running lights ON.**
- **For Canada models: If the vehicle is equipped with an optional remote control engine start system, the daytime running lights will not function when started with the remote start.**

1. Before troubleshooting the lighting system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check the No. 12 (10 A), No. 13 (10 A), No. 15 (7.5 A), No. 16 (10 A), No. 17 (10 A), No. 18 (20 A), No. 19 (15 A), and No. 21 (20 A), and No. 37 (7.5 A) fuses in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, G, S, and T.

NOTE: All connector views are shown from wire side of female terminals.

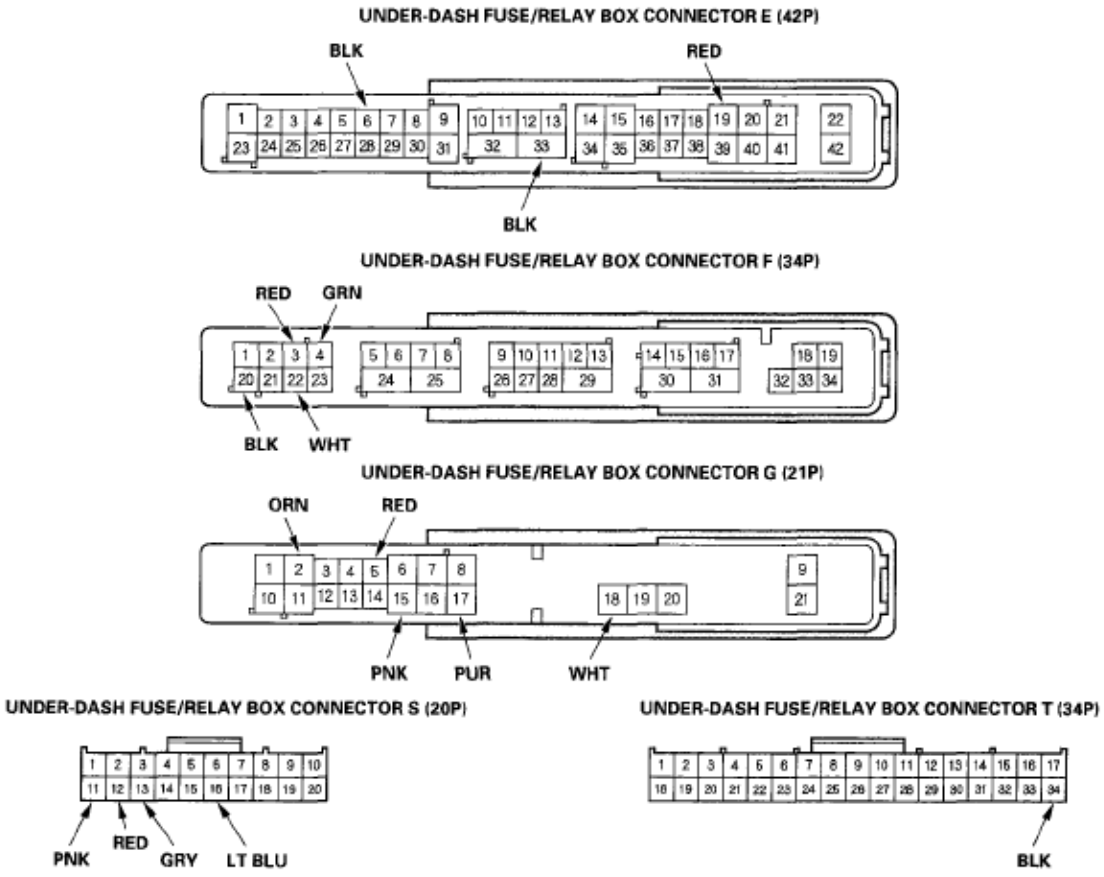


Fig. 16: Identifying Under-Dash Fuse/Relay Box Connector Terminals
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connector still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

MICU INPUT TEST (CONNECTOR DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E19	RED	Under all conditions	Connect battery power to the E19 terminal: The taillights, rear side marker lights, and license plate lights should come on.	• Poor ground (G701) • Blown bulb • An open in the wire
F3	RED	Under all conditions	Connect battery power to the F3 terminal: The right front side marker/parking light should come on.	• Poor ground (G201) • Blown bulb

				• An open in the wire
F4	GRN	Under all conditions	Connect battery power to the F4 terminal: The right headlight (high beam) should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
F22	WHT	Under all conditions	Connect battery power to the F22 terminal: The right headlight (low beam) should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
G5	RED	Under all conditions	Connect battery power to the G5 terminal: The left front side marker/parking light should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
G15	PNK	Under all conditions	Connect battery power to the G15 terminal: The left headlight (high beam) should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
G17	PUR	Under all conditions	Connect battery power to the G17 terminal: The left headlight (low beam) should come on.	• Poor ground (G301) • Blown bulb • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

MICU INPUT TEST (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
G2	ORN	Under all conditions	Check for voltage between G2 terminal and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
G18	WHT	Under all conditions	Check for voltage between G18 terminal and body ground: There should be battery voltage.	• Blown No. 4 (50 A) fuse in the under-hood fuse/relay box

				• An open in the wire
C3	ORN	Ignition switch ON (II)	Check for voltage between C3 and body ground there should be battery voltage.	• Faulty ignition switch • An open in the wire
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
S1	ORN	Combination light switch OFF	Check for voltage between S1 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch in any other position than OFF	Check for voltage between S1 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire
S11	PNK	Combination light switch (Headlight position) ON	Check for voltage between S11 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Check for voltage between S11 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire
S12	RED	Combination light switch lever pulled (Passing)	Check for voltage between S12 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch lever released from passing position	Check for voltage between S12 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire
S13	GRY	Combination light switch (SMALL position) ON	Check for voltage between S13 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Check for voltage between S13 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire

S16	LT BLU	Combination light switch (Dimmer) in high beam position	Check for voltage between S16 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch (Dimmer) in low beam position	Check for voltage between S16 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire

COMBINATION LIGHT SWITCH TEST/REPLACEMENT

1. Remove the dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTALLATION**).
2. Remove the steering column covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
3. Disconnect the 12P connector (A) from the combination light switch (B).

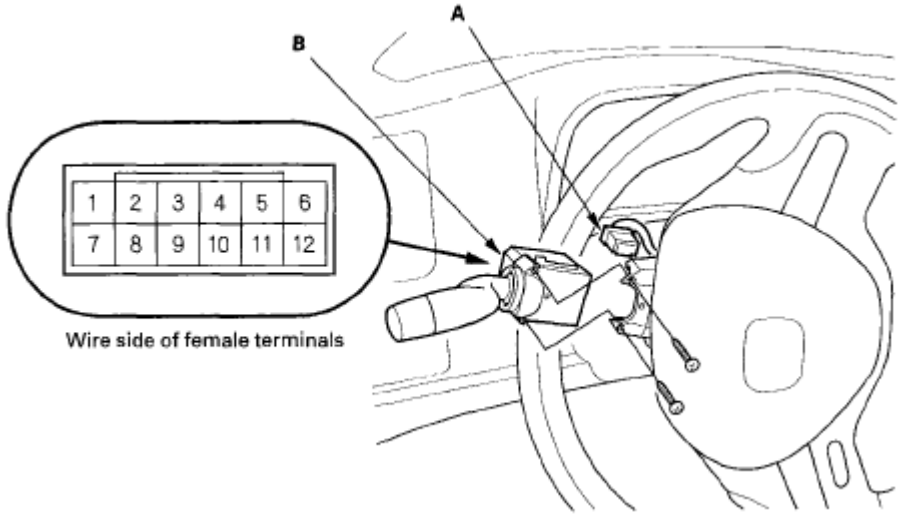


Fig. 17: Disconnecting 12P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the two screws, then slide out the combination light switch.
5. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.
     - If the continuity is not as specified, replace the switch.

Light switch:

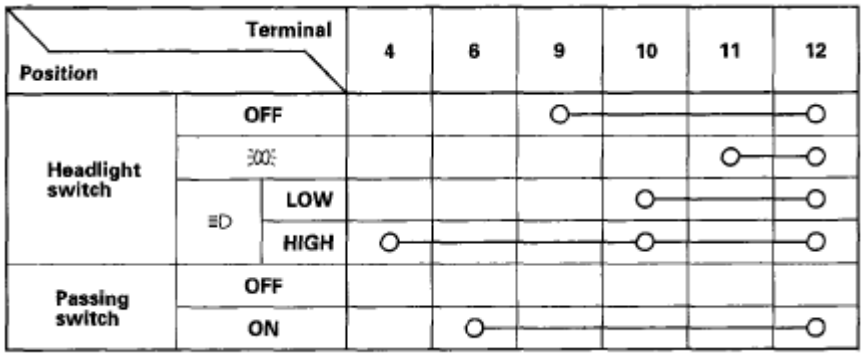


Fig. 18: Checking Continuity Between Light Switch Terminals Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Turn signal switch:

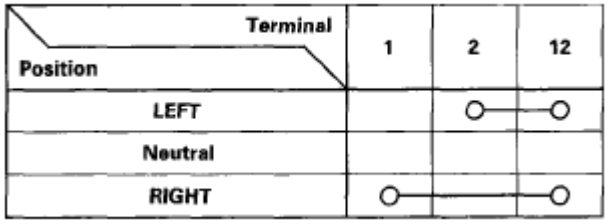


Fig. 19: Checking Continuity Between Turn Signal Switch Terminals Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HEADLIGHT ADJUSTMENT

CAUTION: Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weighs the same should sit in the driver's seat.

1. Clean the outer lens so that you can see the center (A) of the headlights.

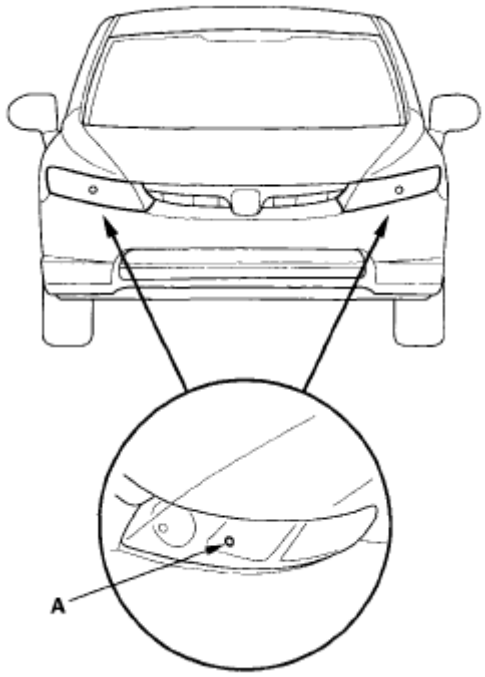


Fig. 20: Cleaning Outer Lens Of Headlights
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Park the vehicle in front of a wall or a screen (A).

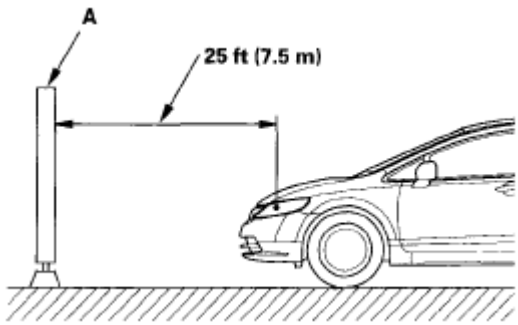


Fig. 21: Parking Vehicle In Front Of Wall Or Screen
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the low beams on.
4. Determine if the headlights are aimed properly.

Vertical adjustment:

Measure the height of the headlights (A). Adjust the cut line (B) to the lights height.

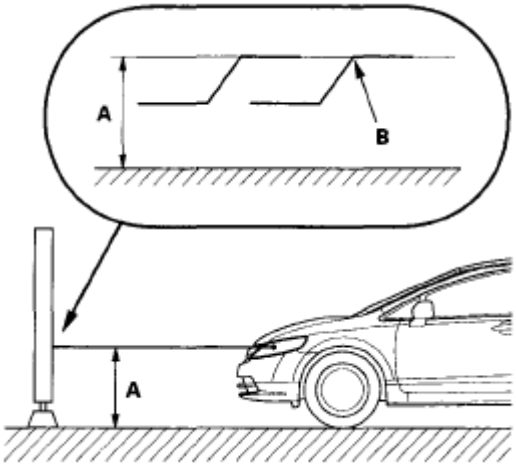


Fig. 22: Measuring Headlights
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If necessary, open the hood and adjust the headlights to local requirements by turning the vertical adjuster.

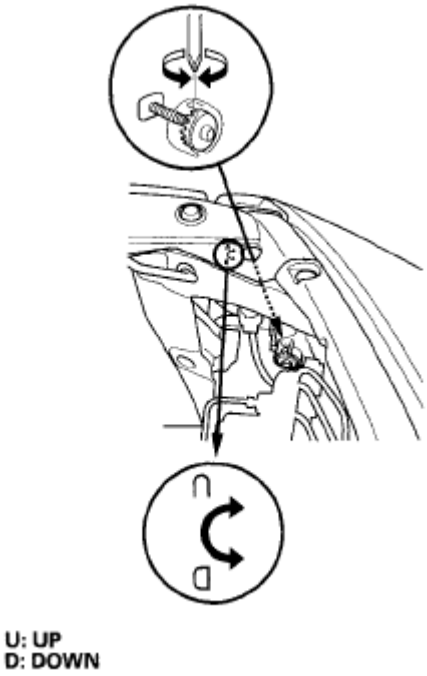


Fig. 23: Adjusting Vertically
Courtesy of AMERICAN HONDA MOTOR CO., INC.

HEADLIGHT REPLACEMENT

1. Remove the front bumper (see **FRONT BUMPER REMOVAL/INSTALLATION**).
2. Remove the connectors (A) from the headlight assembly (B).

NOTE: 4-door shown, the 2-door is similar.

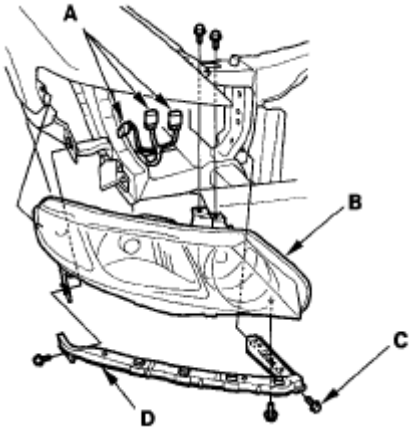


Fig. 24: Removing Connectors From Headlight Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the four bolts, then remove the headlight.
4. Remove the bolt (C) and the corner upper beam (D) from the headlight.
5. Install the headlight in the reverse order of removal.
6. After replacement, adjust the headlight to local requirement.

BULB REPLACEMENT

HEADLIGHT

1. For low beam: Remove the inner fender.
   - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
   - 4-door (see **4-DOOR**)
2. Disconnect the 2P connector (A) from the headlight.

   Headlight (high beam): 60 W
   Headlight (low beam): 51 W

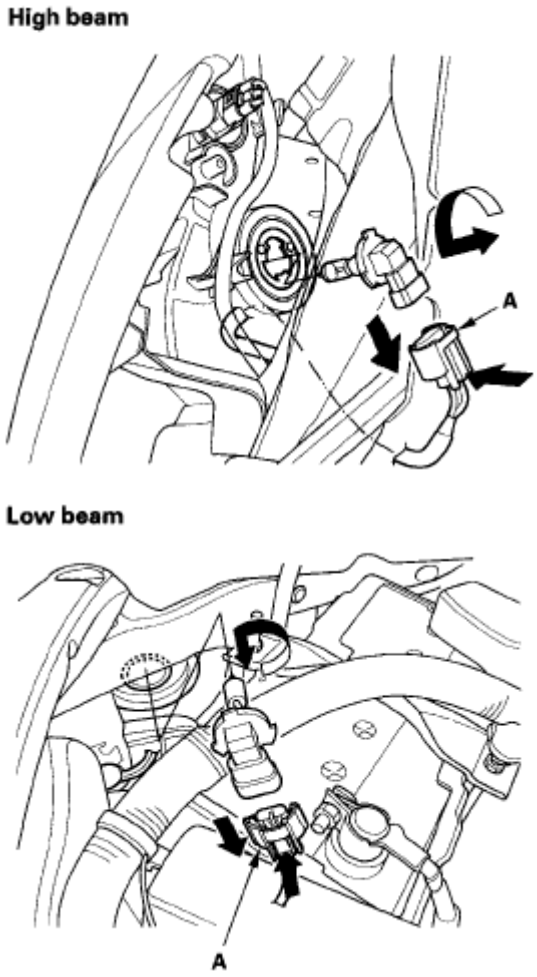


Fig. 25: Disconnecting 2P Connector From Headlight
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb socket 45° counterclockwise to remove the bulb.
4. Install a new bulb in the reverse order of removal.

FRONT SIDE MARKER/PARKING/TURN SIGNAL LIGHTS

1. Remove the inner fender.
   - 2-door (see **FRONT INNER FENDER REPLACEMENT**)
   - 4-door (see **4-DOOR**)
2. Disconnect the 3P connector (A) from the front side marker/parking/turn signal light.

Front Side Marker/Parking/Turn Signal Lights:

21/5 W (4-door)
28/8 W (2-door)

Fig. 26: Disconnecting 3P Connector From Front Side Marker/Parking/Turn Signal Light
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb socket 45° counterclockwise to remove the bulb.
4. Install a new bulb in the reverse order of removal.

TAILLIGHT REPLACEMENT

4-DOOR

1. Remove the rear bumper (see **REAR BUMPER REMOVAL/INSTALLATION**).
2. Disconnect the connectors (A) from the taillights (B).

Brake Lights/Taillights: 21/5 W
Rear Turn Signal Light: 21 W
Back-up Light: 21 W
Rear Side Maker Light: 5 W

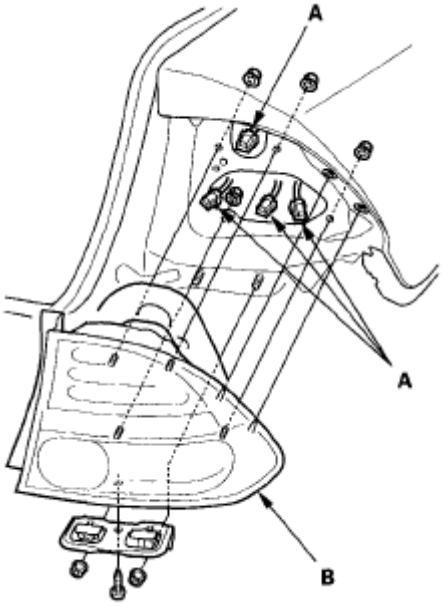


Fig. 27: Disconnecting Connectors From Taillights
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb sockets 45° counterclockwise to remove the bulbs.
4. Remove the nuts and screws, then remove the taillight.
5. Install the light in the reverse order of removal.

2-DOOR

1. Remove the rear bumper (see **REAR BUMPER REMOVAL/INSTALLATION**).
2. Disconnect the connectors (A) from the taillights (B).

   Brake Lights/Taillights: 21/5W
   Rear Turn Signal Light: 21 W
   Back-up Light: 21 W
   Rear Side Marker Light: 5 W

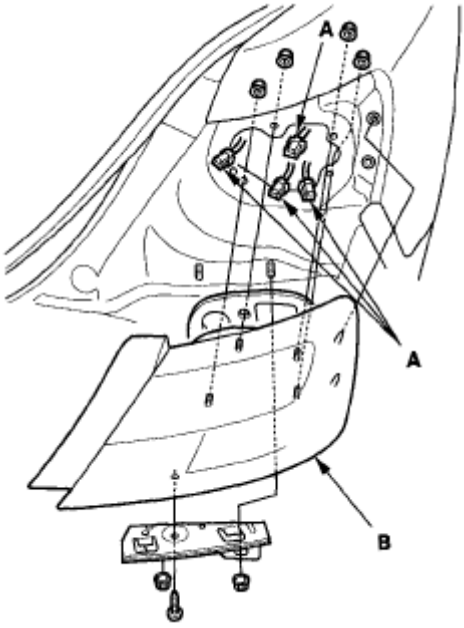


Fig. 28: Disconnecting Connectors From Taillights
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb sockets 45° counterclockwise to remove the bulbs.
4. Remove the nuts and screws, then remove the taillight.
5. Install the light in the reverse order of removal.

INNER TAILLIGHT REPLACEMENT

4-DOOR

1. Open the trunk lid, and remove the rear license trim (see **4-DOOR**).
2. Disconnect the connector (A) from the inner taillight (B).

Taillight: 5W

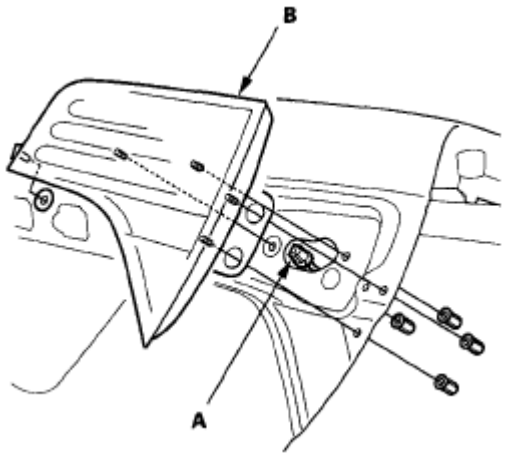


Fig. 29: Disconnecting Connector From Inner Taillight
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb socket 45° counterclockwise to remove the bulb.
4. Remove the nuts, then remove the taillight.
5. Install the light in the reverse order of removal.

LICENSE PLATE LIGHT REPLACEMENT

1. Open the trunk lid, and remove the rear license trim (see **SIDE SILL PROTECTION TAPE REPLACEMENT**).
2. Disconnect the 2P connector (A) from the license plate light.

NOTE: 4-door shown, the 2-door is similar.

License Plate Light: 5 W (4-door) 3 CP (2-door)

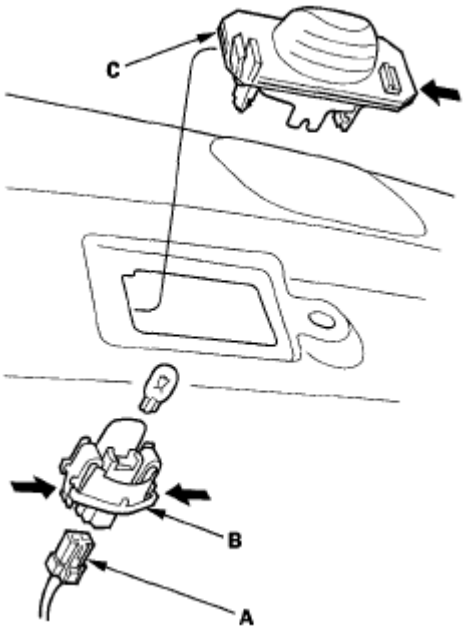


Fig. 30: Disconnecting 2P Connector From License Plate Light
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Release the bulb socket (B) from the lens (C) by pressing on the tabs.
4. Remove the lens from the trunk lid by pressing on the tabs.
5. Install the light in the reverse order of removal.

HIGH MOUNT BRAKE LIGHT REPLACEMENT

EXCEPT SI MODELS

1. Open the trunk lid.
2. Disconnect the 2P connector (A) from the high mount brake light.

Bulb: 21 W

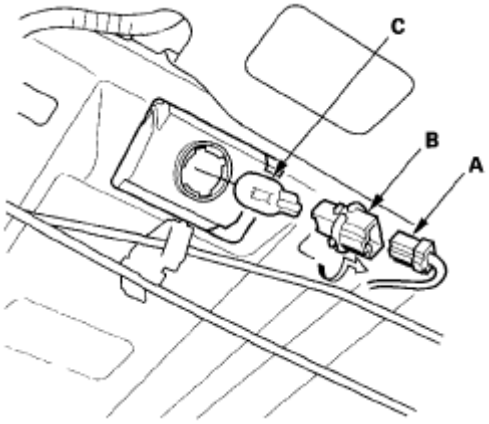


Fig. 31: Disconnecting 2P Connector From High Mount Brake Light
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the bulb socket (B) 45° counterclockwise to remove the bulb (C).
4. Remove the rear shelf.
   - 2-door (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
   - 4-door (see **REAR SHELF EXTENSION - 2-DOOR**)
5. Remove the high mount brake light (A).

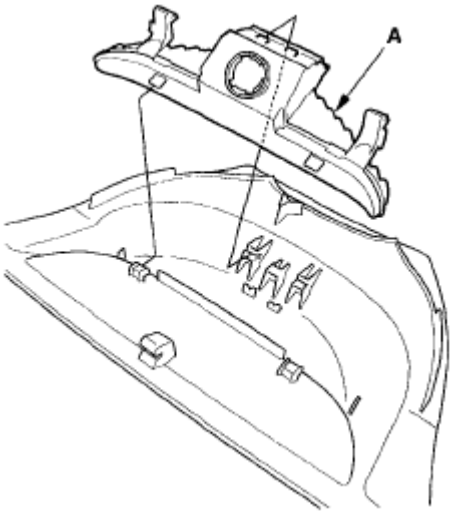


Fig. 32: Removing High Mount Brake Light
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the light in the reverse order of removal.

SI MODEL

1. Remove the two screws from the high mount brake light (A).

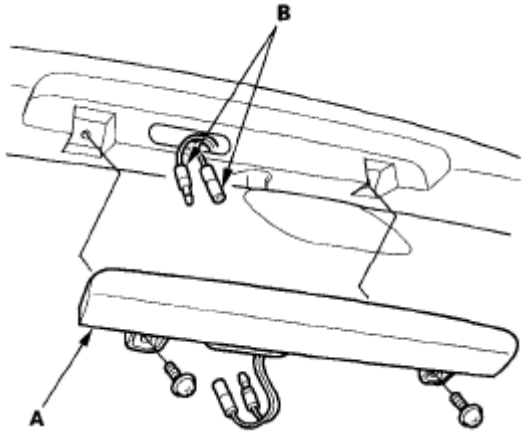


Fig. 33: Removing Hight Mount Brake Light Screws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the terminals (B) and remove the high mount brake light.

BRAKE PEDAL POSITION SWITCH TEST

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).

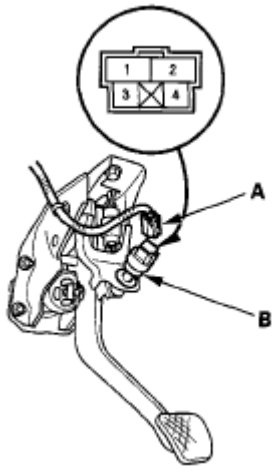


Fig. 34: Disconnecting 4P Connector And Brake Pedal Position Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.
3. Check for continuity between the No. 3 and No. 4 terminals (with cruise control).
   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.
4. If necessary, adjust or replace the switch, or adjust the pedal height (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

2006-08 ACCESSORIES & EQUIPMENT

Turn Signal/Hazard Flasher - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

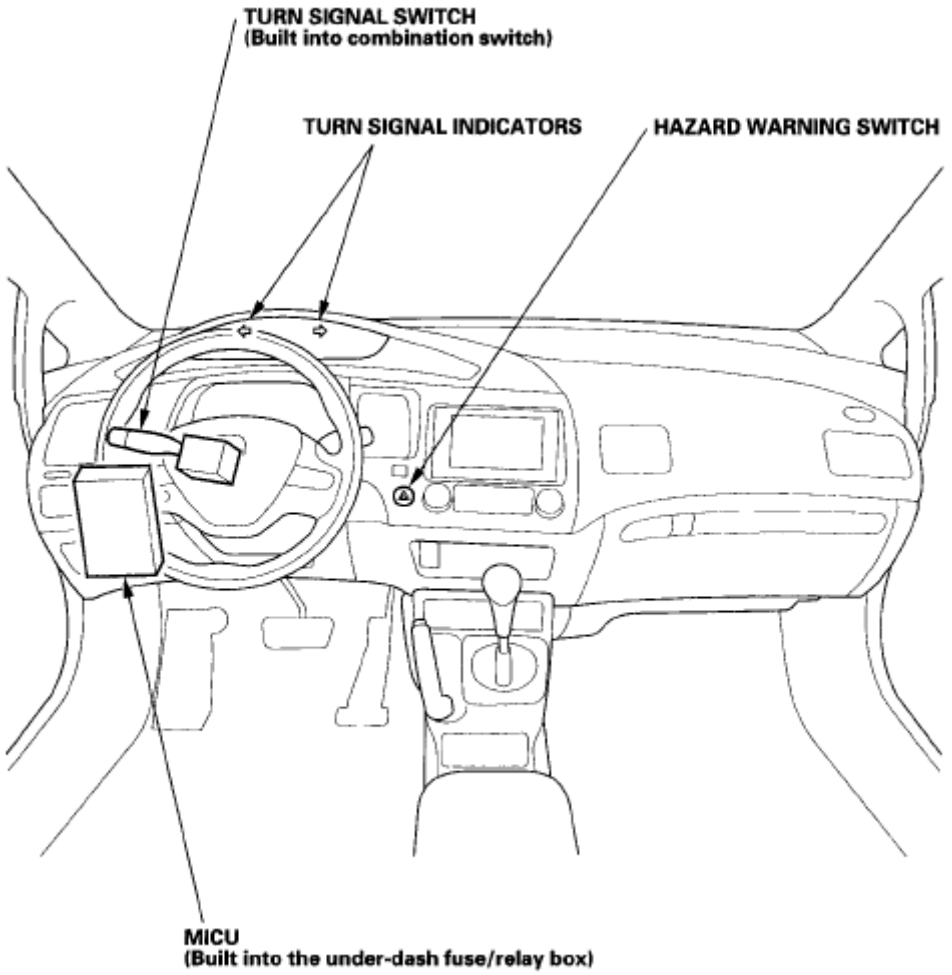


Fig. 1: Locating Turn Signal/Hazard Flasher Component
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

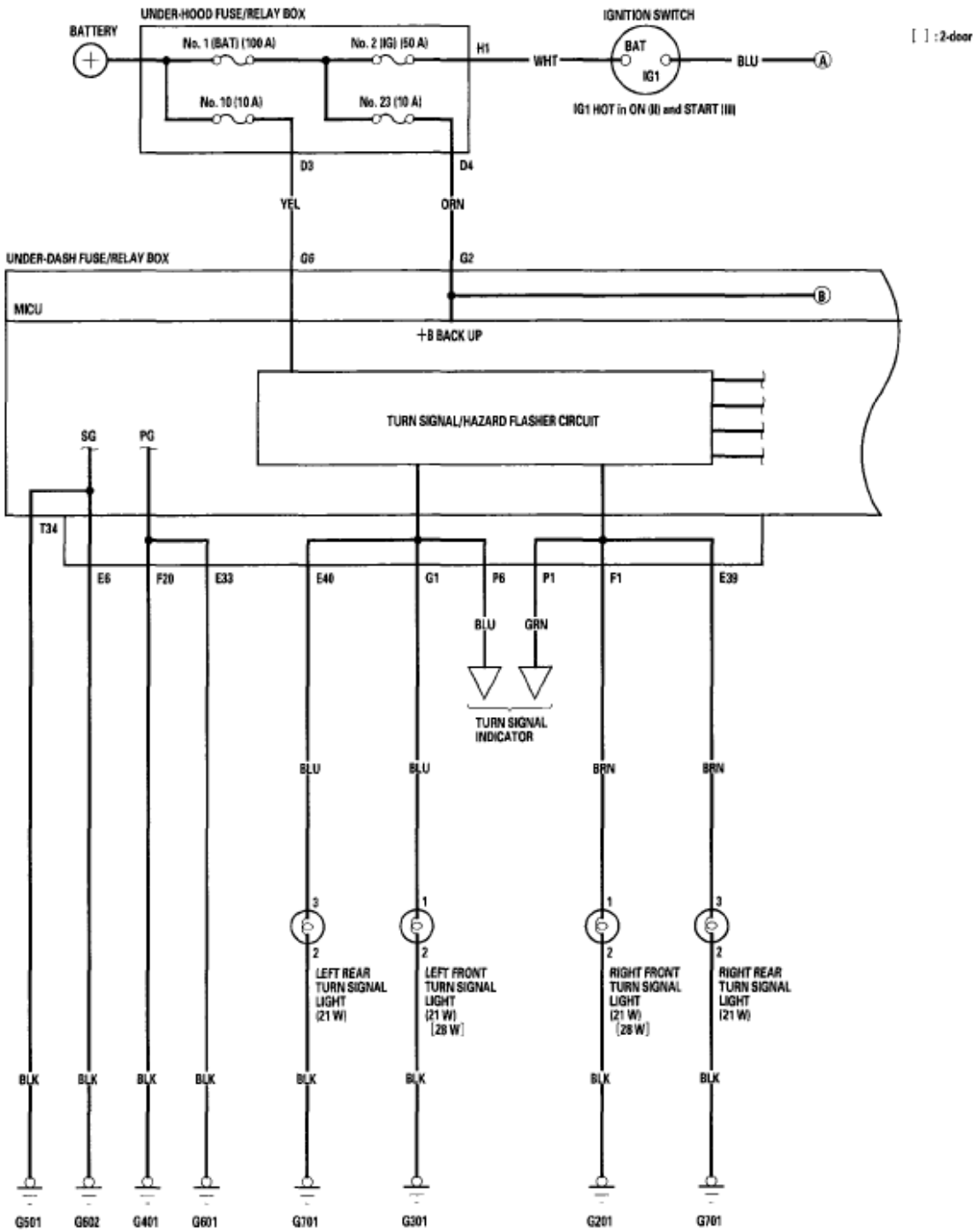


Fig. 2: Turn Signal/Hazard Flasher - Circuit Diagram (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

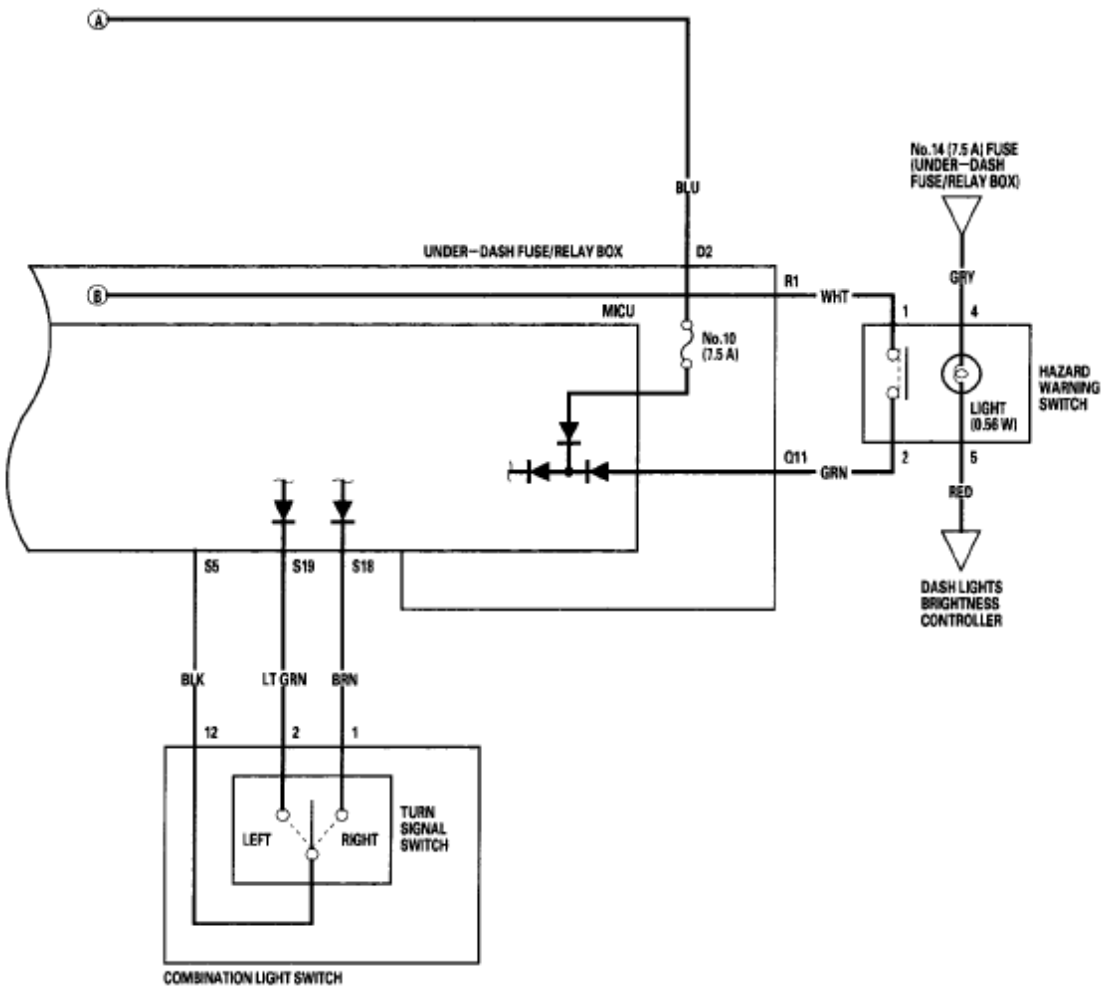


Fig. 3: Turn Signal/Hazard Flasher - Circuit Diagram (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC B1280: TURN SIGNAL SWITCH CIRCUIT MALFUNCTION

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A.

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Operate the turn signal switch in left and right positions, and wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1280 indicated?

   YES - Go to step 5.

   NO - Intermittent failure, the system is OK at this time. Check for loose or poor connections.

5. Select LIGHTING from the BODY ELECTRICAL system select menu, then enter DATA LIST.
6. Check each turn signal switch position value with the DATA LIST menu.

When the turn signal switch is in left position

Data List	Value
Turn Signal Switch (LEFT)	ON
Turn Signal Switch (RIGHT)	OFF

When the turn signal switch is in right position

Data List	Value
Turn Signal Switch (LEFT)	OFF
Turn Signal Switch (RIGHT)	ON

Are all data list values correct?

YES - Faulty MICU; replace**REMOVAL AND INSTALLATION** .

NO - Go to step 7.

7. Turn the ignition switch to LOCK (0).
8. Disconnect the combination light switch 12P connector.
9. Turn the ignition switch to ON (II).
10. Select LIGHTING from the BODY ELECTRICAL system select menu, then enter DATA LIST.
11. Check each turn signal switch position value with the DATA LIST menu.

When the turn signal switch is in left position

Data List	Value
Turn Signal Switch (LEFT)	ON
Turn Signal Switch (RIGHT)	OFF

When the turn signal switch is in right position

Data List	Value
Turn Signal Switch (LEFT)	OFF
Turn Signal Switch (RIGHT)	ON

Are both values now showing OFF?

YES - Go to step 15.

NO - Go to step 12.

12. Turn the ignition switch to LOCK (0).
13. Disconnect under-dash fuse/relay box connector S (20P).
14. Check for continuity between body ground and under-dash fuse/relay box connector S (20P) terminals No. 18 and No. 19 individually.

Is there continuity?

YES - Repair a short to ground in the wire.

NO - Faulty MICU; replace the under-dash fuse/relay box.

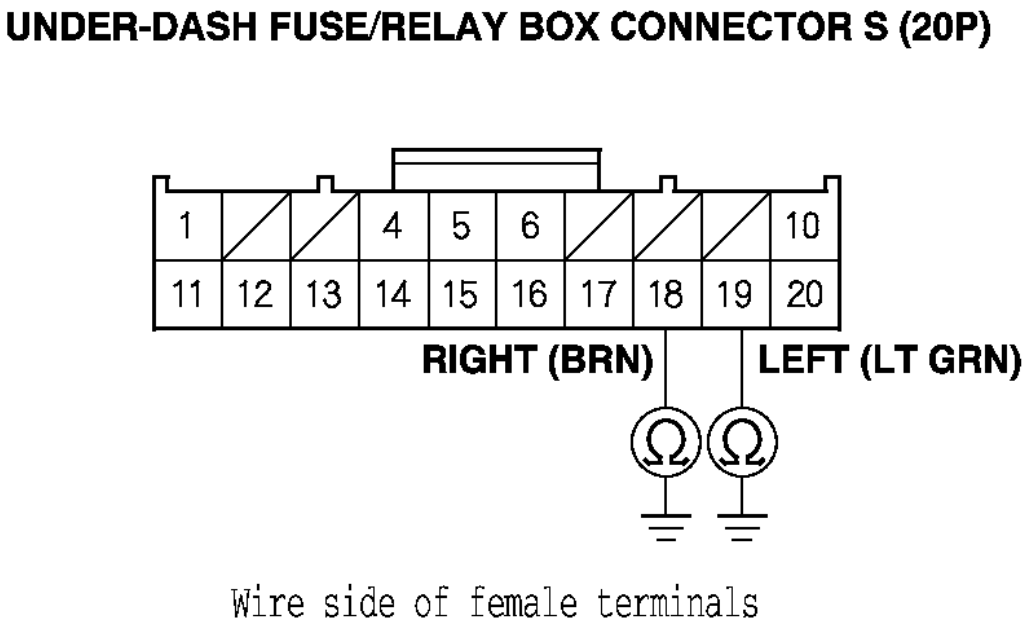


Fig. 4: Under-Dash Fuse/Relay Box Connector S (20P) - Brown
Courtesy of HONDA

15. Turn the ignition switch to LOCK (0).
16. Do the combination light switch test.

Is the combination light switch OK?

Yes - Go to step 17.

NO - Replace the combination light switch.

17. Disconnect under-dash fuse/relay box connector S (20P).
18. Check for continuity between under-dash fuse/relay box connector S (20P) terminals and combination light switch 12P connector terminals as shown:

Under-dash fuse/relay box connector S (20P)	Combination light switch 12P connector
5 (BLK)	12 (BLK)
18 (BRN)	1 (BRN)
19 (LT GRN)	2 (LT GRN)

Is there continuity?

Yes - Go to step 19.

NO - Repair an open in the wire.

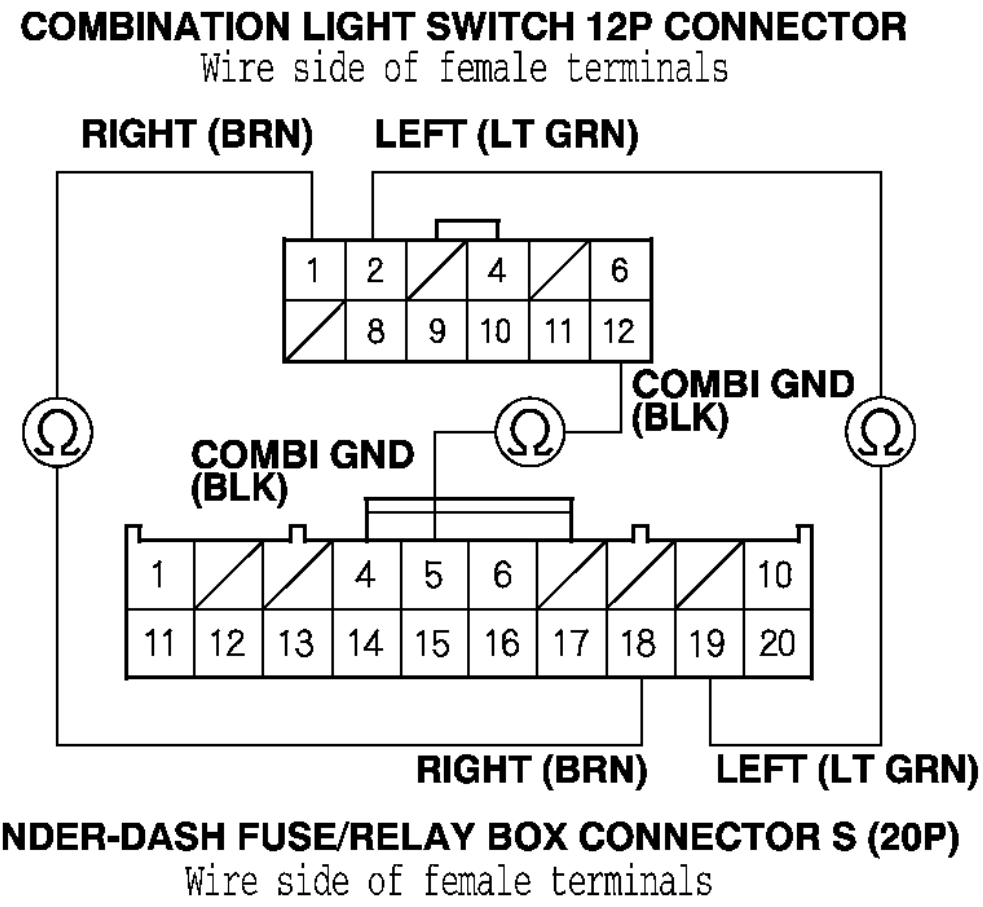


Fig. 5: Combination Light Switch 12P Connector - Brown/Green
Courtesy of HONDA

19. Check for continuity between under-dash fuse/relay box connector S (20P) terminals No. 5 and No. 18, and between connector S (20P) terminals No. 5 and No. 19 respectively.

Is there continuity?

Yes - Repair a short between the wires.

NO - Faulty MICU; replace the under-dash fuse/relay box.

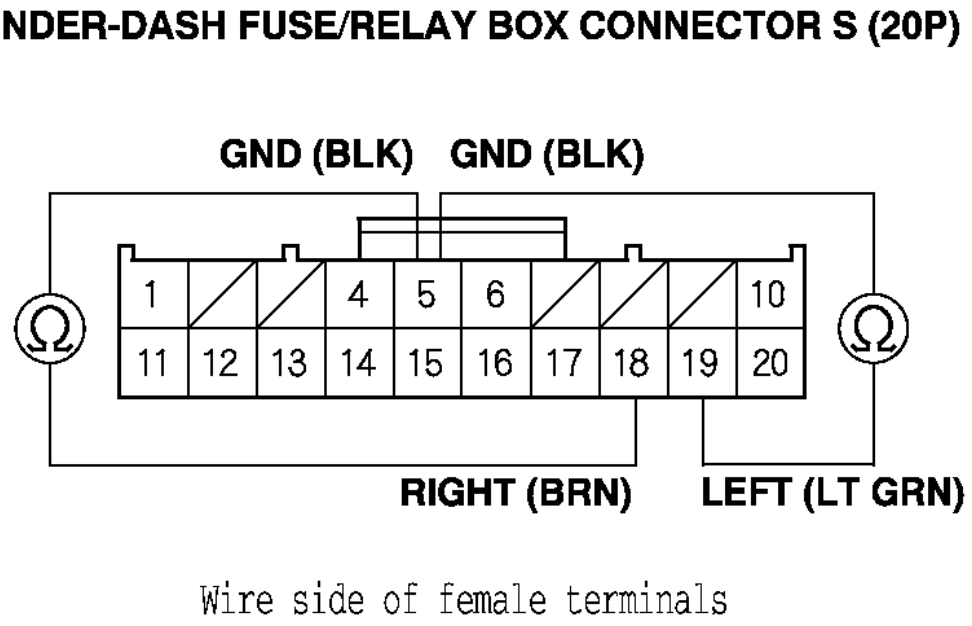


Fig. 6: Under-Dash Fuse/Relay Box Connector S (20P) - Black
Courtesy of HONDA

MICU INPUT TEST

1. Before troubleshooting the turn signal/hazard flasher system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, G, P, Q, R, S, and T.

NOTE: All connector views are wire side of female terminals.

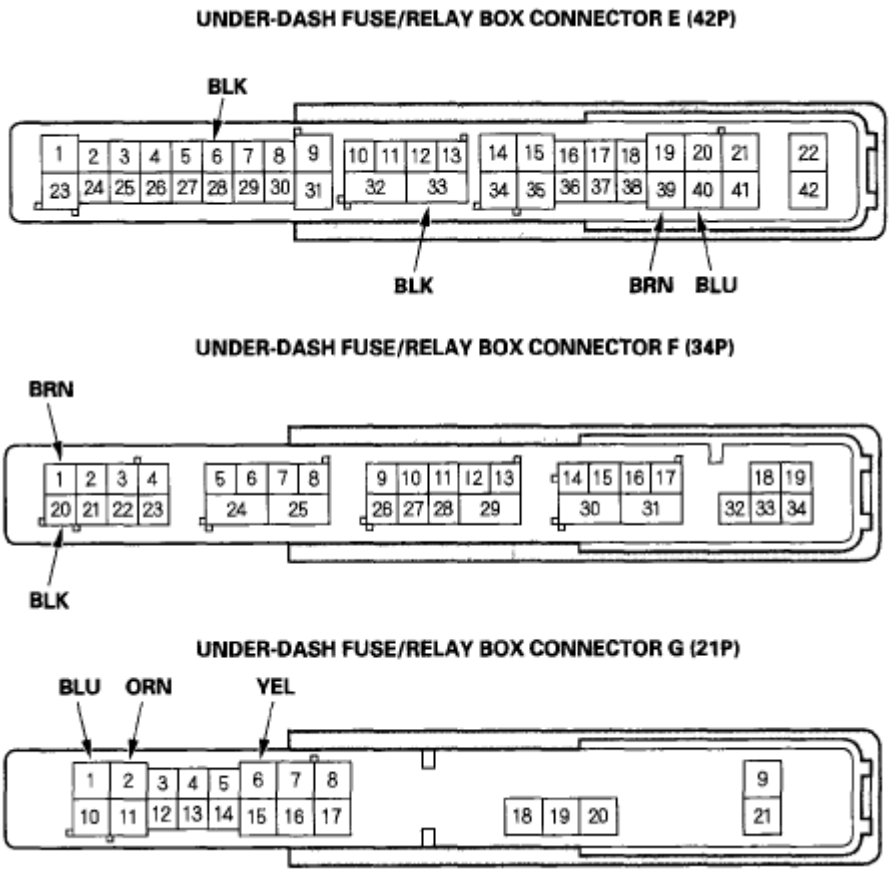


Fig. 7: Identifying Under-Dash Fuse/Relay Box Connectors (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

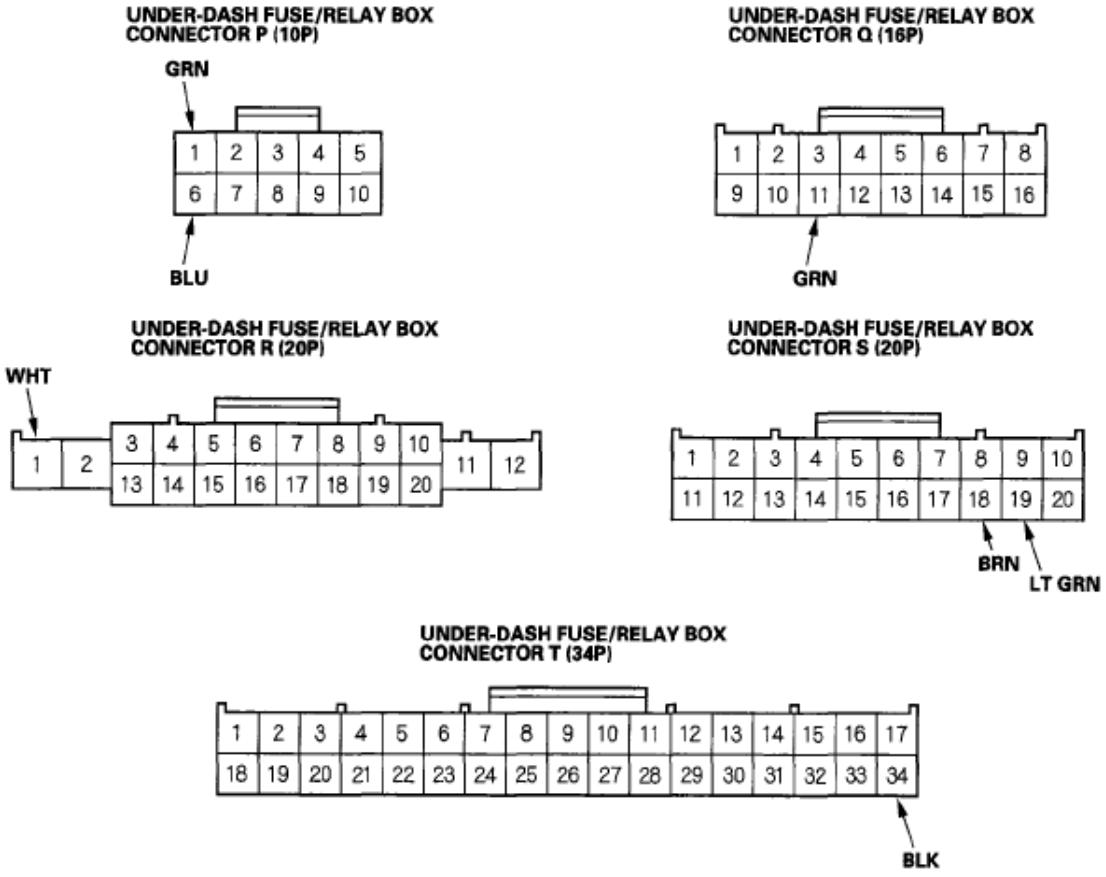


Fig. 8: Identifying Under-Dash Fuse/Relay Box Connectors (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connectors still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

MICU INPUT TEST (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E39	BRN	Under all conditions	Connect G2 and E39 terminals with a jumper wire: The right rear turn signal light should come on.	• Poor ground (G701) • Blown bulb • An open in the wire
E40	BLU	Under all conditions	Connect G2 and E40 terminals with a jumper wire: The left rear turn signal	• Poor ground (G701) • Blown bulb

			light should come on.	• An open in the wire
F1	BRN	Under all conditions	Connect G2 and F1 terminals with a jumper wire: The right front turn signal light should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
G1	BLU	Under all conditions	Connect G2 and G1 terminals with a jumper wire: The left front turn signal light should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
P1	GRN	Under all conditions	Connect G2 and P1 terminals with a jumper wire: The right turn signal indicator should come on.	• Faulty gauge control module (speedo) • Faulty indicator • An open in the wire
P6	BLU	Under all conditions	Connect G2 and P6 terminals with a jumper wire: The left turn signal indicator should come on.	• Faulty gauge control module (speedo) • Faulty indicator • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

MICU INPUT TEST (CONNECTORS RECONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
G2	ORN	Under all conditions	Check for voltage between G2 terminal and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
G6	YEL	Under all conditions	Check for voltage between G6 terminal and body	• Blown No. 10 (10 A) fuse in

			ground: There should be battery voltage.	the under-hood fuse/relay box • An open in the wire
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
R1	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	Faulty under-dash fuse/relay box
Q11	GRN	Hazard warning switch pressed	Check for voltage to ground: There should be battery voltage.	• Faulty hazard warning switch • An open in the wire
S18	BRN	Turn signal switch in right position	Check for voltage between S18 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Turn signal switch in left or neutral position	Check for voltage between S18 and S5 terminals: There should be 5 V or more.	• Faulty combination light switch • Short to ground in the wire
S19	LT GRN	Turn signal switch in left position	Check for voltage between S19 and S5 terminals: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Turn signal switch in right or neutral	Check for voltage between S19 and	• Faulty

		position	S5 terminals: There should be 5 V or more.	combination light switch • Short to ground in the wire

HAZARD WARNING SWITCH TEST/REPLACEMENT

1. Remove the center panel.
   - With Audio (see **AUDIO UNIT REMOVAL/INSTALLATION**)
   - With Navigation (see **NAVIGATION UNIT REMOVAL/INSTALLATION**)
2. Remove the screws and the hazard warning switch (A).

Fig. 9: Removing Hazard Warning Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the terminals in each switch position according to the table.

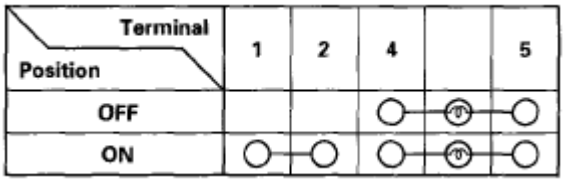


Fig. 10: Checking Continuity Between Terminals In Each Switch Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the continuity is not as specified, replace the bulb (A) or the hazard warning switch.

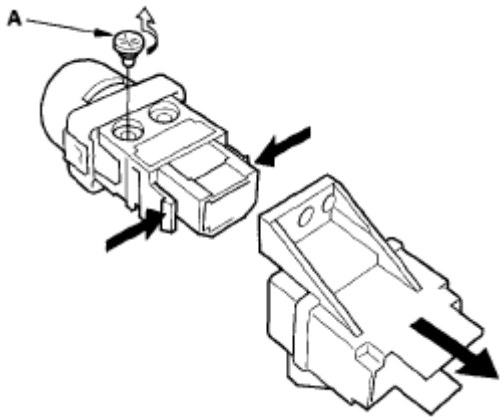


Fig. 11: Replacing Bulb Or Hazard Warning Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the hazard warning switch in the reverse order of removal.

2006-08 ACCESSORIES AND EQUIPMENT

Entry Lights Control System - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

4-door

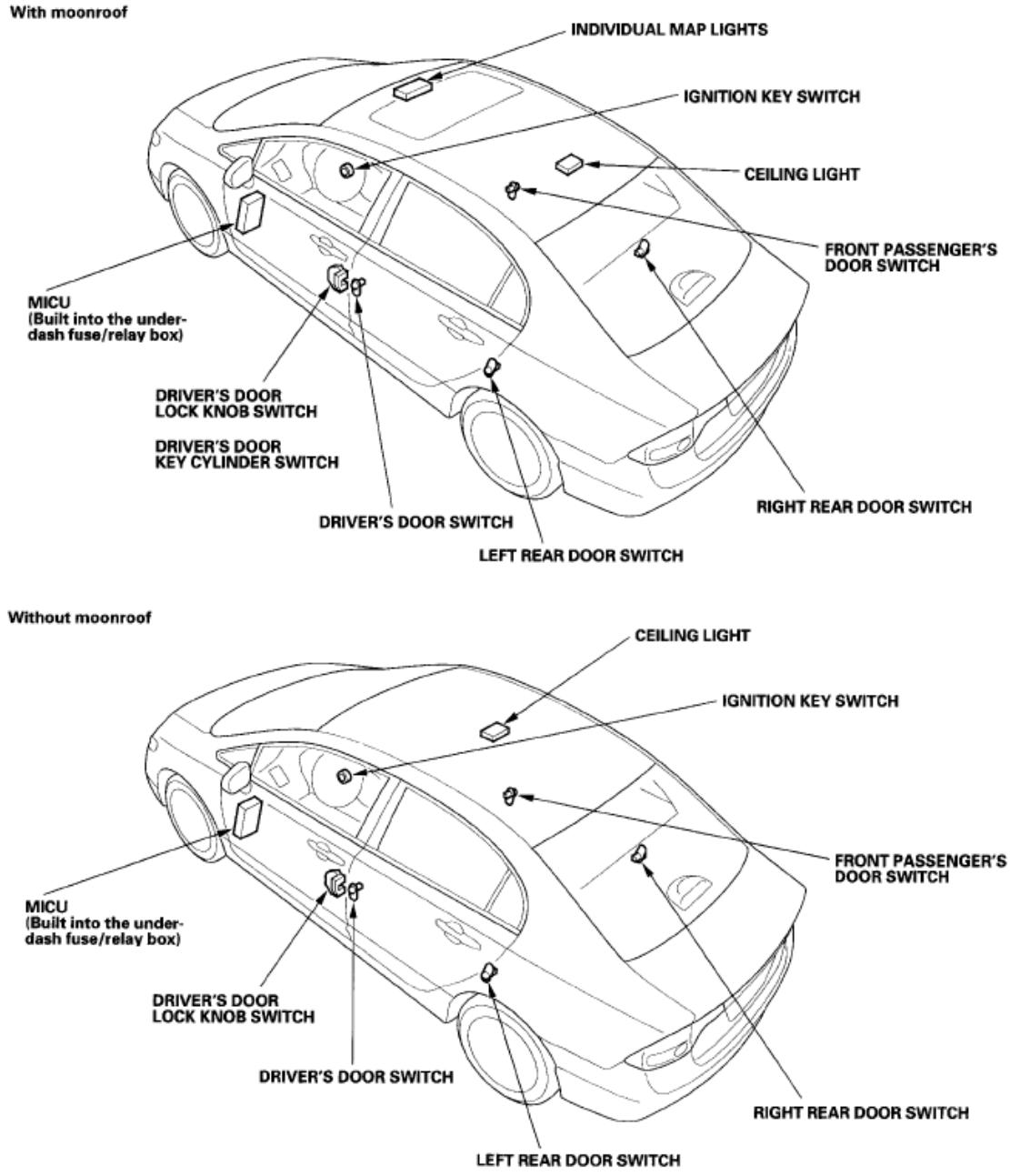


Fig. 1: Identifying Entry Lights Control System Component Location - (4-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2-door

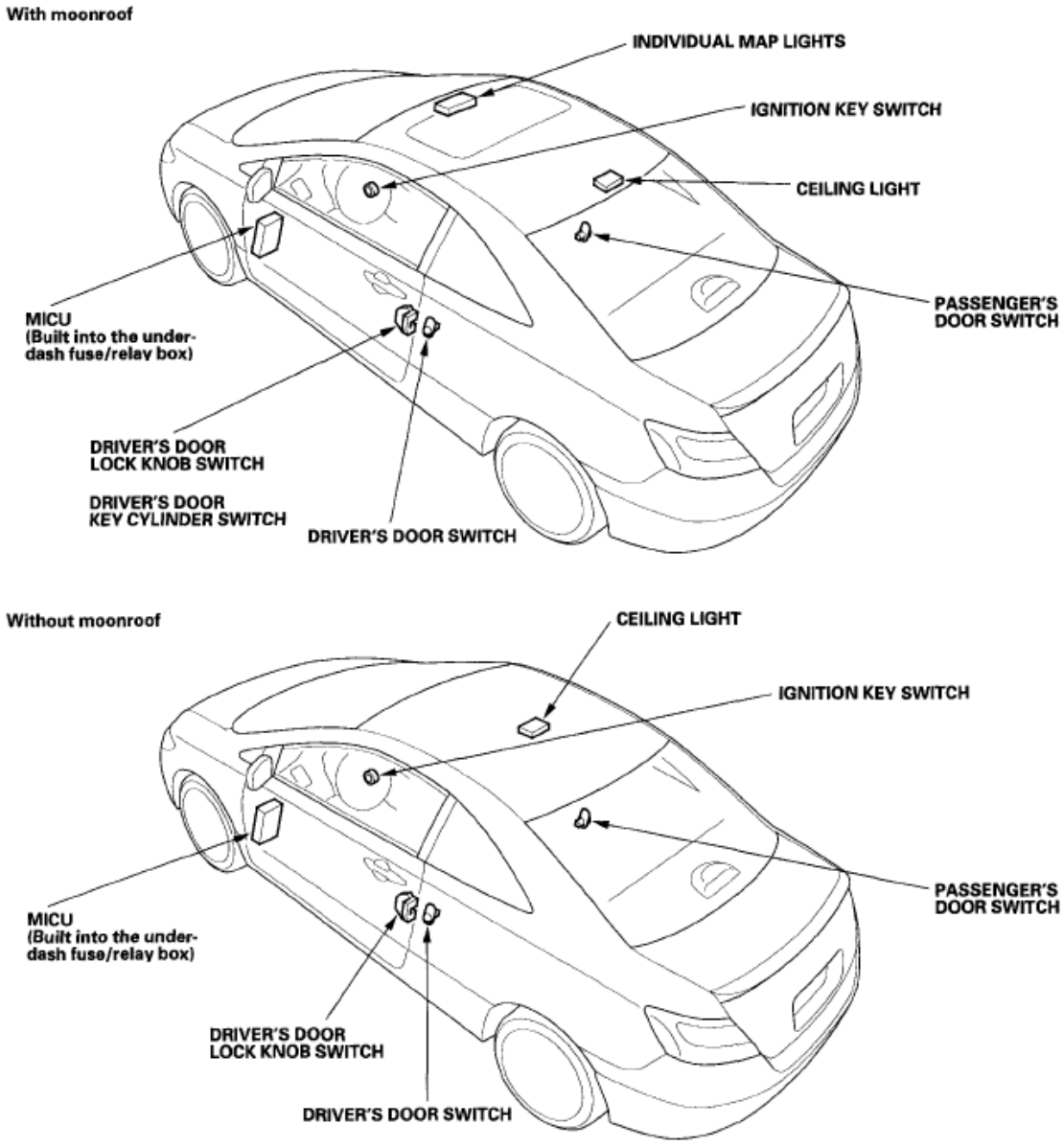


Fig. 2: Identifying Entry Lights Control System Component Location - (2-Door)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

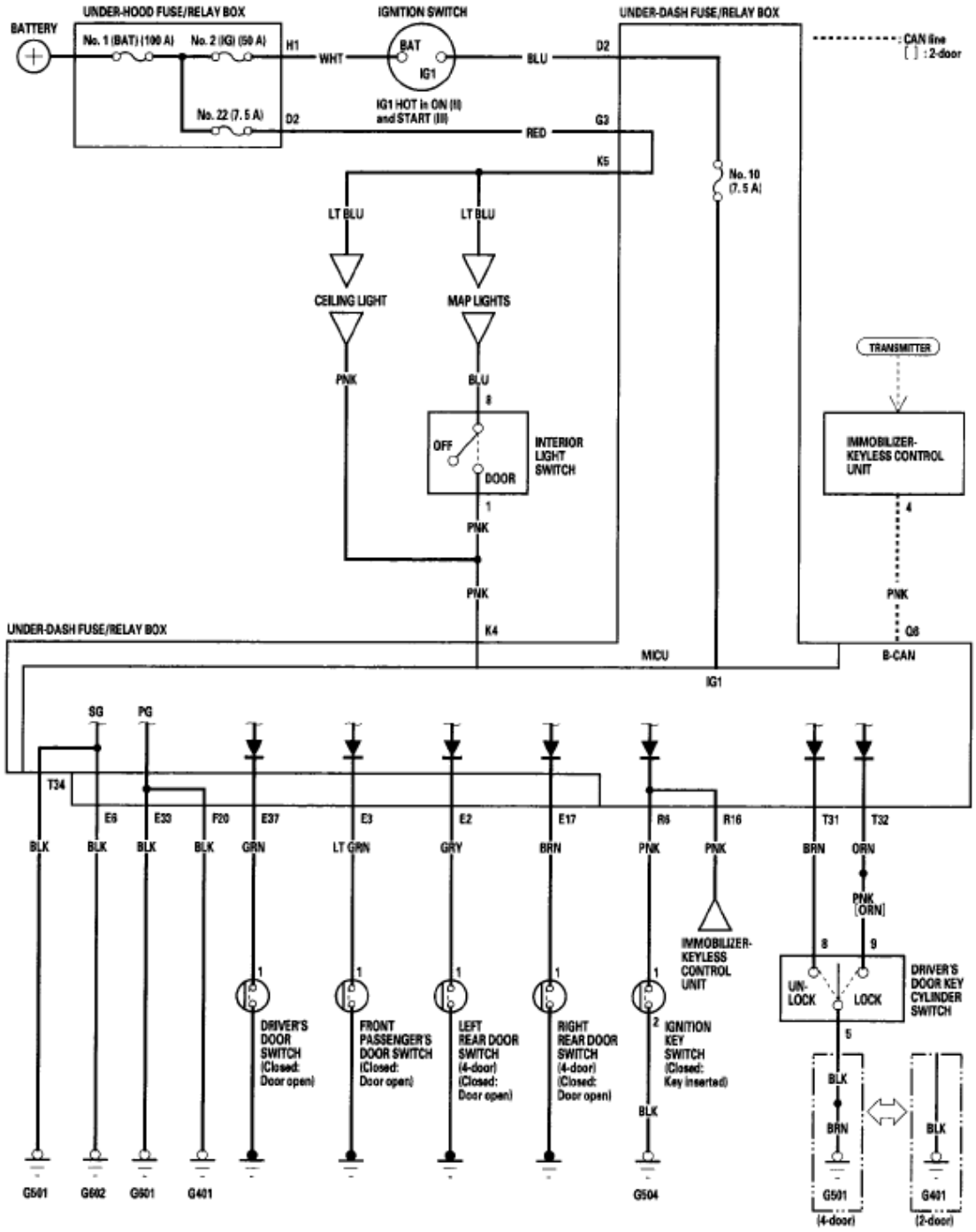


Fig. 3: Entry Lights Control System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MICU INPUT TEST

1. Before troubleshooting the entry lights control system, troubleshoot the B-CAN System Diagnosis Test Mode A (see **TROUBLESHOOTING - B-CAN SYSTEM DIAGNOSIS TEST MODE A**).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, G, K, Q, and T.

NOTE: All connector views are shown from wire side of female terminals.

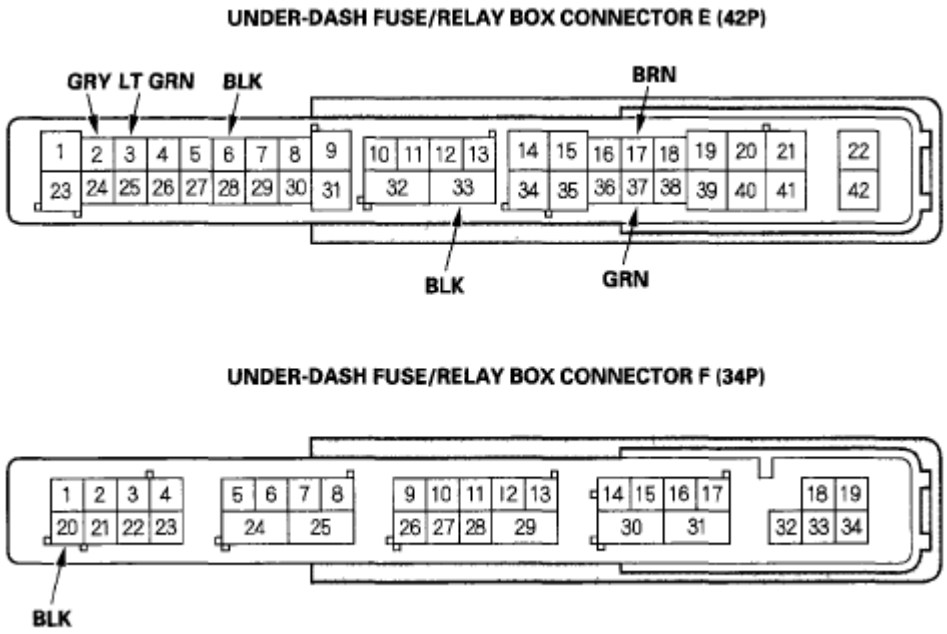


Fig. 4: Identifying Under-Dash Fuse/Relay Box Connectors (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

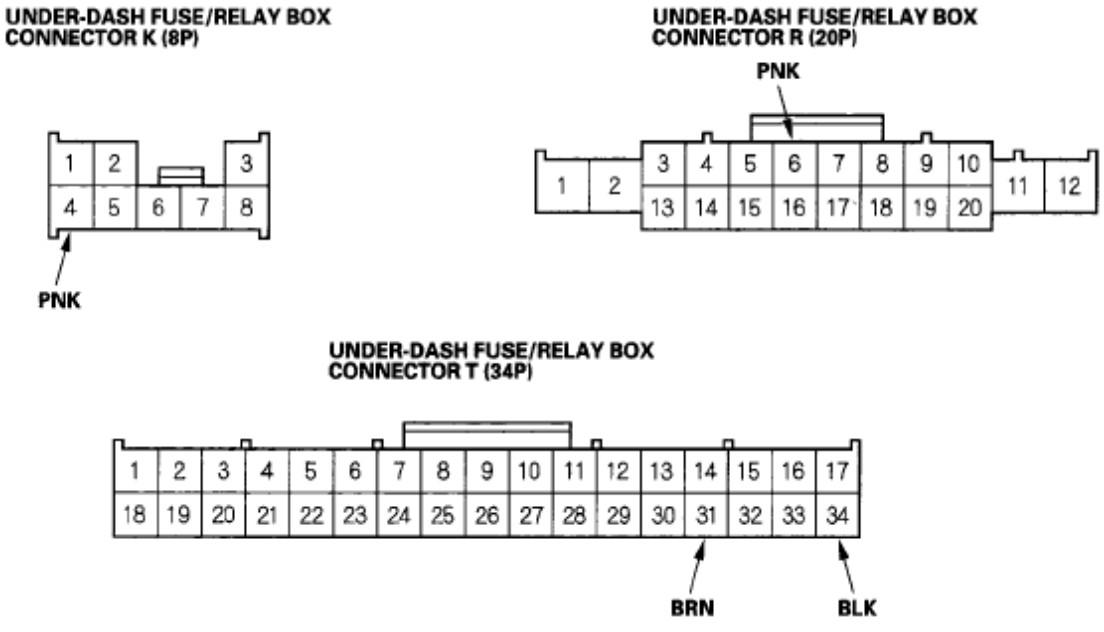


Fig. 5: Identifying Under-Dash Fuse/Relay Box Connectors (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.
5. With the connectors still disconnected, make these input tests at the appropriate connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.

- If all the input tests prove OK, go to step 6.

MICU INPUT TEST CHART (CONNECTORS DISCONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K4	PNK	Under all conditions With moonroof: select the interior light switch in DOOR position	Attach to ground: The ceiling light and map lights should come on.	• Blown No. 22 (7.5 A) fuse in the under-hood fuse/relay box • Blown bulb(s) • Faulty ceiling light • Faulty map light • Faulty interior light switch (with moonroof) • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the connectors.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

MICU INPUT TEST CHART (CONNECTORS CONNECTED)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E6	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
E37	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground in the wire
		Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch

E3	LT GRN			• An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty front passenger's door switch • Short to ground in the wire
E2 (4-door)	GRY	Left rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty left rear door switch • Short to ground in the wire
E17 (4-door)	BRN	Right rear door open	Check for voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty right rear door switch • Short to ground in the wire
R6	PNK	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground in the wire
T31	BRN	Driver door key cylinder switch unlocked	Check for voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door key cylinder switch • An open in the wire
		Driver door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver door key cylinder switch • Short to ground in the wire

IGNITION KEY SWITCH TEST

1. Remove the steering column upper and lower covers (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Disconnect the 6P connector.

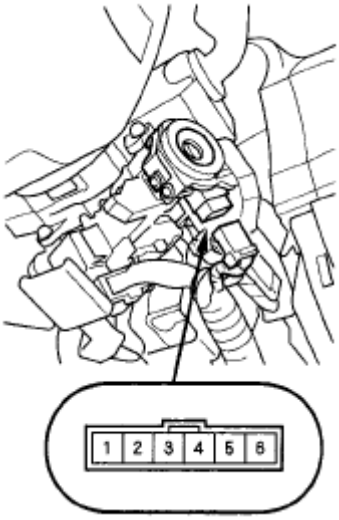


Fig. 6: Locating 6P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the No. 1 and No. 2 terminals.
    - There should be continuity with the key in the ignition switch.
    - There should be no continuity with the key removed.
4. If the continuity is not as specified, replace the ignition switch.

2006-09 ACCESSORIES AND EQUIPMENT

Interior Lights - Civic

COMPONENT LOCATION INDEX

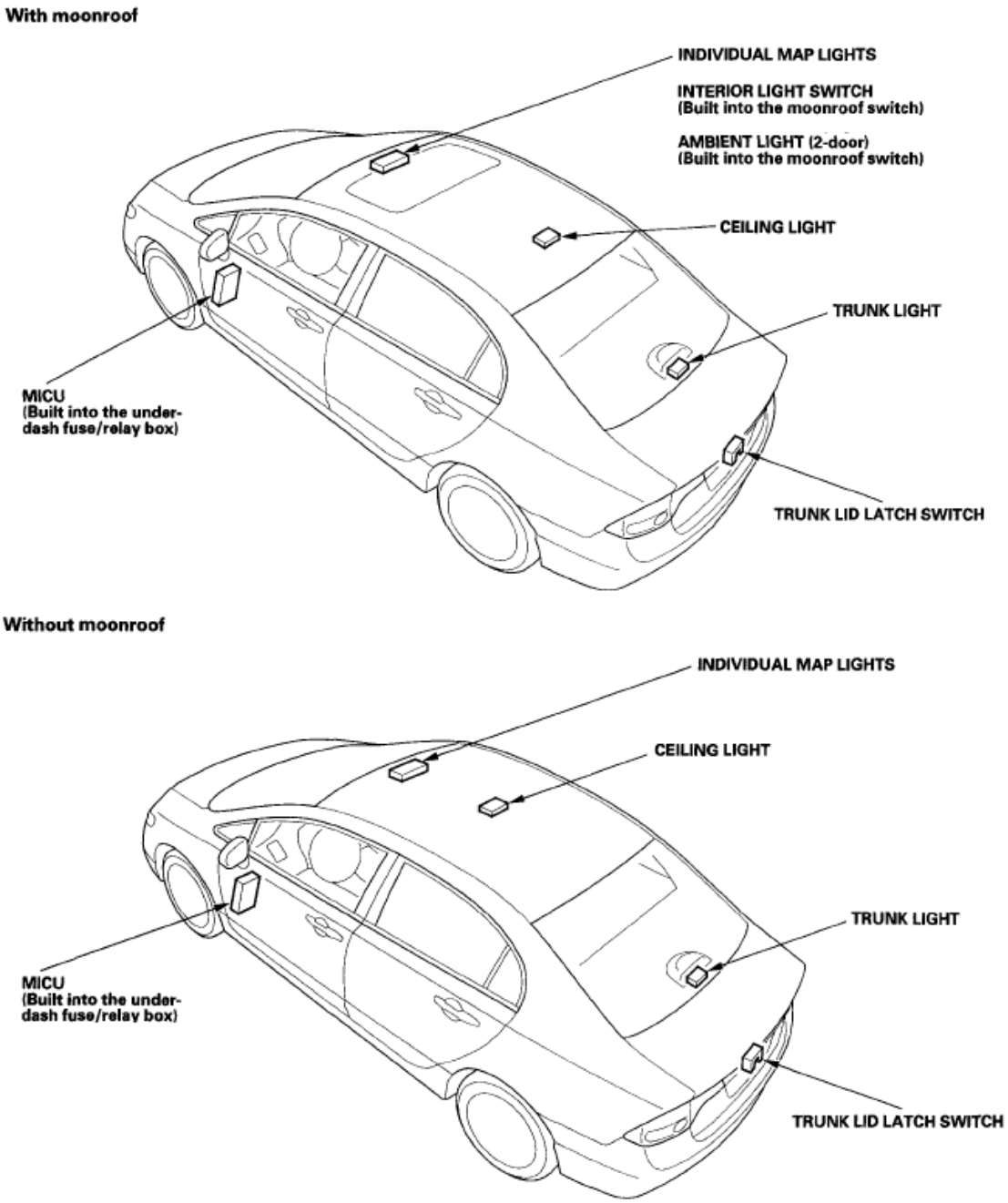


Fig. 1: Identifying Interior Lights Component Locations
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

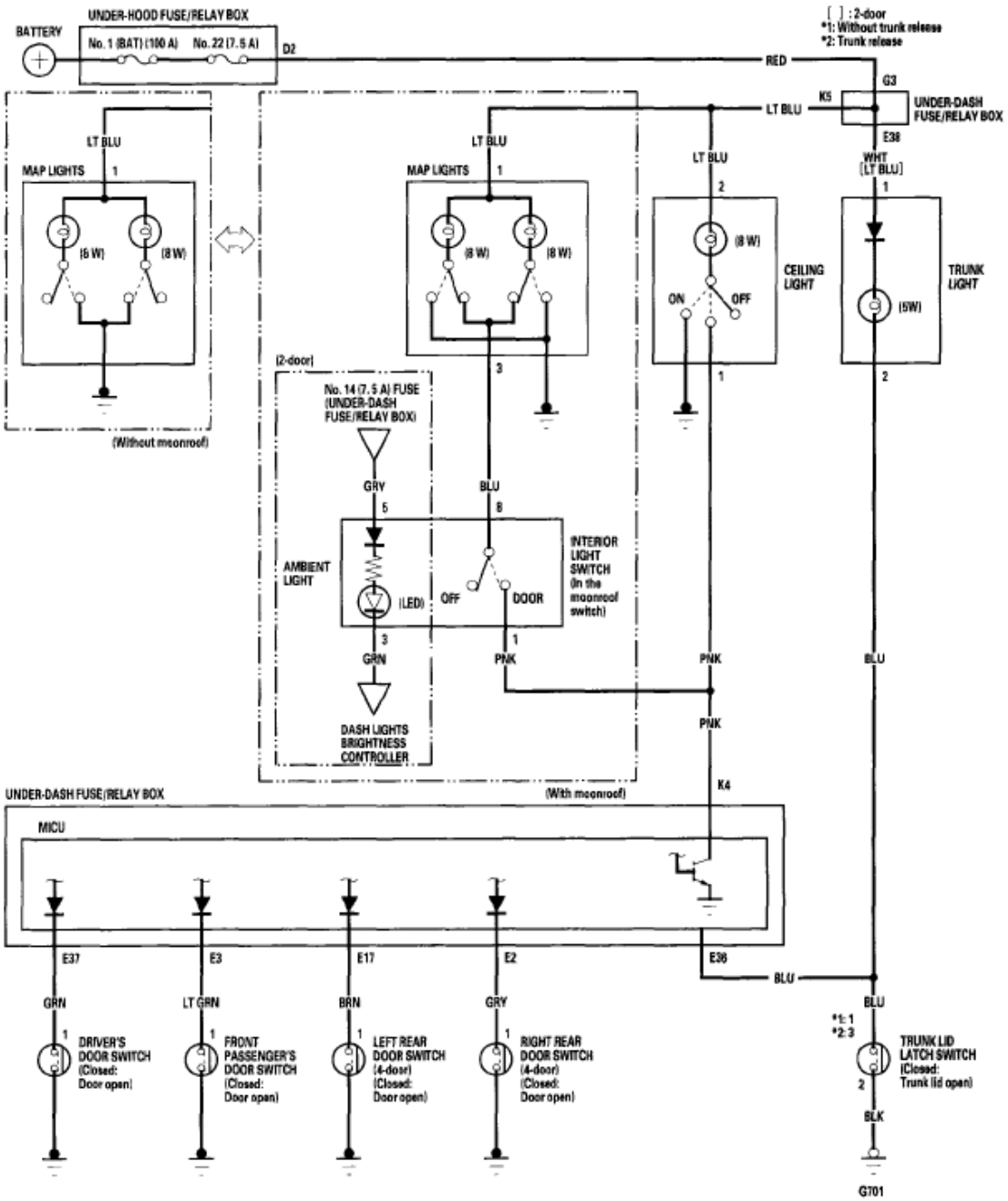


Fig. 2: Interior Lights - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FRONT INDIVIDUAL MAP LIGHT TEST/REPLACEMENT

WITH MOONROOF

1. Turn the front individual map light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

Front Individual Map Light: 8 W x 2

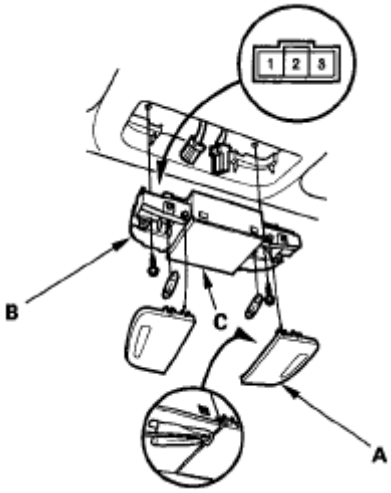


Fig. 3: Identifying Front Map Light Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the screws, then remove the front individual map lights (B) and moonroof switch or navigation microphone (C).
4. Disconnect the 3P connector from the map lights and the 10P [12P] connector from the moonroof switch or navigation microphone.
5. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1		3	Body ground
RIGHT	ON	○	○		○
	OFF	○	○	○	
LEFT	ON	○	○		○
	OFF	○	○	○	

Fig. 4: Terminals Continuity Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light.
7. Install the front map light in the reverse order of removal.

WITHOUT MOONROOF

1. Turn the map light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

Front Map Light: 8 W x 2

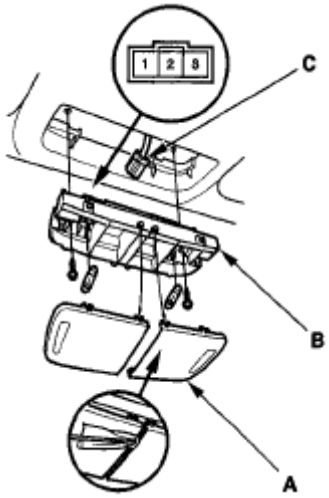


Fig. 5: Identifying Front Map Light Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the screws, then remove the map lights (B).
4. Disconnect the 3P connector (C) from the map lights.
5. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		1		Body ground
RIGHT	ON	○	⏀	○
	OFF			
LEFT	ON	○	⏀	○
	OFF			

Fig. 6: Terminals Continuity Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light.
7. Install the front map light in the reverse order of removal.

CEILING LIGHT TEST/REPLACEMENT

1. Turn the ceiling light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

Ceiling Light: 5W

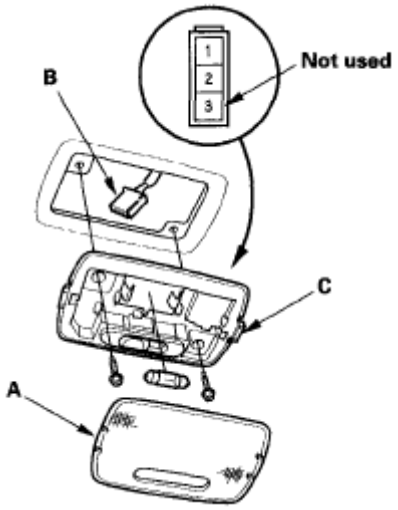


Fig. 7: Identifying Ceiling Light Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the screws, then remove the ceiling light (B).
4. Disconnect the 3P connector (C) from the ceiling light.
5. Check for continuity between the terminals.
   - There should be continuity between terminals No. 1 and No. 2 with the switch in the MIDDLE (DOOR) position.
   - There should be continuity between terminals No. 2 and No. 3 (body ground) with the switch in the ON position.
   - There should be no continuity between terminals No. 1 and No. 2, or between terminal No. 2 and body ground with the switch in the OFF position.
6. If the continuity is not as specified, check the bulb. If the bulb is OK, replace the light.
7. Install in the reverse order of removal.

TRUNK LIGHT TEST/REPLACEMENT

1. Open the trunk lid.
2. Carefully pry out the trunk light (A).

Trunk Light: 5 W

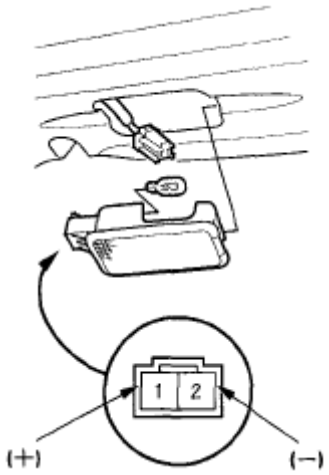


Fig. 8: Identifying Trunk Light Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between the No. 1 (+) and No. 2 (-) terminals. There should be continuity. If there is no continuity, check the bulb. If the bulb is OK, replace the trunk light assembly.
5. Install in the reverse order of removal.

TRUNK LID LATCH SWITCH TEST

1. Open the trunk lid.
2. Disconnect the connector (A) from the trunk lid latch assembly (B).

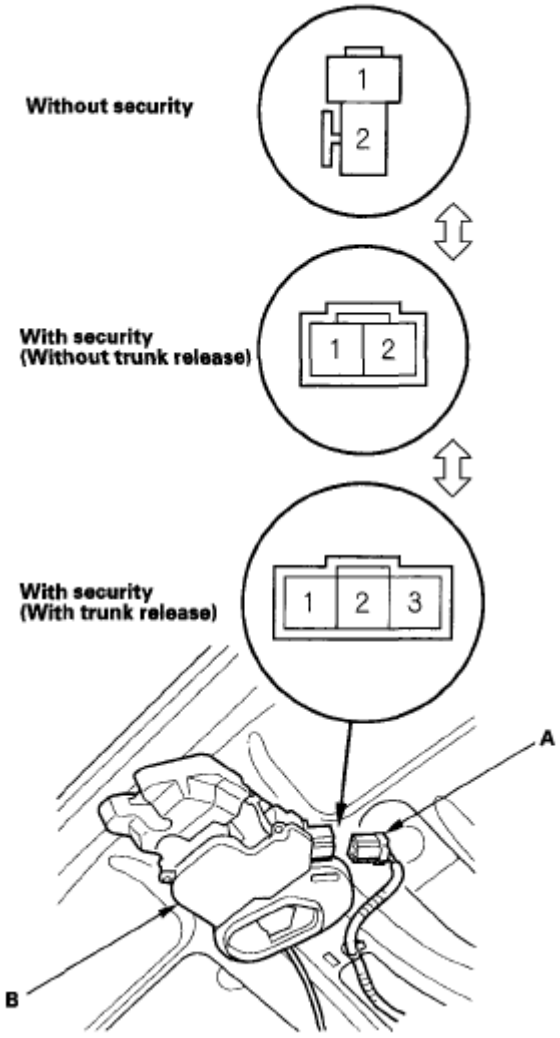


Fig. 9: Identifying Trunk Lid Latch Assembly Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between the No. 1 [No. 3] and No. 2 terminals.

   [ ] : With trunk release

   - There should be continuity with the trunk lid open.
   - There should be no continuity with the trunk lid closed.
4. If the continuity is not as specified, replace the trunk lid latch assembly.

INTERIOR LIGHT SWITCH TEST/REPLACEMENT

WITH MOONROOF

NOTE: The interior light switch is built into the moonroof switch, and it switches the front individual map lights between the OFF and DOOR positions.

1. Remove the front individual map lights (see **FRONT INDIVIDUAL MAP LIGHT TEST/REPLACEMENT**).

2. Disconnect the moonroof switch 10P connector (A) and map light 3P connector (B).

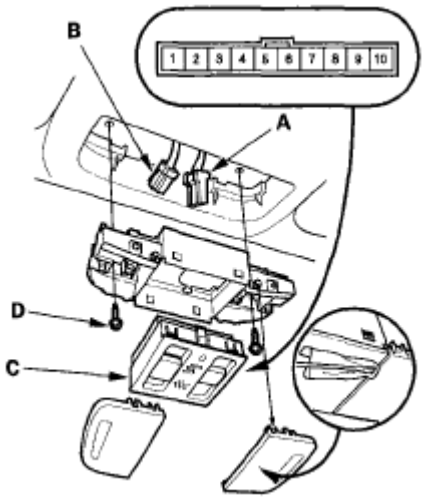


Fig. 10: Identifying Moonroof Switch 10P Connector And Map Light 3P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the moonroof switch (C).
4. Check for continuity between moonroof switch 10P [12P] connector terminals No. 1 [No. 7] and No. 8 [No. 9].
   - There should be continuity when the interior light switch is in the DOOR position.
   - There should be no continuity when the interior light switch is in the OFF position.
5. If the continuity check is not as specified, replace the illumination bulb (D) or the switch.
6. Install the switch and light in the reverse order of removal.

AMBIENT LIGHT REPLACEMENT

NOTE: The ambient light is built into the moonroof switch.

2-DOOR WITH MOONROOF

1. Remove the front individual map lights (see **FRONT INDIVIDUAL MAP LIGHT TEST/REPLACEMENT**).
2. Disconnect the moonroof switch 10P connector (A) and map light 3P connector (B).

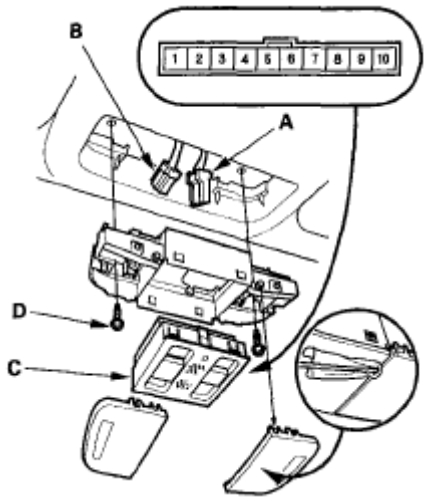


Fig. 11: Identifying Moonroof Switch 10P Connector And Map Light 3P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the moonroof switch (C).
4. Install the switch and light in the reverse order of removal.

2006-08 MAINTENANCE

Maintenance - Civic (Exept GX & Hybrid))

LUBRICANTS AND FLUIDS

For details of lubrication points and type of lubricants to be applied, refer to **LUBRICANT OR FLUID REFERENCE** and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) .

LUBRICANT OR FLUID REFERENCE

Application		Lubricant or Fluid
A	Engine	Honda Motor Oil: American Honda P/N 08798-9023 (5W-20), Honda Canada P/N CA66806 (5W-20) Look for the API certification seal on the oil container as shown in **Fig. 1**. Make sure it says "For Gasoline Engines." SAE viscosity .
B	Manual transmission	Honda Manual Transmission Fluid (MTF): P/N 08798-9016 Always use Honda MTF. Using motor oil can cause stiffer shifting because it does not contain the proper additives.
	Automatic transmission	Honda Automatic Transmission Fluid (ATF-Z1): American Honda P/N 08200-9001, Honda Canada P/N CA66689 Always use Honda ATF-Z1. Using a non-Honda ATF can affect shift quality.
C	Brake system (including ABS/VSA line)	Honda DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
D	Clutch system (manual transmission)	Honda DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
E F	Brake booster clevis Clutch master cylinder clevis (manual transmission)	Multipurpose Grease

G	Release fork (manual transmission)	
H	Battery terminals	
I	Fuel fill door	
J	Hood hinges	
K	Trunk hinges and trunk latch	
L	Rear brake shoe linkage (rear drum brake model)	Rubber Grease
M	Shift cable ends	Honda Silicone Grease: P/N 08C30-B0234M
N	Caliper piston boots, caliper piston seals, caliper pins, and boots	
O	Power steering system	Honda Power Steering Fluid: P/N 08206-9002 Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.
P	Air conditioning compressor	Compressor Oil: SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01) for refrigerant HFC-134a (R-134a)
Q	Cooling System	Honda Long Life Antifreeze/Coolant Type 2: P/N OL999-9001

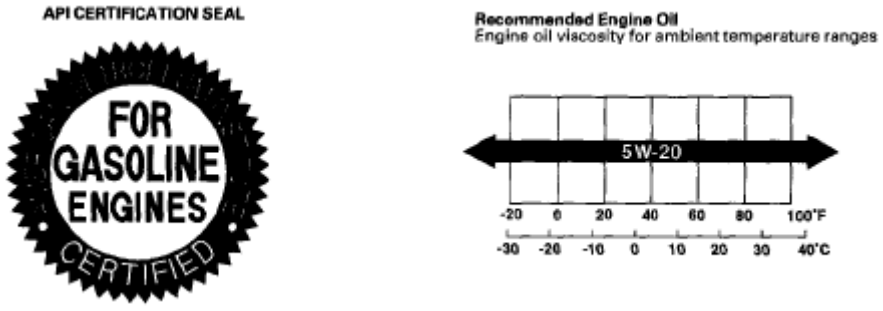


Fig. 1: Identifying API Certification Seal And Recommended Engine Oil
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: The illustration shows the 4-door model.

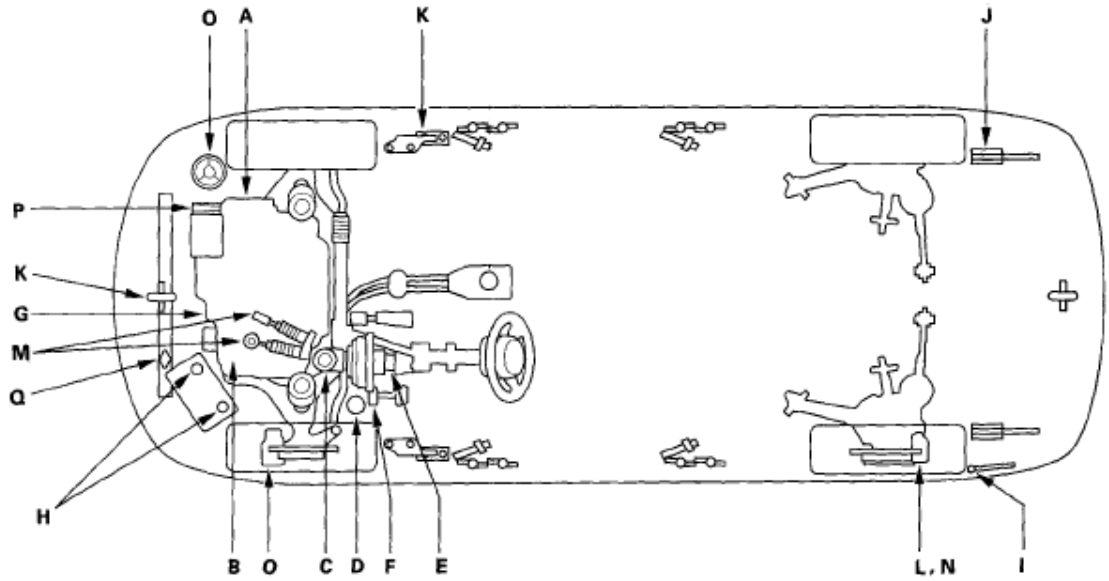


Fig. 2: Identifying Grease Lubrication Points (4-Door Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINTENANCE MINDER

GENERAL INFORMATION

Maintenance Display

The Maintenance Minder is an important feature of the information display. The Civic's onboard computer (ECM/PCM) calculates the remaining engine oil life and automatic transmission fluid life. The system also displays the code for other scheduled maintenance items needing service.

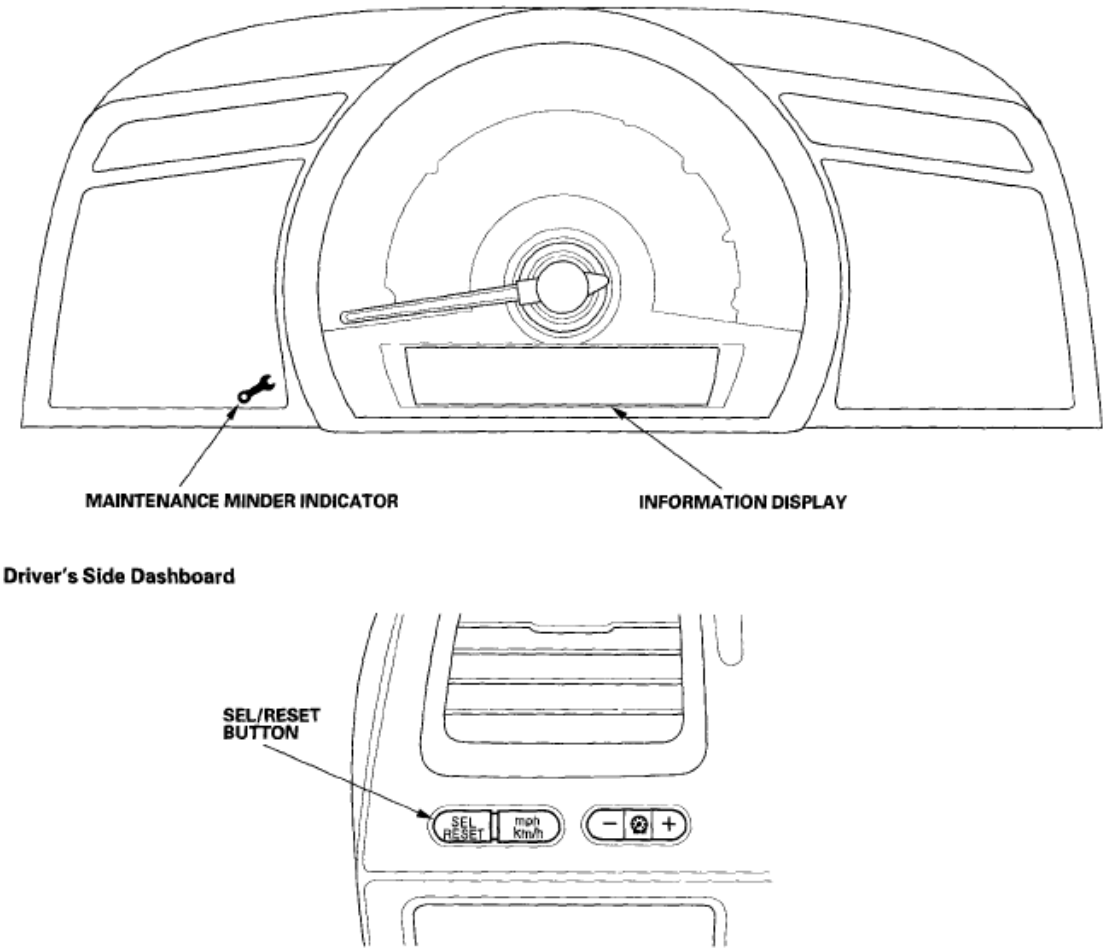


Fig. 3: Identifying Maintenance Minder Display And Driver's Side Dashboard
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Service Information

1. The remaining engine oil life (A) is shown as a percentage in the information display. To see the current engine oil life , turn the ignition switch to the ON (II) position, then push and release the SEL/RESET button repeatedly until the engine oil life displays.

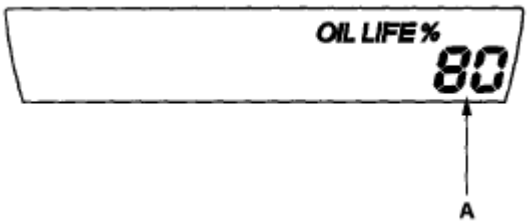


Fig. 4: Engine Oil Life At 80 Percent Displayed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. When the ignition switch is in the ON (II) position, and the remaining engine oil life is 6% to 15%, the remaining engine oil life (A) and other scheduled maintenance item(s) needing service are displayed. The maintenance minder indicator (B) also comes on when the engine oil life is 15% or less. To cancel the display and the indicator, press the SEL/RESET button.

- Complete list of maintenance main items (C) (see **MAINTENANCE MAIN ITEMS**).
- Complete list of maintenance sub items (D) (see **MAINTENANCE SUB ITEMS**).

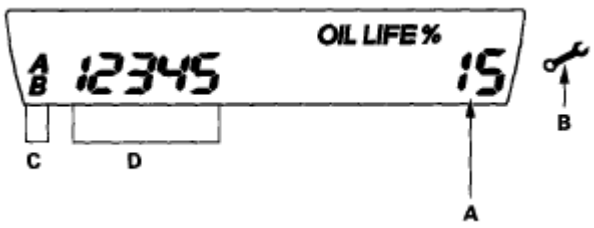


Fig. 5: Engine Oil Life At 15 Percent Displayed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. When the ignition switch in the ON (II) position, and the remaining engine oil life is 1% to 5%, the message "SERVICE" (A) is displayed along with engine oil life and the same maintenance item code (s).

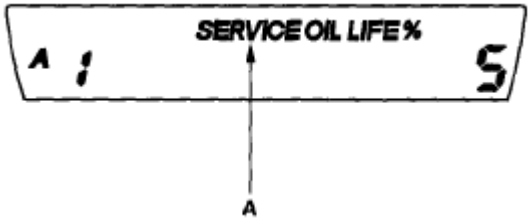


Fig. 6: Service Oil Life At 5 Percent Displayed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. When the ignition switch is in the ON (II) position, and the remaining engine oil life is 0%, the engine oil life indicator (A) blinks. Pressing the SEL/RESET button cancels the display, but the maintenance minder indicator stays on.

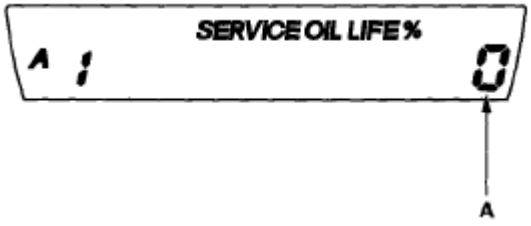


Fig. 7: Service Oil Life At 0 Percent Displayed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the indicated maintenance is not done, the engine oil life indicator shows a negative mileage, for example "-10,", on the display. If the negative mileage is between 0 and -9, the indicator is displayed for only a few seconds when the ignition switch is turned to the ON (II) position. The negative mileage remains displayed after the vehicle is driven more than 10 miles (for USA models) or 10 km (for Canada models) after 0% oil life is reached. This means the indicated maintenance item(s) should have been done more than 10 miles (or 10 km) ago.

Fig. 8: Service Oil Life At Negative 10 Miles
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Resetting the Maintenance Information Display

NOTE:

- **The vehicle must be stopped to reset the display.**
- **If a required service is done and the display is not reset, or if the maintenance display is reset without doing the service, the system will not show the proper maintenance timing. This can lead to serious mechanical problems because there will be no accurate record of when the required maintenance is needed.**

1. Turn the ignition switch to the ON (II) position.
2. Press the SEL/RESET button repeatedly until the engine oil life indicator is displayed.
3. Press and release and hold the SEL/RESET button for about 10 seconds. The engine oil life indicator and the maintenance item code(s) will blink.

NOTE: **If you are resetting the display when the engine oil life is more than 15%, make sure any maintenance item(s) requiring service are done before resetting the display.**

4. Press and hold the SEL/RESET button for another 5 seconds. The maintenance item code(s) will disappear, and the engine oil life will reset to "100."

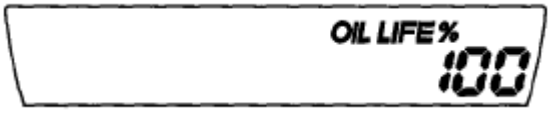


Fig. 9: Oil Life At 100 Percent
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINTENANCE MAIN ITEMS

If the message "SERVICE" does not appear more than 12 months after the display is reset, change the engine oil every year.

NOTE:

- **Replace the brake fluid every 3 years (Independent of the maintenance messages in the information display).**
- **Inspect idle speed every 160,000 miles (256,000 km).**
- **Adjust the valves during services A, B, 1,2 or 3, only if they are noisy.**

MAINTENANCE MAIN ITEMS DESCRIPTION

Symbol	Maintenance Main Items

A	Replace engine oil R18A1 (see **OIL PRESSURE TEST**), K20Z3 (see **OIL PRESSURE TEST**). Engine oil capacity without oil filter: R18A1 3.5 L (3.7 US qt), K20Z3 4.2L (4.4 US qt).
B	Replace engine oil and oil filter R18A1 (see **ENGINE OIL FILTER REPLACEMENT**), K20Z3 (see **ENGINE OIL FILTER REPLACEMENT**). Engine oil capacity with oil filter: R18A1 3.7 L (3.9 US qt), K20Z3 4.4 L (4.6 US qt).
	Inspect front and rear brakes (see **COMPONENT LOCATION INDEX**). • Check pads and discs for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts. • Check the wheel cylinder for leaks. • Check the brake linings for craking, glazing, wear, or contamination.
	Check parking brake adjustment (see **PARKING BRAKE INSPECTION AND ADJUSTMENT**). Check the number of clicks (8 to 10) when the parking brake lever is pulled with 196 N (20 kgf, 44 lbf) of force.
	Inspect tie-rod ends, steering gearbox, and gearbox boots (see **COMPONENT LOCATION INDEX**). • Check rack grease and steering linkage. • Check boots for damage and leaking grease. • Check fluid lines for damage and leaks.
	Inspect suspension components (see **COMPONENT LOCATION INDEX**). • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage.
	Inspect driveshaft boots (see **DRIVESHAFT INSPECTION**). Check boots for cracks and boot bands for tightness.
	Inspect brake hoses and lines including ABS/VSA (see **BRAKE HOSE AND LINE INSPECTION**). Check the master cylinder and ABS/VSA modulator-control unit for damage or leakage.
	Inspect all fluid levels and condition of fluids. • Engine coolant R18A1 (see **COOLANT CHECK**), K20Z3 (see **COOLANT CHECK**). • Automatic transmission fluid (ATF-Z1) (see **ATF LEVEL CHECK**). • Manual transmission fluid (MTF) SPFM (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**), PNN3, PNN4 (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**). • Clutch fluid (see **CLUTCH MASTER CYLINDER REPLACEMENT**). • Power steering fluid (see **STEERING COLUMN/TILT/TELESCOPIC INSPECTION**). • Brake fluid (see **BRAKE FLUID LEVEL SWITCH TEST**). • Windshield washer fluid.
	Inspect exhaust system* R18A1 (see **INTAKE MANIFOLD AND EXHAUST SYSTEM (R18A1)**), K20Z3 (see **INTAKE MANIFOLD AND EXHAUST SYSTEM (K20Z3)**).

	Check catalytic converter heat shields, exhaust pipes, and muffler for damage, leaks, and tightness.
	Inspect fuel lines* and connections* R18A1 (see **FUEL LINE INSPECTION**), K20Z3 (see **FUEL LINE INSPECTION**). Check for loose connections, cracks, and deterioration; retighten loose connections and replace damaged parts.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended interval, to ensure long-term reliability.

MAINTENANCE SUB ITEMS

MAINTENANCE SUB ITEMS DESCRIPTION

Number	Maintenance Sub Items
1	Rotate tires, and check tire inflation and condition. Follow the pattern shown in the Owner's Manual.
2	Replace air cleaner element R18A1 (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), K20Z3 (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**). Replace every 15,000 miles (24,000 km), if the vehicle is driven primaly in dusty conditions.
	Replace dust and pollen filter (see **DUST AND POLLEN FILTER REPLACEMENT**). • Replace the filter at 15,000 miles (24,000 km) intervals if the vehicle is driven mostly in urban areas that have high concentrations of soot in the air from industry and diesel-powered vehicles. • Replace the filter whenever airflow from the heating and cooling system is less than normal.
	Inspect drive belt R18A1 (see **DRIVE BELT AUTO-TENSIONER INSPECTION**), K20Z3 (see **DRIVE BELT INSPECTION**). Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.
3	Replace automatic transmission fluid (see **ATF REPLACEMENT**). Capacity: 2.4 L (2.5 US qt); use Honda ATF-Z1.
	Replace manual transmission fluid SPFM (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**), PNN3, PNN4 (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**). Capacity: SPFM 1.4 L (1.5 US qt), PNN3 1.5 L (1.6 US qt); use Honda MTF.
4	Replace spark plugs R18A1 (see **SPARK PLUG INSPECTION**), K20Z3 (see **SPARK PLUG INSPECTION**). Use R18A1 IZFR6K1 IS (NGK) or SKJ20DR-M11S (DENSO), K20Z3 IFR7G11KS (NGK) or SK22PR-MIIS(DENSO).
	Inspect the valve clearance (cold) R18A1 (see **VALVE CLEARANCE ADJUSTMENT**), K20Z3 (see **VALVE CLEARANCE ADJUSTMENT**). R18A1 Intake: 0.18-0.22 mm (0.007-0.009 in.), Exhaust: 0.23-0.27 mm (0.009-0.011 in.), K20Z3 engine Intake 0.21-0.25 mm (0.008-0.010 in.), Exhaust: 0.25-0.29 mm (0.010-0.011 in.).

5	Replace engine coolant R18A1 (see **COOLANT REPLACEMENT**), K20Z3 (see **COOLANT REPLACEMENT**). Capacity (including the reservoir): 4-door model (except Si): 5.2 L (1.37 US gal), 2-door model (except Si): 5.2 L (1.37 US gal). Si: 4.5 L (1.19 US gal); use Honda Long Life Antifreeze/Coolant Type 2.

GENERAL INFORMATION

Service Reminder Indicators - Honda

ENGINE OIL LIFE INDICATOR

NOTE: To determine the appropriate reset procedure, refer to ENGINE OIL LIFE INDICATOR RESET INDEX.

ENGINE OIL LIFE INDICATOR RESET INDEX

Model & Year	Reset Procedure
ACCORD	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
CIVIC	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
CR-V	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 2
ELEMENT	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
FIT	
2007-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
PILOT	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
ODYSSEY (EXCEPT TOURING MODEL)	
2005-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 1
ODYSSEY (TOURING MODEL)	
2005-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 3
RIDGELINE	
2007-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 4
S2000	
2006-09	ENGINE OIL LIFE INDICATOR - PROCEDURE 5

ENGINE OIL LIFE INDICATOR - PROCEDURE 1

1. Turn ignition switch to ON (II). Press SELECT/RESET knob until engine oil life indicator is displayed.
2. Press SELECT/RESET knob for 10 seconds. Engine oil life indicator and the maintenance item code

(s) will blink. Press SELECT/RESET knob for more than 5 seconds. Maintenance items code(s) will disappear and engine oil life indicator will reset to "100."

ENGINE OIL LIFE INDICATOR - PROCEDURE 2

1. Turn ignition switch to ON (II). Press SELECT/RESET knob until engine oil life indicator is displayed.
2. Press the SELECT/RESET knob for about 10 seconds. The information display shows the reset mode initial display as shown.
3. Select the "OIL LIFE" indicator by turning the SELECT/RESET knob. The display begins to blink. Push the same knob to enter this setting.
4. The engine oil life and maintenance item code(s) will begin blink. Push the SELECT/RESET knob to reset.
5. The maintenance item code(s) will disappear, and engine oil life will reset to "100".

ENGINE OIL LIFE INDICATOR - PROCEDURE 3

1. Turn ignition switch to ON (II). Press SELECT/RESET button on steering wheel until engine oil life is displayed.
2. Press SELECT/RESET knob in instrument panel for 10 seconds. Display will change to "CUSTOM SETUP" mode. Press SELECT/RESET button on steering wheel. Maintenance item code(s) will disappear and engine oil life will reset to "100."
3. To cancel resetting press INFO button on steering wheel. Press SELECT/RESET button. This cancels resetting procedure and normal display mode returns. Select "RESET" button and press SELECT/RESET button multi-information will.

ENGINE OIL LIFE INDICATOR - PROCEDURE 4

1. Turn ignition switch to ON (II) position.
2. Press SELECT button repeatedly until engine oil life display or service message is displayed.
3. Press the RESET button for about 10 seconds. A "MAINT RESET" message will appear.
4. Select appropriate answer - "MAINT RESET >N" (NO) or "MAINT RESET >Y" (YES) by pressing the select button. ">N" or ">Y" is displayed on the outside temperature display.
5. Select the "MAINT RESET >Y" (YES), and press and hold RESET button again to reset engine oil life to "100".

ENGINE OIL LIFE INDICATOR - PROCEDURE 5

1. Turn ignition switch to ON (II). Press TRIP button until engine oil life indicator is displayed.
2. Press TRIP knob for 10 seconds. Engine oil life indicator and the maintenance item code(s) will blink. Press TRIP knob for more than 5 seconds. Maintenance items code(s) will disappear and engine oil life indicator will reset to "100."

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR

NOTE: To determine the appropriate reset procedure, refer to MAINTENANCE

REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET INDEX.

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET INDEX

Model & Year	Reset Procedure
ACCORD	
1991-97	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 1
1998-2005	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2
CIVIC	
1996-2000	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2
2001-05	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 3
CR-V	
1998-2001	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 1
2002-05	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2
ELEMENT	
2003-05	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 3
INSIGHT	
2000-05	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 4
ODYSSEY	
1996-97	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 1
1998-2004	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2
PILOT	
2003-06	MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2
PRELUDE	
1998-2001	MAINTENANCE REQUIRED REMINDER

	LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 1
S2000	
2000-05	**MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2**

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 1

1. At each 7500 mile service interval, the MAINTENANCE REQUIRED light will change from Green to Yellow. If service is not performed (and light is not reset), the MAINTENANCE REQUIRED light will change from Yellow to Red.
2. When service has been completed, reset MAINTENANCE REQUIRED reminder light. To reset reminder light, turn ignition off. Insert ignition key in slot provided to the right of tachometer (or beside the indicator). See **Fig. 1**.

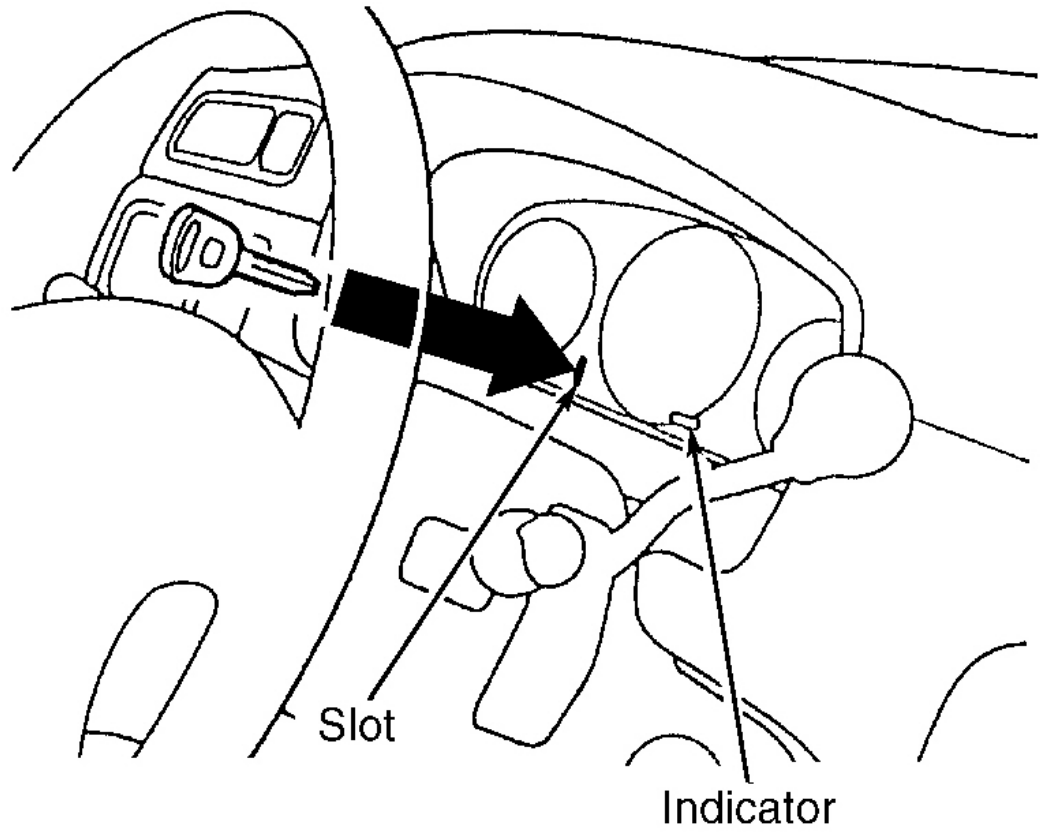


Fig. 1: Maintenance Reminder Light Reset
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 2

To reset MAINT REQ'D indicator light, turn ignition switch to OFF position. Push and hold the SELECT/RESET button and turn ignition switch to ON (II) position. Continue to hold button for more than 10 seconds or until MAINT REQ'D light goes out.

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 3

1. For the first 8000 miles after maintenance required indicator is reset, the MAINT REQ'D indicator light illuminates when the ignition is turned on, then will go out after 2 seconds. When mileage is 8000-10,000 miles, the MAINT REQ'D reminder light will illuminate for 2 seconds, then blink for 10 seconds, and then go out. When mileage exceeds 10,000 miles, MAINT REQ'D indicator light illuminates and stays on while ignition switch is in ON (II) position.
2. To reset the MAINT REQ'D indicator light, turn ignition switch to OFF position. Press and hold the SELECT/RESET button. While still holding button, turn ignition switch to ON position, with engine off. Hold SELECT/RESET button for about 10 seconds until indicator resets.
3. If MAINT REQ'D reminder light does not reset, ensure headlights, parking lights, or both are turned off when resetting reminder light. The MAINT REQ'D indicator cannot be reset if any of these lights are on. If vehicle is equipped with daytime running lights and lights come on when ignition switch is turned to ON (II) position, daytime running lights must be disabled before indicator light can be reset.

MAINTENANCE REQUIRED REMINDER LIGHT/ENGINE OIL LIFE INDICATOR RESET - PROCEDURE 4

1. When distance driven since maintenance required indicator was reset is 6000 miles, the MAINT REQ'D reminder light will start to blink. After exceeding 7500 miles without having scheduled maintenance performed and MAINT REQ'D reminder light reset, light will remain on until it is reset.
2. To reset the light, turn ignition switch to OFF position. Press and hold TRIP button, located on lower right side of instrument cluster. While still holding TRIP button, turn ignition switch to ON position with engine off. Hold button for about 10 seconds until indicator resets.

OXYGEN SENSOR WARNING LIGHT

NOTE: To determine the appropriate reset procedure, refer to OXYGEN SENSOR WARNING LIGHT RESET INDEX.

OXYGEN SENSOR WARNING LIGHT RESET INDEX

Model & Year	Reset Procedure
PASSPORT DX	
1994-95	OXYGEN SENSOR WARNING LIGHT RESET - PROCEDURE 1

OXYGEN SENSOR WARNING LIGHT RESET - PROCEDURE 1

1. Heated Oxygen Sensor (HO2S) must be replaced every 90,000 miles. When odometer reaches 90,000 miles, O2S indicator light on dash will illuminate, and then every subsequent 90,000 miles. After servicing, turn off or reset warning light.

NOTE: Reset procedure is for first 90,000 mile reset. At every subsequent 90,000 mile reset, move screw back to previous hole.

2. To reset warning light, remove instrument cluster. Remove masking tape from hole "B". See **Fig. 2** or **Fig. 3** . Remove screw from hole "A" and insert into hole "B". Apply new masking tape to hole "A".

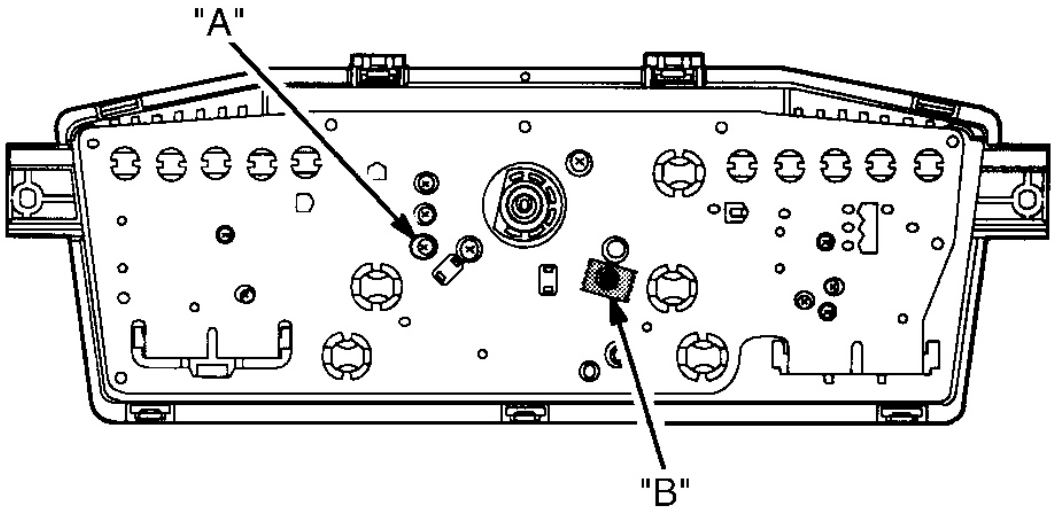


Fig. 2: Identifying Oxygen Sensor Warning Light Reset Holes (2.6L)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

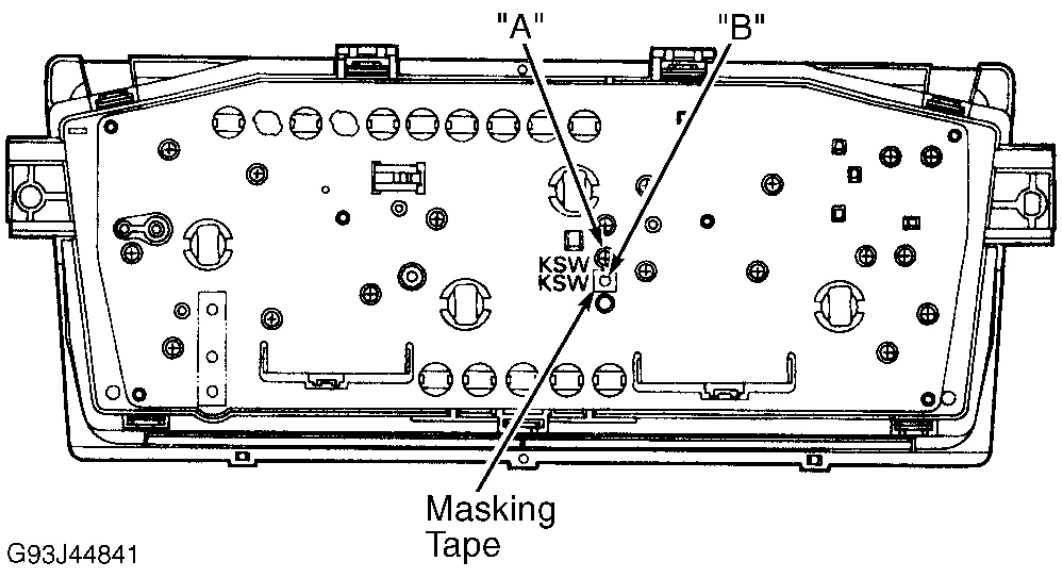


Fig. 3: Identifying Oxygen Sensor Warning Light Reset Holes (3.2L)

Courtesy of ISUZU MOTOR CO.

SERVICE INTERVAL REMINDER

NOTE: To determine the appropriate reset procedure, refer to SERVICE INTERVAL REMINDER RESET INDEX.

SERVICE INTERVAL REMINDER RESET INDEX

Model & Year	Reset Procedure
ACCORD	
1982-85	SERVICE INTERVAL REMINDER RESET - PROCEDURE 1

SERVICE INTERVAL REMINDER RESET - PROCEDURE 1

Oil, filter and service interval indicator flags/lights activate every 7500 miles. To reset indicators, insert ignition key into appropriate slot below glowing indicator flags/lights at lower right corner of instrument cluster. Push key in until reminder window changes from Red to Green.

TIRE PRESSURE MONITOR SYSTEM (TPMS)

NOTE: To determine the appropriate reset procedure, refer to TPMS RESET INDEX.

TPMS RESET INDEX

Model & Year	Reset Procedure
ACCORD	
2008-09	TPMS RESET - PROCEDURE 1
CIVIC	
2008-09	TPMS RESET - PROCEDURE 1
CR-V	
2007-09	TPMS RESET - PROCEDURE 1
ELEMENT	
2007-09	TPMS RESET - PROCEDURE 1
FIT	
2007-09	TPMS RESET - PROCEDURE 1
ODYSSEY	
2005-09	TPMS RESET - PROCEDURE 2
PILOT	
2005-09	TPMS RESET - PROCEDURE 1
RIDGELINE	
2005-09	TPMS RESET - PROCEDURE 1
S2000	
2007-09	TPMS RESET - PROCEDURE 1

TPMS RESET - PROCEDURE 1

NOTE: **If a flat tire is replaced with the spare tire, and the flat tire is stored in the cargo area, the low pressure indicator will stay on but the appropriate tire indicator will go off. This prevents the customer from thinking there is a problem with the spare tire. When the flat tire is taken out of the vehicle for repair, the TPMS indicator will come on because the system is no longer receiving the signal from the tire's transmitter.**

NOTE: **When a tire pressure sensor is replaced or tires are rotated, the sensor ID must be memorized by the TPMS control unit. See TIRE PRESSURE SENSOR REGISTRATION in appropriate manufacturer service information.**

TPMS RESET - PROCEDURE 2

NOTE: **If a flat tire is replaced with the spare tire, and the flat tire is stored in the cargo area, the low pressure indicator will stay on but the appropriate tire indicator will go off. This prevents the customer from thinking there is a problem with the spare tire. When the flat tire is taken out of the vehicle for repair, the TPMS indicator will come on because the system is no longer receiving the signal from the tire's transmitter.**

NOTE: **When a tire pressure sensor is replaced or tires are rotated, the sensor ID must be memorized by the TPMS control unit. See TIRE PRESSURE SENSOR REGISTRATION in appropriate manufacturer service information.**

NOTE: **On models equipped with PAX tire systems, if a tire is repaired or replaced, the warning indicator (and the mileage counter that supports it) must be reset, no matter how far the vehicle was driven in the run flat mode.**

1. To put the gauge control module into the self-diagnostic mode, perform the following:
   - Turn the headlight switch to ON.
   - Press and hold the SELECT/RESET (Instrument panel brightness) knob.
   - Turn the ignition switch to ON (II).
   - Within 5 seconds, turn the headlights to AUTO, then to ON, and then to AUTO again.
   - Within 5 seconds, release the SELECT/RESET knob, then push and release the knob three times.
2. Once the gauge control module is in the self-diagnostic mode, press and hold the INFO button on the steering wheel for 5 seconds to get to the CUSTOMIZE MENU.
3. Use the INFO button to scroll through to the PAX RESET screen, then press the SEL/RESET button on the steering wheel.
4. Use the INFO button to scroll to the appropriate wheel, and then press the SEL/RESET button on the steering wheel to reset the PAX warning system display. The screen should read "PAX RESET COMPLETED". Repeat this step for each wheel that needs to be reset.
5. Use the INFO button to scroll through to EXIT, then press the SEL/RESET button.
6. Turn the ignition switch to OFF to exit the self-diagnostic mode.

2006-09 RESTRAINTS

Seat Belts - Civic

COMPONENT LOCATION INDEX

2-door

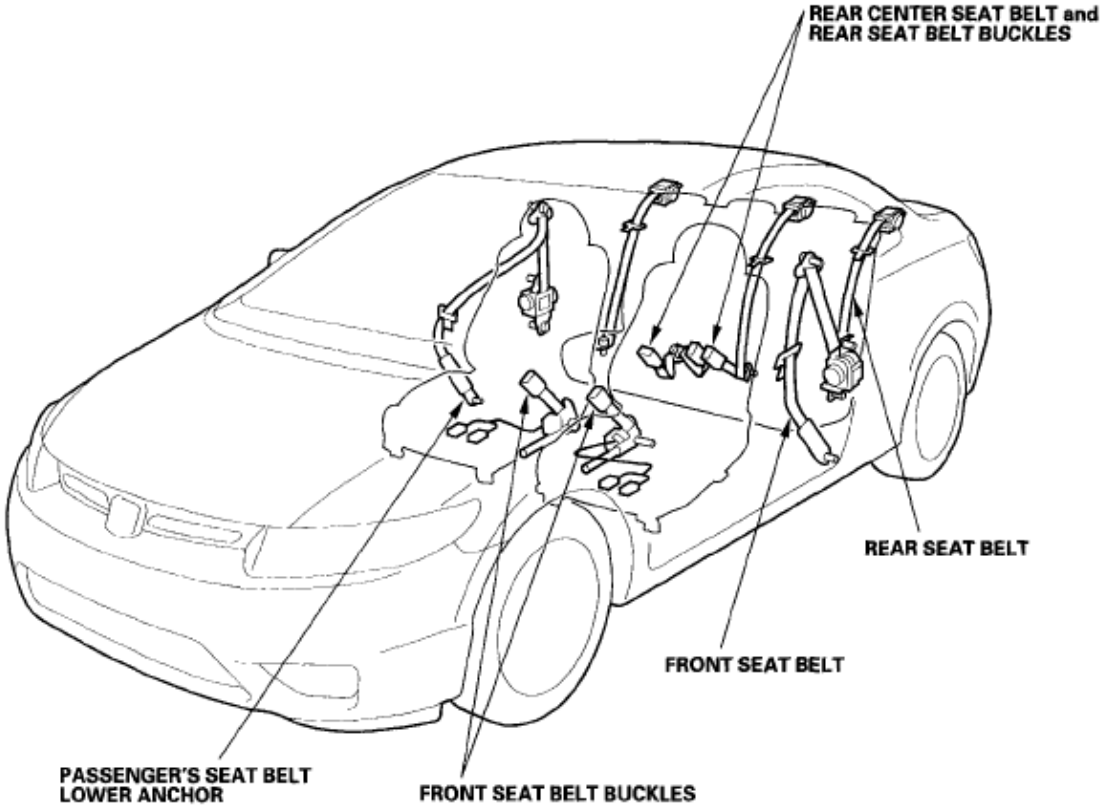


Fig. 1: Identifying Seat Belts Components Location Index - 2-Door
Courtesy of HONDA

4-door

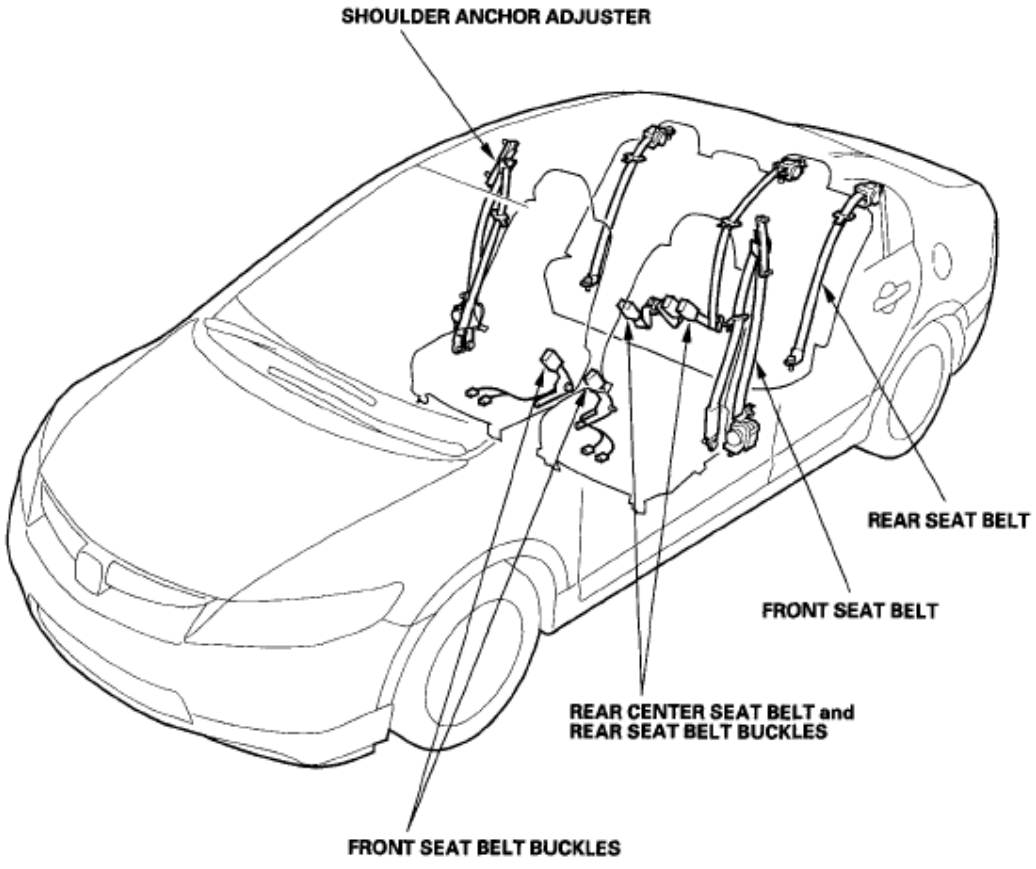


Fig. 2: Identifying Seat Belts Components Location Index - 4-Door
Courtesy of HONDA

FRONT SEAT BELT REPLACEMENT

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

NOTE: Check the front seat belts for damage (see INSPECTION), and replace them if necessary. Be careful not to damage them during removal and installation.

FRONT SEAT BELT - 2-DOOR

1. Make sure you have the anti-theft codes for the audio or the navigation system, then write down the audio presets.
2. Slide the front seat forward fully.
3. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
4. Remove the seat belt lower anchor.
   - Driver's seat belt: Remove the lower anchor cap (A), and remove the lower anchor bolt (B).
   - Passenger's seat belt: Carefully insert the tip of a small screwdriver (C) through the hole in the back of the front seat belt lower anchor cover (D) and into the hole in the front seat belt lower anchor (E).

Unlock the lower anchor by pushing in on the screwdriver. Remove the screwdriver, and then detach the front seat belt anchor plate (F) and anchor cover from the lower anchor.

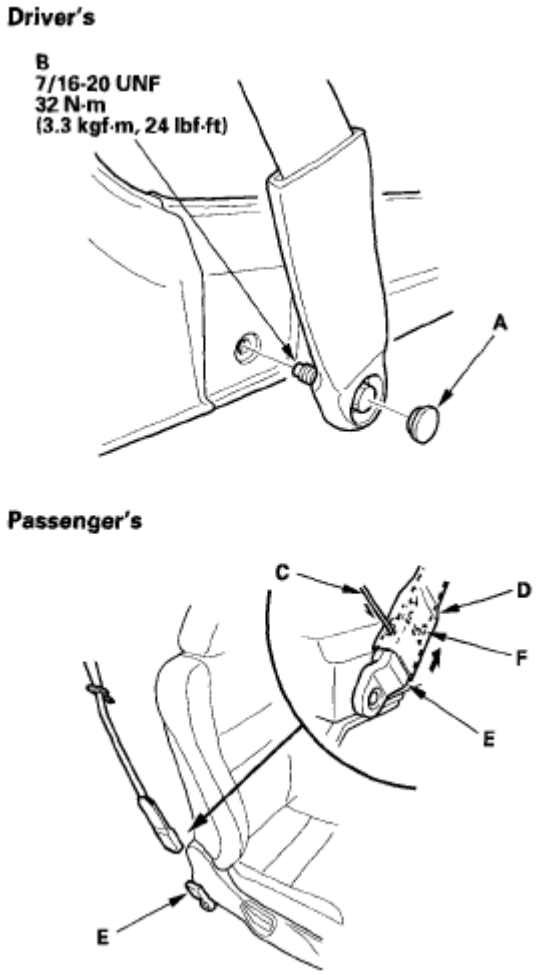


Fig. 3: Identifying Front Seat Belt Components (With Torque Specifications)
Courtesy of HONDA

5. Remove these items:
   - Door sill trim (see step 4 on **TRIM REMOVAL/INSTALLATION - DOOR AREAS**)
   - Rear side trim panel (see **2-DOOR**)
6. Remove the bolts (A) and the seat belt guide (B).

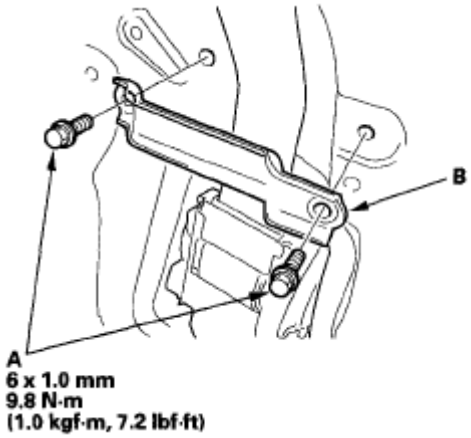


Fig. 4: Identifying Seat Belt Guide Bolts (With Torque Specifications)
Courtesy of HONDA

7. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).

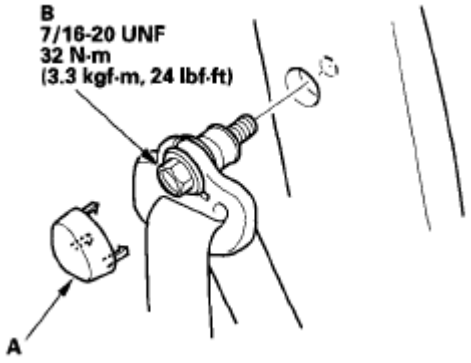


Fig. 5: Identifying Upper Anchor Cap And Upper Anchor Bolt (With Torque Specifications)
Courtesy of HONDA

8. Disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).

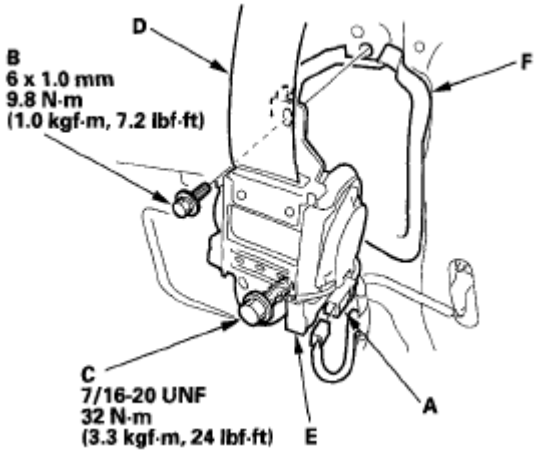


Fig. 6: Identifying Upper Retractor Mounting Bolt And Lower Retractor Bolt (With Torque Specifications)

Courtesy of HONDA

9. If necessary, remove the front seat belt protector (F).
10. Install the belt in the reverse order of removal, and note these items:
    - Check that the retractor locking mechanism functions (see **INSPECTION**).
    - Assemble the washers, collars, and bushings on the upper and lower anchor bolts as shown.
    - If the seat belt tensioner has been deployed, replace the front seat belt protector with a new one.
    - Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
    - Before installing the anchor bolts, make sure there are no twists or kinks in the front seat belt.
    - Make sure the seat belt tensioner connector is plugged in properly.
    - Passenger's seat belt: Before attaching the front seat belt lower anchor, make sure there are no twists or kinks in the belts.
    - Passenger's seat belt: Triangle marks (A) on the anchor plate (B) and on the lower anchor (C) must face the same side.
    - Passenger's seat belt: Insert the hook on the anchor plate into the lower anchor, and be sure that the lower anchor is locked securely.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the audio or the navigation system, then enter the audio presets.
    - Set the clock.
    - Check for any DTCs that may have been set during repairs, and clear them.

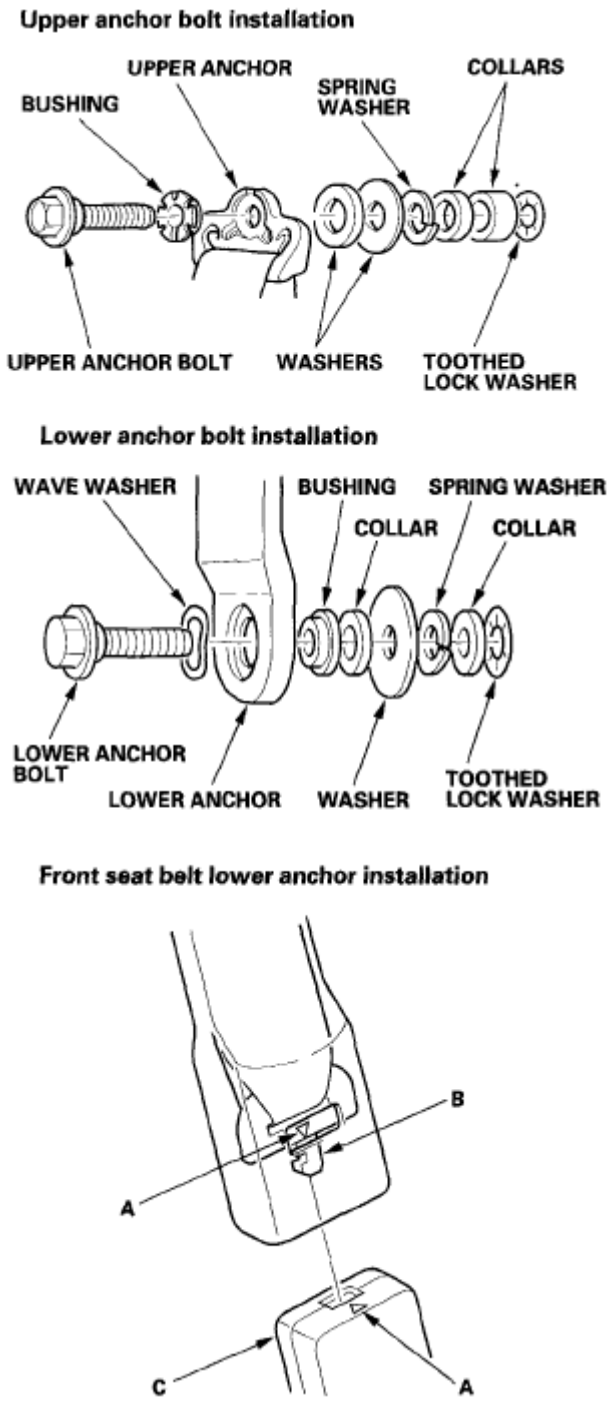


Fig. 7: Identifying Anchor Bolt Installation
Courtesy of HONDA

FRONT SEAT BELT - 4-DOOR

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

NOTE: Check the front seat belts for damage (see INSPECTION), and replace them if necessary.

1. Do the battery terminal disconnection procedure, and wait at least 3 minutes before beginning work.
2. Slide the front seat forward fully, and remove the anchor cover (A).

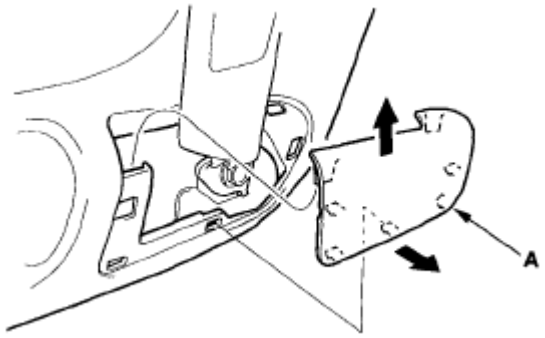


Fig. 8: Identifying Anchor Cover
Courtesy of HONDA

3. Remove the lower anchor bolt (A).

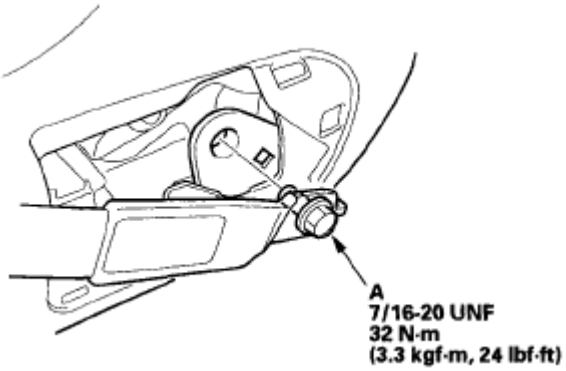


Fig. 9: Identifying Lower Anchor Bolt (With Torque Specifications)
Courtesy of HONDA

4. Remove the B-pillar lower trim (see **B-PILLAR UPPER/LOWER TRIM - 4-DOOR**).
5. Remove the B-pillar upper trim and slider (see **B-PILLAR UPPER/LOWER TRIM - 4-DOOR**).
6. Remove the upper anchor bolt (A).

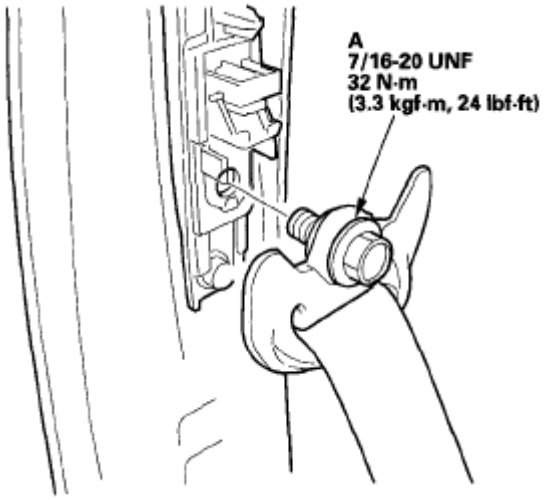


Fig. 10: Identifying Upper Anchor Bolt (With Torque Specifications)
Courtesy of HONDA

7. Disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).

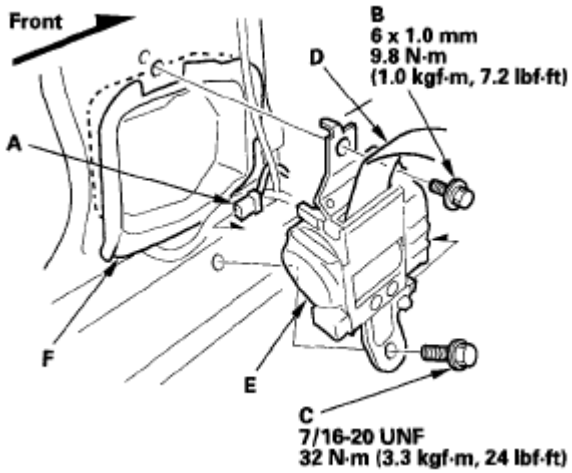


Fig. 11: Identifying Front Seat Belt And Retractor (With Torque Specifications)
Courtesy of HONDA

8. If necessary, remove the front seat belt protector (F).
9. Remove the shoulder anchor adjuster (A).

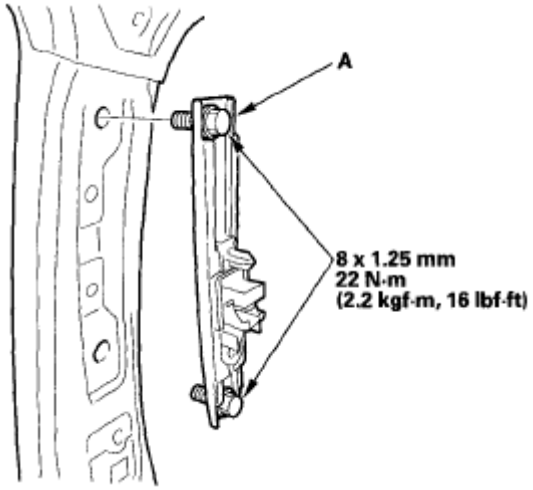


Fig. 12: Identifying Shoulder Anchor Adjuster (With Torque Specifications)
Courtesy of HONDA

10. Install the seat belt in the reverse order of removal, and note these items:
    - Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
    - Tighten the bolts by hand first, then tighten to the specified torque.
    - Check that the retractor locking mechanism functions as described (see **INSPECTION**).
    - Assemble the washer, collar, and bushing on the upper anchor bolt as shown.
    - If the seat belt tensioner has been deployed, replace the front seat belt protector with a new one.
    - Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.
    - Make sure the seat belt tensioner is properly plugged in.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the audio or the navigation system, then enter the audio presets.
    - Set the clock.
    - Check for any DTCs that may have been set during repairs, and clear them.

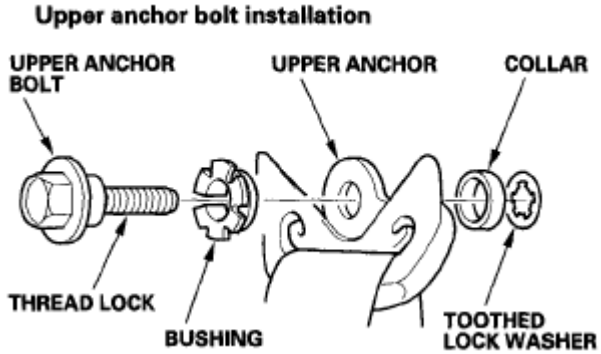


Fig. 13: Identifying Upper Anchor Bolt
Courtesy of HONDA

FRONT SEAT BELT BUCKLE

1. Make sure you have the anti-theft code for the audio or the navigation system, then write down the

audio presets.

2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Remove the front seat (see **FRONT SEAT REMOVAL/INSTALLATION**).
4. Lift up the front seat, then detach the seat belt switch connector (A) and seat belt buckle tensioner connector (B), and on the driver's seat, detach the harness clip (C).

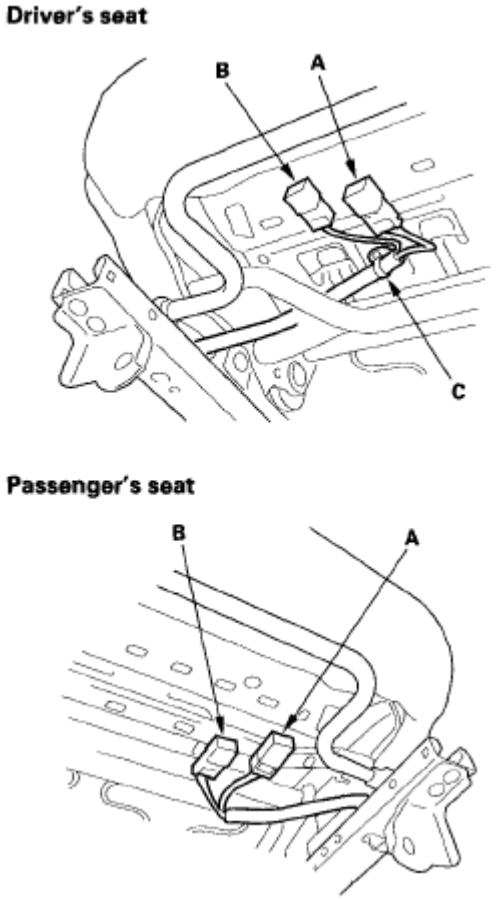


Fig. 14: Identifying Seat Belt Buckle Tensioner Connector And Harness Clip
Courtesy of HONDA

5. Remove the center anchor bolt (A), then remove the seat belt buckle (B) from the elastic band (C).

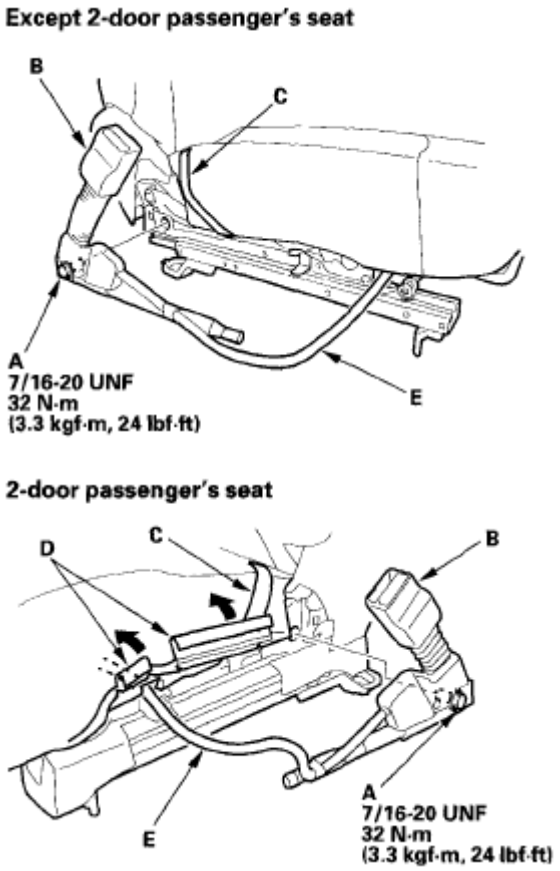


Fig. 15: Identifying Center Anchor Bolt And Seat Belt Buckle (With Torque Specifications) Courtesy of HONDA

6. 2-door Passenger's seat: Release the hook strips (D) and pull back the seat cushion cover.
7. Pull the seat belt switch harness (E) out through the space between the seat cushion and the seat track (driver's seat), or through the hole in the seat track (passenger's seat).
8. Install the buckle in the reverse order of removal, and note these items:
    - Assemble the washers on the center anchor bolt as shown.
    - Apply medium strength type liquid thread lock to the center anchor bolt before reinstallation.
    - Tighten the bolts by hand first, then tighten to specification with a torque wrench.
    - Make sure the seat belt switch connector and seat belt buckle tensioner connector are plugged in properly.
    - Reconnect the negative cable to the battery.
    - Enter the anti-theft codes for the audio or the navigation system, then enter the audio presets.
    - Set the clock.
    - Check for any DTCs that may have been set during repairs, and clear them.

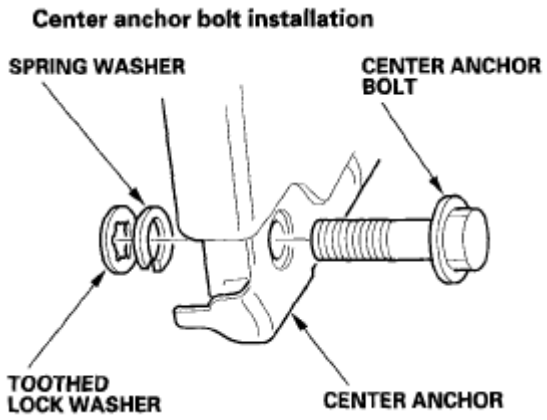


Fig. 16: Identifying Center Anchor Bolt
Courtesy of HONDA

PASSENGER'S SEAT BELT LOWER ANCHOR

1. Remove the door sill trim (see **TRIM REMOVAL/INSTALLATION - DOOR AREAS**).
2. Remove the lower anchor bolt (A), then remove the lower anchor (B).

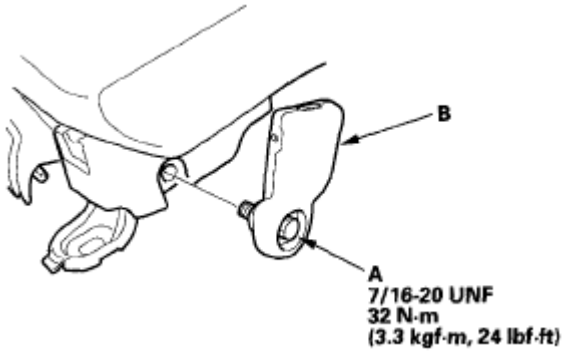


Fig. 17: Identifying Lower Anchor Bolt (With Torque Specifications)
Courtesy of HONDA

3. Install the lower anchor in the reverse order of removal, and note these items:
   - Apply medium strength type liquid thread lock to the lower anchor bolt before reinstallation.
   - Assemble the washers, collars, and bushing on the lower anchor bolt as shown.

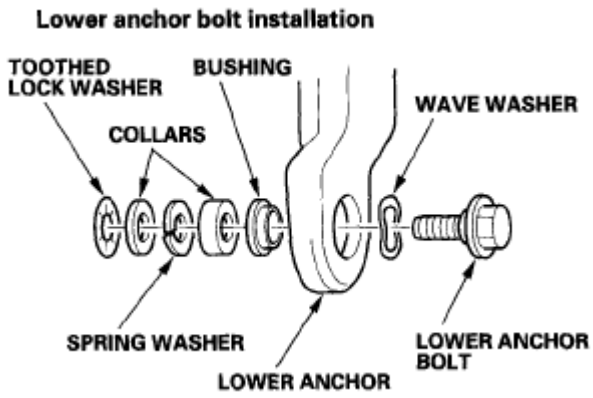


Fig. 18: Identifying Lower Anchor Bolt
Courtesy of HONDA

REAR SEAT BELT REPLACEMENT

NOTE: Check the second row seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Rear Seat Belt

1. Remove the rear seat cushion (see **SEAT CUSHION**).
2. Remove the lower anchor bolt (A).

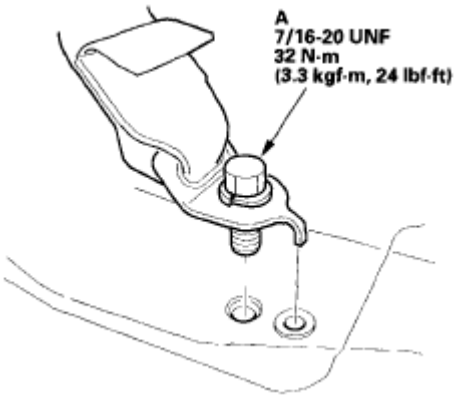


Fig. 19: Identifying Lower Anchor Bolt (With Torque Specifications)
Courtesy of HONDA

3. Remove these items:
   - 2-door:
     - Rear seat-back, fold down (see **REAR SEAT REMOVAL/INSTALLATION**), split fold down (see **SEAT-BACK - SPLIT FOLD DOWN**)
     - Rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
     - Rear shelf extension (see **REAR SHELF EXTENSION - 2-DOOR**)
     - Rear side trim panel (see **2-DOOR**)
   - 4-door:
     - Rear seat side bolsters, both sides (see **SEAT SIDE BOLSTER - 4-DOOR**)
     - C-pillar trim, both sides (see **C-PILLAR TRIM - 4-DOOR**)
     - Rear shelf (see **REAR SHELF EXTENSION - 2-DOOR**)
4. Remove the retractor bolt (A), then remove the rear seat belt (B) and retractor (C).

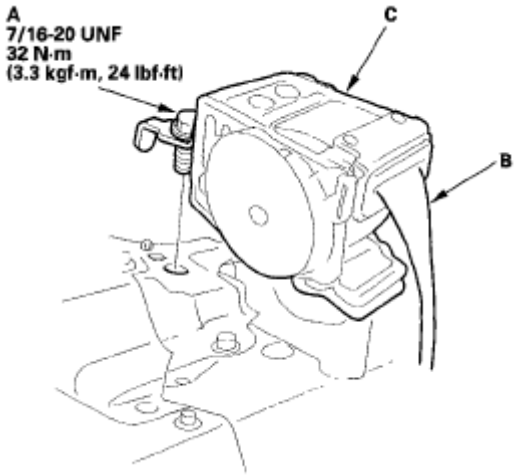


Fig. 20: Identifying Retractor And Retractor Bolt (With Torque Specifications)
Courtesy of HONDA

5. Install the rear seat belt and retractor in the reverse order of removal, and note these items:
   - Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
   - Check that the retractor locking mechanism functions as described (see **INSPECTION**).
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

CENTER SEAT BELT AND SEAT BELT BUCKLES

1. Remove the rear seat cushion (see **SEAT CUSHION**).
2. Remove the center anchor bolts (A), then remove the right seat belt buckle (B), center seat belt buckle (C), and left seat belt buckle (D).

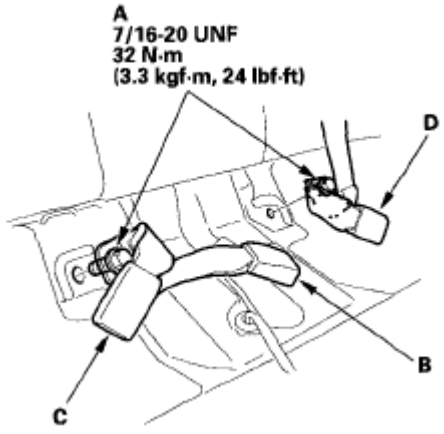


Fig. 21: Identifying Center Seat Belt Buckle And Center Anchor Bolts (With Torque Specifications)
Courtesy of HONDA

3. Fold both rear seat-backs forward.
4. Remove these items:
   - 2-door: Rear shelf (see **TRIM REMOVAL/INSTALLATION - REAR SHELF AREA**)
   - 4-door:

- Rear seat side bolsters, both sides (see **SEAT SIDE BOLSTER - 4-DOOR**)
- C-pillar trim (see **C-PILLAR TRIM - 4-DOOR**)
- Rear shelf (see **REAR SHELF EXTENSION - 2-DOOR**)

5. Remove the retractor mounting ET screw (A) (4-door) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).

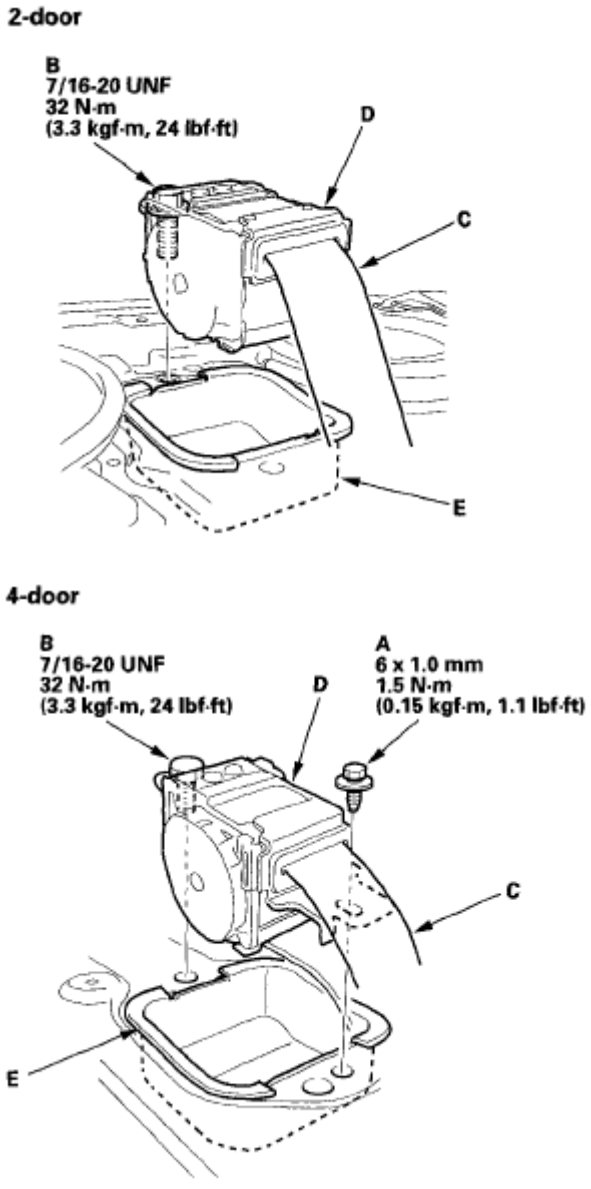


Fig. 22: Identifying Rear Seat Belt And Retractor (With Torque Specifications)
Courtesy of HONDA

6. Remove the rear center seat belt protector (E).
7. Install the seat belt and buckles in the reverse order of removal, and note these items:
   - Apply medium strength type liquid thread lock to the center anchor bolts before reinstallation.
   - Tighten the bolts by hand first, then tighten to the specified torque.
   - Check that the retractor locking mechanism functions (see **INSPECTION**).
   - Assemble the washers on the center anchor bolt as shown.

- Before installing the center anchor bolt, make sure there are no twists or kinks in the center belt.
- Make sure the rear center ELR (emergency locking retractor) is pointing straightforward.

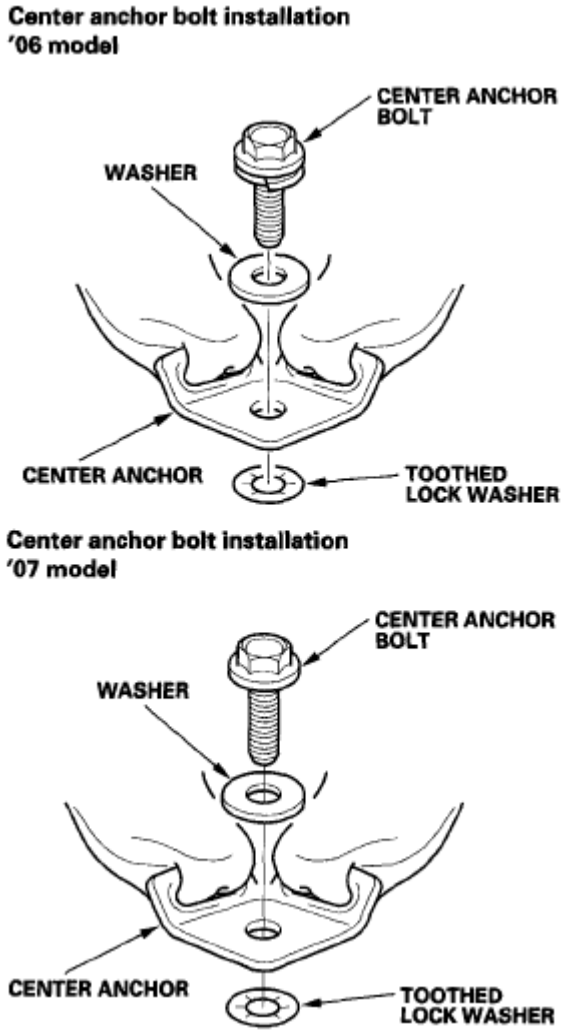


Fig. 23: Identifying Seat Belt Anchor Bolt
Courtesy of HONDA

INSPECTION

OUT OF VEHICLE

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

Retractor

1. Before installing the retractor, check that the seat belt can be pulled out freely.
2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15 "from the mounted position. The seat belt should lock when the retractor is leaned over 40°. Do not attempt to disassemble the retractor.

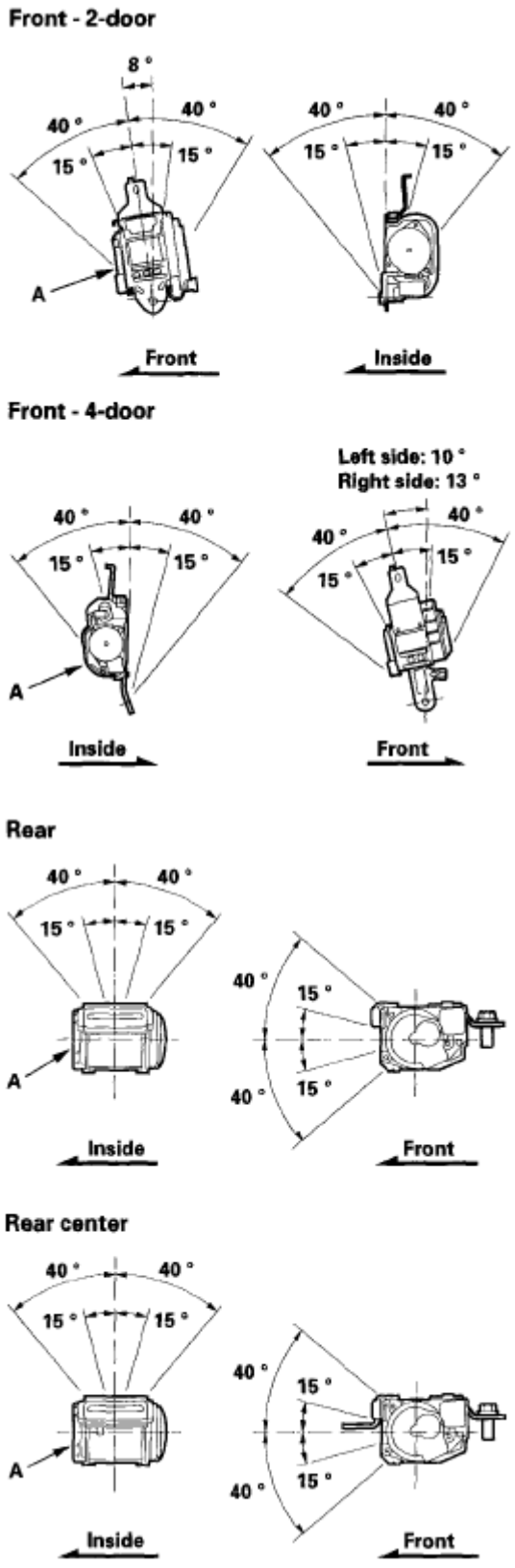


Fig. 24: Identifying Retractor Position
Courtesy of HONDA

3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

IN-VEHICLE

1. Check that the seat belt is not twisted or caught on anything.
2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.
3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.

NOTE: Dirt build-up in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.

4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
5. Make sure that the seat belt will retract automatically when released.
6. For front passenger's seat belt and all rear seat belts, check the seat belt retractor locking mechanism ALR (automatic locking retractor). This function is for securing child seats.
    - 1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract with a ratcheting sound, but not extend. This is normal.
    - 2 To disengage the ALR, release the seat belt and allow it to fully retract, then pull the seat belt out part-way. The seat belt should retract and extend normally.
7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

2006-08 STEERING

EPS System - Civic (All Except Hybrid & Si)

COMPONENT LOCATION INDEX

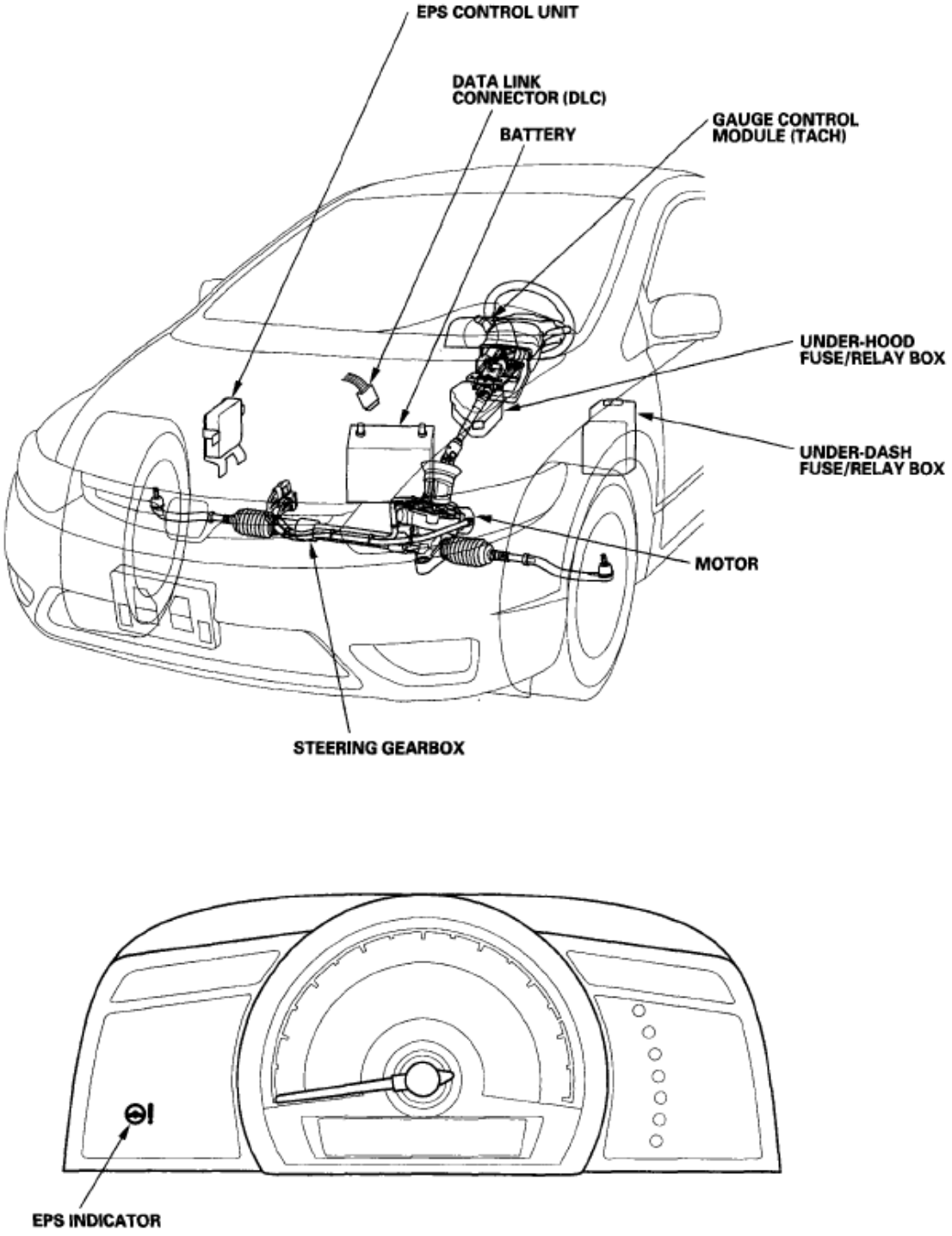


Fig. 1: Locating EPS Components

GENERAL TROUBLESHOOTING INFORMATION

EPS INDICATOR

Under normal conditions, the EPS indicator comes on when the ignition switch is turned to the ON (II) position, then goes off after the engine is started. This indicates that the LED and its circuit are operating correctly. If there is a failure in the system after the engine is started, the EPS indicator will stay on, and the power assist is turned off.

When the EPS indicator comes on, the control unit memorizes the DTC. In this case, the control unit will not activate the EPS system after the engine starts again, but it keeps the EPS indicator on.

When DTC 51-01, 51-02 or 51-06 is stored in the control unit, the EPS indicator will stay on until the DTC is erased. When a problem is detected and the EPS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal. Even though the system is operating normally, the EPS indicator will come on under the following conditions:

- The vehicle speed decreases abruptly from 12mph (20 km/h) or more (by applying brake), and it is less than 1 mph (1 km/h) and engine speed is 2,000 rpm or above for 5 seconds (continuously) after the abrupt deceleration.
- While turning the steering wheel with the vehicle speed of 1 mph (1 km/h) or less for 20 seconds, and the engine speed is 2,000 rpm or above for at least 10 seconds.
- When the engine speed is 500 rpm or less, and the vehicle is travelling at a speed of 6 mph (10 km/h) or more for about 3 seconds.

To determine the actual cause of the problem, question the customer about the conditions during which the problem occured, taking the above conditions into consideration.

DIAGNOSTIC TROUBLE CODE (DTC)

- If the CPU cannot be activated, or it fails, the EPS indicator comes on, but the DTC is not memorized.
- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the most recent DTC is written over the prior DTC, therefore only one occurance is memorized.
- The lowest DTC is indicated first. The DTCs are indicated in ascending order, not in the order that they occurred.
- The DTCs are memorized in the EEPROM (nonvolatile memory) therefore the memorized DTCs cannot be erased by disconnecting the battery. Perform the specified procedures to clear DTCs.

SELF-DIAGNOSIS

Self-diagnosis can be classified into three categories:

- Initial diagnosis: Done right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- Steering diagnosis: Done during regular diagnosis while turning steering wheel.

The EPS control unit performs the following functions when a problem is detected by self-diagnosis:

1. Turns on the EPS indicator.
2. Memorizes the DTC.

3. Stops power assist and manual steering operation resumes.

NOTE: For DTCs 11-01, 11-02, 12-01,21-01,21-02, 22-01 and 35-04 the EPS indicator will go off automatically, and the system returns to normal.

RESTRICTION ON POWER ASSIST OPERATION

Repeated extreme steering force, such as turning the steering wheel continuously back-and-forth with the vehicle stopped, causes an increase of power consumption in the EPS motor. The increase of electric current causes the motor to heat up. Because this heat adversely affects the system, the control unit monitors the electric current of the motor.

When the control unit detects heat build-up in the motor, it reduces the electric current to the motor gradually to protect the system, and it restricts the power assist operation. The EPS indicator does not come on during this function.

When steering torque is not applied to the steering wheel, or when the ignition is turned off and the motor cools, the control unit will restore the power assist gradually until it's fully restored (after about 8 minutes).

TORQUE SENSOR NEUTRAL POSITION

The EPS control unit stores the torque sensor neutral position in the EEPROM. The torque sensor neutral position must be memorized whenever the gearbox, the motor, or the EPS control unit is replaced.

NOTE: The torque sensor neutral position is not effected when erasing the DTCs.

HOW TO TROUBLESHOOT DTCS

The troubleshooting procedures assume that the cause of the problem is still present and the EPS indicator is still on. Following the procedure when the EPS indicator does not come on can result in incorrect diagnosis.

1. Question the customer about the conditions when the problem occured, and try to reproduce the same conditions for troubleshooting. Find out when the EPS indicator came on, such as during EPS control, after EPS control, when the vehicle was at a certain speed, etc.
2. When the EPS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., in the affected circuit before you start troubleshooting.
3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the EPS indicator does not come on.

HOW TO RETRIEVE DTCS

1. With the ignition switch to LOCK (0), connect the HDS (Honda diagnostic system) to the data link connector (DLC) (A) located under the driver's side of the dashboard.

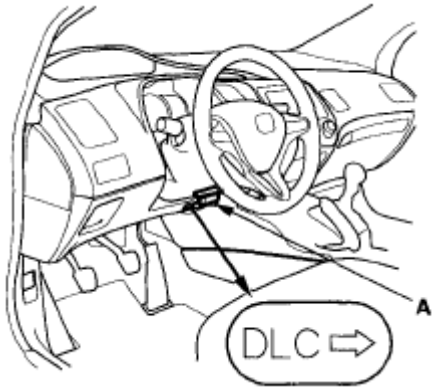


Fig. 2: Identifying DLC Connector

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the **DTC TROUBLESHOOTING**.

NOTE: See the HDS Help menu for specific instructions.

5. Turn the ignition switch to LOCK (0).

HOW TO CLEAR DTCS

1. With the ignition switch in LOCK (0) position, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

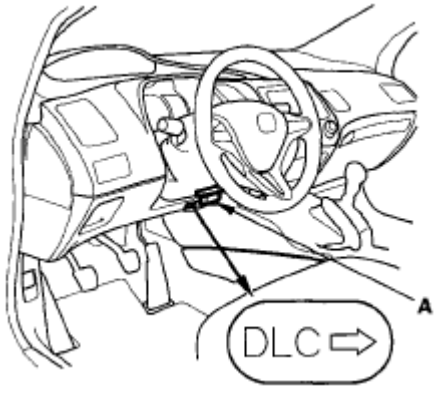


Fig. 3: Identifying DLC Connector

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

5. Turn the ignition switch to LOCK (0).

MEMORIZING THE TORQUE SENSOR NEUTRAL POSITION

The torque sensor neutral position must be memorized whenever the gearbox, the motor, or the EPS control unit is replaced. Note that the torque sensor neutral position is not affected when erasing the DTC.

NOTE: The torque sensor is sensitive to temperature. This procedure should be performed within the range of 68°F ± 50°F (20°C ± 10°C).

1. With the ignition switch in LOCK (0) position, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

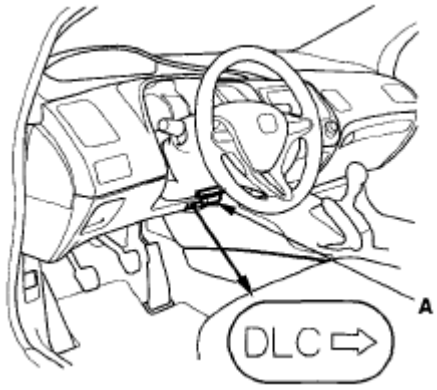


Fig. 4: Identifying DLC Connector

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. From the EPS MENU, select MISCELLANEOUS TEST then TORQUE SENSOR LEARN and follow the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

5. Turn the ignition switch to LOCK (0).

DTC TROUBLESHOOTING INDEX

DTC TROUBLESHOOTING INDEX

DTC	Detection Item
11-01	Low/high IG1-terminal voltage (Initial diagnosis)
11-02	Low/high IG1-terminal voltage (Regular diagnosis)
12-01	Low/high VBU voltage (Regular diagnosis)
21-01	Excessive change of the vehicle speed signal (Regular diagnosis)
21-02	Comparison between the vehicle speed and the engine speed signal (Regular diagnosis)

22-01	Engine speed signal (Initial diagnosis)
31-01	No writing the torque sensor neutral position (Initial diagnosis)
32-01	EPS control unit internal circuit (current sensor) (Initial diagnosis)
32-02	EPS control unit internal circuit (current sensor) (Regular diagnosis)
32-07	EPS control unit internal circuit (current sensor) (Steering diagnosis)
32-08	Current sensor (Regular diagnosis)
32-09	Current sensor (Initial diagnosis)
33-01	Lower FET stuck ON (Initial diagnosis)
33-02	Upper FET stuck ON (Initial diagnosis)
33-06	Lower FET stuck ON (Regular diagnosis)
33-07	Upper FET stuck ON (Regular diagnosis)
34-01	Power relay stuck ON (IG switch is OFF)
34-02	Fail-safe relay stuck ON (Initial diagnosis)
35-01	EPS control unit internal circuit (CPU) (Initial diagnosis/regular diagnosis)
35-02	EPS control unit internal circuit (EEPROM) (Initial diagnosis)
35-03	EPS control unit internal circuit (EPS CPU) (Initial diagnosis)
35-04	EPS control unit internal circuit (CPU communication) (Regular diagnosis)
35-05	EPS control unit internal circuit (Motor/EPS CPU) (Initial diagnosis)
35-06	EPS control unit internal circuit (ITN communication) (Regular diagnosis)
35-07	EPS control unit internal circuit (INHL/INHR ports) (Initial diagnosis/regular diagnosis)
36-02	EPS control unit internal circuit (INH output circuit) (Initial diagnosis)
37-01	EPS control unit internal circuit (Step-up circuit) (Initial diagnosis)
51-01	Low/high voltage for the torque sensor (VT1 and VT2) (Regular diagnosis)
51-02	Torque sensor (VT3 Differential-amplification Function) (Regular diagnosis)
51-03	Torque sensor (VT1, VT2 rapid change) (Regular diagnosis)
51-06	Torque sensor (VT1, VT2 average) (Regular diagnosis)
51-07	Torque sensor (VT1, VT2 initial check) (Initial diagnosis)
61-04	Open/short in the motor harness (Steering diagnosis)

71-01	Motor angle sensor (SIN/COS signals) (Steering diagnosis)
71-02	Motor angle sensor (neutral position learning of SIN/COS) (Initial diagnosis)
71-03	Motor angle sensor (SIN/COS signals) (Steering diagnosis)
71-04	Motor angle sensor (check signal) (Regular diagnosis)
71-05	Motor angle sensor (SIN/COS signals changing amount) (Steering diagnosis)
71-06	Motor angle sensor (neutral position of SIN/COS) (Initial diagnosis)

NOTE:

- **Initial diagnosis: Done right after the engine starts and until the EPS indicator goes off.**
- **Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned off.**
- **Steering diagnosis: Done during regular diagnosis while turning steering wheel.**

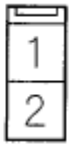
SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure
EPS indicator does not come on	Symptom Troubleshooting (see **EPS INDICATOR DOES NOT COME ON**)
EPS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see **EPS INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED**)
EPS indicator is not on, no DTCs are stored, but there is no power assist or power assist is down	1. Check the motor power wires between the EPS control unit and the motor for a short to body ground. Repair as needed. 2. If the motor power wires are OK, replace the motor (short in the motor) (see **MOTOR REMOVAL AND INSTALLATION**). 3. Check the power and ground connections at the EPS control unit.
HDS does not communicate with the EPS control unit or the vehicle	Troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).

SYSTEM DESCRIPTION

EPS CONTROL UNIT INPUTS AND OUTPUTS FOR CONNECTOR A (2P)



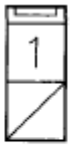
Wire side of female terminals

Fig. 5: Identifying EPS Control Unit Inputs And Outputs For Connector A (2P)

SYSTEM DESCRIPTION

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminals	Conditions	Voltage
1	BLK	PG (Power ground)	Ground for the actuator motor	-	-	-
2	WHT	+B (Plus battery)	Power source for the actuator motor	2-GND	At all times	Battery voltage

EPS CONTROL UNIT INPUTS AND OUTPUTS FOR CONNECTOR B (2P)



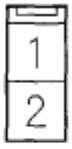
Wire side of female terminals

Fig. 6: Identifying EPS Control Unit Inputs And Outputs For Connector B (2P)

TERMINAL NUMBER REFERENCE

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminals	Conditions	Voltage
1	GRIM	H-W	Drives the actuator motor	-	-	-

EPS CONTROL UNIT INPUTS AND OUTPUTS FOR CONNECTOR C (2P)



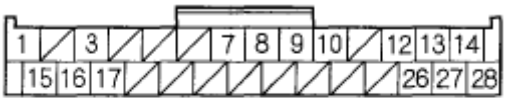
Wire side of female terminals

Fig. 7: Identifying EPS Control Unit Inputs And Outputs For Connector C (2P)

TERMINAL NUMBER REFERENCE

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminals	Conditions	Voltage
1	RED	H-U	Drives the actuator motor	-	-	-
2	BLU	H-V	Drives the actuator motor	-	-	-

EPS CONTROL UNIT INPUTS AND OUTPUTS FOR CONNECTOR D (28P)



Wire side of female terminals

Fig. 8: Identifying EPS Control Unit Inputs And Outputs For Connector D (28P)

TERMINAL NUMBER REFERENCE

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminals	Conditions	Voltage
1	WHT	CAN-H (CAN-HI)	CAN communication circuit	-	-	-
3	BLU	NEP (Engine pulse)	Detects tachometer signal	3-GND	With engine running	3 V or less-6 V or more
7	BRN	SCS (Service check signal)	Detects service check connector signal	7-GND	SCS not grounded	About 5 V
8	LT GRN	VS2 (Voltage sensor 2)	Detects torque sensor signal	-	-	-
9	BRN	PVF (Voltage fade)	Drives the torque sensor	-	-	-
10	GRN	VS1 (Voltage sensor 1)	Detects torque sensor signal	-	-	-
12	PNK	S1 (Signal 1)	Detects motor angle sensor signal	-	-	-
13	BLU	R1 (Motor angle sensor 1)	Detects motor angle sensor signal	-	-	-
14	BRN	S2 (Signal 2)	Detects motor angle sensor signal	-	-	-
15	RED	CAN-L (CAN-LO)	CAN communication circuit	-	-	-
16	GRY	IG1 (Ignition 1)	Power source for activating the system	16-GND	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	0 V
17	LT	K-LINE (Data	Communicates with	17-GND	HDS not	About 5 V

	BLU	link connector)	HDS		connected	
26	BRN	S3 (Signal 3)	Detects motor angle sensor signal	-	-	-
27	PNK	R2 (Motor angle sensor 2)	Detects motor angle sensor signal	-	-	-
28	BLU	S4 (Signal 4)	Detects motor angle sensor signal	-	-	-

CIRCUIT DIAGRAM

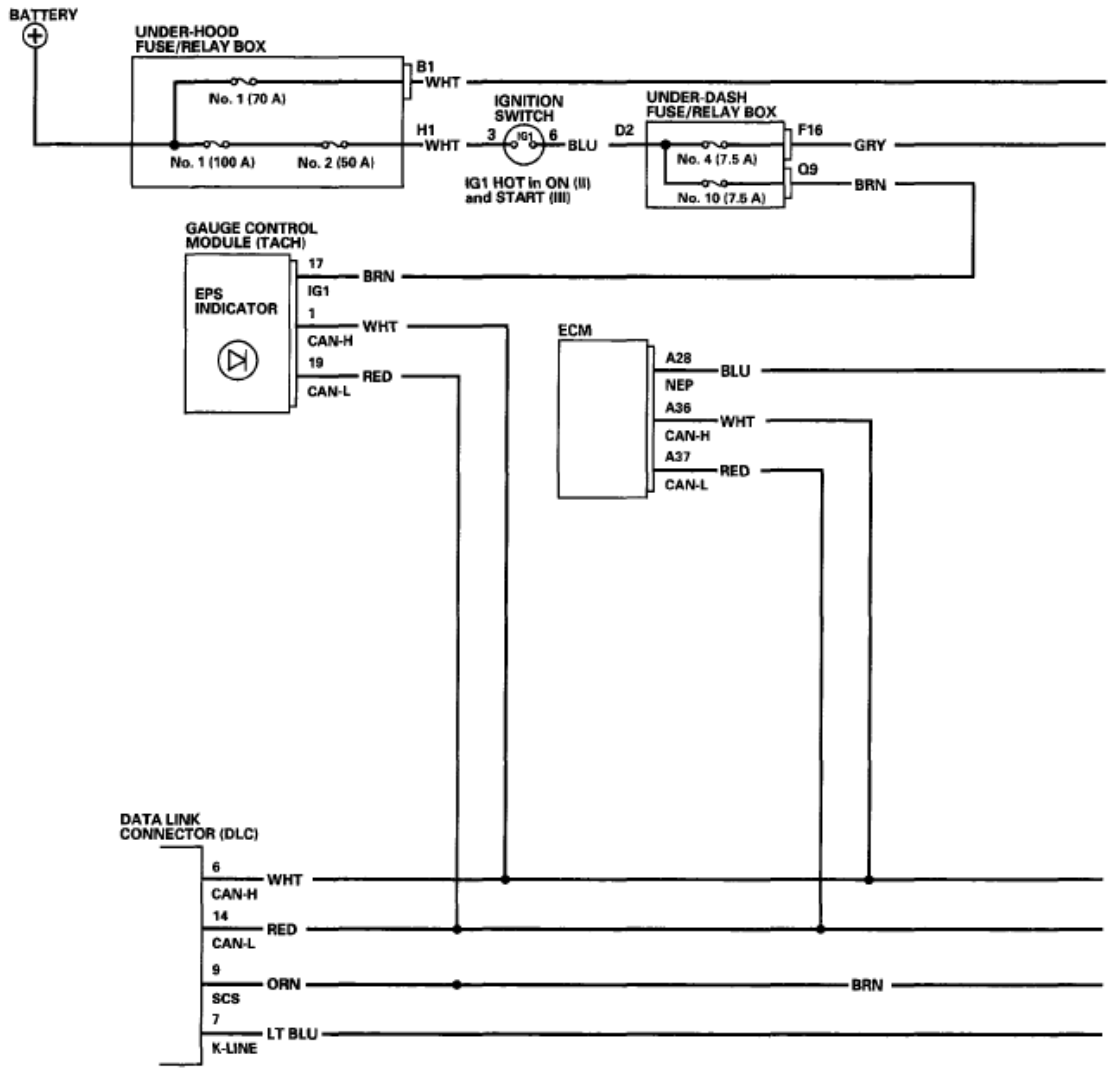


Fig. 9: Identifying EPS Circuit Diagram (1 Of 3)

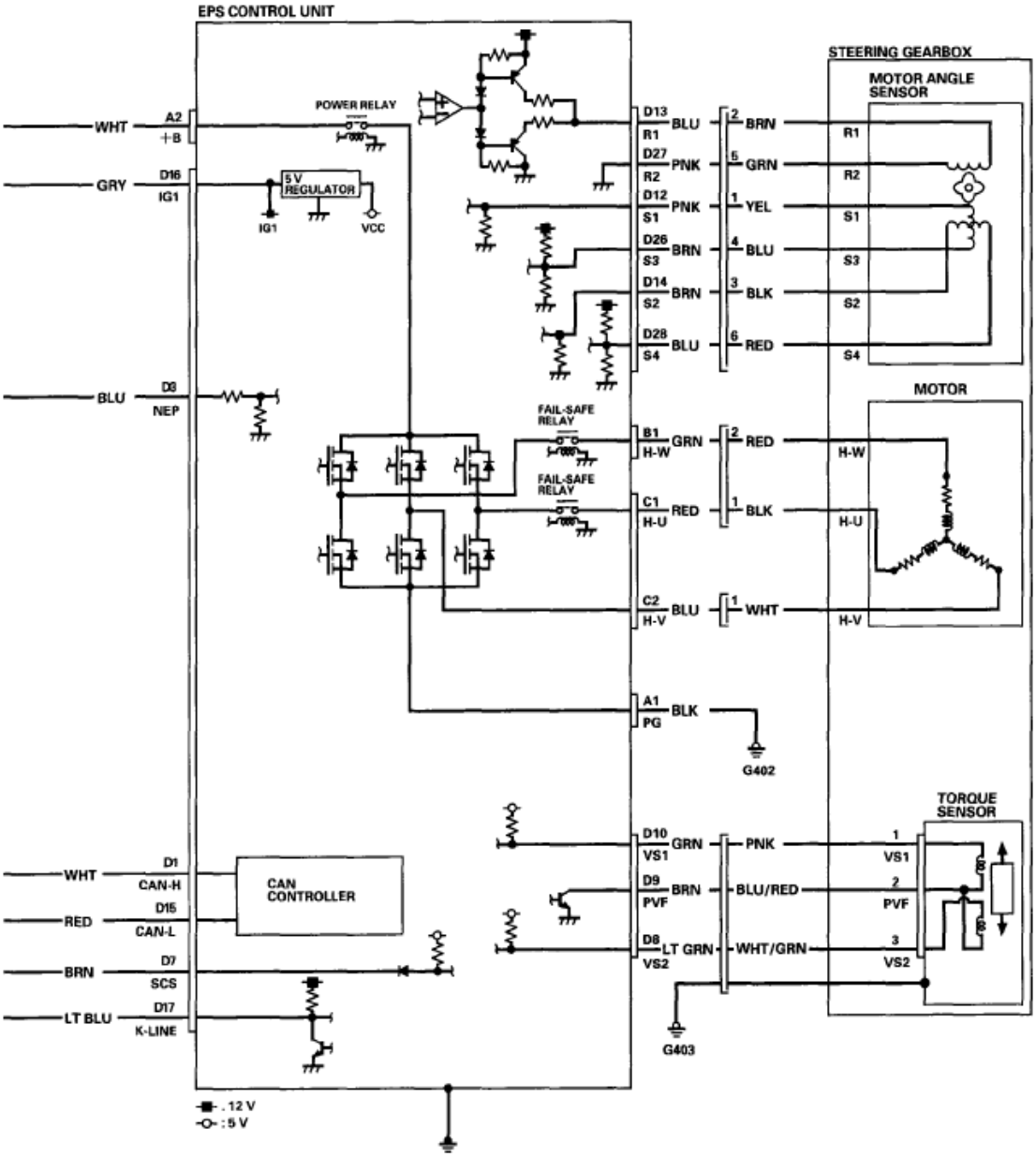


Fig. 10: Identifying EPS Circuit Diagram (2 Of 3)

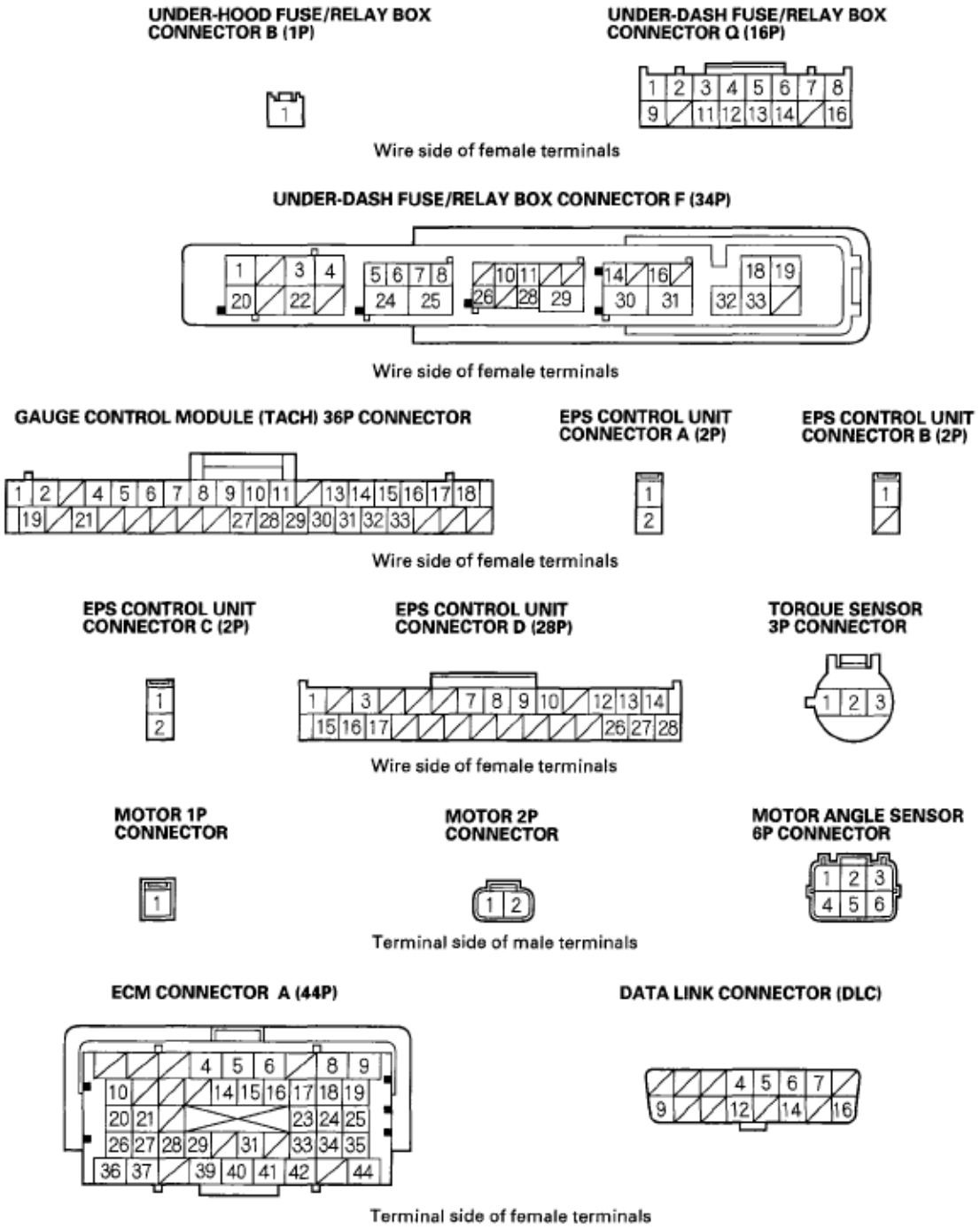


Fig. 11: Identifying EPS Circuit Diagram (3 Of 3)

DTC TROUBLESHOOTING

DTC 11-01: LOW/HIGH IG1-TERMINAL VOLTAGE (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Wait at least 60 seconds.

Does the EPS indicator come on?

YES -Go to step 5.

NO -Check for loose wires or poor connections. If the connections are good, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control connector D (28P).
7. Turn the ignition switch ON (II).
8. Wait at least 60 seconds.
9. Measure voltage between EPS control unit connector D (28P) terminal No. 16 and body ground.

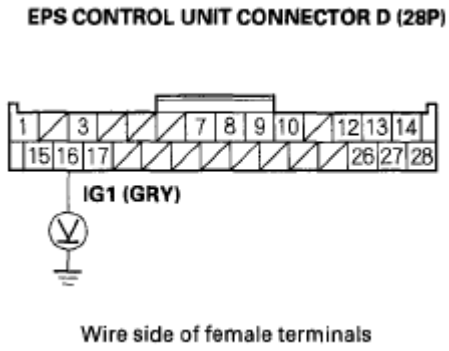


Fig. 12: Measuring Voltage Between EPS Control Unit Connector D (28P) Terminal No. 16 And Body Ground

Is the voltage between 9.63-16.6 V?

YES -Check for loose terminals in the EPS control unit connectors and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -If there is no voltage, or the voltage is lower than specified, repair an open or high resistance in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and EPS control unit. If the wire checks OK, check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

DTC 11-02: LOW/HIGH ID-TERMINAL VOLTAGE (REGULAR DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Wait at least 60 seconds.

Does the EPS indicator come on?

YES -Go to step 5.

NO -Check for loose wires or poor connections. If the connections are good, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control connector D (28P).
7. Turn the ignition switch ON (II).
8. Wait at least 60 seconds.
9. Measure voltage between EPS control unit connector D (28P) terminal No. 16 and body ground.

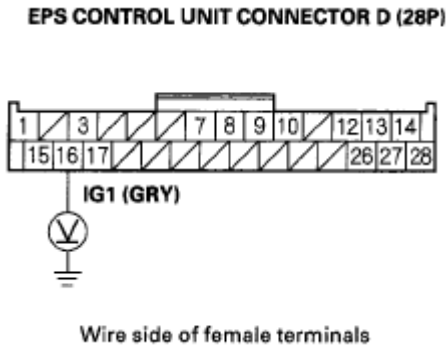


Fig. 13: Measuring Voltage Between EPS Control Unit Connector D (28P) Terminal No. 16 And Body Ground

Is the voltage between 9.20-17.4 V?

YES -Check for loose terminals in the EPS control unit connectors and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -If there is no voltage, or the voltage is lower than specified, repair an open or high resistance in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and EPS control unit. If the wire checks OK, check the battery (see **BATTERY TEST**), and troubleshoot the alternator regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

DTC 12-01: LOW/HIGH VBU VOLTAGE (REGULAR DIAGNOSIS)

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch ON (II).
4. Check the BATTERY in the DATA LIST with the HDS.

Is the voltage at 9.2-17.4 V?

YES -Check for loose wires or poor connections. If the connections are good, the system is OK at this time.

NO -Go to step 5.

5. Turn the ignition switch to LOCK (0).

6. Check the No. 1 (70 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES -Reinstall the fuse, and go to step 7.

   NO-Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit.

7. Disconnect EPS control unit connector A (2P) and connector D (28P).
8. Measure voltage between EPS control unit connector A (2P) terminal No. 2 and body ground.

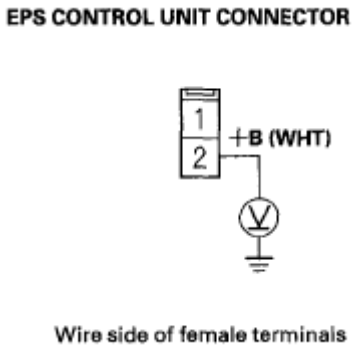


Fig. 14: Measuring Voltage Between EPS Control Unit Connector A (2P) Terminal No. 2 And Body Ground

Is there battery voltage?

YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the EPS control unit and No. 1 (70 A) fuse in the under-hood fuse/relay box.

DTC 21-01: EXCESSIVE CHANGE OF THE VEHICLE SPEED SIGNAL (REGULAR DIAGNOSIS); DTC 21-02: COMPARISON BETWEEN THE VEHICLE SPEED AND THE ENGINE SPEED SIGNAL (REGULAR DIAGNOSIS)

NOTE:

- **If the MIL indicator is on, troubleshoot the fuel and emissions systems first.**
- **Even though the system is operating normally, the EPS indicator will come on caused by the detecting condition of DTC 21-01 or DTC 21-02.**

1. Turn the ignition switch to LOCK (0).
2. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**), and allow all wheels to rotate freely.
3. Connect the HDS to the data link connector (DLC).
4. Start the engine, run the vehicle in 4th gear.

5. Check the VEHICLE SPEED in the DATA LIST with the HDS.

   Is the vehicle speed indicated?

   YES -The system is OK at this time.

   NO -Go to step 6.

6. Check for DTCs in the fuel and emissions systems with the HDS.

   Is DTC P0720 indicated?

   YES -Troubleshoot the indicated DTC.

   NO -Go to step 7.

7. Start the engine and check the tachometer.

   Is the tachometer working correctly?

   YES -Go to step 8.

   NO -Troubleshoot the gauge control module (tach) (see **SELF-DIAGNOSTIC FUNCTION**).

8. Turn the ignition switch to LOCK (0).
9. Short the SCS line with the HDS.
10. Disconnect ECM connector A (44P) and EPS control unit connector D (28P).
11. Check for continuity between EPS control unit connector D (28P) terminals No. 1 and ECM connector A (44P) terminals No. 36.

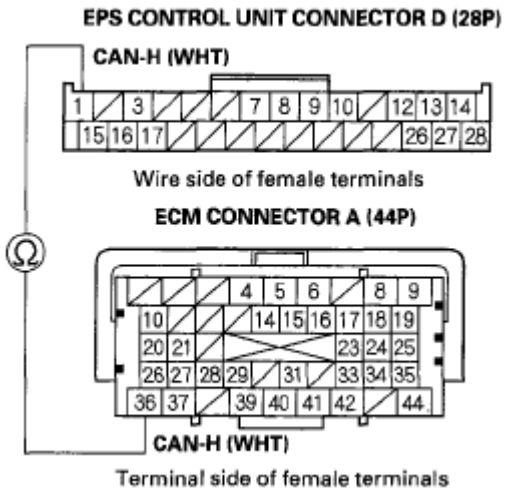


Fig. 15: Checking Continuity Between EPS Control Unit Connector D (28P) Terminals No. 1 And ECM Connector A (44P) Terminals No. 36

Is there continuity?

YES -Go to step 12.

NO -Repair open in the wire between the EPS control unit and the ECM.

12. Check for continuity between EPS control unit connector D (28P) terminals No. 15 and ECM connector A (44P) terminals No. 37.

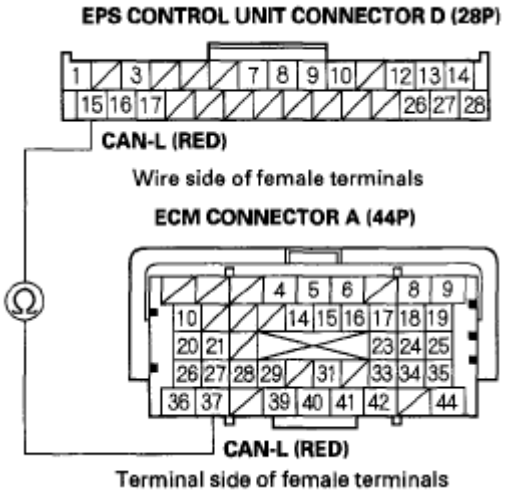


Fig. 16: Checking Continuity Between EPS Control Unit Connector D (28P) Terminals No. 15 And ECM Connector A (44P) Terminals No. 37

Is there continuity?

YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the EPS control unit and the ECM.

DTC 22-01: ENGINE SPEED SIGNAL (INITIAL DIAGNOSIS)

NOTE: If the MIL indicator is on, troubleshoot the fuel and emissions systems first.

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Start the engine.
4. Check the ENGINE SPEED in the DATA LIST with the HDS.

Is there 0 rpm at idle?

YES -Go to step 5.

NO -The system is OK at this time.

5. Turn the ignition switch to LOCK (0).

6. Disconnect EPS control unit connector D (28P).
7. Start the engine.
8. Measure voltage between EPS control unit connector D (28P) terminal No. 3 and body ground.

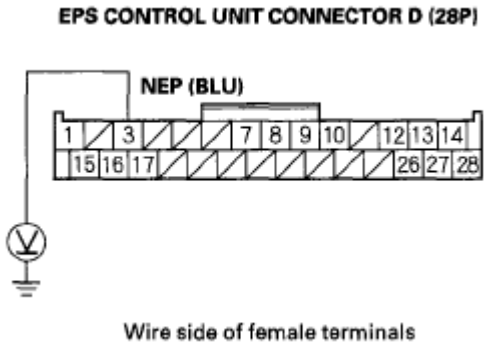


Fig. 17: Measuring Voltage Between EPS Control Unit Connector D (28P) Terminal No. 3 And Body Ground

Is there any voltage?

YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Check for continuity between EPS control unit connector D (28P) terminal No. 3 and body ground.

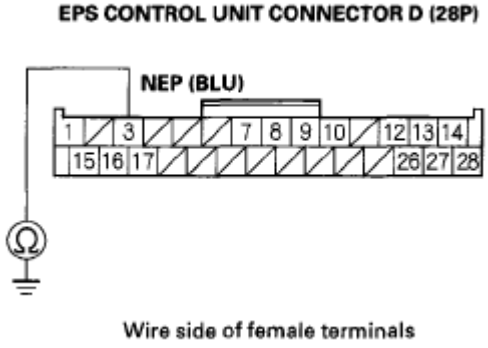


Fig. 18: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 3 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the EPS control unit and the ECM.

NO -Go to step 11.

11. Short the SCS line with the HDS.

12. Disconnect ECM connector A (44P).
13. Check for continuity between EPS control unit connector D (28P) terminals No. 3 and ECM connector A (44P) terminals No. 28.

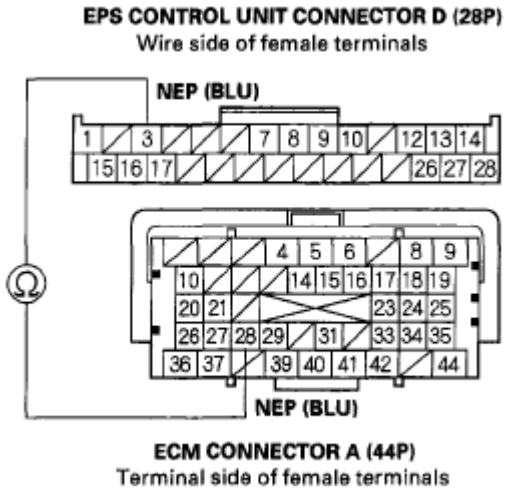


Fig. 19: Checking Continuity Between EPS Control Unit Connector D (28P) Terminals No. 3 And ECM Connector A (44P) Terminals No. 28

Is there continuity?

YES -Check for loose terminals in the ECM connector A (44P), and repair if necessary. If no poor connections are found replace the ECM (see **ECM REPLACEMENT**).

NO -Repair open in the wire between the EPS control unit and the ECM.

DTC 32-01: EPS CONTROL UNIT INTERNAL CIRCUIT (CURRENT SENSOR) (INITIAL DIAGNOSIS); DTC 32-02: EPS CONTROL UNIT INTERNAL CIRCUIT (CURRENT SENSOR) (REGULAR DIAGNOSIS); DTC 35-01: EPS CONTROL UNIT INTERNAL CIRCUIT (CPU) (INITIAL DIAGNOSIS/REGULAR DIAGNOSIS); DTC 35-02: EPS CONTROL UNIT INTERNAL CIRCUIT (EEPROM) (INITIAL DIAGNOSIS); DTC 35-04: EPS CONTROL UNIT INTERNAL CIRCUIT (CPU COMMUNICATION) (REGULAR DIAGNOSIS); DTC 35-06: EPS CONTROL UNIT INTERNAL CIRCUIT (ITN COMMUNICATION) (REGULAR DIAGNOSIS); DTC 35-07: EPS CONTROL UNIT INTERNAL CIRCUIT (INHL/INHR PORTS) (INITIAL DIAGNOSIS/REGULAR DIAGNOSIS); DTC 36-02: EPS CONTROL UNIT INTERNAL CIRCUIT (INH OUTPUT CIRCUIT) (INITIAL DIAGNOSIS); DTC 37-01: EPS CONTROL UNIT INTERNAL CIRCUIT (STEP-UP CIRCUIT) (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.

Does the EPS indicator come on?

YES -Go to step 4.

NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at

this time.

4. Check for DTCs with the HDS.

   Is DTC 32-01, 32-02, 35-01, 35-02, 35-04, 35-06, 35-07, 36-02, or 37-01?

   YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

DTC 32-07: EPS CONTROL UNIT INTERNAL CIRCUIT (CURRENT SENSOR) (STEERING DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES -Go to step 5.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

5. Check for DTCs with the HDS.

   Is DTC 32-07 indicated?

   YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

DTC 32-08: CURRENT SENSOR (REGULAR DIAGNOSIS); DTC 32-09: CURRENT SENSOR (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES -Go to step 5.

NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

5. Check for DTCs with the HDS.

   Is DTC 32-08 or DTC 32-09 indicated?

   YES -Go to step 6.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector B (2P) and connector C(2P).
8. Check for continuity between the following terminals of the EPS control unit connector B (2P) and connector C (2P).

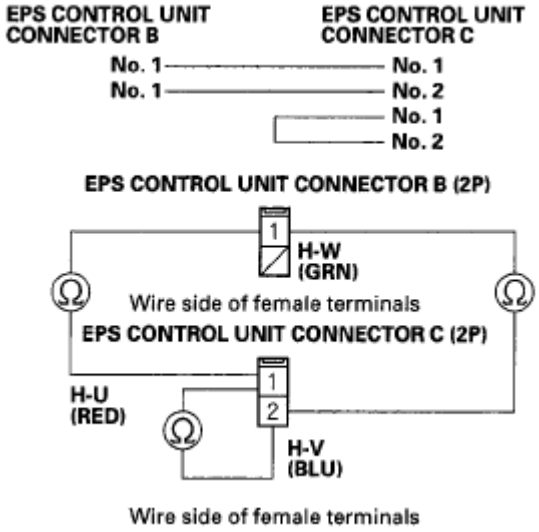


Fig. 20: Checking Continuity Between Following Terminals Of EPS Control Unit Connector B (2P) And Connector C (2P)

Is there continuity?

YES -Check for loose terminals in the EPS control unit connectors and motor connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Go to step 9.

9. Disconnect the motor 1P connector and motor 2P connector.
10. On the motor side, check for continuity between the following terminals of the motor 1P and motor 2P connector.

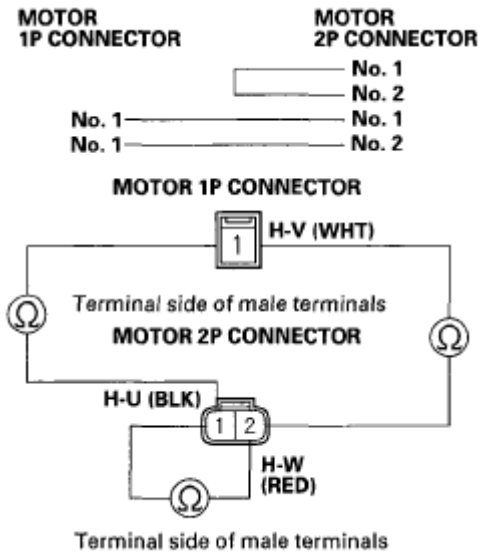


Fig. 21: Checking Continuity Between Following Terminals Of Motor 1P And Motor 2P Connector

Is there continuity?

YES -Repair open in the wire harness between the EPS control unit and motor.

NO -Open in the motor wire harness, or motor internal circuit, replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

DTC 33-01: LOWER FET STUCK ON (INITIAL DIAGNOSIS); DTC 33-06: LOWER FET STUCK ON (REGULAR DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.

   Does the EPS indicator come on?

   YES -Go to step 4.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Check for DTCs with the HDS.

   Is DTC 33-01 or DTC 33-06 indicated?

   YES -Go to step 5.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).

6. Disconnect EPS control unit connector B (2P) and connector C(2P).
7. Check for continuity between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, connector C (2P) No. 2 terminal individually.

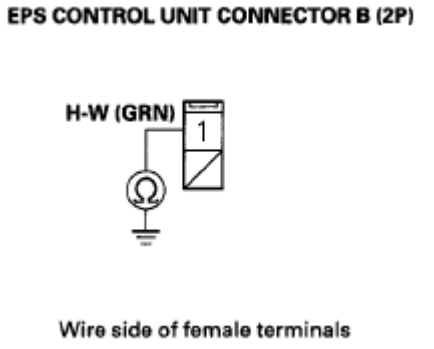


Fig. 22: Checking Continuity Between Body Ground And EPS Control Unit Connector B (2P) No. 1 Terminal

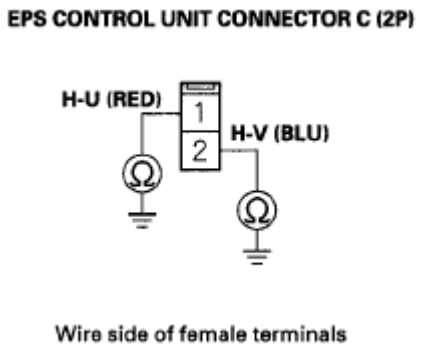


Fig. 23: Checking Continuity Between Connector C (2P) No. 1 Terminal, Connector C (2P) No. 2

Is there continuity?

YES -Go to step 8.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

8. Disconnect the motor 1P connector and motor 2P connector.
9. Check for continuity between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, connector C (2P) No. 2 terminal individually.

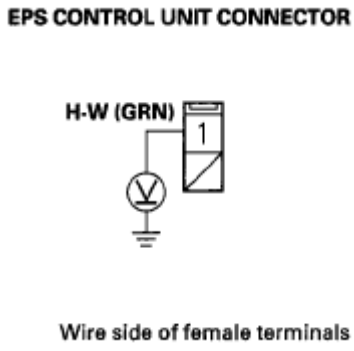


Fig. 24: Checking Continuity Between Body Ground And EPS Control Unit Connector B (2P) No. 1 Terminal

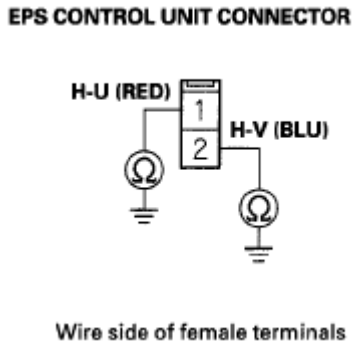


Fig. 25: Checking Continuity Connector C (2P) No. 1 Terminal Connector C (2P) No. 2 Terminal

Is there continuity?

YES -Repair short to body ground in the wire between the EPS control unit and motor.

NO -Short in the motor wire harness, or motor internal circuit, replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

DTC 33-02: UPPER FET STUCK ON (INITIAL DIAGNOSIS); DTC 33-07: UPPER FET STUCK ON (REGULAR DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.

   Does the EPS indicator come on?

   YES -Go to step 4.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Check for DTCs with the HDS.

Is DTC 33-02 or DTC 33-07 indicated?

YES -Go to step 5.

NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control unit connector B (2P) and connector C (2P).
7. Turn the ignition switch ON (II).
8. Measure voltage between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, and connector C (2P) Non terminal individually.

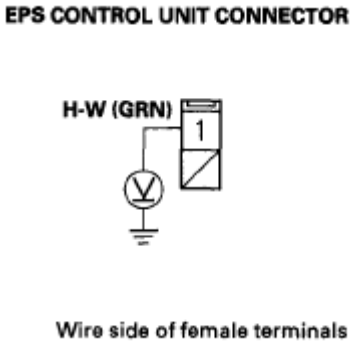


Fig. 26: Measuring Voltage Between Body Ground And EPS Control Unit Connector B (2P) No. 1 Terminal

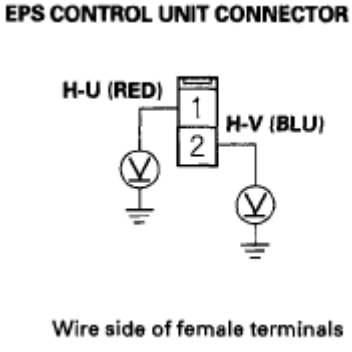


Fig. 27: Measuring Voltage Between Connector C (2P) No. 1 Terminal And Connector C (2P) Non Terminal

Is there battery voltage?

YES -Go to step 9.

NO -Check for loose terminals in the EPS control unit connectors and motor connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

9. Turn the ignition switch to LOCK (0).
10. Disconnect the motor 1P connector and motor 2P connector.

11. Turn the ignition switch ON (II).
12. Measure voltage between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, and connector C (2P) No. 2 terminal individually.

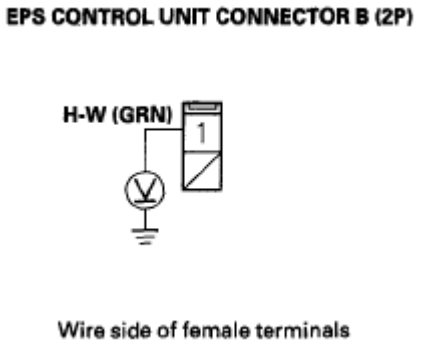


Fig. 28: Measuring Voltage Between Body Ground And EPS Control Unit Connector B (2P) No. 1 Terminal

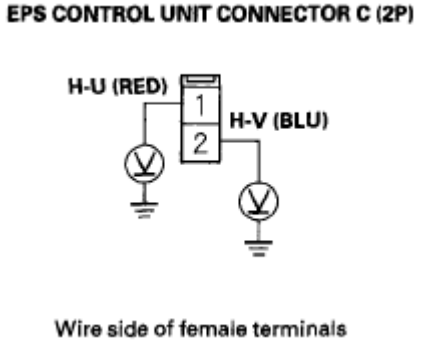


Fig. 29: Measuring Voltage Between Connector C (2P) No. 1 Terminal And Connector C (2P) No. 2 Terminal

Is there battery voltage?

YES - Repair short to power in the wire between the EPS control unit and motor.

NO - Short to power in the motor wire harness, or motor internal circuit, replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

DTC 34-01: POWER RELAY STUCK ON (IGNITION SWITCH IS OFF)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch ON (II).

Does the EPS indicator come on?

YES - Go to step 4.

NO - Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Check for DTCs with the HDS.

   Is DTC 34-01 indicated?

   YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

DTC 34-02: FAIL-SAFE RELAY STUCK ON (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch ON (II).

   Does the EPS indicator come on?

   YES -Go to step 4.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Check for DTCs with the HDS.

   Is DTC 34-02 indicated?

   YES -Go to step 5.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control unit connector B (2P) and connector C (2P).
7. Turn the ignition switch ON (II).
8. Measure voltage between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, and connector C (2P) No. 2 terminal individually.

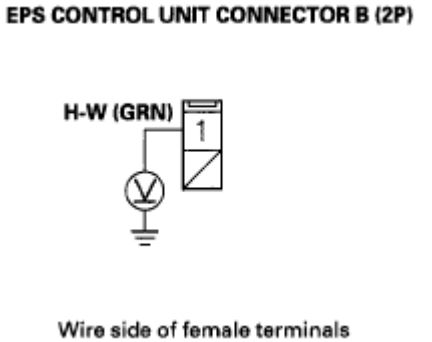


Fig. 30: Measuring Voltage Between Body Ground And EPS Control Unit Connector B (2P) No.

1 Terminal

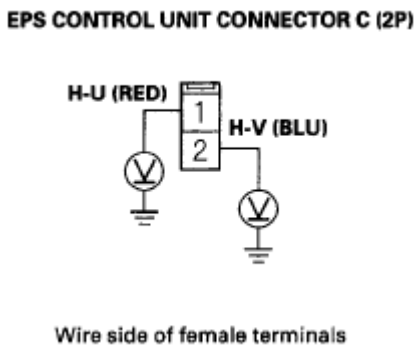


Fig. 31: Measuring Voltage Between Connector C (2P) No. 1 Terminal And Connector C (2P) No. 2 Terminal

Is there battery voltage?

YES -Repair short to power in the wire between the EPS control unit and the motor.

NO -Replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

DTC 35-03: EPS CONTROL UNIT INTERNAL CIRCUIT (EPS CPU) (INITIAL DIAGNOSIS); DTC 35-05: EPS CONTROL UNIT INTERNAL CIRCUIT (MOTOR/EPS CPU) (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch ON (II).

Does the EPS indicator come on?

YES -Go to step 4.

NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Start the engine.
5. Wait 10 seconds or more.
6. Check for DTCs with the HDS.

Is DTC 35-03 or DTC 35-05 indicated?

YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

DTC 51-01: LOW/HIGH VOLTAGE FOR THE TORQUE SENSOR (VT1 AND VT2) (REGULAR DIAGNOSIS)

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch ON (II).
4. Check the ADVT1 in the DATA LIST with the HDS.

   Is the voltage at 0.90-3.55 V?

   YES -Go to step 5.

   NO -Go to step 6.

5. Check the ADVT2 in the DATA LIST with the HDS.

   Is the voltage at 1.02-3.73 V?

   YES -Check for loose wires or poor connections. If the connections are good, the system is OK at this time.

   NO -Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector D (28P).
8. Measure resistance between EPS control unit connector D (28P) terminals No. 9 and No. 10.

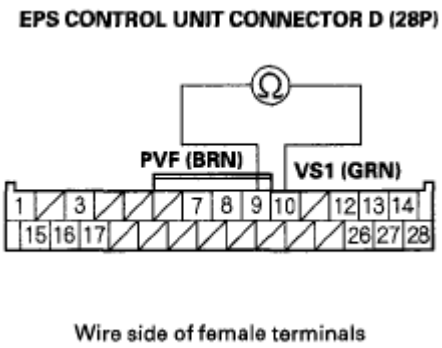


Fig. 32: Measuring Resistance Between EPS Control Unit Connector D (28P) Terminals No. 9 And No. 10

Is the resistance between 12-15 ohms?

YES -Go to step 9.

NO -Go to step 13.

9. Measure resistance between EPS control unit connector D (28P) terminals No. 8 and No. 9.

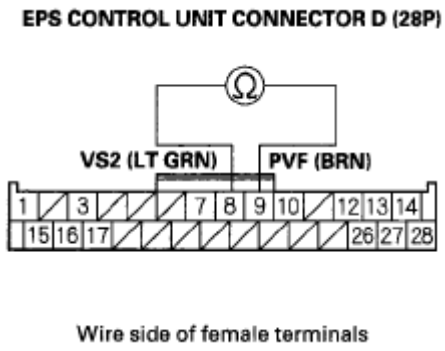


Fig. 33: Measuring Resistance Between EPS Control Unit Connector D (28P) Terminals No. 8 And No. 9

Is the resistance between 12-15 ohms?

YES -Go to step 10.

NO -Go to step 15.

10. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

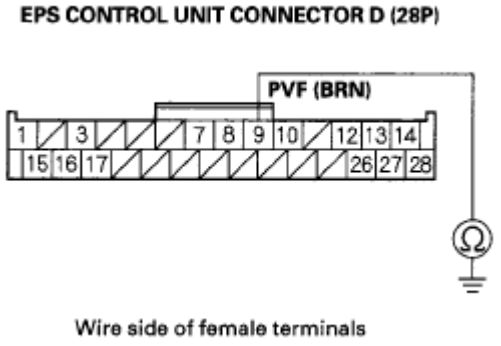


Fig. 34: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 9 And Body Ground

Is there continuity?

YES -Go to step 11.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

11. Disconnect the torque sensor 3P connector from the steering gearbox.
12. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

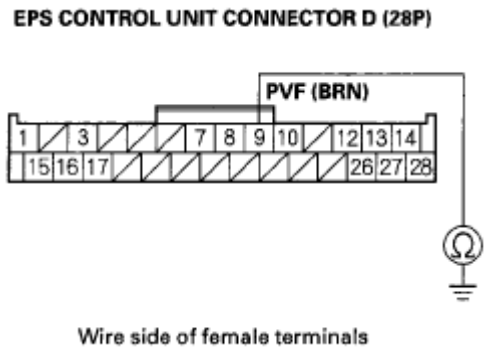


Fig. 35: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 9 And Body Ground

Is there continuity?

YES -Repair short to ground in the wire between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short in the sensor internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

13. Disconnect the torque sensor 3P connector from the steering gearbox.
14. On the sensor side, measure the resistance between torque sensor terminals No. 1 and No. 2.

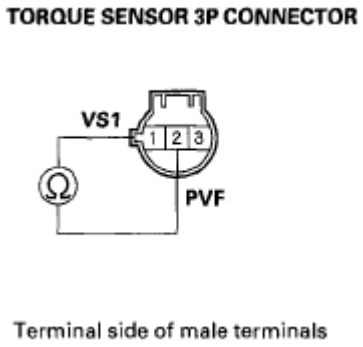


Fig. 36: Measuring Resistance Between Torque Sensor Terminals No. 1 And No. 2

Is the resistance between 12-15 ohms?

YES -Repair open or short between the PNK and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

15. Disconnect the torque sensor 3P connector from the steering gearbox.
16. On the sensor side, measure the resistance between torque sensor terminals No. 2 and No. 3.

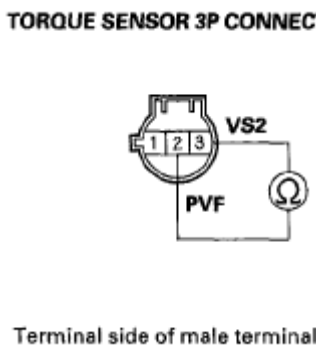


Fig. 37: Measuring Resistance Between Torque Sensor Terminals No. 2 And No. 3

Is the resistance between 12-15 ohms?

YES -Repair open or short between the WHT/GRN and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

DTC 51-02: TORQUE SENSOR (VT3 DIFFERENTIAL-AMPLIFICATION FUNCTION) (REGULAR DIAGNOSIS); DTC 51-03: TORQUE SENSOR (VT1, VT2 RAPID-CHANGE) (REGULAR DIAGNOSIS); DTC 51-06: TORQUE SENSOR (VT1, VT2 AVERAGE) (REGULAR DIAGNOSIS); DTC 51-07: TORQUE SENSOR (VT1, VT2 INITIAL CHECK) (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS
2. Turn the ignition switch to LOCK (0).
3. Start the engine.

   Does the EPS indicator come on?

   YES -Go to step 4.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

4. Check for DTCs with the HDS.

   Is DTC 51-02, 51-03, 51-06 or 51-07 indicated?

   YES -Go to step 5.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control unit connector D (28P).
7. Measure the resistance between EPS control unit connector D (28P) terminals No. 9 and No. 10.

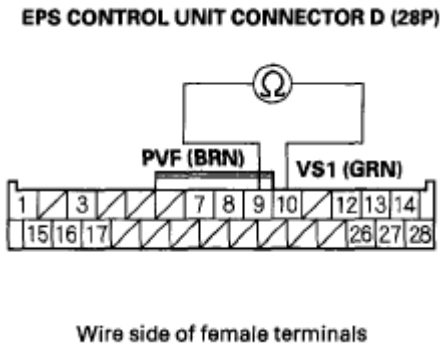


Fig. 38: Measuring Resistance Between EPS Control Unit Connector D (28P) Terminals No. 9 And No. 10

Is the resistance between 12-15 ohms?

YES -Go to step 8.

NO -Go to step 12.

8. Measure resistance between EPS control unit connector D (28P) terminals No. 8 and No. 9.

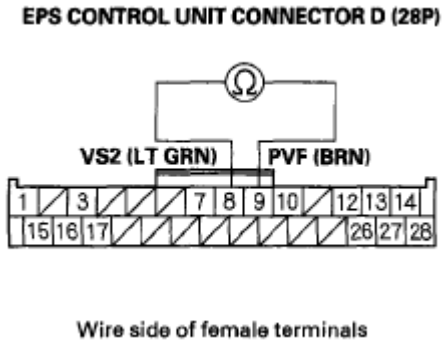


Fig. 39: Measuring Resistance Between EPS Control Unit Connector D (28P) Terminals No. 8 And No. 9

Is the resistance between 12-15 ohms?

YES -Go to step 9.

NO -Go to step 14.

9. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

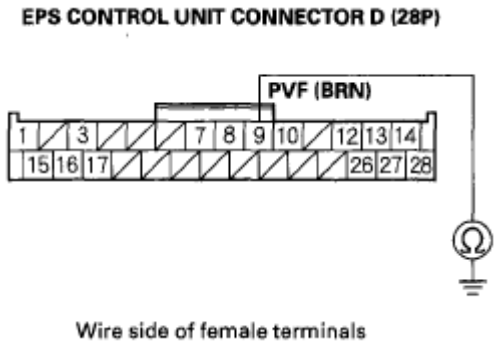


Fig. 40: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 9 And Body Ground

Is there continuity?

YES -Go to step 10.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

10. Disconnect the torque sensor 3P connector from the steering gearbox.
11. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

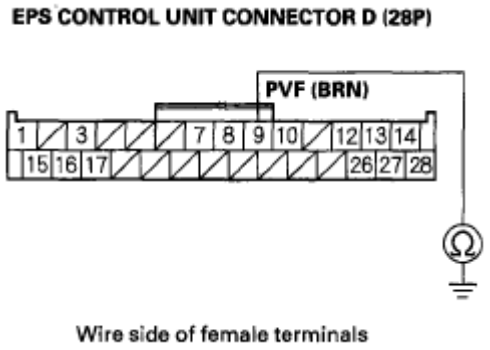


Fig. 41: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 9 And Body Ground

Is there continuity?

YES -Repair short to body ground in the wire between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short in the sensor internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

12. Disconnect the torque sensor 3P connector from the steering gearbox.
13. On the sensor side, measure the resistance between torque sensor terminals No. 1 and No. 2.

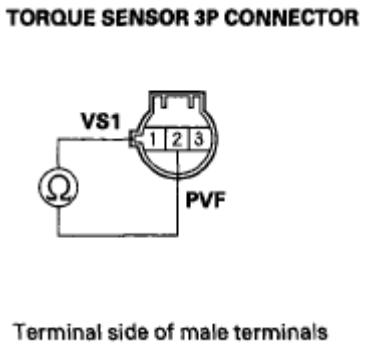


Fig. 42: Measuring Resistance Between Torque Sensor Terminals No. 1 And No. 2

Is the resistance between 12-15 ohms?

YES -Repair open or short between the PNK and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

14. Disconnect the torque sensor 3P connector from the steering gearbox.
15. On the sensor side, measure the resistance between torque sensor terminals No. 2 and No. 3.

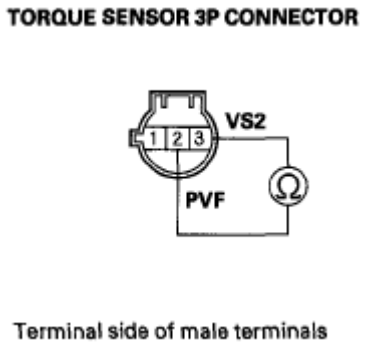


Fig. 43: Measuring Resistance Between Torque Sensor Terminals No. 2 And No. 3

Is the resistance between 12-15 ohms?

YES -Repair open or short between the BLU/RED and WHT/GRN wires in the torque sensor circuit between the torque sensor and the EPS control unit.

NO -Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).

DTC 61-04: OPEN/SHORT IN THE MOTOR HARNESS (STEERING DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Turn the steering wheel to the right or left, and wait 10 seconds or more.

Does the EPS indicator come on?

YES -Go to step 5.

NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

5. Check for DTCs with the HDS.

   Is DTC 61-04 indicated?

   YES -Go to step 6.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector B (2P) and connector C(2P).
8. Check for continuity between the following terminals of the EPS control unit connector B (2P) and connector C(2P).

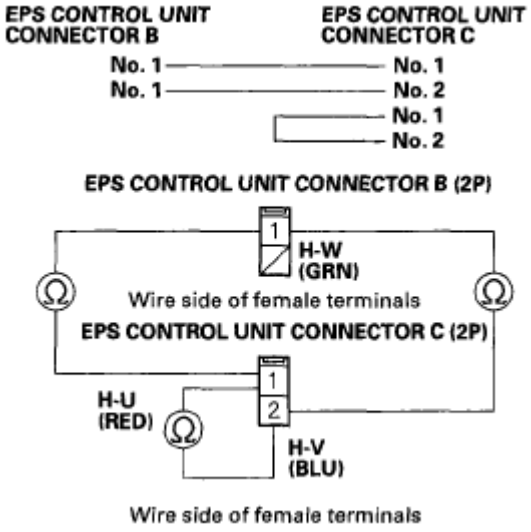


Fig. 44: Checking Continuity Between Following Terminals Of EPS Control Unit Connector B (2P) And Connector C(2P)

Is there continuity?

YES -Go to step 9.

NO -Go to step 12.

9. Check for continuity between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, and connector C (2P) No. 2 terminal individually.

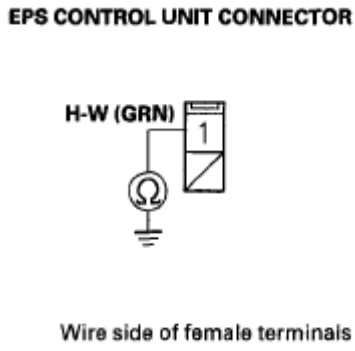


Fig. 45: Checking Continuity Between Body Ground And EPS Control Unit Connector B (2P) No. 1 Terminal

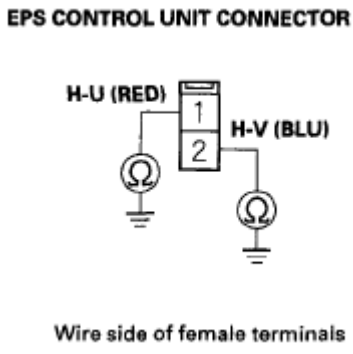


Fig. 46: Checking Continuity Connector C (2P) No. 1 Terminal And Connector C (2P) No. 2 Terminal

Is there continuity?

YES -Go to step 10.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

10. Disconnect the motor 1P connector and the motor 2P connector.
11. Check for continuity between body ground and EPS control unit connector B (2P) No. 1 terminal, connector C (2P) No. 1 terminal, and connector C (2P) No. 2 terminal individually.

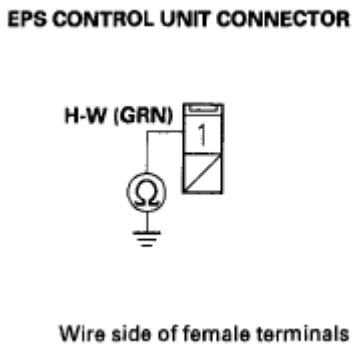


Fig. 47: Checking Continuity Between Body Ground And EPS Control Unit Connector B (2P)

No. 1 Terminal

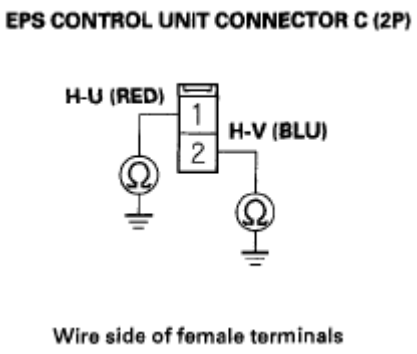


Fig. 48: Checking Continuity Connector C (2P) No. 1 Terminal And Connector C (2P) No. 2 Terminal

Is there continuity?

YES -Repair short to body ground in the wire harness between the EPS control unit and the motor.

NO -Short to the body ground in the motor wire harness, or motor internal circuit, replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

12. Disconnect the motor 1P connector and the motor 2P connector.
13. On the motorside, check for continuity between the following terminals of the motor 1P and the motor 2P connector.

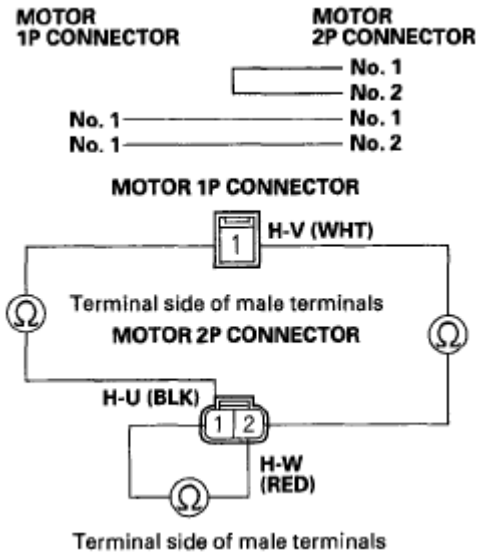


Fig. 49: Checking Continuity Between Terminals Of Motor 1P And Motor 2P Connector

Is there continuity?

YES -Repair open in the wire harness between the EPS control unit and the motor.

NO -Open in the motor wire harness, or motor internal circuit, replace the motor (see **MOTOR**

REMOVAL AND INSTALLATION).

DTC 71-01: MOTOR ANGLE SENSOR (SIN/COS SIGNALS) (STEERING DIAGNOSIS); DTC 71-02: MOTOR ANGLE SENSOR (NEUTRAL POSITION LEARNING OF SIN/COS) (INITIAL DIAGNOSIS); DTC 71-03: MOTOR ANGLE SENSOR (SIN/COS SIGNALS) (STEERING DIAGNOSIS); DTC 71-05: MOTOR ANGLE SENSOR (SIN/COS SIGNALS CHANGING AMOUNT) (STEERING DIAGNOSIS); DTC 71-06: MOTOR ANGLE SENSOR (NEUTRAL POSITION OF SIN/COS) (INITIAL DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES -Go to step 5.

   NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

5. Check for DTCs with the HDS.

   Is DTC 71-01, 71-02, 71-03, 71-05 or 71-06 indicated?

   YES -Go to step 6.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector D (28P).
8. Measure the resistance between the following terminals of EPS control unit connector D (28P).

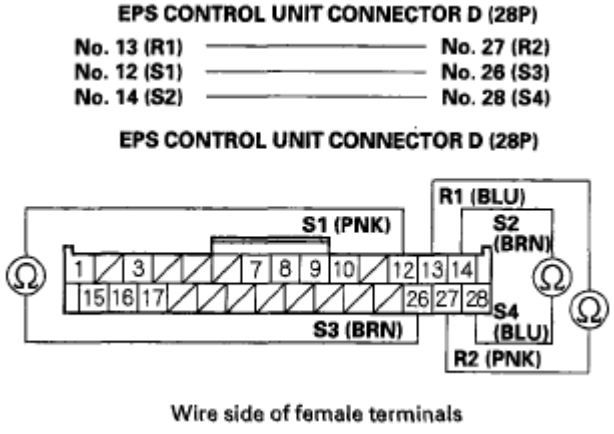


Fig. 50: Measuring Resistance Between Following Terminals Of EPS Control Unit Connector D (28P)

Is the resistance between R1-R2 13-25 ohms, S1-S3 26-49 ohms, and S2-S4 26-49 ohms?

YES -Go to step 9.

NO -Go to step 12.

9. Check for continuity between body ground and EPS control unit connector D (28P) No. 12 terminal, No. 13 terminal, No. 14 terminal, No. 26 terminal, No. 27 terminal, and No. 28 terminal individually.

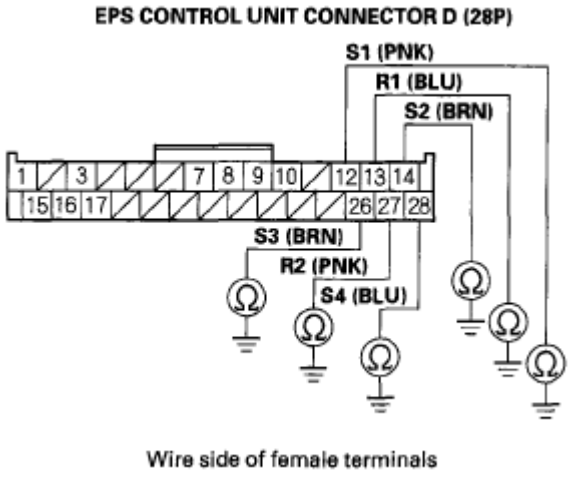


Fig. 51: Checking Continuity Between Body Ground And EPS Control Unit Connector D (28P) No. 12 Terminal, No. 13 Terminal

Is there continuity?

YES -Go to step 10.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

10. Disconnect the motor angle sensor 6P connector.
11. Check for continuity between body ground and motor angle sensor 6P connector No. 1 terminal, No. 2 terminal, No. 3 terminal, No. 4 terminal, No. 5 terminal, and No. 6 terminal individually.

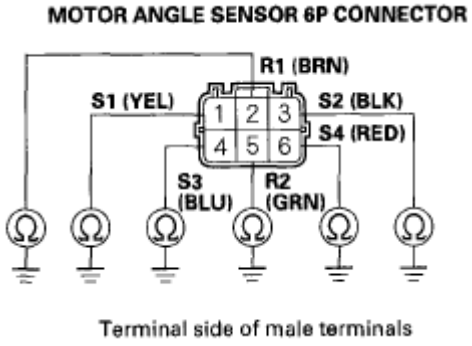


Fig. 52: Checking Continuity Between Body Ground And Motor Angle Sensor 6P Connector No. 1 Terminal, No. 2 Terminal, No. 3 Terminal

Is there continuity?

YES -Faulty motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

NO -Repair short to body ground in the wire between the motor angle sensor 6P connector and the EPS control unit.

12. Disconnect the motor angle sensor 6P connector.
13. Measure resistance between the following terminals of the motor angle sensor 6P connector.

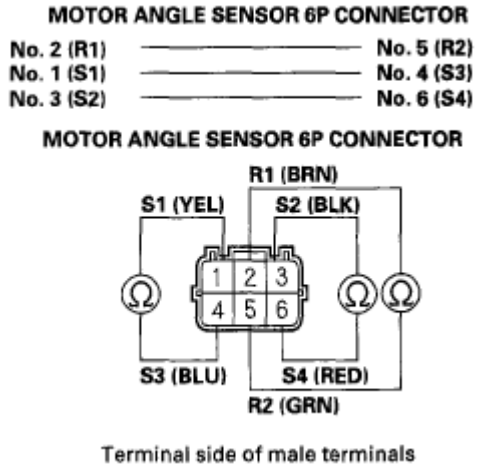


Fig. 53: Measuring Resistance Between Following Terminals Of Motor Angle Sensor 6P Connector

Is the resistance between R1-R2 13-25 ohms, S1-S3 26-49 ohms, and S2-S4 26-49 ohms?

YES -Open, or short to body ground in the wire between the motor angle sensor 6P connector and the EPS control unit.

NO -Faulty motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

DTC 71-04: MOTOR ANGLE SENSOR (CHECK SIGNALS) (REGULAR DIAGNOSIS)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0).
3. Start the engine.
4. Turn the steering wheel to the right or left, and wait 10 seconds or more.

Does the EPS indicator come on?

YES -Go to step 5.

NO -Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.

5. Check for DTCs with the HDS.

   Is DTC 71-04 indicated?

   YES -Go to step 6.

   NO -Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector D (28P).
8. Measure the resistance between the EPS control unit connector D (28P) terminal No. 13 and No. 27.

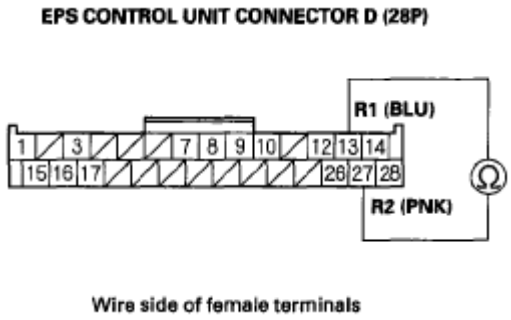


Fig. 54: Measuring Resistance Between EPS Control Unit Connector D (28P) Terminal No. 13 And No. 27

Is the resistance between 13-25 ohms?

YES -Go to step 9.

NO -Go to step 12.

9. Check for continuity between body ground and the EPS control unit connector D (28P) No. 13 terminal and the No. 27 terminal individually.

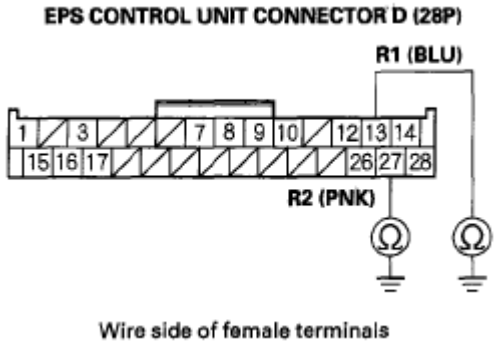


Fig. 55: Checking Continuity Between Body Ground And EPS Control Unit Connector D (28P) No. 13 Terminal And No. 27 Terminal

Is there continuity?

YES -Go to step 10.

NO -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

10. Disconnect the motor angle sensor 6P connector.
11. Check for continuity between body ground and motor angle sensor 6P connector No. 2 terminal and the No. 5 terminal individually.

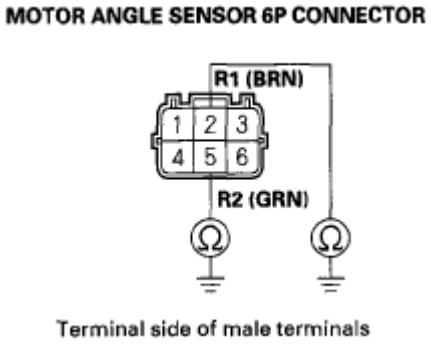


Fig. 56: Checking Continuity Between Body Ground And Motor Angle Sensor 6P Connector No. 2 Terminal

Is there continuity?

YES -Faulty motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

NO -Repair short to body ground in the wire harness between the motor angle sensor 6P connector and the EPS control unit.

12. Disconnect the motor angle sensor 6P connector.
13. Measure the resistance between the motor angle sensor 6P connector terminals No. 2 and No. 5.

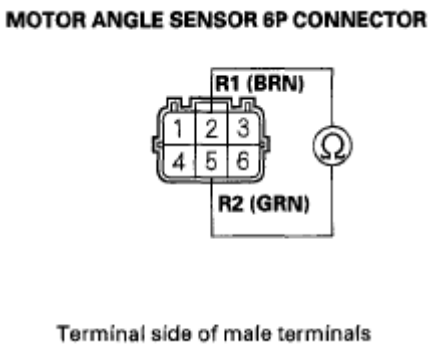


Fig. 57: Measuring Resistance Between Motor Angle Sensor 6P Connector Terminals No. 2 And No. 5

Is the resistance between 13-25 ohms?

YES -Open, or short to body ground in the wire harness between the motor angle sensor 6P connector and EPS control unit.

NO -Faulty motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the motor (see **MOTOR REMOVAL AND INSTALLATION**).

SYMPTOM TROUBLESHOOTING

EPS INDICATOR DOES NOT COME ON

1. Turn the ignition switch ON (II), and watch the EPS indicator.

   Does the EPS indicator come on?

   YES -The system is OK at this time.

   NO -Troubleshoot the gauge control module (tach) (see **SELF-DIAGNOSTIC FUNCTION**).

EPS INDICATOR DOES NOT GO OFF, AND NO DTCS ARE STORED

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch ON (II).
4. Check for DTCs with the HDS.

   Are any DTCs indicated?

   YES -Troubleshooting the indicated DTC.

   NO -Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES -Reinstall the fuse, and go to step 7.

   NO -Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit.

7. Disconnect EPS control unit connector D (28P).
8. Turn the ignition switch ON (II).
9. Measure voltage between EPS control unit connector D (28P) terminal No. 16 and body ground.

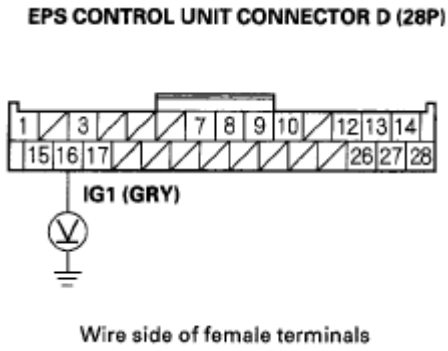


Fig. 58: Measuring Voltage Between EPS Control Unit Connector D (28P) Terminal No. 16 And Body Ground

Is the voltage between 9.20-17.4 V?

YES -Go to step 10.

NO -Repair open in the wire between the EPS control unit and under-dash fuse/relay box.

10. Turn the ignition switch to LOCK (0).
11. Disconnect EPS control unit connector A (2P).
12. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and body ground.

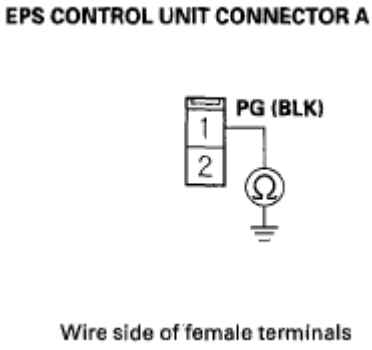


Fig. 59: Checking Continuity Between EPS Control Unit Connector A (2P) Terminal No. 1 And Body Ground

Is there continuity?

YES -Go to step 13.

NO -Repair open in the wire between the EPS control unit and body ground (G402).

13. Disconnect the gauge control module (tach) 36P connector and EPS control unit connector D (28P).
14. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 1.

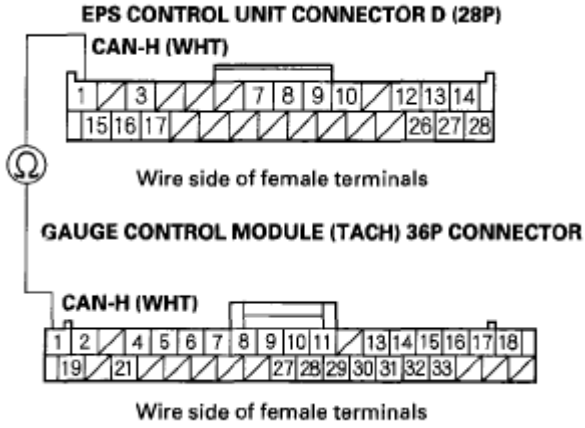


Fig. 60: Checking Continuity Between EPS Control Unit Connector D (28P) Terminal No. 1 And Gauge Control Module

Is there continuity?

YES -Go to step 15.

NO -Repair open in the wire between the EPS control unit and the gauge control module (tach).

15. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and gauge control module (tach) 36P connector terminal No. 19.

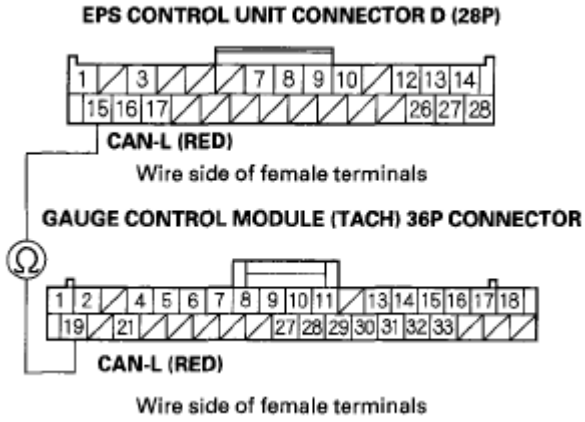


Fig. 61: Check For Continuity Between EPS Control Unit Connector D (28P) Terminal No. 15

Is there continuity?

YES -Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see **EPS CONTROL UNIT REMOVAL/INSTALLATION**).

NO -Repair open in the wire between the EPS control unit and the gauge control module (tach).

MOTOR REMOVAL AND INSTALLATION

REMOVAL

NOTE: Do not allow dust, dirt, or other foreign materials to enter the steering gearbox.

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).
2. Disconnect the torque sensor 3P connector (A) from the steering gearbox, then remove the harness clamp bolts and the ground terminal (B).

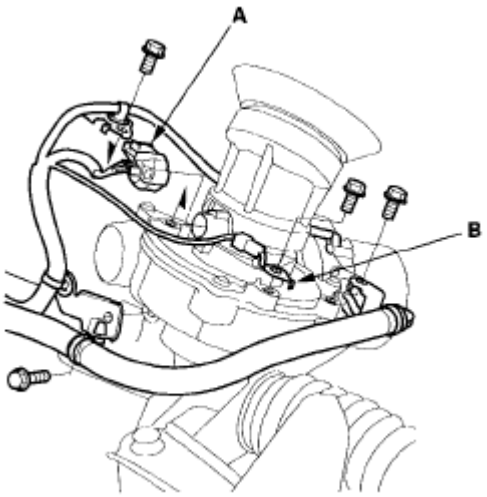


Fig. 62: Identifying Steering Gearbox And Harness Clamp Bolts

3. Remove the motor (A) from the steering gearbox, then remove the O-ring (B) and discard it.

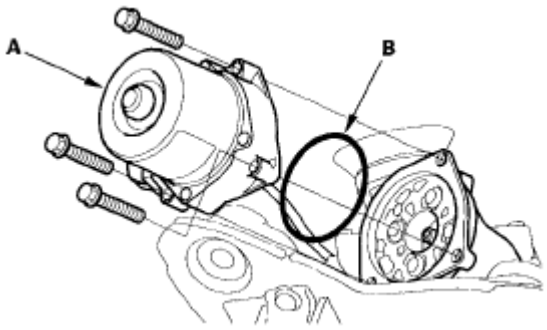


Fig. 63: Identifying Motor (A) From Steering Gearbox And O-Ring

INSTALLATION

1. Clean the mating surface of the motor (A) and the steering gearbox.

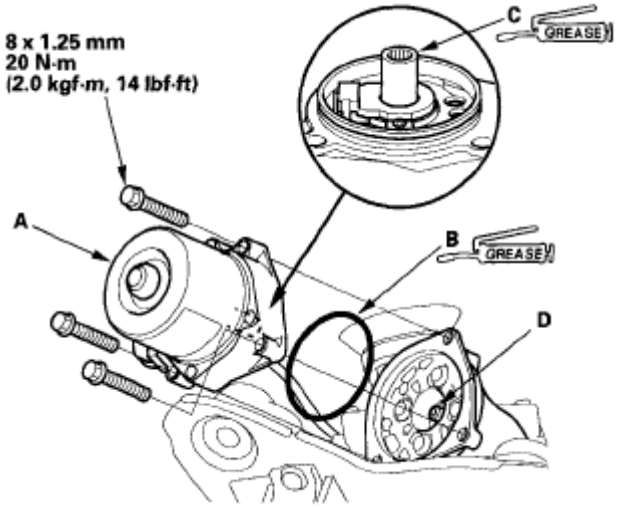


Fig. 64: Identifying Mating Surface Of Motor (A) And Steering Gearbox

2. Apply a thin coat of silicone grease to the new O-ring (B), and carefully fit it on the motor.
3. Apply grease (Shell steering gear grease or Honda's equivalent steering gear grease) into the motor shaft (C).
4. Install the motor on the steering gearbox by engaging the motor shaft and the worm shaft (D).
5. Before tightening the bolts, turn the motor two or three times to the right and left about 45 degrees. Make sure the motor is evenly seated on the steering gearbox, and that the O-ring is not pinched between the mating surfaces.
6. Connect the torque sensor 3P connector (A) to the steering gearbox, then install the harness clamp bolts and the ground terminal (B).

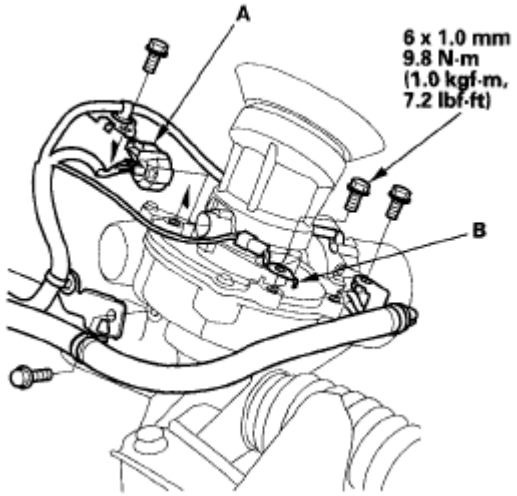


Fig. 65: Identifying Steering Gearbox Harness Clamp Bolts (With Torque Specifications)

7. Finish the installation, and note these items:
   - Make sure the torque sensor 3P connector is properly connected.
   - Make sure the motor and the EPS wires are not caught or pinched by any parts.
8. Install the steering gearbox (see **INSTALLATION**).

STEERING GEARBOX REMOVAL AND INSTALLATION

Special Tools Required

- Ball joint remover, 28 mm 07MAC-SL0A202
- Engine hanger/adaptor VSB02C000015 *
- Front subframe adaptor VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

* Available through the American Honda Tool and Equipment program, 1-888-424-6857.

REMOVAL

Note these items during removal:

- Use solvent and a brush to wash any oil and dirt off the end of the steering gearbox. Avoid any electrical parts. Blow dry with compressed air.
- Make sure to remove the steering wheel before disconnecting the steering joint to avoid damaging the cable reel.

1. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
4. Remove the front wheels.
5. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
6. Remove the driver's dashboard under cover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
7. Remove the steering joint cover (A).

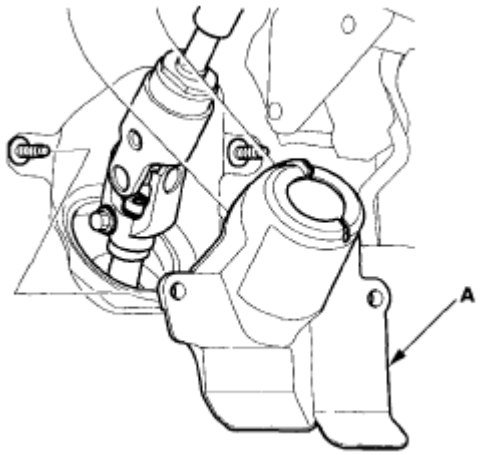


Fig. 66: Identifying Steering Joint Cover (A)

8. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

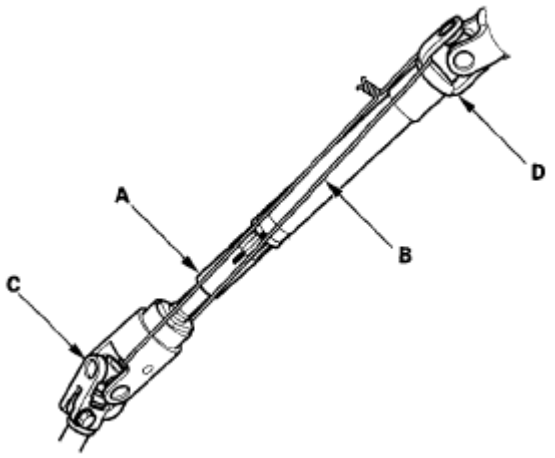


Fig. 67: Identifying Lower Slide Shaft With Wire Between Joint Yokes

9. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.
10. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B) toward the column..

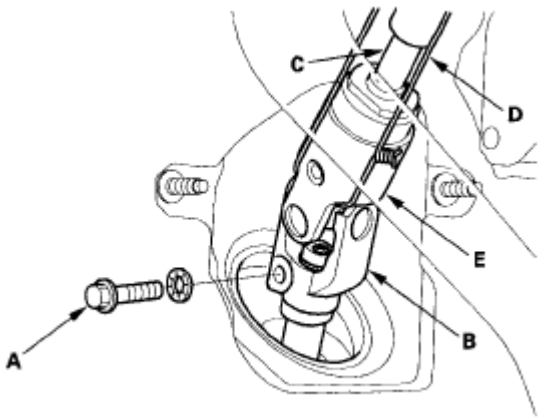


Fig. 68: Identifying Steering Joint Moving Steering Joint Toward Column

11. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly only.

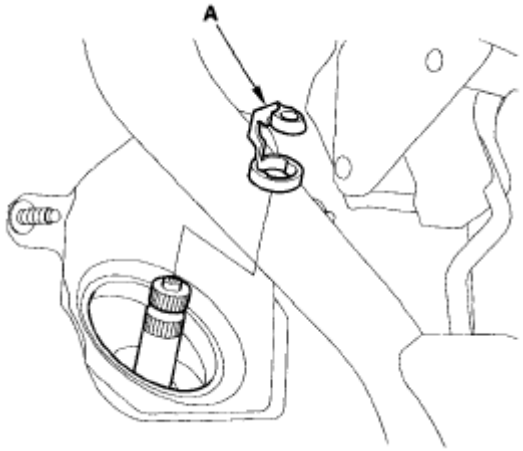


Fig. 69: Identifying Center Guide

12. Remove the under cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
13. Remove the air cleaner housing.
    - For R18A1 engine (see **THROTTLE BODY CLEANING**)
    - For K20Z3 engine (see **AIR CLEANER REMOVAL/INSTALLATION**)
14. Attach the engine hanger adapter to the threaded hole in the cylinder head.

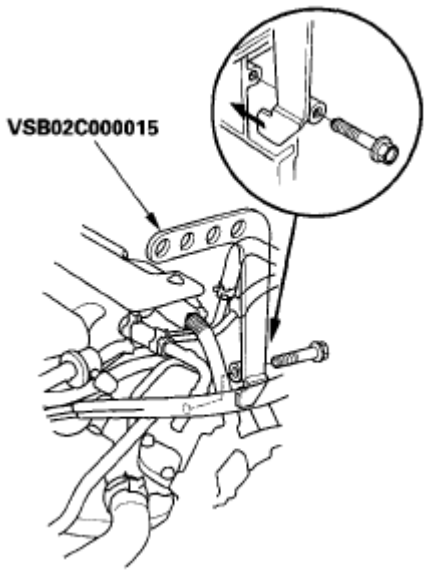


Fig. 70: Identifying Cylinder Head

15. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger/adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission assembly.

NOTE: Be careful when working around the windshield.

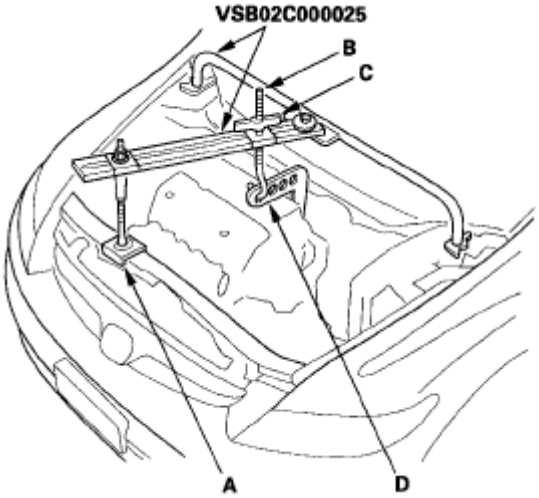


Fig. 71: Identifying Front Leg Assembly (A)

16. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.

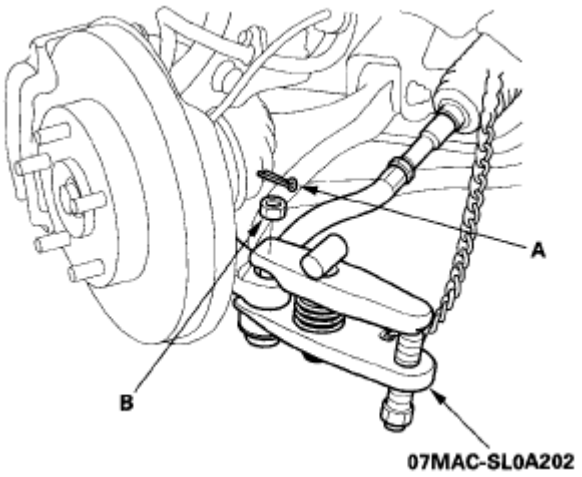


Fig. 72: Identifying Cotter Pin (A)

17. Separate the tie-rod ball joint and the knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
18. Remove the front splash shield (see **FRONT SPLASH SHIELD REPLACEMENT**).
19. Disconnect the torque sensor 4P connector (A), motor angle sensor 6P connector (B), motor IP connector (C), and motor 2P connector (D) from the right side of the steering gearbox. Wrap the connectors with vinyl tape to avoid contamination from grease or water.

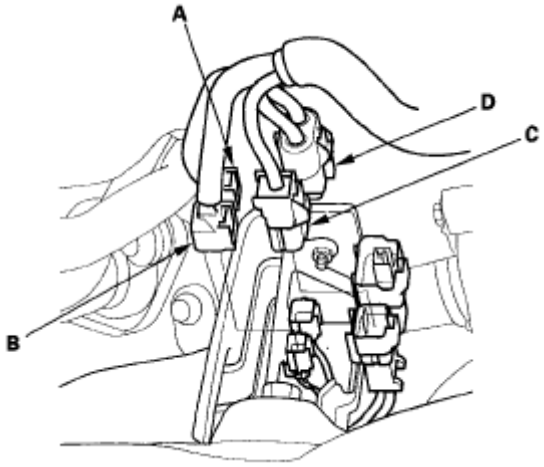


Fig. 73: Identifying Motor Angle Sensor 6P Connector (B)

20. Remove the lower ball joint mounting bolt (A) and the flange nuts (B) from the lower arm.

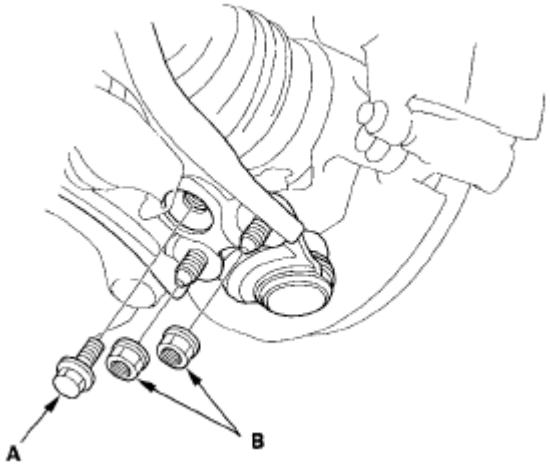


Fig. 74: Identifying Lower Ball Joint Mounting Bolt

21. Disconnect the lower arm from the lower ball housing.
22. Remove the exhaust hanger (A) from the three way catalytic converter (TWC) (B).

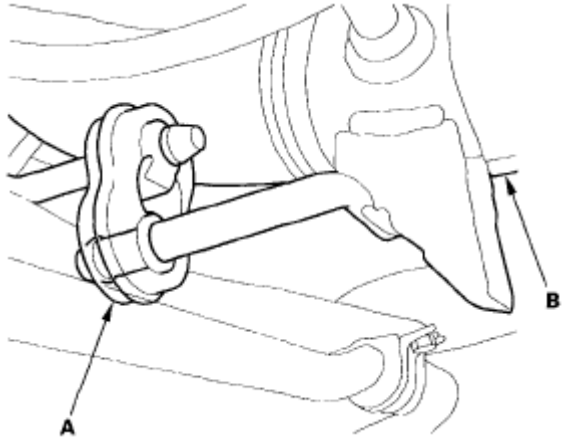


Fig. 75: Identifying Exhaust Hanger (A) From Three Way Catalytic Converter (TWC)

23. Note the reference marks (A) on both sides of the subframe that line up with the body (B).

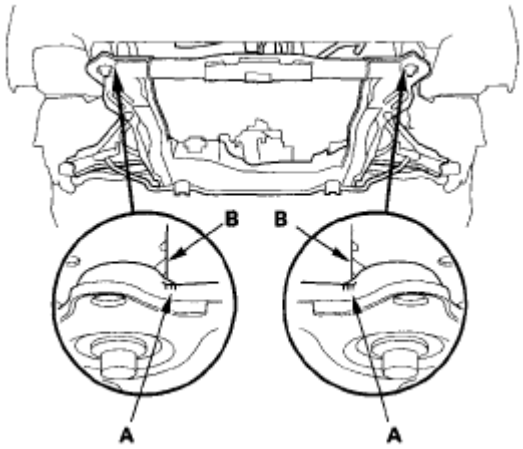


Fig. 76: Identifying Subframe Line Up With Body (B)

24. Attach the front subframe adaptor (A) to the front subframe (B) and the transmission jack (model number LSL-W9371) or the powertrain lift (model number OTC-1585), then tighten the front subframe adaptor screw.

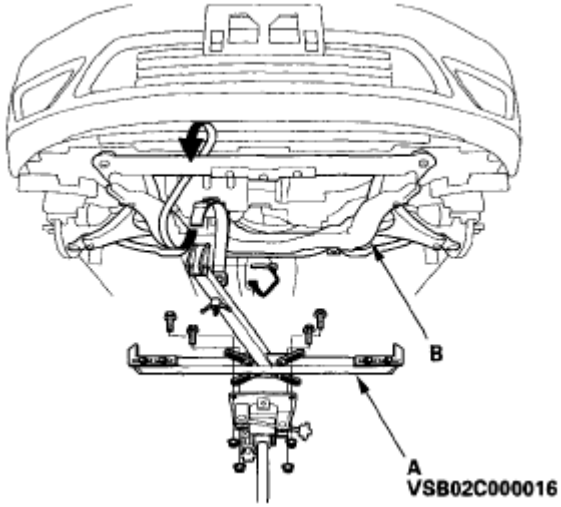


Fig. 77: Identifying Front Subframe Adaptor To Front Subframe

25. Make sure the front subframe is securely supported by the jack with the front subframe adaptor.
26. Remove the front subframe middle mount bolt (A) from the left side.

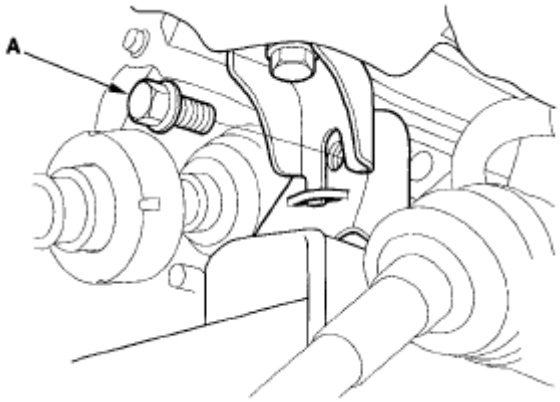


Fig. 78: Identifying Front Subframe Middle Mount Bolt (A) From Left Side

27. Remove the front subframe middle mount bolt (A) from the right side.

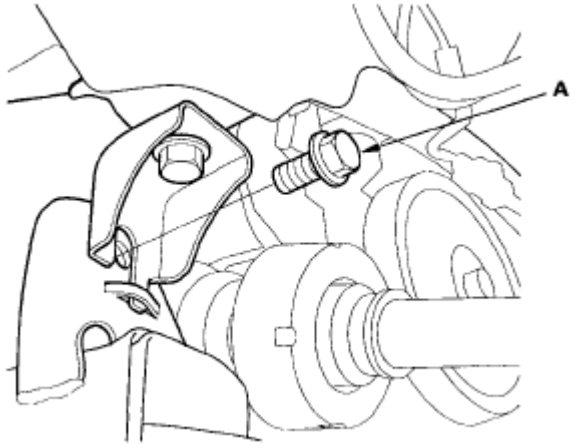


Fig. 79: Identifying Front Subframe Middle Mount Bolt (A) From Right Side

28. Remove the lower torque rod mounting bolt (A) and discard it.

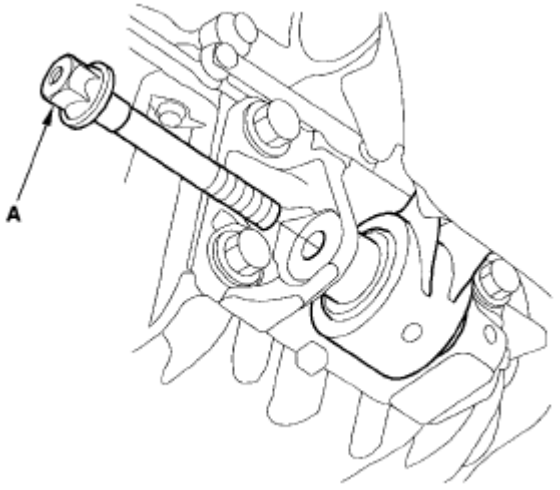


Fig. 80: Identifying Lower Torque Rod Mounting Bolt

29. Remove the lower radiator hose (A) from the radiator hose stay (B).

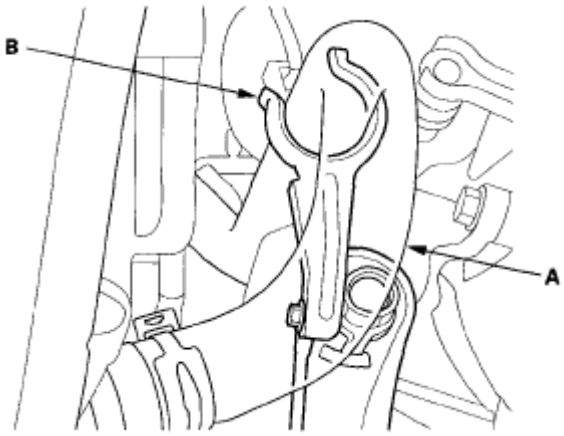


Fig. 81: Identifying Lower Radiator Hose From Radiator Hose Stay

30. Remove the lower engine mounting bolt (A) while holding the nut (B) with a wrench and discard it.

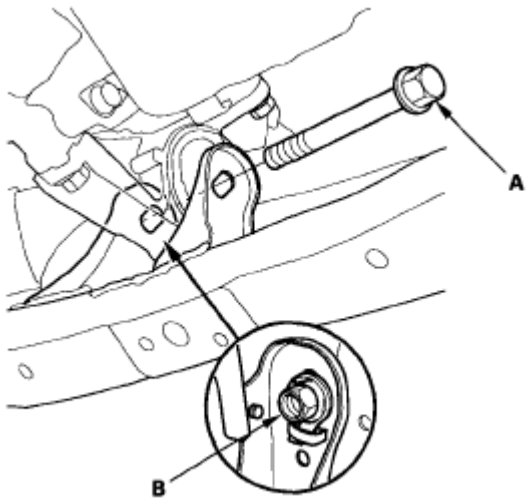


Fig. 82: Identifying Lower Engine Mounting Bolt

31. Remove the front subframe front mounting bolts (A) from the right and left sides of the vehicle, and discard them.

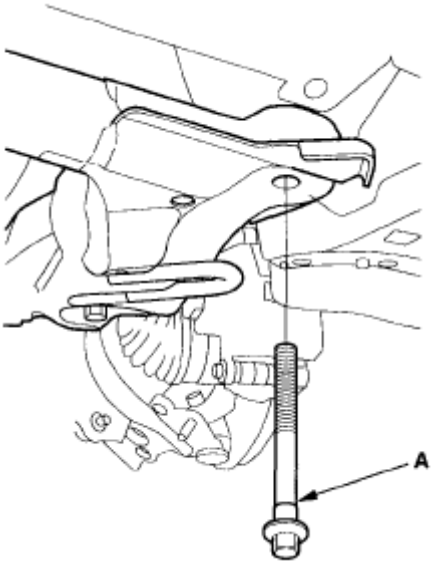


Fig. 83: Identifying Front Subframe Front Mounting Bolts

32. Remove the front subframe rear mounting bolts (A) from the right and left sides of the vehicle, and discard them.

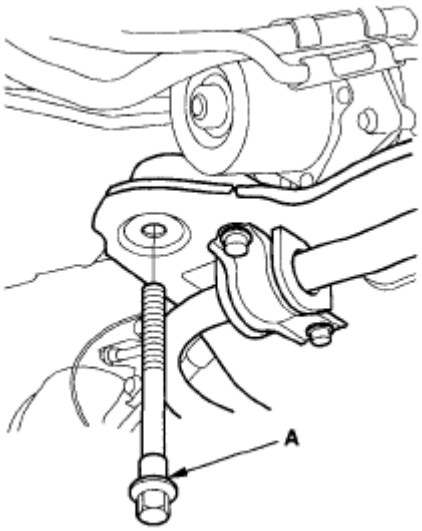


Fig. 84: Identifying Front Subframe Rear Mounting Bolts From Right And Left Sides Of Vehicle

33. Lower the front subframe and steering gearbox as an assembly by lowering the jack slowly.
34. Remove the harness clamp bracket (A) from the front subframe, then remove the harness clips (B).

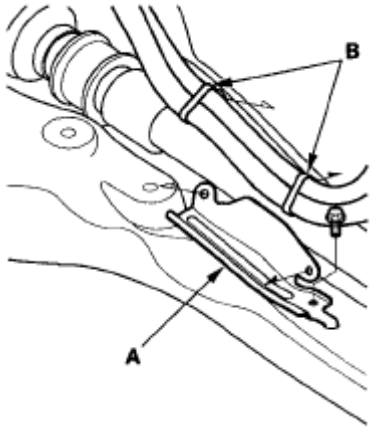


Fig. 85: Identifying Harness Clamp Bracket From Front Subframe

35. Remove the torque sensor 4P connector (A), motor angle sensor 6P connector (B), motor 1P connector (C) and motor 2P connector (D) from the right side of the gearbox mounting bracket (E).

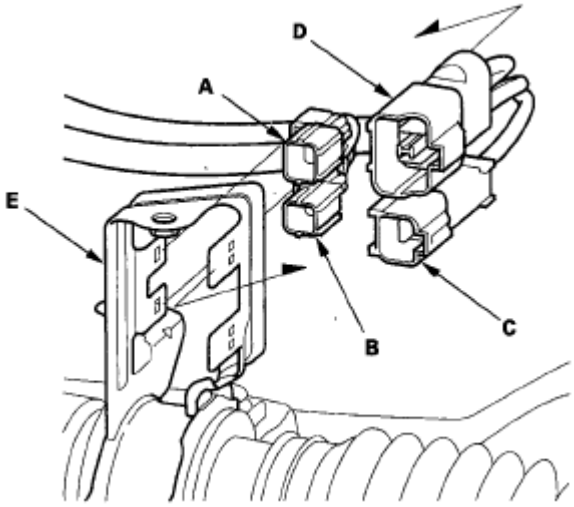


Fig. 86: Identifying Torque Sensor 4P Connector Motor Angle Sensor 6P Connector

36. Remove the pinion shaft grommet (A) from the top of the torque sensor.

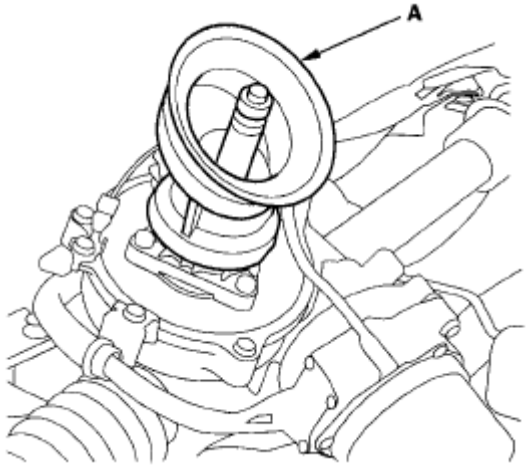


Fig. 87: Identifying Pinion Shaft Grommet (A) From Top Of Torque Sensor

37. Remove the two 10 mm bolts from the right side of the steering gearbox, then remove the gearbox mounting bracket (A) and the mounting cushion (B).

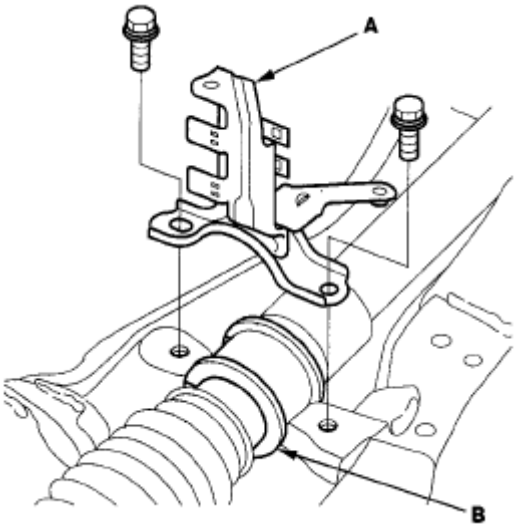


Fig. 88: Identifying Steering Gearbox

38. Remove the four 10 mm flange bolts from the left side of the steering gearbox, then remove the stiffener plates (A).

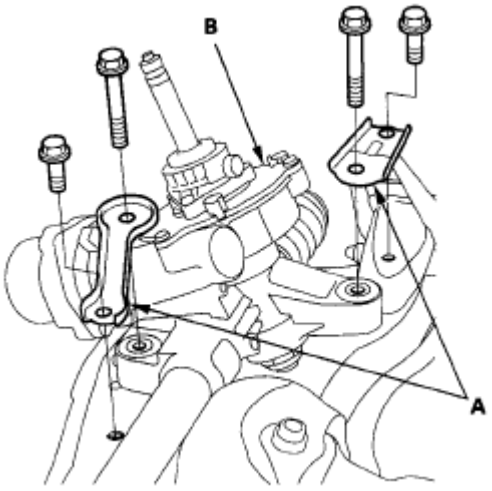


Fig. 89: Identifying Steering Gearbox

39. Remove the steering gearbox (B) from the front subframe.

Installation

1. Place the steering gearbox in position on the front subframe.
2. Loosely install the stiffener plates (A) and the gearbox mounting bolts on the left side of the steering gearbox.

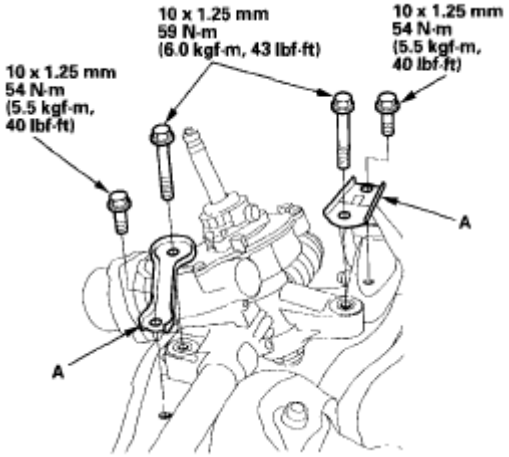


Fig. 90: Identifying Stiffener Plates (A) And Gearbox Mounting Bolts (With Torque Specifications)

3. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the right side of the steering gearbox securely.

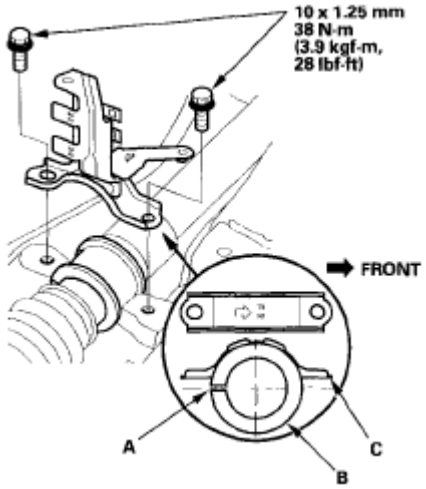


Fig. 91: Identifying Cutout (A) On Mounting Cushion (With Torque Specifications)

4. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two 10 mm bolts.
5. Tighten the 10 mm bolts on both sides of the steering gearbox to the specified torque alternately in two or more steps.
6. Install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the torque sensor. The grommet must not have a gap at the mating surface of the grommet and the torque sensor.

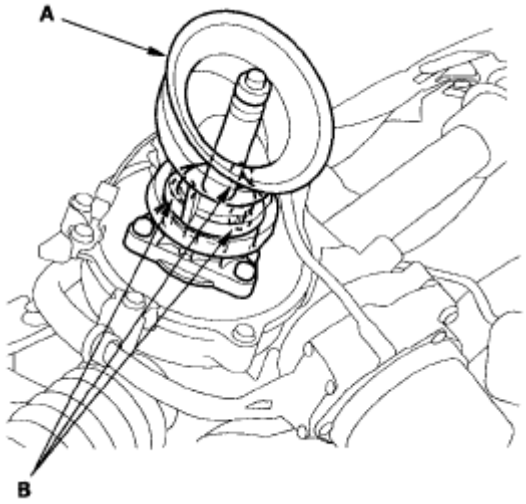


Fig. 92: Identifying Pinion Shaft Grommet (A)

7. Install the torque sensor 4P connector (A), motor angle sensor 6P connector (B), motor 1P connector (C), and motor 2P connector (D) on the right side of the gearbox mounting bracket (E).

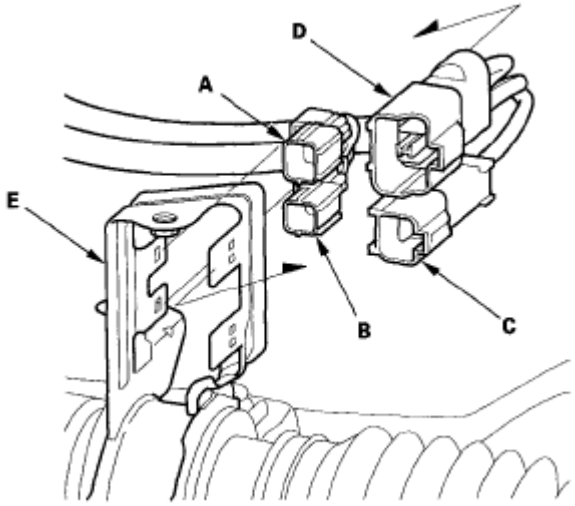


Fig. 93: Identifying Gearbox Mounting Bracket

8. Install the harness clips (A) to the harness clamp bracket (B), then install the harness clamp bracket to the front subframe.

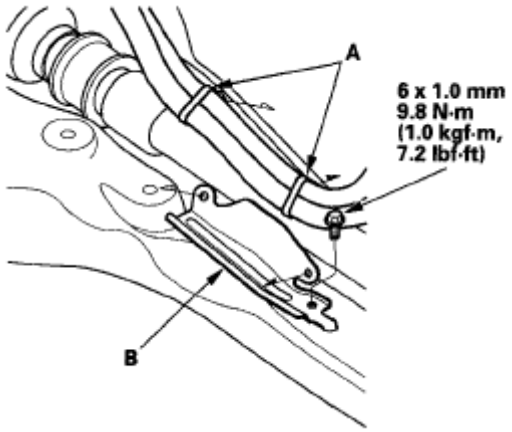


Fig. 94: Identifying Harness Clamp Bracket (With Torque Specifications)

9. Carefully raise the front subframe with the front subframe adapter and the transmission jack or the powertrain lift until the subframe is in position, then loosely install new subframe mounting bolts.

NOTE: Be sure that the pinion shaft grommet is in place securely. Check whether the pinion shaft grommet is not turning up. Incorrect installation can cause leakage of water, mud, and noise.

10. Align the front subframe reference marks (A) to the body (B), as noted during removal.

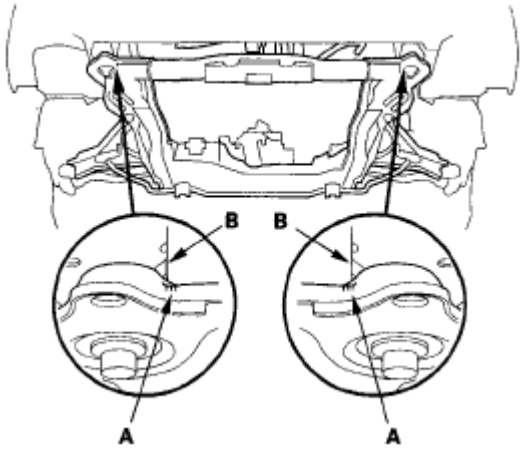


Fig. 95: Identifying Front Subframe Reference Marks To Body

11. Tighten the new front subframe rear mounting bolts (A) to the specified torque.

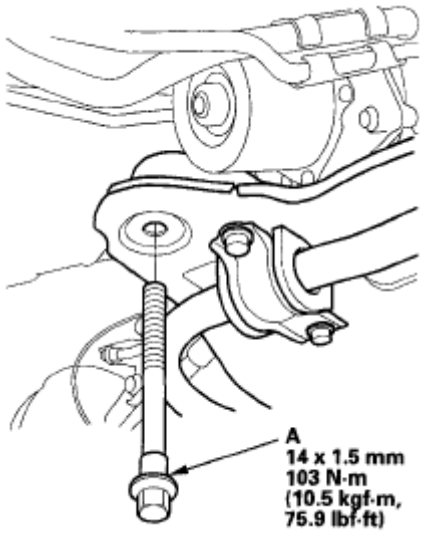


Fig. 96: Identifying Front Subframe Rear Mounting Bolts (With Torque Specifications)

12. Tighten the new front subframe front mounting bolts (A) to the specified torque.

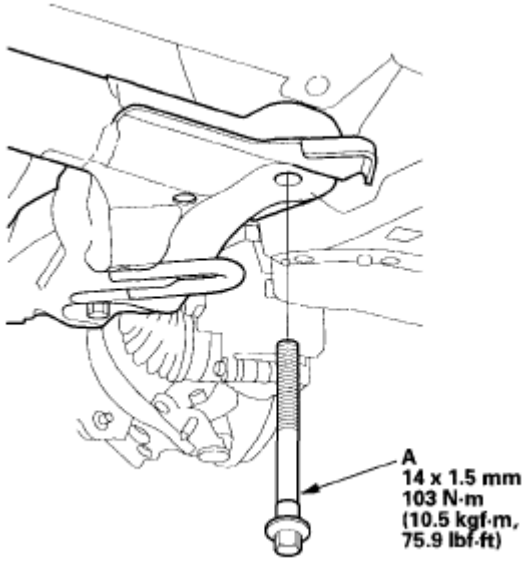


Fig. 97: Identifying Front Subframe Front Mounting Bolts (With Torque Specifications)

13. Install the new lower engine mounting bolt (A) while holding the nut (B) with a wrench.

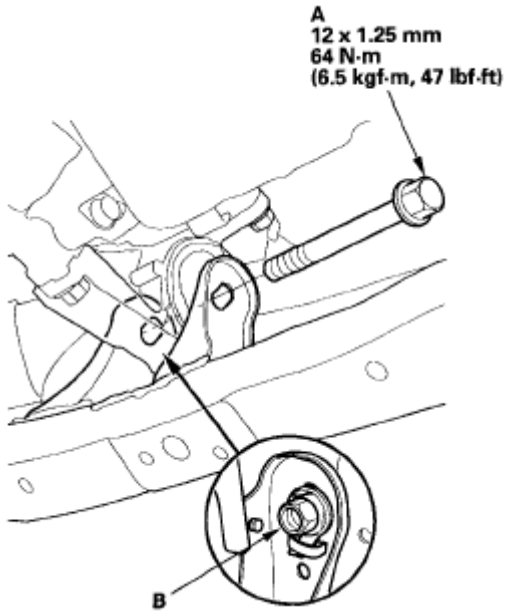


Fig. 98: Identifying Lower Engine Mounting Bolt (With Torque Specifications)

14. Install the lower radiator hose (A) to the radiator hose stay (B).

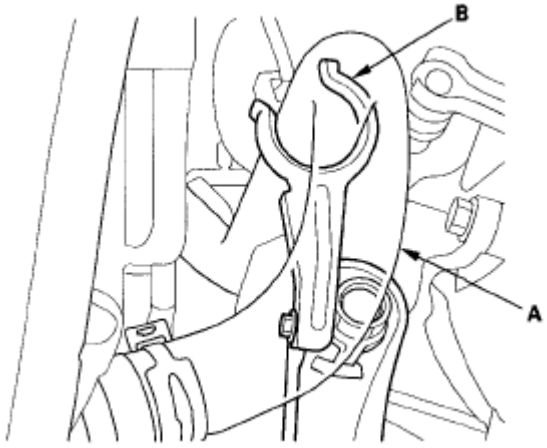


Fig. 99: Identifying Lower Radiator Hose (A) To Radiator Hose Stay

15. Install the new lower torque rod bracket bolt (A) and tighten it to the specified torque.

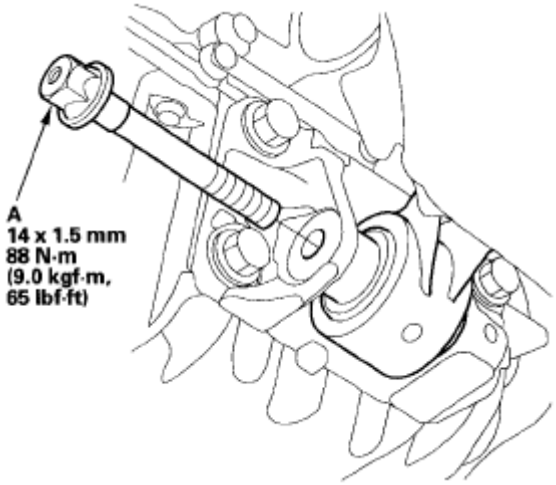


Fig. 100: Identifying Lower Torque Rod Bracket Bolt (With Torque Specifications)

16. Install the new front subframe middle mount bolt (A) on the left side, and tighten it to the specified torque.

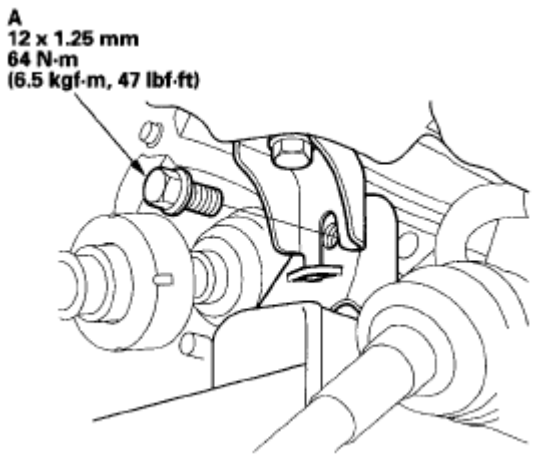


Fig. 101: Identifying Front Subframe Middle Mount Bolt (A) On Left Side (With Torque Specifications)

17. Install the new front subframe middle mount bolt (A) on the right side, and tighten it to the specified torque.

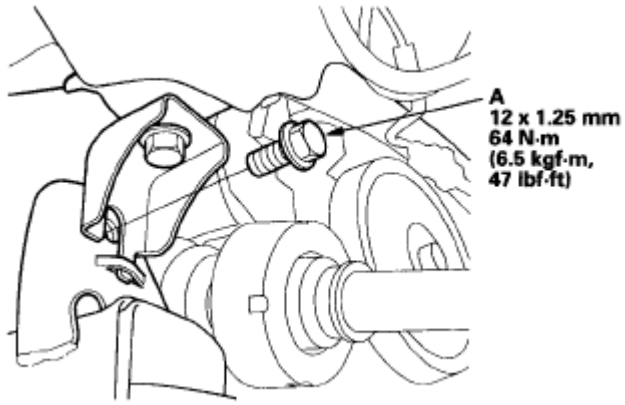


Fig. 102: Identifying Front Subframe Middle Mount Bolt (With Torque Specifications)

18. Install the exhaust hanger (A) to the three way catalytic converter (TWO (B).

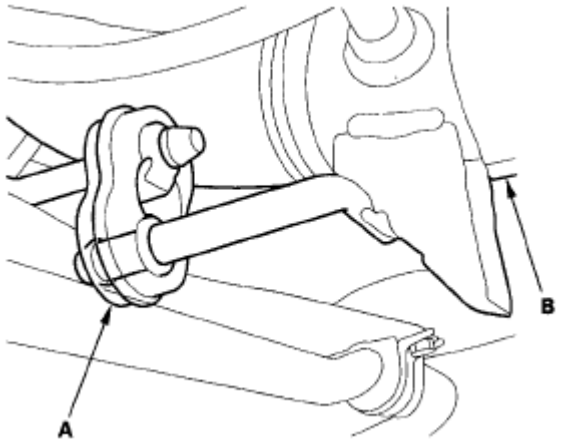


Fig. 103: Identifying Exhaust Hanger (A) To Three Way Catalytic Converter

19. Connect the lower arm (A) to the lower ball joint (B).

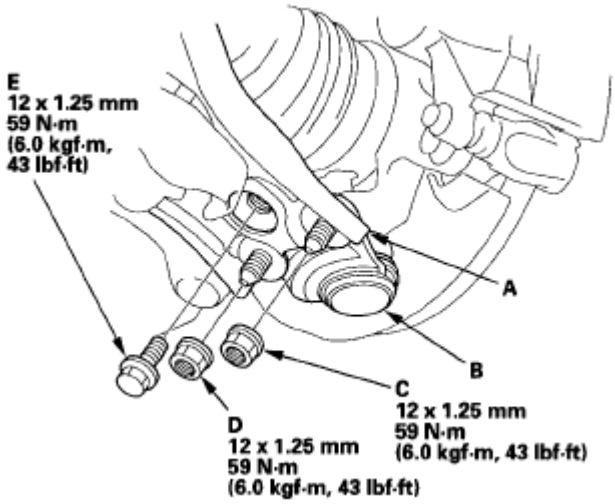


Fig. 104: Identifying Lower Arm (A) To Lower Ball (With Torque Specifications)

20. Install a new flange bolt and the new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the flange nut on the front (C), the flange nut on the rear (D), then the flange bolt (E).
21. Remove the vinyl tape, then connect the torque sensor 4P connector (A), motor angle sensor 6P connector (B), motor 1P connector (C), and motor 2P connector (D) to the steering gearbox. Make sure to push these connectors until you hear a click so that the connectors are secured.

Fig. 105: Connecting Torque Sensor 4P Connector

22. Install the front splash shield (see **FRONT SPLASH SHIELD REPLACEMENT**).
23. Wipe off any grease contamination from the ball joint tapered section and the threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B), and tighten it.

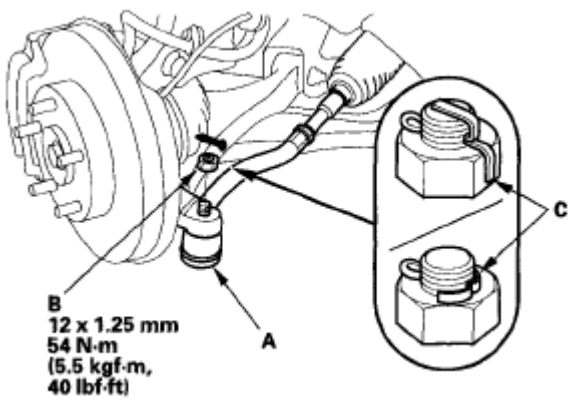


Fig. 106: Identifying Front Splash Shield

24. Install the new cotter pin (C), and bend it as shown.
25. Center the steering rack within its stroke in the steering joint connection.
26. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B) in the range shown.

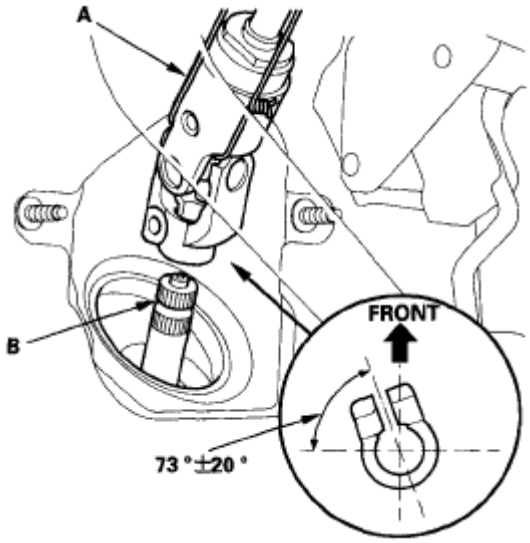


Fig. 107: Identifying Center Steering Rack

27. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.

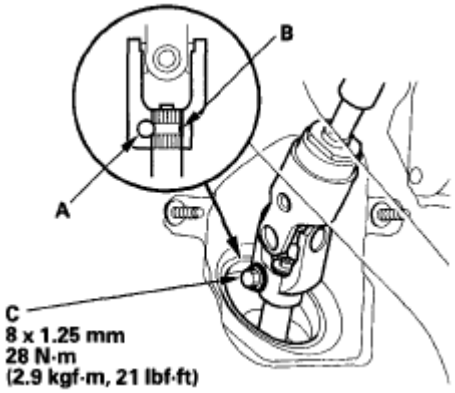


Fig. 108: Identifying Steering Joint With Groove (B) Around Pinion Shaft (With Torque Specifications)

28. Install the steering joint cover (A).

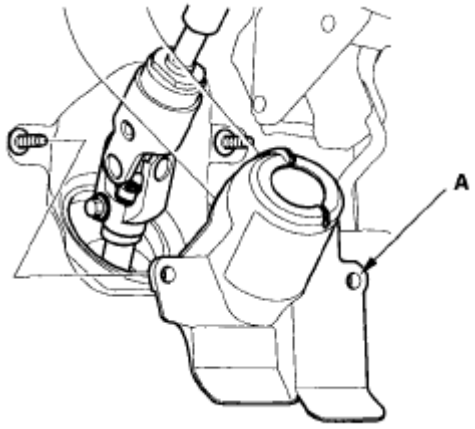


Fig. 109: Identifying Steering Joint Cover (A)

29. Install the driver's dashboard under cover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
30. Install the front wheel, then set the wheels in the straight ahead position.
31. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
32. Holding the tires raised off the ground (lifted up), check for the following symptoms by turning the steering wheel fully to the right and left several times.

SYMPTOM PROBABLE CAUSE REFERENCE

Symptom	Probable cause
Rubbing sound coming from the lower steering column area.	Steering column joint is contacting the cover.
Grating sound from the lower steering column area, or a rough feeling during steering.	Poor engagement of the pinion shaft serrations.
Noise from around the steering wheel during steering.	Poor engagement of the SRS cable reel with the steering wheel, or a damaged cable reel.

33. Install the air cleaner housing (see **AIR CLEANER REMOVAL/INSTALLATION**).
34. Install the under cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
35. Reconnect the negative cable to the battery and do these items:
    - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
    - Set the clock.
    - Make sure the horn and turn signal switch work properly.
    - Make sure the steering wheel switches work properly.
    - Make sure the steering wheel is centered.
    - Do the memorizing the torque sensor neutral position (see **MEMORIZING THE TORQUE SENSOR NEUTRAL POSITION**).
36. After installation, do the following checks:
    - Start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

- Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.
- Check the front toe inspection (see **FRONT TOE INSPECTION/ADJUSTMENT**).

RACK END REMOVAL AND INSTALLATION

EXPLODED VIEW

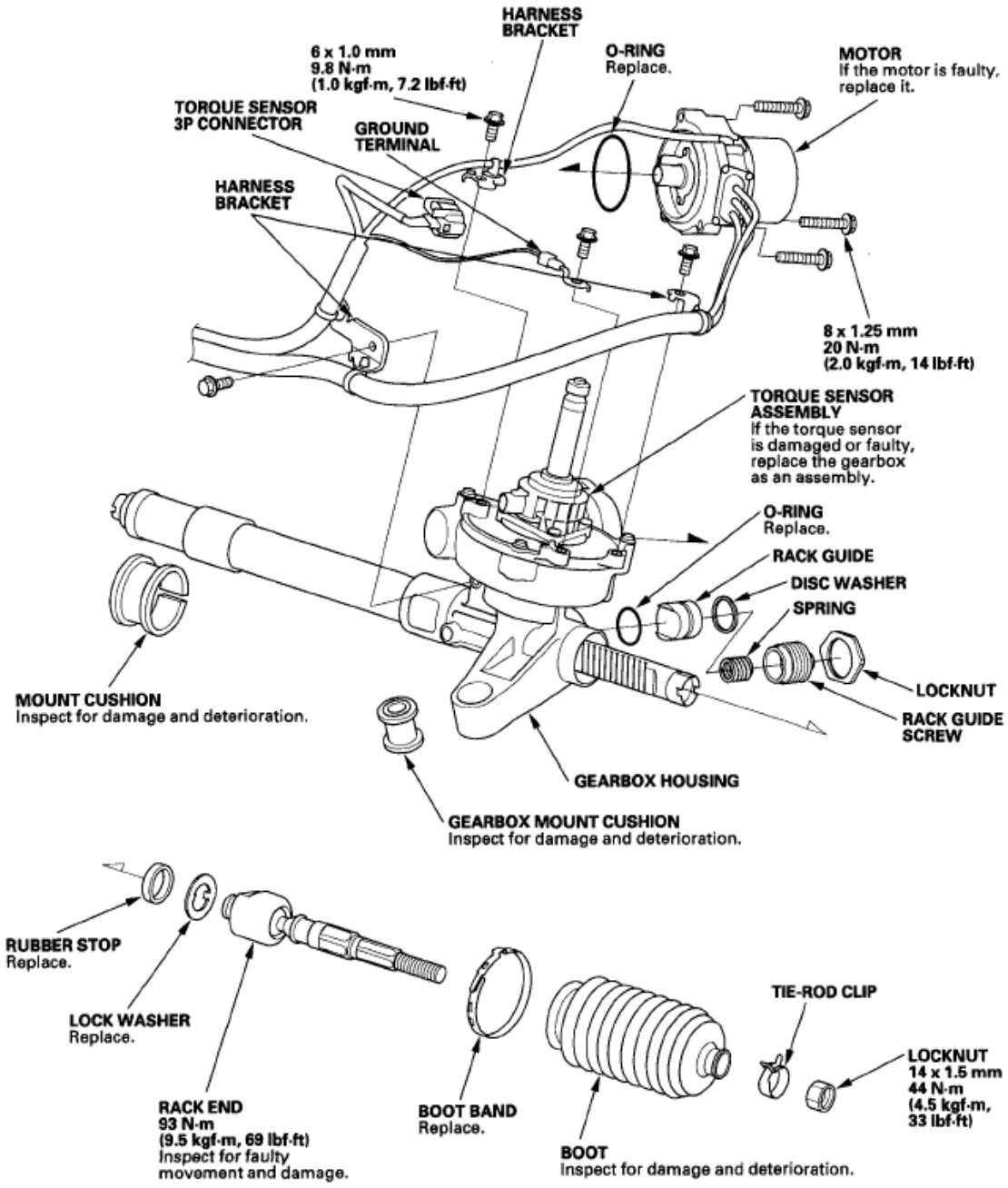


Fig. 110: Exploded View Of Rack End Components (With Torque Specifications)

Removal

NOTE: Do not allow dust, dirt, or other foreign materials to enter the steering gearbox.

1. Remove the boot bands (A) and discard them. Remove the tie-rod clips (B), and pull the boots away from the ends of the steering gearbox.

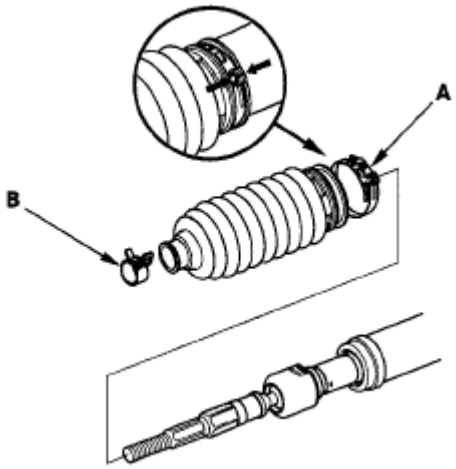


Fig. 111: Identifying Boot Bands

2. Unbend the lock washer (A).

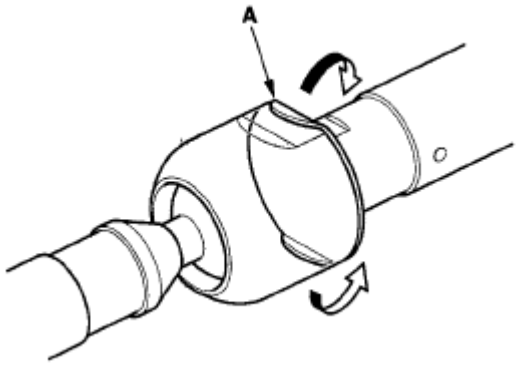


Fig. 112: Identifying Unbend Lock Washer (A)

3. Unscrew both rack ends (A) with a wrench. Be careful not to damage the rack shaft surface with the wrench. Remove the lock washer (B) and rubber stop (C) and discard them.

NOTE: Hold the flat surfaces of the rack shaft on the pinion shaft side with another wrench.

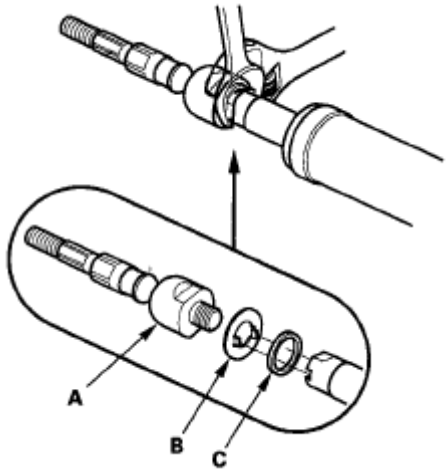


Fig. 113: Identifying Rack Shaft On Pinion Shaft

Installation

1. Install the new rubber stop (A) and lock washer (B) on the rack shaft. Align the lock washer tabs (C) with the slots (D) in the rack shaft. Install the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack shaft.

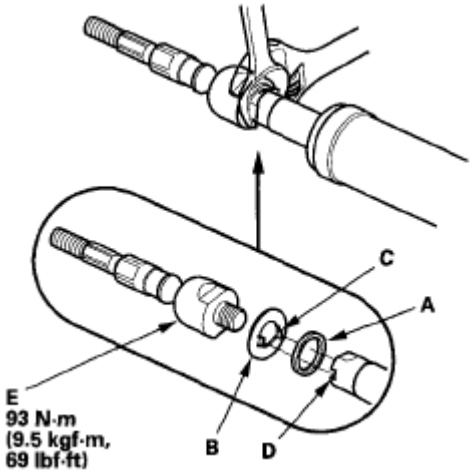


Fig. 114: Identifying Rubber Stop (A) And Lock Washer (B) On Rack Shaft (With Torque Specifications)

2. Tighten both rack ends. Be careful not to damage the rack shaft surface with the wrench.
3. Bend the lock washer (A) back against the flat spots (B) on the rack end ball joint housing.

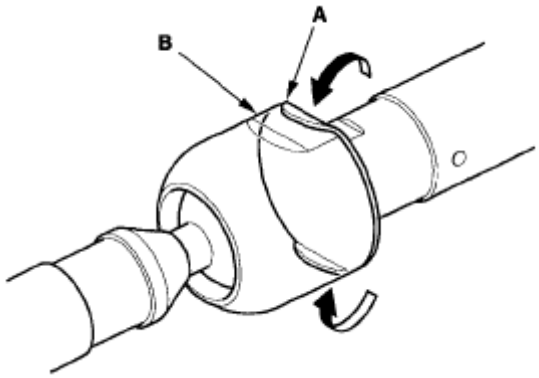


Fig. 115: Identifying Lock Washer (A) Back Against Flat Spots (B) On Rack End Ball Joint Housing

4. Apply multipurpose grease to the circumference of the rack end joint housing (A) and lock washer.

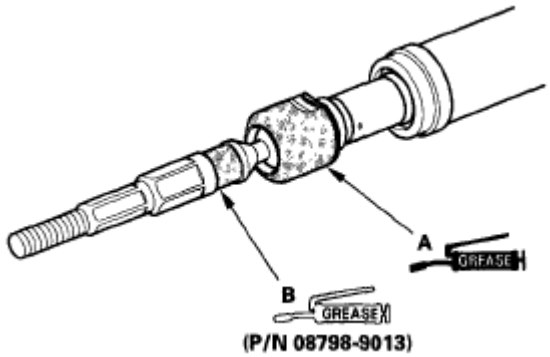


Fig. 116: Identifying Multipurpose Grease To Circumference Of Rack End Joint Housing (A) And Lock Washer

5. Apply a light coat of silicone grease (P/N 08798-9013) to the boot fitting grooves (B) on the rack ends.
6. Center the steering rack within its stroke.
7. Clean off any grease or contamination from the boot installation grooves (A) on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

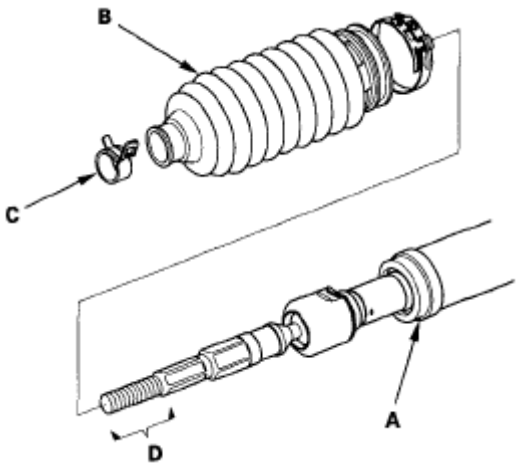


Fig. 117: Identifying Steering Boot

8. After installing the boots, wipe the grease off the thread section (D) of the rack end.
9. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.

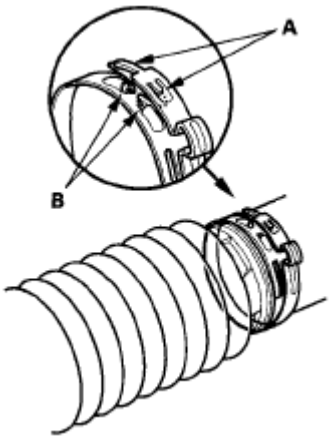


Fig. 118: Identifying Boot Bands

10. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).

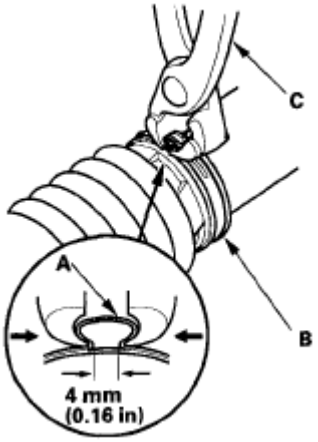


Fig. 119: Identifying Pincers

11. Slide the rack shaft right and left to be certain that the boots are not deformed or twisted.

GEARBOX MOUNT CUSHION REPLACEMENT

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.

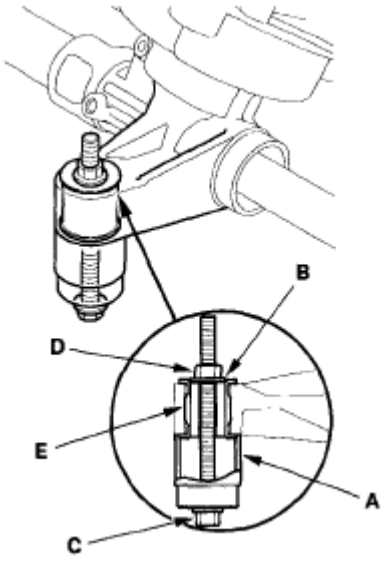


Fig. 120: Identifying Steering Gearbox

3. Hold the 10 mm nut with a wrench, and tighten the 10 x 105 mm flange bolt with another wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place the mount cushion on the gearbox mounting cushion hole.

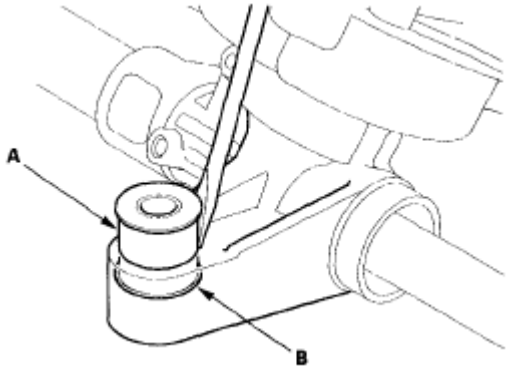


Fig. 121: Identifying Water Solution To Gearbox Mount Cushion Surface

5. Using a flat-tipped screwdriver, push the edge of the mount cushion (B) until it is about 1/3 of the way into the gearbox housing.

NOTE: Be careful not to damage the surface of the mount cushion when pushing it with the flat-tipped screwdriver.

6. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
7. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (A) properly fit on the gearbox flange surface.

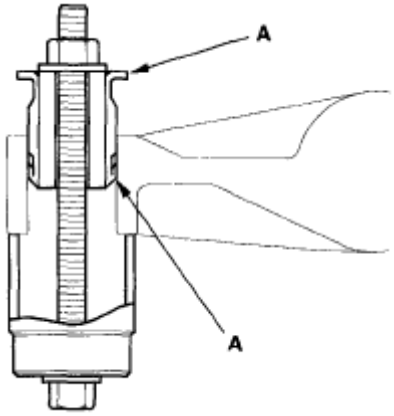


Fig. 122: Identifying Gearbox Mount Cushion

8. Install the steering gearbox (see **INSTALLATION**).
9. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

RACK GUIDE REMOVAL/INSTALLATION

Note these items during removal/installation: Do not allow dust, dirt, or other foreign materials to enter the steering gearbox.

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL AND INSTALLATION**).
2. Loosen the locknut (A), then remove the rack guide screw (B), spring (C), disc washer (D), and rack guide (E).

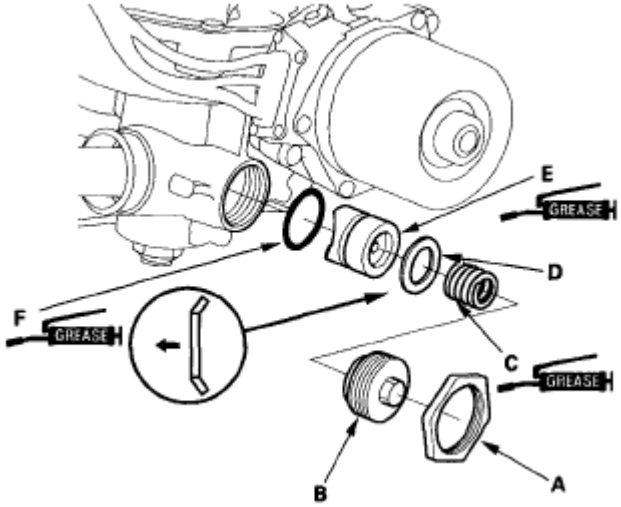


Fig. 123: Identifying Steering Gearbox Components

3. Remove the O-ring (F) from the rack guide. Wipe the grease off the sliding surface of the rack guide.
4. Apply multipurpose grease to the new O-ring, then install it to the rack guide.
5. Apply multipurpose grease to the sliding surface and the circumference of the rack guide, and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing,
6. Apply multipurpose grease to both ends of the spring, and install it onto the gearbox housing.
7. Install the disc washer with its convex side facing the rack guide.
8. Remove the old sealant from the rack guide screw and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Loosely install the rack guide screw on the steering gearbox.
9. Loosely install the locknut.
10. Adjust the rack guide screw (see **EPS TYPE**). After adjusting, check that the rack moves smoothly by sliding the rack right and left.

EPS CONTROL UNIT REMOVAL/INSTALLATION

1. Make sure you have the anti-theft codes for the audio or navigation system, then write down the audio presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the passenger's dashboard under cover (see **PASSENGER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
4. Remove the passenger's side kick panel: 2-door (see **TRIM REMOVAL/INSTALLATION - DOOR AREAS**), 4-door (see **FRONT DOOR SILL AREA - 4-DOOR**).
5. Disconnect EPS control unit connector A (2P), connector B (2P), connector C (2P), and connector D (28P).

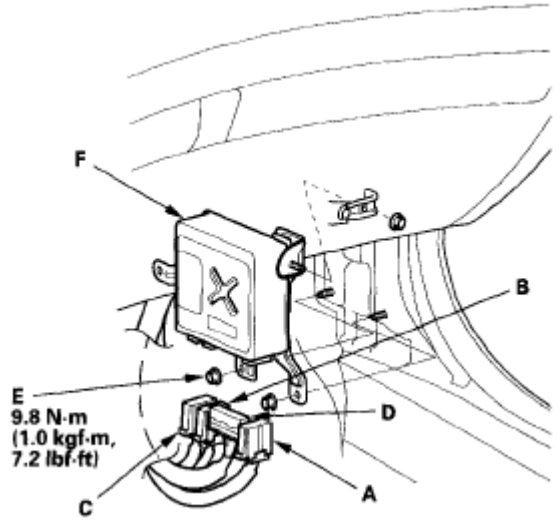


Fig. 124: Identifying EPS Control Unit Connector

6. Remove the nuts (E) from the EPS control unit (F).
7. Remove the EPS control unit.
8. Install the EPS control unit in the reverse order of removal.

9. Reconnect the negative cable to the battery and do these items:
    - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
    - Set the clock.
    - If the EPS control unit is replaced, the EPS control unit must memorize the torque sensor neutral position (see **MEMORIZING THE TORQUE SENSOR NEUTRAL POSITION**).
10. After installation, start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

2006-08 STEERING

Hydraulic Power Steering Components - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

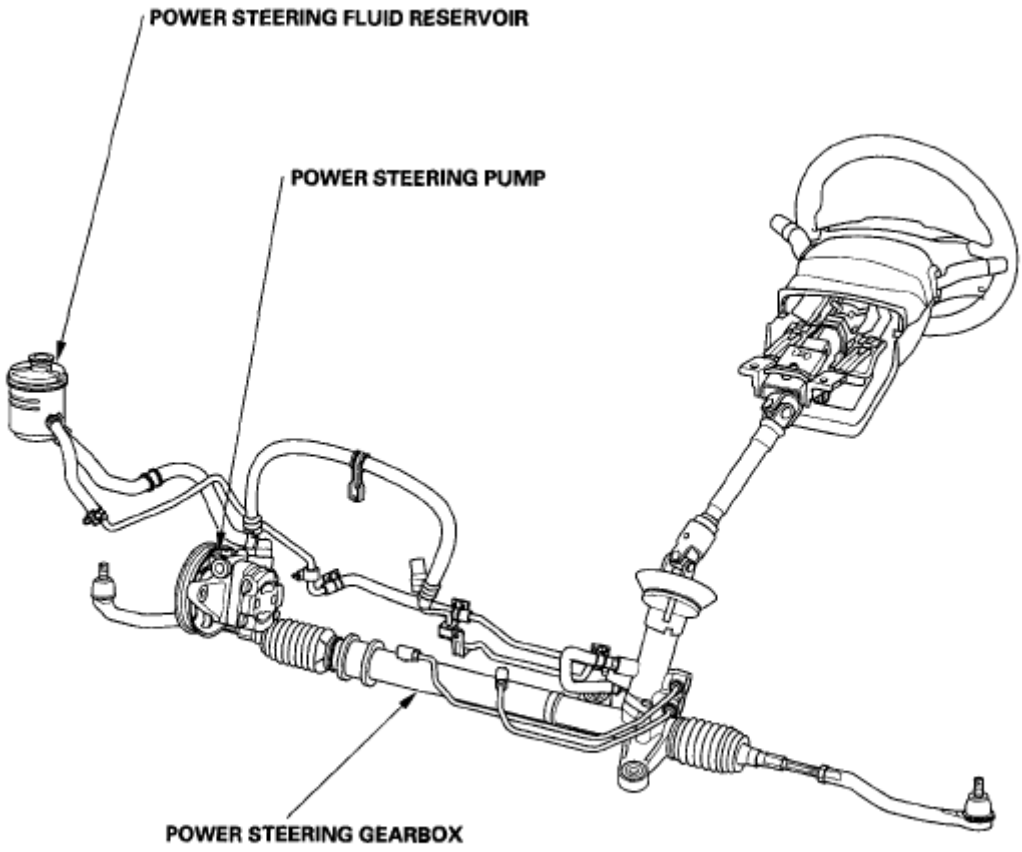


Fig. 1: Identifying Hydraulic Power Steering Components Location

SYMPTOM TROUBLESHOOTING INDEX

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Procedure(s)	Also check for
Hard steering	Troubleshoot the system (see **Symptom Troubleshooting**).	• Modified suspension • Damaged suspension • Tire sizes, tire varieties, and air pressure

Assist (excessively light steering at high speed)	Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**).	Front wheel alignment (see **WHEEL ALIGNMENT**)
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**). 2. Check the drive belt for slippage (see **DRIVE BELT INSPECTION**). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**). 4. Overhaul the steering gearbox (see step 2).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check the ball joints for binding. 3. Check wheel alignment (see **WHEEL ALIGNMENT**). 4. Overhaul the steering gearbox (see step 2).	
Uneven or rough steering	1. Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**). 2. Check the drive belt (see **DRIVE BELT INSPECTION**). 3. Check for low or erratic engine idle speed (see **IDLE SPEED INSPECTION**). 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system (see **FLUID REPLACEMENT**). 6. Overhaul the steering gearbox (see step 2).	
Steering wheel kicks back during wide turns	1. Check the drive belt (see **DRIVE BELT INSPECTION**). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**).	
Humming noise from	1. Check when the noise occurs: • If the noise is heard up to 2-3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation.	

the power steering system	2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise (A/T). 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**). 3. Check the rack guide adjustment (see **RACK GUIDE ADJUSTMENT**). 4. Check the power steering pump pulley: • If the pulley is loose, tighten it (see step 46). • If the pump shaft is loose, replace the pump (see **PUMP REPLACEMENT**).	
Hissing from the power steering system/foaming fluid	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks (see **FLUID LEAKAGE INSPECTION**). • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system (see **FLUID LEAKAGE INSPECTION**). • Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise for 2-3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see **PUMP REPLACEMENT**).	• P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt (see **DRIVE BELT INSPECTION**).	
Fluid leaks from the	• Fluid leaks from the top of the valve body unit. Overhaul the valve body unit (see step 19 on page 17-51). • Fluid leaks from the driver's side boot. Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the passenger's side boot. Replace	

steering gearbox	the cylinder end seal on the cylinder side. • Fluid leaks from pinion shaft near the lower steering joint bolt. Overhaul the valve body unit (see step 19 on page 17-51). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**). • Fluid leaks from a damaged cylinder lines. Replace the cylinder line (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see **FLUID LEAKAGE INSPECTION**), and if necessary replace the power steering pump (see **PUMP REPLACEMENT**).	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap because fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of pump. • Fluid leaks from reservoir. Check for reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint. Replace the pump outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

SYMPTOM TROUBLESHOOTING

HARD STEERING

1. Check the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

Is the initial turning load more than 34 N (3.5 kgf, 7.7 lbf)?

YES -Go to step 2.

NO -Power assist is OK.

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and P/S pressure gauge T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**), or T/N 07406-001000A (see **PUMP PRESSURE TEST WITH T/N 07406-001000A**) to the pump.
3. Measure steady-state fluid pressure from the pump at idle.

   Is the pressure 1,470 kPa (15 kgf/cm^2 , 213 psi) or less?

   YES -Go to step 4.

   NO -Go to step 8.

4. Measure the pump relief pressure at idle.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi) or more?

   YES -Go to step 5.

   NO -Go to step 9.

5. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 5.0 N (0.51 kgf, 1.12 lbf) of each other?

   YES -Go to step 6.

   NO -Go to step 11.

6. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   Is the pressure 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi) or more?

   YES -Go to step 7.

   NO -Faulty steering gearbox.

7. Adjust the rack guide (see **RACK GUIDE ADJUSTMENT**), and retest.

   Is the steering OK?

   YES -Repair is completed.

   NO -Faulty steering gearbox.

8. Check the outlet and return hoses and lines between the pump and the steering gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES -Repair or replace the lines.

   NO -Faulty valve body unit.

9. Disassemble the pump (see **PUMP OVERHAUL**).
10. Check the pressure control valve for smooth movement and leaks (see step 16).

    Is the pressure control valve OK?

    YES -Faulty pump assembly.

    NO -Faulty pressure control valve.

11. Check the cylinder lines for deformation (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

    Are any of the lines deformed?

    YES -Replace the deformed line.

    NO -Go to step 12.

12. Check for a bent rack shaft or misadjusted rack guide (too tight).

    Is the rack shaft bent or the rack guide adjusted too tight?

    YES -Replace the rack shaft, or readjust the rack guide.

    NO -Faulty valve body unit.

PUMP PRESSURE TEST WITH T/N 07406-0010001

Special Tools Required

- P/S joint adapter (pump) 07RAK-S040111
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-0010001

Check the fluid pressure as follows to determine whether the trouble is in the pump or the steering gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
3. Remove the pump outlet hose clamp (A) from the intake manifold.

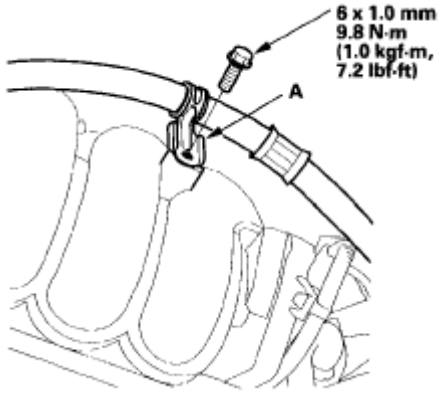


Fig. 2: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

4. Disconnect the pump outlet hose, then install the P/S joint adapter (pump) on the pump (A). Take care so as not to spill the power steering fluid on the frame and other parts.

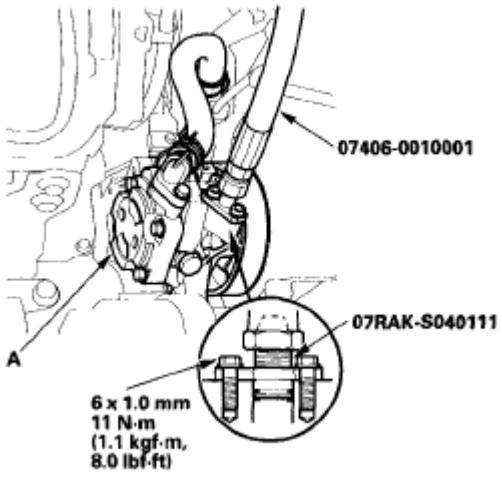


Fig. 3: Identifying P/S Joint Adapter (Pump) On Pump (With Torque Specifications)

5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Connect the P/S joint adapter (hose) to the P/S pressure gauge.
7. Connect the pump outlet hose (A) to the P/S joint adapter (hose).

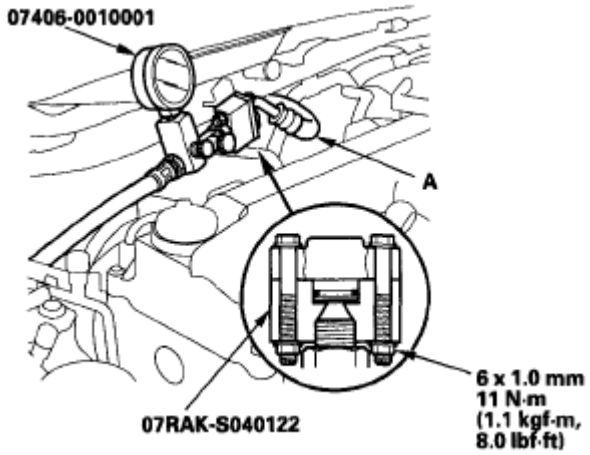


Fig. 4: Identifying Pump Outlet Hose To P/S Joint Adapter (Hose) (With Torque Specifications)

8. Fully open the shut-off valve (A).

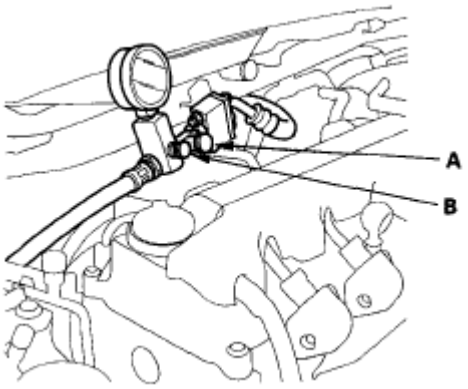


Fig. 5: Identifying Pressure Control Valve

9. Fully open the pressure control valve (B).
10. Start the engine, and let it idle.
11. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
12. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should be no more than 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, check for:
    - Clogged or deformed pump outlet or return line between the pump and the steering gearbox.
    - Clogged valve body unit.
13. Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the gauge should read at least 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, repair or replace the pump.
14. Lower the engine speed, and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.

15. Immediately open the shut-off valve fully.

    If the pump is in good condition, the gauge should read at least 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

16. Reinstall all removed parts.

PUMP PRESSURE TEST WITH T/N 07406-001000A

Special Tools Required

- P/S joint adapter (pump) 07RAK-S040111

- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-001000A

Check the fluid pressure as follows to determine whether the trouble is in the pump or the steering gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
3. Remove the pump outlet hose clamp (A) from the intake manifold.

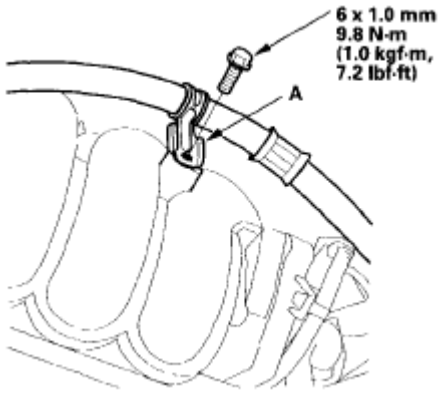


Fig. 6: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

4. Disconnect the pump outlet hose, then install the P/S joint adapter (pump) on the pump (A). Take care so as not to spill the power steering fluid on the frame and other parts.

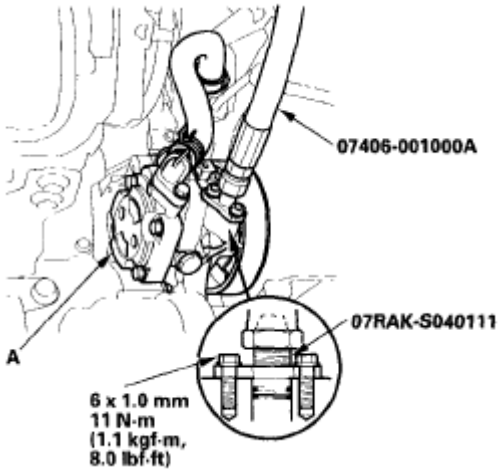


Fig. 7: Identifying P/S Joint Adapter (Pump) On Pump (With Torque Specifications)

5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Connect the P/S joint adapter (hose) to the P/S pressure gauge.
7. Connect the pump outlet hose (A) to the P/S joint adapter (hose).

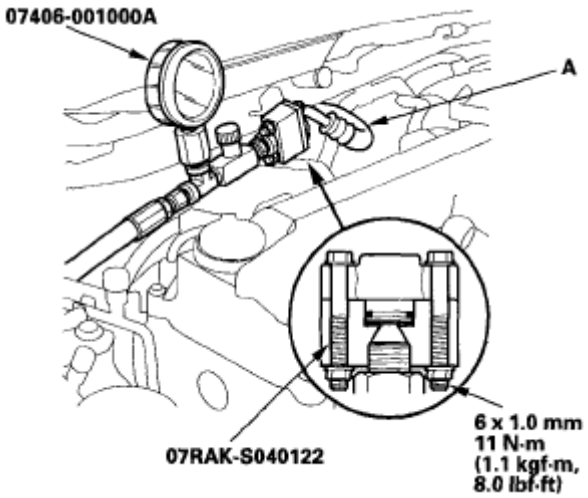


Fig. 8: Identifying P/S Pressure Gauge To P/S Joint Adapter (Pump) (With Torque Specifications)

8. Open the shut-off valve (A) fully.

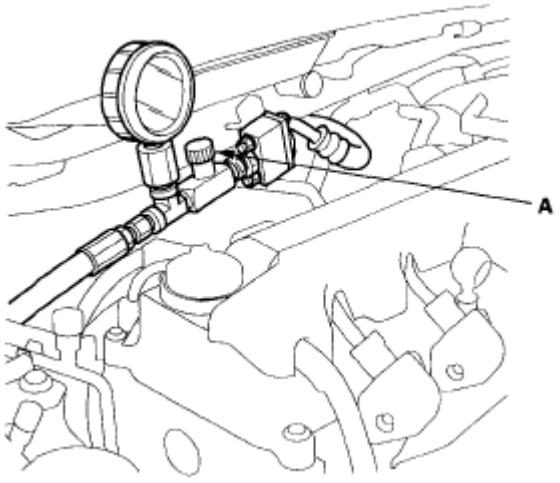


Fig. 9: Identifying Shut-Off Valve - P/S Pressure Gauge

9. Start the engine, and let it idle.
10. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).
11. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should be no more than 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, check for:
    - Clogged or deformed pump outlet or return line between the pump and the steering gearbox.
    - Clogged valve body unit.
12. Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the gauge should read at least 1,470 kPa (15 kgf/cm^2 , 213 psi). If it reads higher, repair or replace the pump.
13. Lower the engine speed, and let it idle. Close the shut-off valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.

14. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 7,850-8,550 kPa (80-87 kgf/cm^2 , 1,140-1,240 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.
15. Reinstall all removed parts.

FLUID LEAKAGE INSPECTION

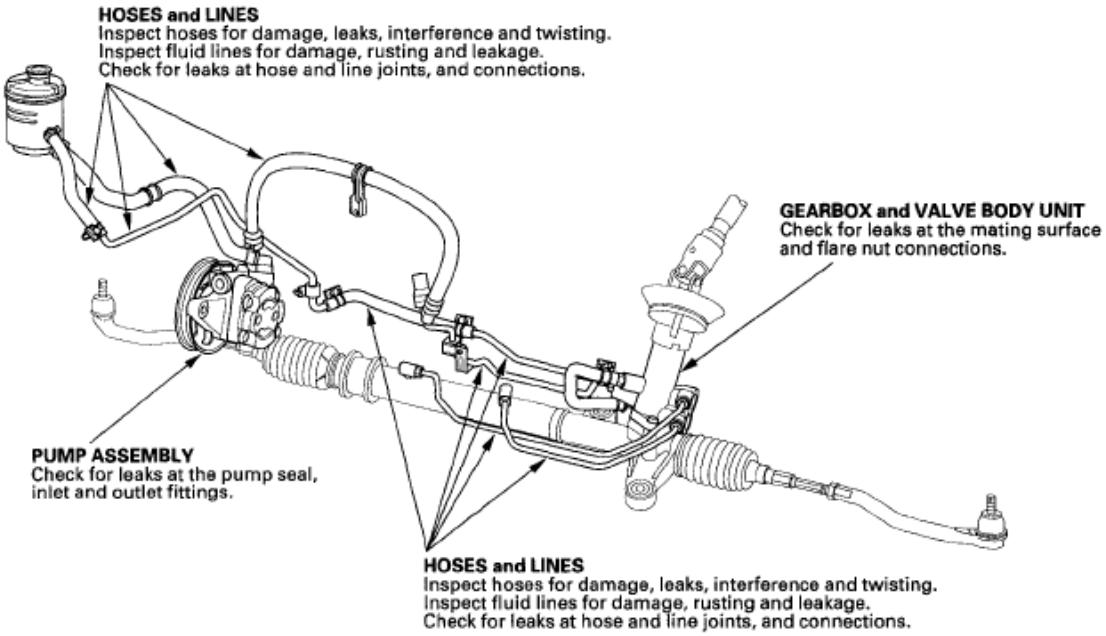


Fig. 10: Identifying Fluid Leakage Components Location

FLUID REPLACEMENT

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Use of any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked. Replace the reservoir if necessary.

System capacity:
0.8 L (0.85 US. qt) at disassembly
Reservoir capacity:
0.26 L (0.27 US. qt)

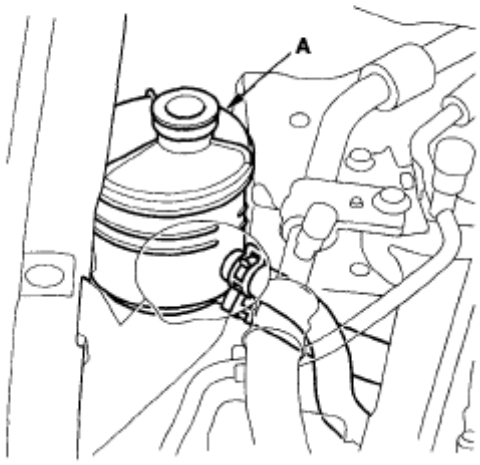


Fig. 11: Identifying Fluid Reservoir

1. Remove the reservoir from its holder. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

NOTE: Inspect the reservoir screen for any debris. If the reservoir screen is clogged, replace the reservoir.

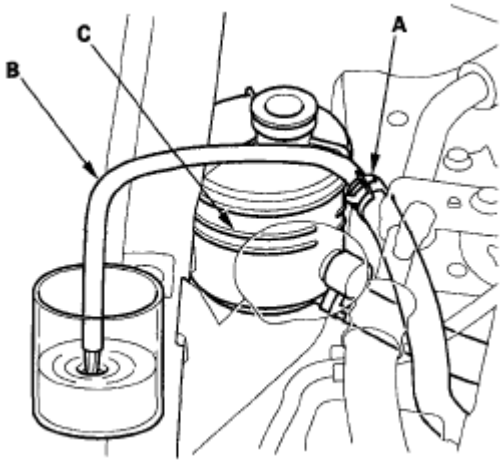


Fig. 12: Identifying Reservoir Tank Specified Level - Upper Level Line

2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.

7. Recheck the fluid level and add some if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat the procedure as necessary.

POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT

Note these items during installation:

- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace the clamps with new ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.

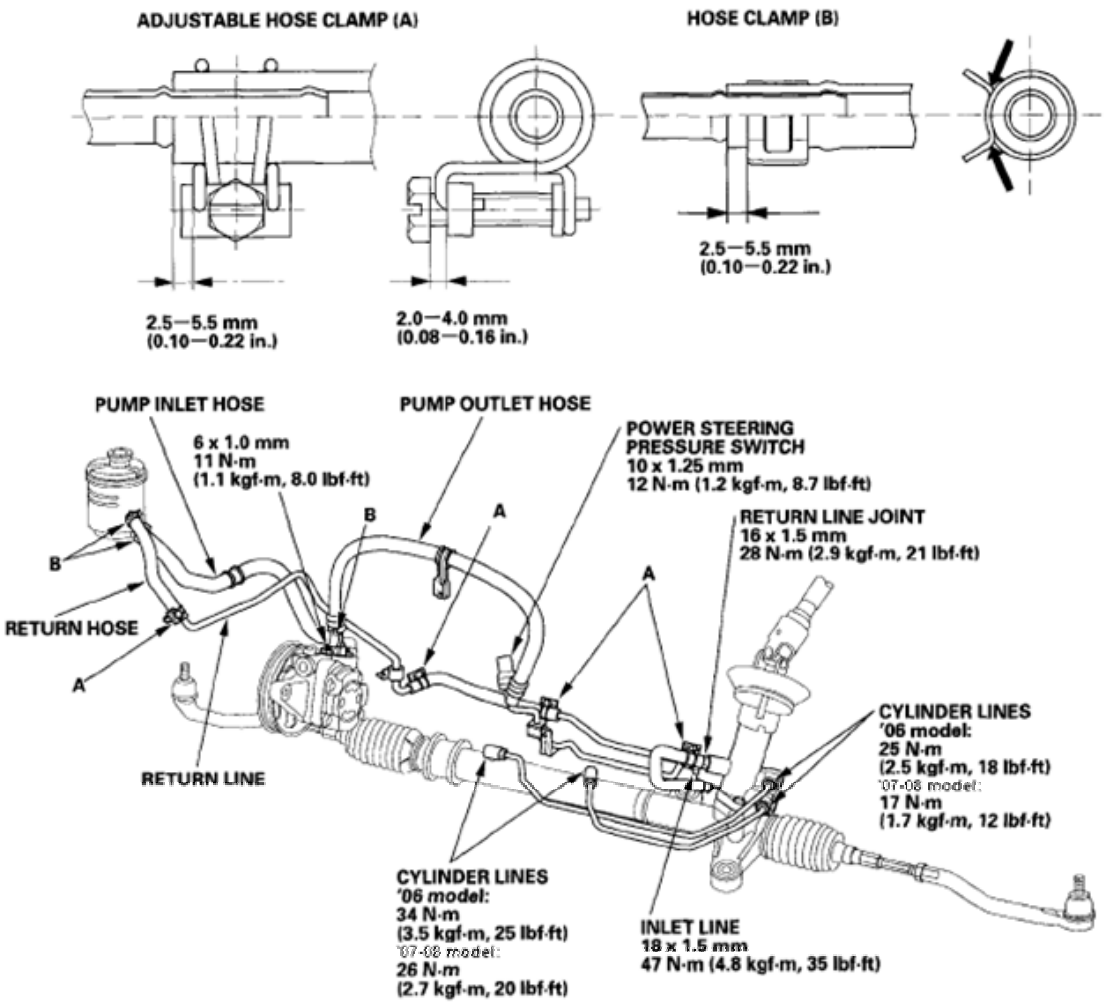


Fig. 13: Identifying Specified Distance From Hose (With Torque Specifications)

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir (see **FLUID REPLACEMENT**).

3. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
4. Remove the air cleaner (see **THROTTLE BODY CLEANING**).
5. Remove the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).
6. M/T model: Remove the shift cable bracket (A).

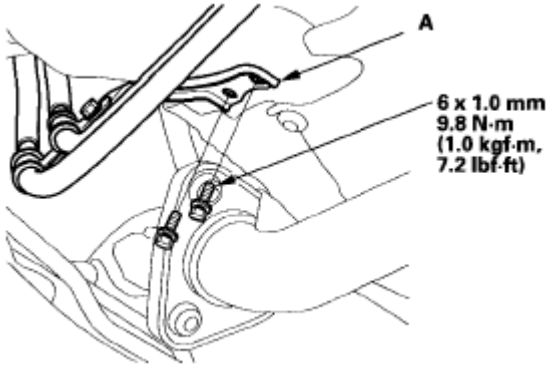


Fig. 14: Identifying Shift Cable Bracket (With Torque Specifications)

7. A/T model: Disconnect the shift cable from the control lever (see **SHIFT CABLE REPLACEMENT**).
8. Remove the upper torque rod mounting bolts (A) from the body.

NOTE: During installation, install new mounting bolts.

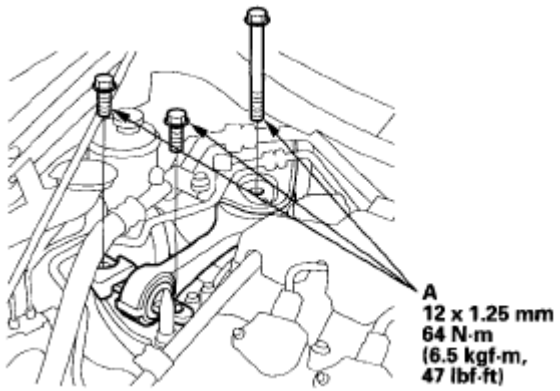


Fig. 15: Identifying Upper Torque Rod Mounting Bolts (With Torque Specifications)

9. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT INSPECTION**).

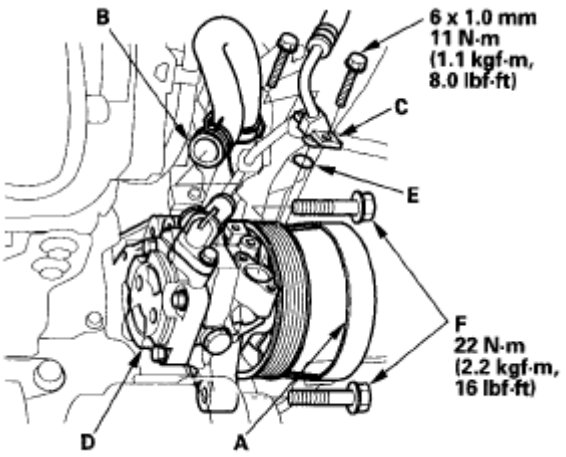


Fig. 16: Identifying Pump Outlet Hose, O-Ring And Pump Mounting Bolts (With Torque Specifications)

10. Cover the parts around the power steering pump with several shop towels to protect them from spilled power steering fluid.
11. Disconnect the pump inlet hose (B) and pump outlet hose (C) from the pump (D), and plug them. Take care not to spill the fluid on the body or on any parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
12. Remove the pump outlet hose O-ring (E), and discard it.
13. Remove the pump mounting bolts (F).
14. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
15. Move the power steering pump toward the driver's side, then raise it.

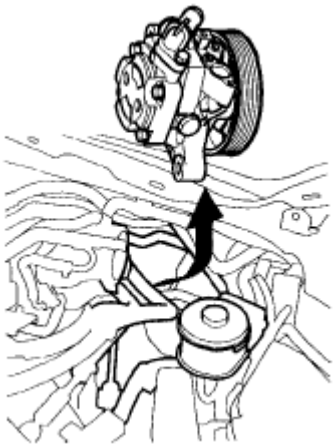


Fig. 17: Identifying Power Steering Pump

16. Connect the pump inlet hose and pump outlet hose onto the new pump with new a O-ring.
17. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
18. Tighten the pump mounting bolts to the specified torque.
19. Install the drive belt (A).

Note these items during belt installation:

- Make sure that the belt is properly positioned on the pulleys (B).
- Do not get power steering fluid or grease on any parts around the power steering pump, drive belt, or pulley faces. Clean off any fluid or grease before installation.

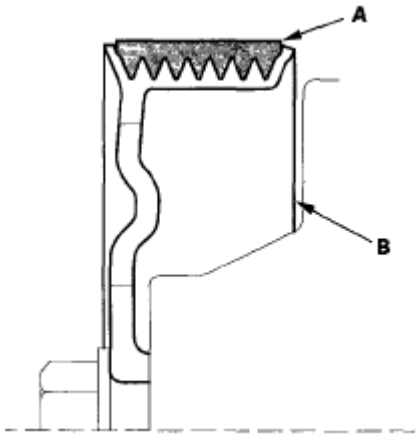


Fig. 18: Identifying Drive Belt

20. Reinstall all removed parts.
21. Fill the reservoir to the upper level line (see **FLUID REPLACEMENT**).

PUMP OVERHAUL

EXPLODED VIEW

Replace the pump as an assembly if the parts indicated with an asterisk (*) are worn or damaged.

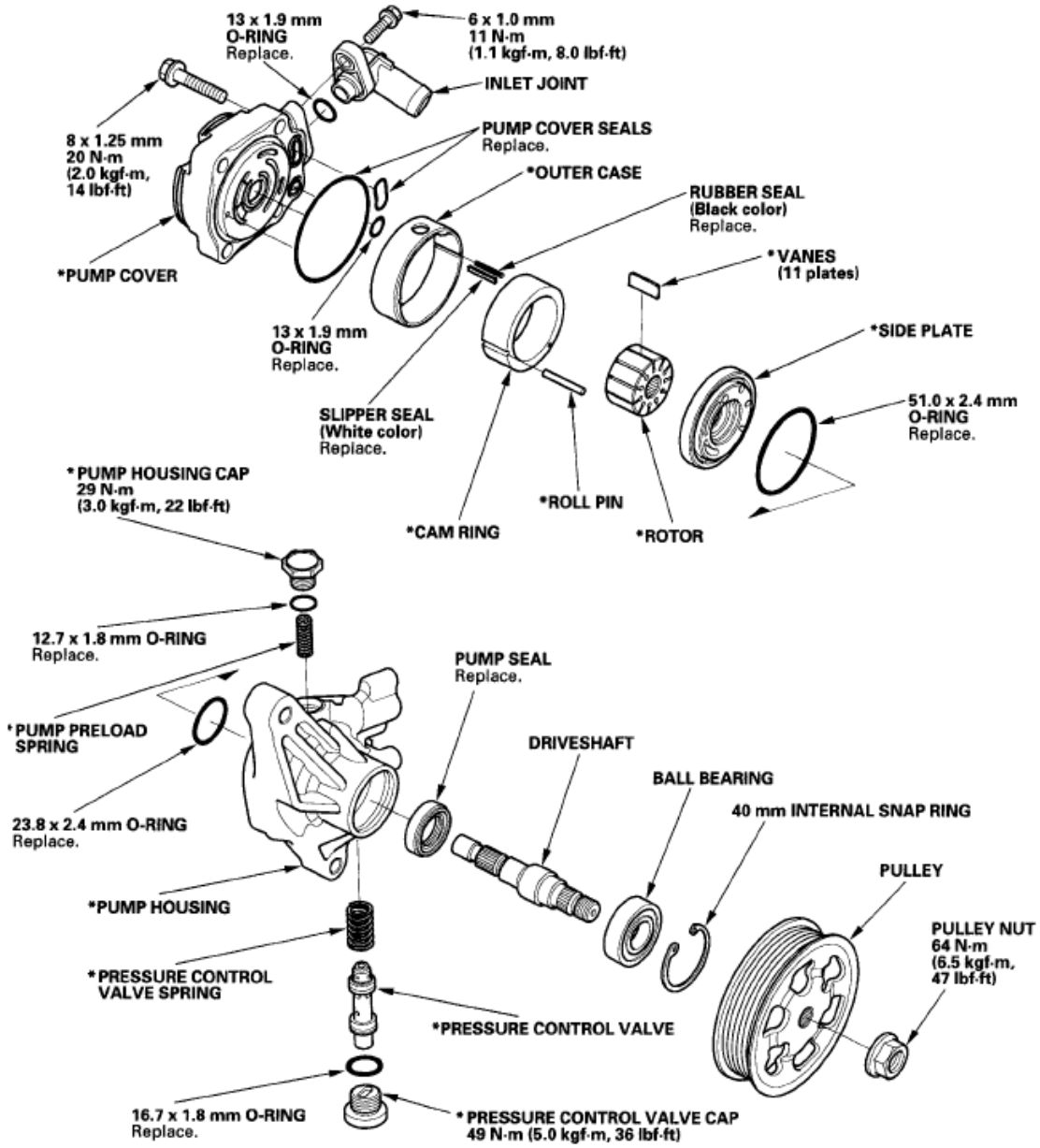


Fig. 19: Exploded View Of Power Steering Pump (With Torque Specifications)

Special Tools Required

- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

Disassembly

NOTE: Refer to the Fig. 19 as needed during the following procedure.

1. Drain the fluid from the pump (see **FLUID REPLACEMENT**).
2. Remove the power steering pump (see **PUMP REPLACEMENT**).

3. Hold the steering pump (A) in a vise with soft jaws (B), hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

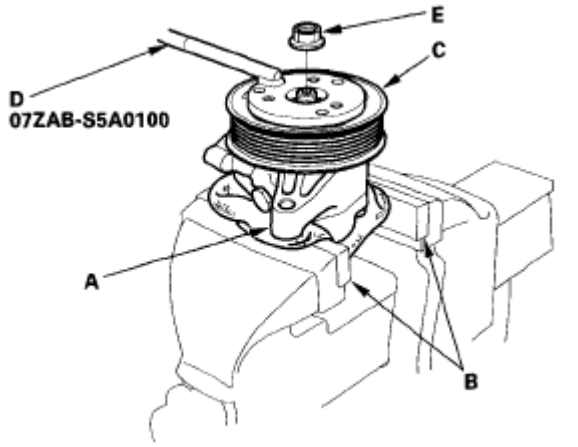


Fig. 20: Identifying Steering Pump In Vise

4. Remove the inlet joint and O-ring.
5. Remove the pressure control valve cap, O-ring, valve spring, and pressure control valve.
6. Remove the pump housing cap, O-ring, and pump preload spring.
7. Remove the pump cover, O-ring, and pump cover seals.
8. Pull out the roll pin.
9. Remove the outer case, cam ring, rotor, vanes, and side plate.
10. Remove the rubber seal and slipper seal from the outer case.
11. Remove the O-rings from the bottom of the housing.
12. Remove the 40 mm internal snap ring, then remove the driveshaft by tapping the shaft end with a plastic hammer.
13. Remove the seal from the pump housing.

Inspection

14. Check the pressure control valve for wear, burrs, and other damage to the edges of the grooves in the valve.

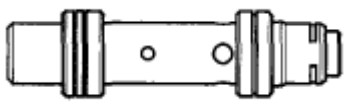


Fig. 21: Identifying Pressure Control Valve

15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.
16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.

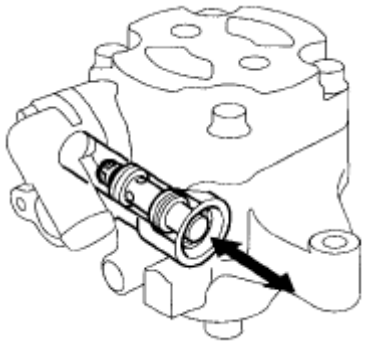


Fig. 22: Identifying Pressure Control Valve On Pump Housing

17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C), and blow in the hose.
    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2 , 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.
    - If the pressure control valve is OK, set it aside for reassembly later.

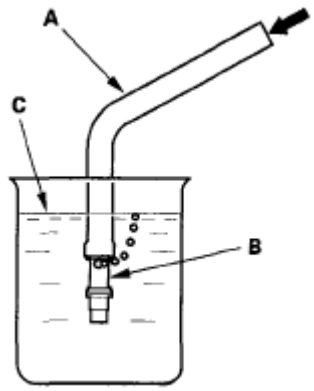


Fig. 23: Checking Pressure Control Valve

18. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a new one (B).

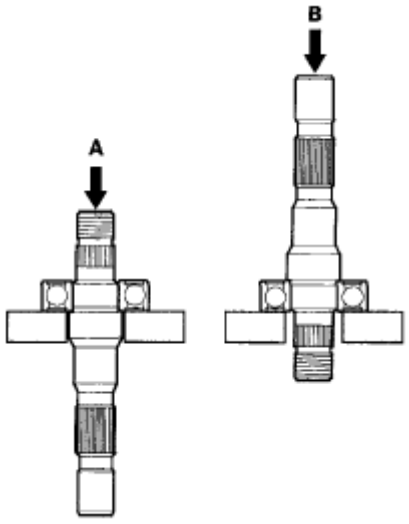


Fig. 24: Locating Ball Bearing

19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn or damaged, replace the pump as an assembly.

Reassembly

20. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand, then drive it in using the driver and the attachment until the seal is fully seated in the pump housing. Do not apply more than 1,370 N (140 kgf, 308 lbf) of pressure.

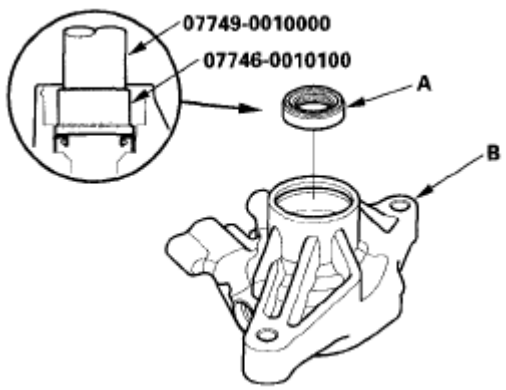


Fig. 25: Identifying Pump Seal On Pump Housing

21. Position the pump driveshaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown.

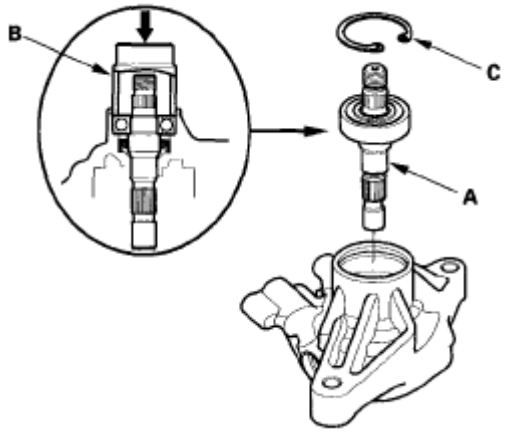


Fig. 26: Identifying Pump Driveshaft Position In Pump Housing

22. Install the 40 mm internal snap ring (C) with its radiused edge facing out.
23. Coat the new 23.8 mm O-ring (A) with power steering fluid, then position it on the bottom (B) of the pump housing.

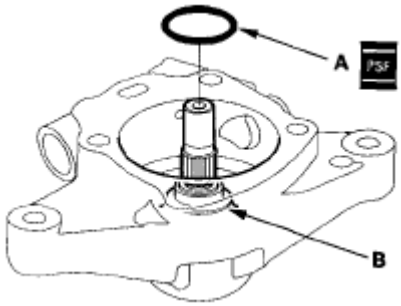


Fig. 27: Identifying O-Ring

24. Coat the new cover seals (A) and new 13.0 mm O-ring (B) with power steering fluid, then position them into the grooves on the cover (C).

NOTE: Be careful not to install the inlet joint O-ring because they are same size.

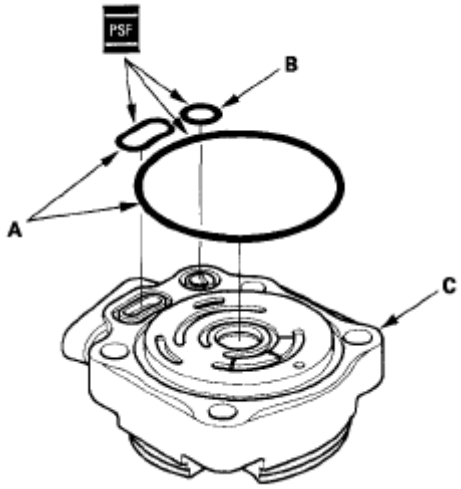


Fig. 28: Identifying O-Ring Position Into Grooves On Cover

25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the tapered side (D) of outer case is facing up.

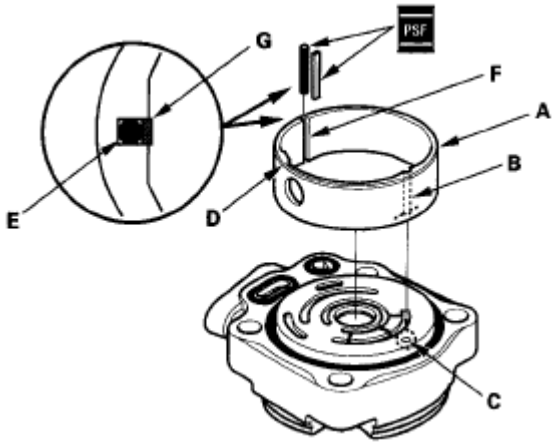


Fig. 29: Identifying Area Applying Rubber Seal

26. Apply power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.
28. Install the cam ring (A) by aligning the slot (B) with the slot (C) in the outer case.

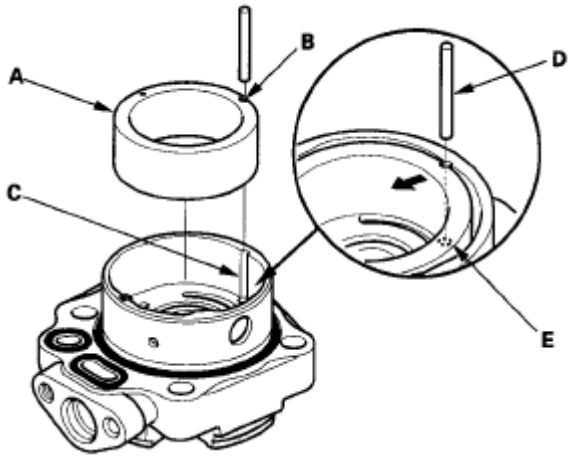


Fig. 30: Locating Slot In Outer Case

29. Insert the roll pin (D) into the slots between the cam ring and outer case, then push the roll pin into the set hole (E).
30. Install the rotor (A) in the cam ring (B).

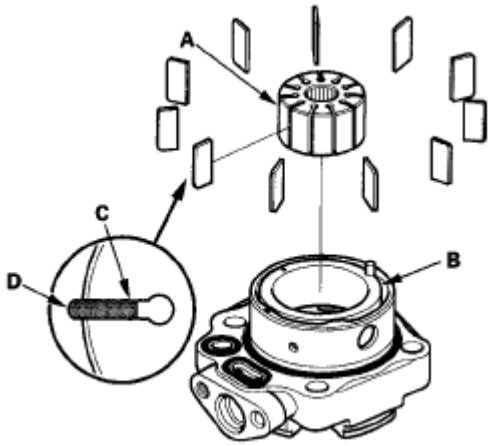


Fig. 31: Identifying Rotor And Cam Ring

31. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.
32. Place the side plate (A) on the cam ring, and align the roll pin set hole (B) with the roll pin (C).

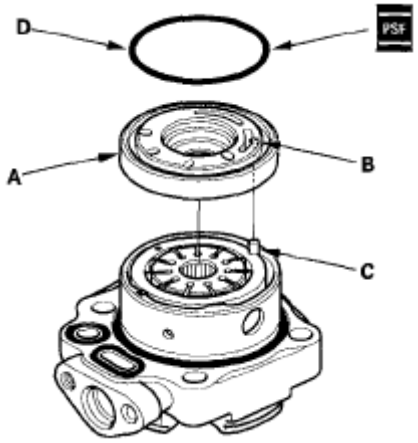


Fig. 32: Identifying Align Roll Pin Set Hole With Roll Pin

33. Coat the new O-ring (D) with power steering fluid, then position it into the groove on the side plate.
34. Install the pump housing (A) over the cover assembly (B).

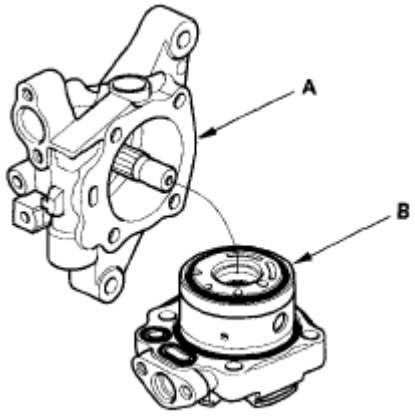


Fig. 33: Identifying Pump Housing And Cover Assembly

35. Align the bolt holes in the cover (A) with the threaded holes in the pump housing. Install the flange bolts loosely first, then torque the flange bolts in a criss-cross pattern in two or more steps.

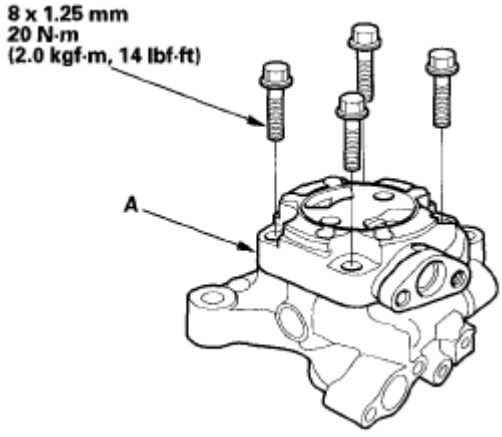


Fig. 34: Identifying Align Bolt Holes In Cover (With Torque Specifications)

36. Push in the cam ring (A) from the pump housing cap hole (B) with a flat-tip screwdriver to make sure the cam ring is fully seated against the outer case.

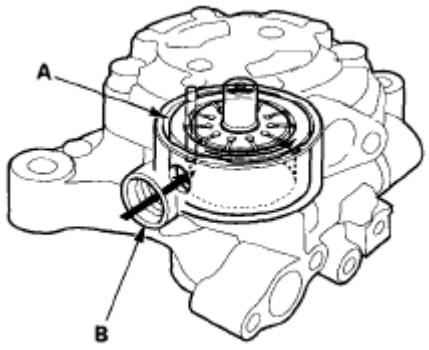


Fig. 35: Locating Push Cam Ring From Pump Housing Cap Hole

37. Install the pump preload spring (A) in the pump housing.

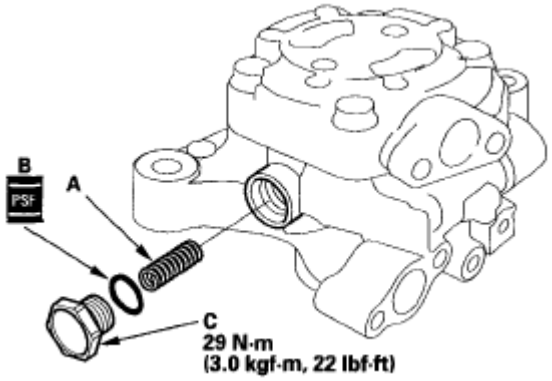


Fig. 36: Identifying Pump Preload Spring (With Torque Specifications)

38. Coat the new 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).
39. Install the pump housing cap on the pump housing, and tighten it to the specified torque.
40. Install the pressure control valve spring (A) in the pump housing.

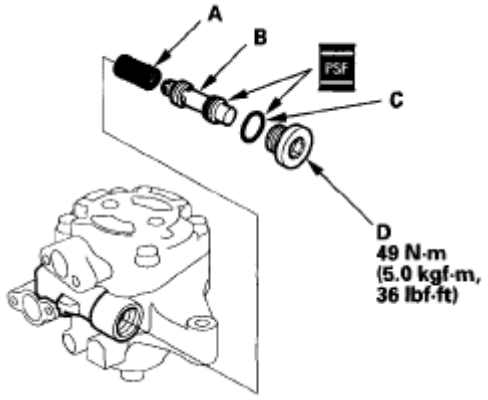


Fig. 37: Identifying Pressure Control Valve Spring (With Torque Specifications)

41. Coat the pressure control valve (B) with power steering fluid, and install it in the pump housing.
42. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the pressure control valve cap (D).
43. Install the pressure control valve cap on the pump housing, and tighten it to the specified torque.
44. Coat the new O-ring (A) with power steering fluid, and install it on the inlet joint (B).

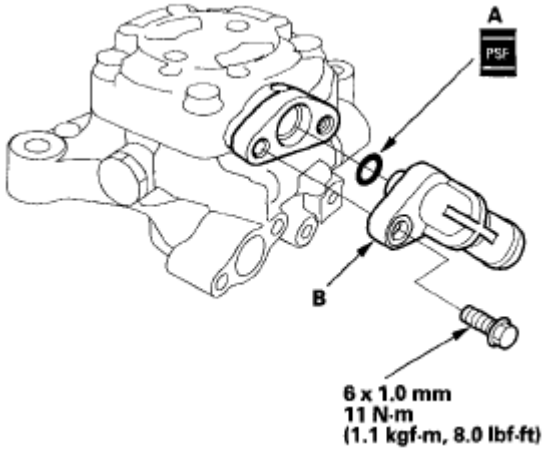


Fig. 38: Identifying Power Steering Fluid O-Ring (With Torque Specifications)

45. Install the inlet joint on the pump housing.
46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws (C). Be careful not to damage the pump housing with the jaws of the vise.

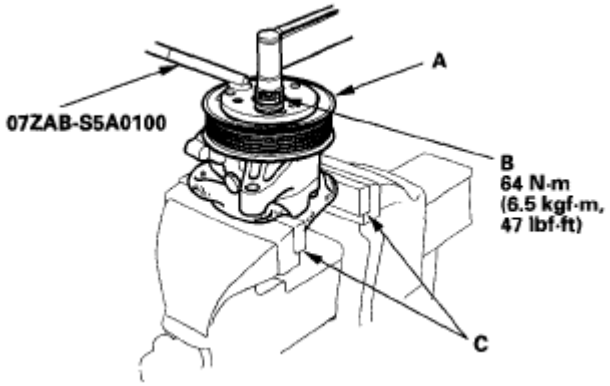


Fig. 39: Identifying Steering Pump In Vise (With Torque Specifications)

47. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.
48. Check that the pump turns smoothly by turning the pulley. If it is hard to turn, loosen the four flange bolts on the cover, then retighten them as in step 35, and check the pump again.

STEERING GEARBOX REMOVAL

Special Tools Required

- 1.8 Support eyelet 07AAK-SNAA400

- 1.8 Support bolt 07AAK-SNAA500
- Ball joint remover, 28 mm 07MAC-SLOA202
- Front subframe adaptor VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *

Available through the American Honda Tool and Equipment program, 1-888-424-6857.

Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the steering gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

1. Drain the power steering fluid (see **FLUID REPLACEMENT**).
2. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
3. Make sure the ignition switch is in LOCK (0), then disconnect the negative cable from the battery.
4. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
5. Remove the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
6. Remove the steering joint cover (A).

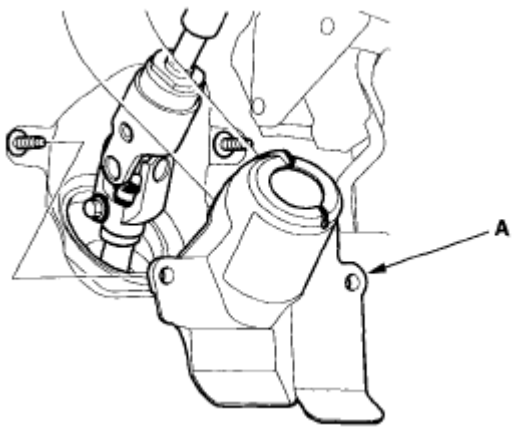


Fig. 40: Identifying Steering Joint Cover

7. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

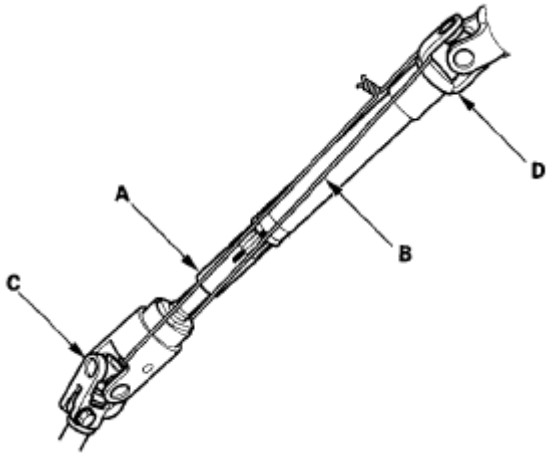


Fig. 41: Identifying Lower Slide Shaft With Wire Between Joint Yokes

8. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.
9. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B) toward the column..

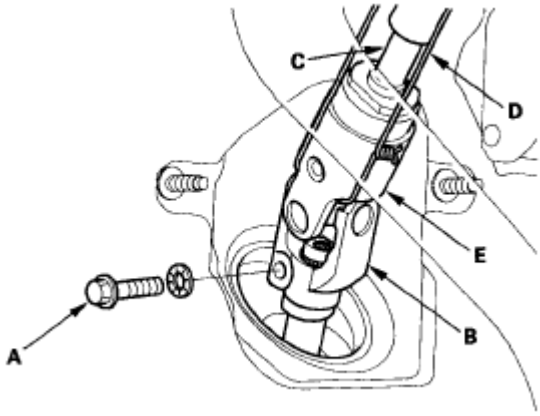


Fig. 42: Identifying Steering Joint Bolt

10. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly only.

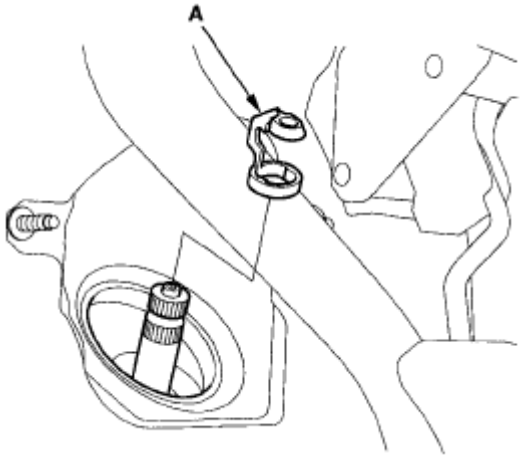


Fig. 43: Identifying Center Guide

11. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
12. Remove the air cleaner housing (see **THROTTLE BODY CLEANING**).
13. Remove the air cleaner housing mounting bracket (A), and install support eyelet (B) behind the breather pipe (C) and down to the threaded hole (D) on the cylinder head.

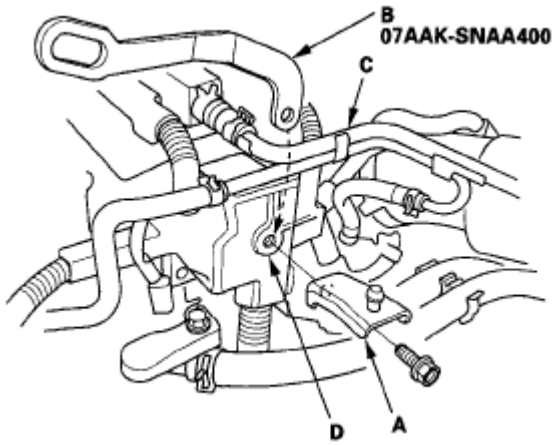


Fig. 44: Identifying Mounting Bracket And Support Eyelet

14. Attach the support eyelet (A) to the cylinder head with the support bolt (B). Tighten the bolt by hand.

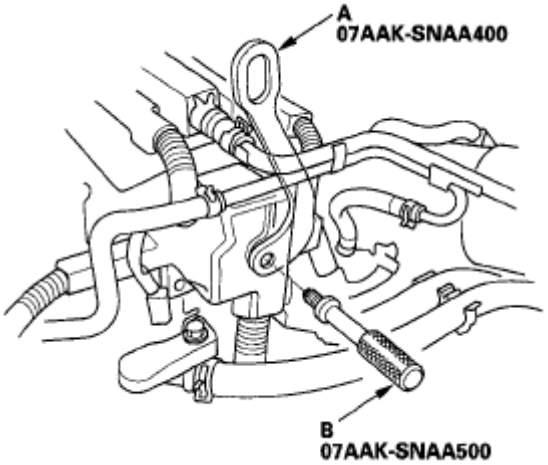


Fig. 45: Identifying Support Eyelet And Support Bolt

15. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wing nut by hand to lift and support the engineltransmission assembly.

NOTE: Use care when working around the windshield.

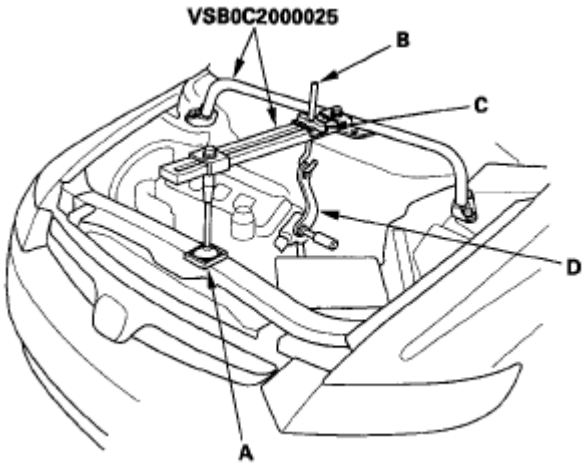


Fig. 46: Identifying Special Tool

16. Remove the pump outlet hose clamp (A) from the intake manifold.

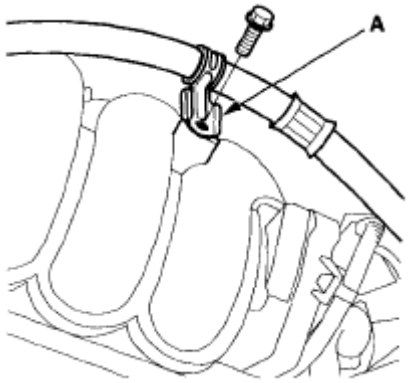


Fig. 47: Identifying Steering Joint Cover

17. Raise the front of vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
18. Remove the front wheels.
19. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.

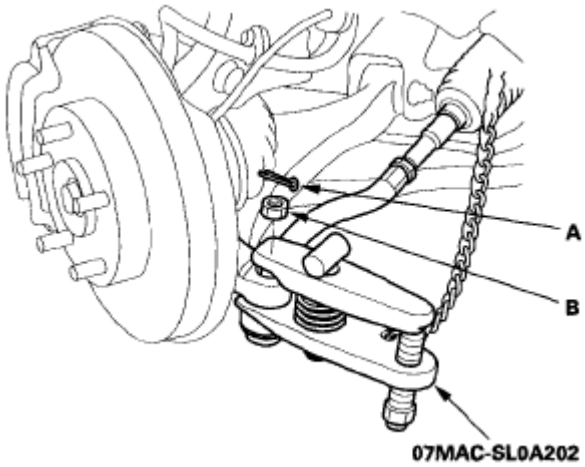


Fig. 48: Identifying Tie-Rod Cotter Pin And Nut

20. Separate the tie-rod ball joint and knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
21. Remove the inlet line clamp bolt (A).

    Open the return line holder (B), and remove the return line clamp bolt (C).

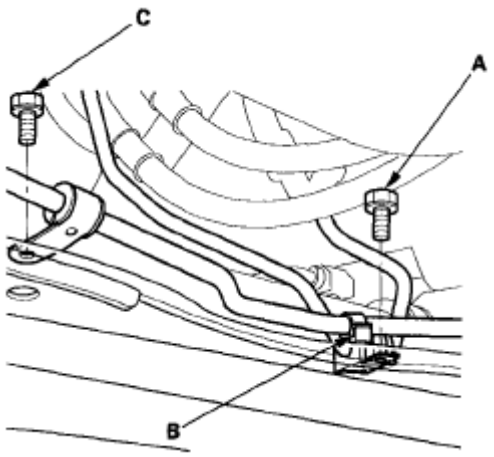


Fig. 49: Identifying Inlet Line Clamp Bolt And Return Line Clamp Bolt

22. Loosen the adjustable hose clamp (A), and disconnect the return hose (B).

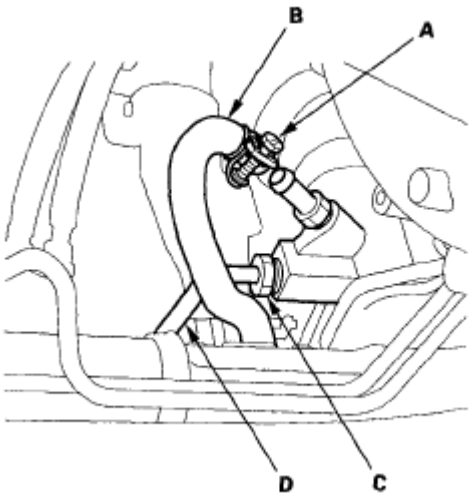


Fig. 50: Identifying Adjustable Hose Clamp

23. Loosen the 18 mm flare nut (C), and disconnect the inlet line (0).
24. Remove the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).
25. Remove the lower ball joint mounting bolt (A) and flange nuts (B) from the lower arm.

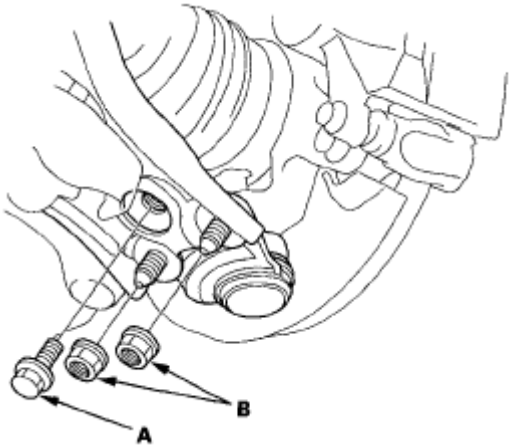


Fig. 51: Identifying Lower Ball Joint Mounting Bolt And Flange Nuts

26. Disconnect the lower arm from the lower ball housing.
27. Note the reference marks (A) on both sides of the subframe that line up with the body (B).

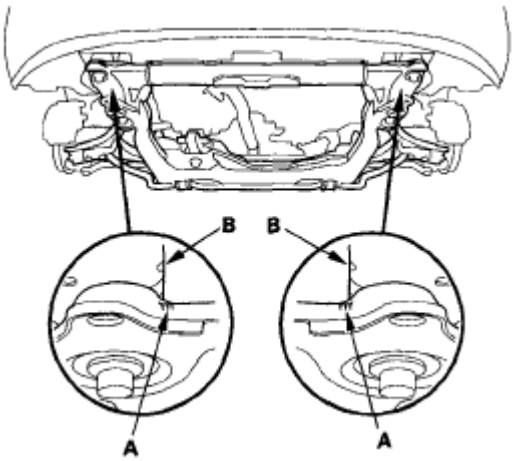


Fig. 52: Identifying Mark On Lower Arm

28. Attach the front subframe adaptor (A) to the front subframe (B) and the transmission jack (model number LSL-W9371) or the powertrain lift (model number OTC-1585), then tighten the front subframe adaptor screw.

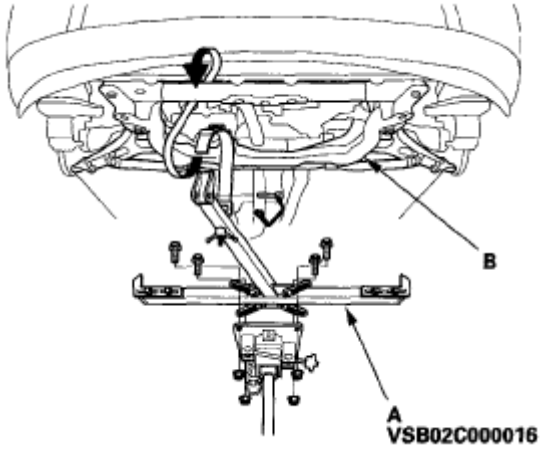


Fig. 53: Locating Jack

29. Make sure the front subframe is securely supported by the jack with the front subframe adaptor.
30. Remove the front subframe middle mount bolt (A) from the left side.

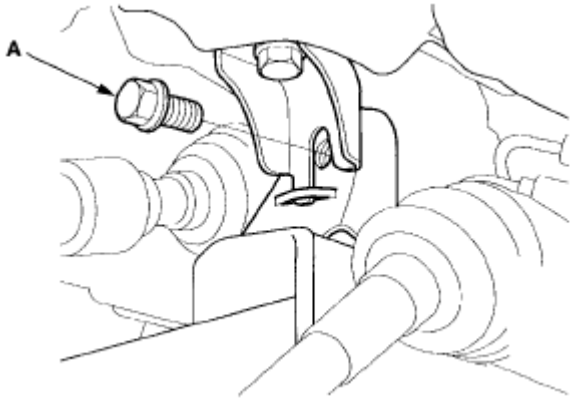


Fig. 54: Locating Front Subframe Middle Mount Bolt - Left Side

31. Remove the front subframe middle mount bolt (A) from the right side.

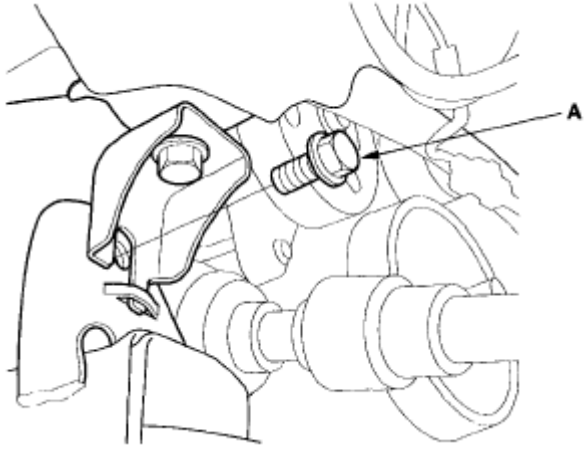


Fig. 55: Locating Front Subframe Middle Mount Bolt - Right Side

32. Remove the two 12 mm flange bolts (A) from the lower torque rod bracket.

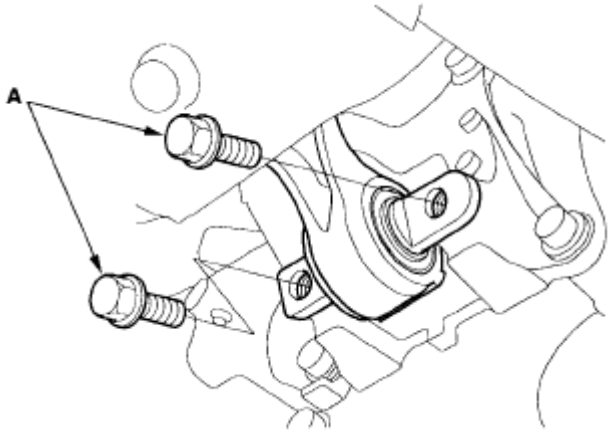


Fig. 56: Identifying Lower Torque Rod Bracket Flange Bolts

33. Remove the front subframe front mounting bolts (A) from the right and left sides of the vehicle and discard them.

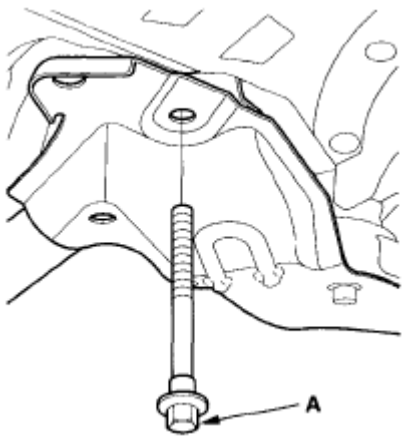


Fig. 57: Identifying Front Subframe Front Mounting Bolts

34. Remove the front subframe rear mounting bolts (A) from the right and left sides of the vehicle and discard them.

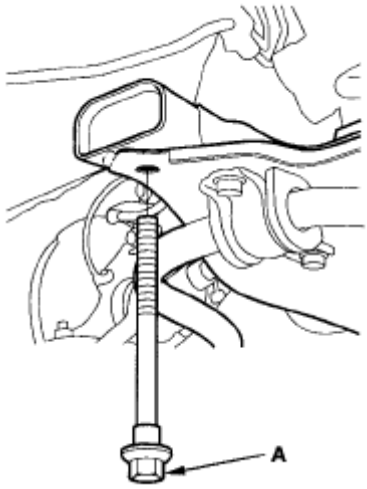


Fig. 58: Identifying Front Subframe Rear Mounting Bolts

35. Lower the front subframe and steering gearbox as an assembly by lowering the jack slowly.
36. Remove the pinion shaft grommet (A) from the top of the valve body unit.

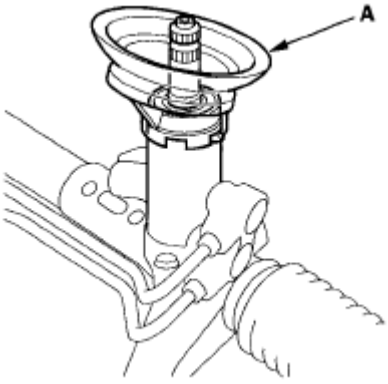


Fig. 59: Identifying Pinion Shaft Grommet

37. Remove the two 10 mm bolts from the right side of the steering gearbox, then remove the gearbox mounting bracket (A) and mounting cushion (B).

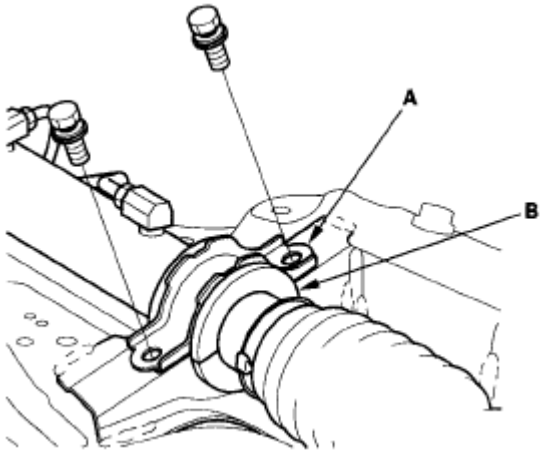


Fig. 60: Identifying Gearbox Mounting Bracket And Mounting Cushion

38. Remove the four 10 mm flange bolts from the left side of the steering gearbox, then remove the stiffener plates (A).

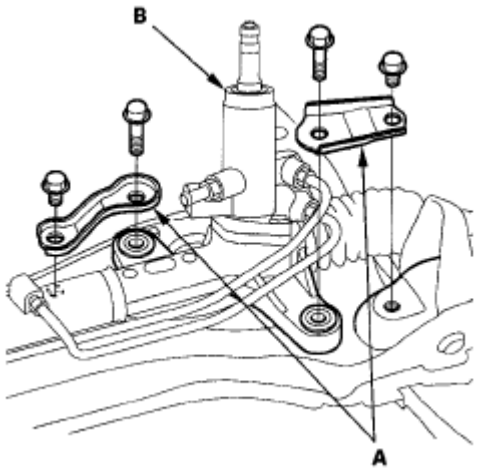


Fig. 61: Identifying Stiffener Plates

39. Remove the steering gearbox (B) from the front subframe.

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

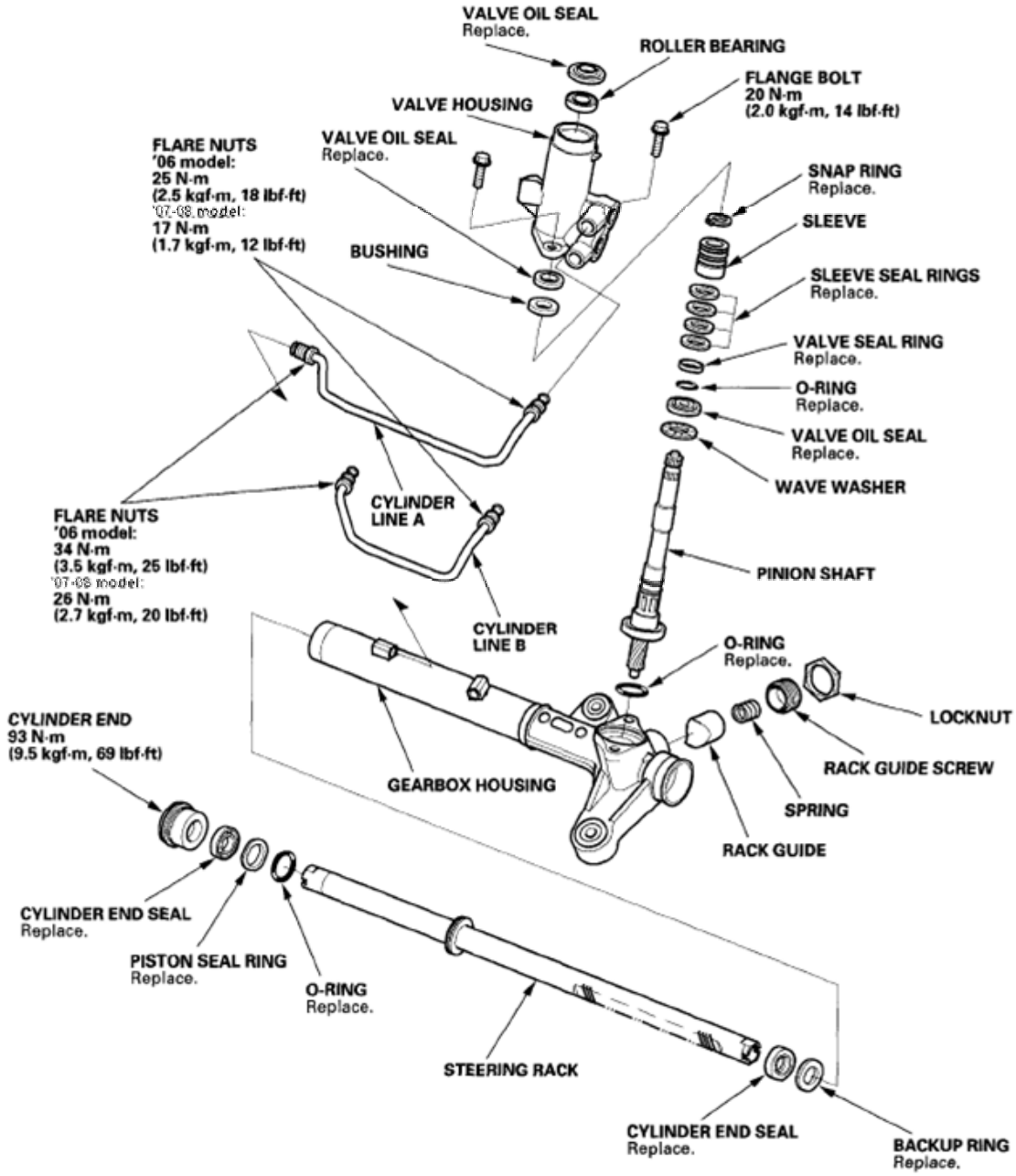


Fig. 62: Exploded View Of Steering Gearbox (With Torque Specifications)

Special Tools Required

- Cylinder end seal remover attachment 07NAD-SR3020A
- Valve seal ring sizing tool 07NAG-SR3090A
- Sleeve seal ring guide 07YAG-S2X0100
- Sleeve seal ring sizing tool, 36 mm 07ZAG-S5A0100
- Attachment, 32 x 35 mm 07746-0010100
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000
- Piston seal ring guide 07HAG-SF10100

- Piston seal ring sizing tool 07HAG-SF1020A or 07HAG-SF10200
- Cylinder end seal slider 07ZAG-S5A0300
- Pincers Oetiker 1098 or equivalent, commercially available

NOTE: Refer to the Fig. 62 as needed during this procedure.

Removal

1. Remove the steering gearbox (see **STEERING GEARBOX OVERHAUL**).

Disassembly

2. Remove the boot bands (A) and tie-rod clips (B). Pull the boot away from the ends of the steering gearbox.

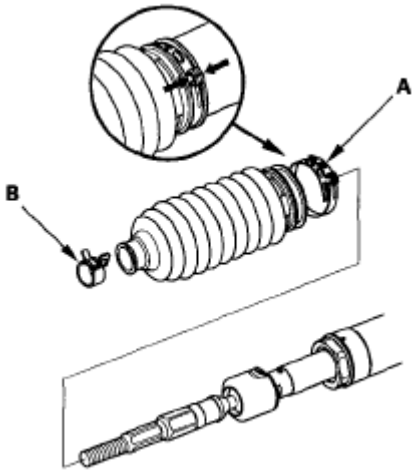


Fig. 63: Identifying Boot Bands And Tie-Rod Clips

3. Unbend the lock washers (A).

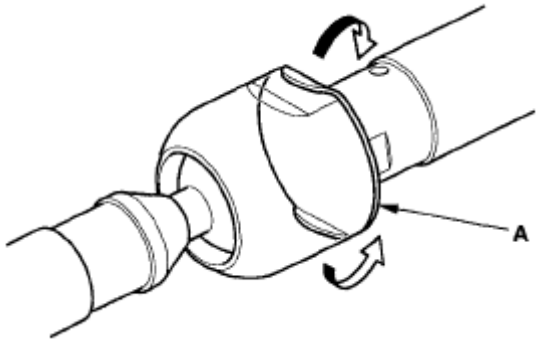


Fig. 64: Identifying Lock Washers

4. Hold the flat surface sections (A) of the steering rack with a wrench (B), and unscrew both rack ends (C) with a wrench (D). Be careful not to damage the rack surface with the wrench.

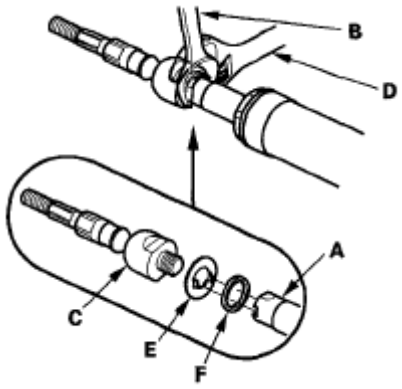


Fig. 65: Identifying Lock Washer And Rubber Stop

5. Remove the lock washer (E) and rubber stop (F).
6. Loosen the locknut (A), then remove the rack guide screw (B).

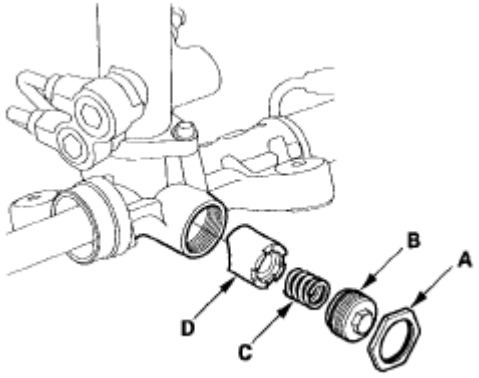


Fig. 66: Identifying Locknut, Rack Guide Screw, Spring And Rack Guide

7. Remove the spring (C) and the rack guide (D) from the gearbox housing.
8. Remove the cylinder line A and B from the steering gearbox.

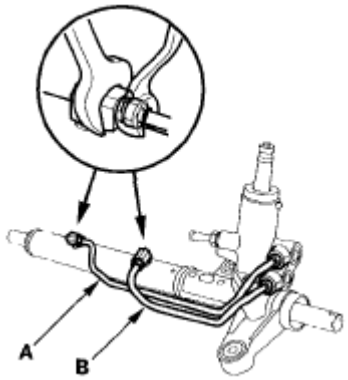


Fig. 67: Identifying Cylinder Line A And B

9. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
10. Remove the two flange bolts, then remove the valve body unit (A) from the steering gearbox (B). Remove the O-ring (C), and discard it.

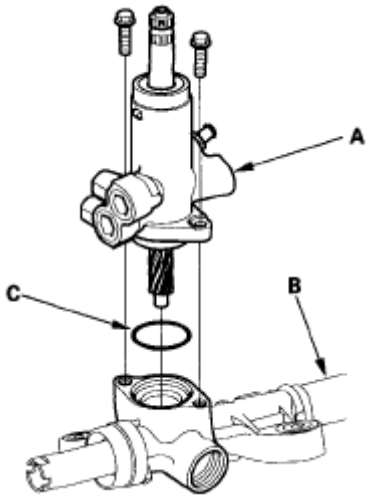


Fig. 68: Identifying Valve Body Unit Components

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5-3.0 mm (0.10-0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder side on the gearbox housing. After removing the cylinder end (B), remove any burrs at the staked point.

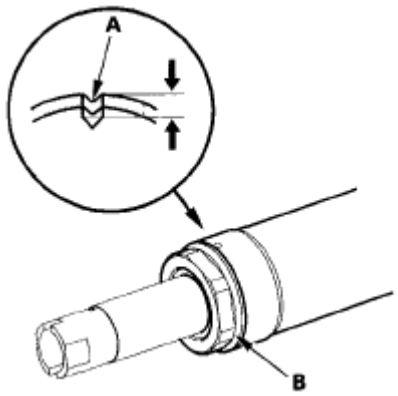


Fig. 69: Identifying Depth In Staked Point On Cylinder

12. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder part of the gearbox housing in the vise. Then remove the cylinder end (C).

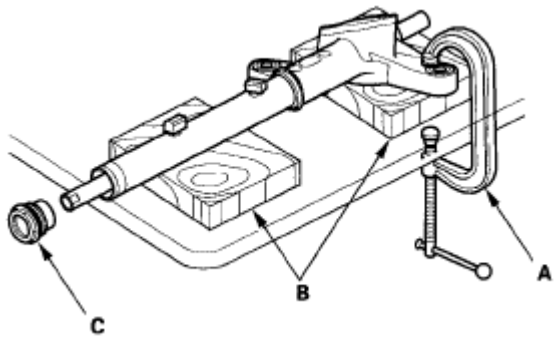


Fig. 70: Identifying Gearbox Housing

13. Install a commercially available bearing separator (A) in the gearbox housing as shown.

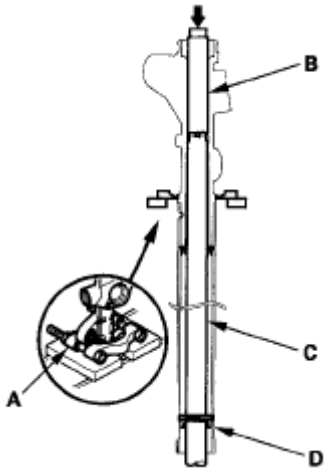


Fig. 71: Identifying Gearbox Housing

14. Place an appropriate size deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing side points upward, then press the cylinder end seal (D) and steering rack out of the steering gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder side on the gearbox housing with the tool.
16. Install the seal remover on a 24 "long 3/8" drive extension (A). Insert the tools in the gearbox housing. Make sure the seal remover is securely positioned on the backup ring edges. Be careful not to damage the inner surface of the cylinder with the seal remover.

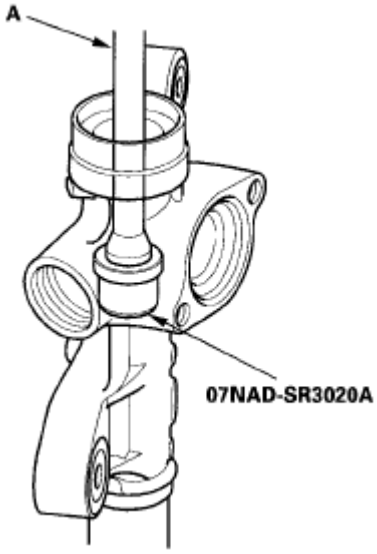


Fig. 72: Inserting Tools In Gearbox Housing

17. Place the steering gearbox in a press, then remove the cylinder end seal (A) and backup ring (B) from the steering gearbox by pressing on the 24 "long, 3/8" drive extension.

    Note these items when pressing the cylinder end seal:

- Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the backup ring, and the cylinder end seal would remain in the steering gearbox.

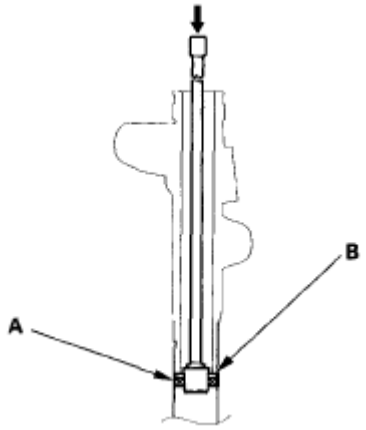


Fig. 73: Identifying Cylinder Seal And Backup Ring

18. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.

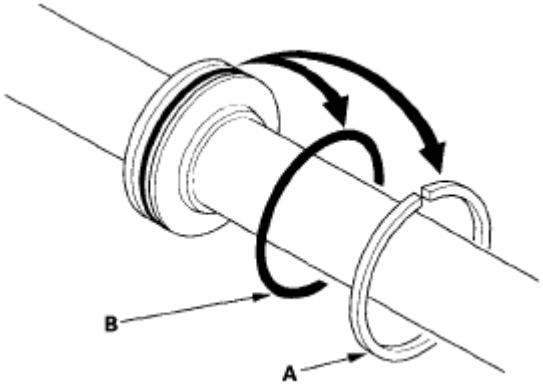


Fig. 74: Locating Piston Seal Ring And O-Ring

19. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.

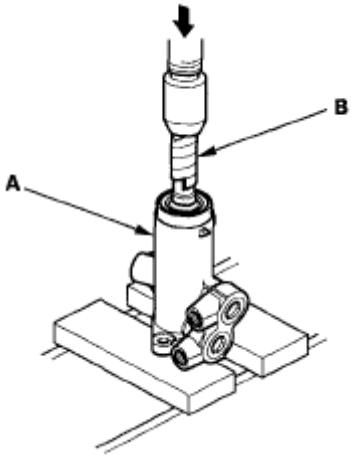


Fig. 75: Identifying Vinyl Of Splines On Pinion Shaft

20. Separate the valve housing from the pinion shaft/valve using a press.
21. Loosen the 16 mm flange nut (A), and remove the return line joint (B).

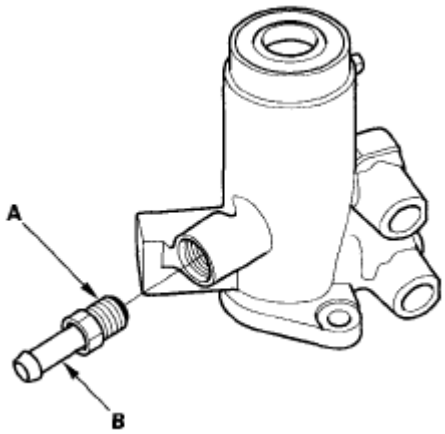


Fig. 76: Identifying Flange Nut And Return Line Joint

22. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.

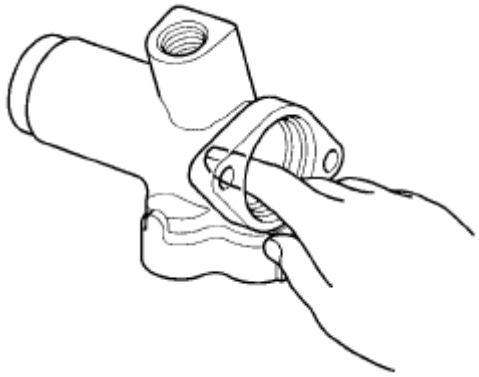


Fig. 77: Identifying Inner Wall Of Valve Housing With Your Finger

23. Check for wear, burrs, and other damage to the edges of the grooves in the sleeve.

NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.

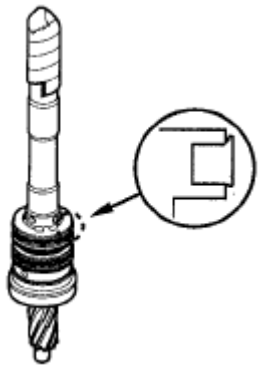


Fig. 78: Identifying Pinion Shaft And Sleeve

24. Remove the snap ring (A) and sleeve (B) from the pinion shaft.

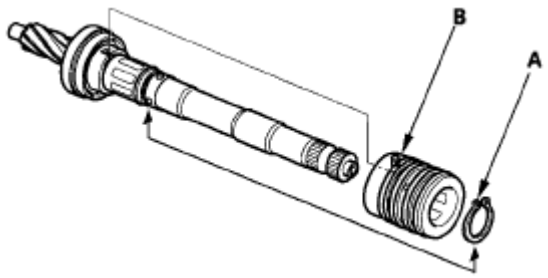


Fig. 79: Identifying Snap Ring And Sleeve

25. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

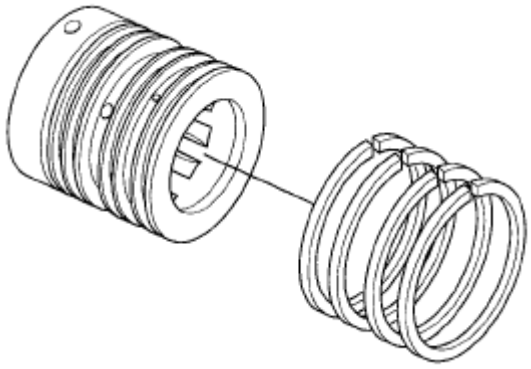


Fig. 80: Identifying Seal Rings

26. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.

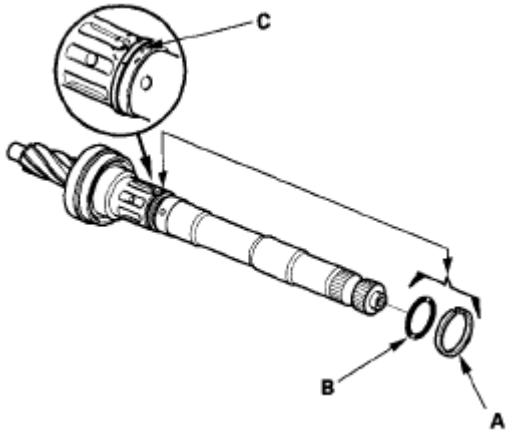


Fig. 81: Identifying Valve Seal Ring And O-Ring

27. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

    Note these items during disassembly:

    - Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
    - The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.

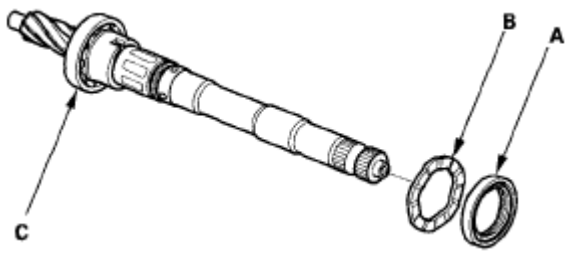


Fig. 82: Identifying Valve Oil Seal And Wave Washer

28. Remove the valve oil seal (A) and roller bearing (B) from the valve housing using a flat-tipped screw driver.

NOTE: Be careful not to damage the inner wall of the valve housing when removing by the flat-tipped screw driver.

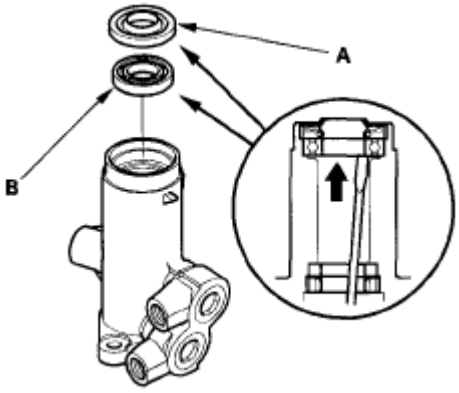


Fig. 83: Identifying Valve Oil Seal And Roller Bearing From Valve Housing

29. Remove the valve oil seal (A) and bushing (B) out of the valve housing using a hydraulic press and an appropriate size socket wrench.

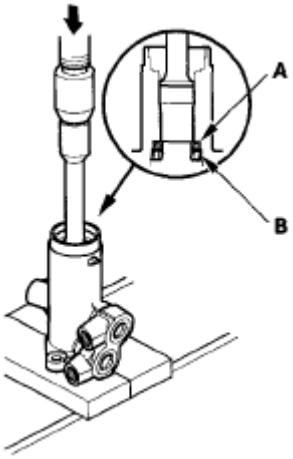


Fig. 84: Identifying Valve Oil Seal And Bushing Out Of Valve Housing

30. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

Reassembly

31. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.

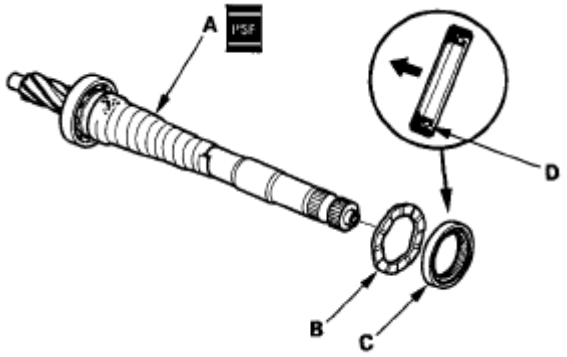


Fig. 85: Identifying Area Applying Vinyl Tape To Pinion Shaft

32. Install the wave washer (B).
33. Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).
34. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.

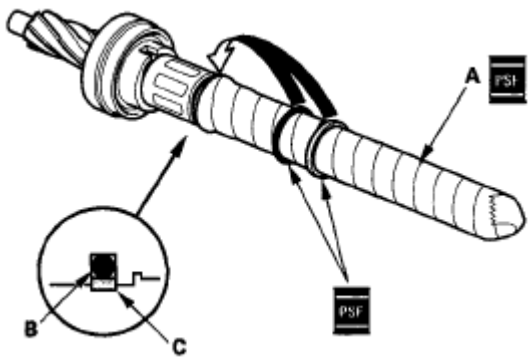


Fig. 86: Identifying Area Applying Vinyl Tape To Splines

35. Fit the new O-ring (B) in the groove of the pinion shaft. Then slide the new valve seal ring (C) over the shaft and in the groove on the pinion shaft.
36. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

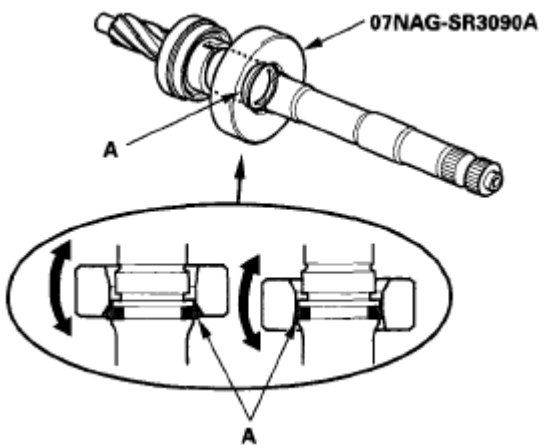


Fig. 87: Identifying Area Applying Power Steering Fluid To Surface Of Valve Seal Ring

37. Apply power steering fluid to the inside of the valve seal ring sizing tool. Set the larger diameter end of the sizing tool over the valve seal ring, and move the sizing tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
38. Remove the sizing tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fit snugly in the pinion shaft groove.
39. Apply power steering fluid to the surface of the sleeve seal ring guide. Slip two new seal rings (A) over the ring guide from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

    Note these items when installing the seal ring:

    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the sizing tool.
    - There are two types of sleeve seal rings; black and brown. Do not mix the different types of rings as they are not compatible.

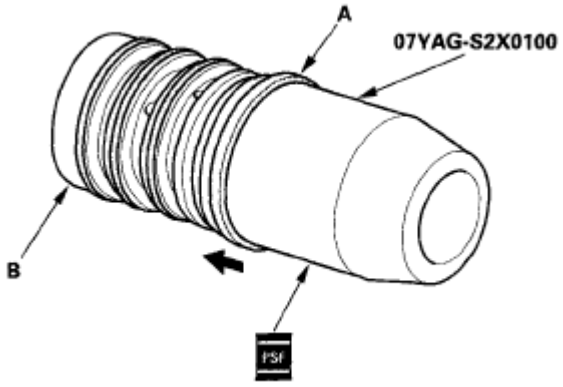


Fig. 88: Identifying Area Applying Power Steering Fluid To Surface Of Sleeve Seal Ring Guide

40. Align the ring guide with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
41. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the sleeve seal ring sizing tool, then slowly insert the sleeve into the sizing tool.

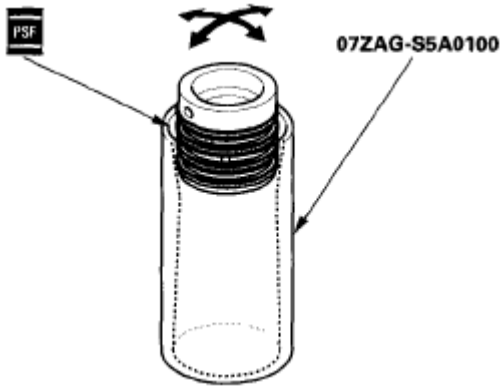


Fig. 89: Identifying Area Applying Power Steering Fluid On Sleeve

42. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Make sure the seal rings are not twisted.
43. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

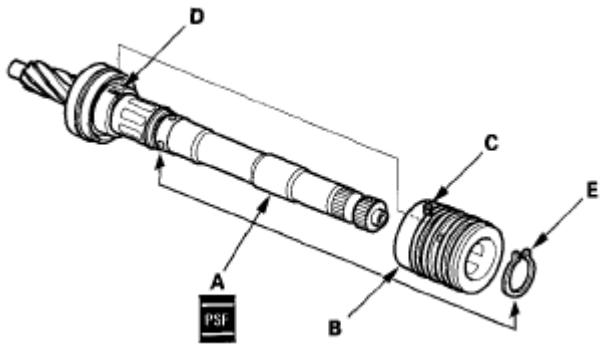


Fig. 90: Identifying Area Applying Power Steering Fluid To Surface Of Pinion Shaft

44. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal and bushing (B) in the valve housing (C) using a hydraulic press, driver, and attachment. Install the seal with its grooved side facing the tool.

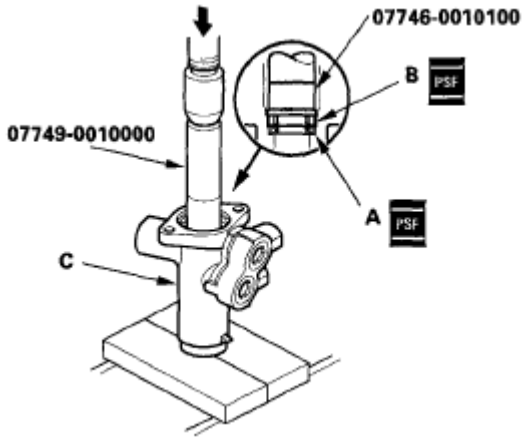


Fig. 91: Identifying Area Applying Power Steering Fluid To Seal Ring Lip

45. Press the roller bearing (A) into the valve housing (B) with a hydraulic press, driver, and attachment.

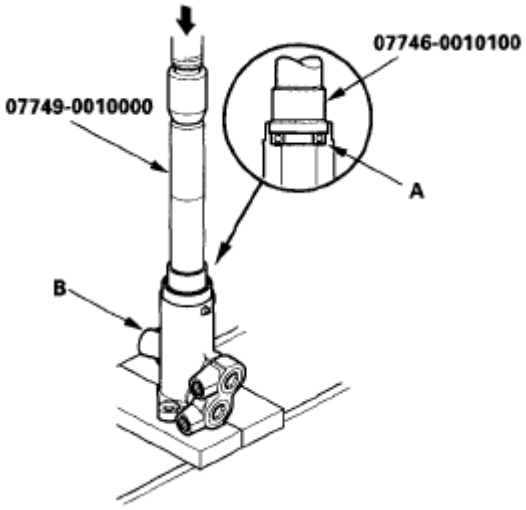


Fig. 92: Identifying Roller Bearing Into Valve Housing

46. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press, driver, and attachment. Install the seal with its grooved side facing the tool.

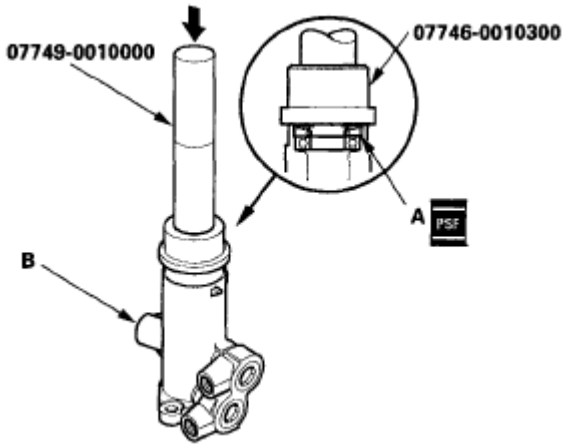


Fig. 93: Identifying Area Applying Power Steering Fluid To Seal Ring Lip

47. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.

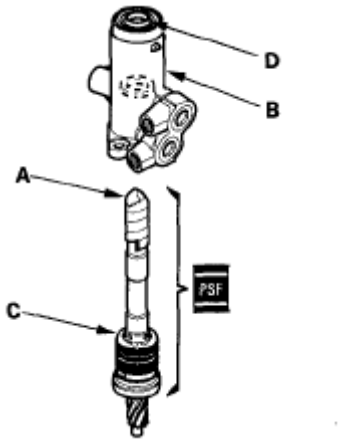


Fig. 94: Identifying Area Applying Vinyl Tape To Pinion Shaft

48. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).
49. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
50. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

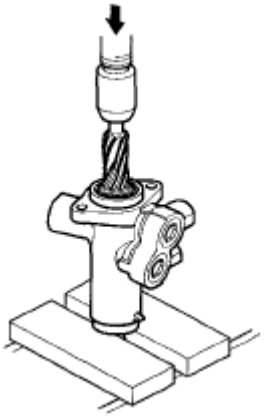


Fig. 95: Identifying Pinion Shaft/Sleeve Into Valve Housing

51. Coat the piston seal ring guide with power steering fluid, then slide it onto the rack, big end first.
52. Position the new O-ring (A) and new piston seal ring (B) on the piston seal ring guide, then slide them down toward the big end of the tool.

    Note these items during reassembly:

    - Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the sizing tool.
    - Replace piston's O-ring and seal ring as a set.

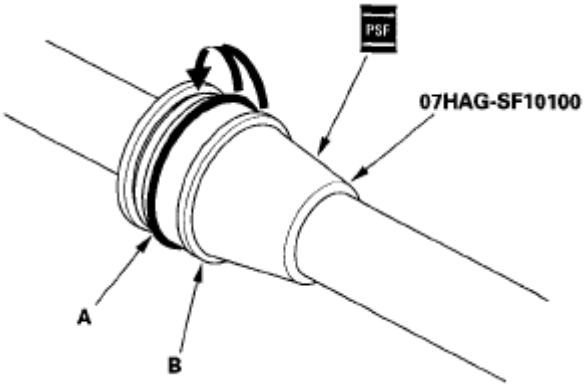


Fig. 96: Identifying O-Ring And Piston Seal Ring

53. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.
54. Coat the piston seal ring (A) and the inside of the piston seal ring sizing tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

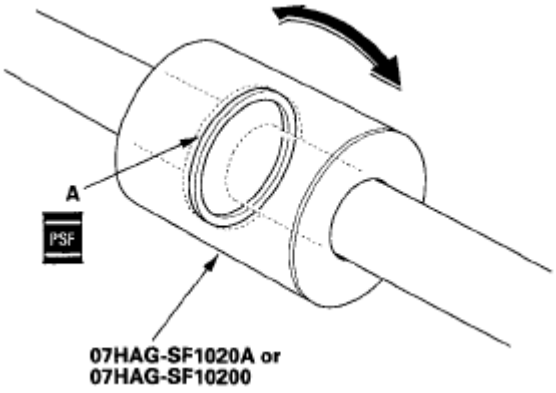


Fig. 97: Identifying Piston Seal Ring

55. Move the sizing tool back and forth several times to make the piston seal ring fit snugly in the piston.
56. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

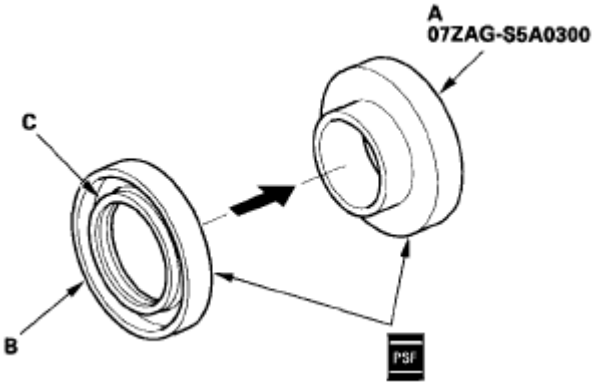


Fig. 98: Identifying Seal On Seal Slider With Grooved Side

57. Coat the surface of the steering rack (A) with power steering fluid.

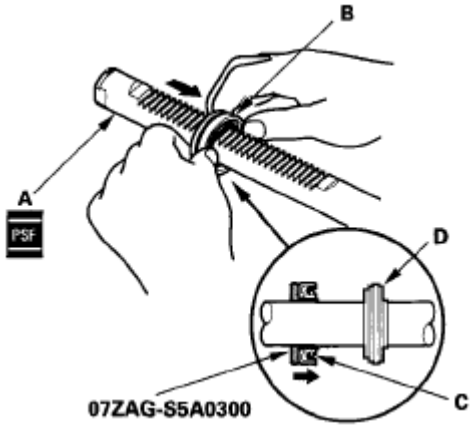


Fig. 99: Identifying Cylinder Seal Onto Steering Rack With Grooved Side

58. Install the cylinder end seal (B) onto the steering rack with its grooved side (C) toward the piston (D).
59. Separate the cylinder end seal from the cylinder end seal slider, then remove the seal slider.
60. Install the new backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).

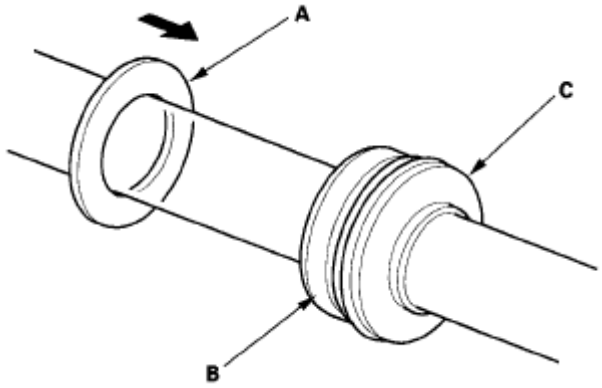


Fig. 100: Identifying Backup Ring And Cylinder End Seal

61. Apply steering grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.

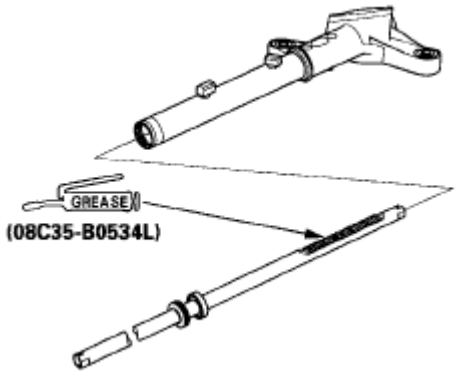


Fig. 101: Identifying Area Applying Steering Grease To Steering Rack Teeth

62. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.

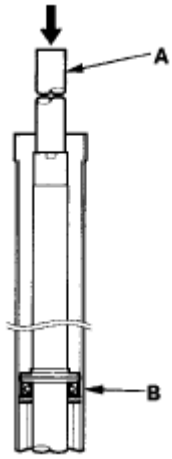


Fig. 102: Identifying Socket Wrench Onto Steering Rack

63. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.
64. Remove the tool, and center the steering rack.
65. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

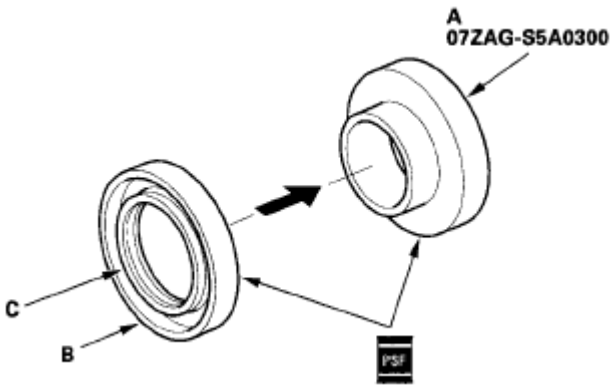


Fig. 103: Identifying Seal On Seal Slider With Grooved Side

66. Coat the inside surface of the cylinder end seal slider and steering rack with power steering fluid, then install the cylinder end seal (A) onto the steering rack with its grooved side toward the cylinder.

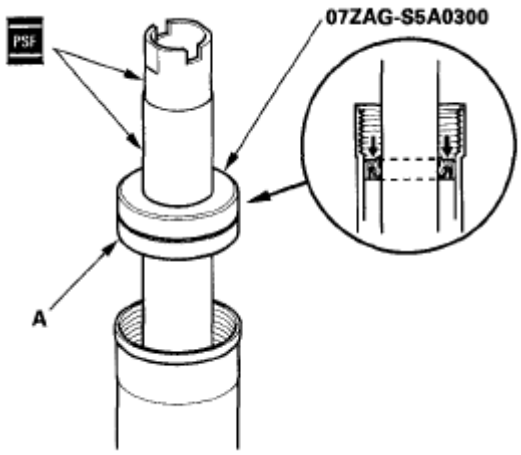


Fig. 104: Identifying Cylinder End Seal Slider And Steering Rack

67. Separate the cylinder end seal from the cylinder end seal slider, then remove the seal slider.
68. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.
69. Hold the gearbox housing using a C-clamp (commercially available) (A) and wooden blocks (B). Do not clamp the cylinder part of the gearbox housing in the vise.

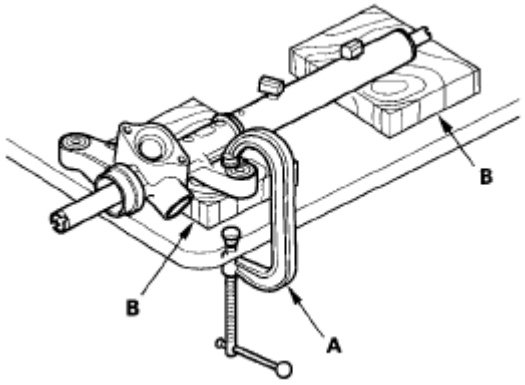


Fig. 105: Identifying Gearbox Housing Using C-Clamp (Commercially Available)

70. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B). Tighten the cylinder end to the specified torque.

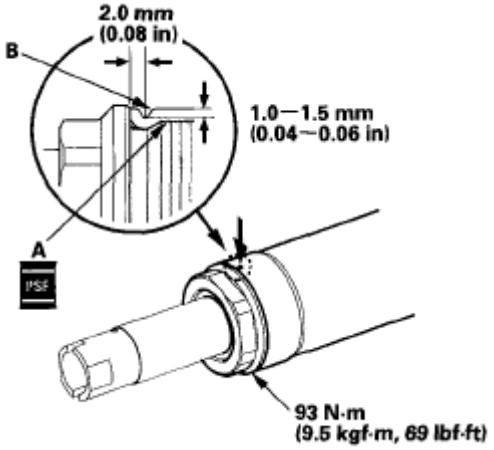


Fig. 106: Identifying Cylinder Screw (With Torque Specifications)

71. Stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).
72. Install the return line joint (A), and tighten the 16 mm flare nut (B).

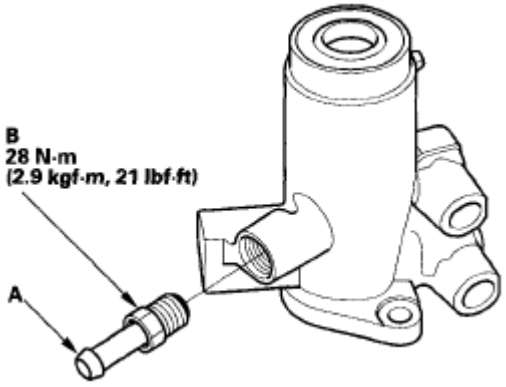


Fig. 107: Identifying Return Line Joint And Flare Nut (With Torque Specifications)

73. Coat the new O-ring (A) with steering grease, and carefully fit it on the valve housing.

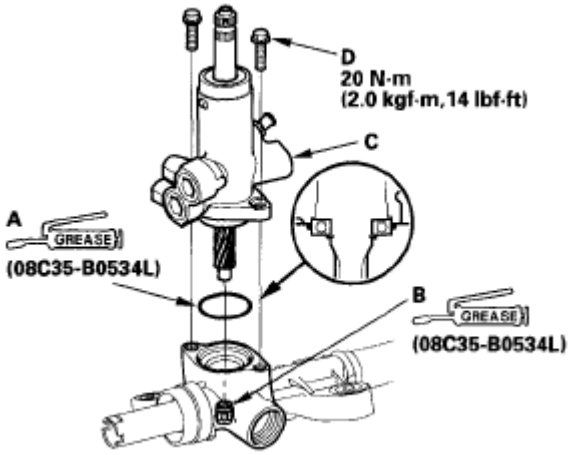


Fig. 108: Identifying Area Applying Steering Grease (With Torque Specifications)

74. Apply steering grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
75. Tighten the flange bolts (D) to the specified torque.
76. Install the cylinder lines.

    Note these items during reassembly:

    - Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
    - Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.

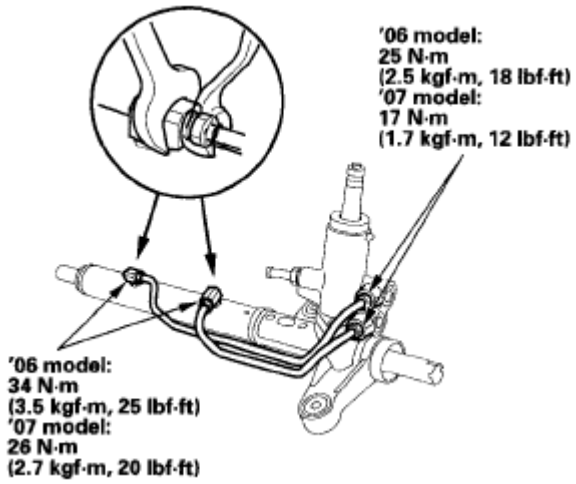


Fig. 109: Identifying Flange Bolts (With Torque Specifications)

77. Apply steering grease to the sliding surface of the rack guide (A), and install it onto the gearbox housing.

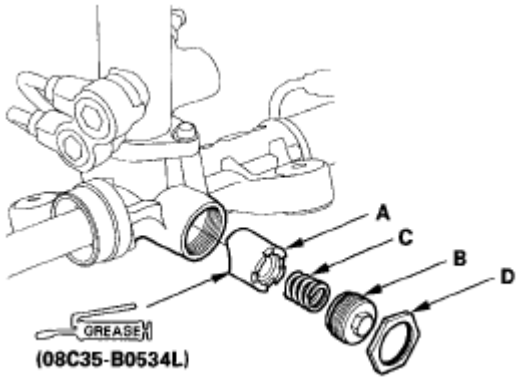


Fig. 110: Identifying Gearbox Housing Components

78. Remove the old sealant from the rack guide screw (B), then apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Install the spring (C), rack guide screw and locknut (D).
79. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.

80. Install a new rubber stop (A) and a new lock washer (B). Align the lock washer tabs (C) with the slots (D) on the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack.

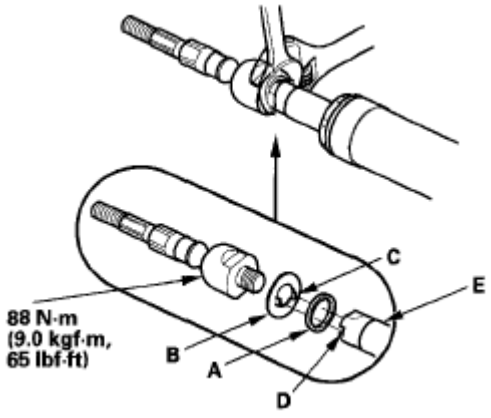


Fig. 111: Identifying Rubber Stop, Lock Washer With Slots (With Torque Specifications)

81. Hold the flat surface sections of the steering rack with a wrench, and tighten both rack ends. Be careful not to damages the rack surface with the wrench.
82. Bend the lock washer (A) back against the flat spots on the rack end joint housing.

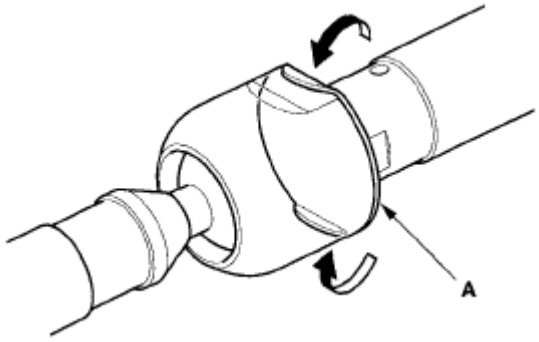


Fig. 112: Locating Lock Washer

83. Apply multipurpose grease to the circumference of the rack end joint housing (A).

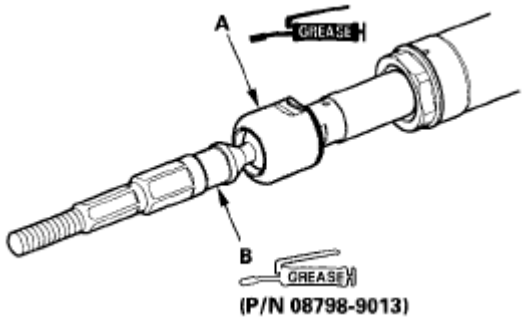


Fig. 113: Identifying Area Applying Grease

84. Apply a light coat of silicone grease (P/N 08798-9013) to the boot grooves (B) on the rack end.

85. Center the steering rack within its stroke.
86. Clean off the any grease or contamination from the boot installation grooves (A) around on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

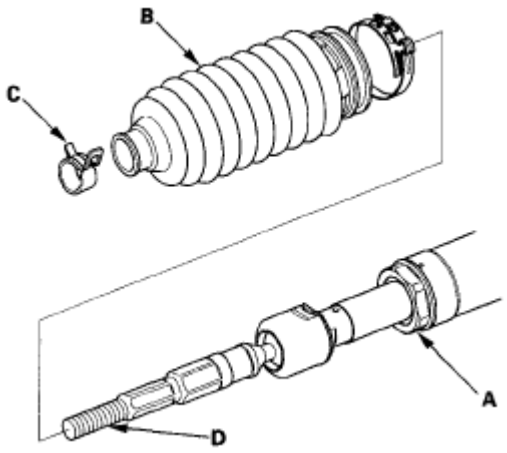


Fig. 114: Identifying Boots Tie-Rod Clips

87. After installing the boots, wipe the grease off the threaded section (D) of the rack end.
88. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.

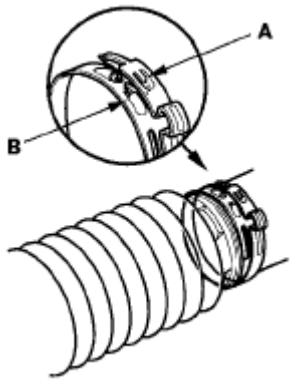


Fig. 115: Aligning Tabs With Holes Of Band

89. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).

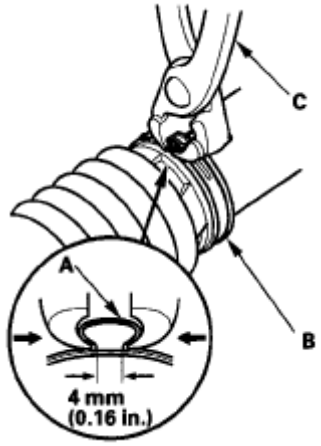


Fig. 116: Identifying Twisted Band

90. Slide the rack right and left to be certain that the boots are not deformed or twisted.
91. Reinstall the steering gearbox (see **STEERING GEARBOX INSTALLATION**).
92. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.

STEERING GEARBOX INSTALLATION

1. Place the gearbox in position on the front subframe.
2. Loosely install the stiffener plates (A) and gearbox mounting bolts on the leftside of the steering gearbox.

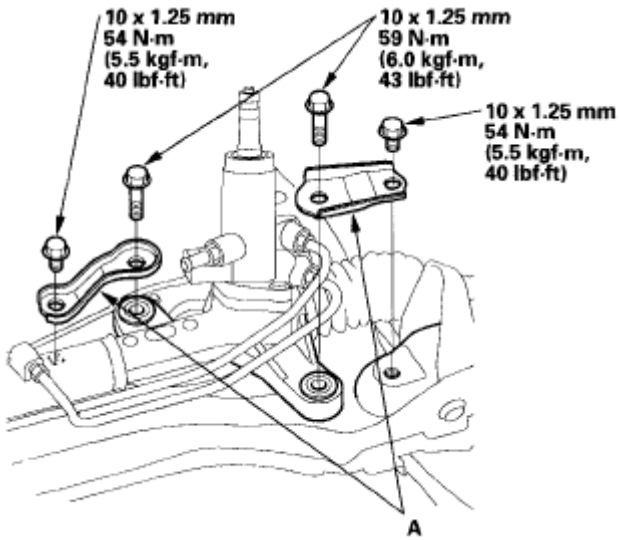


Fig. 117: Identifying Stiffener Plates And Gearbox Mounting Bolts (With Torque Specifications)

3. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the right side of the steering gearbox securely.

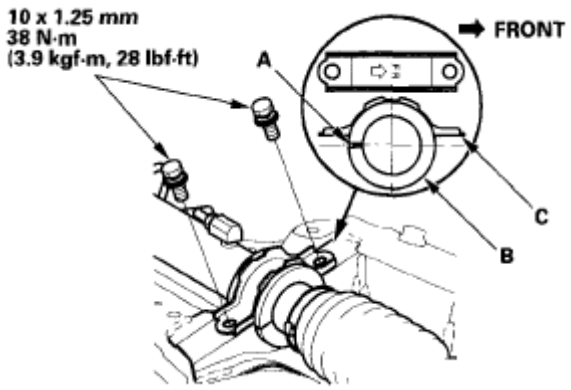


Fig. 118: Identifying Cutout On Mounting Cushion (With Torque Specifications)

4. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two 10 mm bolts.
5. Tighten the 10 mm bolts on the both sides of the steering gearbox to specified torque alternately in two or more steps.
6. Install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the valve housing. The grommet must not have a gap at the mating surface of the grommet and valve housing.

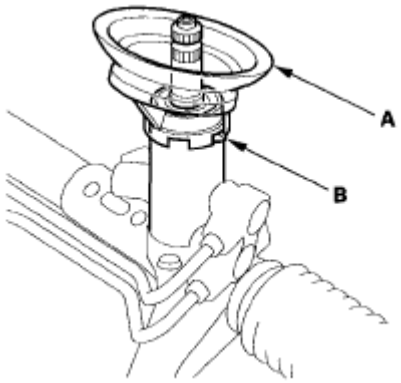


Fig. 119: Identifying Slot In Pinion Shaft Grommet With Lug Portion

7. Carefully raise the front subframe with the front subframe adaptor and the transmission jack or the powertrain lift until the subframe is in position, then loosely install new subframe mounting bolts.

NOTE: Be sure that the pinion shaft grommet is in place securely. Make sure the pinion shaft grommet is not turned up. Incorrect installation can cause leakage of water, mud, and noise.

8. Align the front subframe reference marks (A) to the body (B), as noted during removal.

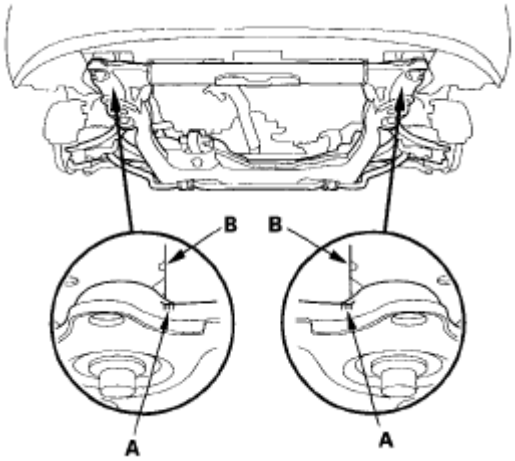


Fig. 120: Identifying Marks To Body

9. Tighten the new front subframe rear mounting bolts (A) to the specified torque.

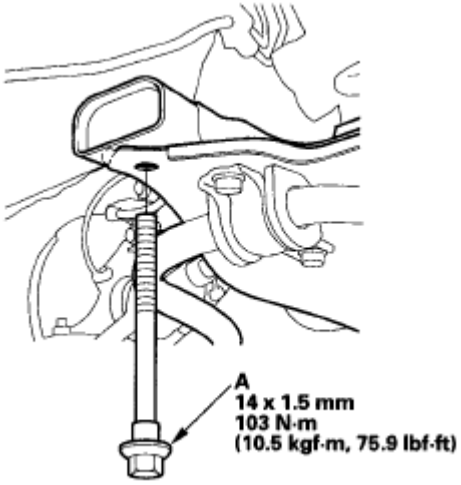


Fig. 121: Identifying Front Subframe Rear Mounting Bolts (With Torque Specifications)

10. Tighten the new front subframe front mounting bolts (A) to the specified torque.

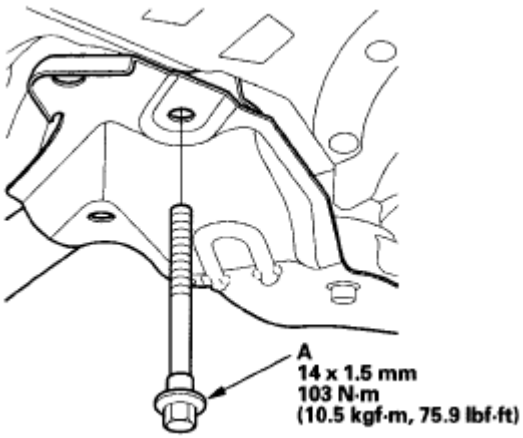


Fig. 122: Identifying Front Subframe Front Mounting Bolts (With Torque Specifications)

11. Install the new lower torque rod bracket bolts (A), and tighten to the specified torque.

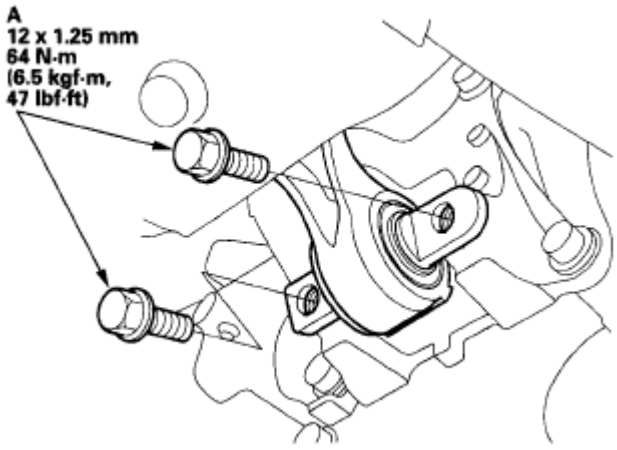


Fig. 123: Identifying Lower Torque Rod Bracket Bolts (With Torque Specifications)

12. Install the new front subframe middle mount bolt (A) on the left side, and tighten it to the specified torque.

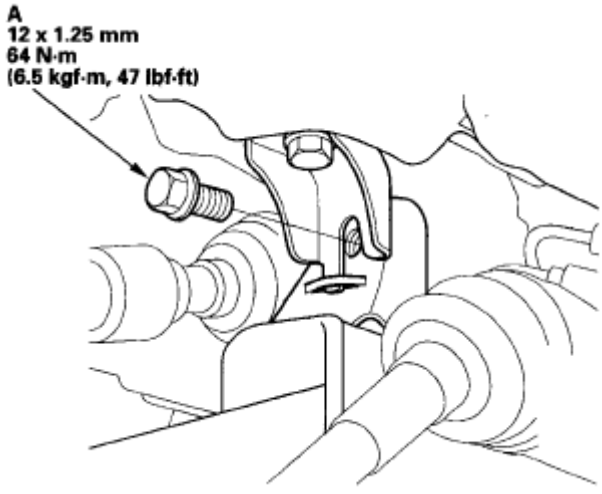


Fig. 124: Identifying Front Subframe Middle Mount Bolt On Left Side - Specified Torque

13. Install the new front subframe middle mount bolt (A) on the right side, and tighten it to the specified torque.

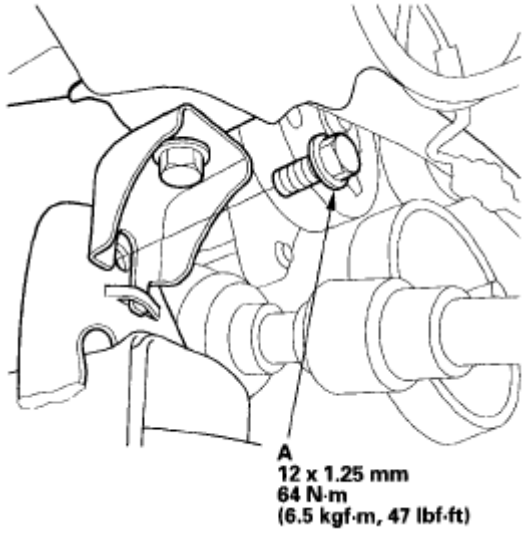


Fig. 125: Identifying Front Subframe Middle Mount Bolt On Right Side (With Torque Specifications)

14. Lower the transmission jack supporting the front subframe.
15. Connect the lower arm (A) to the lower ball joint (B).

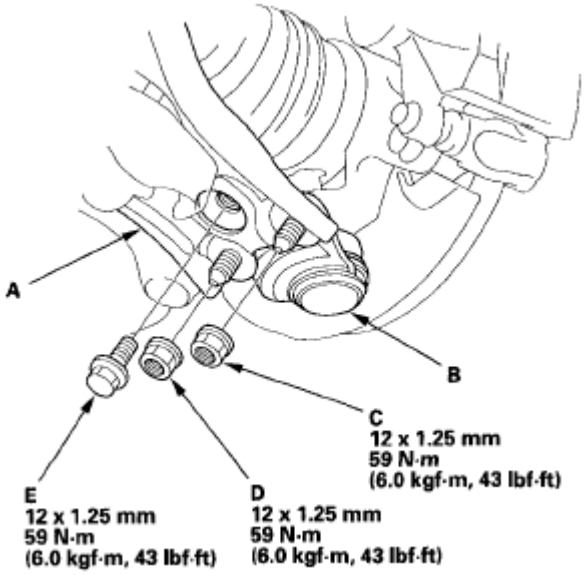


Fig. 126: Identifying Lower Arm To Lower Ball Joint (With Torque Specifications)

16. Install a new flange bolt and the new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the flange nut on the front (C), the flange nut on the rear (D), then the flange bolt (E).
17. Connect the inlet line (A), and loosely install the 18 mm flare nut (B). Do not tighten the flare nut to the specified torque yet.

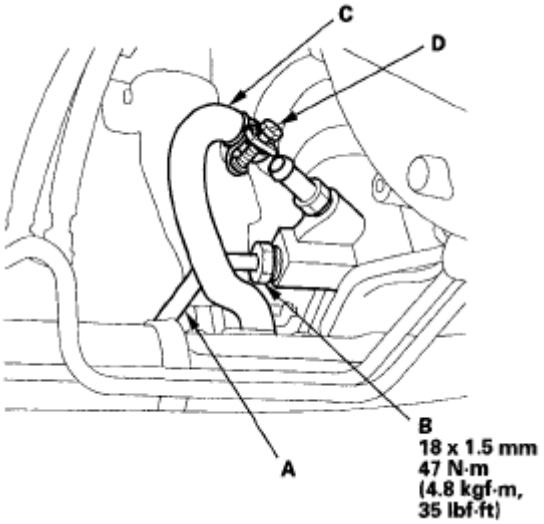


Fig. 127: Identifying Flare Nut (With Torque Specifications)

18. Connect the return hose (C) securely, and tighten the adjustable hose clamp (D) (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).
19. Install the inlet line clamp bolt (A). Install the return line holder (B), and the return line clamp bolt (C) on the front subframe.

NOTE: Make sure that there is no interference between the inlet line, the return line, and any other parts.

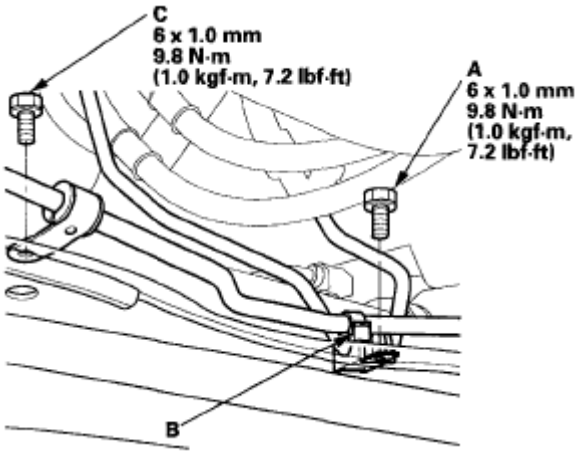


Fig. 128: Identifying Return Line Clamp Bolt (With Torque Specifications)

20. Retighten the inlet line 18 mm flare nut to the specified torque value.
21. Install the front splash shield, 2-door (see **FRONT SPLASH SHIELD REPLACEMENT**), 4-door (see **4-DOOR**).
22. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B), and tighten it.

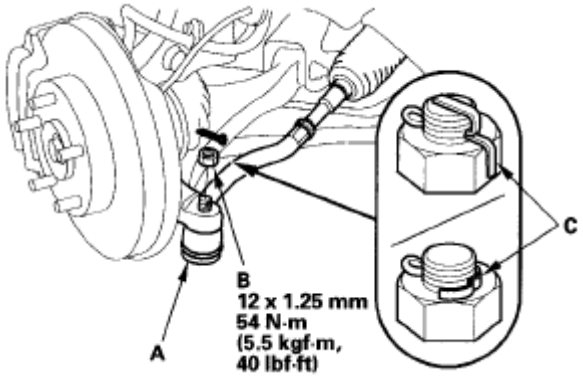


Fig. 129: Identifying Tie-Rod Cotter Pin (With Torque Specifications)

23. Install the new cotter pin (C), and bend it as shown.
24. Install the pump outlet hose clamp (A).

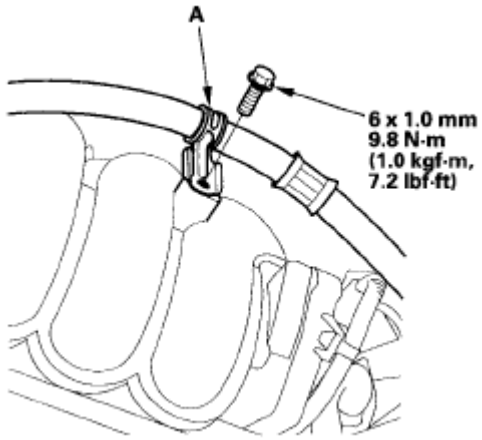


Fig. 130: Identifying Pump Outlet Hose Clamp (With Torque Specifications)

25. Remove the engine hanger, support bolt, and support hanger from the vehicle.
26. Center the steering rack within its stroke in the steering joint connection.
27. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B) in the range shown.

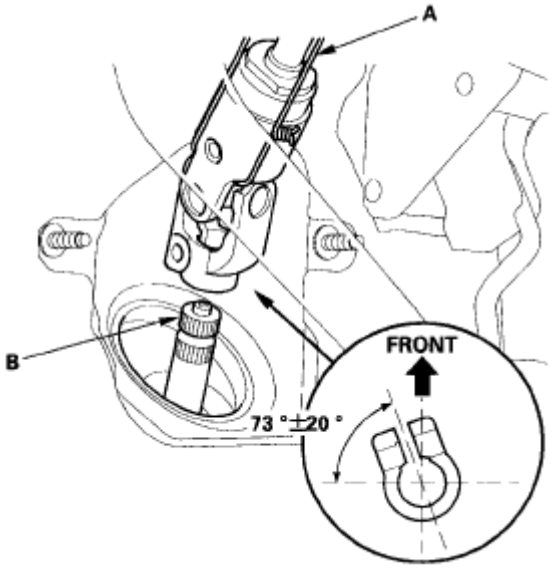


Fig. 131: Identifying Steering Joint Onto Pinion Shaft

28. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.

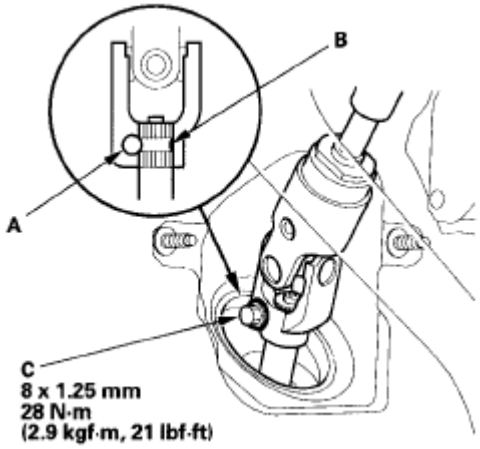


Fig. 132: Aligning Bolt Hole On Steering Joint (With Torque Specifications)

29. Install the steering joint cover (A).

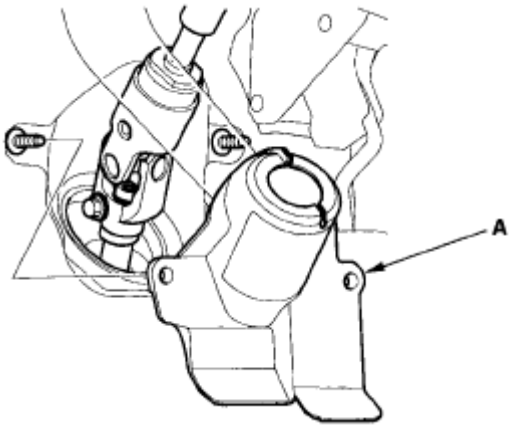


Fig. 133: Identifying Steering Joint Cover

30. Install the driver's dashboard undercover (see **DRIVER'S DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
31. Install the front wheel, then set the front wheels in the straight ahead position.
32. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
33. Install the air cleaner housing mounting bracket (A) on the cylinder head.

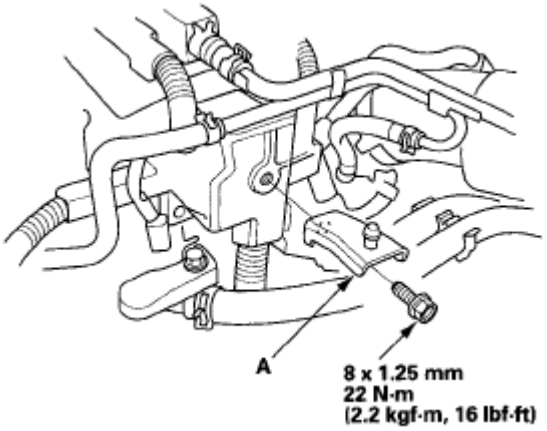


Fig. 134: Identifying Air Cleaner Housing Mounting Bracket (With Torque Specifications)

34. Install the air cleaner housing (see **THROTTLE BODY CLEANING**).
35. Install the under-cowl panel and cowl cover (see **FRONT GRILLE COVER REPLACEMENT**).
36. Reconnect the negative cable to the battery and do these items:
    - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
    - Set the clock.
    - Make sure the horn and turn signal switch work properly.
    - Make sure the steering wheel switches work properly.
    - Make sure the steering wheel is centered.
37. Fill the system with power steering fluid, and bleed air from the system (see **FLUID REPLACEMENT**).

38. After installation, do the following checks:
    - Start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times to warm up to the fluid. Check the steering gearbox for leaks (see **FLUID LEAKAGE INSPECTION**).
    - Check the steering wheel spoke angle.

      IF steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

    - Check the front toe inspection (see **FRONT TOE INSPECTION/ADJUSTMENT**).

GEARBOX MOUNT CUSHION REPLACEMENT

1. Remove the steering gearbox (see **STEERING GEARBOX OVERHAUL**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.

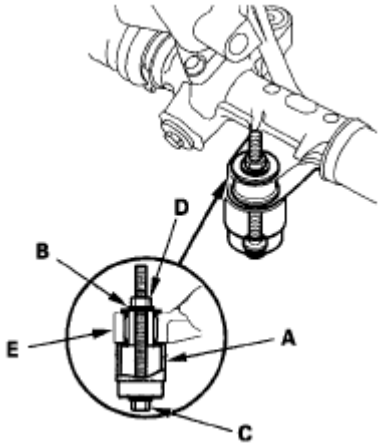


Fig. 135: Identifying Gearbox Flange Bolt And Nut

3. Hold the 10 mm nut with a wrench, and tighten the 10 x 105 mm flange bolt with another wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place the mount cushion on the gearbox mounting cushion hole.

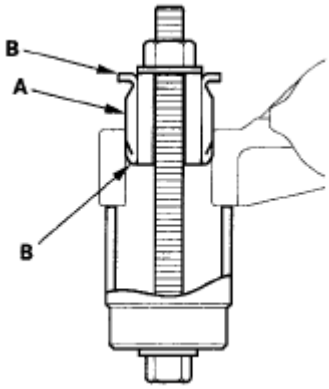


Fig. 136: Identifying Gearbox Housing, Washer, Flange Bolt And Nut

5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.
7. Install the steering gearbox (see **STEERING GEARBOX INSTALLATION**).
8. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

2006-08 STEERING

Steering - Civic (All Except Hybrid)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAK-SNAA400	1.8 Support Eyelet	1
②	07AAK-SNAA500	1.8 Support Bolt	1
③	07HAG-SF10100	Piston Seal Ring Guide	1
④	07HAG-SF1020A or 07HAG-SF10200	Piston Seal Ring Sizing Tool	1
⑤	07JAF-SH20330	Bushing Base	1
⑥	07MAA-SL00100 or 07916-SA50001	Locknut Wrench, 40 mm	1
⑦	07MAA-SL0020A	Locknut Wrench, 43 mm	1
⑧	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑨	07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑩	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑪	07RAK-S040111	P/S joint Adapter (Pump)	1
⑫	07RAK-S040122	P/S joint Adapter (Hose)	1
⑬	07YAG-S2X0100	Sleeve Seal Ring Guide	1
⑭	07ZAB-S5A0100	Pulley Holder	1
⑮	07ZAG-S5A0100	Sleeve Seal Ring Sizing Tool, 36 mm	1
⑯	07ZAG-S5A0300	Cylinder End Seal Slider	1
⑰	07406-0010001 or 07406-001000A	P/S Pressure Gauge	1
⑱	07746-0010100	Attachment, 32 x 35 mm	1
⑲	07746-0010300	Attachment, 42 x 47 mm	1
⑳	07749-0010000	Driver	1

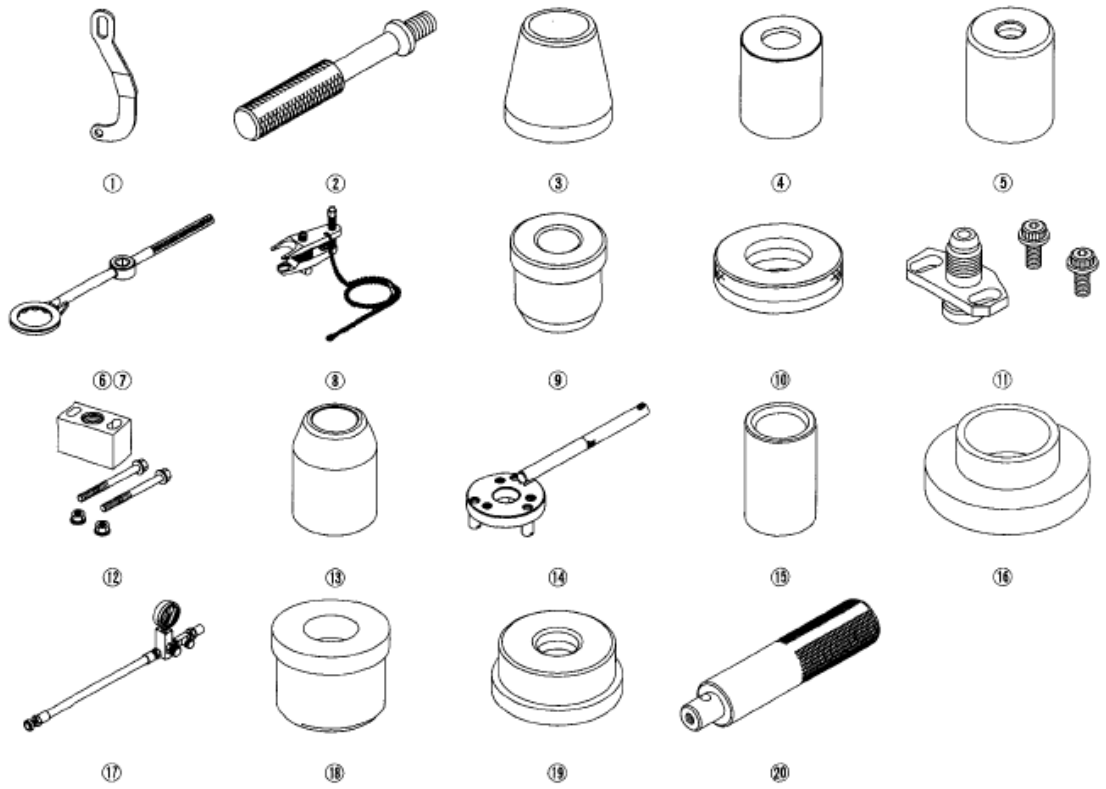


Fig. 1: Identifying Special Tools

COMPONENT LOCATION INDEX

Hydraulic Power Steering Type

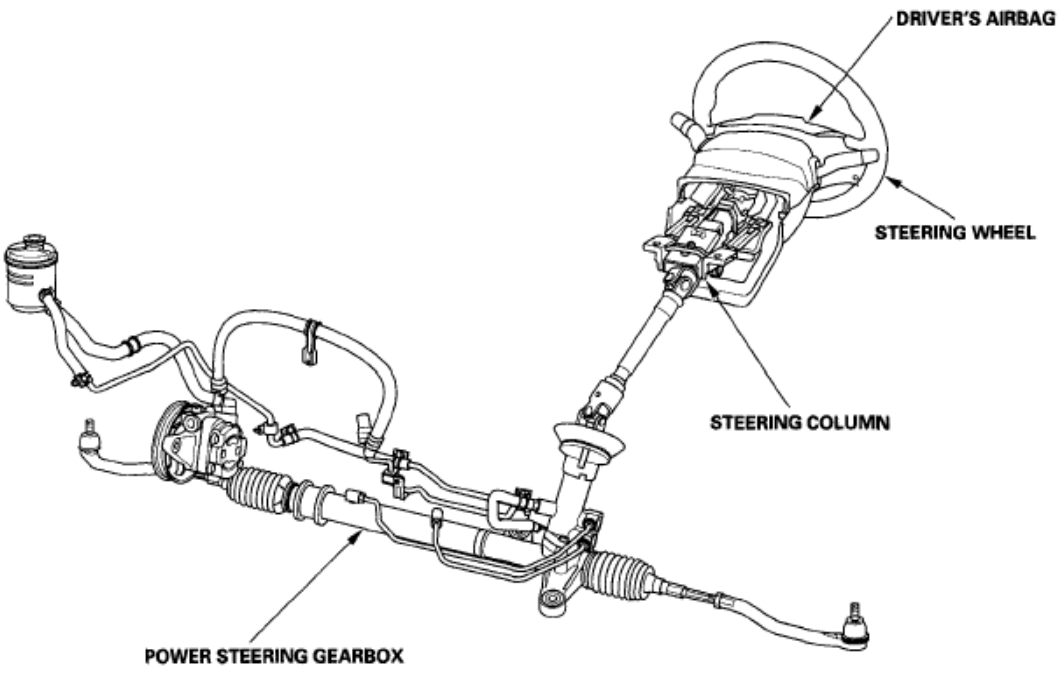


Fig. 2: Identifying Hydraulic Power Steering Type Component Location

EPS Type

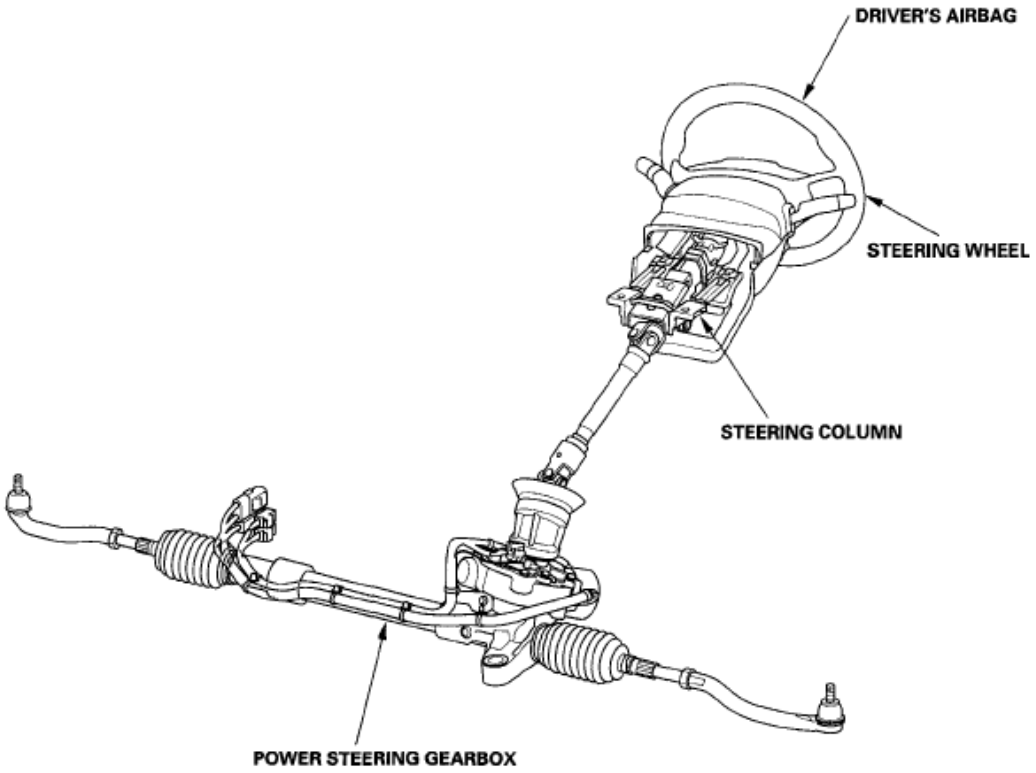


Fig. 3: Identifying Hydraulic Power Steering EPS Type Component Location

STEERING WHEEL ROTATIONAL PLAY CHECK

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the gearbox and linkages are OK.
   - If the play exceeds the limit, adjust the rack guide: power steering type (see **HYDRAULIC POWER STEERING TYPE**), EPS type (see **EPS TYPE**). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see **STEERING LINKAGE AND GEARBOX INSPECTION**).

Rotational play: 0-10 mm (0-0.39 in.)

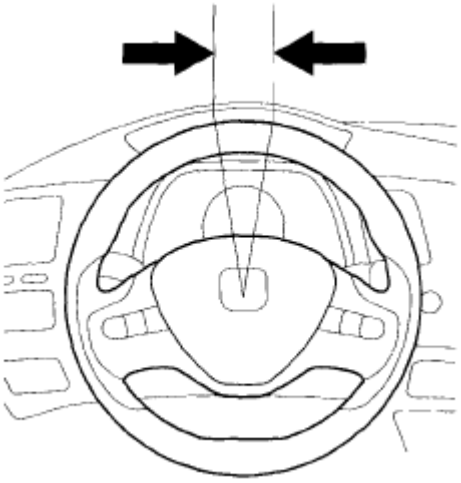


Fig. 4: Identifying Steering Wheel Rotational Play

POWER ASSIST CHECK

NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

1. For the power steering type, check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the component and the fluid (power steering type).
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.
   - If the scale reads no more than the specification, the steering gearbox and pump are OK.
   - For the power steering type, if the scale reads more than specifications, troubleshoot the steering system (see **SYMPTOM TROUBLESHOOTING**)
   - For the EPS type, if the scale reads more than specifications, check for steering linkage (see **STEERING LINKAGE AND GEARBOX INSPECTION**), and check the rack guide adjustment (see **EPS TYPE**).

Initial turning load: 34 N (3.5 kgf, 7.7 lbf)

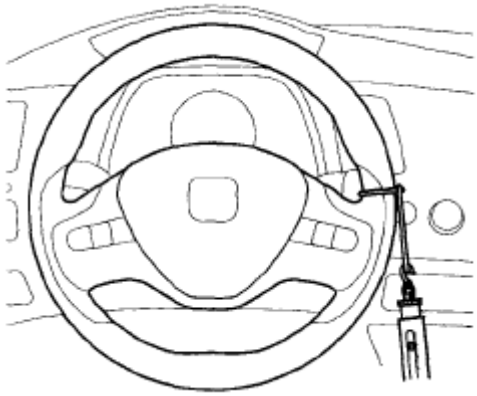


Fig. 5: Identifying Power Steering Wheel Initial Turning Load

STEERING LINKAGE AND GEARBOX INSPECTION

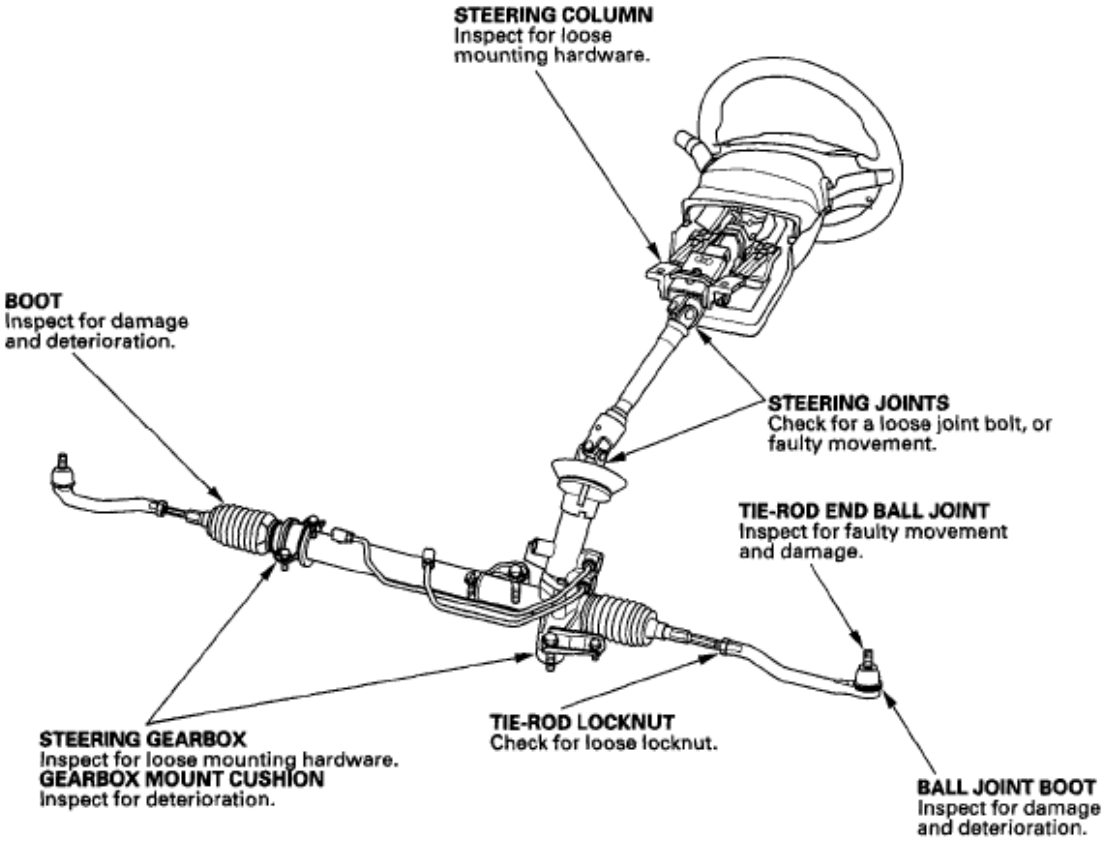


Fig. 6: Identifying Steering Linkage And Gearbox Components Location

STEERING WHEEL REMOVAL

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

1. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.

2. Make sure the ignition switch at LOCK (0), then disconnect the negative cable from the battery.
3. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see **DRIVER'S AIRBAG REPLACEMENT**).
4. Disconnect the cable reel subharness connector (A).

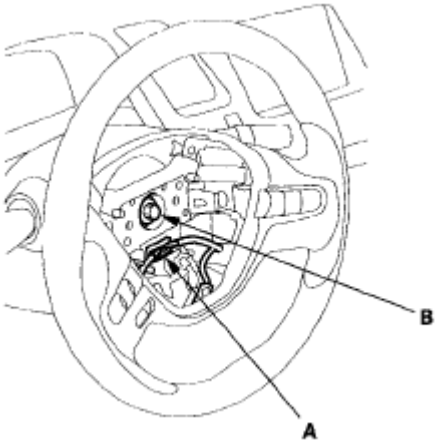


Fig. 7: Identifying Cable Reel Subharness Connector And Steering Wheel Bolt

5. Loosen the steering wheel bolt (B).
6. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

   Note these items when removing the steering wheel:

   - Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
   - If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

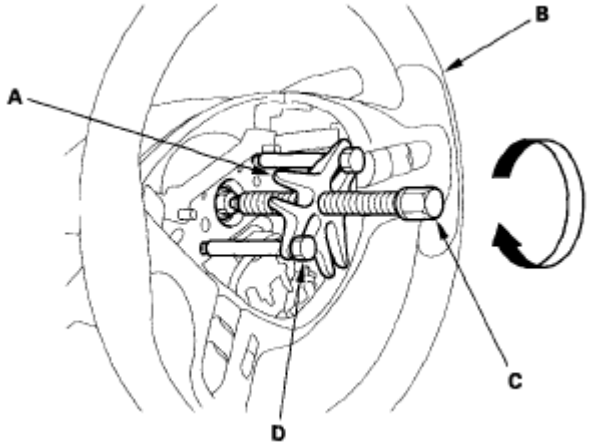


Fig. 8: Identifying Steering Wheel Puller On Steering Wheel & Bolts

7. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.

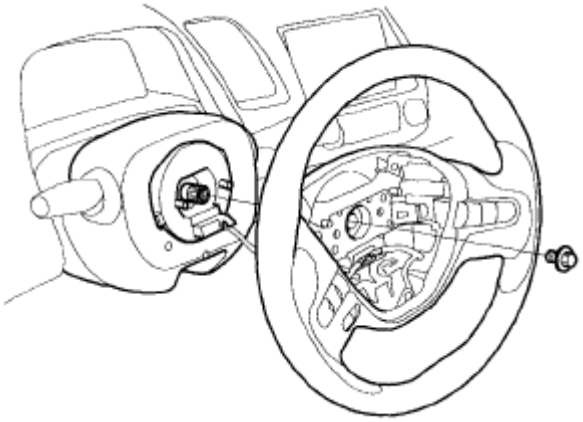


Fig. 9: Identifying Steering Wheel And Bolt

STEERING WHEEL DISASSEMBLY/REASSEMBLY

Except Si model

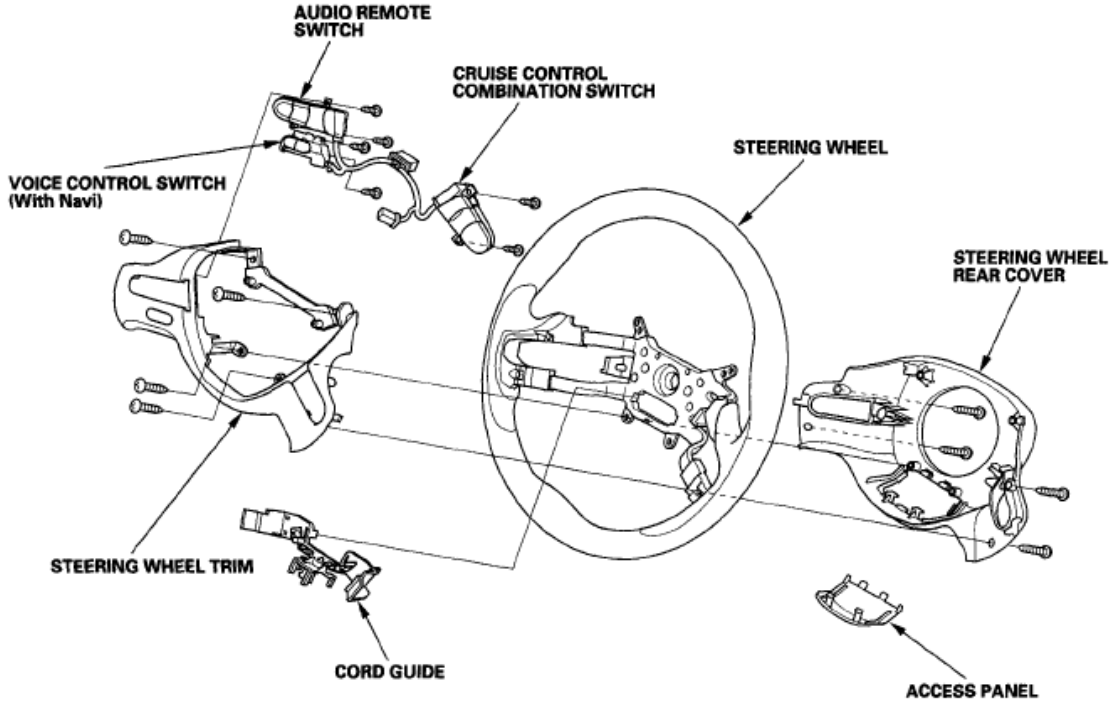


Fig. 10: Exploded View Of Steering Wheel - Except Si Model

Si model

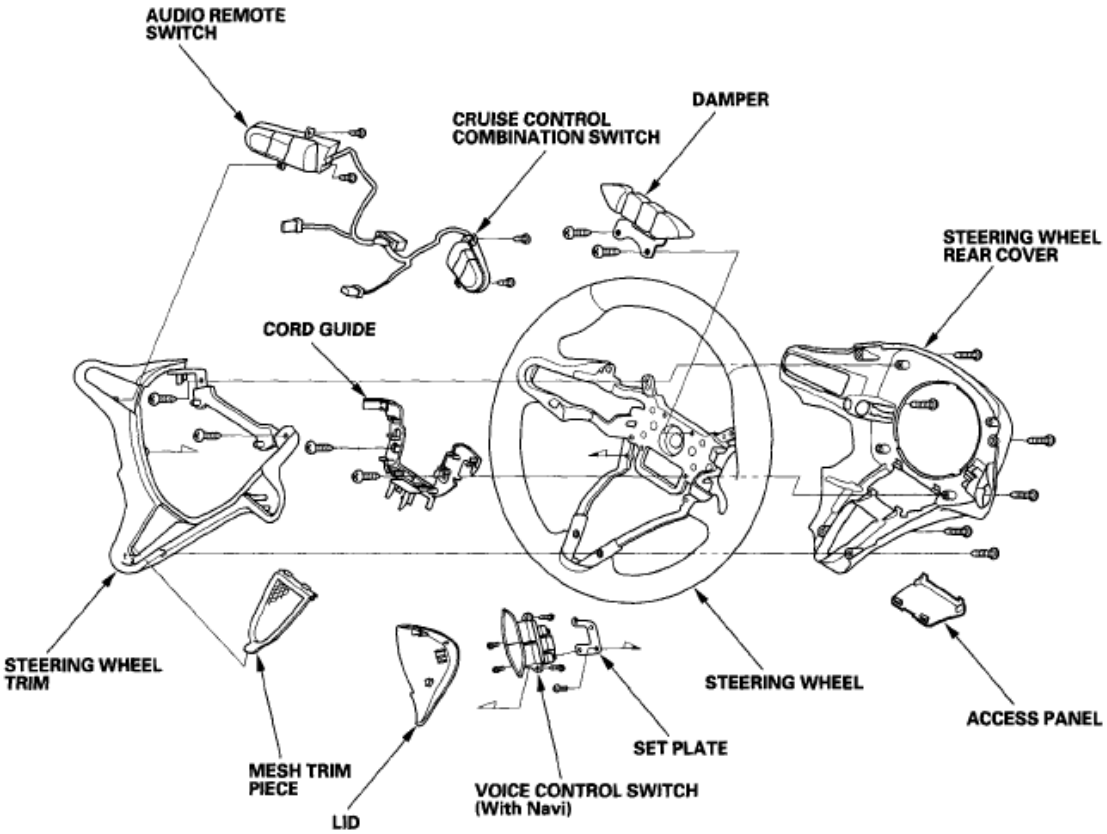


Fig. 11: Exploded View Of Steering Wheel - Si Model

STEERING WHEEL INSTALLATION

1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label should point straight up.

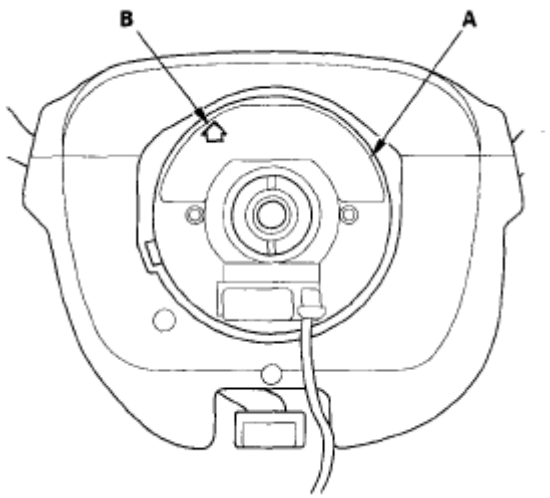


Fig. 12: Identifying Arrow Mark On Cable Reel Label

2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel

on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the turn signal canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.

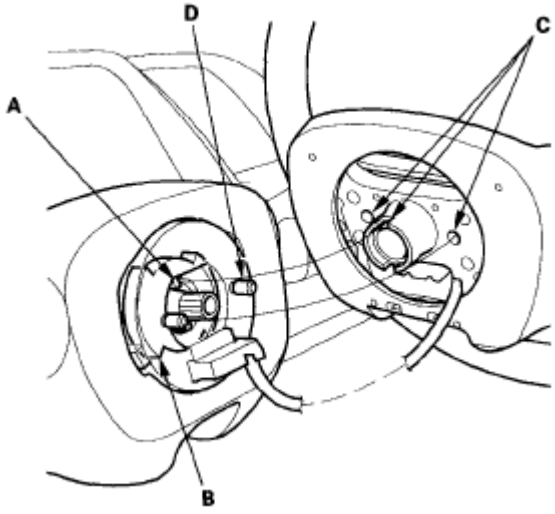


Fig. 13: Identifying Steering Wheel On Steering Column Shaft

3. Install the steering wheel bolt (A), and tighten it to the specified torque. Connect the cable reel subharness connector (B). Make sure the wire harness is routed and fastened properly.

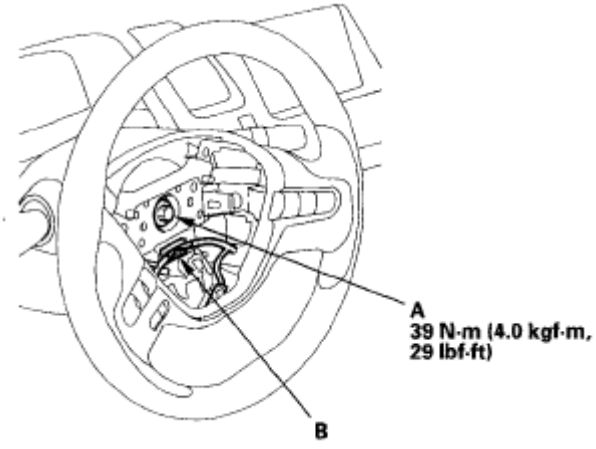


Fig. 14: Identifying Steering Wheel Bolt - Specified Torque

4. Install the driver's airbag, and confirm that the system is operating properly (see **DRIVER'S AIRBAG REPLACEMENT**).
5. Reconnect the negative cable to the battery and do these items:
   - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
   - Set the clock.
   - Make sure the horn and turn signal switch work properly.
   - Make sure the steering wheel switches work properly.

- Make sure the steering wheel is centered.

6. After installation, do these checks.
   - Check the steering wheel spoke angle. If the steering spoke angles to the right and left are not equal (steering wheel is not centered), correct the engagement of the wheel/column shaft serrations.
   - Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see **FRONT TOE INSPECTION/ADJUSTMENT**).

COLUMN COVER REMOVAL AND INSTALLATION

NOTE:

- **Take care not to scratch or damage the column covers.**
- **Do not pry the cover surface with any tools.**

1. Release the lock lever (A), and adjust the steering column to full tilt down position and to the full telescopic pull position.

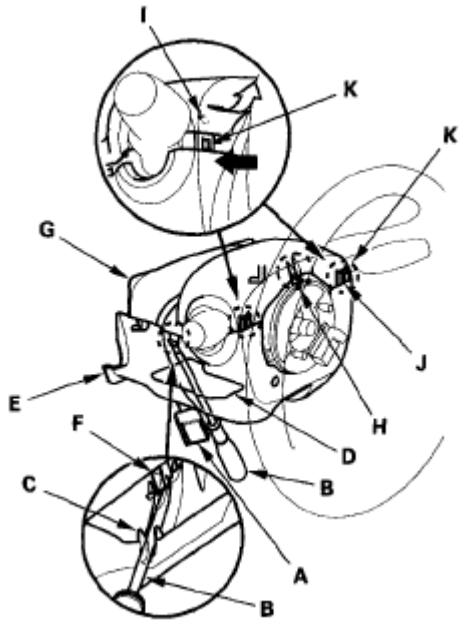


Fig. 15: Identifying Column Cover Remove/Install Components

2. Insert a suitable sized screwdriver or equivalent tool (B) along the guide rib (C) into the lever hole (D) in the lower column cover (E).
3. Release the hook (F) locating on the left side of the upper column cover (G). A right side hook (H) of the upper column cover can't be released from the inside.
4. Turn the steering wheel to left, and release the left pawl (I) of the upper column cover while pushing the lower column cover from the front side.
5. Turn the steering wheel to right, and release the right pawl (J) of the upper column cover is in the same as the step 4.
6. Remove the cover by lightly pulling it up by releasing the right side hook (H) of the upper column cover.

NOTE: Carefully release the pawls, note the hooks (K) may break when upper column cover is pulled up too hard.

7. Remove the three screws, then remove the lower column cover (A).

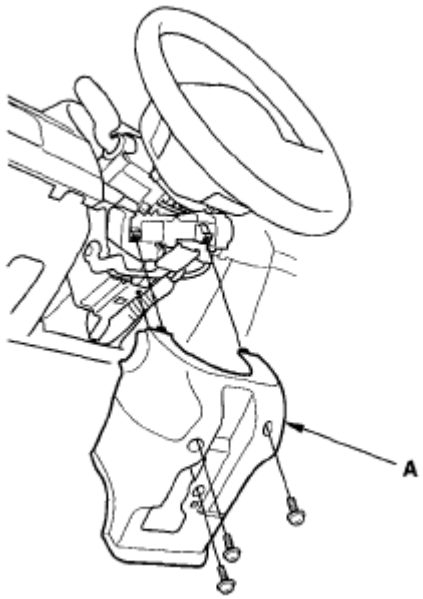


Fig. 16: Identifying Lower Column Cover And Screws

8. Install the upper and lower column cover in the reverse order of removal, and push the hooks into place securely.

STEERING COLUMN REMOVAL AND INSTALLATION

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) in the SRS before doing repairs or service.

REMOVAL

NOTE: Be careful not to pull the bracket (A) on the front side of steering column out of its normal position. If the bracket accidentally comes out, replace the steering column as an assembly.

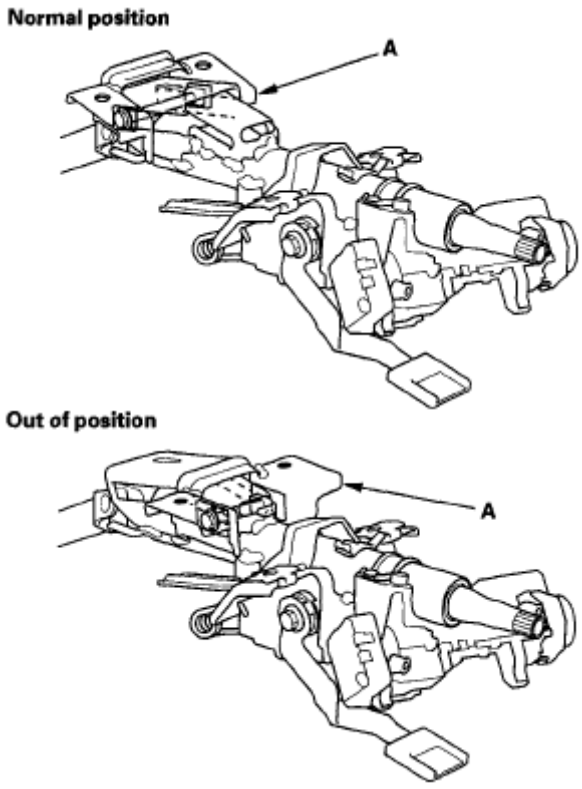


Fig. 17: Identifying Steering Column Bracket Removal Position

1. Make sure you have the anti-theft code for the audio or navigation system, then write down the audio presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see **STEERING WHEEL REMOVAL**).
4. Remove the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
5. Remove the column covers (see **COLUMN COVER REMOVAL AND INSTALLATION**).
6. Remove the steering joint cover (A).

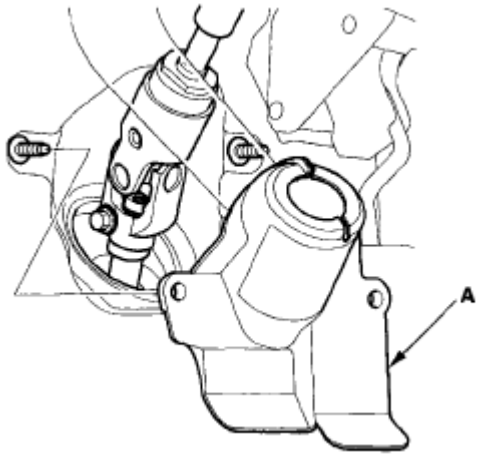


Fig. 18: Identifying Steering Joint Cover

7. Release the lock lever, and adjust the steering column to full tilt up position, and to the full telescopic in position.
8. Tighten the lock lever.
9. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

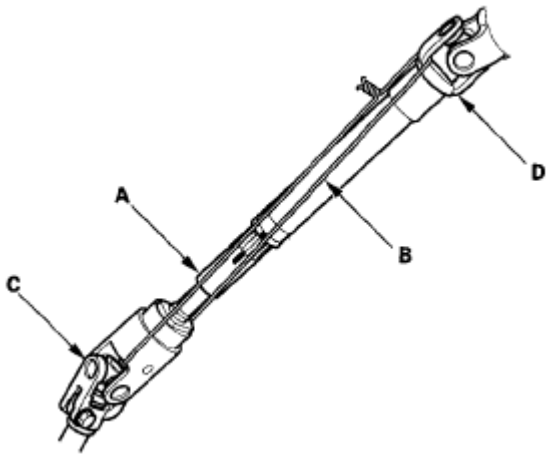


Fig. 19: Identifying Lower Slide Shaft With Wire Between Joint Yokes

10. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.

NOTE: Do not release lock lever when removing the steering column from the frame.

11. Disconnect the wire harness connectors from the combination switch assembly and cable reel (A).

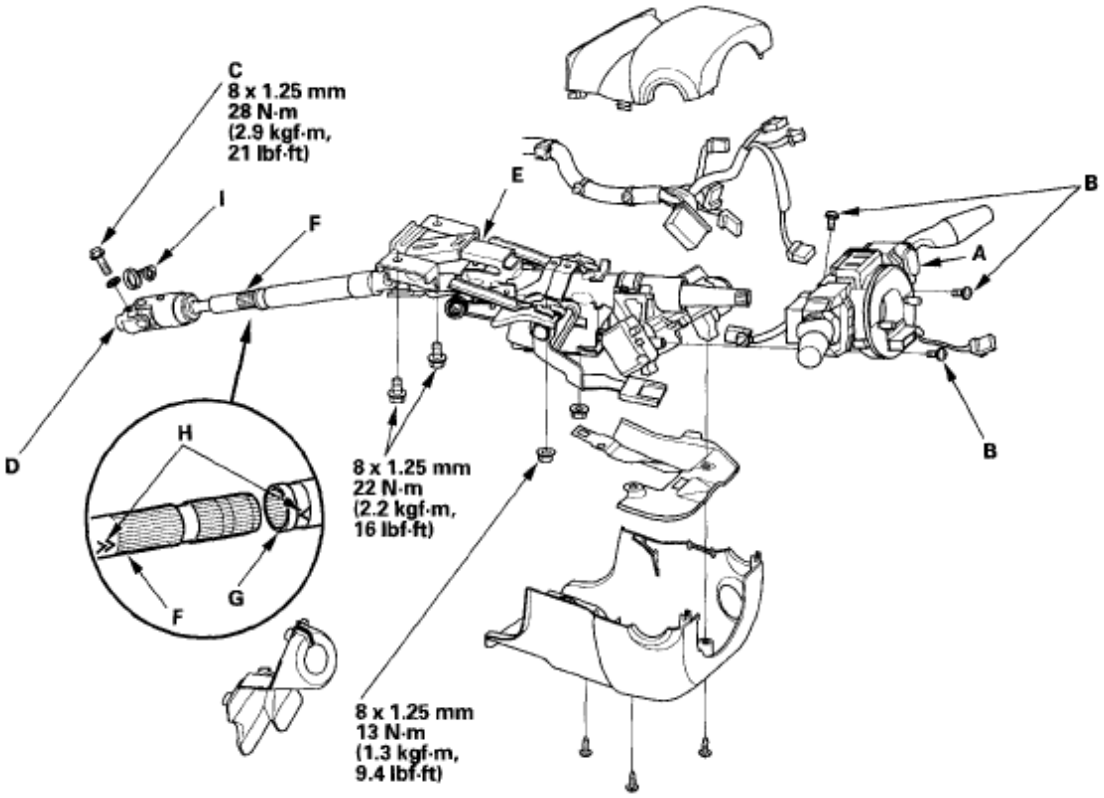


Fig. 20: Identifying Steering Column Components With Torque Specifications

12. Remove the combination switch assembly from the steering column shaft by removing the three screws (B).
13. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
14. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.
15. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the paint or stamped marks (H).
16. Remove the center guide (I) (if equipped), and discard it. The center guide is for factory assembly only.

INSTALLATION

1. Install the steering column in the reverse order of removal, and note these items:
   - Make sure the wires are not caught or pinched by any parts.
   - Take care not to let the sliding capsules fall out of position during column installation.
2. Center the steering rack within its stroke in steering joint connection.
3. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B) in the range shown.

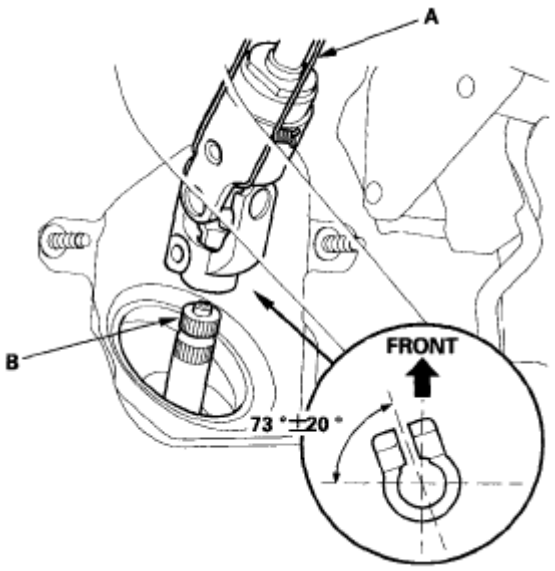


Fig. 21: Cutting Wire & Slipping Lower End Of Steering Joint Into Pinion Shaft

4. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.

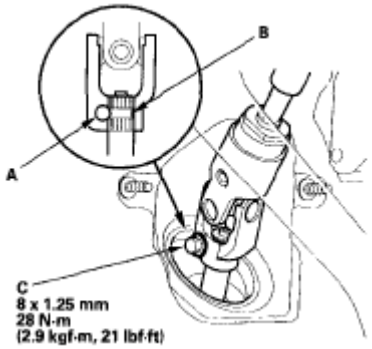


Fig. 22: Identifying Bolt Hole, Steering Joint With Groove & Steering Joint Bolt With Torque Specifications

5. Install the steering joint cover (A).

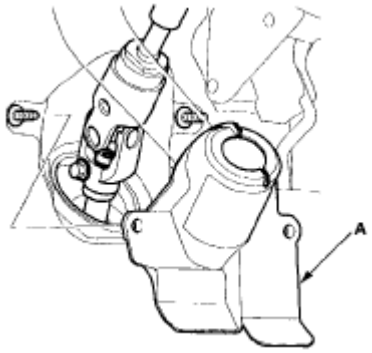


Fig. 23: Identifying Steering Joint Cover

6. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
7. Install the column covers.
8. Install the driver's dashboard undercover.
9. Reconnect the negative cable to the battery and do these items:
   - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Enter the anti-theft code for the audio or navigation system, then enter the audio presets.
   - Set the clock.
   - Make sure the horn and turn signal switch work properly.
   - Make sure the steering wheel switches work properly.
   - Make sure the steering wheel is centered.
10. After installation, do these checks.
    - Check the steering wheel spoke angle. If the steering spoke angles to the right and left are not equal (steering wheel is not centered), correct the engagement of the wheel/column shaft serrations.
    - Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see **FRONT TOE INSPECTION/ADJUSTMENT**).

STEERING COLUMN/TILT/TELESCOPIC INSPECTION

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the lower slide shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the paint or stamped marks (D). If it sticks or binds, replace the steering column as an assembly.
- Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
- Check the tilt mechanism and telescopic mechanism for movement and damage.
- Check the absorbing plates (F) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.

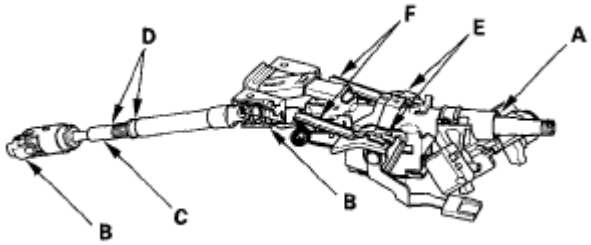


Fig. 24: Identifying Steering Column/Tilt/Telescopic Components

STEERING LOCK REPLACEMENT

1. Remove the steering column (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Center-punch each of the two shear bolts, and drill the heads of the bolts off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.

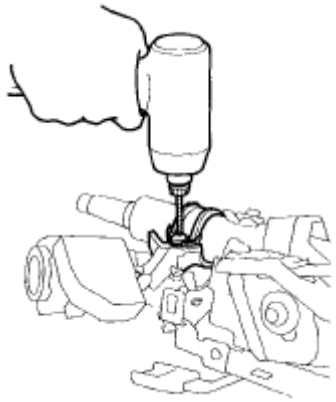


Fig. 25: Removing Shear Bolts

3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and make sure the steering wheel lock works properly and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.

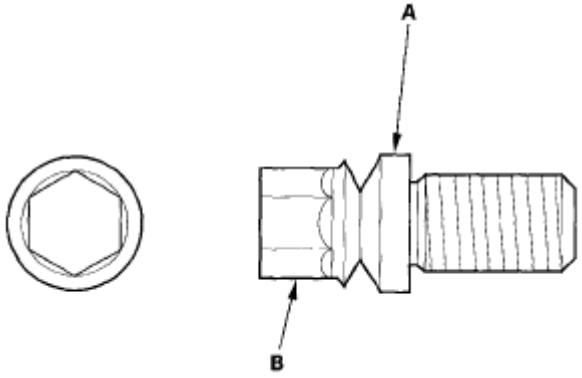


Fig. 26: Identifying Shear Bolts And Hex Heads

8. Rewrite the new immobilizer control unit-receiver (see **COMPONENT LOCATION INDEX**), and make sure the immobilizer system works properly.

RACK GUIDE ADJUSTMENT

Special Tools Required

- Locknut wrench, 40 mm 07MAA-SL00100 or 07916-SA50001
- Locknut wrench, 43 mm 07MAA-SL0020A

HYDRAULIC POWER STEERING TYPE

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw

(B).

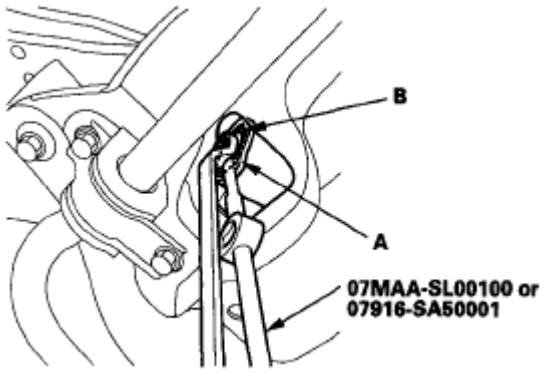


Fig. 27: Identifying Rack Guide Screw Locknut, Locknut Wrench & Rack Guide Screw

3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

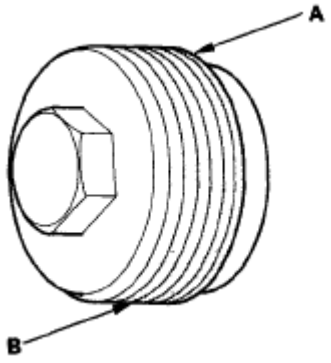


Fig. 28: Identifying Rack Guide Screw

4. Tighten the rack guide screw (A) to 25 N.m (2.5 kgf.m, 18 lbf.ft), then loosen it.

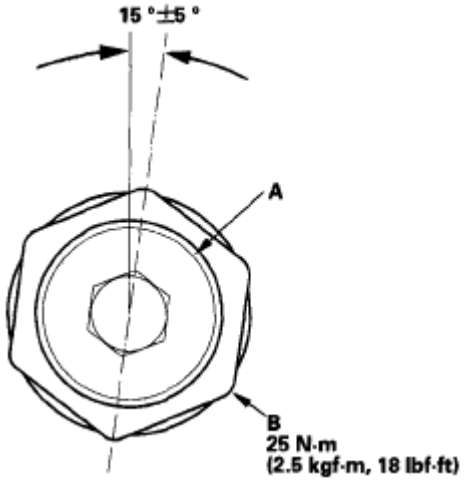


Fig. 29: Identifying Rack Guide Screw Torque Specifications

5. Retighten the rack guide screw to 5.9 N.m (0.6 kgf.m, 4.0 lbf.ft), then back it off to the specified angle.

   Specified return angle:

   '06 model: 15° ± 5°

   '07-08 model: 10° ± 5°

6. Hold the rack guide screw stationary with a wrench, and install the locknut (B) by hand until it's fully seated.
7. Install the locknut wrench on the locknut, and hold the rack guide screw stationary with a wrench. Tighten the locknut to the specified torque.
8. Check for unusual steering effort through the complete turning travel.
9. Check the steering wheel rotational play (see **STEERING WHEEL ROTATIONAL PLAY CHECK**), and the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

EPS TYPE

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw (B).

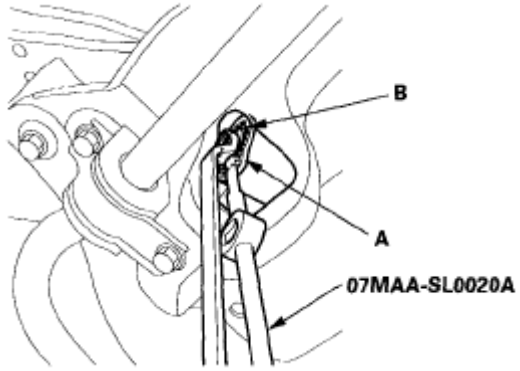


Fig. 30: Identifying Rack Guide Screw Locknut, Locknut Wrench & Rack Guide Screw

3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

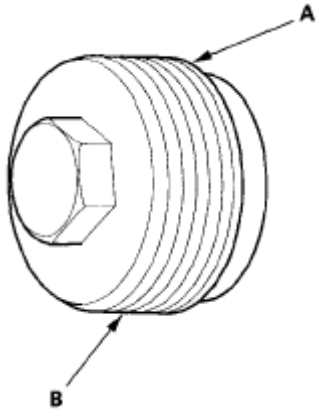


Fig. 31: Identifying Rack Guide Screw

4. Tighten the rack guide screw (A) to 25 N.m (2.5 kgf.m, 18 lbf.ft), then loosen it.

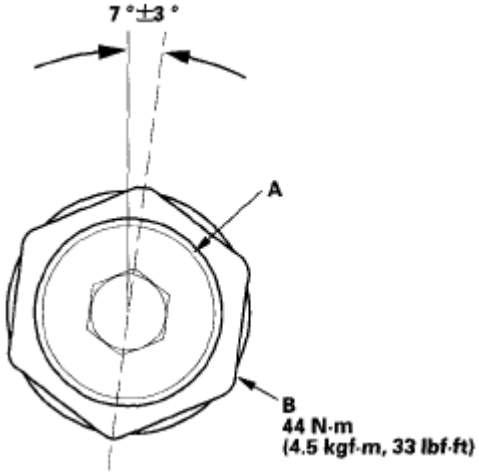


Fig. 32: Identifying Rack Guide Screw Torque Specifications

5. Retighten the rack guide screw to 3.9 N.m (0.4 kgf.m, 2.9 lbf.ft), then back it off to the specified angle.

   Specified return angle: 7° ± 3°

6. Hold the rack guide screw stationary with a wrench, and install the locknut (B) by hand until it's fully seated.
7. Install the locknut wrench on the locknut, and hold the rack guide screw stationary with a wrench. Tighten the locknut to the specified torque.
8. Check for unusual steering effort through the complete turning travel.
9. Check the steering wheel rotational play (see **STEERING WHEEL ROTATIONAL PLAY CHECK**), and the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

TIE-ROD BALL JOINT BOOT REPLACEMENT

Special Tools Required

Bushing Base 07JAF-SH20330

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

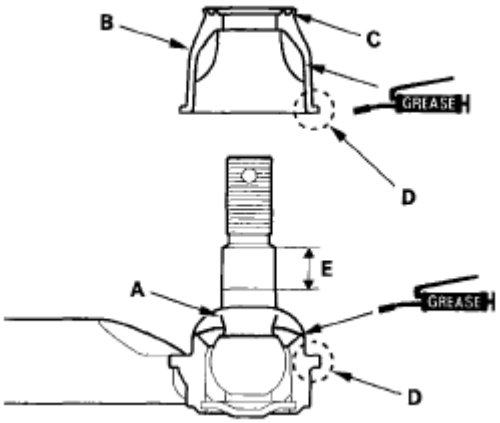


Fig. 33: Identifying Areas For Applying Multipurpose Grease

3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:

   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.
4. Install the new boot (A) using the bushing base. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

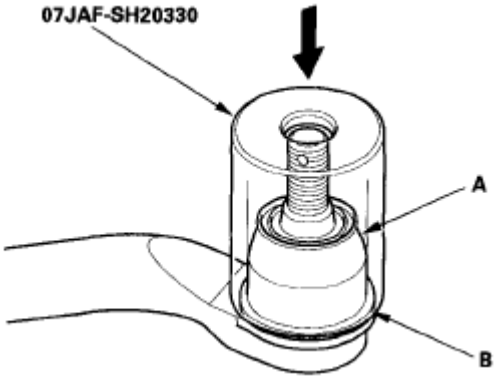


Fig. 34: Installing New Boot

2006-08 SUSPENSION

Front Suspension Civic (All Except Hybrid)

KNUCKLE/HUB/WHEEL BEARING REPLACEMENT

EXPLODED VIEW

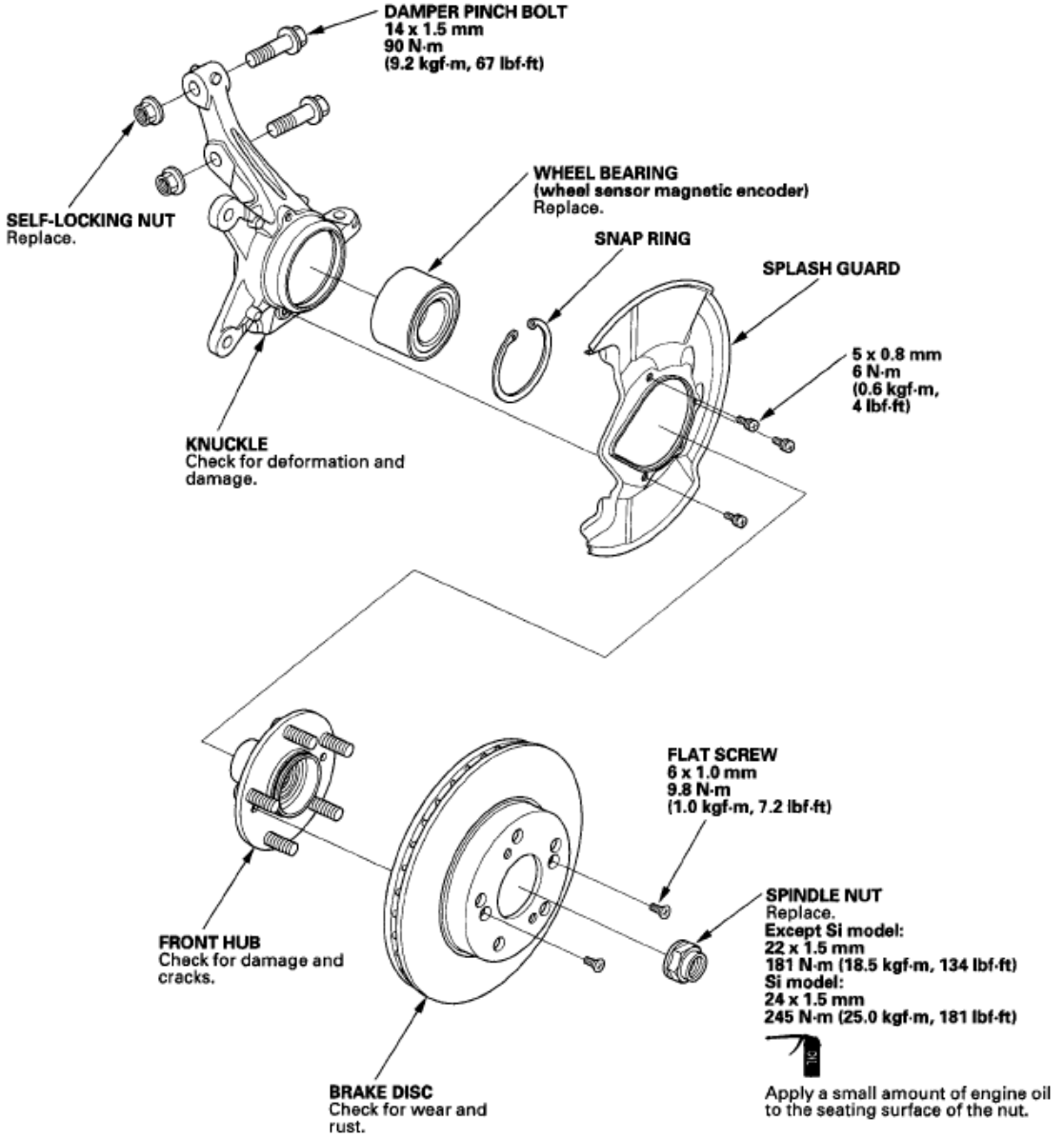


Fig. 1: Exploded View Of Knuckle/Hub/Wheel Bearing (With Torque Specifications)

Special Tools Required

- Hub dis/assembly tool 07GAF-SD40100
- Hub dis/assembly tool 07GAF-SE00100
- Ball joint remover, 32 mm 07MAC-SL0A102

- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Attachment, 96 mm 07948-SB00101
- Support base 07965-SD90100

KNUCKLE/HUB REPLACEMENT

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the wheel nuts (A) and the front wheel.

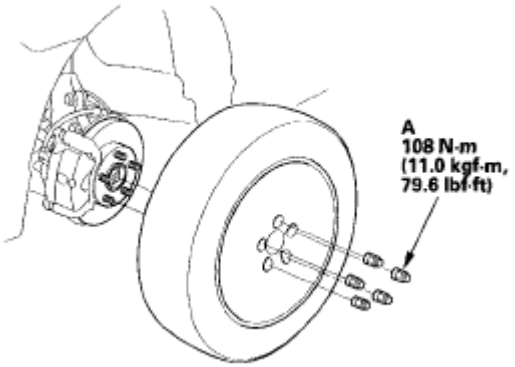


Fig. 2: Identifying Front Wheel And Nut (With Torque Specifications)

3. Remove the brake hose mounting bolt (A).

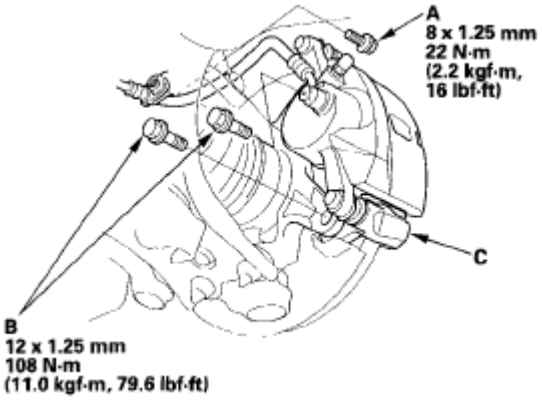


Fig. 3: Identifying Brake Hose Mounting Bolt (With Torque Specifications)

4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.
5. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

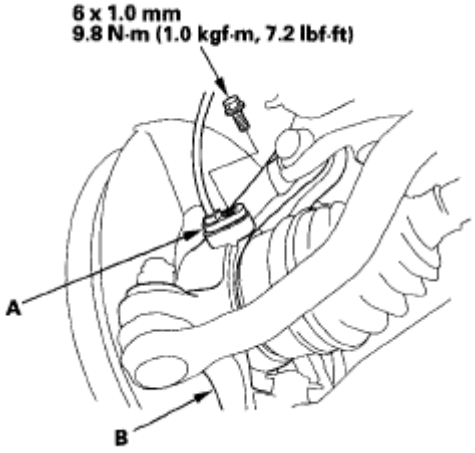


Fig. 4: Identifying Wheel Sensor And Knuckle (With Torque Specifications)

6. Raise the stake (A), then remove the spindle nut (B).

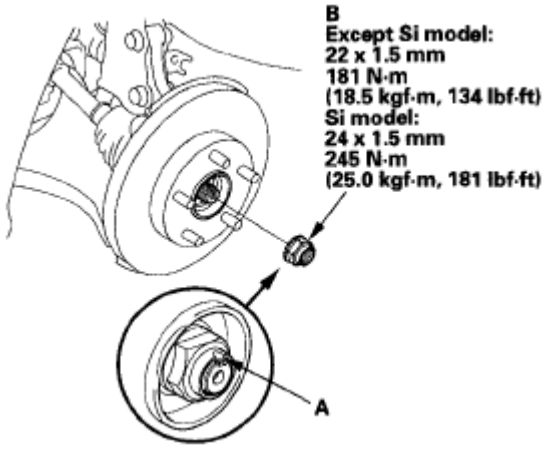


Fig. 5: Identifying Spindle Nut (With Torque Specifications)

7. Remove the 6 mm brake disc retaining screws (A).

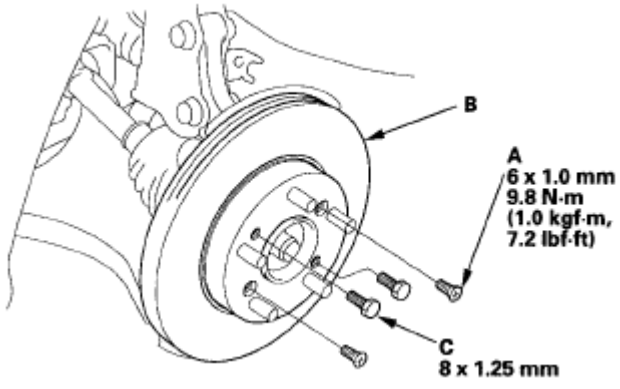


Fig. 6: Identifying Brake Disc Retaining Screws (With Torque Specifications)

8. Remove the brake disc (B) from the hub.

NOTE: If the brake disc has clung to the hub. Screw two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the hub. Turn each bolt 90 degrees to prevent the brake disc from binding.

9. Check the front hub for damage and cracks.
10. Remove the cotter pin (A) from the tie-rod end ball joint, then remove the nut (B).

NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.

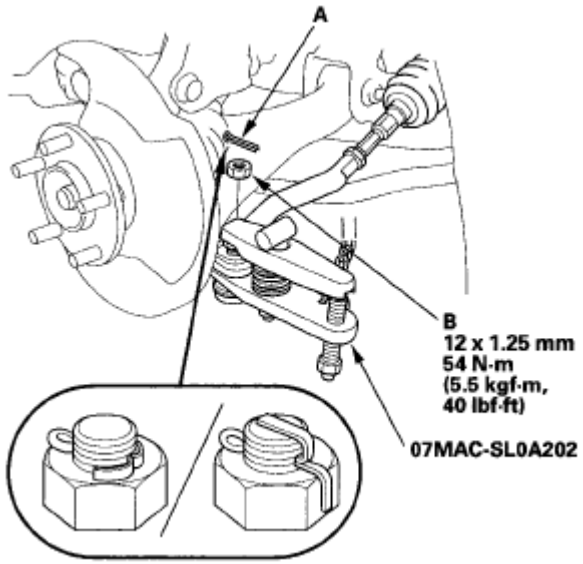


Fig. 7: Identifying Cotter Pin Position (With Torque Specifications)

11. Disconnect the tie-rod ball joint from the knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
12. Remove the flange bolt and flange nuts from the lower arm (A).

NOTE: During installation, install a new flange bolt and new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).

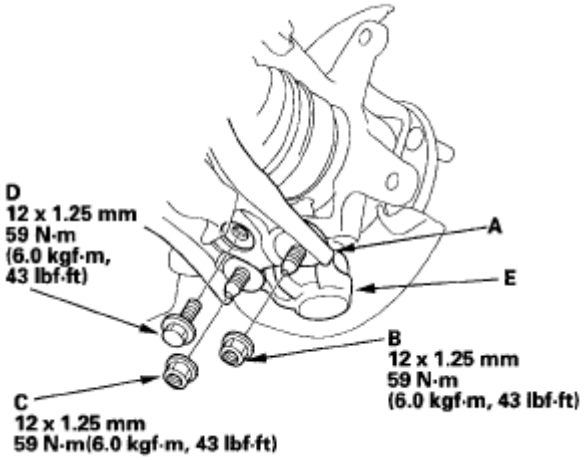


Fig. 8: Identifying Lower Ball Joint (With Torque Specifications)

13. Disconnect the lower ball joint (E) from the lower arm.
14. Remove the damper pinch bolts (A) and the self-locking nuts (B) from the damper.

NOTE: During installation, install the new damper pinch bolts and the new self-locking nuts.

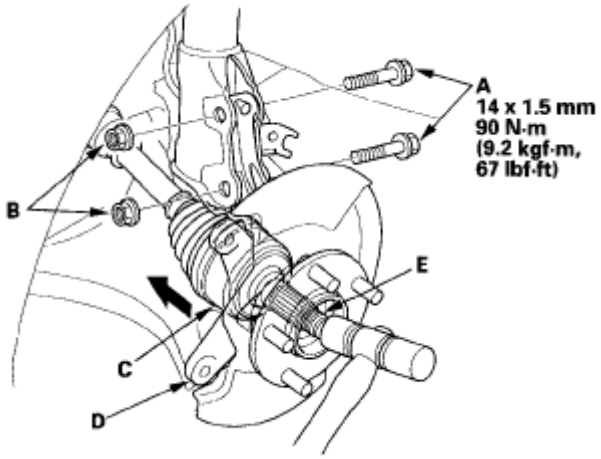


Fig. 9: Identifying Damper Pinch Bolts (With Torque Specifications)

15. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the hub outward, then remove the knuckle.

NOTE:

- **Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.**
- **During installation, apply grease to the mating surface of the wheel bearing and driveshaft outboard joint (see DRIVESHAFT INSTALLATION).**

16. Remove the lock pin (A) from the lower ball joint pin (B), then remove the nut (C).

NOTE: During installation, install a lock pin after tightening the new castle nut.

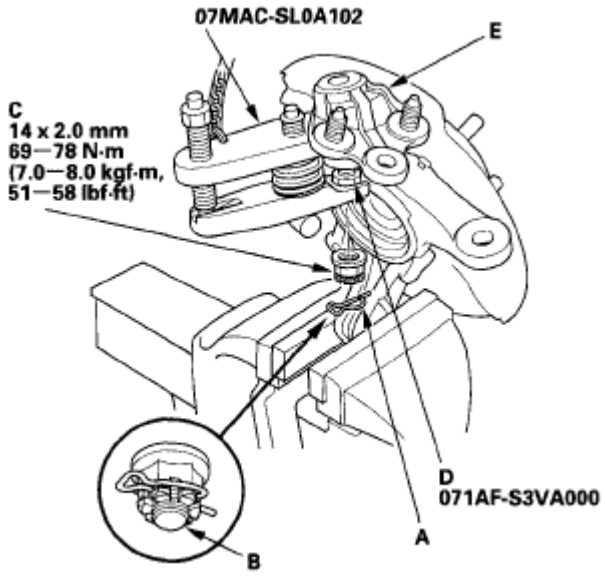


Fig. 10: Identifying Lower Ball Joint Pin (With Torque Specifications)

17. Install the ball joint thread protector (D).
18. Disconnect the lower ball joint (E) from the knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
19. Install the knuckle/hub in the reverse order of removal, and note these items:
    - Be careful not to damage the ball joint boot when installing the knuckle.
    - Tighten all mounting hardware to the specified torque values.
    - Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the knuckle connecting hole, the threaded section, and mating surface of the castle nut.
    - First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
    - Use a new spindle nut during reassembly.
    - Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
    - Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
    - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
    - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

WHEEL BEARING REPLACEMENT

1. Separate the hub (A) from the knuckle (B) using the hub dis/assembly tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform

the splash guard. Hold onto the hub to keep it from falling when pressed clear.

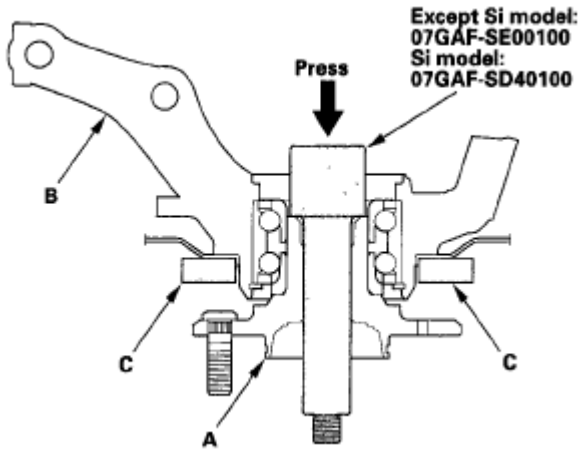


Fig. 11: Separating Hub From Knuckle

2. Press the wheel bearing inner race (A) off of the hub (B) using the hub dis/assembly tool, a commercially available bearing separator (C), and a press.

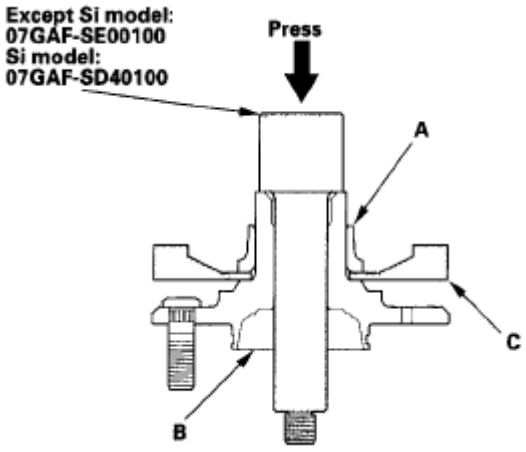


Fig. 12: Pressing Wheel Bearing Inner Race

3. Remove the splash guard (A) and the snap ring (B) from the knuckle (C).

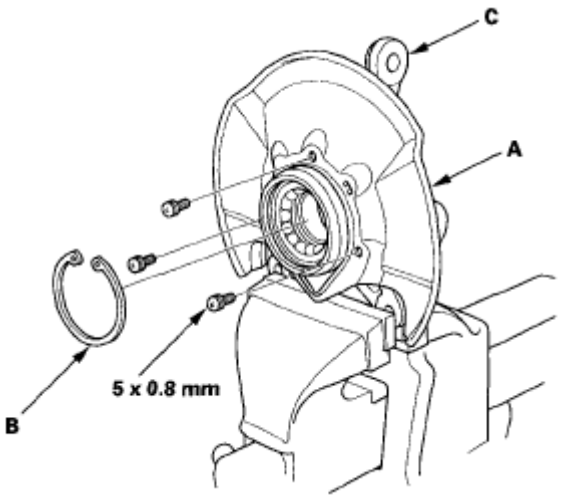


Fig. 13: Identifying Splash Guard And Snap Ring

4. Press the wheel bearing (A) out of the knuckle (B) using the attachment, the driver, and a press.

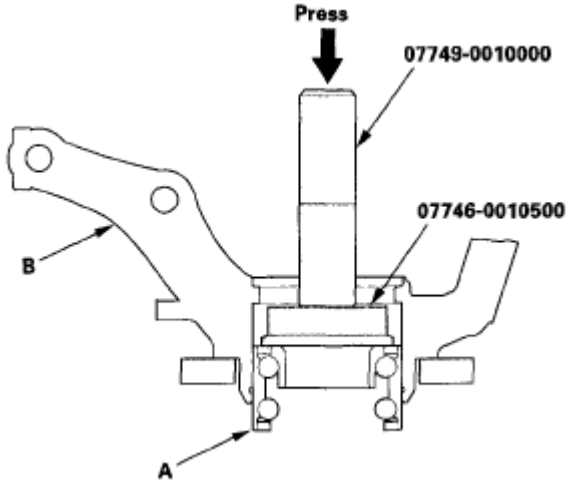


Fig. 14: Pressing Wheel Bearing Out Of Knuckle

5. Wash the knuckle and hub thoroughly in high flashpoint solvent before reassembly.
6. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the attachment, the support base, and a press.

NOTE:

- **Install the wheel bearing with the wheel sensor magnetic encoder (E) (brown color), toward the inside of the knuckle.**
- **Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.**
- **Keep all magnetic tools away from the encoder surface.**
- **Be careful not to damage the encoder surface when you insert the wheel bearing.**

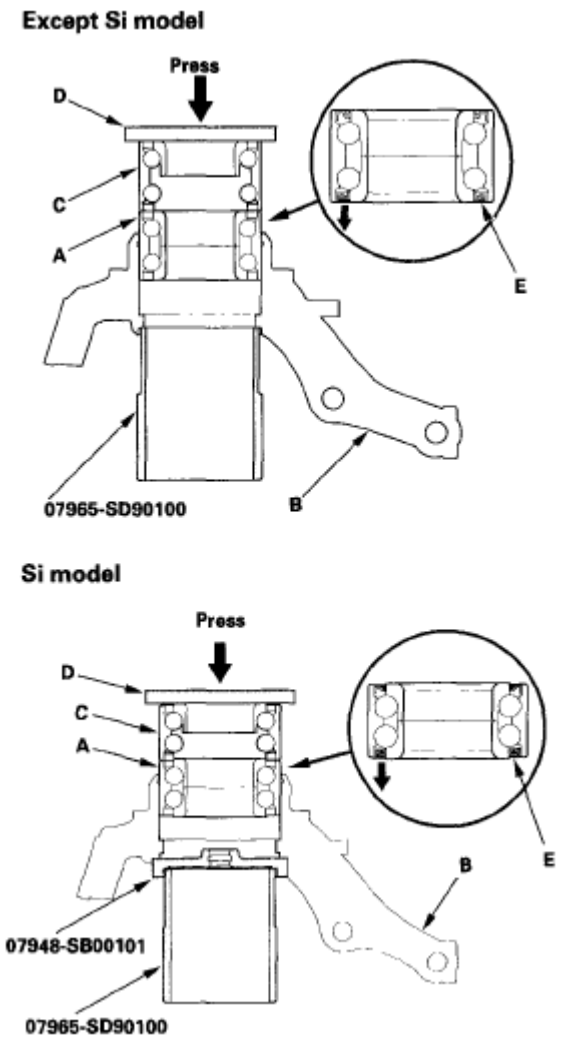


Fig. 15: Pressing Wheel Bearing Into Knuckle

7. Install the snap ring (A) securely in the knuckle (B).

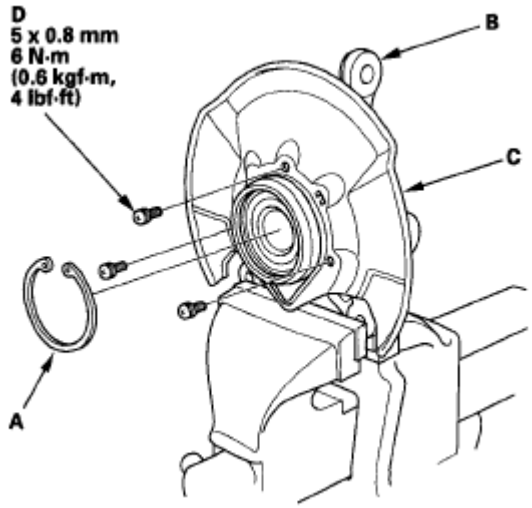


Fig. 16: Identifying Snap Ring In Knuckle (With Torque Specifications)

8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.
9. Install the hub (A) onto the knuckle (B) using the attachment, the driver, the support base, and a hydraulic press. Be careful not to distort the splash guard (C).

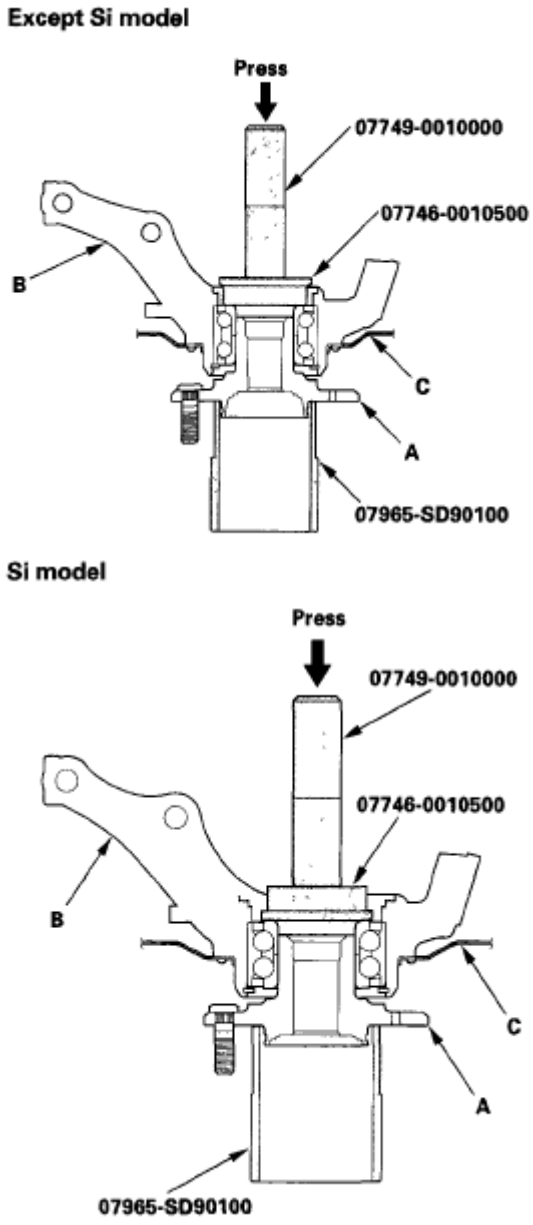


Fig. 17: Installing Hub Onto Knuckle

LOWER BALL JOINT REPLACEMENT

Special Tools Required

- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint thread protector, 14 mm 071AF-S3VA000

1. Remove the front wheel (see **KNUCKLE/HUB REPLACEMENT**).

2. Remove the flange bolt and flange nuts from the lower arm (A).

NOTE: During installation, install a new flange bolt and new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).

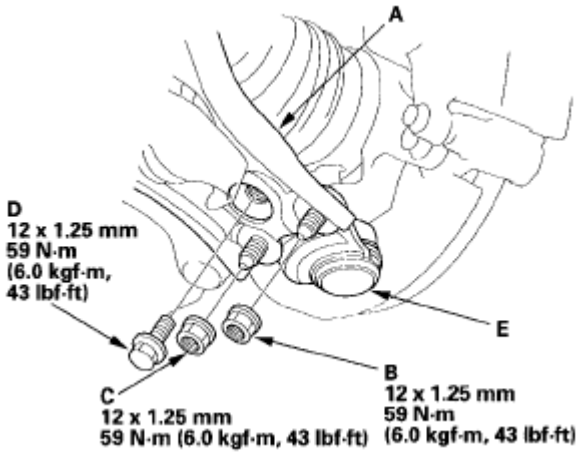


Fig. 18: Tightening Bolts (With Torque Specifications)

3. Disconnect the lower ball joint (E) from the lower arm.
4. Remove the spindle nut (see step 6), and remove the outboard joint (A) from the knuckle (B) by tapping the driveshaft end (C) with a plastic hammer while drawing the hub outward.

NOTE:

- **Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.**
- **During installation, apply grease to the mating surface of the wheel bearing and driveshaft outboard joint (see DRIVESHAFT INSTALLATION).**

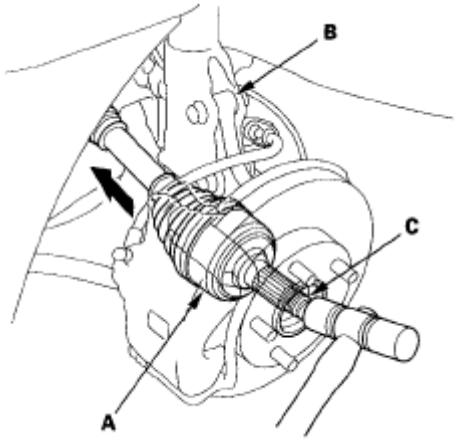


Fig. 19: Tapping Driveshaft

5. Remove the lock pin (A) from the lower ball joint pin (B), then remove the castle nut (C).

NOTE: During installation, install a lock pin after tightening the new castle nut.

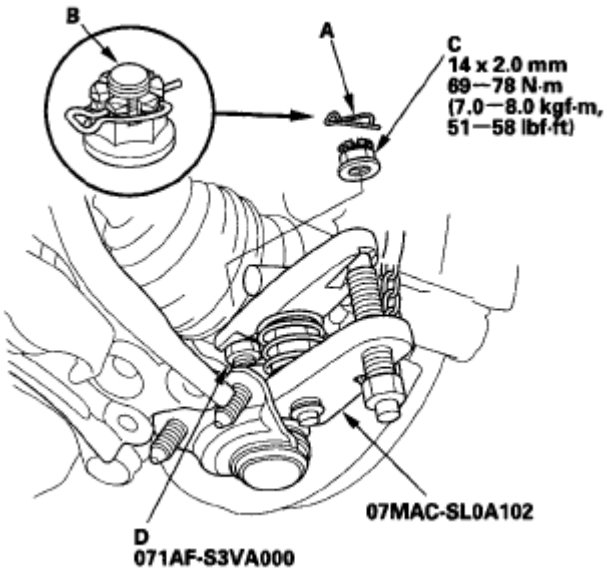


Fig. 20: Identifying Lock Pin And Lower Ball Joint Pin (With Torque Specifications)

6. Install the ball joint thread protector (D).
7. Disconnect the lower ball joint from the knuckle using the ball joint remover (see **BALL JOINT REMOVAL**), then remove the lower ball joint.
8. Install the lower ball joint in the reverse order of removal, and note these items:
   - First install all the components, and lightly tighten the bolts and nuts, then tighten the lower ball joint to the lower arm to the specified torque. Raise the suspension to load it with the vehicle's weight before fully tightening the lower ball joint to the knuckle to the specified torque values.
   - Tighten all mounting hardware to the specified torque values.
   - Use a new spindle nut during reassembly.
   - Before installing the wheel, clean the mating surface of the brake disc and inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

BALL JOINT BOOT REPLACEMENT

Special Tools Required

Attachment, 40 mm 07GAF-SE00200

1. Remove the lower ball joint (see **LOWER BALL JOINT REPLACEMENT**).
2. Remove the boot clip and the boot.
3. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-lower ball housing mating surfaces (B).

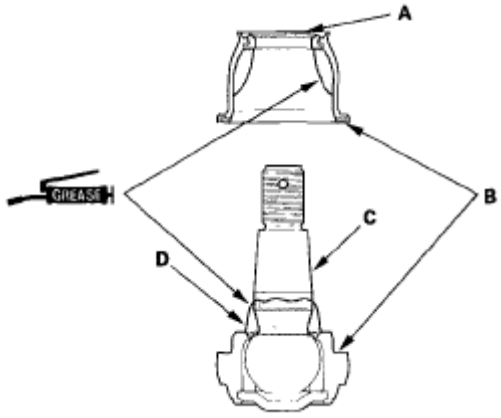


Fig. 21: Identifying Area Applying Grease

4. Wipe the grease off the tapered portion of the pin (C), and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
5. Install the boot on the ball joint, then squeeze it gently to force out any air.
6. Press the boot with the attachment until the bottom seats on the lower ball housing (A) all the way around.

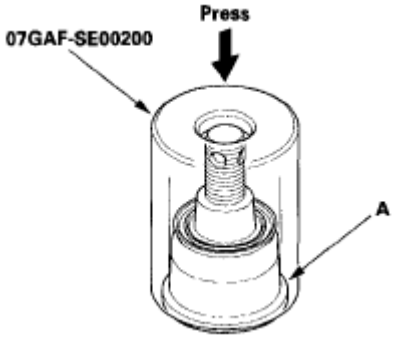


Fig. 22: Pressing Boot With Attachment Until Bottom Seats On Lower Ball Housing

7. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.
8. Install the lower ball joint (see **LOWER BALL JOINT REPLACEMENT**).

LOWER ARM REMOVAL/INSTALLATION

Special Tools Required

- Bushing driver 07AAF-SVAA100
- Receiver set 07AAF-SVAA200

REMOVAL/INSTALLATION

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the center cap and front wheel.
3. Remove the flange nut (A) while holding the respective joint pin (B) with a hex wrench (C), then

disconnect the stabilizer links from the lower arm (D).

NOTE: Use a new flange nut during reassembly.

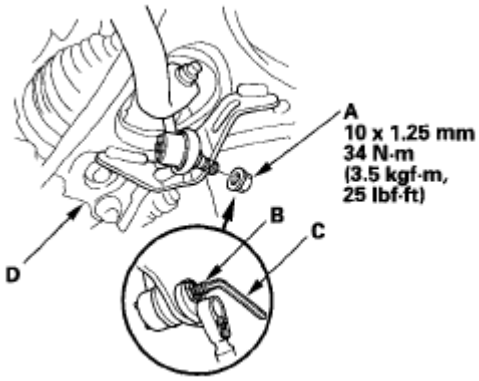


Fig. 23: Identifying Respective Joint Pin With Hex Wrench (With Torque Specifications)

4. Turn the stabilizer bar backward to gain easier access to the front side of the lower arm mounting bolt.
5. Remove the flange bolt and flange nuts from the lower arm (A).

NOTE: During installation, install a new flange bolt and new flange nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).

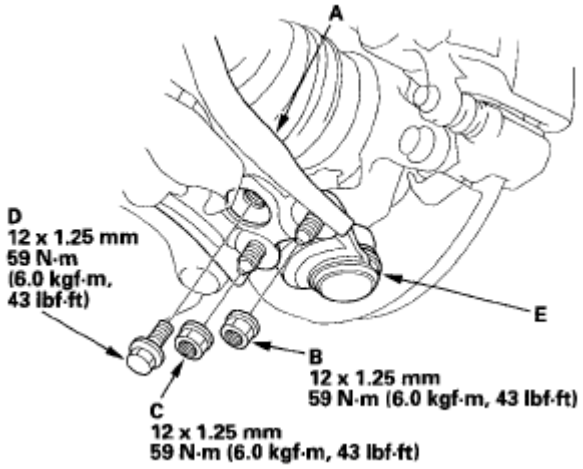


Fig. 24: Identifying Lower Arm Bolts (With Torque Specifications)

6. Disconnect the lower ball joint (E) from the lower arm.
7. Remove the lower arm mounting bolt (A).

NOTE: During installation, install a new mounting bolt.

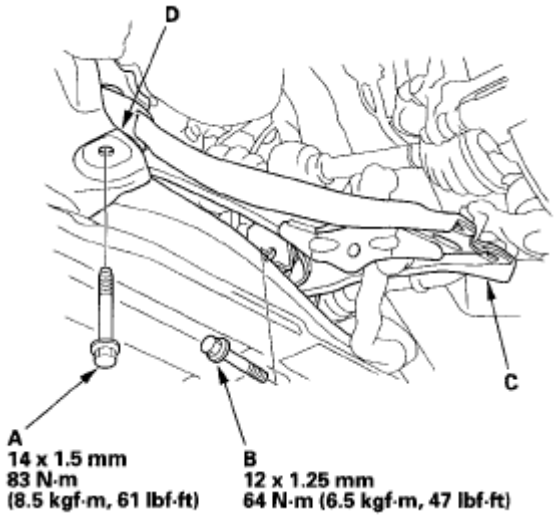


Fig. 25: Identifying Lower Arm Mounting Bolt (With Torque Specifications)

8. Remove the lower arm mounting bolt (B), then remove the lower arm (C) from the front suspension subframe (D).

NOTE: During installation, install a new mounting bolt.

9. Install the lower arm in the reverse order of removal, and note these items:
   - First install all the components, and lightly tighten the bolts and nuts, then tighten the lower ball joint to the lower arm to the specified torque. Raise the suspension the lower ball joint to the knuckle and the lower arm to the subframe to load it with the vehicle's weight before fully tightening to the specified torque.
   - Tighten all mounting hardware to the specified torque values.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

BUSHING REPLACEMENT

NOTE: Replace the lower arm (A) as an assembly if the lower arm has the paint mark (B) around the hole near the front bushing. The paint mark can also be seen around a hole on the bottom side of the lower arm in the same area. Paint marks indicate a oversize bushing has been installed.

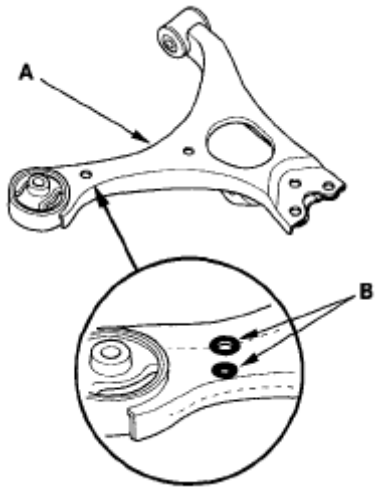


Fig. 26: Identifying Paint Mark On Lower Arm

1. Press out the bushing (A) with the bushing driver, receiver set (attachment A) and a hydraulic press, and remove the bushing from the lower arm (B).

NOTE: Be careful not to damage the inside of the bushing hole when pressing on the bushing.

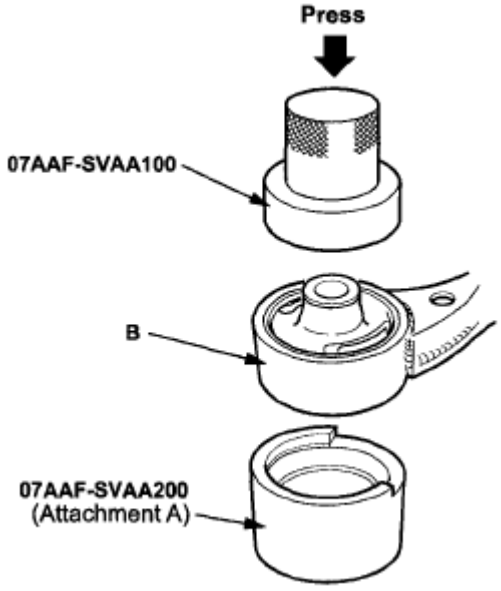


Fig. 27: Pressing Out Bushing

2. Clean the mating surface of the new bushing and the lower arm.
3. Position the tab (A) of the bushing (B) with the lower arm (C) as shown.

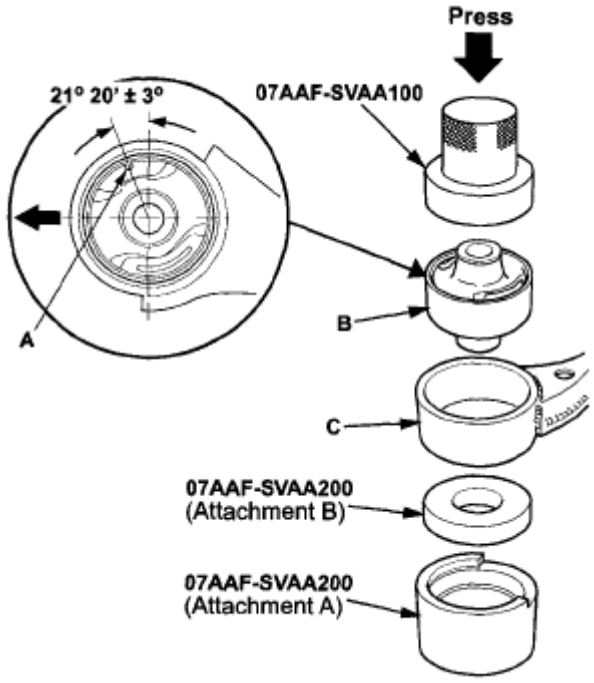


Fig. 28: Identifying Tab Position

4. Using a hydraulic press, bushing driver, and receiver set attachments, press in the bushing into the lower arm.
5. Using a yellow oil-based paint marker, paint a mark (A) around the hole (B) near the front bushing (C). Also paint a mark around the hole on the bottom side of the lower arm in the same area.

NOTE: These marks are used to identify a lower control arm that has had the bushing replaced. Do not replace the bushing in a lower arm with there paint marks; you must replace the lower arm.

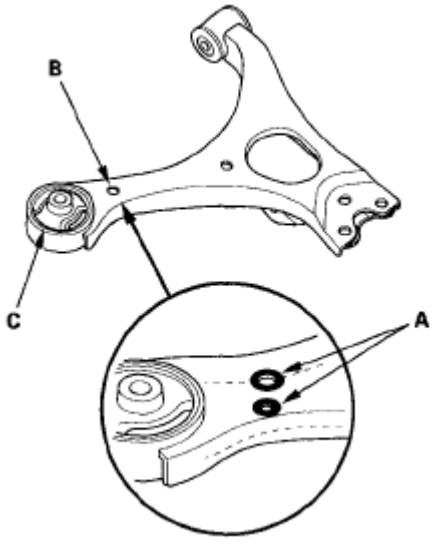


Fig. 29: Identifying Paint Marks On Lower Arm

STABILIZER LINK REMOVAL/INSTALLATION

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheel.
3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).

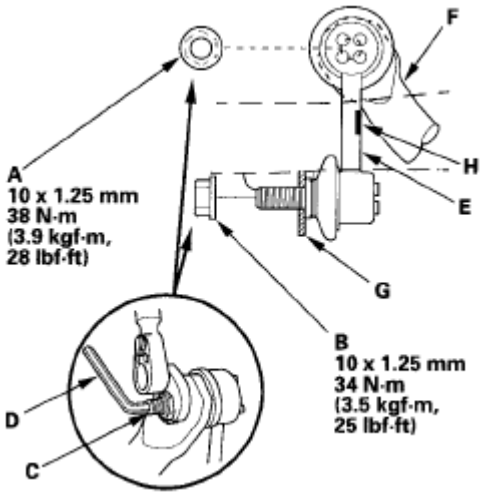


Fig. 30: Identifying Self-Locking Nut (With Torque Specifications)

4. Install the stabilizer link on the stabilizer bar (F) and lower arm (G) with the joint pins set at the center of their range of movement.

NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing rearward.

5. Install a new self-locking nut and a new flange nut, and lightly tighten them.
6. Place a jack under the lower arm, and raise the suspension to load it with the vehicle's weight.
7. Tighten the self-locking nut and flange nut to the specified torque values while holding the respective joint pin with a hex wrench.
8. Reinstall all removed parts and test-drive the vehicle.
9. After 5 minutes of driving, torque the self-locking nut again to the specified torque value.

STABILIZER BAR REPLACEMENT

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Disconnect both stabilizer links from the stabilizer bar (see **STABILIZER LINK REMOVAL/INSTALLATION**).
4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D) from the front suspension subframe (E).

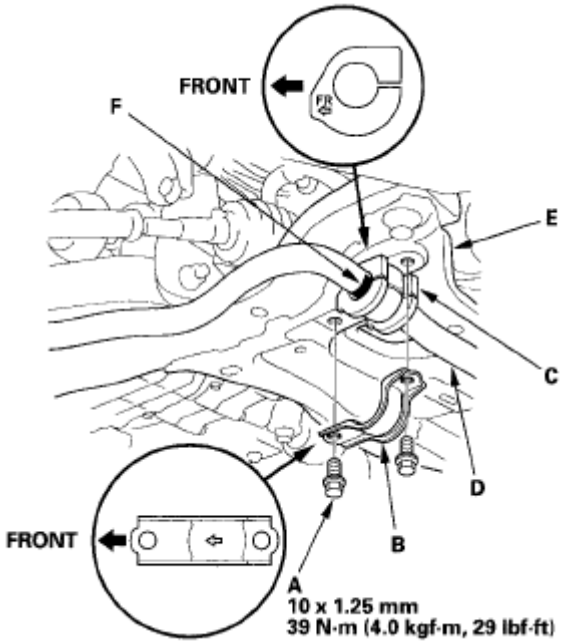


Fig. 31: Identifying Flange Bolts And Bushing Holders

5. Install the stabilizer bar in the reverse order of removal, and note these items:
   - Note the right and left direction of the stabilizer bar.
   - Align the paint marks (F) on the stabilizer bar with the sides of the bushings.
   - Note the fore/aft direction of the bushing holders.
   - Refer to **STABILIZER LINK REMOVAL/INSTALLATION** to connect the stabilizer bar to the links .
   - Before installing the wheel, clean the mating surface of the brake disc and inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

DAMPER/SPRING REMOVAL AND INSTALLATION

REMOVAL

1. Turn the ignition switch ON (II), then turn on the windshield wipers. Turn the ignition switch off when the wipers are near the A-pillars.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
3. Remove the front wheel.
4. Remove the wheel sensor harness clip (A) and the brake hose bracket (B) from the damper. Do not disconnect the wheel sensor connector.

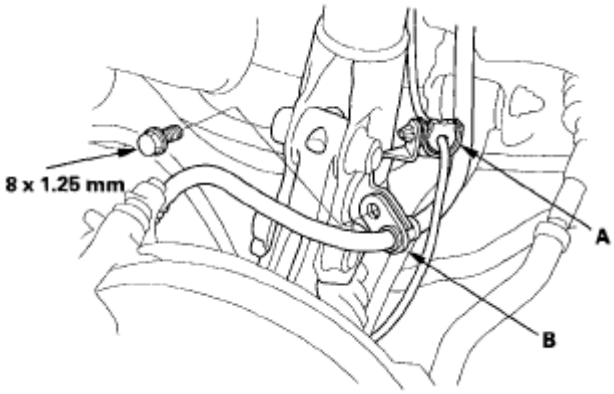


Fig. 32: Identifying Wheel Sensor Harness Clip And Brake Hose Bracket

5. Remove the damper pinch bolts (A) and self-locking nuts (B) from the damper.

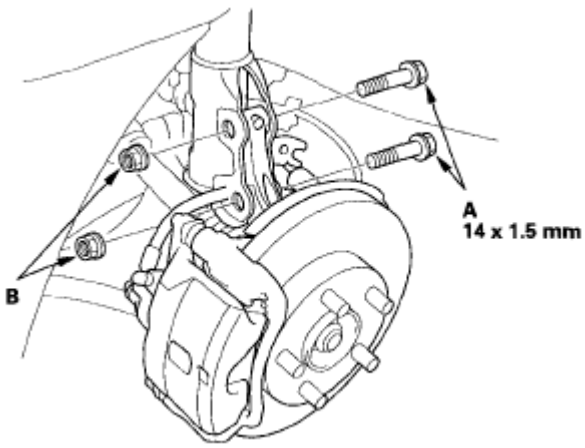


Fig. 33: Identifying Damper Pinch Bolts And Self-Locking Nuts

6. Remove the service cap (A) and the lid (B).

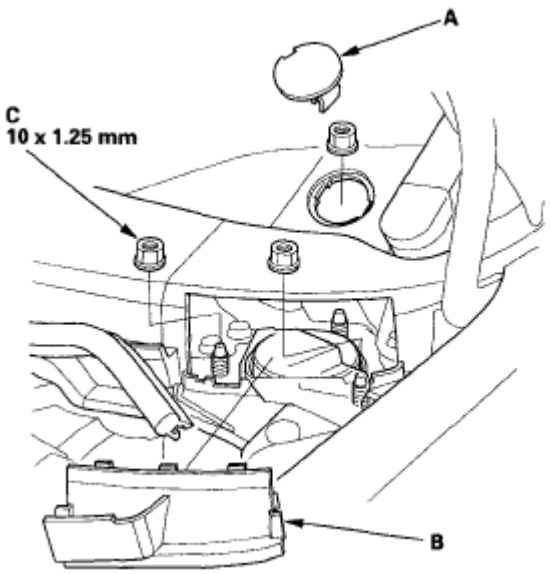


Fig. 34: Identifying Service Cap And Lid

7. Remove the three flange nuts (C) from the top of the damper.

NOTE:

- **Damper springs are different, left and right. Mark the springs L and R before you continue.**
- **Be careful not to damage the body.**

8. Remove the damper assembly (A).

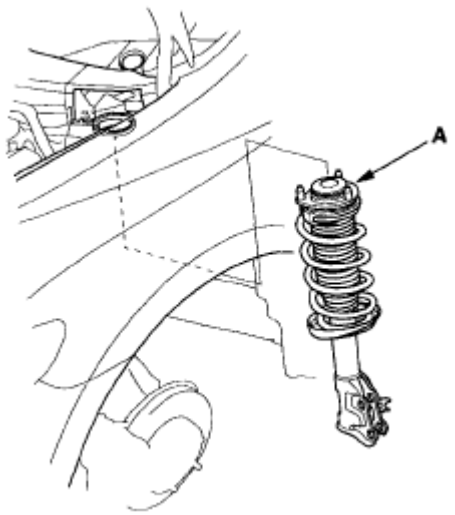


Fig. 35: Identifying Damper Assembly

INSTALLATION

1. Install the damper assembly (A) onto the frame.

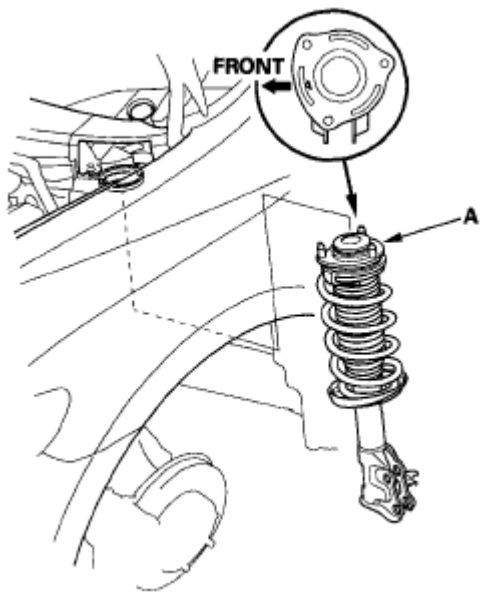


Fig. 36: Identifying Damper Assembly

2. Loosely install the new flange nuts (A).

NOTE: Install the service cap (B) and the lid (C) after tightening the flange nuts to the specified torque value.

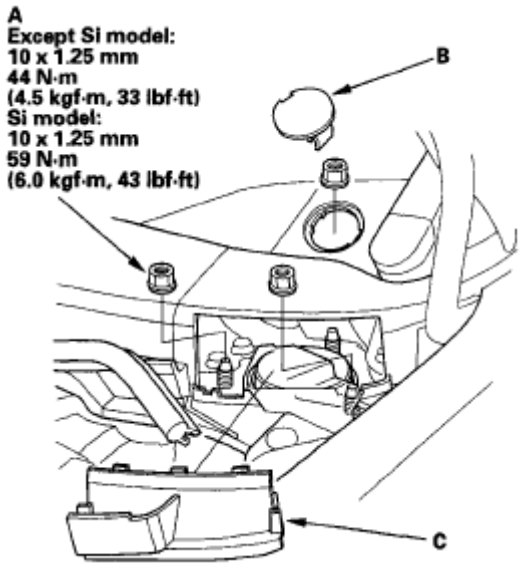


Fig. 37: Identifying Flange Nuts (With Torque Specifications)

3. Loosely install new damper pinch bolts (A) and new self-locking nuts (B) to the damper (C).

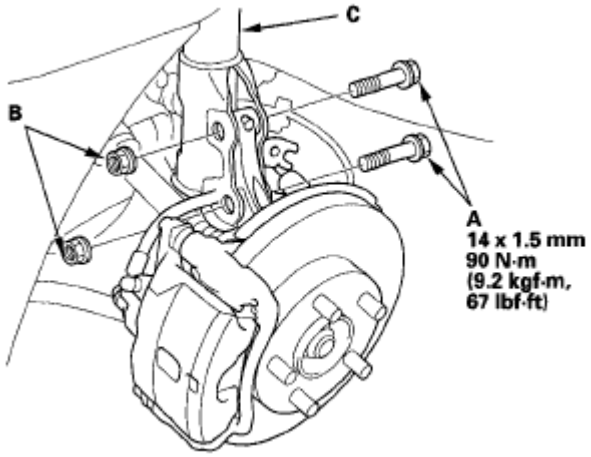


Fig. 38: Identifying Damper Pinch Bolts (With Torque Specifications)

4. Install the wheel sensor harness clip (A) and the brake hose bracket (B) to the damper (C).

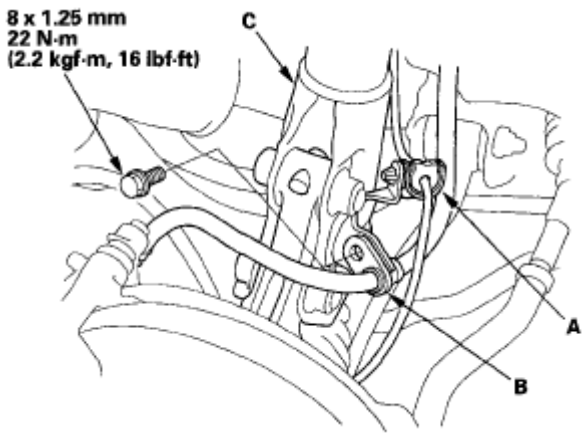


Fig. 39: Identifying Wheel Sensor Harness Clip And Brake Hose Bracket (With Torque Specifications)

5. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
6. Tighten the damper pinch bolts to the specified torque value.
7. Tighten the flange nuts on top of the damper to the specified torque value.
8. Install the service cap and the lid.
9. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.
10. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).
11. Turn the ignition switch to ON (II), then turn the windshield wipers to the default positions, and turn the ignition switch to LOCK (0).

DAMPER/SPRING DISASSEMBLY, INSPECTION, AND REASSEMBLY

EXPLODED VIEW

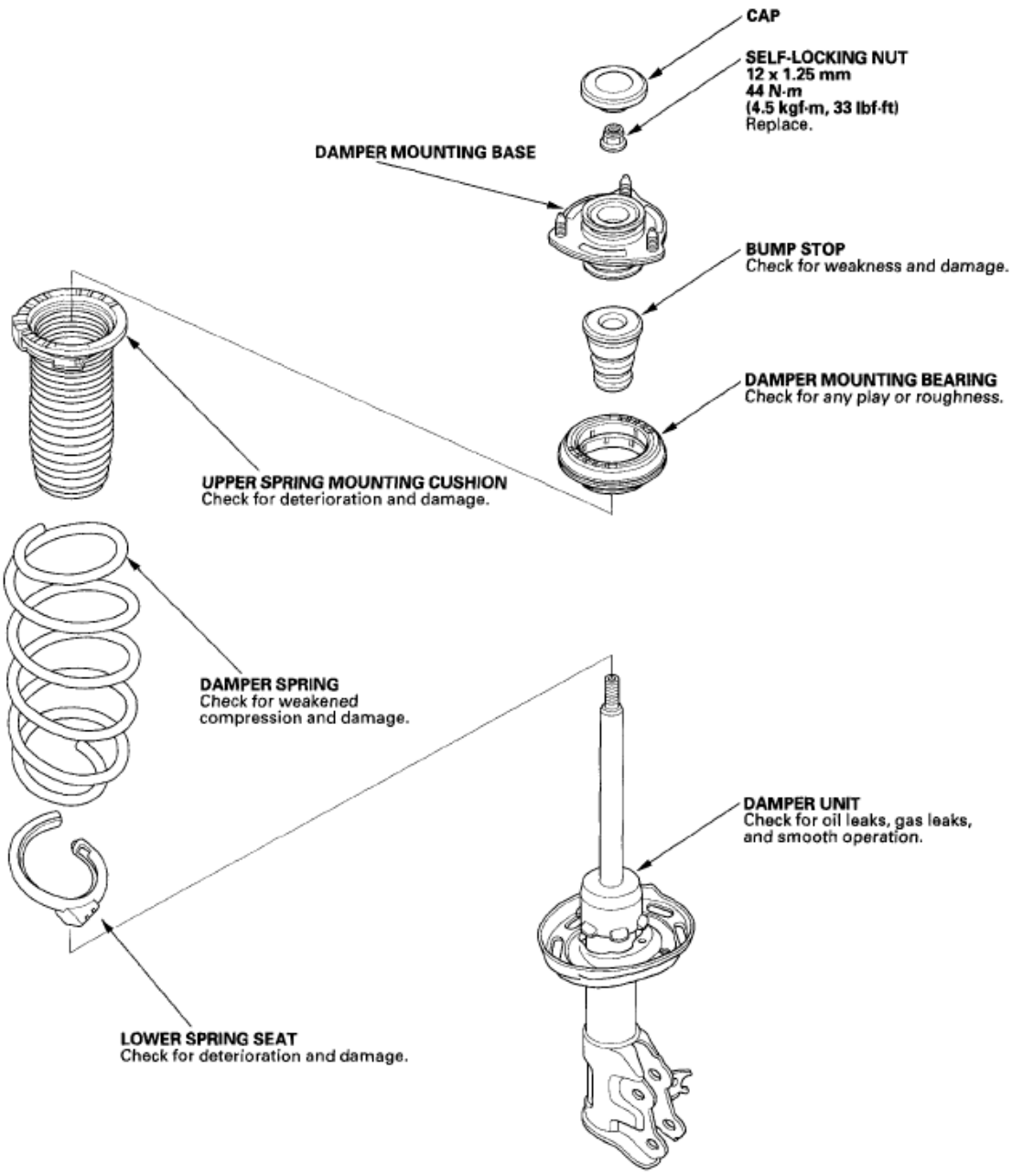


Fig. 40: Exploded View Of Damper/Spring (With Torque Specifications)

Special Tools Required

Strut nut adapter 07AAA-SVAA100

NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

DISASSEMBLY

1. Remove the cap (A) from the top of the damper.

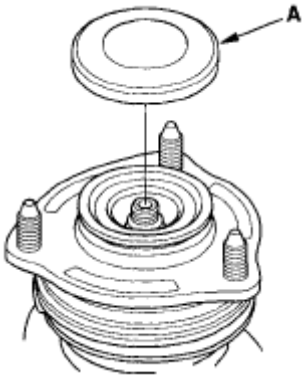


Fig. 41: Identifying Damper Cap

2. Compress the damper spring, then remove the self-locking nut (A) using the strut nut adapter (B) while holding the damper shaft with a hex wrench (C). Do not compress the spring more than necessary to remove the nut.

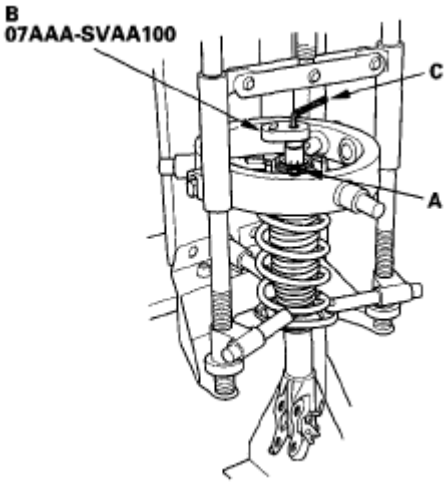


Fig. 42: Identifying Compress Damper Spring

3. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

INSPECTION

1. Reassemble all the parts, except for the upper spring mounting cushion, the bump stop, and the damper spring.
2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.

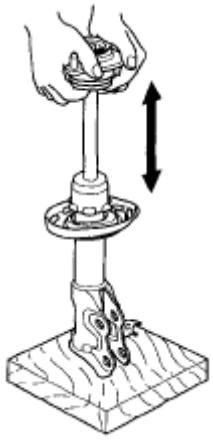


Fig. 43: Identifying Compress Damper Assembly By Hand

3. Check for oil leaks, abnormal noises, or binding during these tests.

REASSEMBLY

1. Install the damper spring (A) on the upper spring mounting cushion (B) by aligning the ledge portion (C).

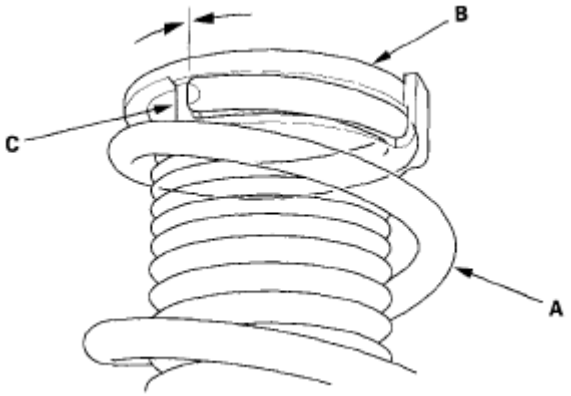


Fig. 44: Aligning Ledge Portion

2. Compress the damper spring.
3. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit (A) by referring to the Exploded View.

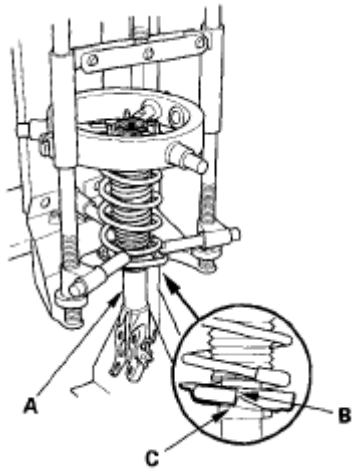


Fig. 45: Exploded View Of Damper

4. Align the bottom of the spring (B) and the stepped part of the lower spring seat (C).
5. Align the damper bracket (A) and the damper mounting base (B) so that the "delta" stamp (C) points toward the front.

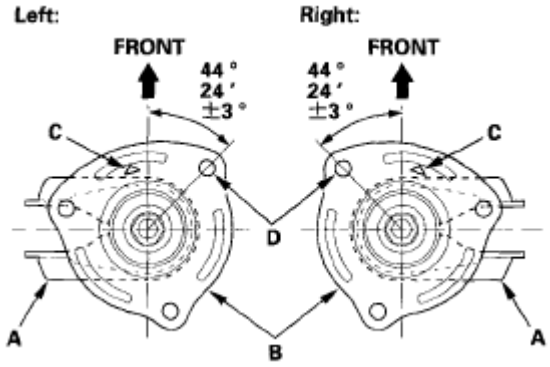


Fig. 46: Aligning Angle Of Strut Bolt On Damper Bracket

6. Align the angle of the strut bolt (D) on the damper bracket as shown.
7. Install a new self-locking nut (A).

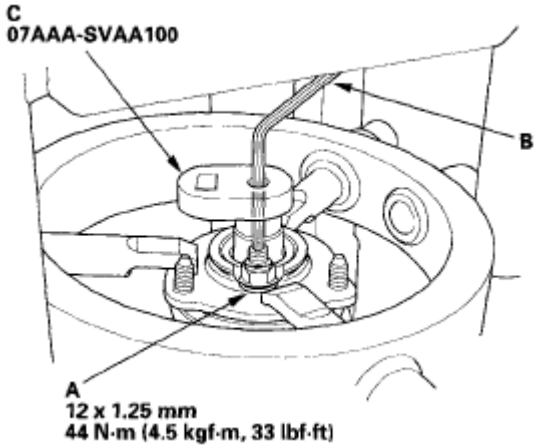


Fig. 47: Identifying Self-Locking Nut (With Torque Specifications)

8. Hold the damper shaft using a hex wrench (B), and tighten the new self-locking nut using the strut nut adapter (C) to the specified torque value.
9. Install the cap.

2006-08 SUSPENSION

Rear Suspension - Civic (All Except Hybrid)

KNUCKLE/HUB BEARING UNIT REPLACEMENT

EXPLODED VIEW-DISC BRAKE TYPE

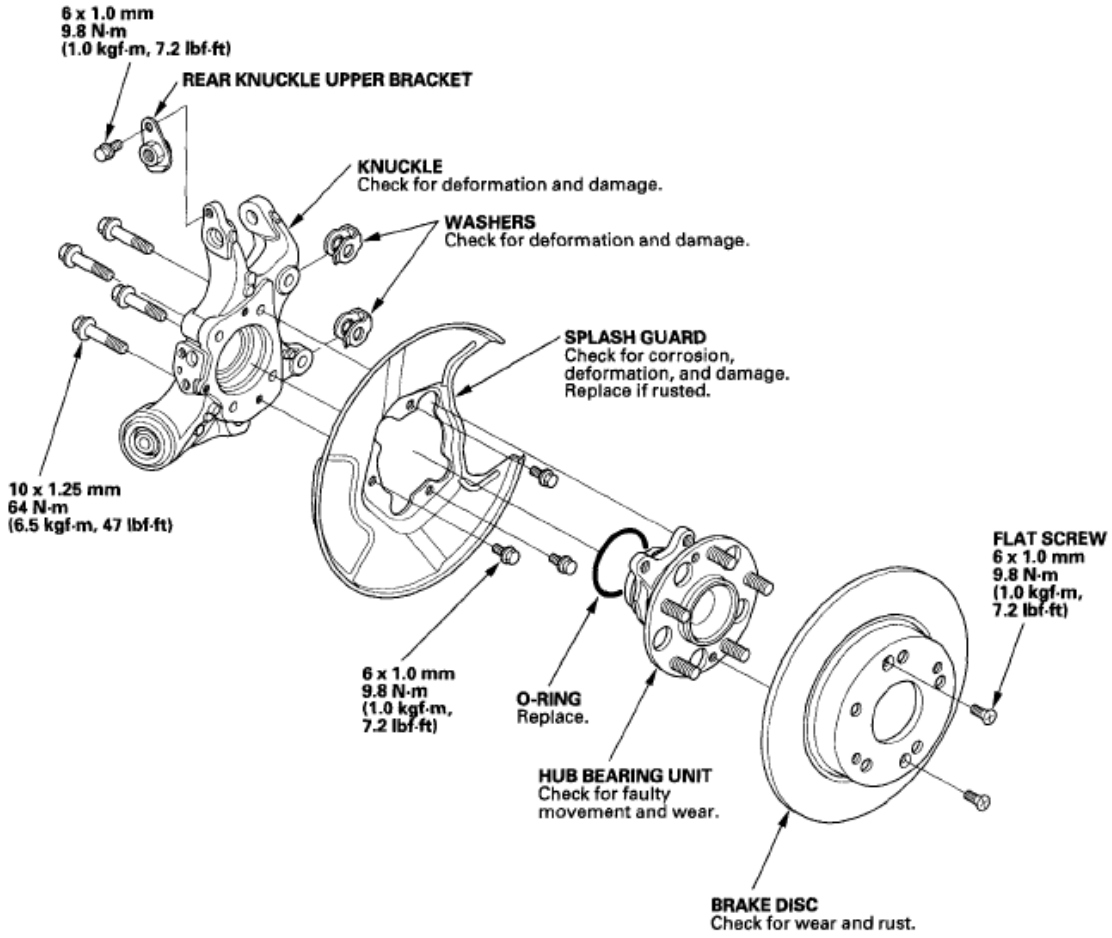


Fig. 1: Exploded View Of Disc Brake Type (With Torque Specifications)

EXPLODED VIEW-DRUM BRAKE TYPE

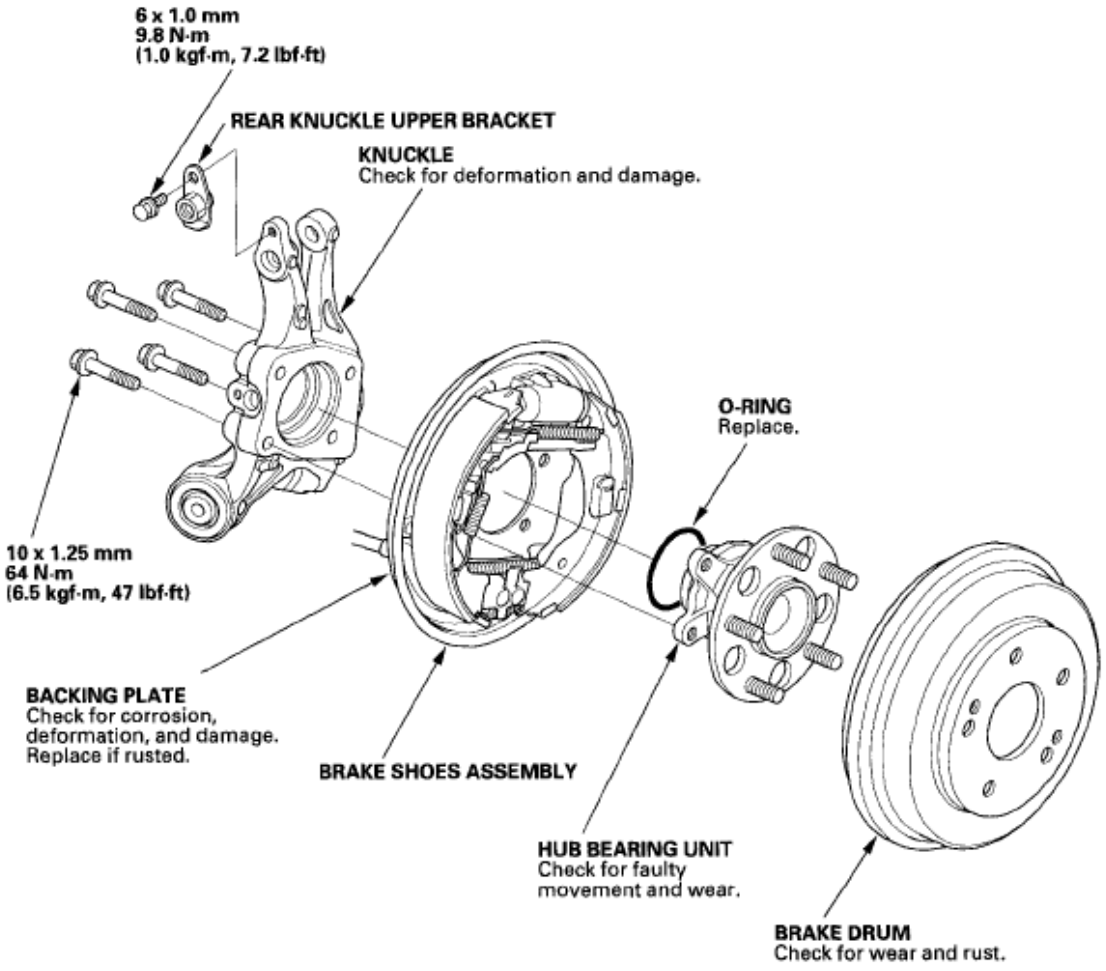


Fig. 2: Exploded View Of Drum Brake Type (With Torque Specifications)

HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the wheel nuts (A) and the rear wheel.

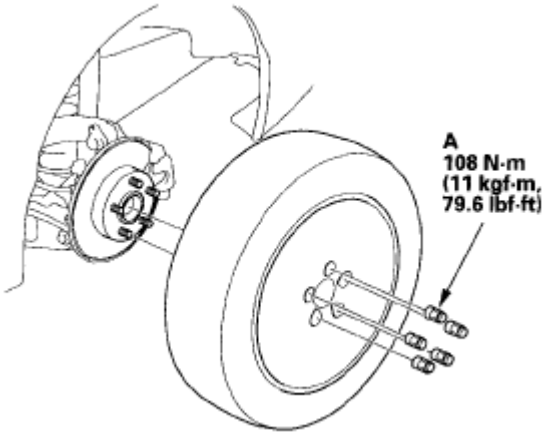


Fig. 3: Identifying Wheel Nuts And Rear Wheel (With Torque Specifications)

3. Remove the brake hose bracket mounting bolt (A) from the knuckle.

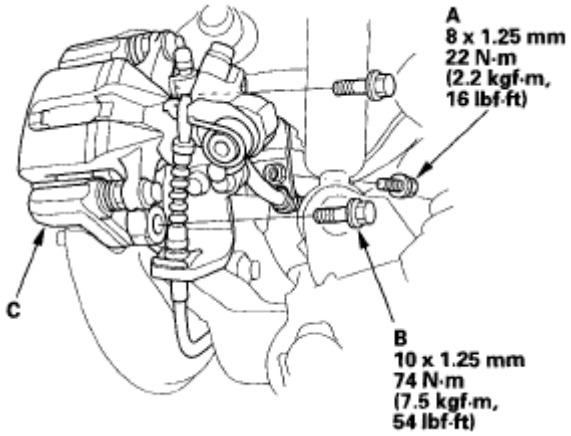


Fig. 4: Identifying Brake Hose Bracket Mounting Bolt From Knuckle (With Torque Specifications)

4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.
5. Remove the two washers (A).

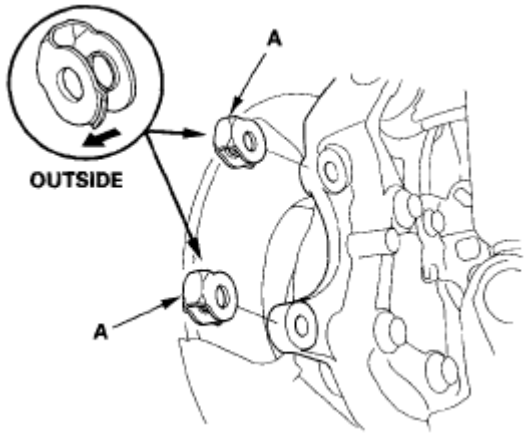


Fig. 5: Identifying Two Washers

6. Remove the 6 mm brake disc retaining screws (A).

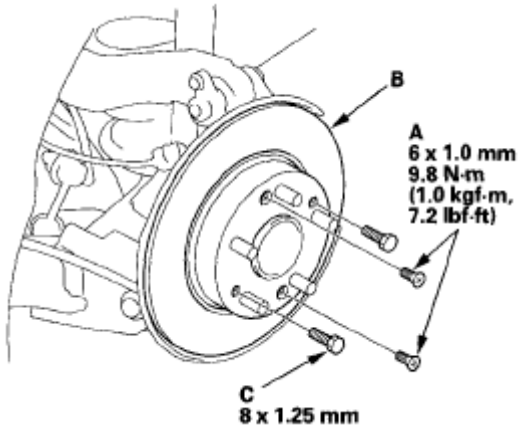


Fig. 6: Identifying Brake Disc Retaining Screws (With Torque Specifications)

7. Remove the brake disc (B) from the hub bearing unit.

NOTE: If the brake disc has clung to the hub bearing unit. Screw two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the hub bearing unit. Turn each bolt 90 degrees at a time to prevent cocking the brake disc.

8. Remove the hub bearing unit (A) and the O-ring (B).

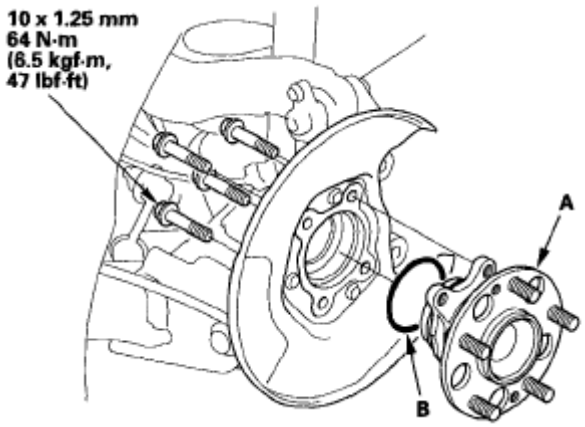


Fig. 7: Identifying Hub Bearing Unit And O-Ring (With Torque Specifications)

9. Check the hub bearing unit for damage and cracks.
10. Install the hub bearing unit in the reverse order of removal, and note these items:
    - Use a new O-ring during reassembly.
    - Tighten all mounting hardware to the specified torque values.
    - Before installing the brake disc, Clean the matching surface of the hub bearing unit and inside of the brake disc.
    - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
    - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the wheel nuts (A) and the rear wheel.

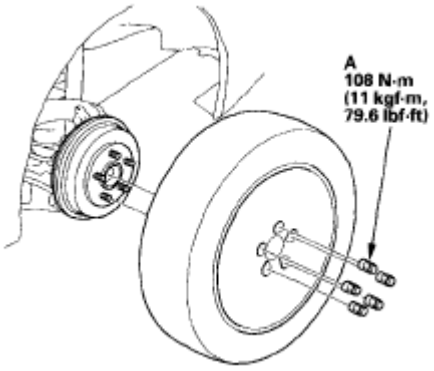


Fig. 8: Identifying Wheel Nuts And Rear Wheel (With Torque Specifications)

3. Release the parking brake, and remove the brake drum (A) from the hub bearing unit.

NOTE:

- **If necessary, turn the adjuster bolt (B) with a flat-tip screwdriver until the shoes become loose.**
- **If the brake drum has clung to the hub bearing unit. Screw two 8 x 1.25 mm bolts (C) into the brake drum to push it away from the hub bearing unit. Turn each bolt 90 degrees at a time to prevent cocking the brake drum.**
- **After installation, press the brake pedal several times to make sure the brakes work and self adjust the brake shoes.**

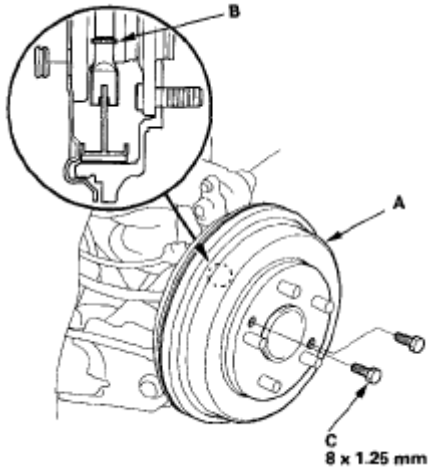


Fig. 9: Identifying Brake Drum And Adjuster Bolt

4. Remove the hub bearing unit (A) and the O-ring (B).

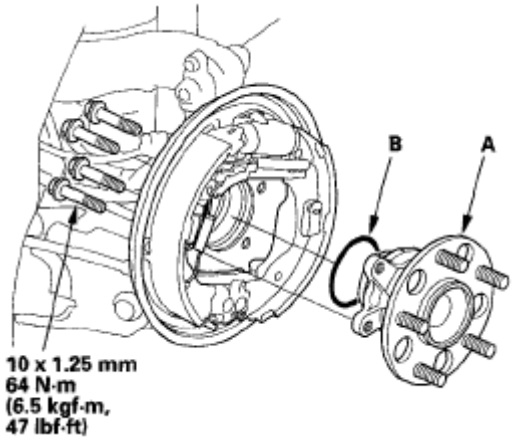


Fig. 10: Identifying Hub Bearing Unit And O-Ring (With Torque Specifications)

5. Check the hub bearing unit for damage and cracks.
6. Install the hub bearing unit in the reverse order of removal, and note these items:
   - Use a new O-ring during reassembly.
   - Tighten all mounting hardware to the specified torque values.
   - Before installing the brake drum, clean the matching surface of the hub bearing unit and inside of the brake drum.
   - Before installing the wheel, clean the mating surface of the brake drum and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

KNUCKLE REPLACEMENT-DISC BRAKE TYPE

1. Remove the hub bearing unit.
2. Remove the splash guard (A).

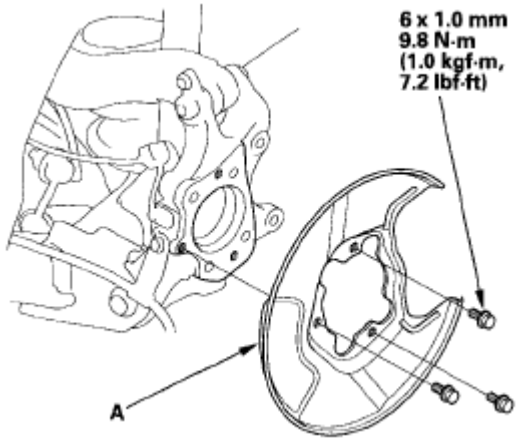


Fig. 11: Identifying Splash Guard (With Torque Specifications)

3. Remove the wheel sensor (A), and the brake hose mounting bracket (B) from the knuckle (C). Do not disconnect the wheel sensor connector.

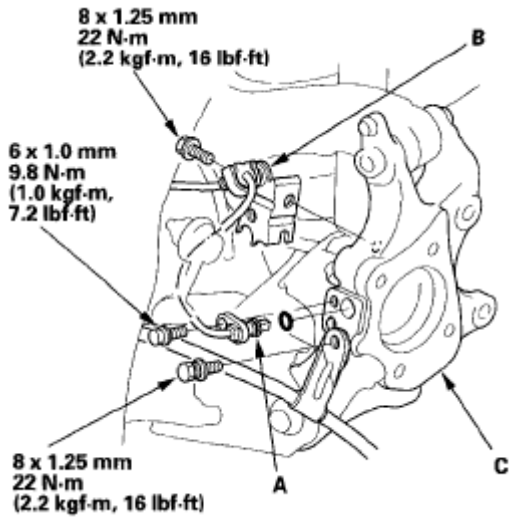


Fig. 12: Identifying Wheel Sensor And Brake Hose Mounting Bracket From Knuckle (With Torque Specifications)

4. Place a floor jack under the trailing arm to support it.

NOTE: Do not place the jack against the plate section of the lower arm. Be careful not to damage any suspension components.

5. Remove the upper arm mounting bolt (A), and disconnect the upper arm (B) from the knuckle.

NOTE: Use the new upper arm mounting bolt during reassembly.

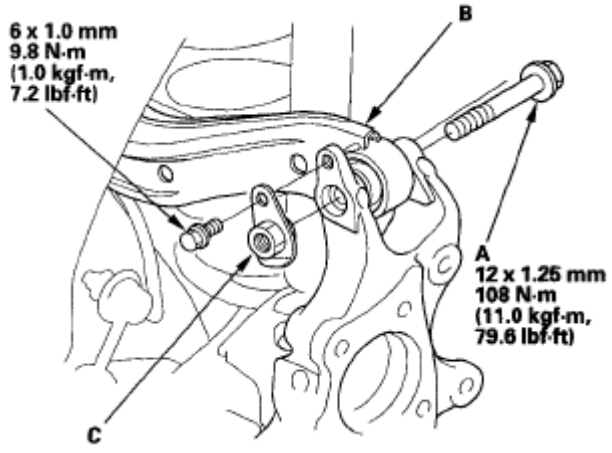


Fig. 13: Identifying Mounting Bolt (With Torque Specifications)

6. Remove the rear knuckle upper bracket (C).
7. Mark the cam positions of the adjusting bolt (A) and the adjusting cam (B), then remove the self-locking nut (C), the adjusting cam, and the adjusting bolt. Discard the self-locking nut.

NOTE: Use a new self-locking nut during reassembly.

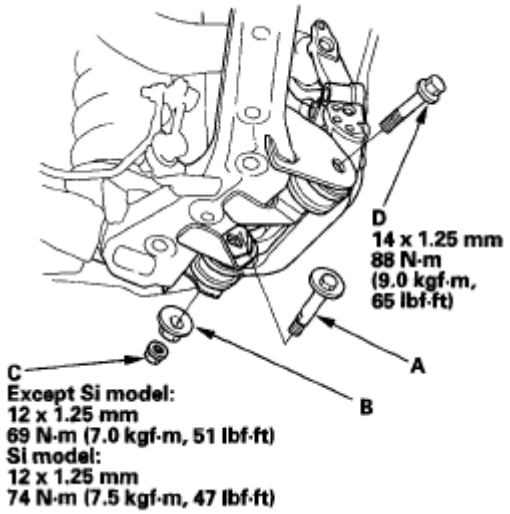


Fig. 14: Identifying Adjusting Bolt, Cam And Self Locking Nut (With Torque Specifications)

8. Remove the flange bolt (D) and remove the knuckle.

NOTE: Use a new flange bolt during reassembly.

9. Install the knuckle in the reverse order of removal, and note these items:
   - First install all the suspension components, and lightly tighten the bolts and nuts, then place a floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
   - Align the cam positions of the adjusting bolt and the adjusting cam with the marked positions when tightening.
   - Before installing the brake disc, clean the mating surface of the hub bearing unit and the inside of the brake disc.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

KNUCKLE REPLACEMENT-DRUM BRAKE TYPE

1. Remove the hub bearing unit.
2. Disconnect the brake line (A) from the wheel cylinder (B). Remove the rear brake assembly (C) from the knuckle.

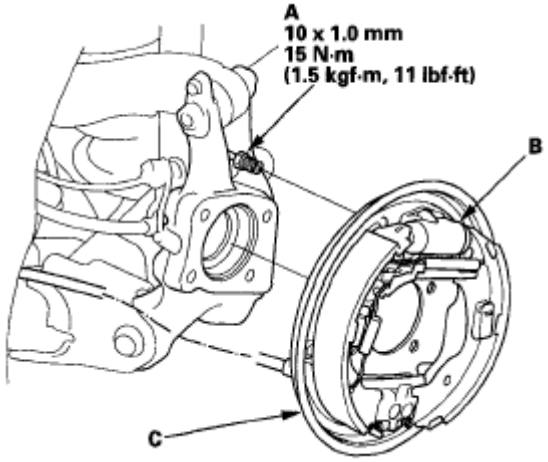


Fig. 15: Identifying Rear Brake Assembly From Knuckle (With Torque Specifications)

3. Remove the wheel sensor (A), and the brake hose mounting bracket (B) from the knuckle (C). Do not disconnect the wheel sensor connector.

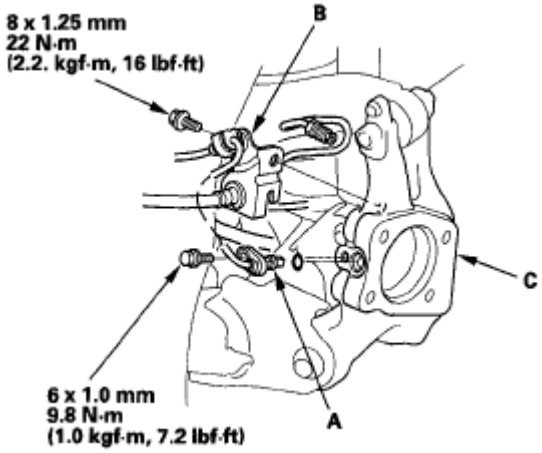


Fig. 16: Identifying Wheel Sensor, Brake Hose Mounting Bracket From Knuckle (With Torque Specifications)

4. Place a floor jack under the trailing arm to support it.

NOTE: Do not place the jack against the plate section of the lower arm. Be careful not to damage any suspension components.

5. Remove the upper arm mounting bolt (A), and disconnect the upper arm (B) from the knuckle.

NOTE: Use a new upper arm mounting bolt during reassembly.

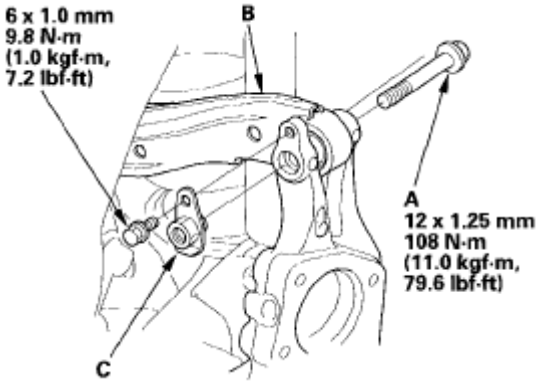


Fig. 17: Identifying Upper Arm Mounting Bolt (With Torque Specifications)

6. Remove the rear knuckle upper bracket (C).
7. Mark the cam positions of the adjusting bolt (A) and the adjusting cam (B), then remove the self-locking nut (C), the adjusting cam, and the adjusting bolt. Discard the self-locking nut.

NOTE: Use a new self-locking nut during reassembly.

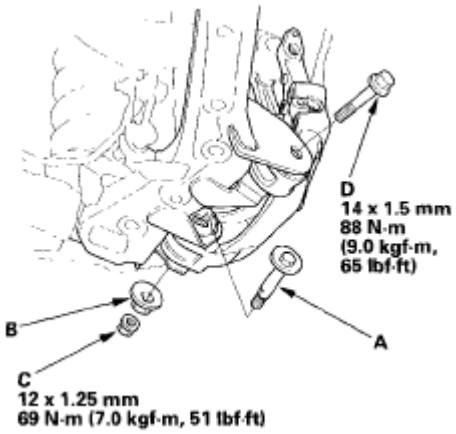


Fig. 18: Identifying Adjusting Bolt, Cam And Self Locking Nut (With Torque Specifications)

8. Remove the flange bolt (D) and remove the knuckle.

NOTE: Use a new flange bolt during reassembly.

9. Install the knuckle in the reverse order of removal, and note these items:
   - First install all the suspension components, and lightly tighten the bolts and nuts, then place a floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
   - Align the cam positions of the adjusting bolt and the adjusting cam with the marked positions when tightening.
   - Before installing the brake drum, clean the mating surface of the hub bearing unit and the inside of the brake drum.
   - Before installing the wheel, clean the mating surface of the brake drum and the inside of the wheel.

- Fill the master cylinder reservoir to the MAX (upper) level line, and bleed the brake system (see **BRAKE SYSTEM BLEEDING**). Check for a leak at the brake line to the wheel cylinder, and retighten it if necessary.
- Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

UPPER ARM REMOVAL/INSTALLATION

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheel.
3. Position a floorjack at the connecting point of the trailing arm (A) and the knuckle (B).

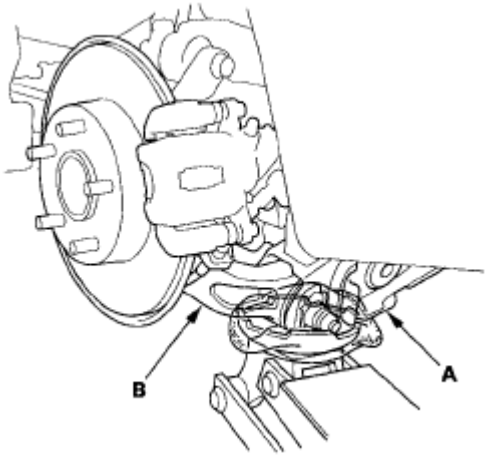


Fig. 19: Identifying Trailing Arm And Knuckle

4. Remove the flange bolts (A) from the vehicle.

NOTE: Use the new flange bolts during reassembly.

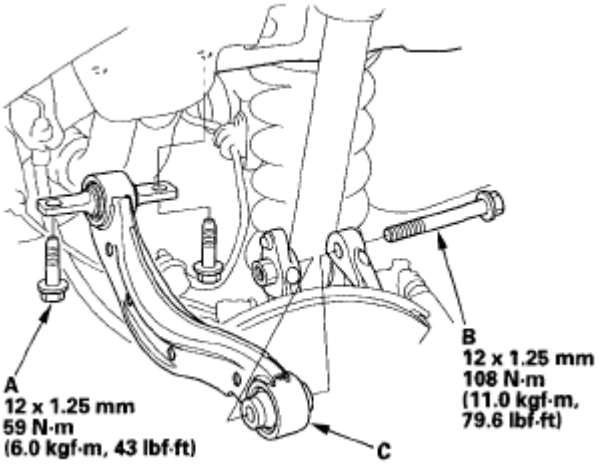


Fig. 20: Identifying Flange Bolts From Vehicle (With Torque Specifications)

5. Remove the flange bolt (B) from the knuckle, and remove the upper arm (C).

NOTE: Use the new flange bolt during reassembly.

6. Install the upper arm in the reverse order of removal, and note these items:
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components, and lightly tighten the bolts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Before installing the wheel, clean the mating surface of the brake disc or the brake drum and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

TRAILING ARM REMOVAL/INSTALLATION

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheel.
3. Remove the rear under cover (see **MIDDLE FLOOR UNDERCOVER REPLACEMENT**).
4. Remove the parking brake cable (A) from the trailing arm (B).

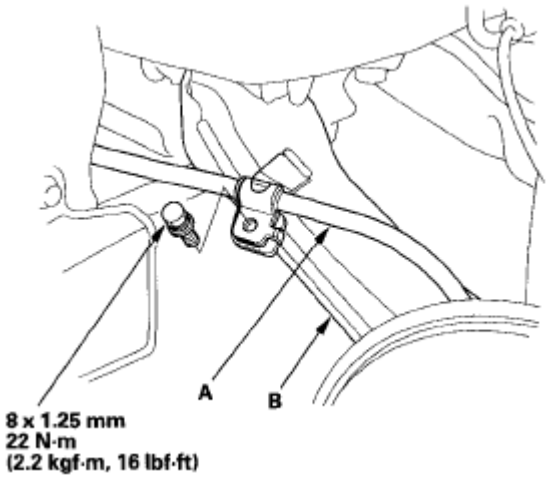


Fig. 21: Identifying Parking Brake Cable From Trailing Arm (With Torque Specifications)

5. Position a floor jack at the connecting point of the trailing arm.

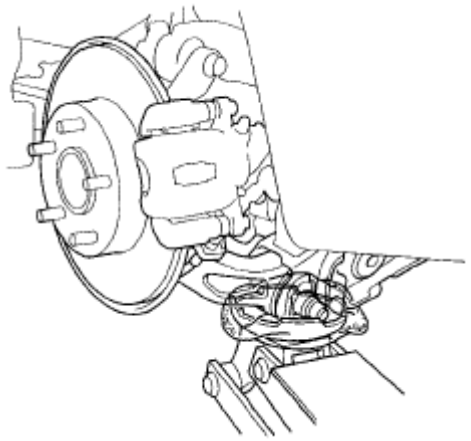


Fig. 22: Identifying Trailing Arm

6. Remove the knuckle, disc type (see **KNUCKLE REPLACEMENT-DISC BRAKE TYPE**), drum type (see **KNUCKLE REPLACEMENT-DRUM BRAKE TYPE**).
7. Remove the stabilizer link from the trailing arm (see **STABILIZER LINK REMOVAL/INSTALLATION**).
8. Remove the spring (see **SPRING REPLACEMENT**).
9. Remove the trailing arm rear mounting bolt (A).

NOTE: Use a new mounting bolt during reassembly.

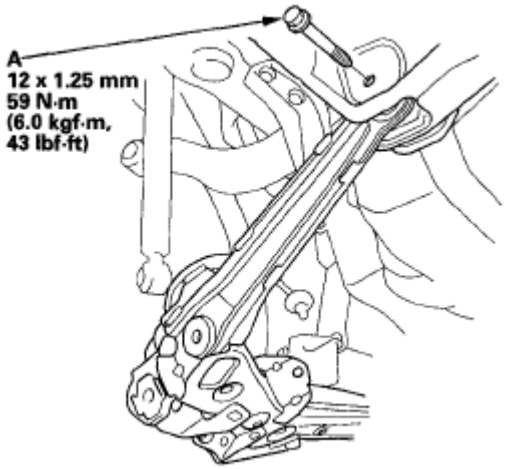


Fig. 23: Identifying Trailing Arm Rear Mounting Bolt (With Torque Specifications)

10. Lower the jack, and remove the trailing arm.
11. Install the trailing arm in the reverse order of removal, and note these items:
    - Tighten all mounting hardware to the specified torque values.
    - First install all the components, and lightly tighten the bolts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Check the brake hose for interference and twisting.
    - Before installing the wheel, clean the mating surface of the brake disc or the brake drum and the inside of the wheel.

- Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

STABILIZER LINK REMOVAL/INSTALLATION

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheel.
3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).

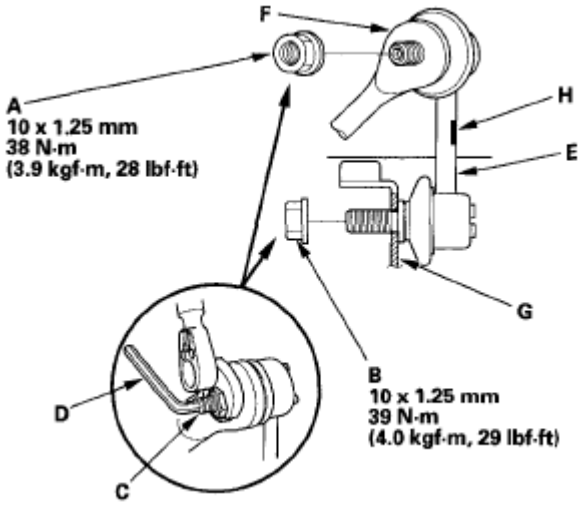


Fig. 24: Identifying Self-Locking Nut And Flange Nut (With Torque Specifications)

4. Install the stabilizer link on the stabilizer bar (F) and trailing arm (G) with the joint pins set at the center of their range of movement.

NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing rearward.

5. Install a new self-locking nut and a new flange nut, and lightly tighten them.
6. Place a floor jack under the trailing arm, and raise the suspension to load it with the vehicle's weight.
7. Tighten the self-locking nut and flange nut to the specified torque values while holding the respective joint pins with a hex wrench.
8. Reinstall all removed parts and test-drive the vehicle.
9. After 5 minutes of driving, torque the self-locking nut again to the specified torque value.

STABILIZER BAR REPLACEMENT

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheels.
3. Disconnect both stabilizer links from the stabilizer bar (see **STABILIZER LINK REMOVAL/INSTALLATION**).

4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).

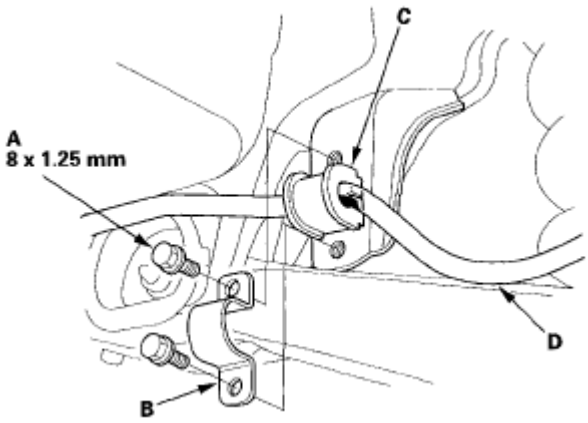


Fig. 25: Identifying Flange Bolts And Bushing Holders

5. Remove the flange bolts (A) and the stabilizer bar bracket (B) if necessary.

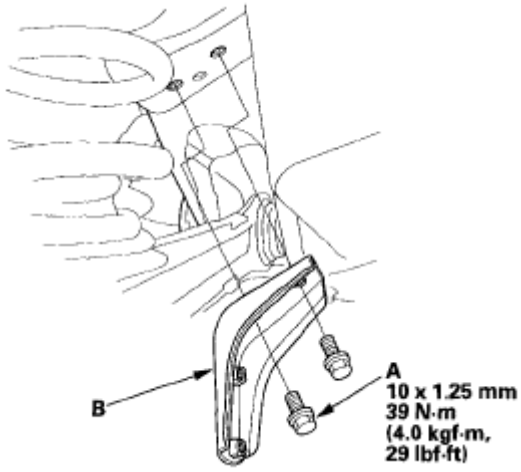


Fig. 26: Identifying Flange Bolts And Stabilizer Bar Bracket (With Torque Specifications)

6. Install the stabilizer bar in the reverse order of removal, and note these items:
   - Note the right and left direction of the stabilizer bar.
   - Align the paint marks (A) on the stabilizer bar with the sides of the bushings.
   - Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see **STABILIZER LINK REMOVAL/INSTALLATION**).
   - Before installing the wheel, clean the mating surfaces on the brake disc or the brake drum and inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

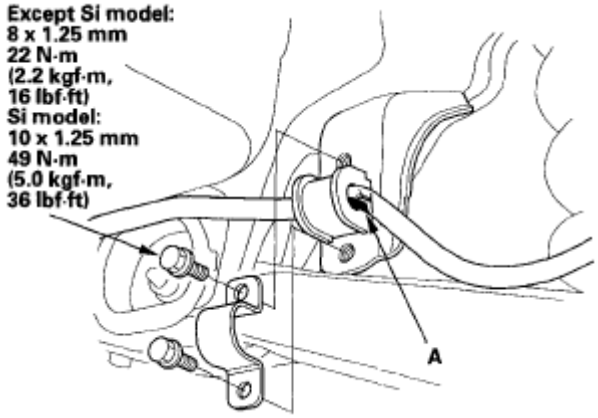


Fig. 27: Identifying Paint Marks (With Torque Specifications)

DAMPER REPLACEMENT

EXPLODED VIEW

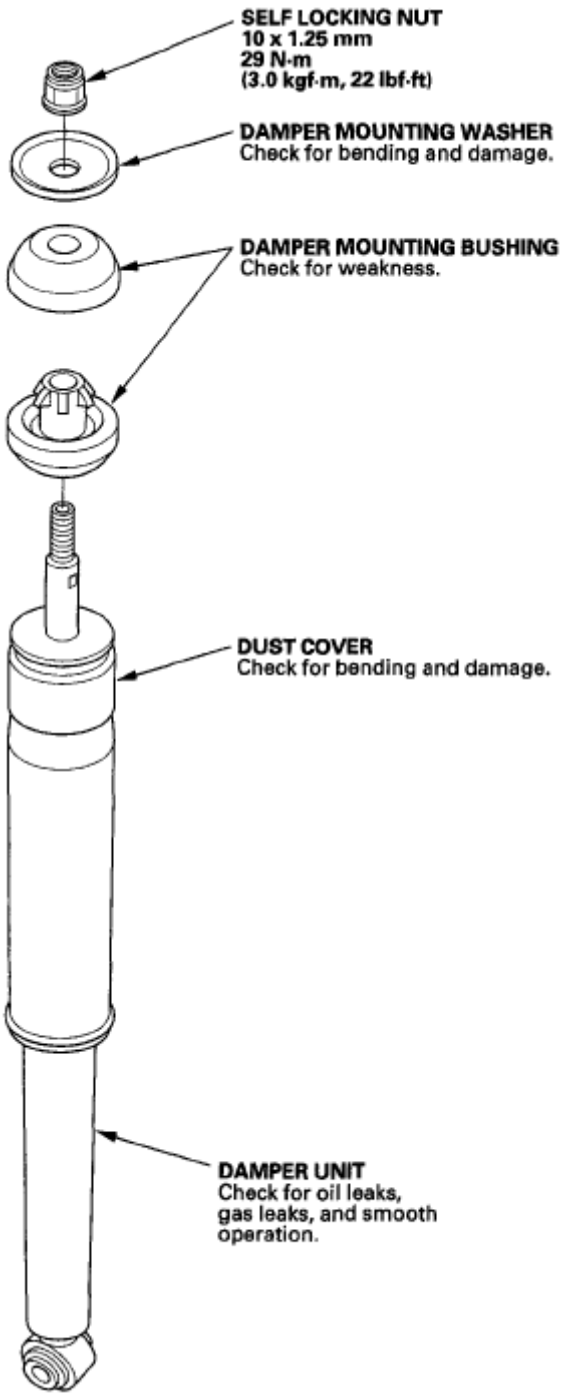


Fig. 28: Exploded View Of Damper Components (With Torque Specifications)

REMOVAL

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheel.
3. Position a floor jack at the connecting point of the trailing arm (A) and the knuckle (B). Raise the floor jack until the suspension begins to compress.

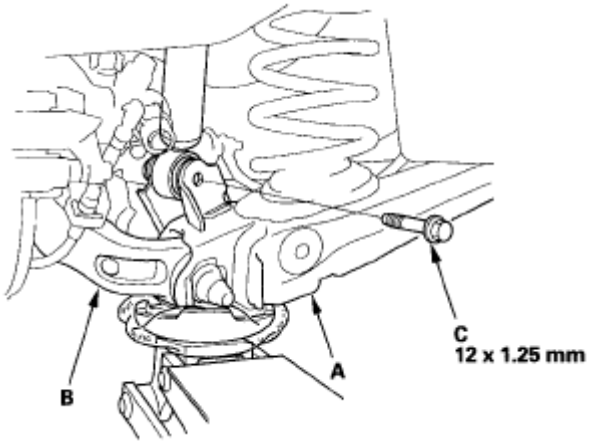


Fig. 29: Identifying Flange Bolt

4. Remove the flange bolt (C) from the bottom of the damper.
5. Remove the trunk side trim panel, 2-door (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**), 4-door (see **4-DOOR**).
6. Remove the self-locking nut (A) while holding the damper shaft (B) with a hex wrench (C).

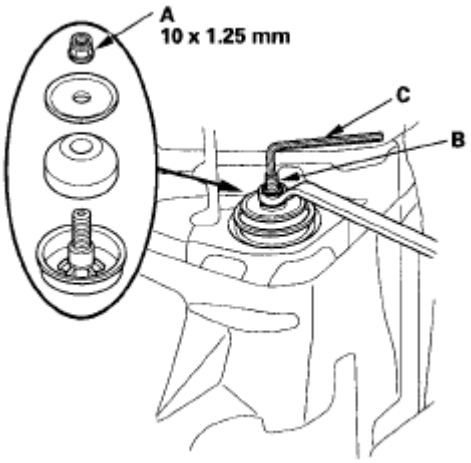


Fig. 30: Identifying Self-Locking Nut

7. Compress the damper unit (A) by hand, and remove it from the vehicle.

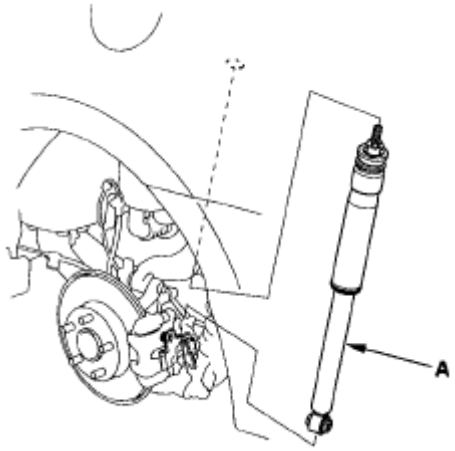


Fig. 31: Identifying Compress Damper Unit By Hand

INSPECTION

1. Push on the damper as shown.

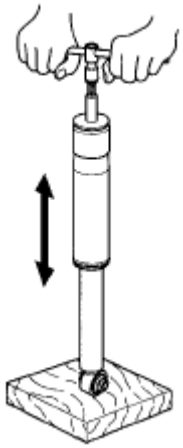


Fig. 32: Pushing On Damper

2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.
3. Check for oil leaks, abnormal noises, or binding during these tests.

INSTALLATION

1. Install the damper mounting bushing (A) onto the damper unit. Position the damper assembly (B) between the body and trailing arm. Be careful not to damage the body.

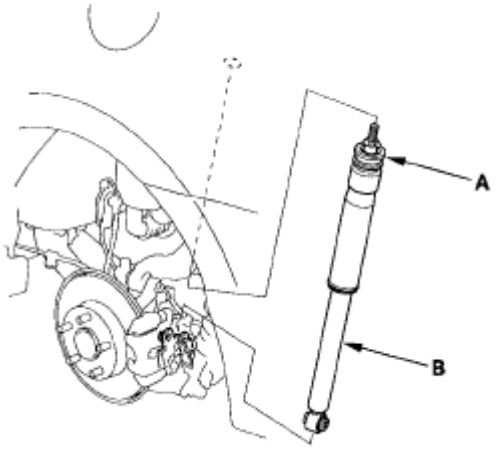


Fig. 33: Identifying Damper Mounting Bushing Onto Damper Unit

2. Position a jack under the trailing arm to support the suspension, then install a new damper mounting bolt (A).

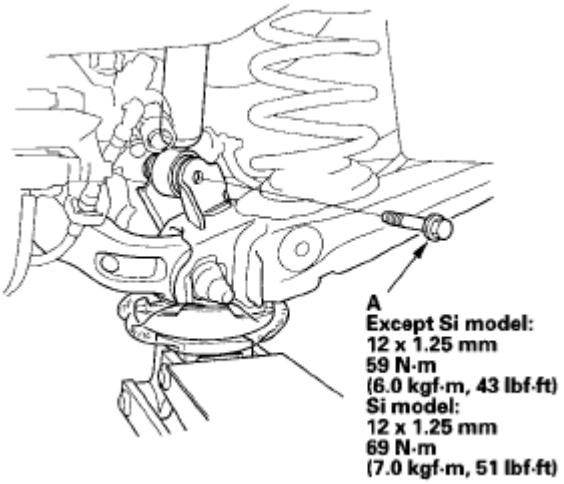


Fig. 34: Identifying Damper Mounting Bolt (With Torque Specifications)

3. Loosely tighten the damper mounting bolt.
4. Raise the rear suspension with the jack until the vehicle just lifts off the safety stands, then tighten the damper mounting bolt to the specified torque value.
5. Install the damper mounting bushing (A), the damper mounting washer (B), and a new self-locking nut (C) on the damper shaft.

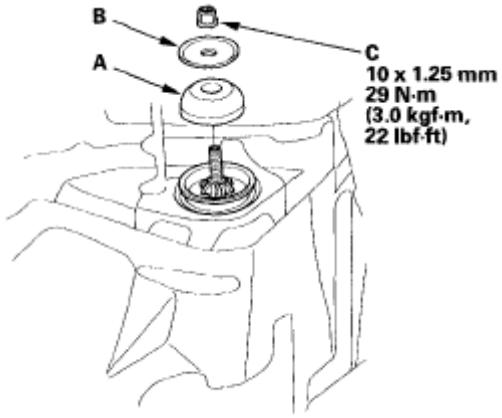


Fig. 35: Identifying Damper Mounting Bushing (With Torque Specifications)

6. Tighten the self-locking nut to the specified torque value while holding the damper shaft (A) with a hex wrench (B).

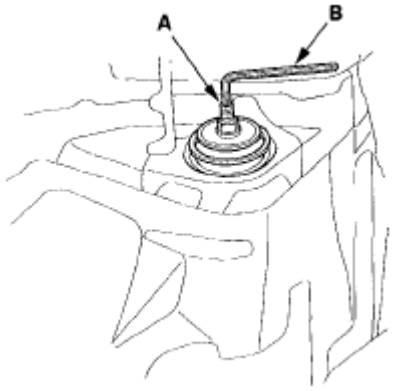


Fig. 36: Tightening Self-Locking Nut (With Torque Specifications)

7. Install the trunk side trim panel, 2-door (see **TRIM REMOVAL/INSTALLATION - TRUNK AREA**), 4-door (see **4-DOOR**).
8. Install the rear wheel.

NOTE: Before installing the wheel, clean the mating surface of the brake disc or brake drum and the inside of the wheel.

9. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

SPRING REPLACEMENT

EXPLODED VIEW

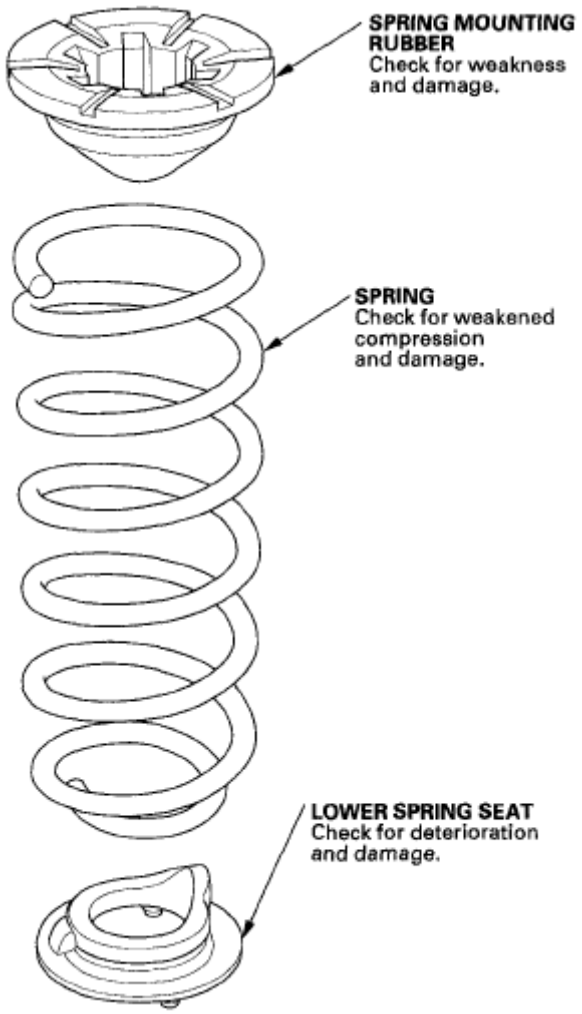


Fig. 37: Exploded View Of Spring Replacement

REMOVAL

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the rear wheel.
3. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

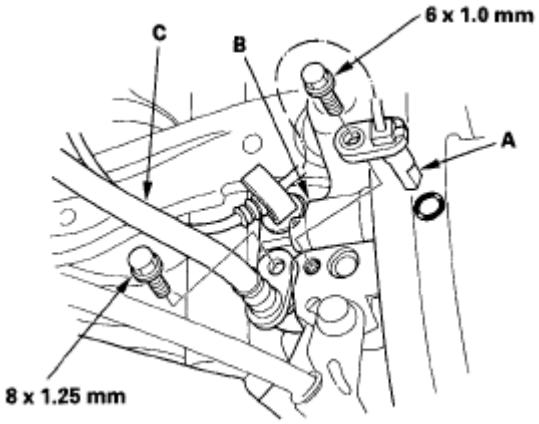


Fig. 38: Identifying Wheel Sensor And O-Ring

4. Remove the brake hose (C).
5. Position a floor jack at the connecting point of the trailing arm and the knuckle.
6. Remove the flange bolt (A) that connects the trailing arm (B) and the damper (C).

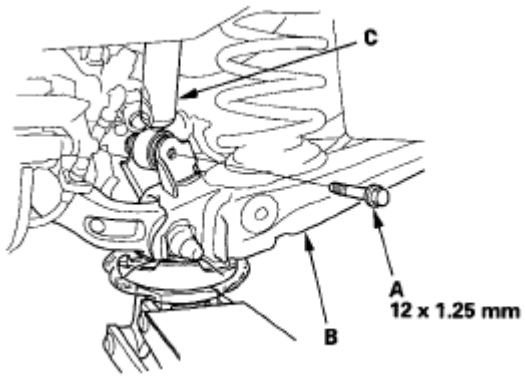


Fig. 39: Identifying Flange Bolt

7. Remove the stabilizer link from the trailing arm (see **STABILIZER LINK REMOVAL/INSTALLATION**).
8. Remove the flange bolt (A) that connects the knuckle (B) and the upper arm (C).

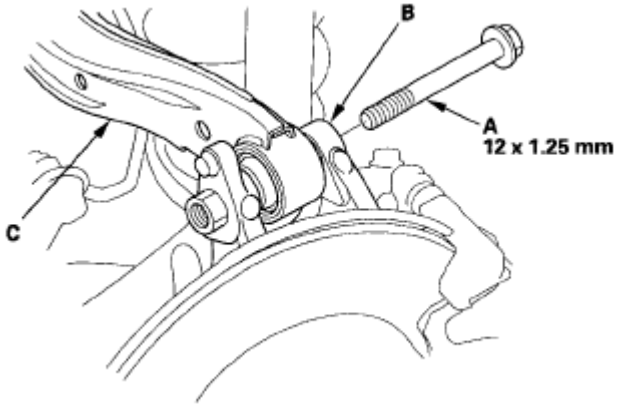


Fig. 40: Identifying Flange Bolt

9. Remove the trailing arm front mounting bolts (A).

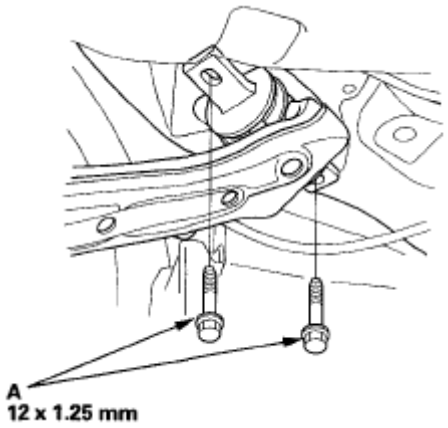


Fig. 41: Identifying Trailing Arm Front Mounting Bolts

10. Lower the floor jack gradually.
11. Remove the spring mounting rubber (A), the spring (B) and the lower spring seat (C).

NOTE: If the clip is installed inside the spring mounting rubber, discard it.

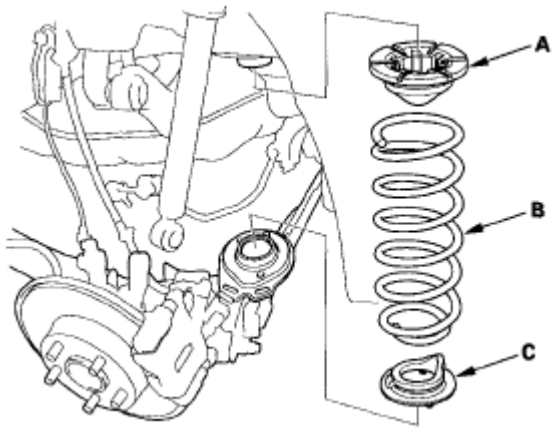


Fig. 42: Identifying Spring Mounting Rubber

INSTALLATION

1. Install the spring mounting rubber (A), the spring (B) and the lower spring seat (C).

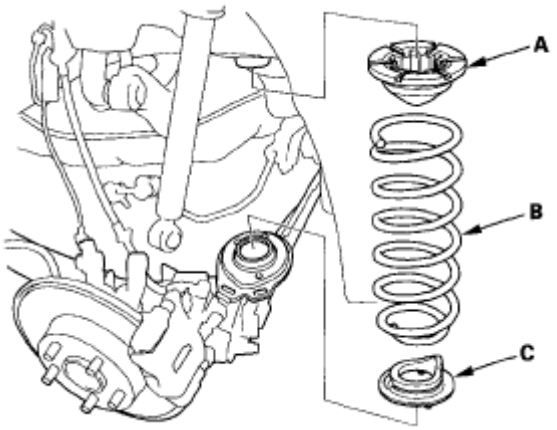


Fig. 43: Identifying Spring Mounting Rubber

2. Align the bottom of the spring (A) and the lower spring seat (B) with the trailing arm (C) as shown.

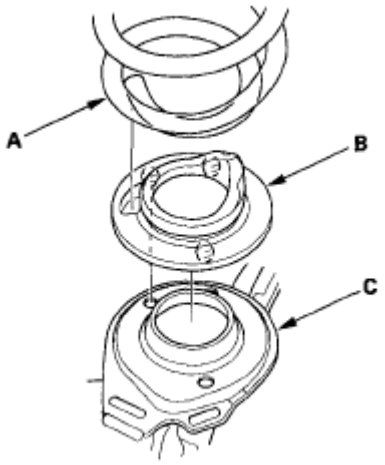


Fig. 44: Aligning Bottom Of Spring

3. Loosely install the new trailing arm front mounting bolts (A).

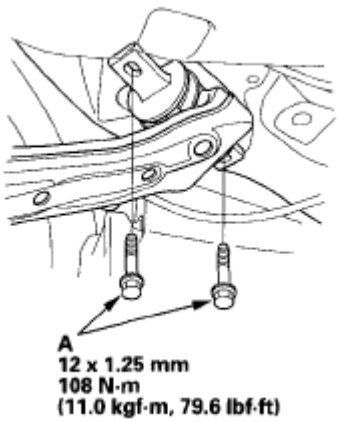


Fig. 45: Identifying Trailing Arm Front Mounting Bolts (With Torque Specifications)

4. Loosely install a new flange bolt (A) on the knuckle (B) and the upper arm (C).

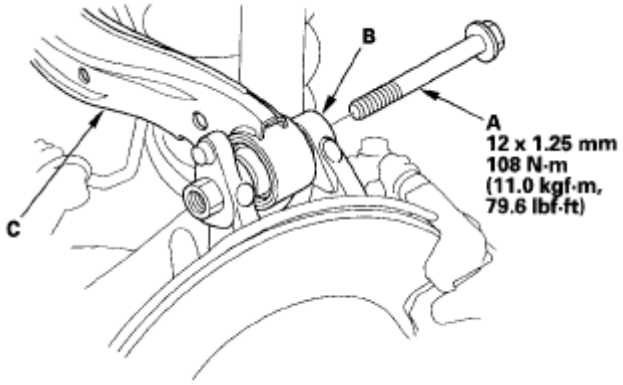


Fig. 46: Identifying Flange Bolt (With Torque Specifications)

5. Slowly raise the jack until you can align the bolt hole with the holes in the trailing arm (A) and the damper (B), and install a new flange bolt (C).

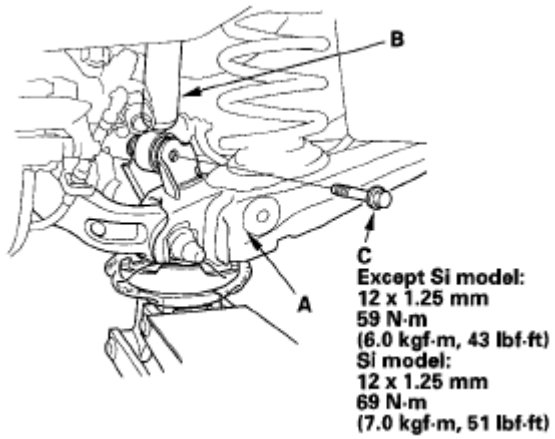


Fig. 47: Identifying Flange Bolt (With Torque Specifications)

6. Install the stabilizer link on the trailing arm with a new self-locking nut, and lightly tighten both nuts.
7. Raise the rear suspension with a floor jack to load the vehicle weight.
8. Tighten all mounting hardware to the specified torque values. For stabilizer link torque specifications (see **STABILIZER LINK REMOVAL/INSTALLATION**).
9. Install the wheel sensor (A) and the brake hose (B).

NOTE: Apply multipurpose grease to the mating surfaces on the knuckle and the O-ring (C).

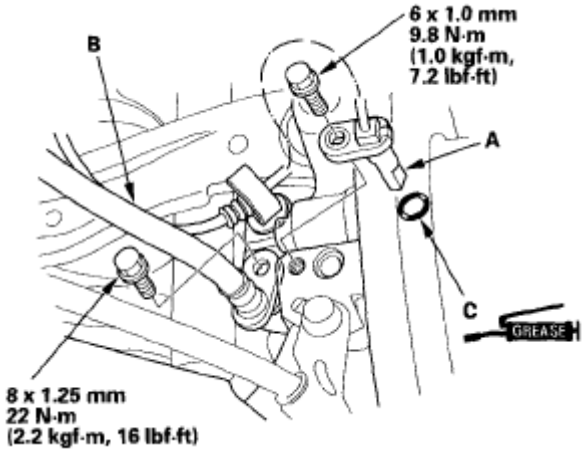


Fig. 48: Identifying Wheel Sensor And Brake Hose (With Torque Specifications)

10. Install the rear wheel.

NOTE: Before installing the wheel, clean the mating surface of the brake disc or the brake drum and inside of the wheel.

11. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

2006-08 SUSPENSION

Front and Rear Suspension (Inspection) - Civic (All Except Hybrid)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07AAA-SVAA100	Strut Nut Adapter	1
②	07AAF-SVAA100	Bushing Driver	1
③	07AAF-SVAA200	Receiver Set	1
④	07GAF-SD40100	Hub Dis/Assembly Tool	1
⑤	07GAF-SE00100	Hub Dis/Assembly Tool	1
⑥	07GAF-SE00200	Attachment, 40 mm	1
⑦	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
⑧	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑨	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1
⑩	07746-0010500	Attachment, 62 x 68 mm	1
⑪	07749-0010000	Driver	1
⑫	07948-SB00101	Attachment, 96 mm	1
⑬	07965-SD90100	Support Base	1

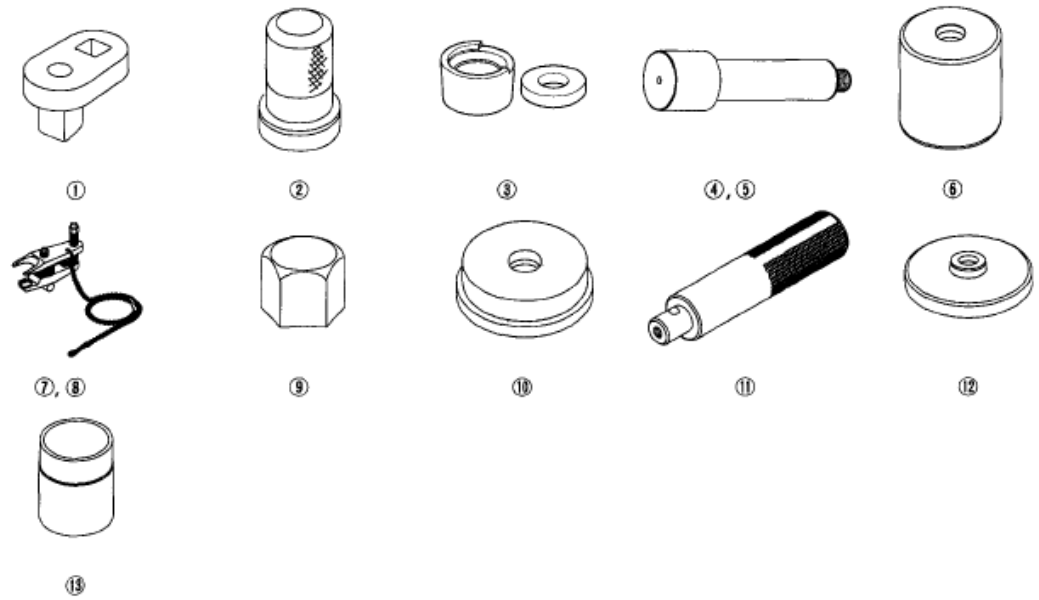


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

Front Suspension

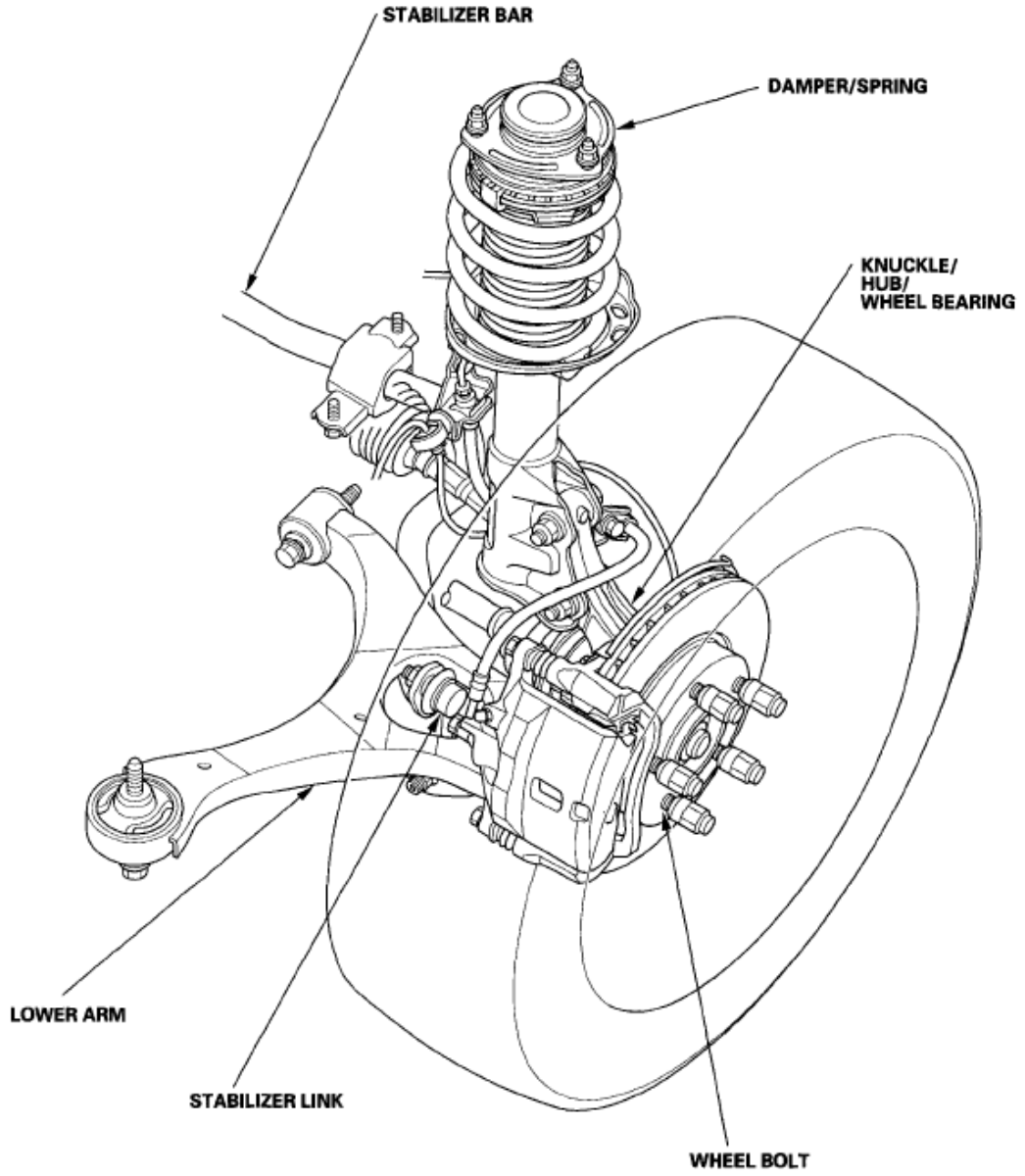


Fig. 2: Identifying Front Suspension Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rear Suspension - Disc Brake Type

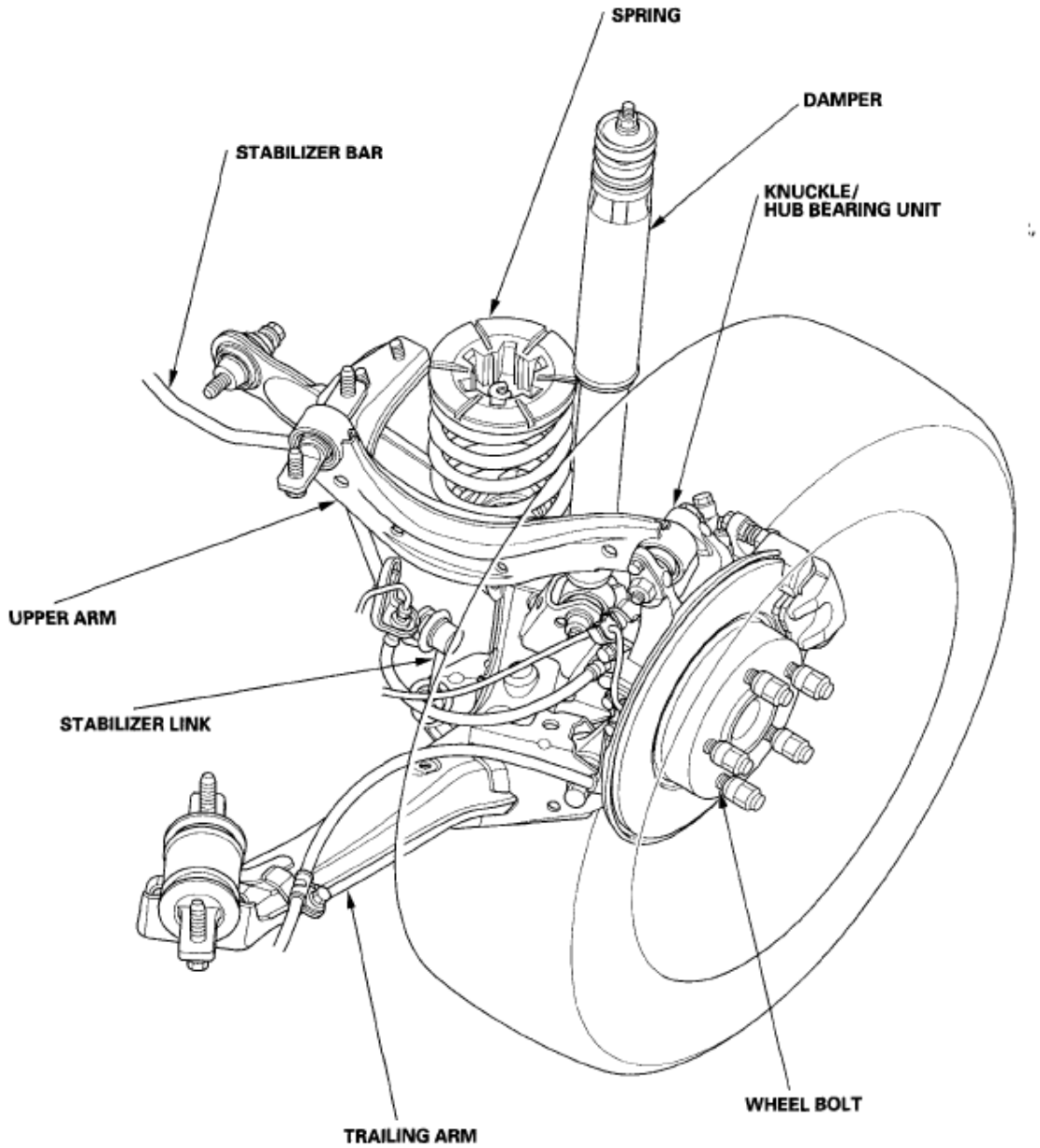


Fig. 3: Identifying Rear Suspension Component Location - Disc Brake Type
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rear Suspension - Drum Brake Type

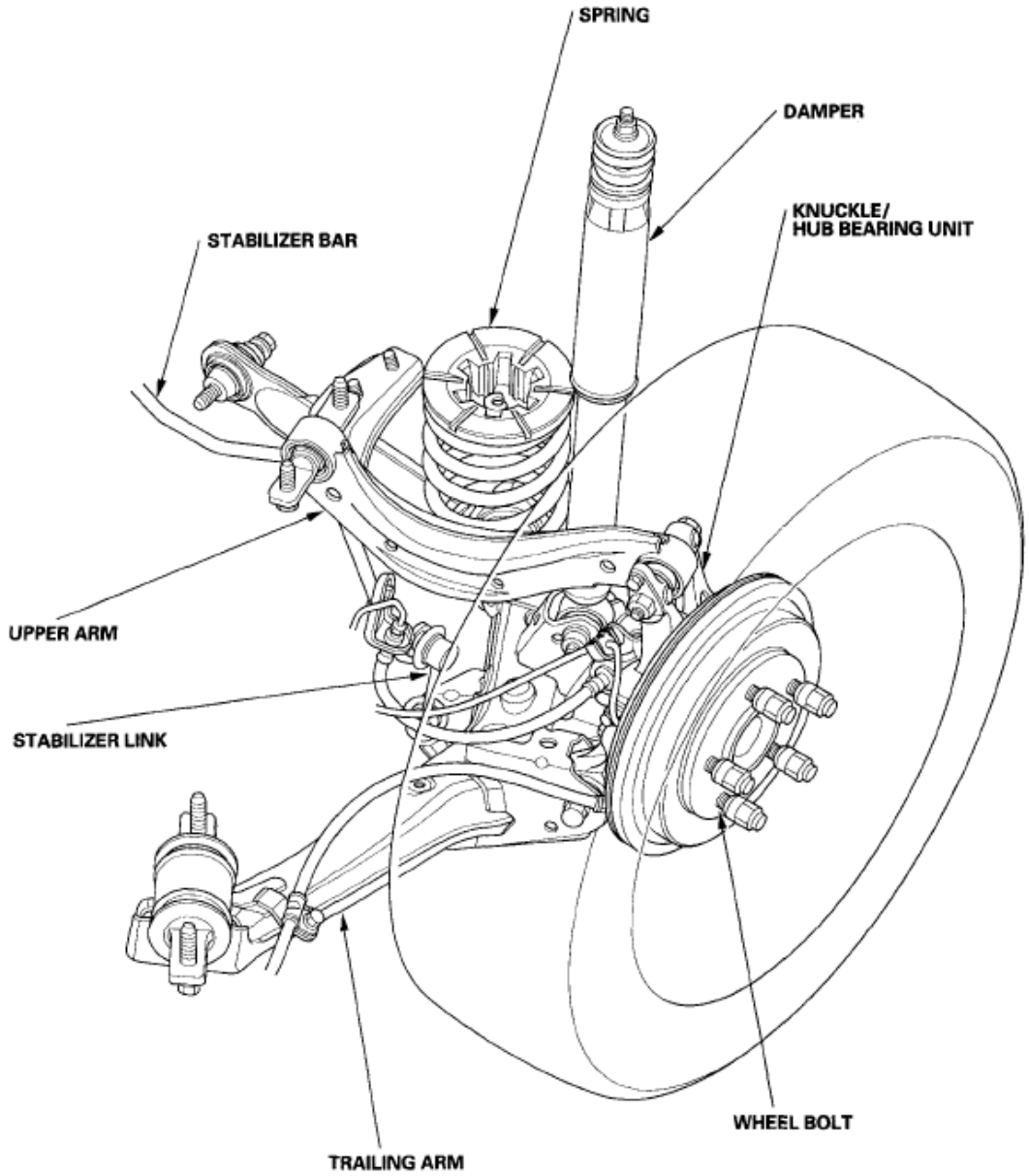


Fig. 4: Identifying Rear Suspension Components Location - Drum Brake Type
Courtesy of AMERICAN HONDA MOTOR CO., INC.

WHEEL ALIGNMENT

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are related to each other. For example, when you adjust camber, the toe will change. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

PRE-ALIGNMENT CHECKS

For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.

3. Check the tire size and pressure.

   Tire size:

   Front/Rear:

   DX, DX-G and GX models: P195/65R 15 89H

   LX and EX models: P205/55R 16 89H

   Si model: P215/45R 17 87V

   215/45ZR 17 91W (optional)

   Tire pressure:

   Front/Rear:

   DX, DX-G and GX models:

   210 kPa (2.1kgf/m^2 , 30psi)

   LX and EX (L) models: 220 kPa (2.2 kgf/m^2 , 32 psi)

   Tire pressure (4-door Si model):

   Si model: 230 kPa (2.3 kgf/m^2 , 33 psi)

4. Check the runout of the wheels and tires (see **WHEEL RUNOUT INSPECTION**).
5. Check the suspension ball joints. (Hold a tire with your hands, and move it up and down and right and left to check for wobbling.)

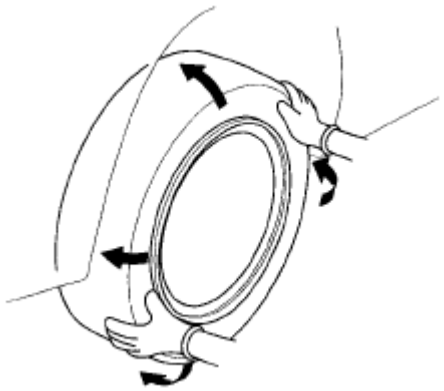


Fig. 5: Identifying Suspension Ball Joints (Hold Tire With Your Hands)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Bounce the vehicle up and down several times to settle the suspension.

CASTER INSPECTION

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the caster angle.

Caster angle: 7° 00'±1°

- If the measurement is within specifications, measure the camber angle.
- If the measurement is not within specifications, check for bent or damaged suspension components.

CAMBER INSPECTION

Except GX Model

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the camber angle.

Camber angle:

Front: 0°00'±30' (Maximum difference between the front right and left side: 0° 35')

Rear: -1 °30' (+1°05 ' -0° 45')

- If the measurement for the front camber is outside the specification, go to front camber adjustment.
- If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

GX Model

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the camber angle.

NOTE:

- **There are upper arms with "C" marks (A) and without "C" marks.**
- **"C" marks are in both faces of both arms.**
- **Rear camber angle is different based on with or without "C" marks.**

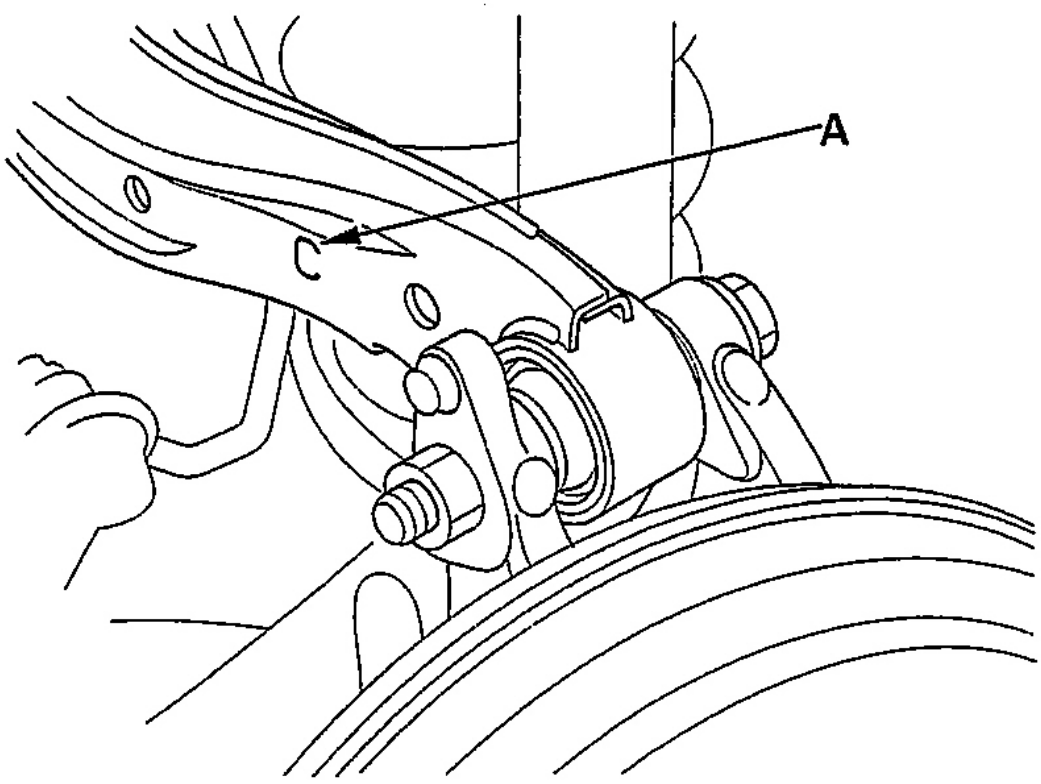


Fig. 6: Identifying "C" Marking On Upper Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Camber angle:

Front: 0°00'±30' (Maximum difference between the front right and left side: 0° 35')

Rear (without "C" marks on the upper arm): -1 °30' (+1°05 ' -0° 45')

Rear (with "C" marks on the upper arm): -0 °45' (+1°05 ' -0° 45')

- If the measurement for the front camber is outside the specification, go to front camber adjustment.
- If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

FRONT CAMBER ADJUSTMENT

The front camber can be adjusted by exchanging one or both of the damper pinch bolts with a smaller diameter adjusting bolt. The difference between the adjusting bolt diameter and the pinch bolt hole diameter allows for a small range of adjustment.

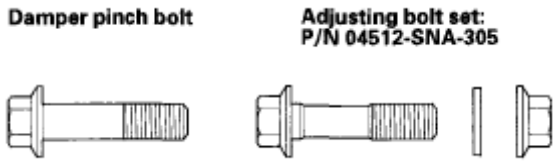


Fig. 7: Identifying Damper Pinch Bolts With Smaller Diameter Adjusting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the front wheels.
3. Loosen the damper pinch bolts (A), and adjust the camber by moving the bottom of the damper within the range of the damper pinch bolt free play.

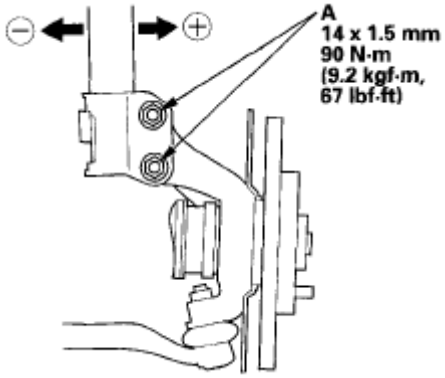


Fig. 8: Identifying Damper Pinch Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the damper pinch bolts to the specified torque.
5. Reinstall the front wheels. Lower the front of the vehicle to the ground, and bounce the front of the vehicle up and down several times to settle the suspension.
6. Measure the camber angle.
   - If the measurement is within specification, measure the toe-in.
   - If the measurement is not within specification, go to step 7.
7. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
8. Remove the front wheels.
9. Replace the damper pinch bolts with the adjusting bolts (A), and adjust the camber angle.

NOTE:

- **Install the washers (B) included adjusting bolt set between the front damper and self-locking nut.**
- **The camber angle can be adjusted up to ±25' (center of tolerance) by replacing one damper pinch bolt with the adjusting bolt.**
- **The camber angle can be adjusted up to 50' by replacing both damper pinch bolts with the adjusting bolts.**

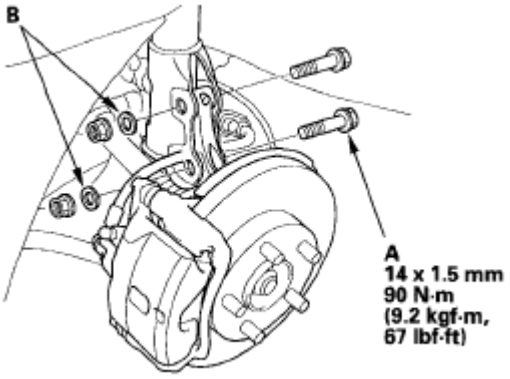


Fig. 9: Identifying Damper Pinch Bolts With Adjusting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Tighten the adjusting bolts to the specified torque value.
11. Install the front wheels.
12. Lower the vehicle to the ground, and bounce the front of the vehicle up and down several times to settle the suspension.
13. Measure the camber angle. If the camber angle is not within specification, repeat steps 7 through 12 to readjust the camber angle. If the camber measurement is correct, measure toe-in, and adjust it if necessary.

FRONT TOE INSPECTION/ADJUSTMENT

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Center the steering wheel spokes, and install a steering wheel holder tool.
2. Check the toe with the wheels pointed straight ahead.

   Front toe-in: 0±2 mm (0±0.08 in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, go to rear toe inspection/adjustment.
3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both tie-rods (C) until the front toe is within specifications.

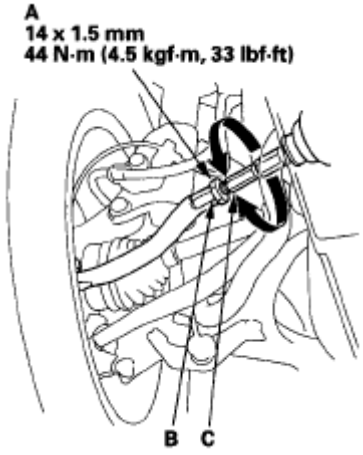


Fig. 10: Identifying Tie-Rod Locknuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. After adjusting, tighten the tie-rod locknuts. Reposition the rack-end boot if it is twisted or displaced.
5. Go to rear toe inspection/adjustment.

REAR TOE INSPECTION/ADJUSTMENT

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Release the parking brake to avoid an incorrect measurement.
2. Check the toe.

   Rear toe-in: 2^{+2} -1 mm ($0.08^{+0.08}$ -0.04 in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, remove the alignment equipment.
3. Hold the adjusting bolt (A) on the trailing arm (B), and remove the self-locking nut (C).

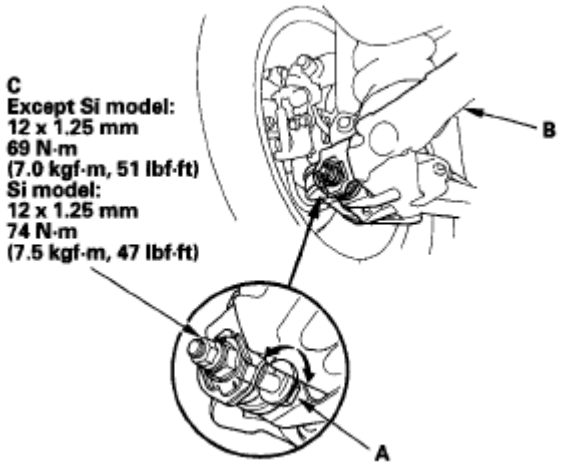


Fig. 11: Identifying Adjusting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Replace the self-locking nut with a new one, and lightly tighten it.

NOTE:

- **Always use a new self-locking nut whenever it has been loosened.**
- **Reassemble the adjusting bolt and cam plate with the eccentric facing up.**

5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.
6. Tighten the new self-locking nut while holding the adjusting bolt.

TURNING ANGLE INSPECTION

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   Turning angle:

   DX, DX-G and GX models:

   Inward wheel: 40° 06'±2°

   Outward wheel: 31 °55' (reference)

   Except DX and DX-G models:

   Inward wheel: 38 ° 46' ±2 °

   Outward wheel: 31 ° 14' (reference)

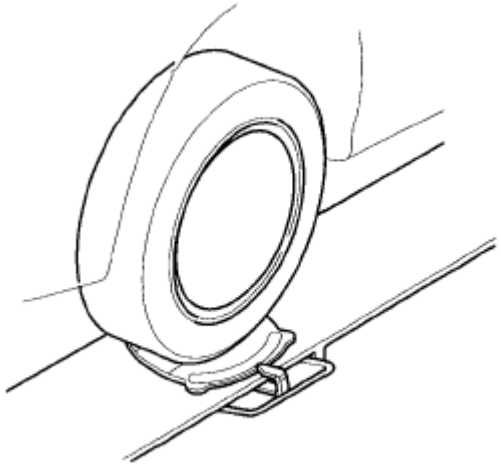


Fig. 12: Measuring Wheel Turning Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

WHEEL BEARING END PLAY INSPECTION

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the wheels.
3. Install suitable flat washers (A) and the wheel nuts. Tighten the nuts to the specified torque to hold the brake disc or brake drum securely against the hub.

Front

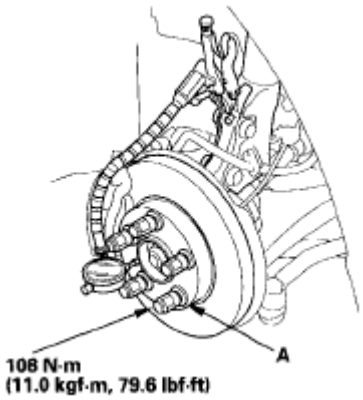


Fig. 13: Measure Bearing End Play (Front Brake Disc) (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rear

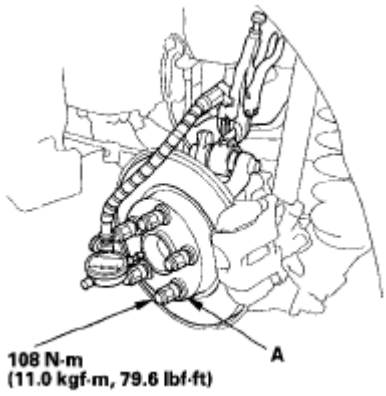


Fig. 14: Measure Bearing End Play (Rear Brake Disc) (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Attach the dial gauge. Place the dial gauge against the hub flange.
5. Measure the bearing end play by moving the brake disc or the brake drum inward and outward.

Front/Rear:

Standard: 0-0.05 mm (0-0.002 in.)

6. If the bearing end play measurement is more than the standard, replace the wheel bearing or the hub

bearing unit.

WHEEL RUNOUT INSPECTION

NOTE: When measuring the front wheel runout, turn the back side of the wheel slowly by hand.

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Check for bent or deformed wheels.
3. Set up the dial gauge as shown, and measure axial runout by turning the wheel.

   Front and rear wheel axial runout:

   Standard:

   Steel wheel: 0-1.0 mm (0-0.04 in.)

   Aluminum wheel: 0-0.7 mm (0-0.03 in.)

   Service limit: 2.0 mm (0.08 in.)

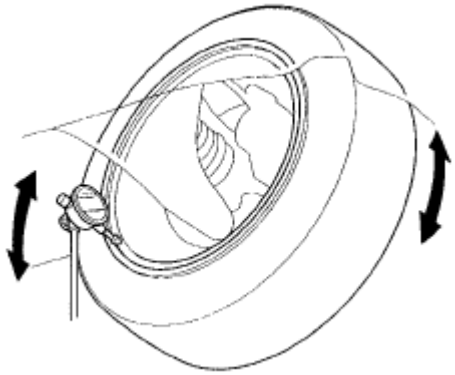


Fig. 15: Measuring Wheel Axial Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Reset the dial gauge to the position shown, and measure the radial runout.

   Front and rear wheel radial runout:

   Standard:

   Steel wheel: 0-1.0 mm (0-0.04 in.)

   Aluminum wheel: 0-0.7 mm (0-0.03 in.)

   Service limit: 1.5 mm (0.06 in.)

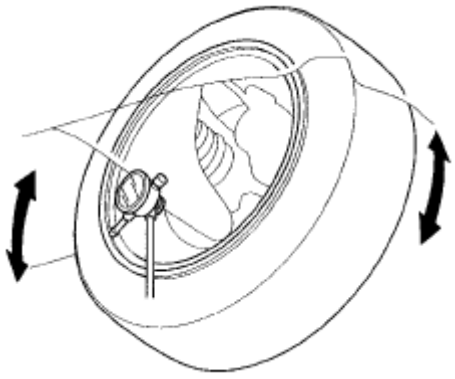


Fig. 16: Measuring Wheel Radial Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the wheel runout is not within the specification, check the wheel bearing end play (see **WHEEL BEARING END PLAY INSPECTION**), and make sure the mating surfaces on the brake disc or the brake drum and the inside of the wheel are clean.
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

WHEEL BOLT REPLACEMENT

Special Tools Required

Ball joint remover, 28 mm 07MAC-SL0A202

NOTE:

- **Do not use a hammer or air or electric impact tools to remove and install the wheel bolts.**
- **Be careful not to damage the threads of the wheel bolts,**

FRONT (EXCEPT SI MODEL) AND REAR

1. Raise the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
2. Remove the brake disc or drum: front (see **KNUCKLE/HUB REPLACEMENT**), rear disc brake (see **HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE**), rear drum brake (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).
3. Separate the wheel bolt (A) from the hub (B) using the ball joint remover (C), and keep the jaw (D) of ball joint remover vertical against the wheel bolt (see **BALL JOINT REMOVAL**).

NOTE:

- **If the angle of the remover against the wheel bolt is not square, readjust the ball joint remover by turning the head (E) of the adjusting bolt (F).**
- **Before installing the new wheel bolt, clean the mating surface on the bolt and the hub.**

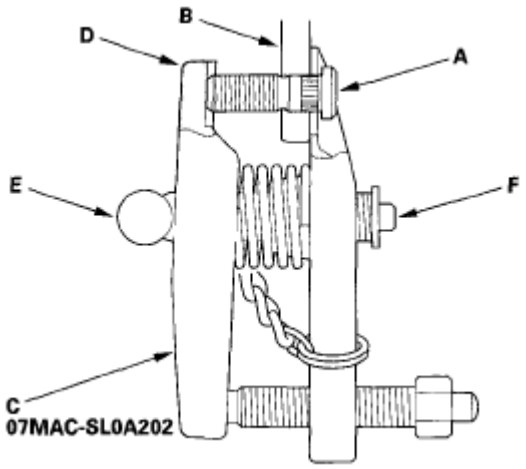


Fig. 17: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the new wheel bolt (A) into the hub (B) while aligning the splined surfaces (C) on the hub hole with the wheel bolt. Adjust the measurement (D) with washers (P/N 94101-12800 or equivalent) (E), then install a nut (P/N 90304-SC2-000 or equivalent) (F) hand-tight.

NOTE:

- **Degrease all around the wheel bolt and the threaded section of the nut.**
- **Make sure the wheel bolt is installed vertically in relation to the hub disc surface.**
- **Do not install the nut and washers that have been used as tools on a vehicle.**

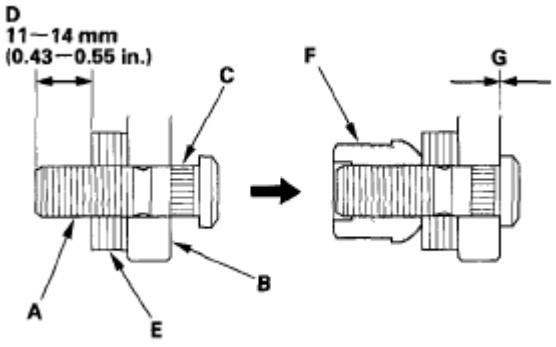


Fig. 18: Identifying Wheel Bolt Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Tighten the nut until the wheel bolts is drawn fully into the hub. Do not exceed the maximum torque limit. Make sure there is no gap (G) between the bolt and the hub.

   Limited torque: 108 N.m (11.0 kgf.m, 79.6 lbf.ft) max.

6. Install the brake disc or disc/drum: front (see **KNUCKLE/HUB REPLACEMENT**), rear disc brake (see **HUB BEARING UNIT REPLACEMENT-DISC BRAKE TYPE**), rear drum brake (see **HUB BEARING UNIT REPLACEMENT-DRUM BRAKE TYPE**).

NOTE:

- **If you can not tighten the wheel nut to the specified torque value when installing the wheel, replace the front hub or rear hub bearing unit as an assembly.**
- **Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.**

FRONT (SI MODEL)

1. Remove the front hub (see **KNUCKLE/HUB REPLACEMENT**).
2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

NOTE:

- **Before installing the new wheel bolt, clean the mating surface on the bolt and the hub.**
- **The illustration shows a front hub.**

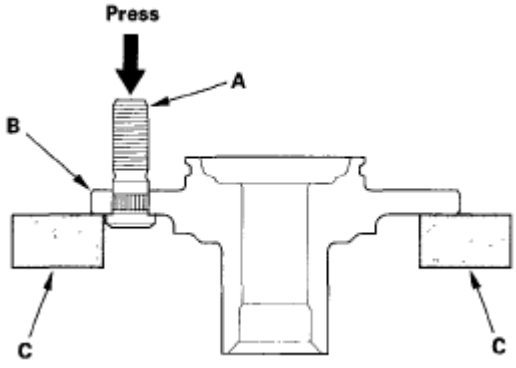


Fig. 19: Identifying Illustration Wheel Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

NOTE:

- **Degrease all around the wheel bolt and the threaded section of the nut.**
- **Make sure the wheel bolt is installed vertically in relation to the hub disc surface.**

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.
5. Install the front hub (see **KNUCKLE/HUB REPLACEMENT**).

NOTE: **If you can not tighten the wheel nut to the specified torque value when installing the wheel, replace the front hub or rear hub bearing unit as an assembly.**

BALL JOINT REMOVAL

Special Tools Required

- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202

NOTE: Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

07MAC-SL0A102 OR 07MAC-SL0A202

1. Install a hex nut (A) onto the threads of the ball joint (B). Make sure the nut is flush with the ball joint pin end to prevent damage to the thread end of the ball joint pin.

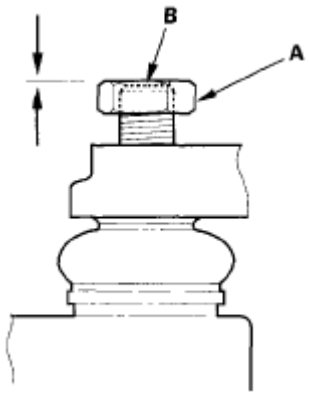


Fig. 20: Identifying Hex Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Apply grease to the ball joint remover on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.

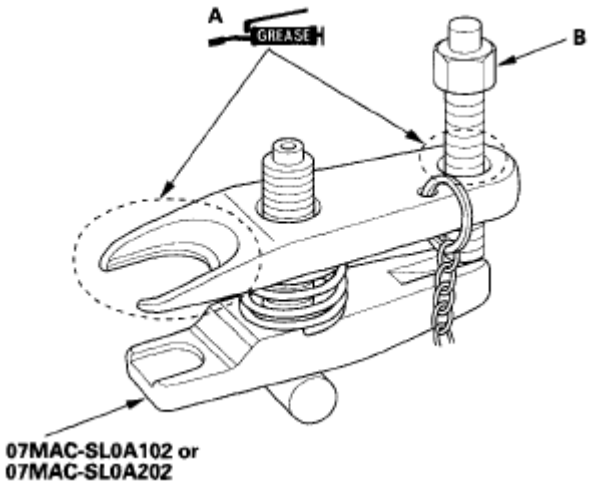


Fig. 21: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Loosen the pressure bolt (A), and install the ball joint remover as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the adjusting bolt

(B).

NOTE: Fasten the safety chain (C) securely to a suspension arm or the subframe (D). Do not fasten it to a brake line or wire harness.

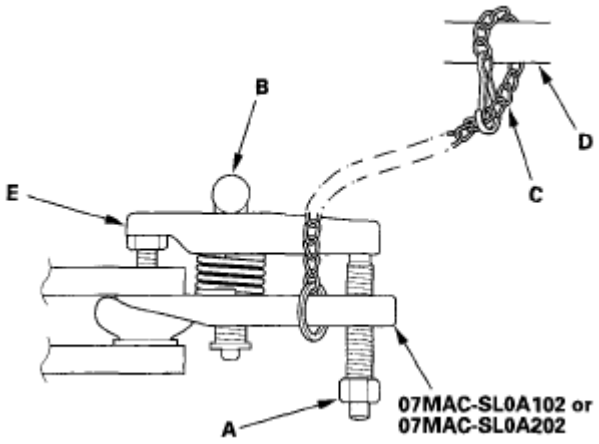


Fig. 22: Identifying Ball Joint Remover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt is in the position shown to allow the jaw (E) to pivot.
5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint pin hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

NOTE: Do not use pneumatic or electric tools on the pressure bolt.

6. Remove the ball joint remover, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

AUTOMATIC TRANSMISSION

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2

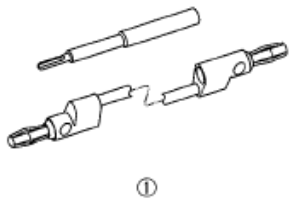


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GENERAL TROUBLESHOOTING INFORMATION

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.

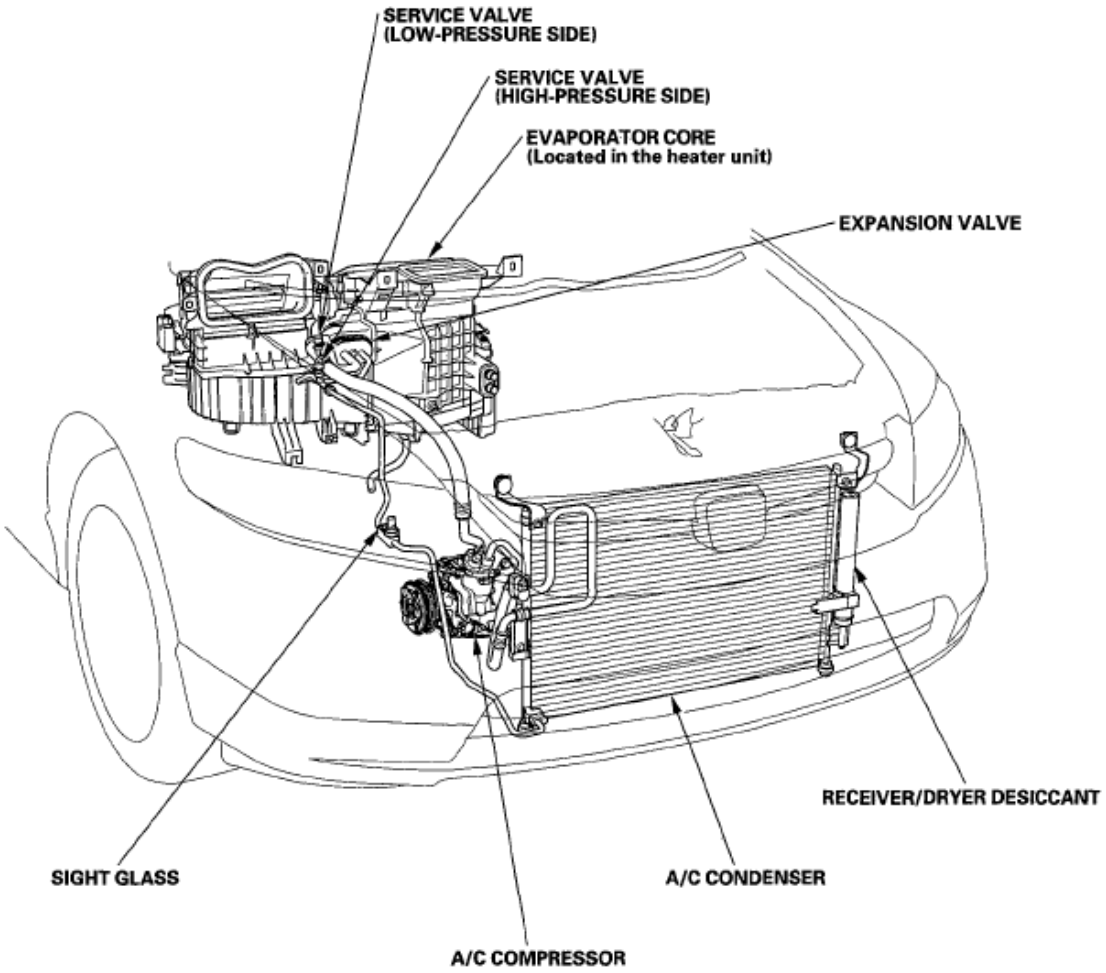


Fig. 2: Identifying D Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

When the Honda Diagnostic System (HDS) is connected to the data link connector (DLC) (A) located behind the driver's dashboard lower cover and the SCS mode is selected, it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned to ON (II) and the appropriate menu is selected.

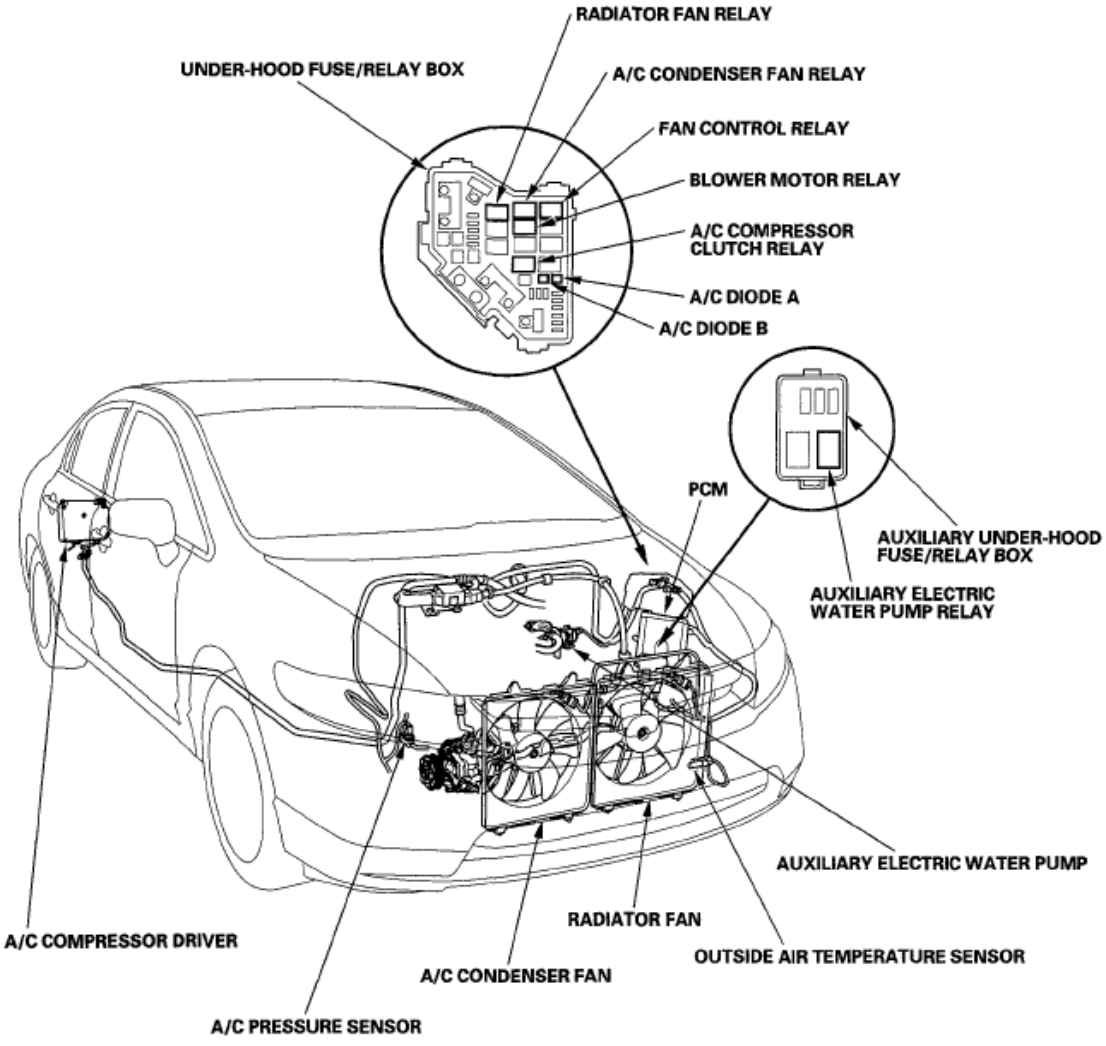


Fig. 3: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the D indicator or the malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, do this:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.
4. Record the freeze data and on-board snapshots for all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the **INDICATED DTC'S TROUBLESHOOTING**. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported on or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the P-code.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.

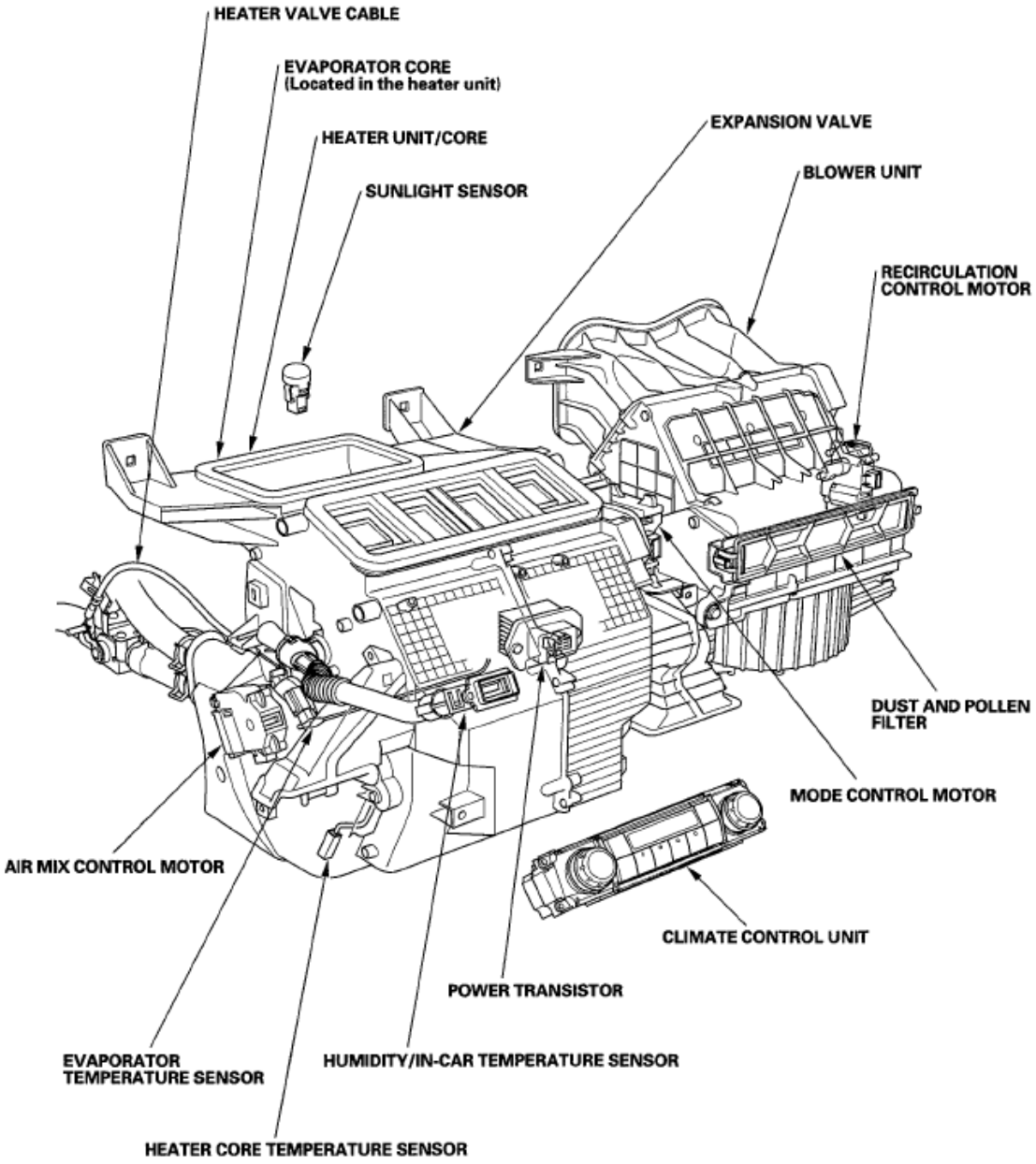


Fig. 4: Identifying D Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

When the D indicator has been reported on, connect the HDS to the DLC (A) located behind the driver's dashboard lower cover. Turn the ignition switch to ON (II), select SCS mode, then the D indicator will indicate flash the DTC.

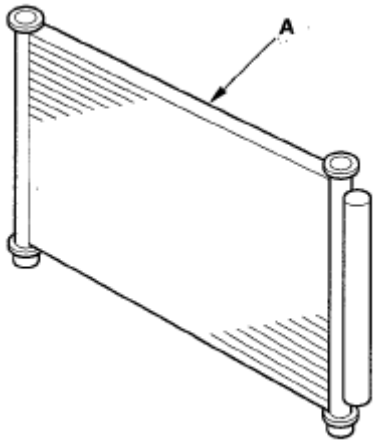


Fig. 5: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, do this:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to **DLC CIRCUIT TROUBLESHOOTING** . .
3. Select SCS mode, then observe the D indicator in the gauge control module. Codes 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

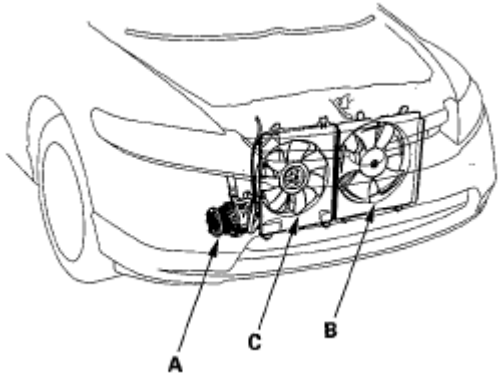


Fig. 6: D Indicator - Blinking Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Record all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data,

and then recheck for DTCs. If the A/T DTC returns, go to the **INDICATED DTC'S TROUBLESHOOTING**. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

How to Troubleshoot Circuits at the PCM Connectors

NOTE: The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned to LOCK (0). Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

1. Jump the SCS line with the HDS.
2. Remove the PCM cover (A).

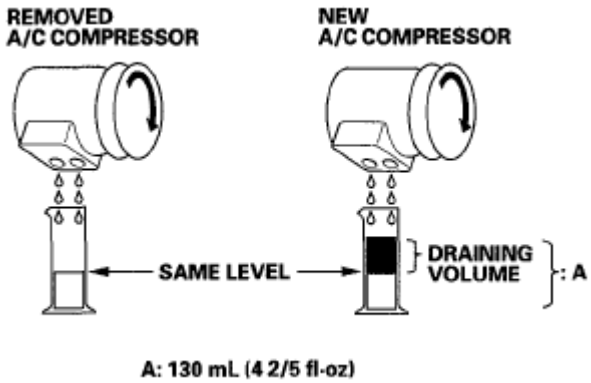
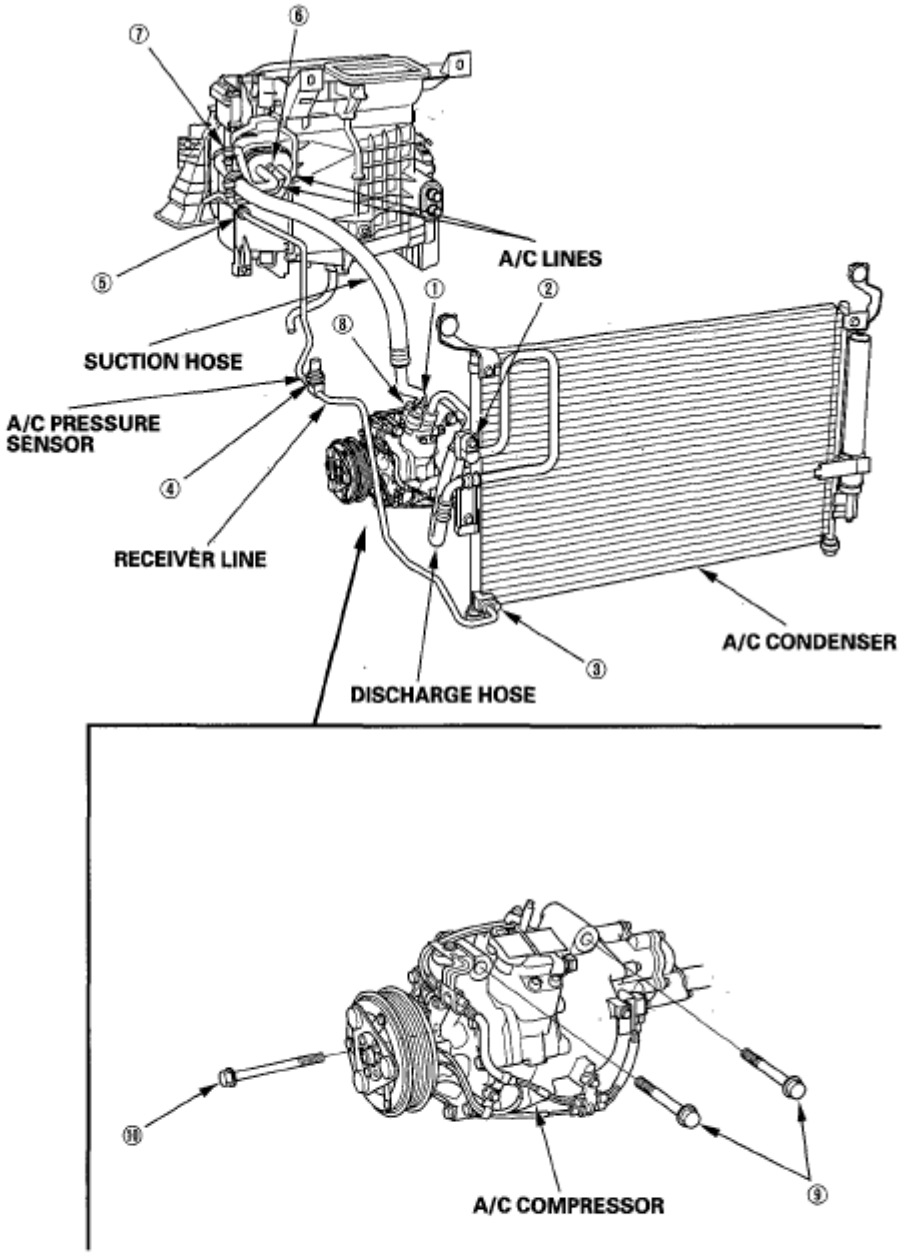


Fig. 7: Identifying PCM Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the mounting bolts, disconnect the PCM connectors, and probe the terminals in the inspection port on the terminal side of the connectors.

NOTE: PCM connectors A, B, and C have symbols (A=[], B= triangle symbol , C=o) embossed on them for identification.



① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ A/C pressure sensor to the receiver line (11 x 1.0 mm): 11.8 N·m (1.2 kgf·m, 8.7 lbf·ft)
⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.7 N·m (1.4 kgf·m, 10.1 lbf·ft)
⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ A/C line to the suction hose (24 x 1.5 mm): 31.4 N·m (3.2 kgf·m, 23.1 lbf·ft)
⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑨ A/C compressor to the engine block (10 x 1.25 mm): 45 N·m (4.6 kgf·m, 33.2 lbf·ft)
⑩ A/C compressor to the oil pan (10 x 1.25 mm): 45 N·m (4.6 kgf·m, 33.2 lbf·ft)

Fig. 8: Disconnecting PCM Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Check the connector inspection port (A) size, and select a suitable pin probe.

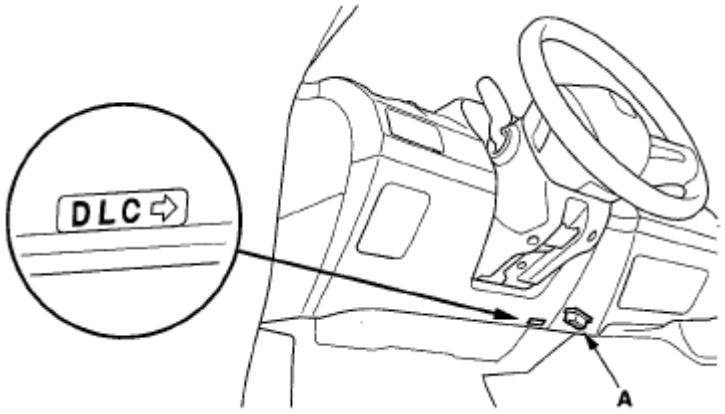


Fig. 9: Identifying Connector Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Connect one end of the patch cords (A) terminal to a digital multimeter (B), and connect the other side of the patch cord terminal to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).

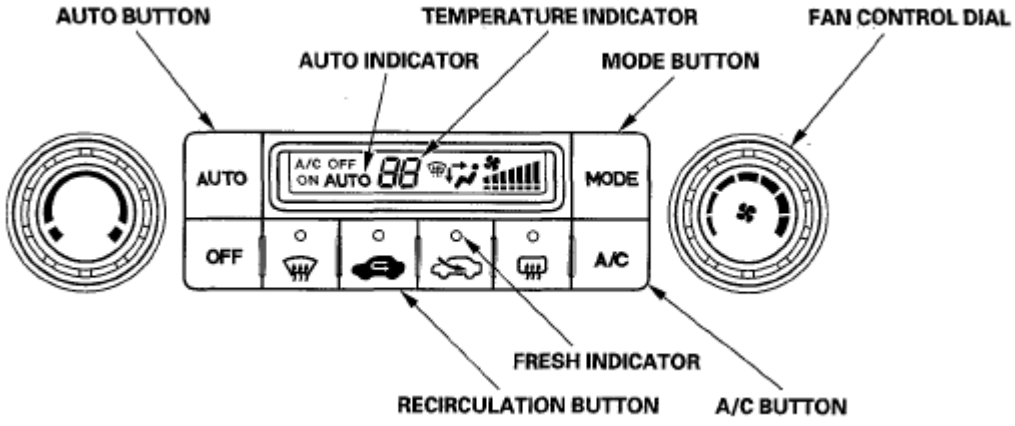


Fig. 10: Checking Connector Terminal Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Gently slide the pin probe into the inspection port at the connector terminal side. Always use the inspection port. Do not slide the probe into the connector terminals.

NOTE:

- **For accurate result, always use the pin probe (male)**
- **To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.**
- **Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.**

Clear A/T DTCs Procedures

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

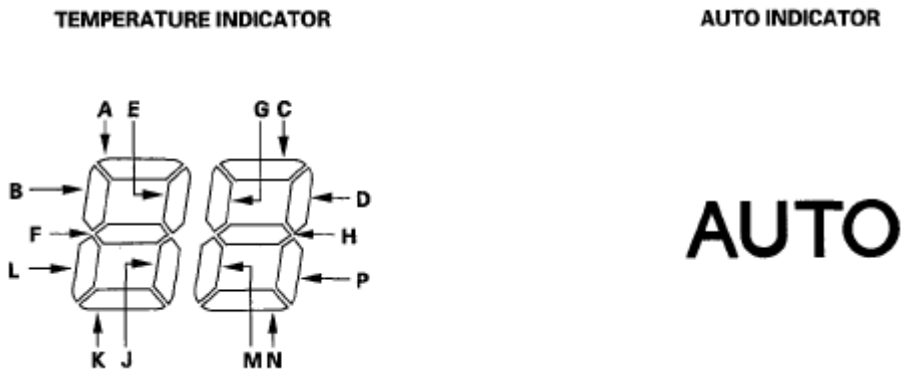


Fig. 11: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the PCM. If it does not, go to **DLC CIRCUIT TROUBLESHOOTING** .
4. Clear the DTC(s) on the HDS screen.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The On-board diagnosis is successfully completed.
- FAILED: The On-board diagnosis has finished but failed.
- NOT COMPLETED: The On-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

NOTE: Reset the PCM with the HDS while the engine is stopped.

1. Turn the ignition switch to LOCK (0).
2. Turn the ignition switch to ON (II), and wait for 30 seconds.
3. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
4. Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
5. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on).
6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 31 mph (50 km/h) or under the same conditions as those indicated by the freeze data.

Updating the PCM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

NOTE:

- **Use this procedure when you need to update the PCM during troubleshooting procedures.**
- **Make sure HDS/HIM has the latest software version downloaded from the iN (interactive network).**
- **To ensure the latest program is installed, do a PCM update whenever the PCM is substituted or replaced.**
- **You cannot update a PCM with the program it already has. It will only accept a new program.**
- **Before you update the PCM, make sure the battery is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.**
- **Never turn the ignition switch to LOCK (0) while updating the PCM. If you turn the ignition switch to LOCK (0) before completion, the PCM can be damaged.**
- **To prevent PCM damage, do not operate anything electrical (audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.**
- **If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.**
- **High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.**

1. Turn the ignition switch to ON (II), but do not start the engine.
2. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

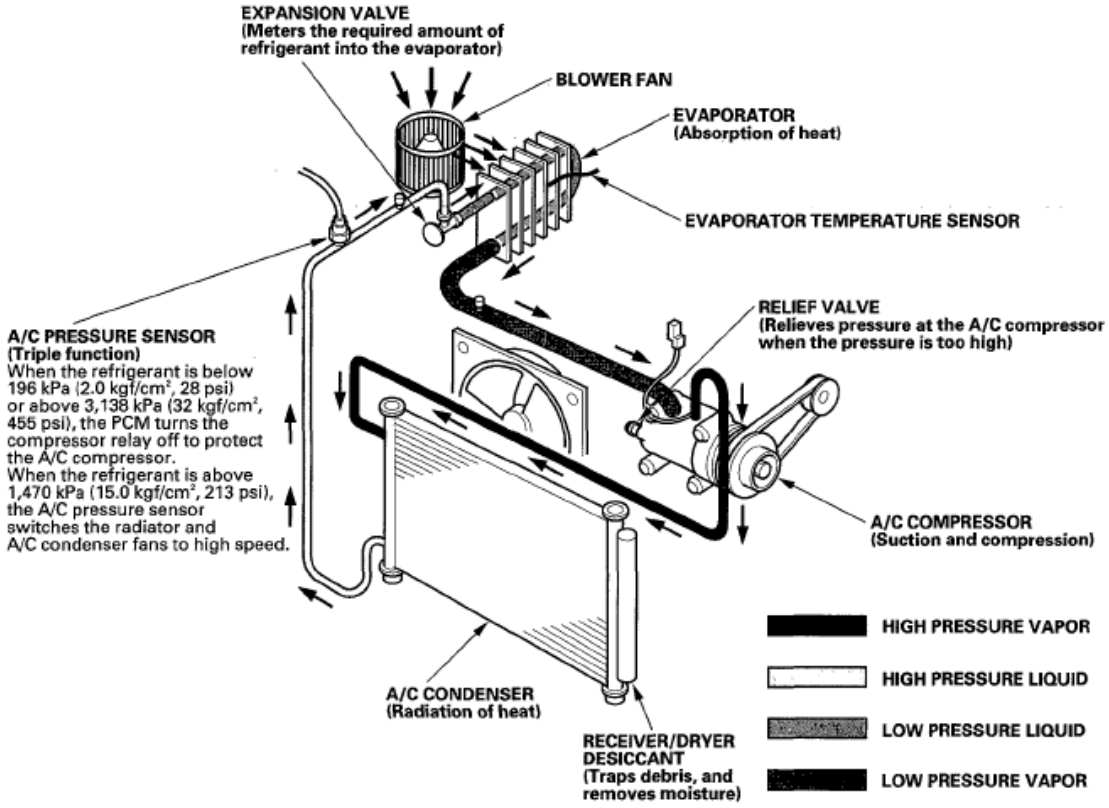


Fig. 12: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the HDS communicates with the PCM. if it does not, go to **DLC CIRCUIT TROUBLESHOOTING** .
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS, then select the CM update, and follow the screen prompts to update the PCM.
7. If the PCM has the latest software, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

NOTE: If the PCM update procedure requires you to cool the PCM, follow the screen prompts. If you run into a problem (programming takes over 15 minutes, status bar goes over 100%, D or immobilizer indicator flashes, HDS tablet freezes, etc.) during the update procedure, follow these steps to minimize the chance of damaging the PCM:

- **Leave the ignition switch in the "ON (II)" position.**
- **Connect a jumper battery (do not connect a battery charger).**
- **Shut down the HDS.**
- **Disconnect the HDS from the DLC.**

- **Reboot the HDS.**
- **Reconnect the HDS to the DLC, and try the update procedure again.**

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see **THROTTLE BODY CLEANING**).
9. Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Do the crank (CKP) learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).

Substituting the PCM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

Use this procedure when you need to substitute a known-good PCM during troubleshooting procedures.

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

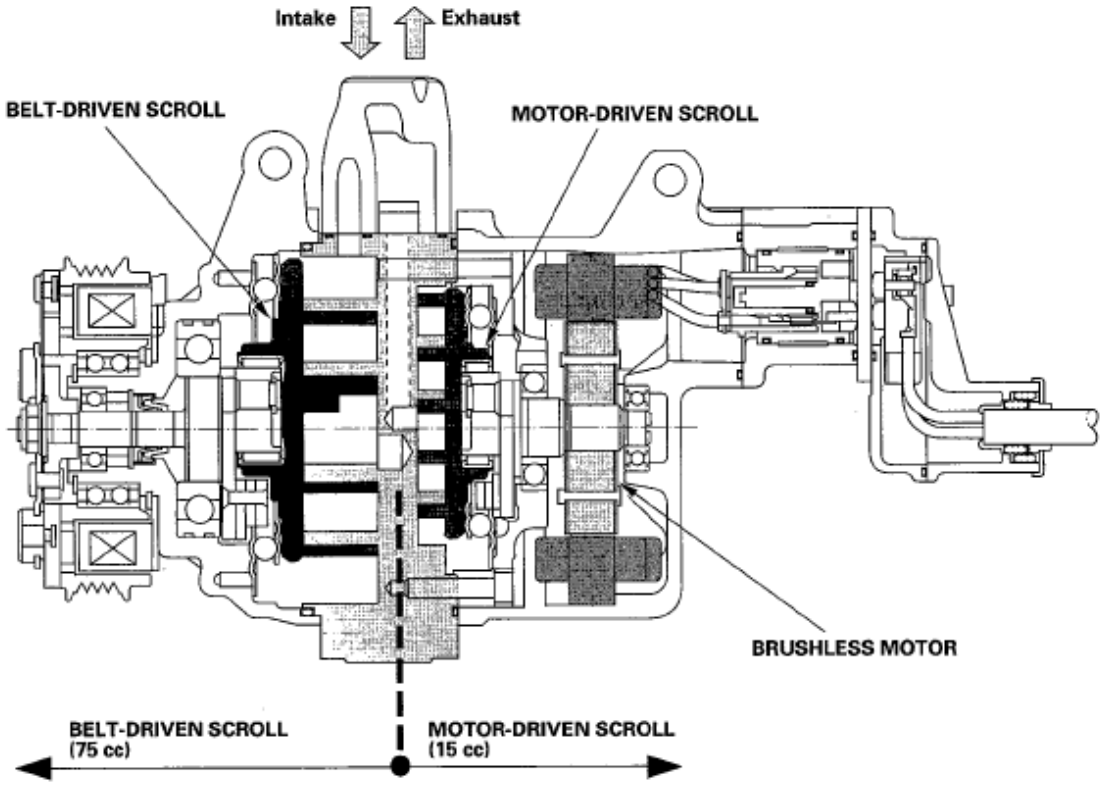


Fig. 13: Identifying Data Link Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the PCM. If it does not, go to **DLC CIRCUIT TROUBLESHOOTING** . If you did the DLC circuit troubleshooting, skip steps 5 thru 9, then clean the throttle body (see **THROTTLE BODY CLEANING**) after substituting the PCM.
5. Select the INSPECTION MENU with the HDS.
6. Select the TP POSITION CHECK in the ETCS TEST with the HDS.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

7. Turn the ignition switch to LOCK (0).
8. Remove the battery.
9. Remove the PCM cover (A).

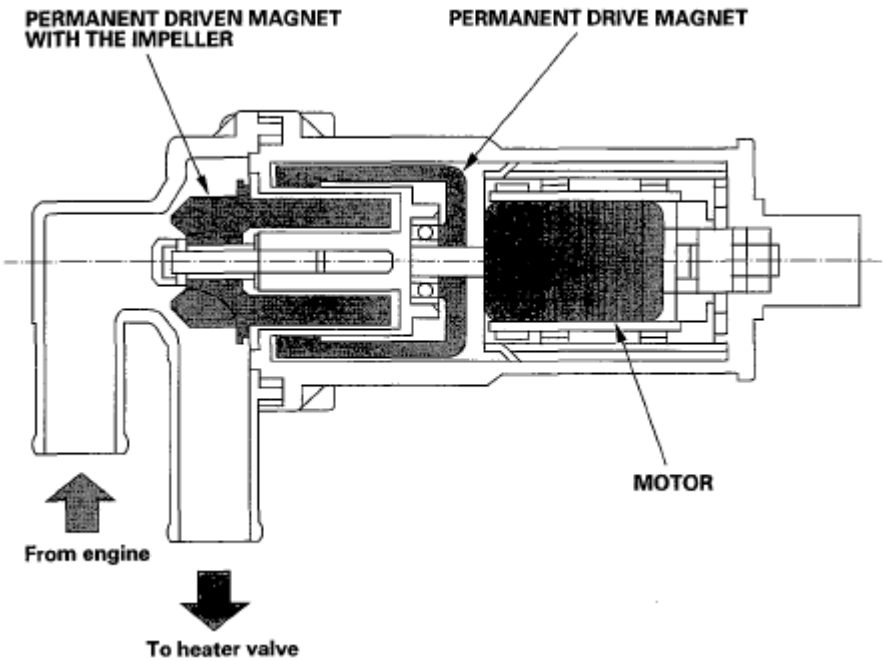


Fig. 14: Identifying PCM Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the bolts (D), and remove the PCM (E).

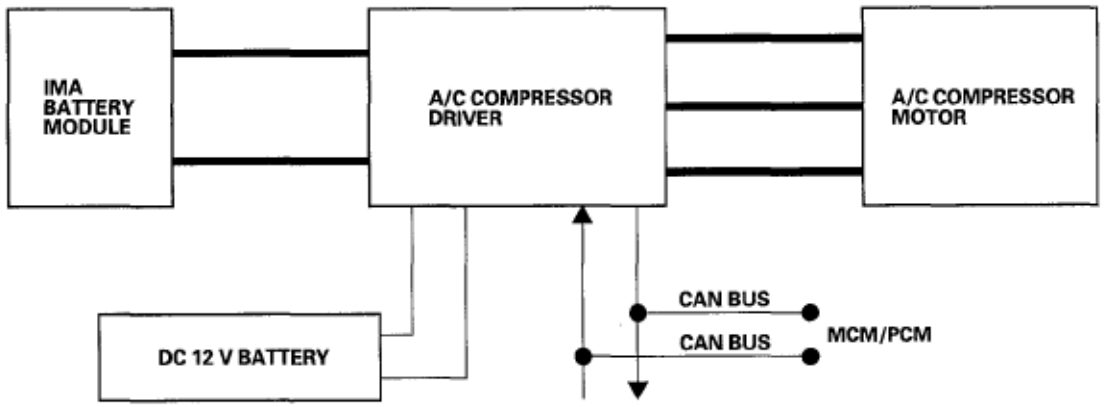


Fig. 15: Identifying PCM Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Disconnect PCM connectors A, B, and C.

NOTE: PCM connectors A, B, and C have symbols (A=[], B= triangle symbol , C=o) embossed on them for identification.

12. Install the PCM and the battery in the reverse order of removal.
13. Turn the ignition switch to ON (II).

NOTE: DTC P0630 "VIN not Programmed or Mismatch" will be stored because VIN has not been programmed into the PCM. Ignore it, and continue this procedure.

14. Input the VIN to the PCM with the HDS.
15. Update the PCM if it does not have the latest software.
16. Select the IMMOBILIZER SYSTEM with the HDS.
17. Enter the immobilizer code with the PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the PCM with the HDS.
19. If the TP POSITION CHECK indicates FAILED in step 6, clean the throttle body (see **THROTTLE BODY CLEANING**).
20. Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Do the crank (CKP) learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN LEARN**).
22. Enter the anti-theft code for the audio system or the navigation system (if equipped), enter the audio presets. Set the clock (on vehicles without navigation).

DTC TROUBLESHOOTING INDEX

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

DTC TROUBLESHOOTING CHART

DTC[1]	D Indicator	MIL	Detection Item
P0107 (12)[3]	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input
P0108 (12)[3]	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input
P0335 (88)[3]	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor No signal
P0339 (88)[3]	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor Intermittent Interruption
P0365 (89)[3]	Blinks	ON or OFF	Camshaft Position (CMP) Sensor No Signal
P0369 (89)[3]	Blinks	ON or OFF	Camshaft Position (CMP) Sensor Intermittent Interruption
P0603 (0)[3]	Blinks	ON or OFF	PCM Internal Control Module Keep Alive Memory (KAM) Error
P0705 (5)[2]	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)
P0706 (6)[2]	OFF	ON	Open in Transmission Range Switch Circuit
P0711 (28)[2]	Blinks	OFF	Problem in ATF Temperature Sensor Circuit
P0712 (28)[2]	Blinks	OFF	Short in ATF Temperature Sensor Circuit
P0713 (28)[2]	Blinks	OFF	Open in ATF Temperature Sensor Circuit
P0716 (15)[2]	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit
P0717 (15)[2]	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)
P0718 (15)[2]	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

P0721 (9)[2]	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit
P0722 (9)[2]	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)
P0723 (9)[2]	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure
P0731 (64)	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)
P0732 (64)	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)
P0733 (64)	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)
P0734 (64)	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)
P0735 (64)	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)
P0741 (40)	OFF	ON	Torque Converter Clutch Hydraulic Circuit Stuck OFF
P0746 (76)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck OFF
P0747 (76)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON
P0751 (70)	Blinks	ON	Shift Solenoid Valve A Stuck OFF
P0752 (70)	Blinks	ON	Shift Solenoid Valve A Stuck ON
P0756 (71)	Blinks	ON	Shift Solenoid Valve B Stuck OFF
P0757 (71)	Blinks	ON	Shift Solenoid Valve B Stuck ON
P0761 (72)	Blinks	ON	Shift Solenoid Valve C

			Stuck OFF
P0762 (72)	Blinks	ON	Shift Solenoid Valve C Stuck ON
P0766 (73)	Blinks	ON	Shift Solenoid Valve D Stuck OFF
P0767 (73)	Blinks	ON	Shift Solenoid Valve D Stuck ON
P0776 (77)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF
P0777 (77)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON
P0796 (78)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF
P0797 (78)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck ON
P0812 (65)(2)	Blinks	ON	Open in Transmission Range Switch ATP RVS Switch Circuit
P0842 (25)(2)	Blinks	ON	Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON
P0843 (25)(2)	Blinks	ON	Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF
P0847 (26)(2)	Blinks	ON	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON
P0848 (26)(2)	Blinks	ON	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck

			OFF
P0962 (16)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit
P0963 (16)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A
P0966 (23)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit
P0967 (23)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B
P0970 (29)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit
P0971 (29)[2]	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C
P0973 (7)[2]	Blinks	ON	Short in Shift Solenoid Valve A Circuit
P0974 (7)[2]	Blinks	ON	Open in Shift Solenoid Valve A Circuit
P0976 (8)[2]	Blinks	ON	Short in Shift Solenoid Valve B Circuit
P0977 (8)[2]	Blinks	ON	Open in Shift Solenoid Valve B Circuit
P0979 (22)[2]	Blinks	ON	Short in Shift Solenoid Valve C Circuit
P0980 (22)[2]	Blinks	ON	Open in Shift Solenoid Valve C Circuit
P0982 (60)[2]	Blinks	ON	Short in Shift Solenoid Valve D Circuit
P0983 (60)[2]	Blinks	ON	Open in Shift Solenoid Valve D Circuit
P16C0 (99)	OFF	ON	PCM A/T Control System Incomplete Update
P1717 (62)[2]	Blinks	ON	Open in Transmission Range Switch ATP RVS Switch Circuit
P1746 (45)	Blinks	OFF	Problem in Shift Control System; Cut Valve A Stuck OFF, or Cut Valve B Stuck ON

P1747 (45)	Blinks	OFF	Problem in Shift Control System; Cut Valve A Stuck ON, or Cut Valve B Stuck OFF
P1780 (49)	Blinks	ON	Problem in Shift Control System
P2122 (20)	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input
P2123 (20)	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input
U0028 (107)	Blinks	OFF	F-CAN Malfunction (BUS-OFF (PCM))
U0121 (107)	Blinks	OFF	F-CAN Malfunction (PCM-ABS)
U0155 (107)(3)	Blinks	ON or OFF	F-CAN Malfunction (PCM-Gauge Control Module)

(1) The DTC in parentheses is the flash code. The D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.

(2) This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

(3) The MIL comes on when the PGM-FI system detects the same failure.

SYMPTOM TROUBLESHOOTING INDEX

TROUBLESHOOTING CHART

Symptom	Probable cause(s)	Notes
When you turn the ignition switch to ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line for a DTC (see **DTC B1168: GAUGE CONTROL MODULE LOST COMMUNICATION WITH ECM/PCM (ENGINE MESSAGES); DTC B1169: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE PCM (A/T MESSAGES); DTC B1170: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE ABS/VSA MODULATOR-**

		CONTROL UNIT ( ). • Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see **THE INDICATOR DRIVE CIRCUIT CHECK**).
A/T gear position indicator does not come on while the shift lever is in that position	• F-CAN communication line error • Gauge control module defective • PCM defective • Transmission range switch defective	• Check the F-CAN communication line for a DTC (see **DTC B1168: GAUGE CONTROL MODULE LOST COMMUNICATION WITH ECM/PCM (ENGINE MESSAGES); DTC B1169: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE PCM (A/T MESSAGES); DTC B1170: GAUGE CONTROL MODULE LOST COMMUNICATION WITH THE ABS/VSA MODULATOR-CONTROL UNIT (**). • Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see **THE INDICATOR DRIVE CIRCUIT CHECK**). • Inspect the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).
Shift lever cannot be moved from P while you are pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake switch circuit • Brake switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock mechanism defective • Throttle body defective • Transmission range switch ATP P switch stuck OFF	• Inspect the APP Sensor signal (see **APP SENSOR SIGNAL INSPECTION**). • Troubleshoot the shift lock system circuit (see **SHIFT LOCK SYSTEM CIRCUIT TROUBLESHOOTING**). • Test the shift lock solenoid (see **SHIFT LOCK SOLENOID TEST**). • Inspect the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

	• Transmission range switch ATP P switch line opened	
Ignition switch cannot be moved from ACCESSORY (1) to LOCK (0) (key is pushed in, the shift lever in P)	• Interlock control system circuit • Key interlock solenoid stuck ON • Park pin switch stuck OFF • Transmission range switch	• Troubleshoot the key interlock system circuit (see **KEY INTERLOCK SYSTEM CIRCUIT TROUBLESHOOTING**). • Inspect the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).
HDS does not communicate with the PCM or the vehicle	DLC circuit error	Troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check for a stored DTC, and check for loose connections. • Check the line pressure. • Improper alignment of ATF pump and torque converter housing may cause the ATF pump to seize. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will cause the ATF pump seize. • Install the main seal flush with the torque converter housing when replacing the main seal. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion

		gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the ATF cooler and the cooler lines. • Replace the torque converter. • Inspect the countershaft and the secondary shaft for wear and damage.
Vehicle moves in 2 and R, but not in D, D3, or 1	1. 1st accumulator defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Inspect the 1st accumulator piston, the O-ring, and the spring for wear and damage in the servo body. • Inspect the countershaft, the secondary shaft, and the 1st clutch for wear and damage. • Check the 1st clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, 1, and R, but not in 2	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Inspect the 2nd accumulator piston, the O-ring, and the spring for wear and damaged in the servo body. • Check the 2nd clutch pressure. • Inspect the countershaft, the secondary shaft, and the 2nd clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the

		wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 2nd clutch feed pipe. If the 2nd clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 2nd clutch feed pipe is loose or damaged.
Vehicle moves in D, D3, 2, and 1, but not in R	1. Shift solenoid valve D defective 2. Shift fork shaft stuck 3. Shift valve D defective 4. 5th/reverse accumulator defective 5. 5th clutch defective 6. Reverse gears worn or damaged	• Check for a stored DTC, and check for loose connections. • Test the shift solenoid valve function with the HDS. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for a missing shift fork bolt on the shift fork shaft. • Inspect the servo valve O-ring. • Check the shift fork shaft detent for wear and damage. • Inspect the 5th accumulator piston, the O-ring, and the spring for wear and damage in the servo body. • Check the 5th clutch pressure. • Inspect the mainshaft and the 5th clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 5th gear and the reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, whirring noise, also replace the

		mainshaft 5th gear, the reverse idler gear, and the countershaft 5th gear.
Poor acceleration	1. Shift solenoid valve A defective 2. Shift solenoid valve B defective 3. Shift solenoid valve C defective	• Check for a stored DTC, and check for loose connections. • Test the shift solenoid valve function with the HDS.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in 2 and 1, and in D and D3 in 1st and 2nd	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level and check the ATF lines for leakage and loose connections. If necessary, clean the ATF lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the line pressure. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump to seize. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will cause the ATF pump to seize. • Install the main seal flush with the torque converter housing when replacing the main seal. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the ATF warmer and the ATF lines. • Replace the torque converter.
Poor acceleration; flares	2nd clutch defective	• Check the 2nd clutch pressure.

when starting off in D, D3, and R; stall speed high when starting off in 2		• Inspect the secondary shaft and the 2nd clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 2nd clutch feed pipe. If the 2nd clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 2nd clutch feed pipe is loose or damaged.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in R	1. Shift cable broken or out of adjustment 2. 5th clutch defective	• Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the mainshaft and the 5th clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings: Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; stall speed low in 2 and 1, and in D and D3 in 1st and 2nd	1. Shift solenoid valve D defective 2. Torque converter one-way clutch defective 3. Engine output low	• Check for a stored DTC, and check for loose connections. • Test the shift solenoid valve function with the HDS. • Inspect the O-rings, and check the shift solenoid valve for seizure.

	4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Replace the torque converter assembly. • Check the lock-up shift valve in the regulator valve body. • Check the engine control system.
Poor acceleration; stall speed low in R	1. Engine output low 2. Torque converter clutch piston defective 3. Lock-up shift valve defective	• Check the engine control system. • Replace the torque converter assembly. • Check the lock-up shift valve in the regulator valve body.
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve D defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or damaged 7. Lock-up shift valve defective 8. Misassembled engine and transmission mount	• Check the ATF level and check the ATF lines for leakage and loose connections. If necessary, clean the ATF lines. • Check for a stored DTC, and check for loose connections. • Test the shift solenoid valve function with the HDS. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check the transmission and the drive plate installation. • Check the drive plate for wear and damage, if the drive plate is worn or damaged, replace the drive plate. • Check the engine control system. • Replace the torque converter assembly. • Check the line pressure. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump to seize. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will cause ATF pump to seize. • Install the main seal flush with the torque converter housing when replacing the main seal. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.

		• Check the lock-up shift valve in the regulator valve body. • Adjust the transmission and engine mounts by loosening and retightening the mount bolts.
Vehicle moves in N	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st clutch defective 5. 2nd clutch defective 6. 3rd clutch defective 7. 4th clutch defective 8. 5th clutch defective 9. Clearance between clutch end-plate and top disc incorrect 10. Needle bearing seized, worn, or damaged 11. Thrust washer seized, worn, or damaged	• Check the ATF level, and drain the ATF if it is overfilled. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Check the relief valve in the main valve body. • Check the 1st, 2nd, 3rd, 4th, and 5th clutch pressures. • Inspect the mainshaft, the secondary shaft, the 1st, 2nd, 3rd, 4th, and 5th clutches for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the 0-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 2nd, 3rd, and 4th clutch feed pipes. • If the 2nd clutch feed pipe is scored, replace the end cover. • If the 3rd or 4th clutch feed pipe is scored, replace it and the O-rings under the feed pipe flange.

		• Replace the secondary shaft if the bushing for the 2nd clutch feed pipe or the 4th clutch feed pipe is loose or damaged. • Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Late shift after shifting from N to D, or excessive shock when shifted into D	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. A/T clutch pressure control solenoid valve C defective 4. Shift cable broken or out of adjustment 5. Connection between shift cable and transmission or body is worn 6. Input shaft (mainshaft) speed sensor defective 7. Output shaft (countershaft) speed sensor defective 8. ATF temperature sensor defective 9. Foreign material in separator plate orifice 10. Servo control valve defective 11. 1st accumulator defective 12. 1st check ball stuck 13. Lock-up shift valve defective 14. 1st clutch defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings, for wear and damage. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring for wear and damage. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Check the servo control valve in the main valve body. • Inspect the 1st accumulator piston, the O-ring, and the spring for wear and damage in the regulator valve body. • Check that the 1st check ball is not stuck in the main valve body. • Check the lock-up shift valve in the regulator valve body. • Check the 1st clutch pressure.

		• Inspect the secondary shaft and the 1st clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Late shift after shifting from N to R, or excessive shock when shifted into R	1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve A defective 3. Shift cable broken or out of adjustment 4. Connection between shift cable and transmission or body is worn 5. Input shaft (mainshaft) speed sensor defective 6. Output shaft (countershaft) speed sensor defective 7. ATF temperature sensor defective 8. Shift fork shaft stuck 9. Foreign material in separator plate orifice 10. Shift valve E defective 11. 5th/reverse accumulator defective 12. Lock-up shift valve defective 13. 5th clutch defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings, for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Inspect the servo valve O-ring. • Check the shift fork shaft detent for wear and damage. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with panicles of steel or aluminum, inspect the ATF

		pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Check shift valve D in the main valve body. • Inspect the 5th accumulator piston, the O-ring, and the spring for wear and damage in the servo body. • Check the lock-up shift valve in the regulator valve body. • Check the 5th clutch pressure. • Inspect the mainshaft and the 5th clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Late shift after shifting from D3 to 2, or 2 to 1	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. A/T clutch pressure control solenoid valve C defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage.
Transmission does not shift	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connections. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring for wear and damage.
Excessive shock or flares	1. A/T clutch pressure	• Check for a stored DTC, and check for

on all upshifts and downshifts	control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. ATF temperature sensor defective 6. Foreign material in separator plate orifice	loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring for wear and damage. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. 2nd clutch transmission fluid pressure switch defective 6. Foreign material in separator plate orifice 7. 1st accumulator defective 8. 2nd accumulator defective 9. 1st check ball stuck	• Check for a stored DTC, and check, for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for a clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find

	10. 2nd check ball stuck 11. 1st clutch defective 12. 2nd clutch defective 13. Look up shift valve defective	the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the 1st accumulator piston, the O-ring, and the spring for wear and damage in the servo body. • Inspect the 2nd accumulator piston, the O-ring, and the spring for wear and damage in the servo body. • Check that the 1st check ball and the 2nd check ball are not stuck in the main valve body. • Check the 1st and 2nd clutch pressures. • Inspect the secondary shaft, the 1st clutch, and the 2nd clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 2nd clutch feed pipe. If the 2nd clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 2nd clutch feed pipe is loose or damaged.
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. 3rd clutch transmission fluid pressure switch defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Check for a clogged orifice in the transmission fluid pressure switch

	4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 3rd accumulator defective 7. 2nd check ball stuck 8. 2nd clutch defective 9. 3rd clutch defective	connector. If the orifice is clogged, remove it and clean the connector. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the 2nd and 3rd accumulator pistons, the O-rings, and springs for wear and damage in the servo body. • Check that the 2nd check ball is not stuck in the main valve body. • Check the 2nd and 3rd clutch pressures. • Inspect the secondary shaft, the mainshaft, the 2nd clutch, and the 3rd clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 2nd and 3rd clutch feed pipes. • If the 2nd clutch feed pipe is scored, replace the end cover. • If the 3rd clutch feed pipe is scored, replace it and the O-rings under the feed pipe flange. • Replace the secondary shaft if the bushing for the 2nd clutch feed pipe is loose or damaged.

		• Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 3rd accumulator defective 5. 4th accumulator defective 6. 3rd clutch defective 7. 4th clutch defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the 3rd and 4th accumulator pistons, the O-rings, and the springs for wear and damage in the servo body. • Check the 3rd and 4th clutch pressures. • Inspect the mainshaft, the secondary shaft, the 3rd clutch, and the 4th clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 3rd and 4th clutch feed pipes.

		• If the 3rd clutch feed pipe is scored, replace it and the O-rings under the feed pipe flange. • If the 4th clutch feed pipe is scored, replace it and the O-rings under the feed pipe flange. • Replace the secondary shaft if the bushing for the 4th clutch feed pipe is loose or damaged. • Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 4th accumulator defective 5. 5th accumulator defective 6. 4th clutch defective 7. 5th clutch defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF strainer for debris. If the strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the 4th and 5th accumulator pistons, the O-rings, and the springs for wear and damage in the servo body. • Check the 4th and 5th clutch pressures. • Inspect the mainshaft, the secondary shaft, the 4th clutch, and the 5th clutch for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance,

		inspect the clutch discs and the plates for wear and damage, and inspect the clutch wave-plate height. If the discs and the plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate. • Inspect the 4th clutch feed pipes. If the 4th clutch feed pipe is scored, replace it and the O-rings under the feed pipe flange. • Replace the secondary shaft if the bushing for the 4th clutch feed pipe is loose or damaged.
Engine flares while driving	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Shift solenoid valve A defective 4. Shift solenoid valve B defective 5. Shift solenoid valve C defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure.
Noise from transmission in all shift lever positions	1. ATF pump worn or damaged 2. Mainshaft bearing, countershaft bearing, or secondary shaft bearing defective	• Check the line pressure. • Improper alignment of the ATF pump and the torque converter housing may cause the ATF pump to seize. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will cause the ATF pump seize. • Install the main seal flush with the torque converter housing when replacing the main seal. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Inspect the mainshaft, the countershaft, and the secondary shaft

		bearing for wear and damage.
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter assembly.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Check the transmission and the drive plate installation. • Check the drive plate for wear and damage, if the drive plate is worn or damaged, replace the drive plate. • Check the engine control system.
Shock just before stopping the engine, or at the instant after the engine stopped	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connections. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Transmission does not shift into P	1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body is worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control lever. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and the park lever pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Torque converter clutch does not disengage	1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve A defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control

	3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective	solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Replace the torque converter assembly. • Check the lock-up shift valve in the regulator valve body. • Check the lock-up control valve in the main valve body.
Torque converter clutch does not operate smoothly	1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Replace the torque converter assembly. • Check the torque converter check valve in the regulator valve body. • Check the lock-up shift valve in the regulator valve body. • Check the lock-up control valve in the main valve body.
Torque converter clutch does not engage	1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve A defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve	• Check for a stored DTC, and check for loose connections. • Test the solenoid valve function with the HDS. • Inspect the A/T clutch pressure control solenoid valve body gasket, the ATF feed pipes, and the O-rings for wear and damage. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring for wear and damage.

	defective 8. Lock-up control valve defective	• Replace the torque converter assembly. • Check the torque converter check valve in the regulator valve body. • Check the lock-up shift valve in the regulator valve body. • Check the lock-up control valve in the main valve body.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn	• Check for a stored DTC, and check for loose connections. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connections. • Check the output shaft (countershaft) speed sensor installation. • Inspect the sensor O-ring.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	Engine rocker arm defective	Check the engine rocker arms.

COMPONENT LOCATION INDEX

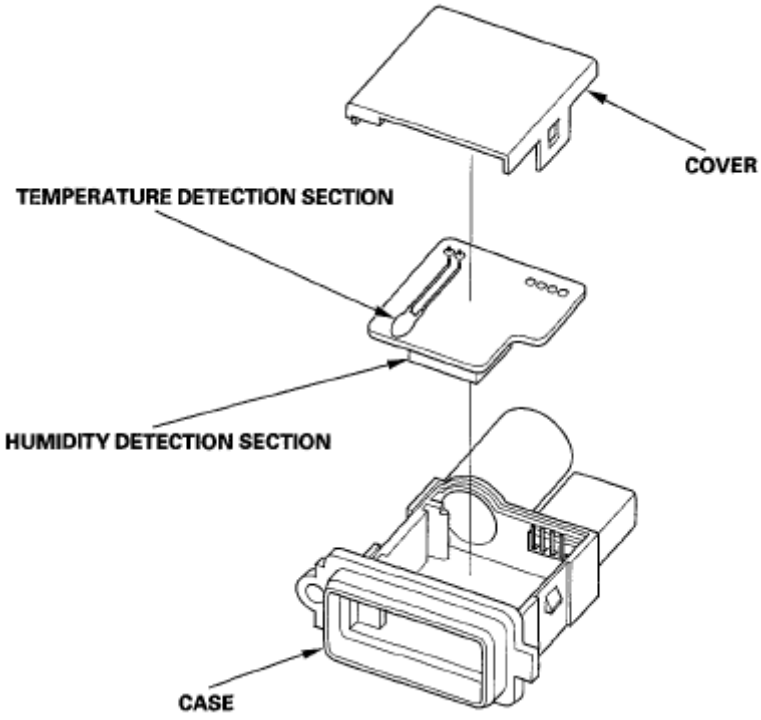


Fig. 16: Identifying Automatic Transmission Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM DESCRIPTION

General Operation

The automatic transmission is a combination of a three-element torque converter and triple-shaft electronically controlled unit which provides five speeds forward and one in reverse. The entire unit is positioned in line with the engine.

Torque Converter, Shafts, Gears, and Clutches

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine runs. Around the outside of the torque converter is a ring gear which meshes with the starter drive gear when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft. The transmission has three parallel shafts; the mainshaft, the countershaft, and the secondary shaft. The mainshaft is in line with the engine crankshaft, and includes the 3rd and 5th clutches, and gears for 3rd, 5th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 5th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th-5th, reverse, park, and the final drive. The countershaft 4th-5th gear enables the shared use of the secondary shaft 4th gear and the mainshaft 5th gear. The countershaft 4th-5th gear and the countershaft reverse gear can be locked to the countershaft providing the 4th, 5th or reverse gear, depending on which way the selector is moved. The final drive gear is integral with the countershaft. The secondary shaft includes the 1st, 2nd, and 4th clutches, and gears for 1st, 2nd, 4th, and idler. The idler gear shaft is located between the mainshaft and the secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft to the countershaft, or through the mainshaft to the countershaft to provide drive.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, cut valve B, shift valves A, C, and D, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, the 1st accumulator, and the 3rd accumulator. The servo body contains the servo valve, shift valve B, cut valve A, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, and D. Fluid from the regulator passes through the manual valve to the various control valves. The 2nd, 3rd, and 4th clutches receive fluid from their respective feed pipes, and the 1st and the 5th clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism

To shift gears, the PCM controls shift solenoid valves A, B, C, and D, and A/T clutch pressure control solenoid valves A, B, and C, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port to send hydraulic pressure to the clutch. A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize the clutches to engage them and their corresponding gears.

Lock-up Mechanism

The lock-up mechanism operates in D (1st, 2nd, 3rd, 4th, and 5th gears), and D3 (1st, 2nd and 3rd gears). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and the volume of the lock-up mechanism. When shift solenoid valve D is turned on by the PCM, shift solenoid valve D pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve control the volume of the lock-up conditions.

Gear Selection

The shift lever has seven positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 5th gear ranges, D3: DRIVE 1st through 3rd gear ranges, 2: 2nd gear, and 1: 1st gear.

SHIFT LEVER GEAR POSITION

Position	Description
P: PARK	Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
R: REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 5th clutch engaged.
N: NEUTRAL	All clutches are released.
D: DRIVE (1st through 5th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending

	on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 1st, 2nd, 3rd, 4th, and 5th gears.
D3: DRIVE (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving, up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 1st, 2nd, and 3rd gears.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up and down.
1: FIRST	Used for engine braking; stays in 1st gear; does not upshift.

Starting the engine is possible only in P and N because of a slide-type neutral-safety switch.

Automatic Transmission Gear Position Indicator

The A/T gear position indicator in the gauge control module shows which shift lever position has been selected without having look down at the shift lever.

Clutches and Gears

The five-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and the steel plates together, locking them so they do not slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

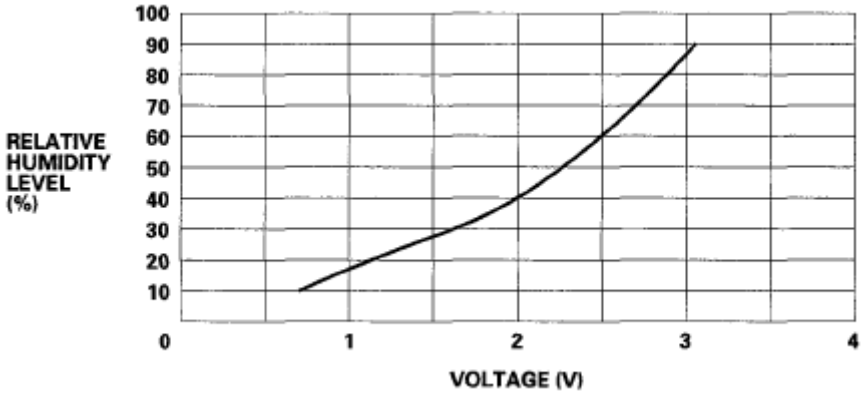


Fig. 17: Section View Of Clutches And Gears
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1st Clutch

The 1st clutch engages/disengages 1st gear, and is located at the right end of the secondary shaft, opposite

the end cover. The 1st clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

2nd Clutch

The 2nd clutch engages/disengages 2nd gear, and is located at the middle of the secondary shaft. The 2nd clutch is joined back-to-back to the 4th clutch, and is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

3rd Clutch

The 3rd clutch engages/disengages 3rd gear, and is located at the middle of the mainshaft. The 3rd clutch is joined back-to-back to the 5th clutch, and is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

4th Clutch

The 4th clutch engages/disengages 4th gear, and is located at the middle of the secondary shaft. The 4th clutch is joined back-to-back to the 2nd clutch, and is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

5th Clutch

The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 3rd clutch, and is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

Gear Operation

Gears on the mainshaft:

- 3rd gear is engages/disengages with the mainshaft by the 3rd clutch.
- 5th gear is engaged/disengages with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:

- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th-5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th-5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 4th-5th gear and reverse gear engage with the countershaft.

Gears on the secondary shaft:

- 1st gear is engaged/disengaged with the secondary shaft by the 1st clutch.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- 4th gear is engages/disengages with the secondary shaft by the 4th clutch.

- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler gear shaft transmits power between the mainshaft and the secondary shaft.

The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and change rotational direction of the countershaft to reverse.

Power Flow

P Position

Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

N Position

Engine power transmitted from the torque converter drives the mainshaft idler gear, the idler gear shaft idler gear, and the secondary shaft idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from D or R:

- When shifted from D, the reverse selector engages with the countershaft 4th-5th gear and the reverse selector hub, and the 4th-5th gear engages with the countershaft.
- When shifted from R, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.

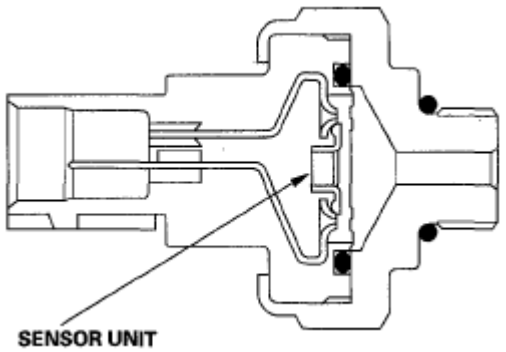


Fig. 18: Automatic Transmission - Power Flow Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D, D3 Position

In D and D3, the optimum gear is automatically selected from 1st, 2nd, 3rd, and 5th gears in D; 1st, 2nd, and 3rd gears in D3 according to conditions such as the balance between the throttle opening (engine loading) and the vehicle speed.

In 1st Gear and 1 Position

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler gear shaft idler gear and the

secondary shaft idler gear.

- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

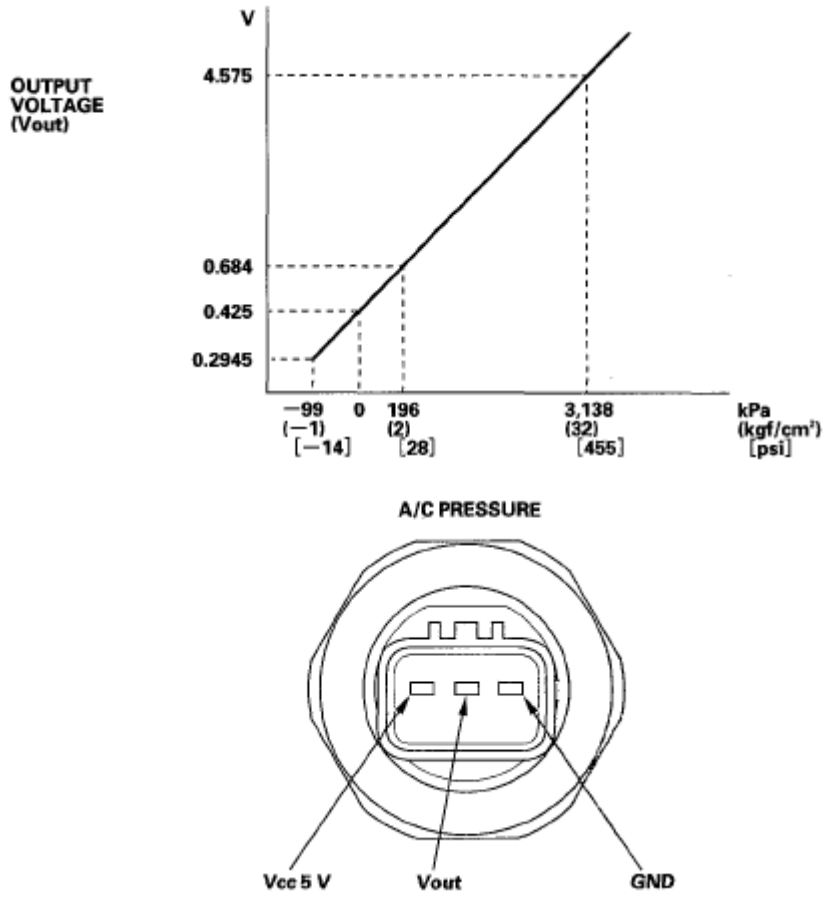


Fig. 19: Automatic Transmission - Power Flow Diagram - 1st Gear And 1 Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

In 2nd Gear and 2 Position

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler gear shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

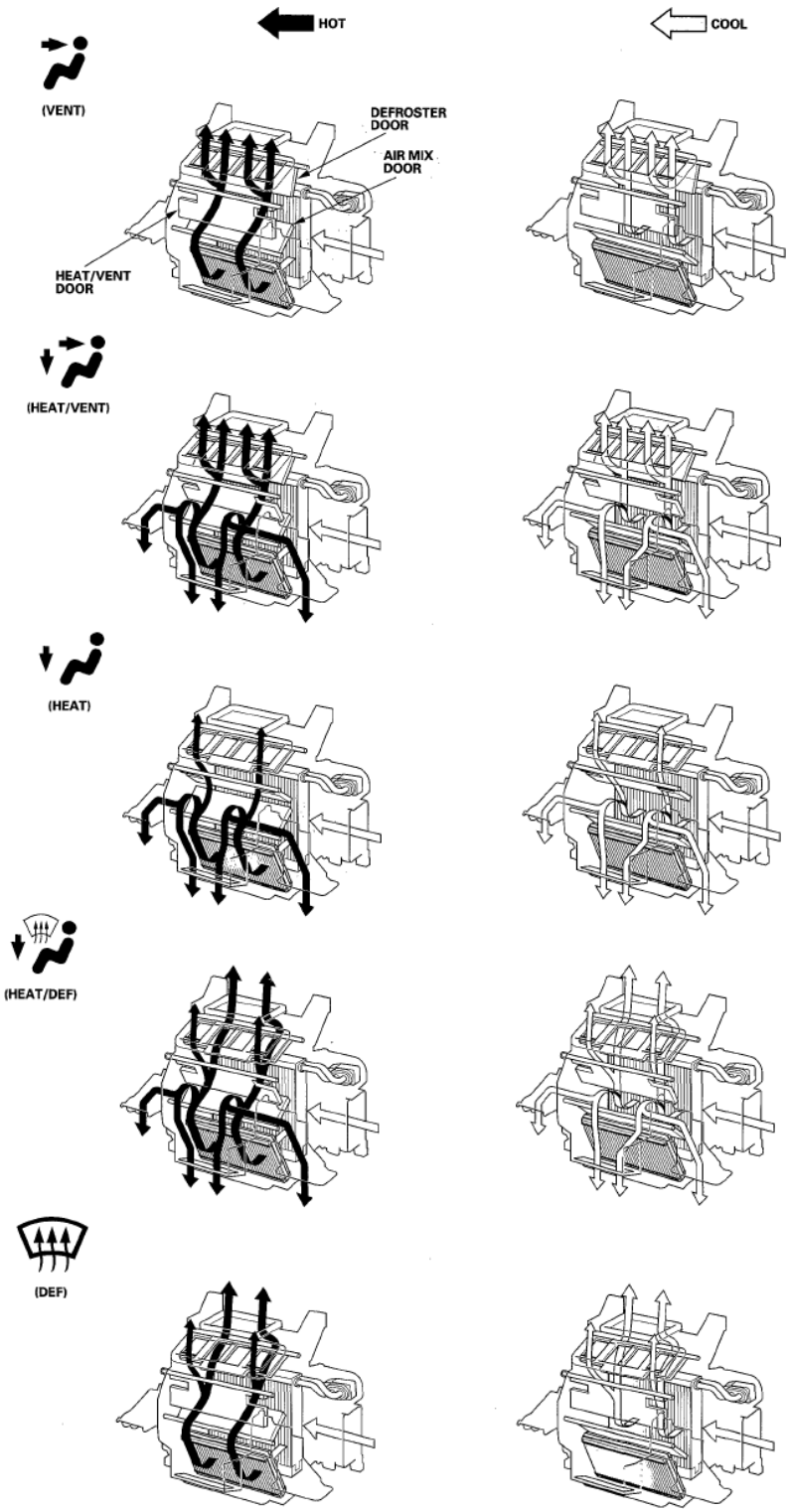


Fig. 20: Automatic Transmission - Power Flow Diagram - 2nd Gear And 2 Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

In 3rd Gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the mainshaft 3rd gear with the mainshaft.
- The mainshaft 3rd gear drives the countershaft 3rd gear and the countershaft.

- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

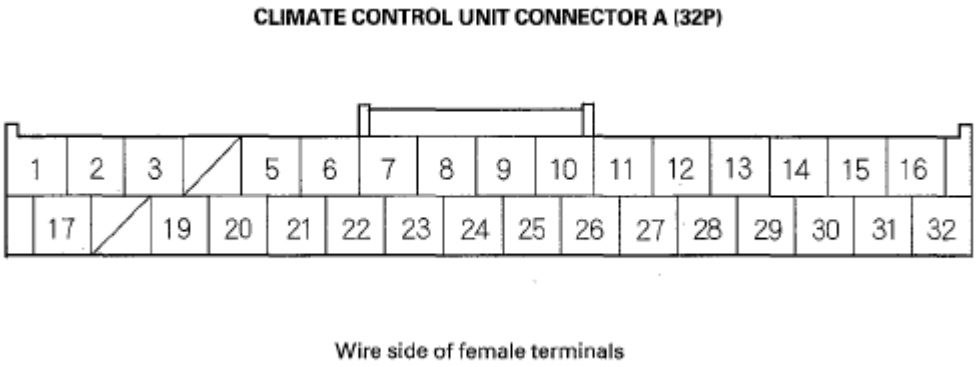


Fig. 21: Automatic Transmission - Power Flow Diagram - 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

In 4th Gear

- Hydraulic pressure is applied to the 4th clutch, then the 4th clutch engages the secondary shaft 4th gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler gear shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 4th gear drives the countershaft 4th-5th gear.
- The countershaft 4th-5th gear drives the countershaft via the reverse selector, which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

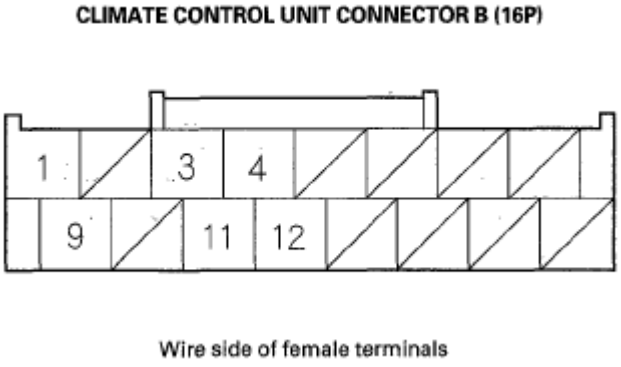


Fig. 22: Automatic Transmission - Power Flow Diagram - 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

In 5th Gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th-5th gear and the reverse selector hub while the shift lever is in forward range; D, D3, 2, and 1.
- Hydraulic pressure is also applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 4th-5th gear.
- The countershaft 4th-5th gear drives the countershaft via the reverse selector, which drives the reverse

selector hub.

- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

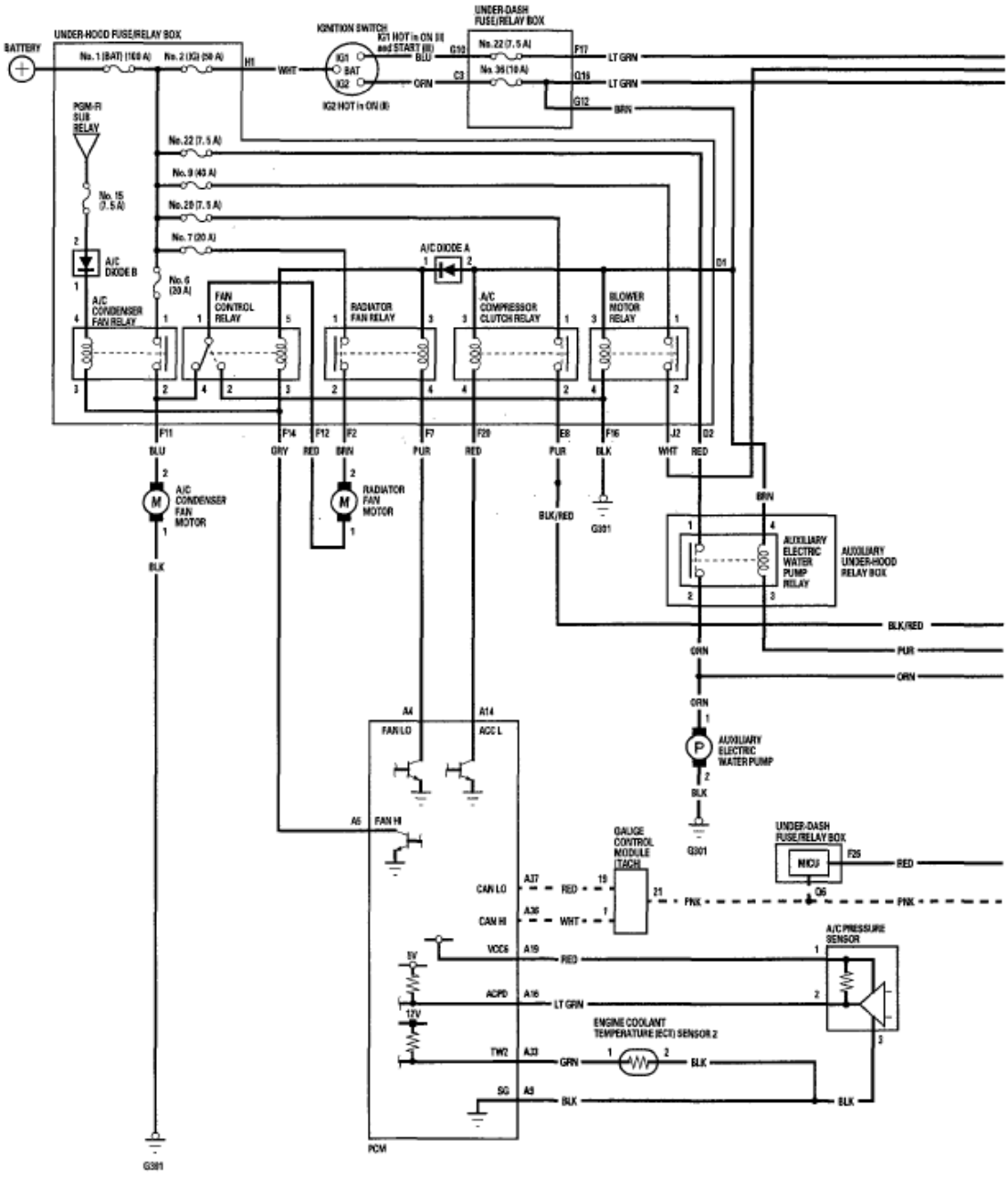


Fig. 23: Automatic Transmission - Power Flow Diagram - 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and the reverse selector hub while the shift lever is in R.
- Hydraulic pressure is also applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.

- The rotational direction of the countershaft reverse gear is changed by the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector, which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

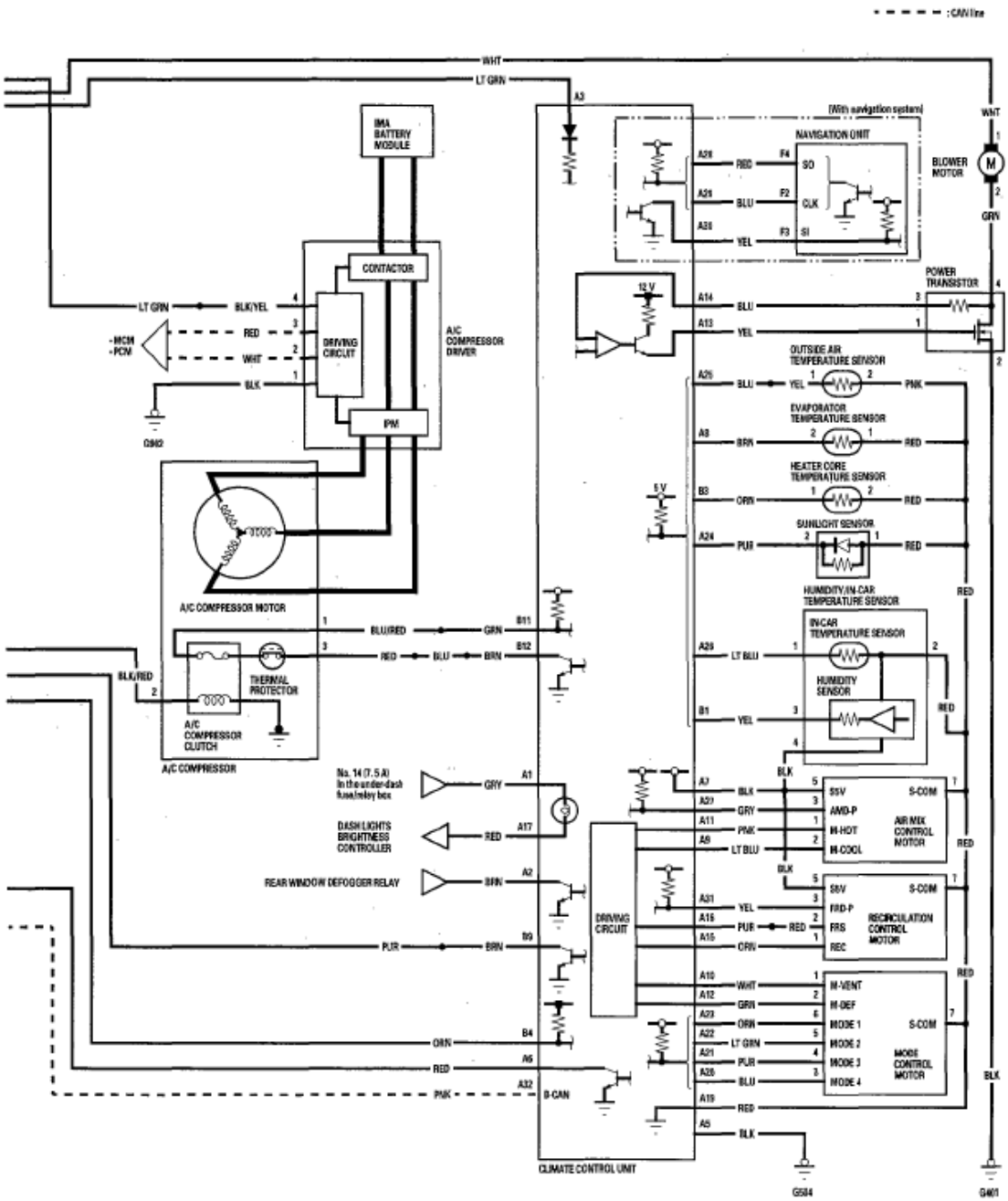


Fig. 24: Automatic Transmission - Power Flow Diagram - R Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Electronic Control System

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid

valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from the sensors, switches, and other control units, processes data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.

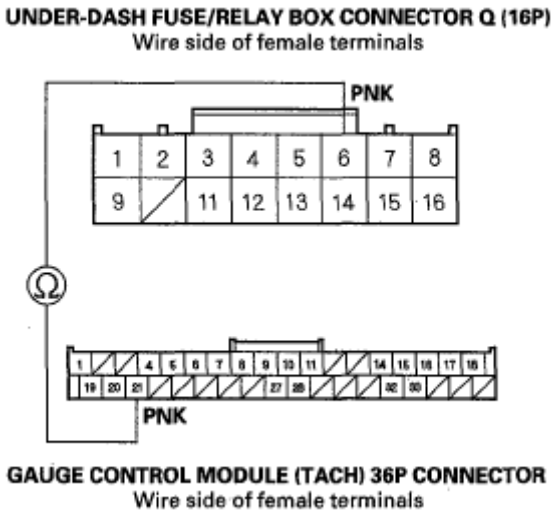


Fig. 25: Electronic Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shift Control

The PCM instantly determines which gear should be selected by various signals sent from the sensors and the switches, and actuates shift solenoid valves A, B, C, and D to control gear selection.

The shift solenoid valves are a normally closed type. When a shift solenoid valve is turned ON by the PCM, its port opens and the pressure from the shift solenoid valve(s) moves to the shift valves. When a shift solenoid valve is turned OFF by the PCM, its port closes, cutting off the pressure to the shift valves.

The combination of driving signals to shift solenoid valves A, B, C, and D and their respective gear position are shown in the table.

SHIFT LEVER GEAR POSITION

Shift lever Position	Gear Position	Shift Solenoid Valves			
		A	B	C	D
D, D3	Shifting from N	OFF	OFF	OFF	OFF
	Stays in 1st	OFF	ON	OFF	ON or OFF
	Shifting gears between 1st and 2nd	ON	ON	OFF	ON or OFF
	Stays in 2nd	ON	OFF	OFF	ON or OFF
	Shifting gears between 2nd and 3rd	OFF	OFF	OFF	ON or OFF

	Stays in 3rd	OFF	OFF	ON	ON or OFF
D	Shifting gears between 3rd and 4th	ON	OFF	ON	ON or OFF
	Stays in 4th	ON	ON	ON	ON or OFF
	Shifting gears between 4th and 5th	OFF	ON	ON	ON or OFF
	Stays in 5th	OFF	ON	OFF	ON or OFF
2	2nd	ON	OFF	OFF	ON or OFF
1	1st	OFF	ON	OFF	ON or OFF
N	Neutral	OFF	OFF	OFF	OFF
R	Shifting from P and N	OFF	OFF	ON	ON
	Stays in reverse	OFF	ON	ON	ON
	Reverse inhibit control	ON	OFF	ON	OFF
P	Park	OFF	OFF	OFF	ON

Shift Control - Grade Logic Control

The grade logic control system has been adopted to control shifting in D. To control shifting while the vehicle is ascending or descending a slope, the PCM compares actual driving conditions with programmed driving conditions, based on the input from the accelerator pedal position sensor, the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal.

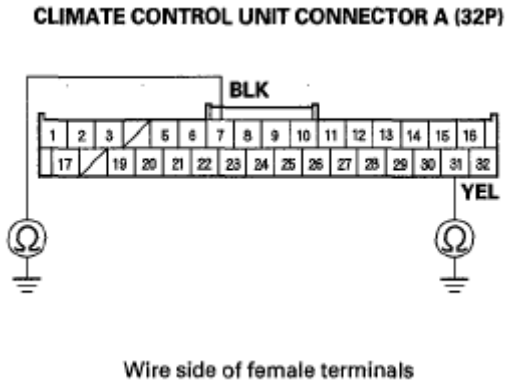


Fig. 26: Shift Control - Grade Logic Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Grade Logic Control: Ascending Control

When the PCM determines that the vehicle is climbing a hill in D, the PCM extends the engagement area of 2nd gear, 3rd gear, and 4th gear to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.

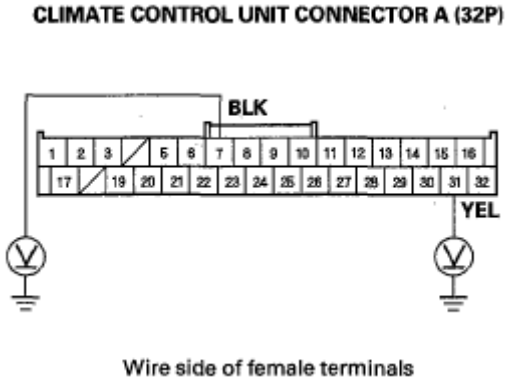


Fig. 27: Grade Logic Control - Ascending Control Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Grade Logic Control: Descending Control

When the PCM determines that the vehicle is going down a hill in D, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to extend the 4th gear, 3rd gear, and 2nd gear engagement areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.

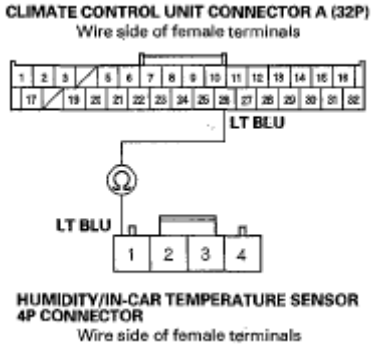


Fig. 28: Grade Logic Control - Descending Control Graph
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Clutch Pressure Control

The PCM actuates A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between gears, the clutch pressure regulated by A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

The PCM receives input signals from the various sensors and switches, processes data, and outputs current

to A/T clutch pressure control solenoid valves A, B, and C.

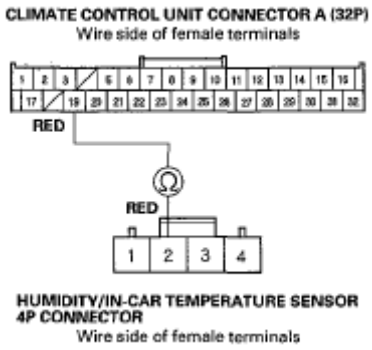


Fig. 29: Clutch Pressure Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Lock-up Control

Shift solenoid valve D controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates shift solenoid valve D and A/T clutch pressure control solenoid valve A to start lock-up. A/T clutch pressure control solenoid valve A applies and regulates hydraulic pressure to the lock-up control valve to control the volume of the lock-up. The lock-up mechanism operates in D (1st, 2nd, 3rd, 4th, and 5th gears) and in D3 (1st, 2nd, and 3rd gears).

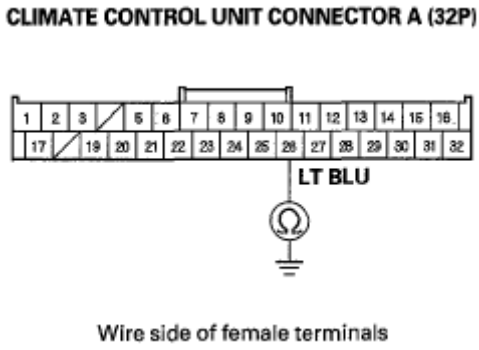


Fig. 30: Lock-Up Control System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCM A/T Control System Electrical Connections

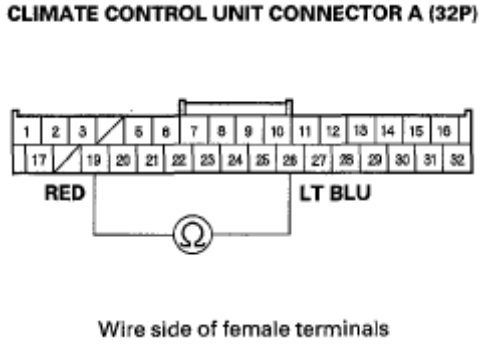


Fig. 31: PCM A/T Control System - Circuit Diagram

Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCM A/T Control System Inputs and Outputs

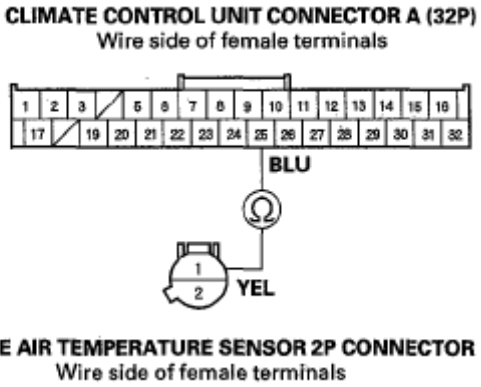


Fig. 32: Identifying PCM Harness Connector Terminal Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PCM CONNECTOR A [] (44P)

CONNECTOR TERMINAL WIRE COLOR REFERENCE

Terminal number	Wire color	Terminal name	Description	Signal
A27	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator released: Battery voltage
A31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using the HDS: About 0 V With service check signal opened About 5.0 V
A36	WHT	CAN H (CAN COMMUNICATION SIGNAL HIGH)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A37	RED	CAN L (CAN COMMUNICATION SIGNAL LOW)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A40	LT GRN	BK SW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch	With brake pedal pressed:

			signal	Battery voltage With Brake pedal released: About 0 V

NOTE:
Standard battery voltage is about 12 V.

PCM CONNECTOR B (TRIANGLE SYMBOL) (44P)

CONNECTOR TERMINAL WIRE COLOR REFERENCE

Terminal number	Wire color	Terminal name	Description	Signal
B1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B2	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: Duty controlled With EGR not operating: About 0 V
B8	BLU/YEL	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 2nd clutch pressure: About 5.0 V • With 2nd clutch pressure: About 0 V
B9	BLK/RED	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 3rd clutch pressure: About 5.0 V • With 3rd clutch pressure: About 0 V
B10	BLU	SH A (SHIFT SOLENOID VALVE A)	Drivers shift solenoid valve A	With engine running in 2, D (in 2nd and 4th gears), and D3 (in 2nd gear): Battery voltage With engine running in P, R, N, 1, and D

				(in 1st, 3rd, and 5th gears), and D3 (in 1st and 3rd gears) About 0 V
B11	GRN/RED	SH D (SHIFT SOLENOID VALVE D)	Drivers shift solenoid valve D	With engine running in P and R: Battery voltage With engine running in N: About 0 V
B12	RED/BLK	ATP N (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal	In N: About 0 V In any position other than N: About 5.0 V
B13	BLU/BLK	ATP P (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal	In P: About 0 V In any position other than P: About 5.0 V
B14	WHT/GRN	ATP R (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R: About 0 V In any position other than R: About 5.0 V
B15	RED	ATP D3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 position signal	In D3: About 0 V In any position other than D3: Battery voltage
B16	BRN	ATP 2-1 (TRANSMISSION RANGE SWITCH 2-1)	Detects transmission range switch 2 position and 1 position signal	In 2 and 1: About 0 V In any position other than 2 and 1: Battery voltage
B17	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With the ignition switch ON (II): About 0 V or about 5.0 V With engine idling in N: About 2.5 V (pulses)
B18	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With the ignition switch ON (II): About 5.0 V
B20	GRN	SH C (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in R, D3 (in 3rd gear), and D (in 3rd gear): Battery voltage With engine running in P, N, 2, D3 (in 1st and 2nd gears), and D (in 1st, 2nd, 4th, and 5th gears):

				About 0 V
B21	YEL/GRN	ATP D (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal	In D: About 0 V In any position other than D: Battery voltage
B22	YEL	ATP RVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch R position signal	In R: About 0 V In any position other than R: Battery voltage
B25	BLU/WHT	LS C (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II) Current controlled
B26	GRN/WHT	SH B (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in R, 1, D3 (in 1st gear), and D (in 1st gear) Battery voltage With engine running in P, N, 2, D3 (in 2nd and 3rd gears), and D (in 2nd, 3rd, 4th, and 5th gears): About 0 V
B27	BRN/RED	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With igniting switch ON (II): 0.2-4.8 V (about 1.8 V at operating temperature) (depending on ATF temperature)
B28	BLU/YEL	ATP FWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D, D3, and 2 positions signal	In D, D3, and 2: About 0 V In any position other than D, D3, and 2: Battery voltage
B29	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running. 1.2-3.0 V (depending on EGR valve lift)
B33	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
B35	WHT	LS A (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): Current controlled
B36	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B37	BRN	IMT + (INTAKE MANIFOLD TUNING	Drives IMT actuator	With ignition switch ON (II). Battery

		(IMT) ACTUATOR + SIDE)		voltage
B38	WHT/BLK	IMT - (INTAKE MANIFOLD TUNING (IMT) ACTUATOR - SIDE)	Ground for IMT actuator	With ignition switch ON (II): About 4.5 V (between IMT + terminal and IMT - terminal)
B39	WHT	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	With ignition switch ON (II): About 0 V With engine speed about 5,200 rpm: About 5.0 V
B44	BRN/WHT	LS B (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): Current controlled
NOTE: **Standard battery voltage is about 12 V.**				

PCM CONNECTOR C o (44P)

CONNECTOR TERMINAL WIRE COLOR REFERENCE

Terminal number	Wire color	Terminal name	Description	Signal
C11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): About 3.0 V At idle: About 1.0 V (depending on engine speed)
C13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): About 5 0 V
C14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
C22	WHT/BLK	POILCS (ENGINE OIL PRESSURE (EOP) SENSOR)	Detects EOP sensor signal	With ignition switch ON (II). About 0.5 V With engine running: About 0.7 V (depending on engine oil pressure)
C36	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition switch signal	With ignition switch ON (II): Battery voltage
C40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for	Less than 1.0 V

			PCM circuit	at all times
C43	BLK/BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): About 0 V or about 5 0 V With vehicle moving About 2.5 V (pulses)
C44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
NOTE: **Standard battery voltage is about 12 V.**				

Hydraulic Controls

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to each of the clutches. Shift solenoid valves A, B, C, and D are mounted on the servo body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the transmission housing.

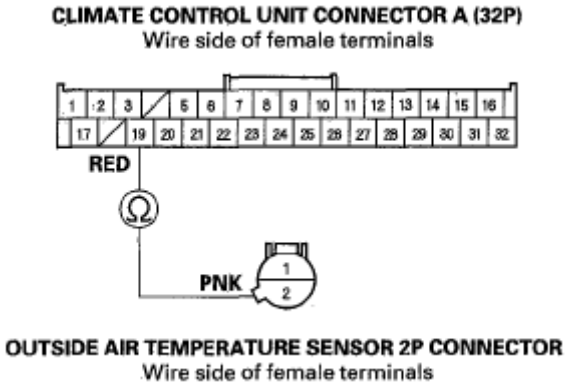


Fig. 33: Identifying A/T Clutch Pressure Control Solenoid Valves Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Main Valve Body

The main valve body contains the manual valve, cut valve B, shift valves A, C, and D, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off to control hydraulic pressure going to the hydraulic control system.

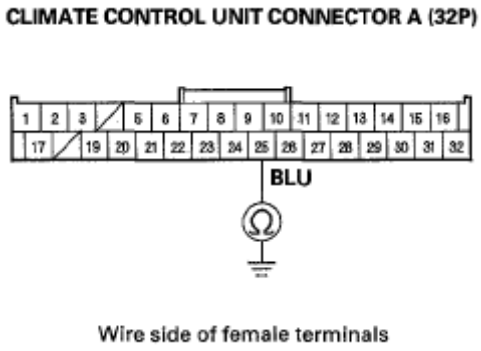


Fig. 34: Identifying Main Valve Body Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Regulator Valve Body

The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, the 1st accumulator, and the 3rd accumulator.

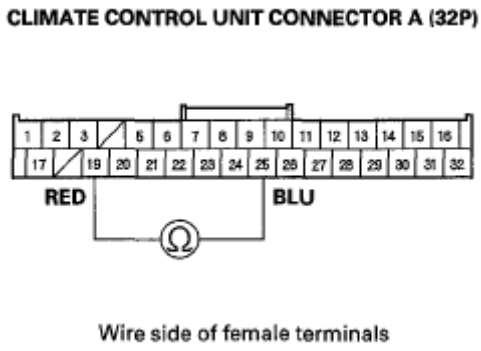


Fig. 35: Identifying Regulator Valve Body Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system. While also furnishing fluid to the lubrication system and the torque converter. Fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve toward the spring, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through the torque converter changes. This operation is continued, maintaining the line pressure.

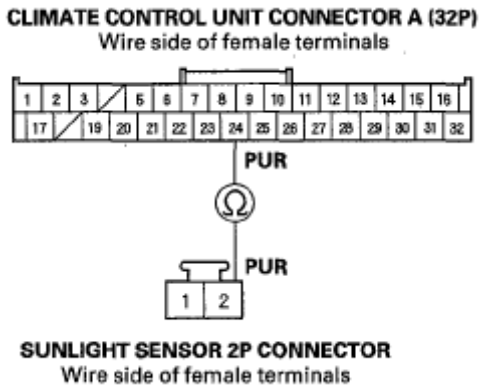


Fig. 36: Regulator Valve Operation Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Increases in hydraulic pressure according to torque are regulated by the regulator valve using stator torque reaction. The stator shaft is splined to the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

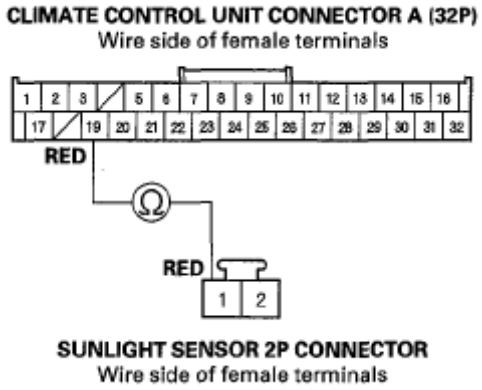


Fig. 37: Identifying Regulator Spring Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Servo Body

The servo body is on the main valve body. The servo body contains the servo valve, shift valve B, cut valve A, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, and D.

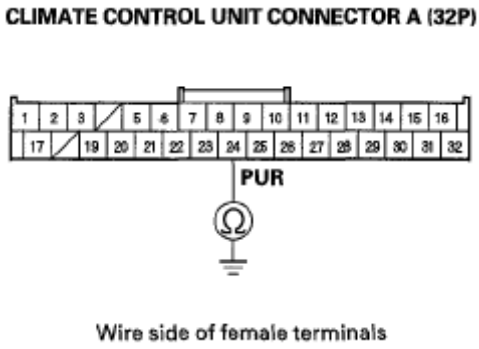


Fig. 38: Identifying Servo Body Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Accumulator

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.

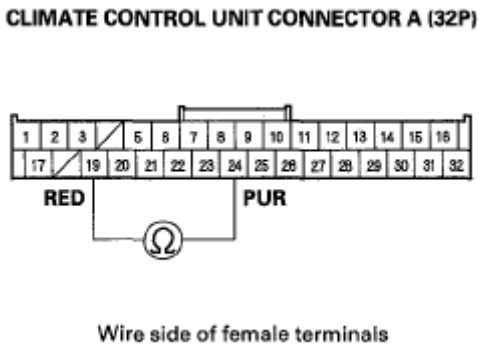


Fig. 39: Identifying Accumulator Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that is regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM turns the shift solenoid valves ON and OFF. The shift solenoid valve controls line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON by the PCM, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the shift solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valve moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and apply the pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic Pressure at the Port for use in the hydraulic circuit

HYDRAULIC PRESSURE REFERENCE

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	Line	5T	A/T clutch pressure control solenoid valve C
3	Line	SA	Shift solenoid valve A
3'	Line	SB	Shift solenoid valve B
4	Line	SC	Shift solenoid valve C
4'	Line	SD	Shift solenoid valve D
4"	Line	10	1st clutch
7	Line	20	2nd clutch
1A	Line	30	3rd clutch
1B	Line	40	4th clutch
1C	Line or A/T clutch pressure control solenoid valve A	50	5th clutch
3A	Line or A/T clutch pressure control solenoid valve A	55	A/T clutch pressure control solenoid valve A
3B	Line or A/T clutch pressure control solenoid valve A	55'	A/T clutch pressure control solenoid valve A
3C	Line or A/T clutch pressure control solenoid valve A	56	A/T clutch pressure control solenoid valve B
5A	Line or A/T clutch pressure control solenoid valve A	57	A/T clutch pressure control solenoid valve C
5B	Line, A/T clutch pressure control solenoid valve A, or C	90	Torque converter
5C	A/T clutch pressure control solenoid valve C	91	Torque converter
5D	Line or A/T clutch pressure control solenoid valve A	92	Torque converter
5E	Line or A/T clutch pressure control solenoid valve B	93	ATF cooler
5F	A/T clutch pressure control solenoid valve B	94	Torque converter
5G	Line, A/T clutch pressure control solenoid valve A, or B	95	Lubrication
5H	A/T clutch pressure control solenoid valve B	96	Torque converter

5J	A/T clutch pressure control solenoid valve C	97	Torque converter
5K	A/T clutch pressure control solenoid valve C	99	Suction
5L	A/T clutch pressure control solenoid valve C	X	Drain
5M	A/T clutch pressure control solenoid valve B	HX	High position drain
5R	A/T clutch pressure control solenoid valve C	AX	Air drain

N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- Shift solenoid valve A is turned OFF, shift valve A remains on the right side, and cut valve A remains on the left side.
- Shift solenoid valve B is turned OFF, and shift valve B remains on the right side.
- Shift solenoid valve C is turned OFF, and shift valve C remains on the right side.

Line pressure (1) passes through the manual valve and stops at cut valve B. Line pressure (1) also flows to shift solenoid valves, and A/T clutch pressure control solenoid valve A. Under this condition, hydraulic pressure is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

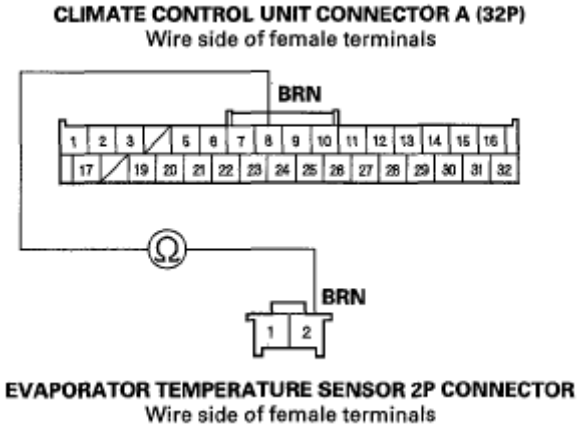


Fig. 40: Hydraulic Fuel Pressure Flow Diagram (N Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: 1st gear shifting from the N position

The shift solenoid valves and the shift valves remain the same position when shifting from D to N. The PCM actuates A/T clutch pressure control solenoid valve A to regulate the line pressure. Line pressure (1) becomes A/T clutch pressure control solenoid valve A pressure (55), and A/T clutch pressure control solenoid valve A pressure flows to the lock-up shift valve, shift valve B, the manual valve, and shift valve

A. Also solenoid valve A pressure becomes 1st clutch pressure (10) at shift valve C, and 1st clutch pressure (10) flows to the 1st clutch. The 1st clutch is engaged by A/T clutch pressure control solenoid valve A pressure mode when shifting to D from N.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

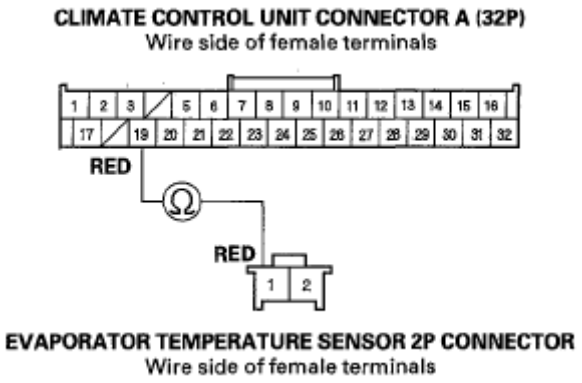


Fig. 41: Hydraulic Fuel Pressure Flow Diagram (D Position - 1st Gear Shifting From N Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Driving in 1st gear

The PCM turns shift solenoid valve B ON, and shift solenoid valves A and C remain OFF. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B. Shift valve B then moves to the left side, causing the line pressure port leading to the 1st clutch to be uncovered, and the A/T clutch pressure control solenoid valve A pressure port to be covered. Line pressure (1B) passed through shift valve B flows to the manual valve, shift valve A, and shift valve C, and becomes 1st clutch pressure (10). 1st clutch pressure is applied to the 1st clutch, and the 1st clutch is engaged by the line pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

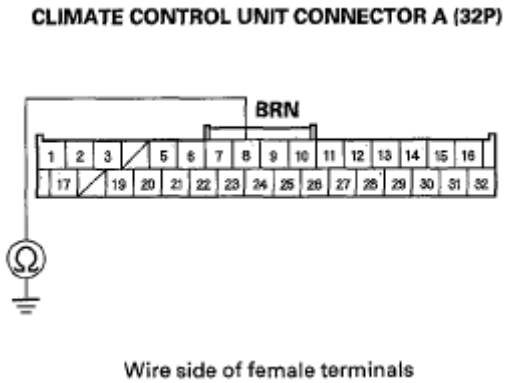


Fig. 42: Hydraulic Fuel Pressure Flow Diagram (D Position - Driving In 1st Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON, shift solenoid valve B remains ON, and C remains OFF. Shift solenoid valve A pressure (SA) is applied to the

right end of shift valve A and to the left side of cut valve A. Cut valve A is moved to the right side to release 1st clutch pressure in line pressure mode, and shift valve A is moved to the left side to switch line pressure (5A) port to A/T clutch pressure control solenoid valve C pressure (5C) port leading to the 1st clutch. Also shift valve A uncovers 2nd clutch pressure (20) port leading A/T clutch pressure control solenoid valve B pressure (56) to the 2nd clutch. The 1st clutch and the 2nd clutch are engaged by the A/T clutch pressure control solenoid valve pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

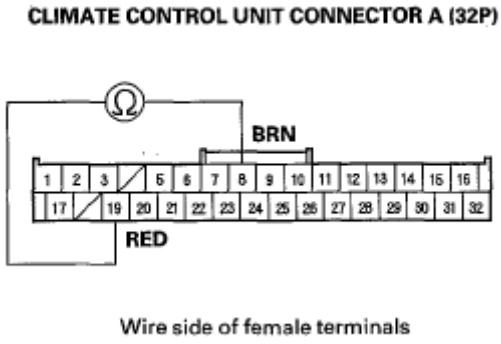


Fig. 43: Hydraulic Fuel Pressure Flow Diagram (D Position - Shifting Between 1st Gear And 2nd Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Driving in 2nd gear

The PCM turns shift solenoid valve B OFF, shift solenoid valve A remains ON, and C remains OFF. Shift solenoid valve B is turned OFF, and shift solenoid valve B pressure (SB) in the right end of shift valve B and in the left end of the servo control valve is released. Cut valve B and servo control valve are kept in the right side by line pressure (4) even though releasing hydraulic pressure in the left end. Shift valve B is moved to the right side to switch A/T clutch pressure control solenoid valve B pressure (5F) port to line pressure (5D) port leading to the 2nd clutch. 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged by the line pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

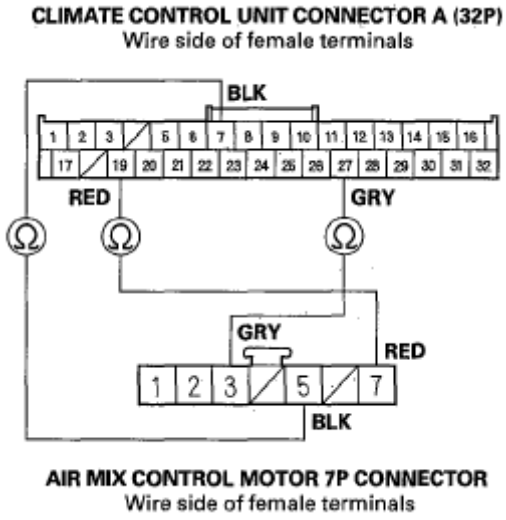


Fig. 44: Hydraulic Fuel Pressure Flow Diagram (D Position - Driving In 2nd Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF, while shift solenoid valve B and C remain OFF. Shift solenoid valve A is turned OFF, and shift solenoid valve A pressure (SA) in the right end of shift valve A and in the left end of cut valve A is released. Even though shift solenoid valve A pressure is released, cut valve A is kept on the right side by line pressure (4). Shift valve A is moved to the right side to switch to the line pressure (5G) port to the A/T clutch pressure control solenoid valve B pressure (5E) port leading to the 2nd clutch. Also shift valve A uncovers 3rd clutch pressure (30) port leading A/T clutch pressure control solenoid valve C pressure (5L) to the 3rd clutch. The 2nd and 3rd clutch are engaged by the A/T clutch pressure control solenoid valve pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

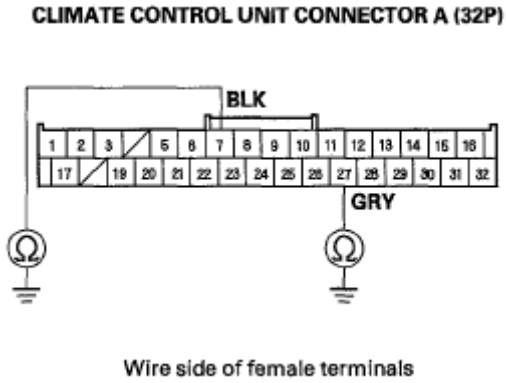


Fig. 45: Hydraulic Fuel Pressure Flow Diagram (D Position - Shifting Between 2nd Gear And 3rd Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Driving in 3rd gear

The PCM turns shift solenoid valve CON, and shift solenoid valve A and B remain OFF. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C and cut valve B. Shift valve C is then moved to the left side to releasing the 2nd clutch pressure. The 3rd clutch keeps on engaging with the A/T clutch pressure control solenoid valve C pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

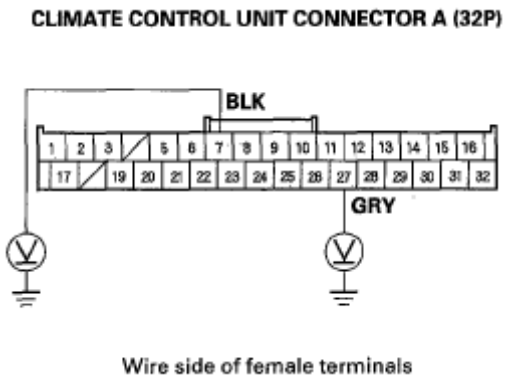


Fig. 46: Hydraulic Fuel Pressure Flow Diagram (D Position - Driving In 3rd Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON. Shift solenoid valve B remains OFF, and C remains ON. Shift solenoid valve A pressure (SA) is applied to the right end of shift valve A and the left end of cut valve A. Shift valve A is moved to the left side, switching the line pressure (5L) port to the A/T clutch pressure control solenoid valve C pressure (5K) port leading to the 3rd clutch. Also shift valve A uncovers the 4th clutch pressure (40) port leading A/T clutch pressure control solenoid valve B pressure (5H) to the 4th clutch. The 3rd and 4th clutches are engaged by the A/T clutch pressure control solenoid valve pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

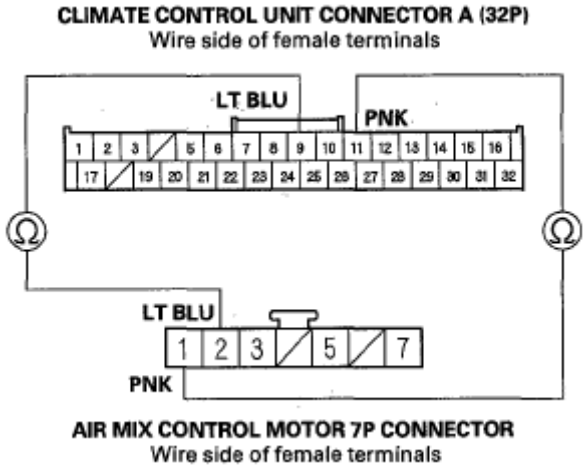


Fig. 47: Hydraulic Fuel Pressure Flow Diagram (D Position - Shifting Between 3rd Gear And 4th Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Driving in 4th gear

The PCM turns shift solenoid valve B ON, and shift solenoid valve A and B remain ON. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B and the left side of the servo control valve. Shift valve B then moves to the left side releasing the 3rd clutch pressure. The 4th clutch is engaged by the A/T clutch pressure control solenoid valve B pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

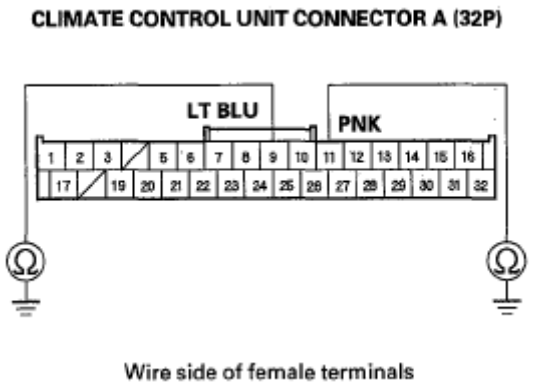


Fig. 48: Hydraulic Fuel Pressure Flow Diagram (D Position - Driving In 4th Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF while shift solenoid valve B and C remain ON. As a result, the pressure in the right end of shift valve A is released. Even though shift solenoid valve A pressure (SA) is released, cut valve A is kept on the right side by the line pressure (4). Shift valve A is moved to the right side to uncover A/T clutch pressure control solenoid valve C pressure (5T) (5J) port leading to the 4th clutch. The 4th and 5th clutches are engaged by the A/T clutch pressure control solenoid valve pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

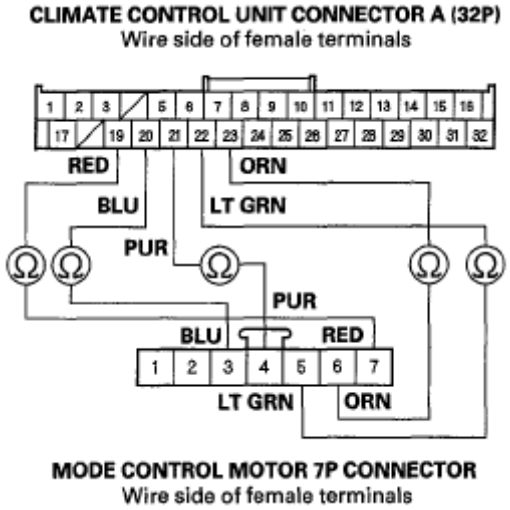


Fig. 49: Hydraulic Fuel Pressure Flow Diagram (D Position - Shifting Between 4th Gear And 5th Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

D Position: Driving in 5th gear

The PCM turns shift solenoid valve C OFF, shift solenoid valve A remains OFF, and B remains ON. Shift solenoid valve C pressure (SC) is then released to the right side of shift valve C. This causes shift valve C to

move to the right side, releasing the 4th clutch pressure. The 5th clutch is engaged by the A/T clutch pressure control solenoid valve C pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

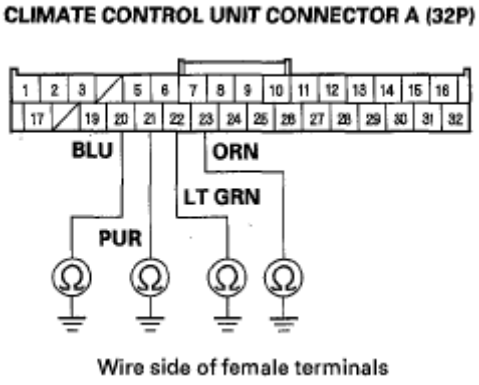


Fig. 50: Hydraulic Fuel Pressure Flow Diagram (D Position - Driving In 5th Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2 Position

The PCM controls the shift solenoid valves and the A/T clutch pressure control solenoid valves. The conditions of the shift solenoid valves and the position of the shift valves are as follows:

- Shift solenoid valve A is turned ON, causing shift valve A to move to the left side.
- Shift solenoid valve B is turned OFF, keeping shift valve B on the right side.
- Shift solenoid valve C is turned OFF, keeping shift valve C on the left side.

Line pressure travels up and through shift valve C (5D), through shift valve B (5G), and then up to shift valve A (20) to become 2nd clutch pressure. The 2nd clutch is engages by the 2nd clutch pressure.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

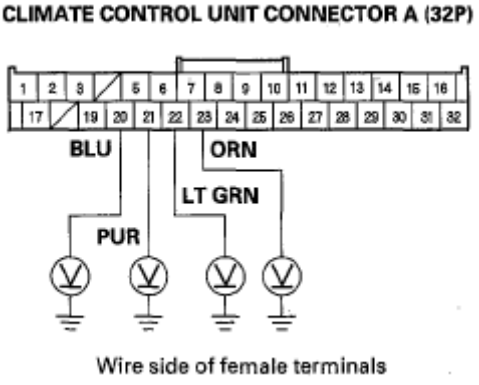


Fig. 51: Hydraulic Fuel Pressure Flow Diagram (2 Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1 Position

The PCM controls the shift solenoid valves and the A/T clutch pressure control solenoid valves. The conditions of the shift solenoid valves and the position of the shift valves are as follows:

- Shift solenoid valve A is turned OFF, keeping shift valve A on the right side.
- Shift solenoid valve B is turned ON, causing shift valve B move to the left side.
- Shift solenoid valve C is turned OFF, keeping shift valve C on the right side.

Line pressure (1) from the manual valve flows to cut valve B, cut valve A, shift valve B, and becomes line pressure (5A) at the manual valve. Line pressure (5A) passes through shift valve A, flows to shift valve C, and becomes 1st clutch pressure (10). 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

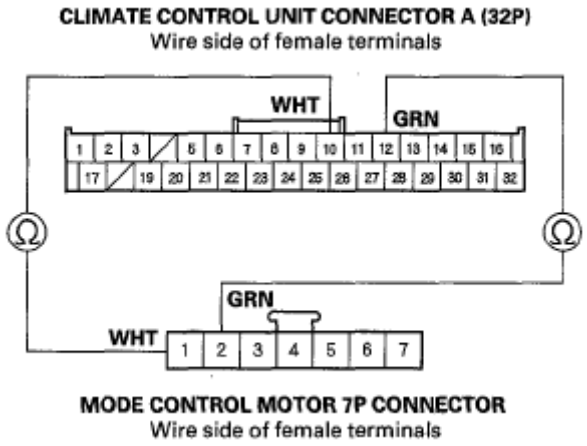


Fig. 52: Hydraulic Fuel Pressure Flow Diagram (1 Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

R Position: Shifting to the R position from the P or N position

The manual valve is moved into the R position. This causes line pressure (1) to become line pressure (1), (3), and (7) at the manual valve. The PCM turns shift solenoid valves C and D ON, and shift solenoid valves A and B remain OFF. Shift solenoid valve D pressure (SD) is applied to the left end of shift valve D, causing shift valve D to move to the right side, uncovering the line pressure (3) port leading to the servo valve. Line pressure (3') from shift valve D flows to the servo valve, and pushes the servo valve to the reverse position. The PCM controls A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure (55), and A/T clutch pressure control solenoid valve A pressure (55) flows to the lock-up shift valve, shift valve B, the manual valve, the servo valve, shift valve D, and cut valve A. A/T clutch pressure control solenoid valve A pressure (3C) becomes 5th clutch pressure (50) at cut valve A. 5th clutch pressure (50) is applied to the 5th clutch, and the 5th clutch is engaged by the A/T clutch pressure control solenoid valve A pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

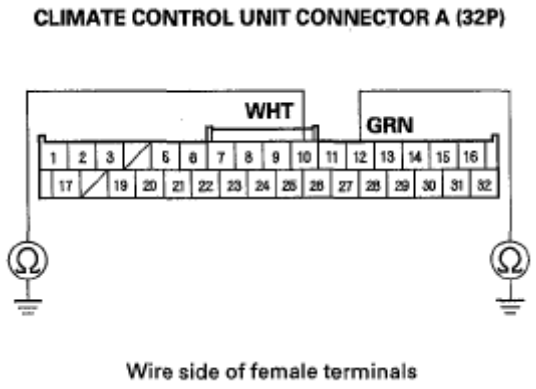


Fig. 53: Hydraulic Fuel Pressure Flow Diagram (R Position - Shifting To R Position From P Or N Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

R Position: Driving in reverse gear

When starting off in reverse gear, the PCM turns shift solenoid valves B and C ON. Shift solenoid valve A remains OFF, and D remains ON. Shift solenoid valve B is turned ON, and shift solenoid valve B pressure (SB) is applied to the right end of shift valve B. Shift valve B is moved to the right side to switch A/T clutch pressure control solenoid valve A pressure (55') port to line pressure (1B) port leading to the 5th clutch. The 5th clutch is engaged with the line pressure mode.

Reverse Inhibitor Control

When R is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h), the PCM turns shift solenoid valves A and C ON, and shift solenoid valves B and D OFF. Shift solenoid valve D is kept OFF, and shift valve D is kept in the left side to cover line pressure (3) port leading to the servo valve. The servo valve is kept in the forward position. Shift solenoid valve A is turned ON, shift valve A is moved to the right side and covers the port to stop line pressure (1 A) leading to the 5th clutch. The servo valve is not applied line pressure, the 5th clutch is not applied 5th clutch pressure, as a result, power is not transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

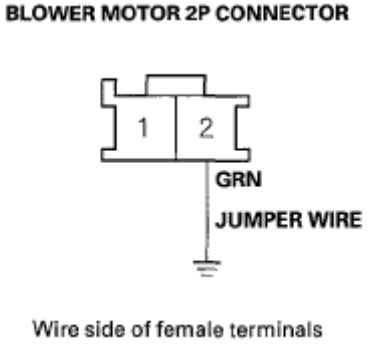


Fig. 54: Hydraulic Fuel Pressure Flow Diagram (R Position - Driving In Reverse Gear)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

P Position

The manual valve is moved into the P position, line pressure (1) becomes line pressure (1), (3), and (7) at the manual valve. The PCM turns shift solenoid valve D ON, and shift solenoid valves A, B, and C OFF. Shift solenoid valve D pressure (SD) is applied to the left end of shift valve D, and shift valve D is moved to the right side to uncover line pressure (3) port leading to the servo valve. Line pressure (3') from shift valve D flows to the servo valve, and pushes the servo valve to the reverse position. Line pressure (1) is intercepted at cut valve B, line pressure (1B) is intercepted at shift valve B, and hydraulic pressure is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

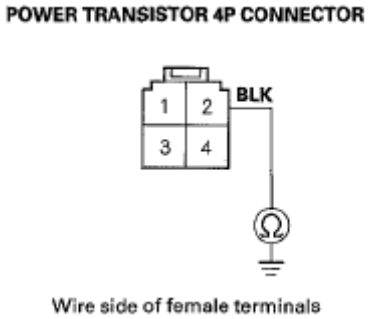


Fig. 55: Hydraulic Fuel Pressure Flow Diagram (P Position)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Lock-up System

The lock-up mechanism of the torque converter clutch operates in D (2nd, 3rd, 4th, and 5th gears) and D3 (2nd and 3rd gears). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and the amount of ATF the lock-up mechanism receives. When shift solenoid valve D is turned on by the PCM, shift solenoid valve D pressure turns the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve control the volume of lock-up.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)

Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and the stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch locks-up, and the mainshaft rotates at the same as the engine.

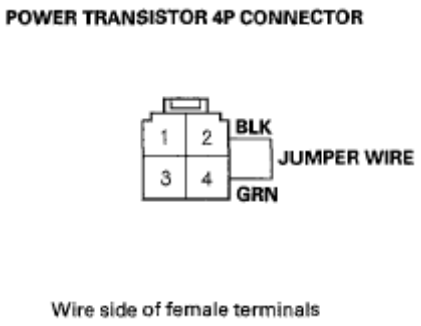


Fig. 56: Torque Converter Clutch Lock-Up On Diagram (Engaging Torque Converter Clutch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)

Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released.

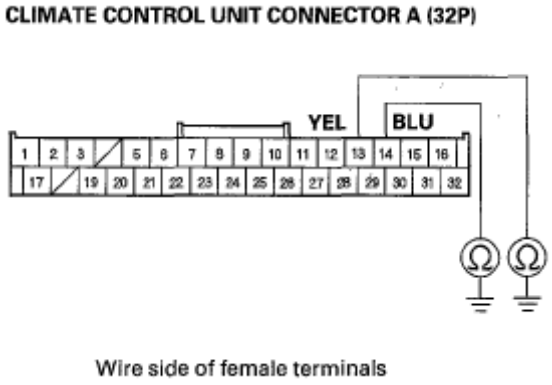


Fig. 57: Torque Converter Clutch Lock-Up Off Diagram (Disengaging Torque Converter Clutch)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

No Lock-up

The PCM turns shift solenoid valve D OFF. The lock-up shift valve is on the right side, and uncovers the torque converter pressure port leading to the back of the torque converter. Torque converter pressure (92) regulated by the regulator valve flows to the lock-up shift valve, and becomes torque converter pressure (94). Torque converter pressure (94) enters into the back of the torque converter, and discharges into the circuit from the front of the torque converter. When the hydraulic pressure flow enters the torque converter from the rear and discharges it from the front, the torque converter clutch piston and cover become disengaged. This is called the non lock-up condition.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

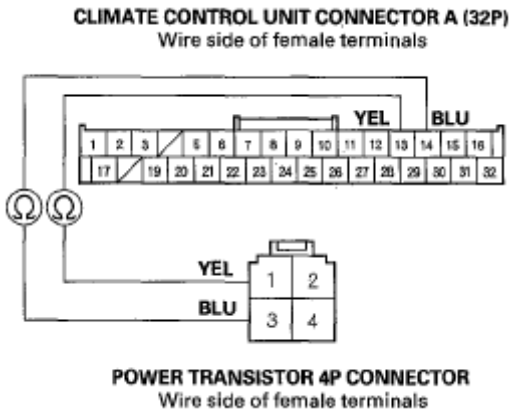


Fig. 58: Hydraulic Fuel Pressure Flow Diagram (No Lock-Up)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Partial Lock-up

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON. Shift solenoid valve D pressure (SD) is applied to the right end of the lock-up shift valve, which switches the pressure over to the torque converter pressure port leading to the front of the torque converter. Torque converter pressure (91) enters into the front of the torque converter to engage the torque converter clutch piston. The PCM also controls A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure (55), and A/T clutch pressure control solenoid valve A pressure (55) is applied to the lock-up control valve. Torque converter pressure (94) drained from the back of the torque converter is applied to the right side of the lock-up control valve, and torque converter pressure (90) is applied to the left side of the lock-up control valve. The lock-up control valve controls the lock-up volume, by receiving these pressures. The torque converter clutch is engaged partially during torque converter pressure (90) in the left side of the lock-up control valve is higher, and the torque converter clutch is engaged securely according to the volume of pressure in the right side of the lock-up control valve. Under this condition, the torque converter clutch is engaged by pressure entering into the front side of the torque converter; this condition is partial lock-up.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

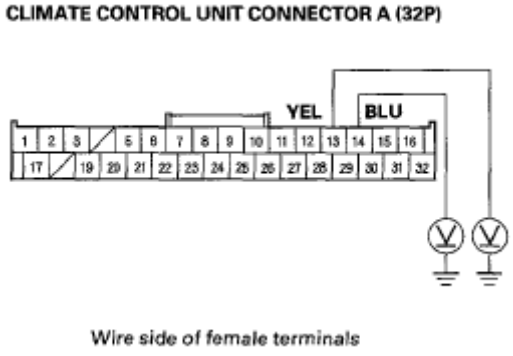


Fig. 59: Hydraulic Fuel Pressure Flow Diagram (Partial Lock-Up)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Full Lock-up

When the vehicle speed increases, the PCM controls A/T clutch pressure control solenoid valve A to

increase A/T clutch pressure control solenoid valve A pressure (55). A/T clutch pressure control solenoid valve A pressure (55) is applied to the lock-up control valve, and the lock-up control valve is moved to the left side to release torque converter back pressure (94). Torque converter pressure (91) enters into the front of the torque converter, and the torque converter clutch piston is engaged with the torque converter cover securely by torque converter pressure. Under this condition, torque converter back pressure is released fully, causing the torque converter clutch to be fully engaged; this condition is full lock-up.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

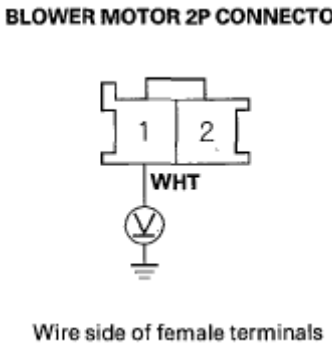


Fig. 60: Hydraulic Fuel Pressure Flow Diagram (Full Lock-Up)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Circuit Diagram - PCM A/T Control System

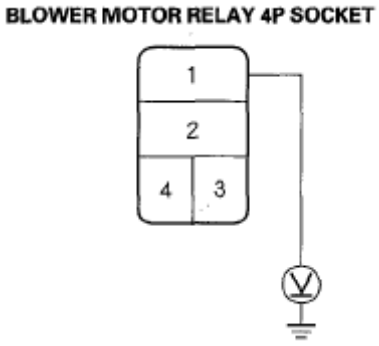


Fig. 61: PCM A/T Control System - Circuit Diagram (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

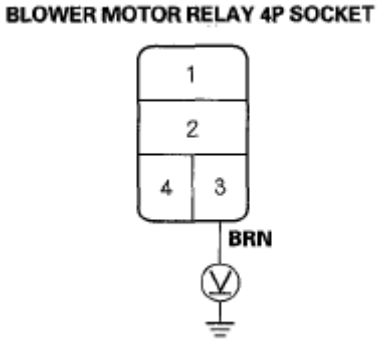


Fig. 62: PCM A/T Control System - Circuit Diagram (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0107: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input; DTC P0108: Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the PGM-FI SYSTEM?

   YES -Go to the **INDICATED DTC'S TROUBLESHOOTING** in the PGM-FI system:

   - P0107 (see **DTC P0107: MAP SENSOR CIRCUIT LOW VOLTAGE**)
   - P0108 (see **DTC P0108: MAP SENSOR CIRCUIT HIGH VOLTAGE**)

   NO -Go to step 5.

5. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES -Go to step 6.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

6. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
7. Start the engine, and wait for at least 2 minutes.
8. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1.

   NO -Go to step 9.

9. Monitor the OBD STATUS for P0107 or P0108 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 8, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P0335: Crankshaft Position (CKP) Sensor No Signal; DTC P0365: Camshaft Position (CMP) Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0335 or P0365 indicated in the PGM-FI SYSTEM?

   YES -Go to the **INDICATED DTC'S TROUBLESHOOTING** in the PGM-FI system:

   - P0335 (see **DTC P0335: CKP SENSOR NO SIGNAL**)
   - P0365 (see **DTC P0365: CMP SENSOR NO SIGNAL**)

   NO -Go to step 5.

5. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0365 indicated in the A/T SYSTEM?

   YES -Go to step 6.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

6. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
7. Start the engine, and wait for at least 2 minutes.
8. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0365 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM, If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1.

NO -Go to step 9.

9. Monitor the OBD STATUS for P0335 or P0365 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 8, go to the **INDICATED DTC'S TROUBLESHOOTING**.

   NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P0339: Crankshaft Position (CKP) Sensor Intermittent Interruption; DTC P0369: Camshaft Position (CMP) Sensor Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and raise the engine speed to at least 2,000 rpm.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0339 or P0369 indicated in the PGM-FI SYSTEM?

   YES -Go to the **INDICATED DTC'S TROUBLESHOOTING** in the PGM-FI system:

   - P0339 (see **DTC P0339: CKP SENSOR INTERMITTENT INTERRUPTION**)
   - P0369 (see **DTC P0369: CMP SENSOR CIRCUIT INTERMITTENT INTERRUPTION**)

   NO -Go to step 5.

5. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0339 or P0369 indicated in the A/T SYSTEM?

   YES -Go to step 6.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

6. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
7. Start the engine, and wait for at least 2 minutes.
8. Check for DTCs in the A/T SYSTEM with the HDS.

Is DTC P0339 or P0369 indicated in the A/T SYSTEM?

YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1.

NO -Go to step 9.

9. Monitor the OBD STATUS for P0339 or P0369 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 8, go to the **INDICATED DTC'S TROUBLESHOOTING**.

   NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P0603: PCM Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0603 indicated in the PGM-FI SYSTEM?

   YES -Go to **DTC P0603: ECM/PCM INTERNAL CONTROL MODULE KEEP ALIVE MEMORY (KAM) ERROR** in the PGM-FI system .

   NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0603 indicated in the A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).

6. Turn the ignition switch to ON (II).
7. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0603 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1.

   NO -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
5. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 6.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

   Is the switch OK?

   YES -With the switch connector disconnected, go to step 8.

   NO -Replace the transmission range switch (see **TRANSMISSION RANGE SWITCH REPLACEMENT**), then go to step 50.

8. Turn the ignition switch to ON (II).
9. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

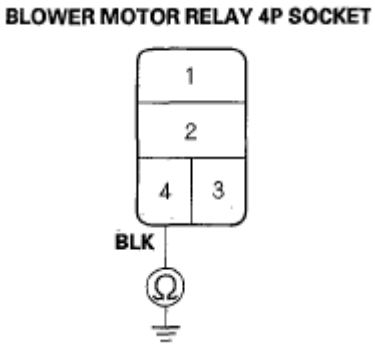


Fig. 63: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 6 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 15.

NO -Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B13 and body ground.

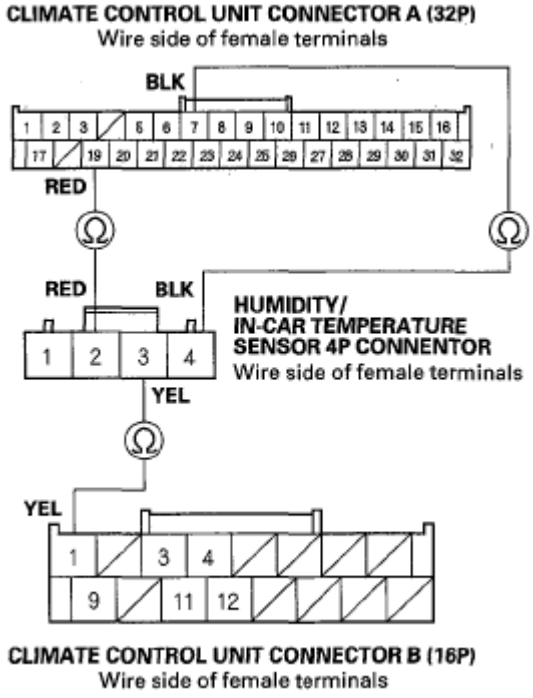


Fig. 64: Checking Continuity Between PCM Connector Terminal B13 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch, then go to step 50.

NO -Go to step 14.

14. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

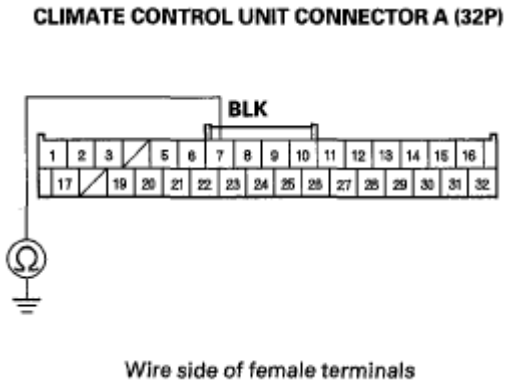


Fig. 65: Checking Continuity Between Transmission Range Switch Connector Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 57.

NO -Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 50.

15. Measure the voltage between transmission range switch connector terminals No. 7 and No. 10.

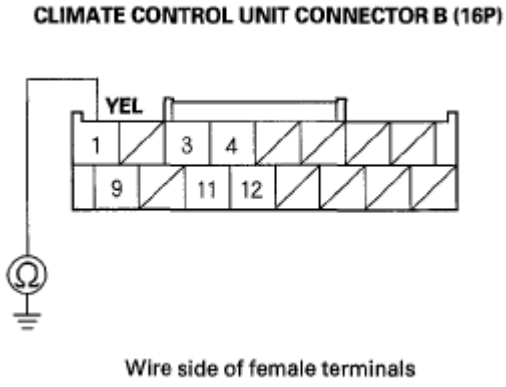


Fig. 66: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 7 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 20.

NO -Go to step 16.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (44P).
19. Check for continuity between PCM connector terminal B14 and body ground.

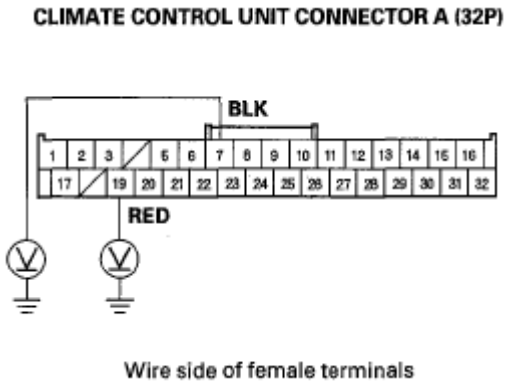


Fig. 67: Checking Continuity Between PCM Connector Terminal B14 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B14 and the transmission range switch, then go to step 50.

NO -Go to step 57.

20. Measure the voltage between transmission range switch connector terminals No. 2 and No. 10.

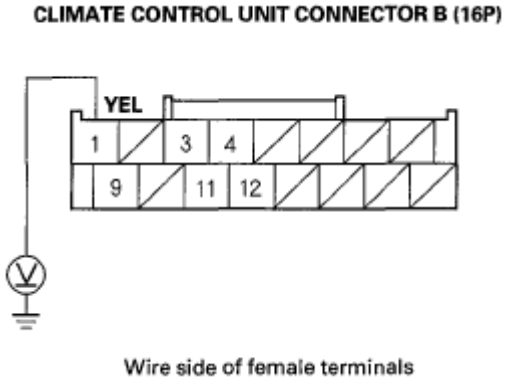


Fig. 68: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 2 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 25.

NO -Go to step 21.

21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector B (44P).
24. Check for continuity between PCM connector terminal B12 and body ground.

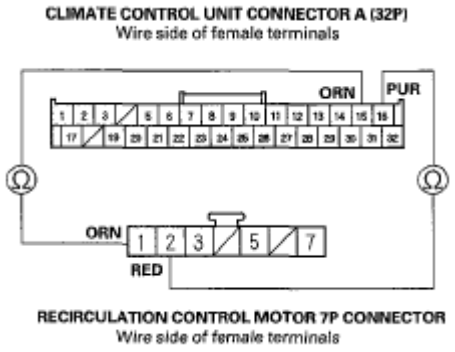


Fig. 69: Checking Continuity Between PCM Connector Terminal B12 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B12 and the transmission range switch, then go to step 50.

NO -Go to step 57.

25. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

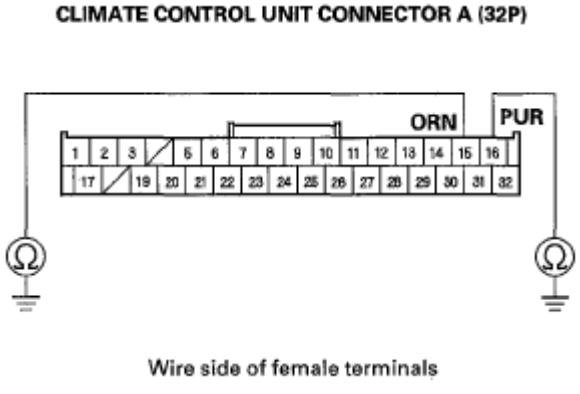


Fig. 70: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 8 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 30.

NO -Go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Jump the SCS line with the HDS.
28. Disconnect PCM connector B (44P).
29. Check for continuity between PCM connector terminal B21 and body ground.

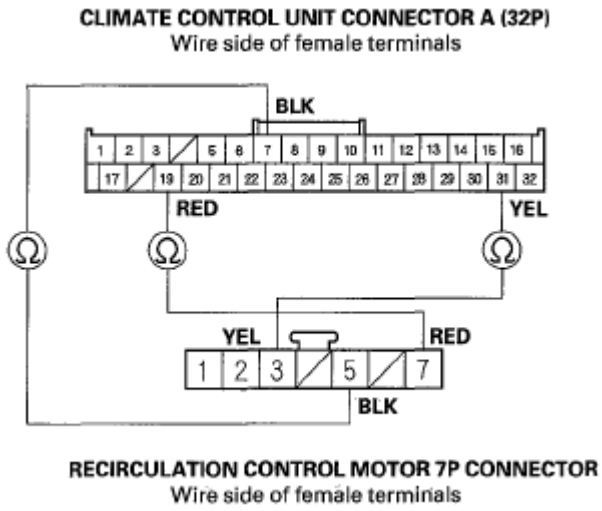


Fig. 71: Checking Continuity Between PCM Connector Terminal B21 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B21 and the transmission range switch, then go to step 50.

NO -Go to step 57.

30. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.

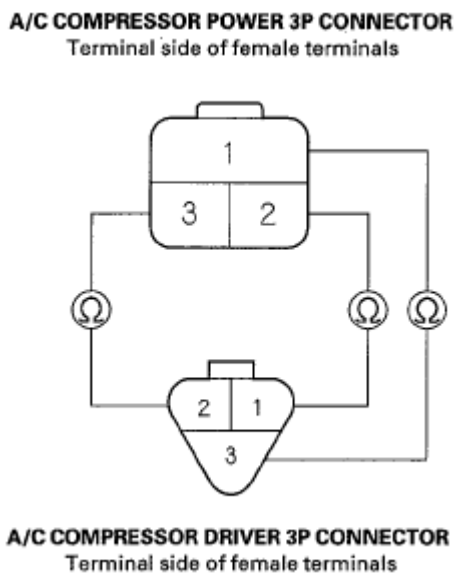


Fig. 72: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 3

And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 35.

NO -Go to step 31.

31. Turn the ignition switch to LOCK (0).
32. Jump the SCS line with the HDS.
33. Disconnect PCM connector B (44P).
34. Check for continuity between PCM connector terminal B15 and body ground.

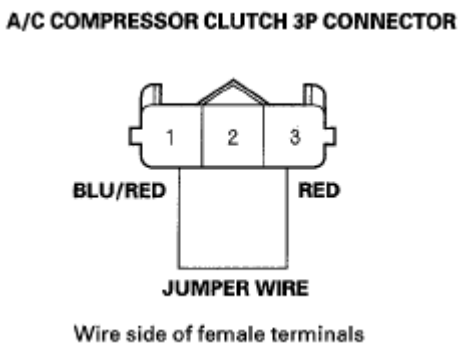


Fig. 73: Checking Continuity Between PCM Connector Terminal B15 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B15 and the transmission range switch, then go to step 50.

NO -Go to step 57.

35. Measure the voltage between transmission range switch connector terminals No. 9 and No. 10.

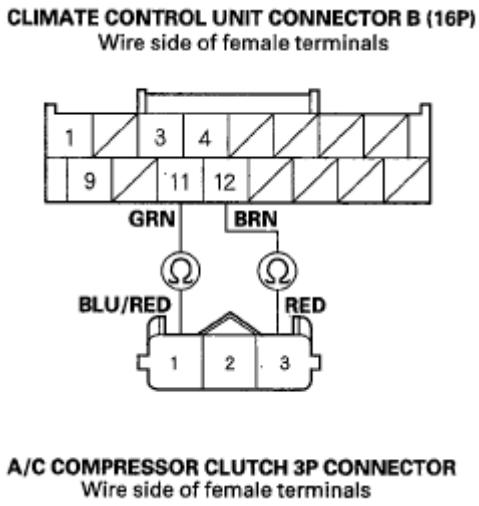


Fig. 74: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 9 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 40.

NO -Go to step 36.

36. Turn the ignition switch to LOCK (0).
37. Jump the SCS line with the HDS.
38. Disconnect PCM connector B (44P).
39. Check for continuity between PCM connector terminal B16 and body ground.

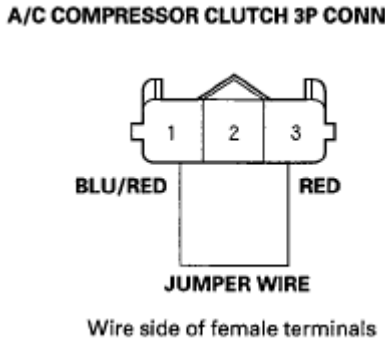


Fig. 75: Checking Continuity Between PCM Connector Terminal B16 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B16 and the transmission range switch, then go to step 50.

NO -Go to step 57.

40. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.

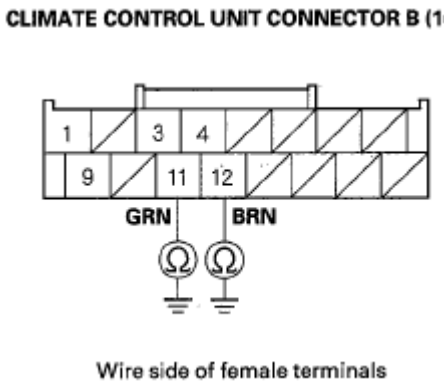


Fig. 76: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 5 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 45.

NO -Go to step 41.

41. Turn the ignition switch to LOCK (0).
42. Jump the SCS line with the HDS.
43. Disconnect PCM connector B (44P).
44. Check for continuity between PCM connector terminal B28 and body ground.

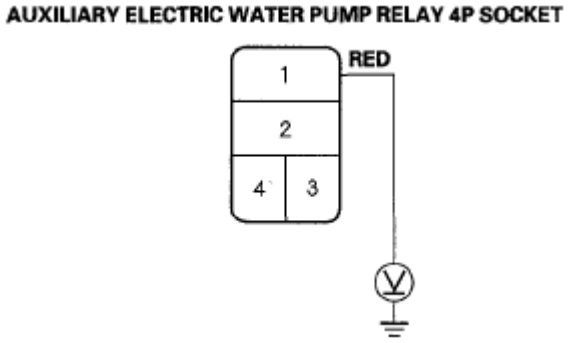


Fig. 77: Checking Continuity Between PCM Connector Terminal B28 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B28 and the transmission range switch, then go to step 50.

NO -Go to step 57.

45. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.

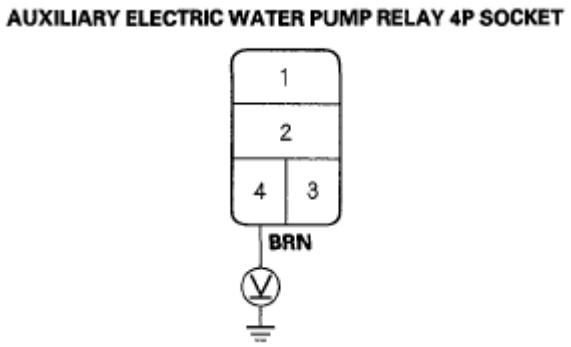


Fig. 78: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 1 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 57.

NO -Go to step 46.

46. Turn the ignition switch to LOCK (0).
47. Jump the SCS line with the HDS.
48. Disconnect PCM connector B (44P).
49. Check for continuity between PCM connector terminal B22 and body ground.

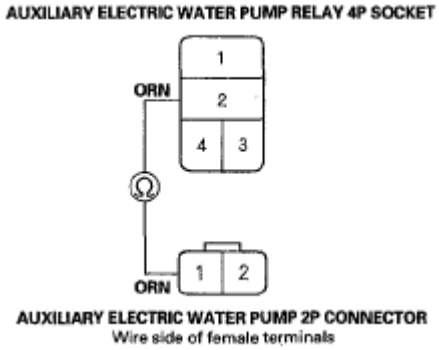


Fig. 79: Checking Continuity Between PCM Connector Terminal B22 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 50.

NO -Go to step 57.

50. Reconnect all connectors.
51. Turn the ignition switch to ON (II).
52. Clear the DTC with the HDS.

53. Start the engine.
54. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
55. Check for DTCs with the HDS.

    Is DTC P0705 indicated?

    YES -Check for intermittent short to body ground in the wire between the transmission range switch and the PCM, then go to step 1.

    NO -Go to step 56.

56. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 55, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 53.

57. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
58. Start the engine.
59. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
60. Check for DTCs with the HDS.

    Is DTC P0705 indicated?

    YES -Check for intermittent short to body ground in the wire between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 58. If the PCM was substituted, go to step 1.

    NO -Go to step 61.

61. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 60, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 58. If the PCM was substituted, go to step 1. If

the HDS indicates NOT COMPLETED, go to step 58.

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
4. Start the engine, run the vehicle with the shift lever in D until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
5. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 4, then go to step 6.
6. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 7.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.

7. Turn the ignition switch to LOCK (0).
8. Inspect the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

   Is the switch OK?

   YES -Go to step 9.

   NO -Replace the transmission range switch (see **TRANSMISSION RANGE SWITCH REPLACEMENT**), then go to step 30.

9. Adjust the shift cable (see **SHIFT CABLE ADJUSTMENT**).
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Start the engine, run the vehicle with the shift lever in D until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

YES -Go to step 15.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 12.

15. Shift to D, and check the ATP FWD and ATP D in the DATA LIST with the HDS.

    Are ATP FWD and ATP D ON?

    YES -Go to step 16.

    NO -Go to step 22.

16. Shift to D3, and check the ATP FWD and ATP D3 in the DATA LIST with the HDS.

    Are ATP FWD and ATP D3 ON?

    YES -Go to step 17.

    NO -Go to step 22.

17. Shift to 2, and check the ATP FWD and ATP 2-1 in the DATA LIST with the HDS.

    Are ATP FWD and ATP 2-1 ON?

    YES -Go to step 18.

    NO -Go to step 22.

18. Clear the DTC with the HDS.
19. Start the engine, run the vehicle with the shift lever in D until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
20. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 19, then go to step 21.
21. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Go to step 22.

    NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 19.

22. Turn the ignition switch to LOCK (0).
23. Disconnect the transmission range switch connector.
24. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

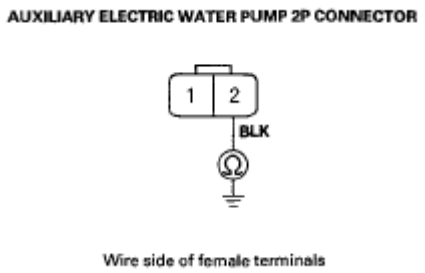


Fig. 80: Checking Continuity Between Transmission Range Switch Connector Terminal No. 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 25.

NO -Repair open in the wire between the transmission range switch and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 30.

25. Turn the ignition switch to ON (II).
26. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.

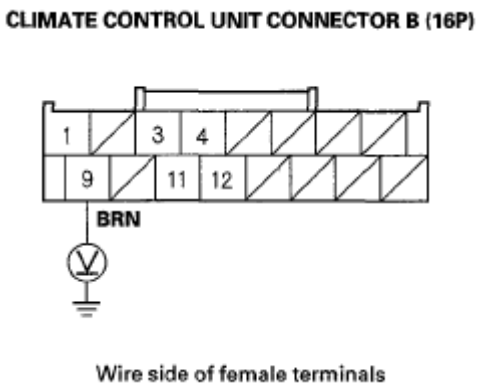


Fig. 81: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 5 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 27.

NO -Repair open in the wire between the transmission range switch and PCM connector terminal B28, then go to step 30.

27. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

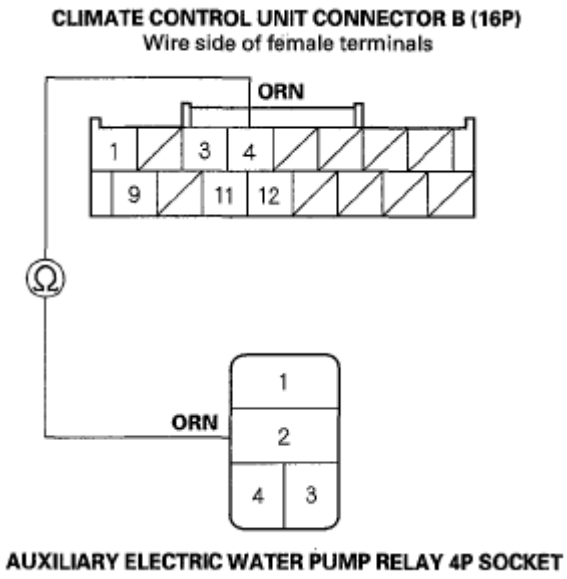


Fig. 82: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 8 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 28.

NO -Repair open in the wire between the transmission range switch and PCM connector terminal B21, then go to step 30.

28. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.

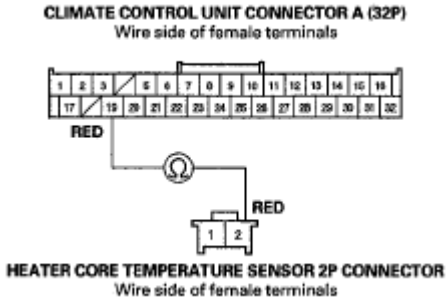


Fig. 83: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 3 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 29.

NO -Repair open in the wire between the transmission range switch and PCM connector terminal B15, then go to step 30.

29. Measure the voltage between transmission range switch connector terminals No. 9 and No. 10.

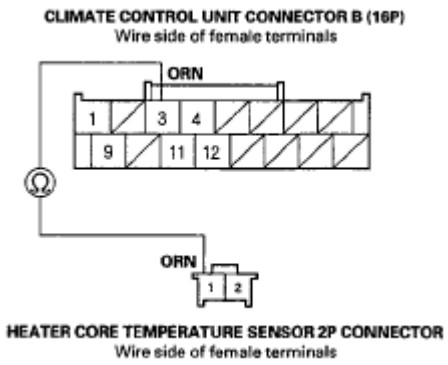


Fig. 84: Measuring Voltage Between Transmission Range Switch Connector Terminals No. 9 And No. 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 37.

NO -Repair open in the wire between the transmission range switch and PCM connector terminal B16, then go to step 30.

30. Reconnect all connectors.
31. Turn the ignition switch to ON (II).
32. Clear the DTC with the HDS.
33. Start the engine, run the vehicle with the shift lever in D until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.
34. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 33, then go to step 35.
35. Check for DTCs with the HDS.

Is DTC P0706 indicated?

YES -Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

NO -Go to step 36.

36. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 35, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 33.

37. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
38. Start the engine, run the vehicle with the shift lever in D until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.
39. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 38, then go to step 40.
40. Check for DTCs with the HDS.

    Is DTC P0706 indicated?

    YES -Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 38. If the PCM was substituted, go to step 1.

    NO -Go to step 41.

41. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 40, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 38. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 38.

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

   Does the ATF temperature exceed the ambient air temperature?

   YES -Record the ATF temperature. Leave the engine off for at least 30 minutes, then go to step 3.

   NO -Record the ATF temperature. Test the stall speed RPM (see **STALL SPEED TEST**) three times, then go to step 3.

3. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

Did the ATF temperature change?

YES -Leave the engine off for at least 30 minutes, then go to step 4.

NO -Replace the ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT**), then go to step 6.

4. Check the ECT SENSOR in the DATA LIST with the HDS.

   Does the ECT SENSOR read about the same as the ambient air temperature?

   YES -Go to step 5.

   NO -Leave the engine off until ECT SENSOR reads the same as the ambient air temperature, then go to step 5.

5. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

   Does the ATF temperature read about the same as ECT SENSOR?

   YES -Go to step 12.

   NO -Replace the ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT**), then go to step 6.

6. Clear the DTC with the HDS.
7. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
8. Allow the engine coolant temperature to cool to the ambient air temperature.
9. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 19 mph (31 km/h) for at least 5 minutes.
10. Check for DTCs with the HDS.

    Is DTC P0711 indicated?

    YES -Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO -Go to step 11.

11. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 10, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

12. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
13. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
14. Allow the engine coolant temperature to cool to the ambient air temperature.
15. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 19 mph (31 km/h) for at least 5 minutes.
16. Check for DTCs with the HDS.

    Is DTC P0711 indicated?

    YES -Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 13. If the PCM was substituted, go to step 1.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 13. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for an intermittent short to body ground in the ATFT wire between the ATF temperature sensor and the PCM.

3. Turn the ignition switch to LOCK (0).

4. Disconnect the shift solenoid harness connector.
5. Turn the ignition switch to ON (II).
6. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Is the ATF TEMP SENSOR voltage 0.07 V or less?

   YES -Go to step 7.

   NO -Replace the ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT**), then go to step 12.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (44P).
10. Check for continuity between shift solenoid harness connector terminal No. 6 and body ground.

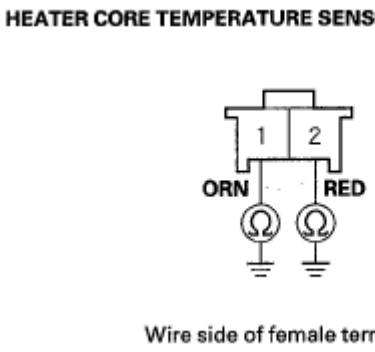


Fig. 85: Checking Continuity Between Shift Solenoid Harness Connector Terminal No. 6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B27 and shift solenoid harness connector terminal No. 6, then go to step 12.

NO -Go to step 11.

11. Check for continuity between shift solenoid harness connector terminal No. 6 and body ground.

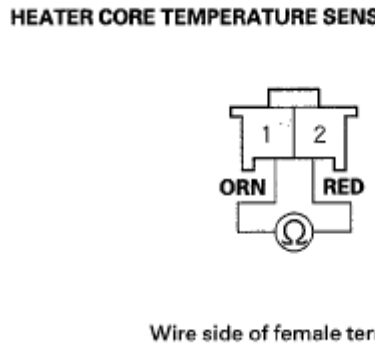


Fig. 86: Checking Continuity Between Shift Solenoid Harness Connector Terminal No. 6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT**), then go to step 12.

NO -Go to step 18.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine with the shift lever in P, and wait for at least 20 seconds.
16. Check for DTCs with the HDS.

    Is DTC P0712 indicated?

    YES -Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
19. Start the engine with the shift lever in P, and wait for at least 20 seconds.
20. Check for DTCs with the HDS.

Is DTC P0712 indicated?

YES -Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Does the ATF TEMP SENSOR voltage exceed 4.93 V?

   YES -Go to step 3.

   NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the ATF temperature sensor and the PCM.

3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid harness connector.
5. Connect shift solenoid harness connector terminals No. 6 and No. 7 with a jumper wire.

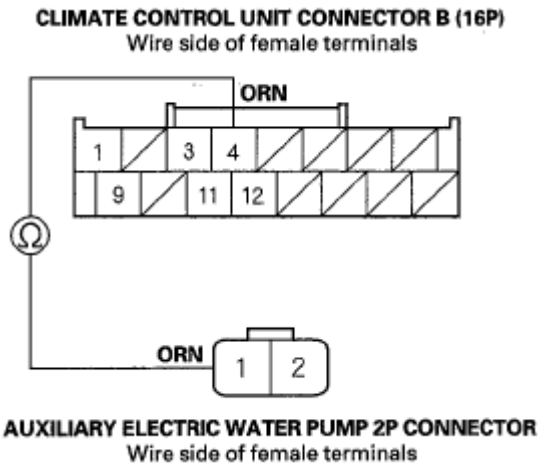


Fig. 87: Connecting Shift Solenoid Harness Connector Terminals 6 And 7 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Turn the ignition switch to ON (II).
7. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

   Does the ATF TEMP SENSOR voltage exceed 4.93 V?

   YES -Go to step 8.

   NO -Replace the ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT**), then go to step 21.

8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the shift solenoid harness connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between shift solenoid harness connector terminal No. 6 and body ground.

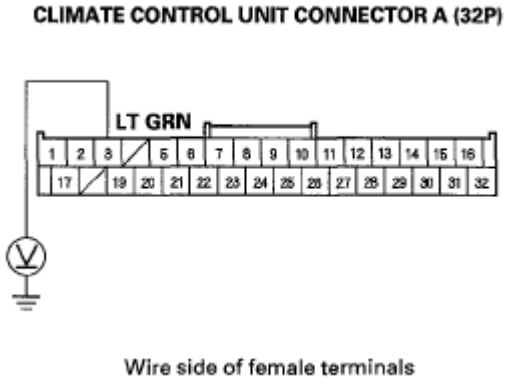


Fig. 88: Measuring Voltage Between Shift Solenoid Harness Connector Terminal 6 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 12.

NO -Go to step 17.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Connect shift solenoid harness connector terminal No. 7 and body ground with a jumper wire.

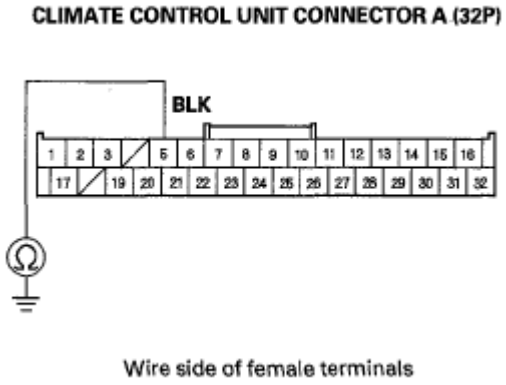


Fig. 89: Connecting Shift Solenoid Harness Connector Terminal 7 And Body Ground With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check for continuity between PCM connector terminal B33 and body ground.

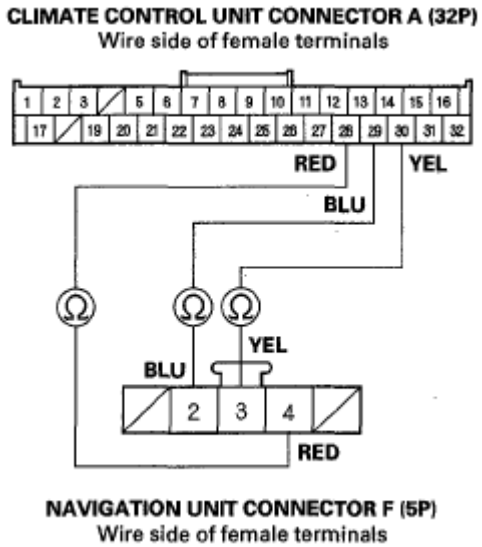


Fig. 90: Checking Continuity Between PCM Connector Terminal B33 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 27.

NO -Repair open in the wire between PCM connector terminal B33 and the ATF temperature sensor, then go to step 21.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector B (44P).
20. Check for continuity between PCM connector terminal B27 and shift solenoid harness connector terminal No. 6.

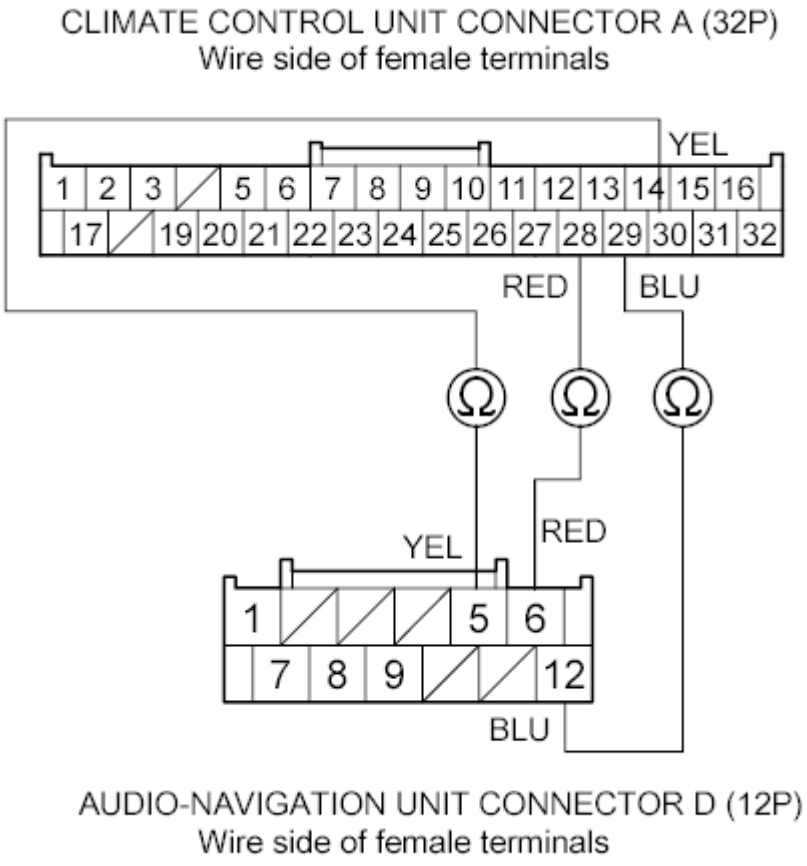


Fig. 91: Checking Continuity Between PCM Connector Terminal B27 And Shift Solenoid Harness Connector Terminal No. 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 27.

NO -Repair open in the wire between PCM connector terminal B27 and the ATF temperature sensor, then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.

24. Start the engine with the shift lever in P, and wait for at least 20 seconds.
25. Check for DTCs with the HDS.

    Is DTC P0713 indicated?

    YES -Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO -Go to step 26.

26. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 25, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

27. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
28. Start the engine with the shift lever in P, and wait for at least 20 seconds.
29. Check for DTCs with the HDS.

    Is DTC P0713 indicated?

    YES -Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 28. If the PCM was substituted, go to step 1.

    NO -Go to step 30.

30. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 29, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 28. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 28.

DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit; DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check for proper input shaft (mainshaft) speed sensor installation (see **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT**).
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
5. Test-drive the vehicle with the shift lever in D, and keep the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 7.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C40 and body ground, and between terminal C44 and body ground.

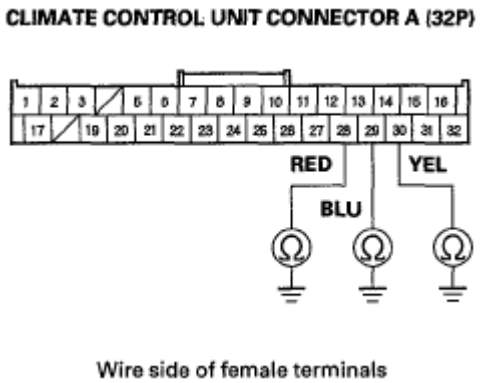


Fig. 92: Checking Continuity Between PCM Connector Terminal C40 And C44 Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 11.

NO -Repair open in the wires between PCM connector terminals C40, C44, and ground (G101) (see**CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 32.

11. Connect PCM connector C (44P).
12. Disconnect the input shaft (mainshaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

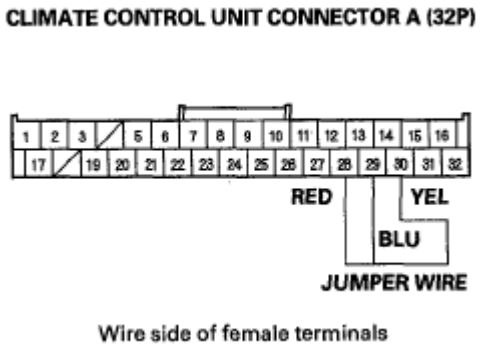


Fig. 93: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 18.

NO -Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Disconnect PCM connector B (44P).
17. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.

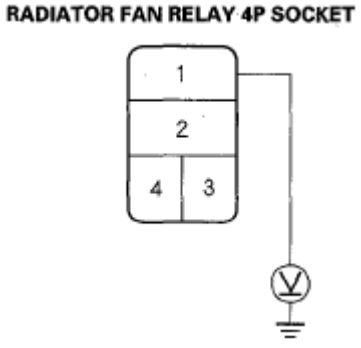


Fig. 94: Checking Continuity Between PCM Connector Terminal B18 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 20.

NO -Repair open in the wire between PCM connector terminal B18 and the input shaft {mainshaft) speed sensor, then go to step 32.

18. Turn the ignition switch to LOCK (0).
19. Disconnect PCM connector B (44P).
20. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

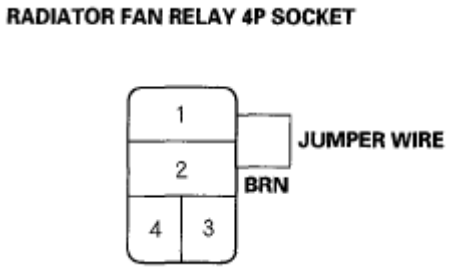


Fig. 95: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 32.

NO -Go to step 21.

21. Check for continuity between PCM connector, terminal B33 and input shaft (mainshaft) speed sensor connector terminal No. 3.

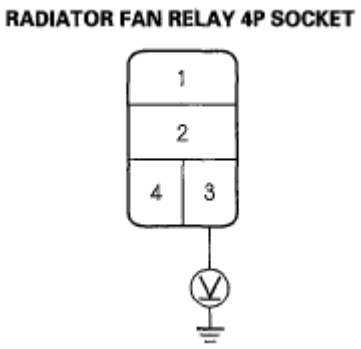


Fig. 96: Checking Continuity Between PCM Connector, Terminal B33 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between PCM connector terminal B33 and the input shaft (mainshaft) speed sensor, then go to step 32.

22. Connect PCM connector B (44P).
23. Turn the ignition switch to ON (II).
24. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.

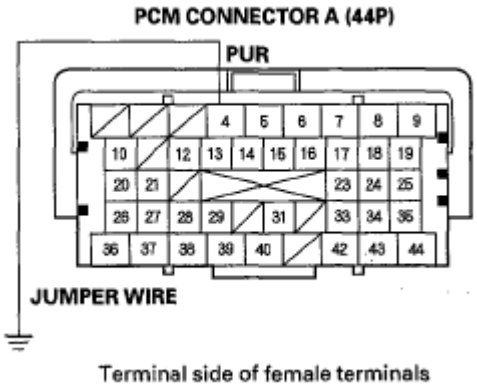


Fig. 97: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminals 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 28.

NO -Go to step 25.

25. Turn the ignition switch to LOCK (0).
26. Disconnect PCM connector B (44P).
27. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.

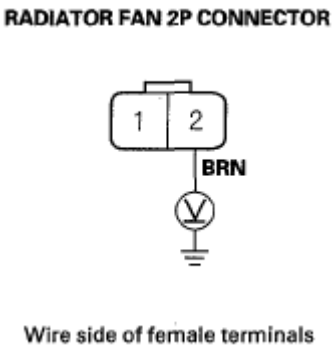


Fig. 98: Checking Continuity Between PCM Connector Terminal B17 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 38.

NO -Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 32.

28. Connect the input shaft (mainshaft) speed sensor connector.
29. Clear the DTC with the HDS.
30. Test-drive the vehicle with the shift lever in D, and keep the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down and stop the wheels.
31. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

Does the HDS indicate FAILED?

YES -Replace the input shaft (mainshaft) speed sensor (see **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT**), then go to step 32.

NO -Go to step 38.

32. Reconnect all connectors.
33. Turn the ignition switch to ON (II).
34. Clear the DTC with the HDS.
35. Test-drive the vehicle with the shift lever in D, and keep the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slowdown and stop the wheels.
36. Check for DTCs with the HDS.

Is DTC P0716 or P0717 indicated?

YES -Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

NO -Go to step 37.

37. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 36, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 35.

38. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).

39. Test-drive the vehicle with the shift lever in D, and keep the vehicle at speeds over 12 mph (20 km/h) for more than 10 seconds. Slow down and stop the wheels.
40. Check for DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES -Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 39. If the PCM was substituted, go to step 1.

    NO -Go to step 41.

41. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 40, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 39. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 39.

DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
4. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 3, then go to step 5.
5. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Go to step 6.

    NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES -Go to step 8.

   NO -Repair the connector terminals, then go to step 8.

8. Connect the input shaft (mainshaft) speed sensor connector.
9. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Go to step 12.

    NO -If the HDS indicates PASSED, troubleshooting is complete. If the HDS indicates NOT COMPLETED, go to step 9.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C40 and body ground, and between terminal C44 and body ground.

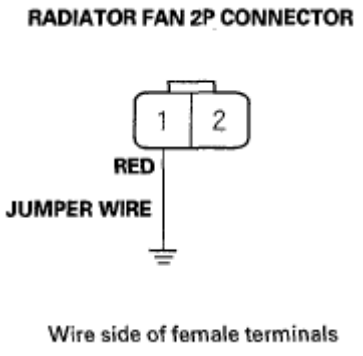


Fig. 99: Checking Continuity Between PCM Connector Terminal C40 And C44 Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 16.

NO -Repair open in the wires between PCM connector terminals C40, C44, and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 32.

16. Connect PCM connector C (44P).
17. Disconnect the input shaft (mainshaft) speed sensor connector.
18. Turn the ignition switch to ON (II).
19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

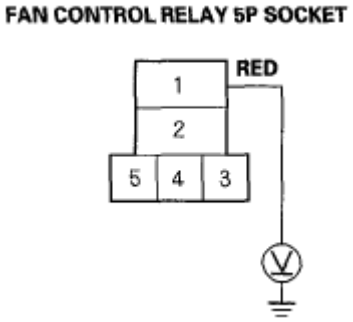


Fig. 100: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 20.

NO -Go to step 29.

20. Turn the ignition switch to LOCK (0).
21. Disconnect PCM connector B (44P).
22. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

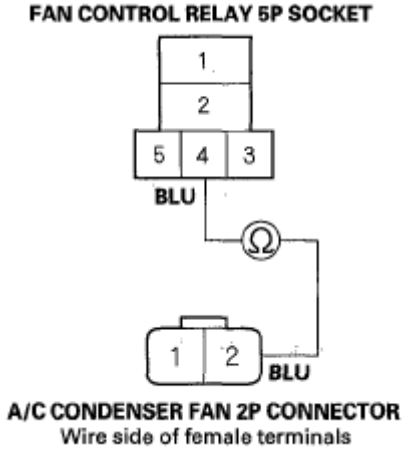


Fig. 101: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 32.

NO -Go to step 23.

23. Connect PCM connector B (44P).
24. Turn the ignition switch to ON (II).
25. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

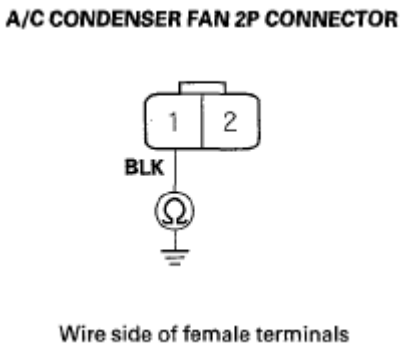


Fig. 102: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Replace the input shaft (mainshaft) speed sensor (see **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT**), then go to step 32.

NO -Go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Disconnect PCM connector B (44P).
28. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.

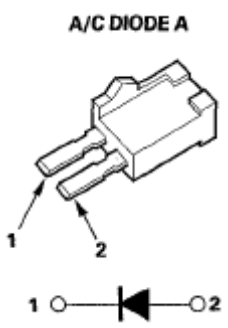


Fig. 103: Checking Continuity Between PCM Connector Terminal B17 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 39.

NO -Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 32.

29. Turn the ignition switch to LOCK (0).
30. Disconnect PCM connector B (44P).
31. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.

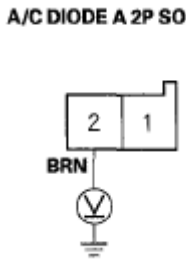


Fig. 104: Checking Continuity Between PCM Connector Terminal B18 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 32.

NO -Repair open in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor, then go to step 32.

32. Reconnect all connectors.
33. Turn the ignition switch to ON (II).
34. Clear the DTC with the HDS.
35. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
36. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 35, then go to step 37.
37. Check for DTCs with the HDS.

Is DTC P0718 indicated?

YES -Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

NO -Go to step 38.

38. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 37, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 35.

39. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
40. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
41. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 40, then go to step 42.
42. Check for DTCs with the HDS.

    Is DTC P0718 indicated?

    YES -Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 40. If the PCM was substituted, go to step 1.

    NO -Go to step 43.

43. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 42, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 40. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 40.

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit; DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for proper output shaft (countershaft) speed sensor installation (see **OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT**).

4. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
5. Test-drive the vehicle with the shift lever in D and the engine speed 2,000 rpm or higher, for at least 10 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 7.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C40 and body ground, and between terminal C44 and body ground.

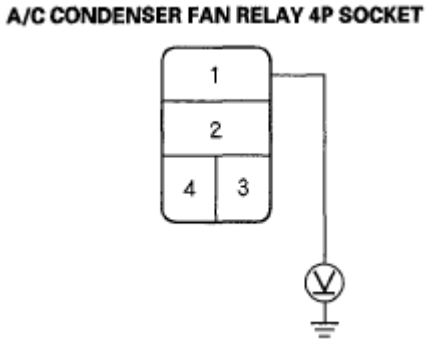


Fig. 105: Checking Continuity Between PCM Connector Terminal C40 And C44 Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 11.

NO -Repair open in the wires between PCM connector terminals C40, C44, and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair a poor ground (G101), then go to step 32.

11. Connect PCM connector C (44P).
12. Disconnect the output shaft (countershaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

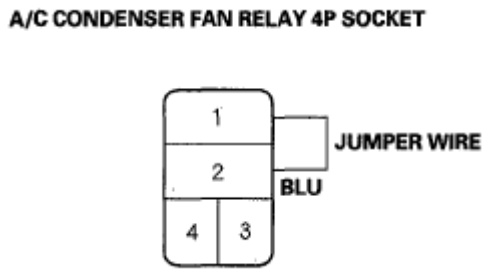


Fig. 106: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 18.

NO -Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Disconnect PCM connector C (44P).
17. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.

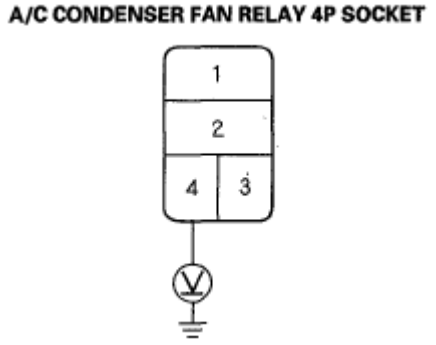


Fig. 107: Checking Continuity Between PCM Connector Terminal C13 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 18.

NO -Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 32.

18. Turn the ignition switch to LOCK (0).
19. Disconnect PCM connector C (44P).
20. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

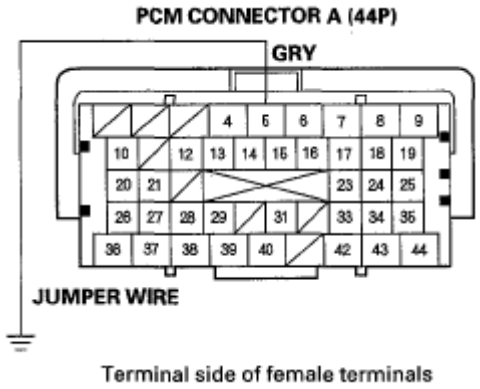


Fig. 108: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 32.

NO -Go to step 21.

21. Check for continuity between PCM connector terminal C14 and output shaft (countershaft) speed sensor connector terminal No. 3.

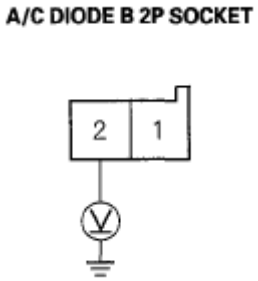


Fig. 109: Checking Continuity Between PCM Connector Terminal C14 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal C14, then go to step 32.

22. Connect PCM connector C (44P).
23. Turn the ignition switch to ON (II).
24. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

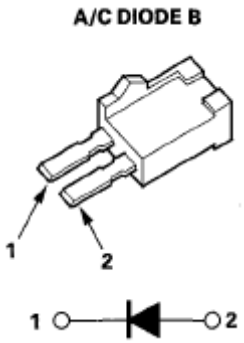


Fig. 110: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminals 2 And 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 28.

NO -Go to step 25.

25. Turn the ignition switch to LOCK (0).
26. Disconnect PCM connector C (44P).
27. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.

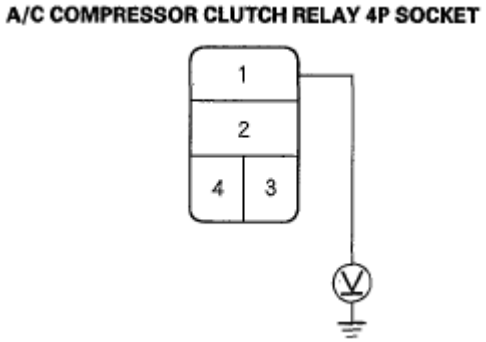


Fig. 111: Checking Continuity Between PCM Connector Terminal C43 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 38.

NO -Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 32.

28. Connect the output shaft (countershaft) speed sensor connector.
29. Clear the DTC with the HDS.
30. Test-drive the vehicle with the shift lever in D and the engine speed 2,000 rpm or higher, for at least

10 seconds. Slow down and stop the wheels.

31. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Replace the output shaft (countershaft) speed sensor (see **OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT**), then go to step 32.

    NO -Go to step 38.

32. Reconnect all connectors.
33. Turn the ignition switch to ON (II).
34. Clear the DTC with the HDS.
35. Test-drive the vehicle with the shift lever in D at speeds over 12 mph (20 km/h), for at least 10 seconds. Slow down and stop the wheels.
36. Check for DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES -Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO -Go to step 37.

37. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 36, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 35.

38. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
39. Test-drive the vehicle with the shift lever in D at speeds over 12 mph (20 km/h), for at least 10 seconds. Slow down and stop the wheels.
40. Check for DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES -Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 39. If the PCM was substituted, go to step 1.

    NO -Go to step 41.

41. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 40, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 39. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 39.

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D with engine speed 2,000 rpm or higher, and let the transmission shift through all five gears.
4. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 3, then go to step 5.
5. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 6.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES -Go to step 8.

   NO -Repair the connector terminals, then go to step 8.

8. Connect the output shaft (countershaft) speed sensor connector.
9. Test-drive the vehicle with the shift lever in D with engine speed 2,000 rpm or higher, and let the

transmission shift through all five gears.

10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Go to step 12.

    NO -If the HDS indicates PASSED, troubleshooting is complete. If the HDS indicates NOT COMPLETED, go to step 9.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C40 and body ground, and between terminal C44 and body ground.

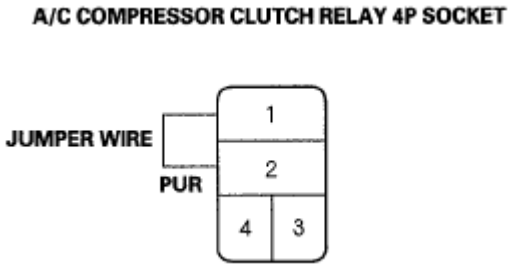


Fig. 112: Checking Continuity Between PCM Connector Terminal C40 And C44 Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 16.

NO -Repair open in the wires between PCM connector terminals C40, C44, and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 32.

16. Connect PCM connector C (44P).
17. Disconnect the output shaft (countershaft) speed sensor connector.
18. Turn the ignition switch to ON (II).
19. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

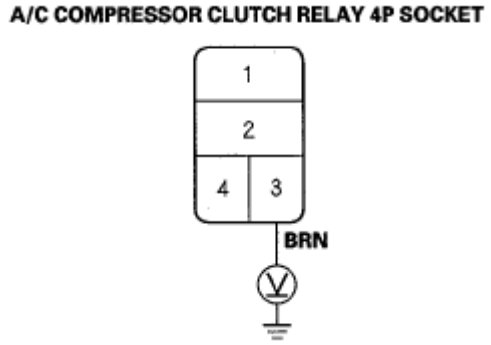


Fig. 113: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 20.

NO -Go to step 29.

20. Turn the ignition switch to LOCK (0).
21. Disconnect PCM connector C (44P).
22. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

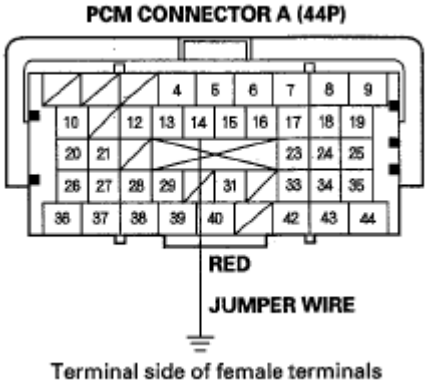


Fig. 114: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 32.

NO -Go to step 23.

23. Connect PCM connector C (44P).
24. Turn the ignition switch to ON (II).

25. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

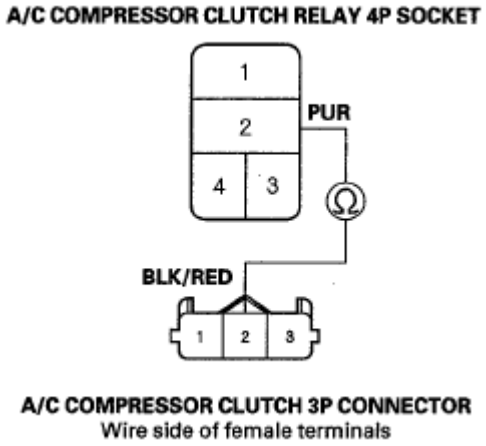


Fig. 115: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Replace the output shaft (countershaft) speed sensor (see **OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT**), then go to step 32.

NO -Go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Disconnect PCM connector C (44P).
28. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.

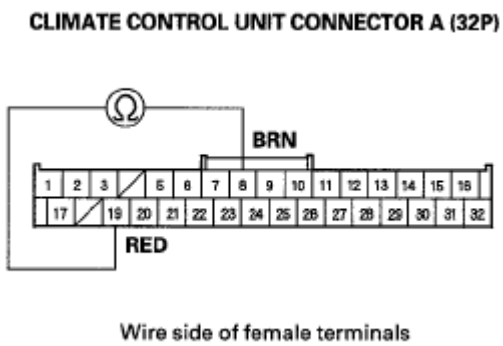


Fig. 116: Checking Continuity Between PCM Connector Terminal C43 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 39.

NO -Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 32.

29. Turn the ignition switch to LOCK (0).
30. Disconnect PCM connector C (44P).
31. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.

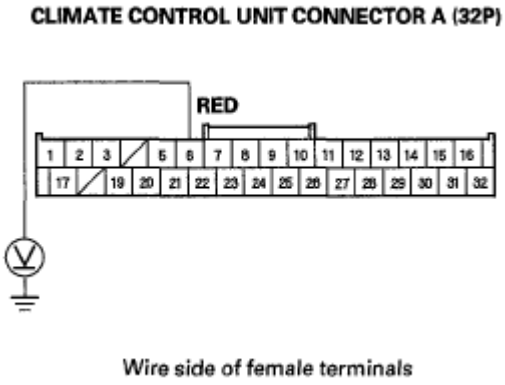


Fig. 117: Checking Continuity Between PCM Connector Terminal C13 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 32.

NO -Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 32.

32. Reconnect all connectors.
33. Turn the ignition switch to ON (II).
34. Clear the DTC with the HDS.
35. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
36. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 35, then go to step 37.
37. Check for DTCs with the HDS.

Is DTC P0723 indicated?

YES -Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

NO -Go to step 38.

38. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 37, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 35.

39. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
40. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears at speeds over 12 mph (20 km/h).
41. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 40, then go to step 42.
42. Check for DTCs with the HDS.

    Is DTC P0723 indicated?

    YES -Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 40. If the PCM was substituted, go to step 1.

    NO -Go to step 43.

43. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 42, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 40. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 40.

DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 13.

NO -Replace the ATF (see step 5), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limit?

   YES -Go to step 5.

   NO -Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 13.

5. Measure the 1st clutch pressure (see **PRESSURE TEST**).

   Is the 1st clutch pressure within service limits?

   YES -Go to step 6.

   NO -Shift valves B and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 13.

6. Test stall speed with the shift lever in 1 (see **STALL SPEED TEST**).

   Is the stall speed within service limits?

   YES -Go to step 7.

   NO -Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 13.

7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 1st gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Check for DTCs with the HDS.

    Is DTC P0731 indicated?

    YES -Repair the 1st clutch, or replace the transmission, then go to step 13.

    NO -Go to step 12.

12. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 11, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, repair the 1st clutch, or replace the transmission. If the HDS

indicates NOT COMPLETED, go to step 9.

13. Test-drive the vehicle in 1st gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
14. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 13, then go to step 15.
15. Check for DTCs with the HDS.

    Is DTC P0731 indicated?

    YES -Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO -Go to step 16.

16. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and Any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

    Does the strainer have metal debris or excessive clutch material?

    YES -Replace the transmission, then go to step 13.

    NO -Replace the ATF (see step 5), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

    Is the line pressure within service limit?

    YES -Go to step 5.

    NO -Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 13.

5. Measure the 2nd clutch pressure (see **PRESSURE TEST**).

   Is the 2nd clutch pressure within service limits?

   YES -Go to step 6.

   NO -Shift valves A and 6 are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 13.

6. Test stall speed with the shift lever in 2 (see **STALL SPEED TEST**).

   Is the stall speed within service limits?

   YES -Go to step 7.

   NO -Shift valve C is stuck. Repair the shift valve C and the hydraulic circuit, or replace the transmission, then go to step 13.

7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 2nd gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Check for DTCs with the HDS.

    Is DTC P0732 indicated?

    YES -Repair the 2nd clutch, or replace the transmission, then go to step 13.

    NO -Go to step 12.

12. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 11, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, repair the 2nd clutch, or replace the transmission. If the HDS indicates NOT COMPLETED, go to step 9.

13. Test-drive the vehicle in 2nd gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
14. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 13, then go to step 15.
15. Check for DTCs with the HDS.

    Is DTC P0732 indicated?

    YES -Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and

the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

NO -Go to step 16.

16. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

   YES -Go to step 5.

   NO -Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.

5. Measure the 3rd clutch pressure (see **PRESSURE TEST**).

   Is the 3rd clutch pressure within service limits?

   YES -Go to step 6.

   NO -Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

6. Turn the ignition switch to ON (II).

7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 3rd gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
9. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 8, then go to step 10.
10. Check for DTCs with the HDS.

    Is DTC P0733 indicated?

    YES -Repair the 3rd clutch, or replace the transmission, then go to step 12.

    NO -Go to step 11.

11. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 10, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, repair the 3rd clutch, or replace the transmission. If the HDS indicates NOT COMPLETED, go to step 8.

12. Test-drive the vehicle in 3rd gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0733 indicated?

    YES -Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see

GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

   YES -Go to step 5.

   NO -Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.

5. Measure the 4th clutch pressure (see **PRESSURE TEST**).

   Is the 4th clutch pressure within service limits?

   YES -Go to step 6.

   NO -Shift valves A, B, C, and/or D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 4th gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
9. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 8, then go to step 10.
10. Check for DTCs with the HDS.

    Is DTC P0734 indicated?

    YES -Repair the 4th clutch, or replace the transmission, then go to step 12.

    NO -Go to step 11.

11. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 10, go to the

INDICATED DTC'S TROUBLESHOOTING.

NO -If the HDS indicates FAILED, repair the 4th clutch, or replace the transmission. If the HDS indicates NOT COMPLETED, go to step 8.

12. Test-drive the vehicle in 4th gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0734 indicated?

    YES -Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST**).

   Is the line pressure within service limits?

YES -Go to step 5.

NO -Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.

5. Measure the 5th clutch pressure (see **PRESSURE TEST**).

   Is the 5th clutch pressure within service limits?

   YES -Go to step 6.

   NO -Shift valves A, B, C, and/or D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 5th gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
9. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 8, then go to step 10.
10. Check for DTCs with the HDS.

    Is DTC P0735 indicated?

    YES -Repair the 5th clutch, or replace the transmission, then go to step 12.

    NO -Go to step 11.

11. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 10, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, repair the 5th clutch, or replace the transmission. If the HDS indicates NOT COMPLETED, go to step 8.

12. Test-drive the vehicle in 5th gear with the shift lever in D at speeds over 7 mph (12 km/h) and the engine speed above 1,000 rpm, for at least 12 seconds.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0735 indicated?

    YES -Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 15.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check that shift solenoid valve D operates with the HDS.

   Is a clicking sound heard?

   YES -Go to step 7.

   NO -Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 12.

7. Run the engine until the ECT SENSOR temperature reaches 176 °F (80 °C).
8. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES -Go to step 9.

   NO -Follow the instructions indicated on the HDS by the test result. Go to step 12 if any part is replaced.

9. Test-drive the vehicle on a level road with a steady throttle at 60 mph (96 km/h) for at least 20 seconds.
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES -Repair the faulty torque converter clutch mechanism, the torque converter clutch hydraulic circuit, the lock-up shift valve, or the lock-up control valve, or replace the transmission, then go to step 15.

    NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 9.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Test-drive the vehicle on a level road with a steady throttle at 60 mph (96 km/h) for at least 20 seconds, or test-drive the vehicle for several minutes under the same condition as those indicated by the freeze data.
16. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 15, then go to step 17.
17. Check for DTCs with the HDS.

    Is DTC P0741 indicated?

    YES -Go to step 5.

    NO -Go to step 18.

18. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 17, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 15.

DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch

material.

Does the strainer have metal debris or excessive clutch material?

YES -Replace the transmission, then go to step 14.

NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears, then slow down to a stop. Shift to R, and drive the vehicle for at least 2 seconds.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.
8. Monitor the OBD STATUS for P0746 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 9.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.
10. Select Clutch Pressure Control (Linear) Solenoid valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

    Does the HDS indicate NORMAL?

    YES -Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve A with the HDS.

    NO -Follow the instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, go to step 11. If any part is replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST**).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES -Repair the hydraulic system related with shift valve A, or replace the transmission, then go to step 14.

    NO -Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12.

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears, then slow down to a stop. Shift to R, and drive the vehicle for at least 2 seconds.

15. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 14, then go to step 16.
16. Check for DTCs with the HDS.

    Is DTC P0746 indicated?

    YES -Go to step 9.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0746 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 9. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 14.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.
8. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 9.

   NO -lf the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.
10. Select Clutch Pressure Control (Linear) Solenoid valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

    Does the HDS indicate NORMAL?

    YES -Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve A with the HDS.

    NO -Follow the instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, go to step 11. If any part is replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST**).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES -Repair the hydraulic system related with shift valve A, or replace the transmission, then go to step 14.

    NO -Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12.

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 14, then go to step 16.
16. Check for DTCs with the HDS.

    Is DTC P0747 indicated?

    YES -Go to step 9.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 9. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0751: Shift Solenoid Valve A Stuck OFF; DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see

GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES -Go to step 7.

   NO -Replace shift solenoid valve A (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 10.

7. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair shift valve A, or replace the transmission, then go to step 12.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 7.

10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0751 or P0752 indicated?

    YES -Go to step 5.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0756: Shift Solenoid Valve B Stuck OFF; DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES -Go to step 7.

   NO -Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 10.

7. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair shift valve B, or replace the transmission, then go to step 12.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 7.

10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0756 or P0757 indicated?

    YES -Go to step 5.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0761: Shift Solenoid Valve C Stuck OFF; DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

    Does the strainer have metal debris or excessive clutch material?

    YES -Replace the transmission, then go to step 12.

    NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES -Go to step 7.

    NO -Replace shift solenoid valve C (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID**

WIRE HARNESS REPLACEMENT), then go to step 10.

7. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair shift valve C, or replace the transmission, then go to step 12.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 7.

10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0761 or P0762 indicated?

    YES -Go to step 5.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0766: Shift Solenoid Valve D Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

YES -Replace the transmission, then go to step 12.

NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES -Go to step 7.

   NO -Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 10.

7. Start the engine, and shift to N. Then shift to R and drive the vehicle for at least 2 seconds. Slow the vehicle down to a stop. Then drive the vehicle in D, and let the transmission shift through all five gears.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Monitor the OBD STATUS for P0766 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair shift valve D, or replace the transmission, then go to step 12.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 7.

10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Start the engine, and shift to N. Then shift to R and drive the vehicle for at least 2 seconds. Slow the vehicle down to a stop. Then drive the vehicle in D, and let the transmission shift through all five gears.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

    Is DTC P0766 indicated?

    YES -Go to step 5.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0766 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0767: Shift Solenoid Valve D Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 12.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES -Go to step 7.

   NO -Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 10.

7. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears, then slow down to a stop. Shift to R, and drive the vehicle for at least 3 seconds.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Monitor the OBD STATUS for P0767 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair shift valve D, or replace the transmission, then go to step 12.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 7.

10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears, then slow down to a stop. Shift to R, and drive the vehicle for at least 3 seconds.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.

14. Check for DTCs with the HDS.

    Is DTC P0767 indicated?

    YES -Go to step 5.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P0767 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF; DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 14.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.
8. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 9.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.
10. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

    Does the HDS indicate NORMAL?

    YES -Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve B with the HDS.

    NO -Follow the instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, go to step 11. If any part is replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B TEST**).

    Does A/T clutch pressure control solenoid valve B work properly?

    YES -Repair the hydraulic system related with shift valve B, or replace the transmission, then go to step 14.

    NO -Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 12.

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 14, then go to step 16.
16. Check for DTCs with the HDS.

    Is DTC P0776 or P0777 indicated?

    YES -Go to step 9.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 9. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF; DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot

with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 14.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.
8. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 9.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.
10. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

    Does the HDS indicate NORMAL?

    YES -Intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, retest A/T clutch pressure control solenoid valve C with the HDS.

    NO -Follow the instructions indicated on the HDS by the test result, If the HDS has not determined the cause of the failure, go to step 11. If any part is replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C TEST**).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES -Repair the hydraulic system related with shift valve C, or replace the transmission, then go to step 14.

    NO -Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE**

CONTROL SOLENOID VALVE B AND C REPLACEMENT), then go to step 12.

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 14, then go to step 16.
16. Check for DTCs with the HDS.

    Is DTC P0796 or P0797 indicated?

    YES -Go to step 9.

    NO -Go to step 17.

17. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 9. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0812: Open in Transmission Range Switch ATP R Switch Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Shift to R, and check the A/T R SWITCH in the DATA LIST with the HDS.

   Is the A/T R SWITCH ON?

   YES -Intermittent failure, the system is OK at this time.

   NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Disconnect the transmission range switch connector.
5. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

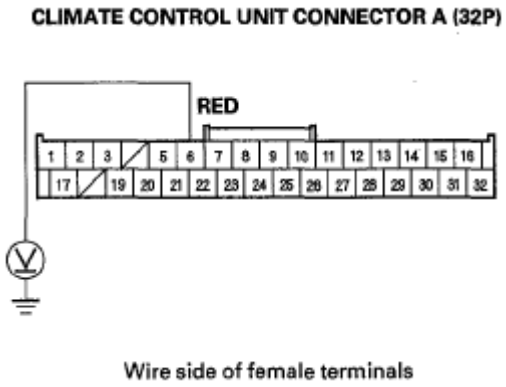


Fig. 118: Checking Continuity Between Transmission Range Switch Connector Terminal 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 6.

NO -Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 9.

6. Turn the ignition switch to ON (II).
7. Measure the voltage between transmission range switch connector terminals No. 7 and No. 10.

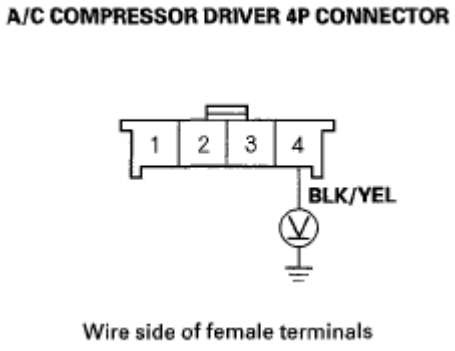


Fig. 119: Measuring Voltage Between Transmission Range Switch Connector Terminals 7 And 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 8.

NO -Repair open in the wire between PCM connector terminal B14 and the transmission range switch, then go to step 9.

8. Check for continuity between transmission range switch connector terminals No. 7 and No. 10 while the shift lever is in R, and when the shift lever is shifted to any position other than R.

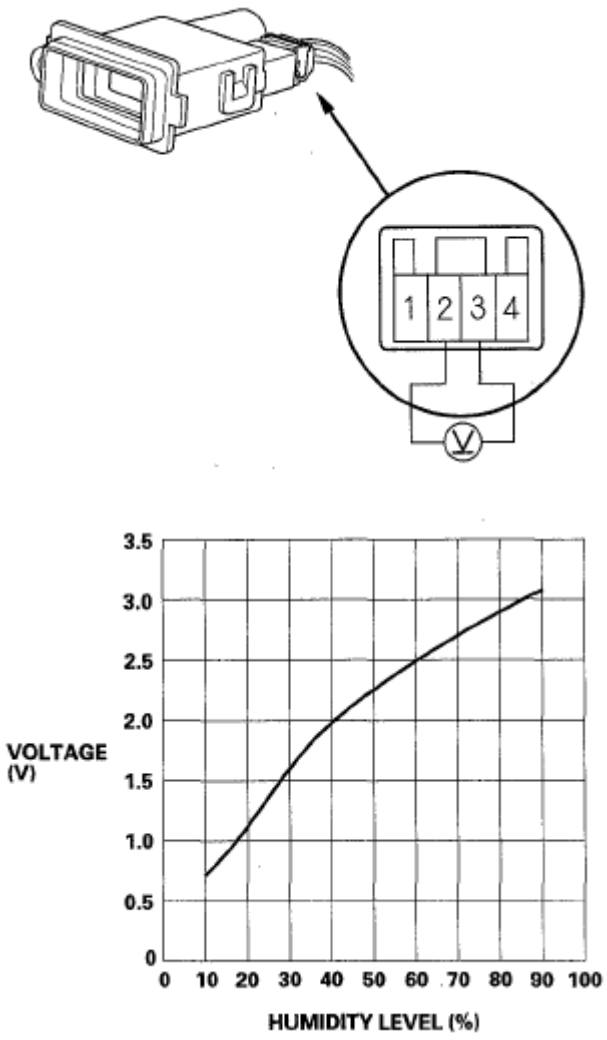


Fig. 120: Checking Continuity Between Transmission Range Switch Connector Terminals 7 And 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity while the shift lever is in R, and no continuity when the shift lever is shifted to any position other than R?

YES -Go to step 16.

NO -Replace the transmission range switch (see **TRANSMISSION RANGE SWITCH REPLACEMENT**), then go to step 9.

9. Reconnect all connectors.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with to the HDS.
12. Test-drive the vehicle with the shift lever in R at speeds below 3 mph (5 km/h) for at least 2 seconds. Then increase the speed and drive over 3 mph (5 km/h) for at least 2 seconds.
13. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 12, then go to step 14.
14. Check for DTCs with the HDS.

Is DTC P0812 indicated?

YES -Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

NO -Go to step 15.

15. Monitor the OBD STATUS for P0812 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 12.

16. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
17. Test-drive the vehicle with the shift lever in R at speeds below 3 mph (5 km/h) for at least 2 seconds. Then increase the speed and drive over 3 mph (5 km/h) for at least 2 seconds.
18. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 17, then go to step 19.
19. Check for DTCs with the HDS.

    Is DTC P0812 indicated?

    YES -Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 17. If the PCM was substituted, go to step 1.

    NO -Go to step 20.

20. Monitor the OBD STATUS for P0812 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 19, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 17. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 17.

DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check the 2nd PRESSURE SWITCH in the DATA LIST with the HDS when not in 2nd gear.

   Is the 2nd PRESSURE SWITCH OFF?

   YES -Go to step 4.

   NO -Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Test-drive the vehicle in 3rd gear with the shift lever in D, for at least 2 seconds.
6. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 7.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.

7. Turn the ignition switch to LOCK (0).
8. Disconnect the 2nd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Check the 2nd PRESSURE SWITCH in the DATA LIST with the HDS.

    Is the 2nd PRESSURE SWITCH OFF?

    YES -Replace the 2nd clutch transmission fluid pressure switch (see **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 15.

    NO -Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B8 and body ground.

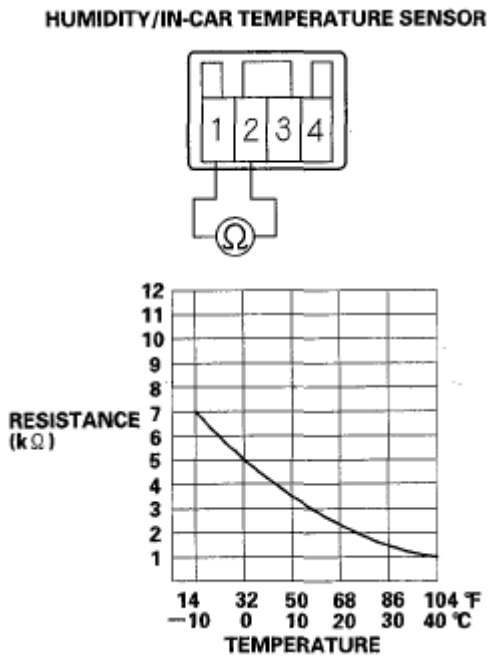


Fig. 121: Checking Continuity Between PCM Connector Terminal B8 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 15.

NO -Go to step 22.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Test-drive the vehicle with the shift lever in 2 for at least 2 seconds, then shift to D, and drive in 3rd gear for at least 2 seconds. Then drive in 4th gear for at least 2 seconds.
20. Check for DTCs with the HDS.

    Is DTC P0842 indicated?

    YES -Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the

INDICATED DTC'S TROUBLESHOOTING.

NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
24. Test-drive the vehicle with the shift lever in 2 for at least 2 seconds, then shift to D, and drive in 3rd gear for at least 2 seconds. Then drive in 4th gear for at least 2 seconds.
25. Check for DTCs with the HDS.

    Is DTC P0842 indicated?

    YES -Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 26.

26. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 25, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Shift the shift lever into 2.
5. Check the 2nd PRESSURE SWITCH in the DATA LIST with the HDS.

Is the 2nd PRESSURE SWITCH ON?

YES -Go to step 6.

NO -Go to step 8.

6. Test-drive the vehicle with the shift lever in 2 for at least 2 seconds.
7. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

Does the HDS indicate FAILED?

YES -Go to step 8.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the 2nd clutch transmission fluid pressure switch connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

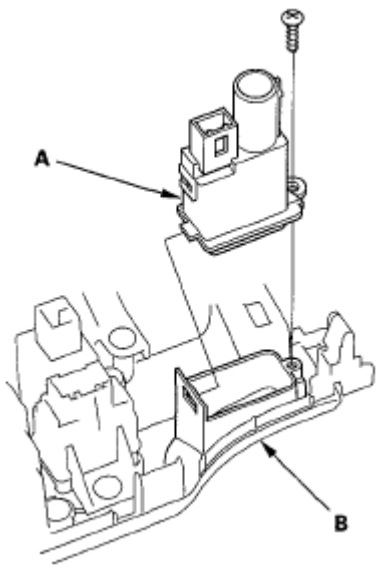


Fig. 122: Measuring Voltage Between 2nd Clutch Transmission Fluid Pressure Switch Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Replace the 2nd clutch transmission fluid pressure switch (see **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 16.

NO -Go to step 12.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch connector terminal.

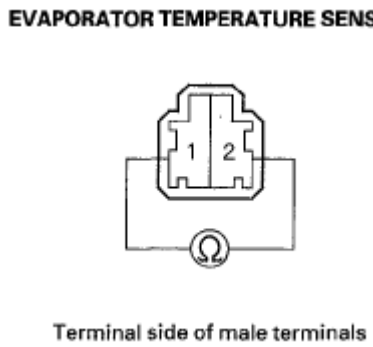


Fig. 123: Checking Continuity Between PCM Terminal B8 And 2nd Clutch Transmission Fluid Pressure Switch Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 23.

NO -Repair open in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Drive the vehicle with the shift lever in 2 for at least 2 seconds, then shift to D, and drive in 4th gear for at least 2 seconds.
21. Check for DTCs with the HDS.

Is DTC P0843 indicated?

YES -Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

NO -Go to step 22.

22. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 21, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

23. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Drive the vehicle with the shift lever in 2 for at least 2 seconds, then shift to D, and drive in 4th gear for at least 2 seconds.
26. Check for DTCs with the HDS.

    Is DTC P0843 indicated?

    YES -Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 24. If the PCM was substituted, go to step 1.

    NO -Go to step 27.

27. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 26, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS when not in 3rd gear.

   Is the 3rd PRESSURE SWITCH OFF?

   YES -Go to step 4.

NO -Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Drive the vehicle in 4th gear with the shift lever in D, for at least 2 seconds.
6. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

Does the HDS indicate FAILED?

YES -Go to step 7.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.

7. Turn the ignition switch to LOCK (0).
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS.

Is the 3rd PRESSURE SWITCH OFF?

YES -Replace the 3rd clutch transmission fluid pressure switch (see **3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 15.

NO -Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B9 and body ground.

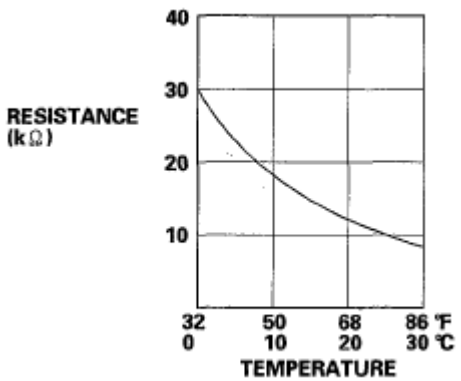


Fig. 124: Checking Continuity Between PCM Connector Terminal B9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B9 and the 3rd clutch

transmission fluid pressure switch, then go to step 15.

NO -Go to step 22.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Drive the vehicle in 3rd gear with the shift lever in D3, for at least 2 seconds. Then shift to D, and drive in 4th gear for at least 2 seconds.
20. Check for DTCs with the HDS.

    Is DTC P0847 indicated?

    YES -Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
24. Drive the vehicle in 3rd gear with the shift lever in D3, for at least 2 seconds. Then shift to D, and drive in 4th gear for at least 2 seconds.
25. Check for DTCs with the HDS.

    Is DTC P0847 indicated?

    YES -Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 26.

26. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 25, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 3rd gear with the shift lever in D3, and check that the SHIFT COMMAND indicates 3rd in the DATA LIST with the HDS.
5. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS.

   Is the 3rd PRESSURE SWITCH ON?

   YES -Go to step 6.

   NO -Go to step 8.

6. Test-drive the vehicle in 3rd gear with the shift lever in D3, for at least 2 seconds.
7. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the 3rd clutch transmission fluid pressure switch connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

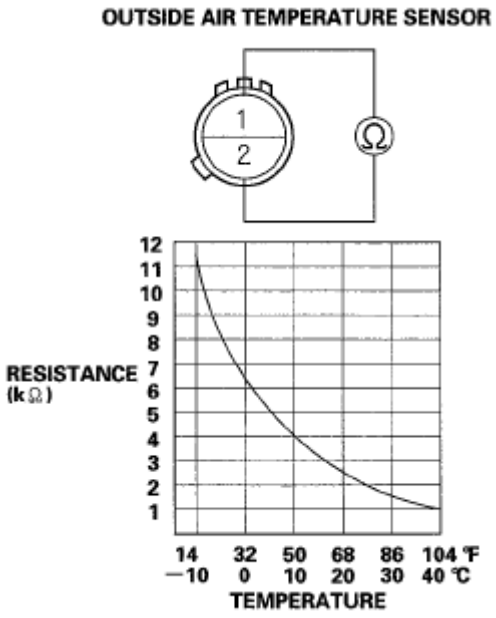


Fig. 125: Checking Voltage Between 3rd Clutch Transmission Fluid Pressure Switch Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Replace the 3rd clutch transmission fluid pressure switch (see **3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**), then go to step 16.

NO -Go to step 12.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between PCM connector terminal B9 and 3rd clutch transmission fluid pressure switch connector terminal.

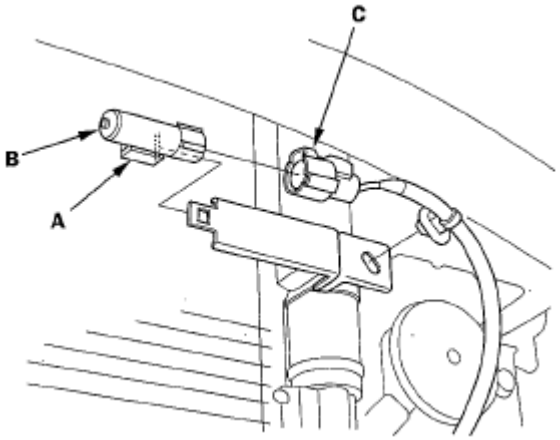


Fig. 126: Checking Continuity Between PCM Terminal B9 And 3rd Clutch Transmission Fluid Pressure Switch Terminal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 23.

NO -Repair open in the wire between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Test-drive the vehicle in 3rd gear with the shift lever in D3, for at least 2 seconds. Then shift to D, and drive in 4th gear for at least 2 seconds.
21. Check for DTCs with the HDS.

    Is DTC P0848 indicated?

    YES -Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO -Go to step 22.

22. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 21, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

23. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 3rd gear with the shift lever in D3, for at least 2 seconds. Then shift to D, and drive in 4th gear for at least 2 seconds.
26. Check for DTCs with the HDS.

    Is DTC P0848 indicated?

    YES -Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 24. If the PCM was substituted, go to step 1.

NO -Go to step 27.

27. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 26, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0962 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES -Go to step 6.

   NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve A at 1.0 A.
7. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

YES -Go to step 8.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

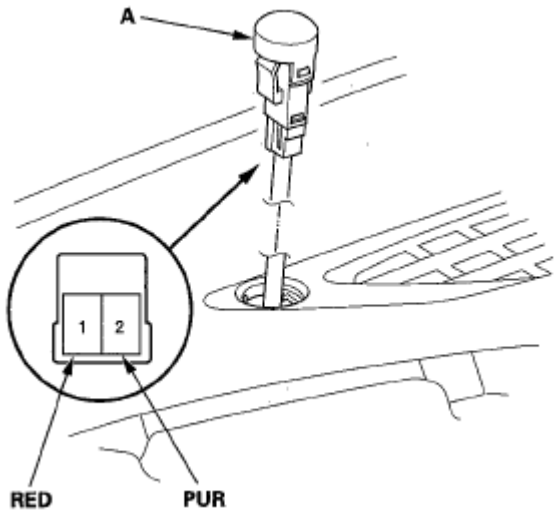


Fig. 127: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

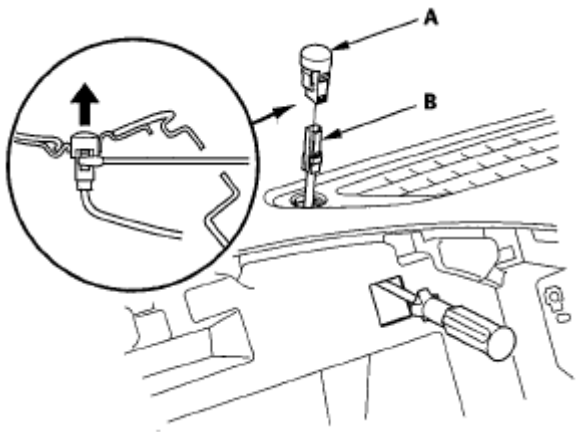


Fig. 128: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 12.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground.

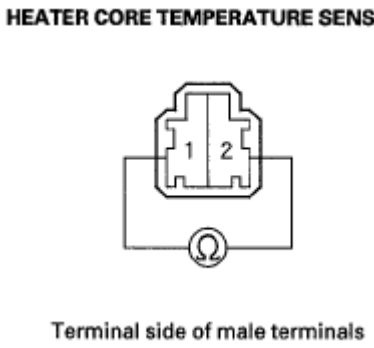


Fig. 129: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground, then go to step 16.

NO -Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminals B35.

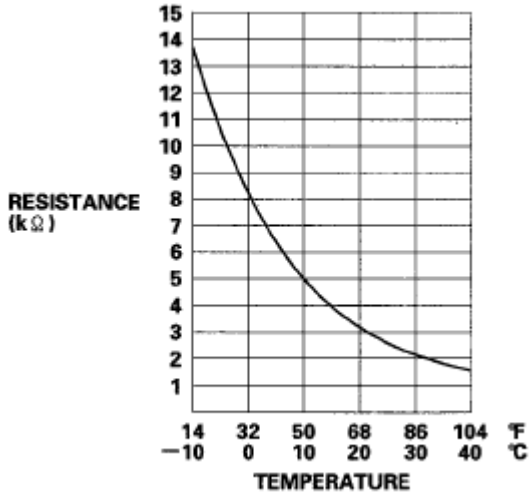


Fig. 130: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Terminal 1 And PCM Terminals B35
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B35, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0962 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, and wait for at least 1 second.
24. Check for DTCs with the HDS.

    Is DTC P0962 indicated?

    YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 25.

25. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0963 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES -Go to step 6.

   NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve A at 0.2 A.
7. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

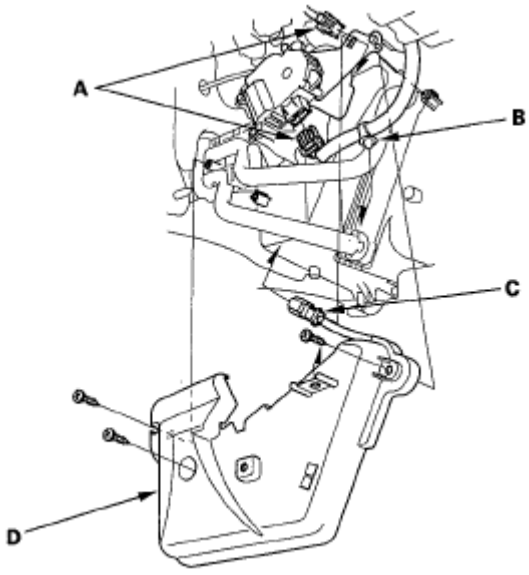


Fig. 131: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve A Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

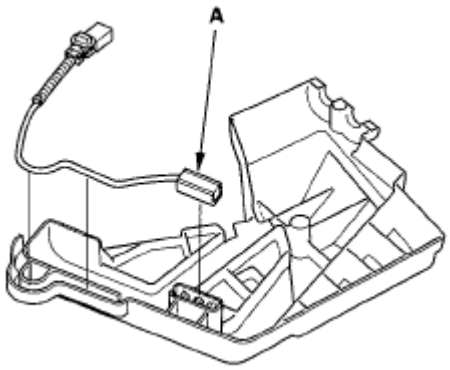


Fig. 132: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 18.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for DTCs with the HDS.

Is DTC P0963 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

NO -Go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

    Is DTC P0963 indicated?

    YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0966 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES -Go to step 6.

   NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve B at 1.0 A.
7. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

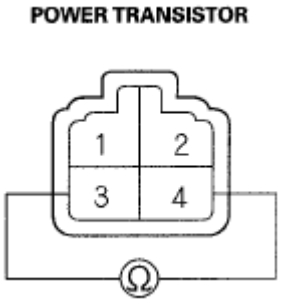


Fig. 133: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve B Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

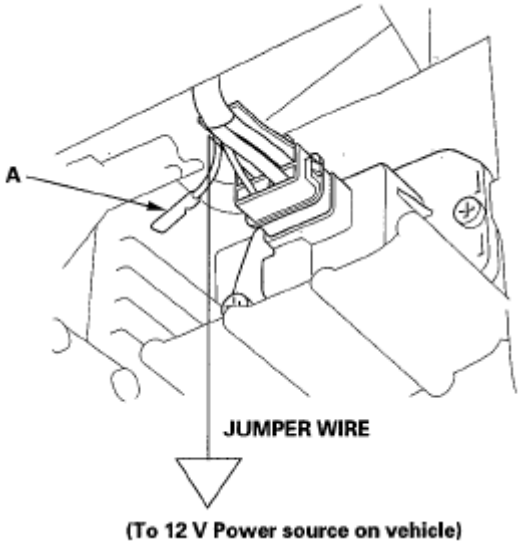


Fig. 134: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 12.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground.

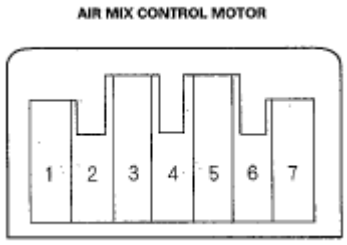


Fig. 135: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground, then go to step 16.

NO -Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminals B44.

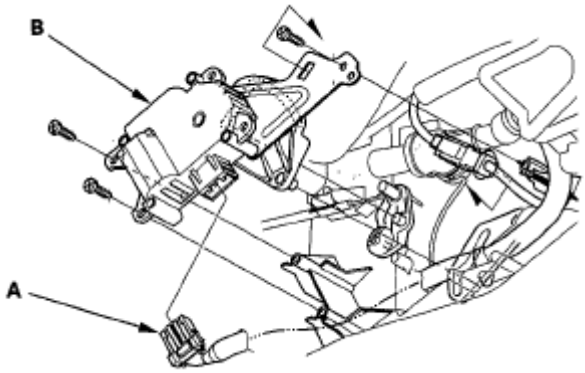


Fig. 136: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Terminal 1 And PCM Terminals B44
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B44, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0966 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve Band the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT

COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, and wait for at least 1 second.
24. Check for DTCs with the HDS.

    Is DTC P0966 indicated?

    YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 25.

25. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

    Is DTC P0967 indicated?

    YES -Go to step 8.

    NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch

pressure control solenoid valve B with the HDS.

Does the HDS indicate NORMAL?

YES -Go to step 6.

NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve B at 0.2 A.
7. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the HDS indicate FAILED?

YES -Go to step 8.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

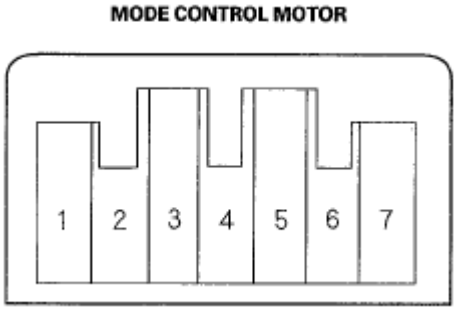


Fig. 137: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve B Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

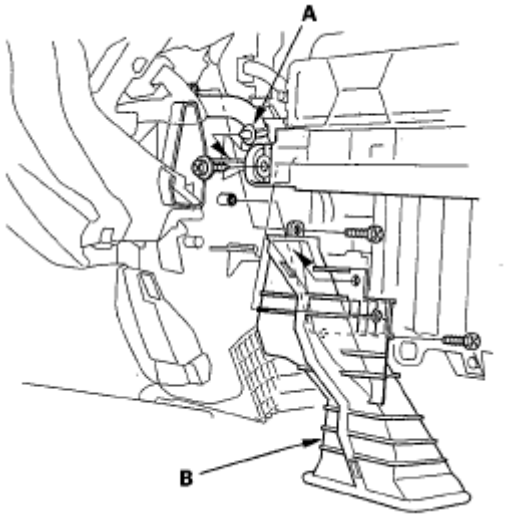


Fig. 138: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 18.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for DTCs with the HDS.

Is DTC P0967 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

NO -Go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT

COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

    Is DTC P0967 indicated?

    YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

    Is DTC P0970 indicated?

    YES -Go to step 8.

    NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch

pressure control solenoid valve C with the HDS.

Does the HDS indicate NORMAL?

YES -Go to step 6.

NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve C at 1.0 A.
7. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the HDS indicate FAILED?

YES -Go to step 8.

NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

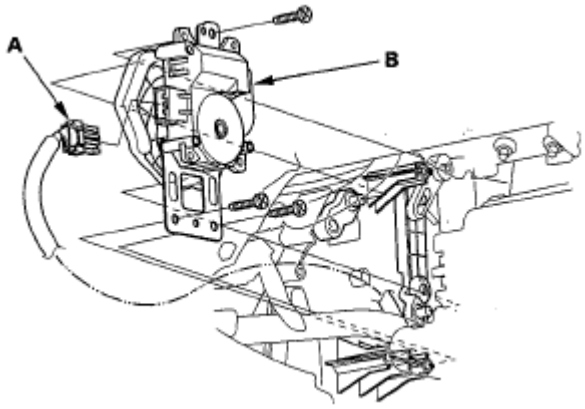


Fig. 139: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve C Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2

and body ground.

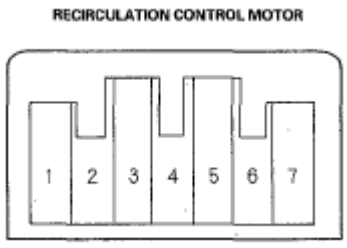


Fig. 140: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 12.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground.

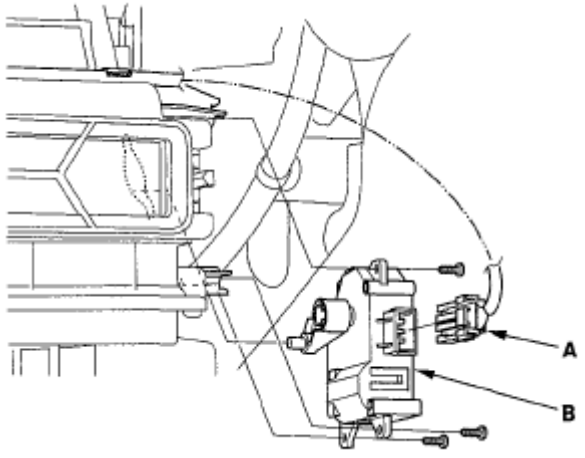


Fig. 141: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground, then go to step 16.

NO -Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25.

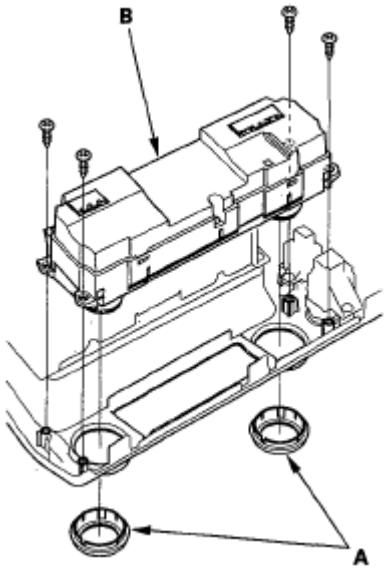


Fig. 142: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Terminal 1 And PCM Connector Terminal B25
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 22.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0970 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the

INDICATED DTC'S TROUBLESHOOTING.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, and wait for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P0970 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

NO -Go to step 25.

25. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0971 indicated?

YES -Go to step 8.

NO -Go to step 5.

5. Select Clutch Pressure Control Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES -Go to step 6.

   NO -Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve C at 0.2 A.
7. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

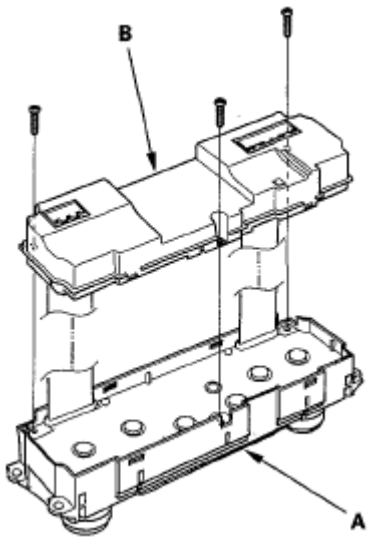


Fig. 143: Measuring Resistance Between A/T Clutch Pressure Control Solenoid Valve C Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 3-10 ohms?

YES -Go to step 11.

NO -Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

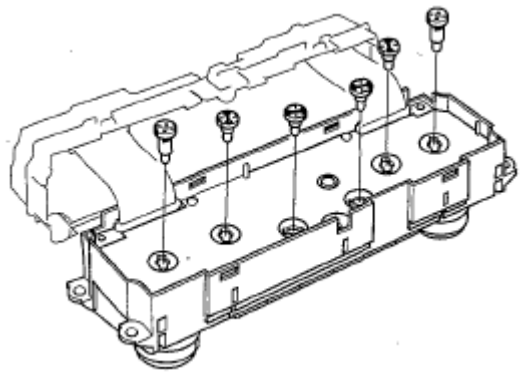


Fig. 144: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Terminal 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 18.

NO -Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for DTCs with the HDS.

Is DTC P0971 indicated?

YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

NO -Go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the

INDICATED DTC'S TROUBLESHOOTING.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
19. Start the engine, and wait for at least 1 second.
20. Check for DTCs with the HDS.

    Is DTC P0971 indicated?

    YES -Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 2nd gear with the shift lever in D, for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0973 indicated?

   YES -Go to step 8.

NO -Go to step 5.

5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Test-drive the vehicle in 2nd gear with the shift lever in D, for at least 1 second.
7. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.

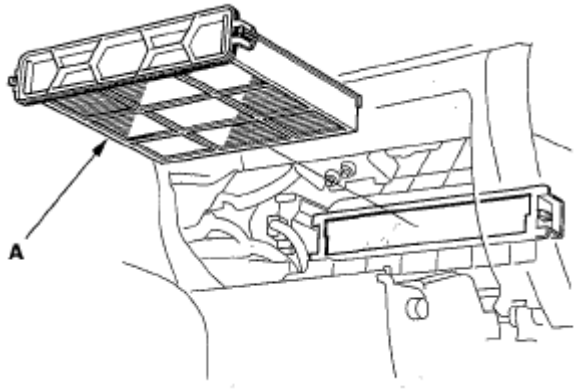


Fig. 145: Measuring Resistance Between PCM Connector Terminals B10 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 12 ohms?

YES -Go to step 12.

NO -Go to step 21.

12. Disconnect the shift solenoid harness connector.

13. Check for continuity between PCM connector terminals B10 and C40.

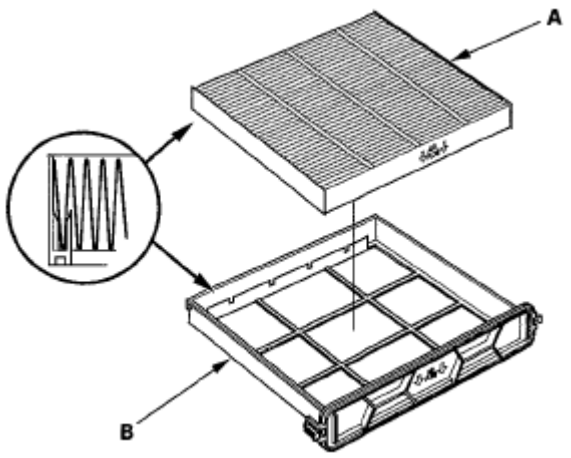


Fig. 146: Checking Continuity Between PCM Connector Terminals B10 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B10 and the shift solenoid harness connector, then go to step 15.

NO -Go to step 14.

14. Inspect shift solenoid valve A and the shift solenoid harness (see **SHIFT SOLENOID VALVE TEST**).

Is shift solenoid valve A and the harness OK?

YES -Go to step 21.

NO -Replace shift solenoid valve A or the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 15.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 2nd gear in D, for at least 1 second.
19. Check for DTCs with the HDS:

Is DTC P0973 indicated?

YES -Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1.

NO -Go to step 20.

20. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 19, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
22. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 2nd gear in D, for at least 1 second.
23. Check for DTCs with the HDS.

    Is DTC P0973 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1.

    NO -Go to step 24.

24. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 23, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 22.

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.

3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0974 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.

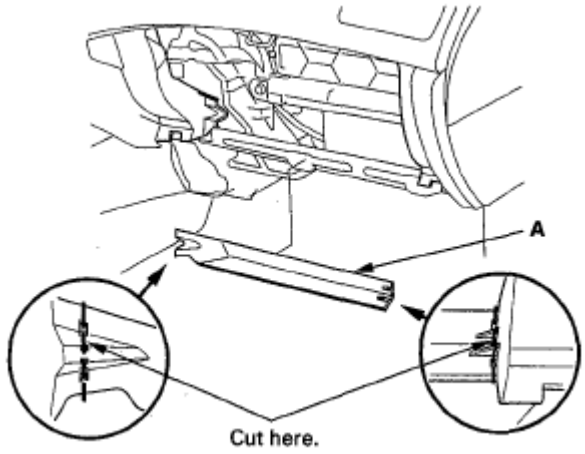


Fig. 147: Measuring Resistance Between PCM Connector Terminals B10 And C40

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 12-25 ohms?

YES -Go to step 22.

NO -Go to step 12.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminal B10 and shift solenoid harness connector terminal No. 5.

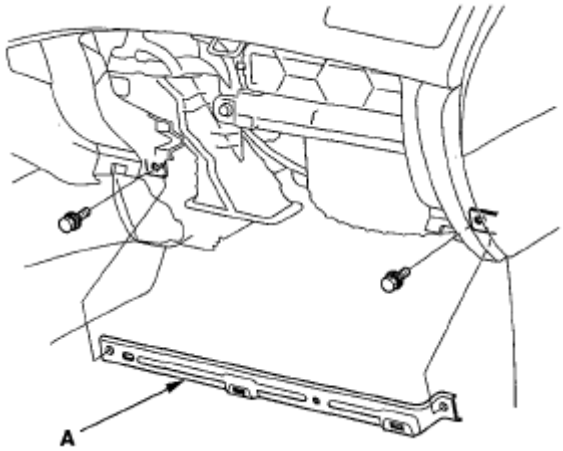


Fig. 148: Checking Continuity Between PCM Connector Terminal B10 And Shift Solenoid Harness Connector Terminal 5
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 14.

NO -Repair open in the wire between PCM connector terminal B10 and the shift solenoid harness connector, then go to step 16.

14. Remove the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**).
15. Check for continuity between shift solenoid harness connector terminal No. 5 and the shift solenoid valve A connector terminal.

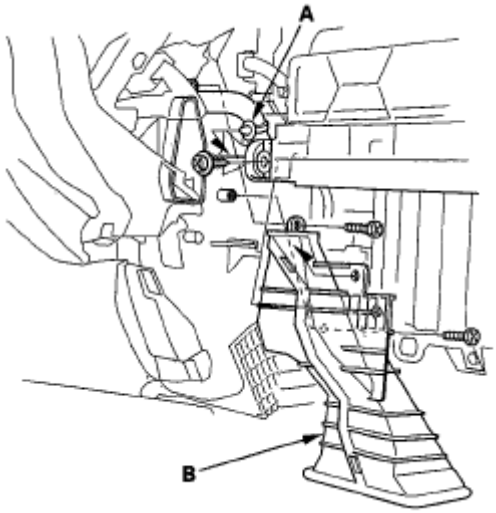


Fig. 149: Checking Continuity Between Shift Solenoid Harness Terminal 5 And Shift Solenoid Valve A Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace shift solenoid valve A (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

NO -Replace the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 2nd gear in D, for at least 1 second.
20. Check for DTCs with the HDS.

    Is DTC P0974 indicated?

    YES -Check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1.

    NO -Go to step 21.

21. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift

solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 2nd gear in D, for at least 1 second.
24. Check for DTCs with the HDS.

    Is DTC P0974 indicated?

    YES -Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 25.

25. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0976 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second.
7. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.

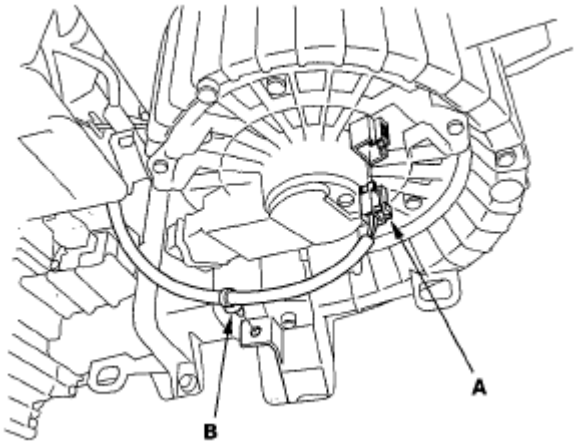


Fig. 150: Measuring Resistance Between PCM Connector Terminals B26 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 12 ohms?

YES -Go to step 12.

NO -Go to step 21.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminals B26 and C40.

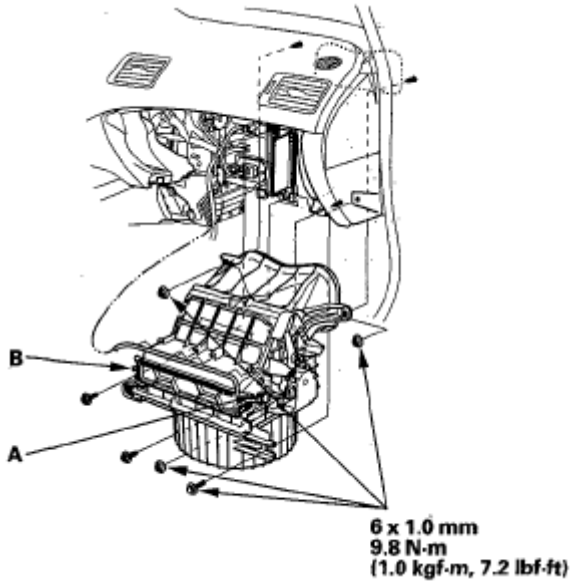


Fig. 151: Checking Continuity Between PCM Connector Terminals B26 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B26 and the shift solenoid harness connector, then go to step 15.

NO -Go to step 14.

14. Inspect shift solenoid valve B and the shift solenoid harness (see **SHIFT SOLENOID VALVE TEST**).

    Is shift solenoid valve B and the harness OK?

    YES -Go to step 21.

    NO -Replace shift solenoid valve B or the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 15.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second. Then drive in 3rd gear for at least 1 second.
19. Check for DTCs with the HDS.

    Is DTC P0976 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1.

NO -Go to step 20.

20. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 19, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
22. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second. Then drive in 3rd gear for at least 1 second.
23. Check for DTCs with the HDS.

    Is DTC P0976 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1.

    NO -Go to step 24.

24. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 23, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 22.

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 3rd gear with the shift lever in D, for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0977 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Test-drive the vehicle in 3rd gear with the shift lever in D, for at least 1 second.
7. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.

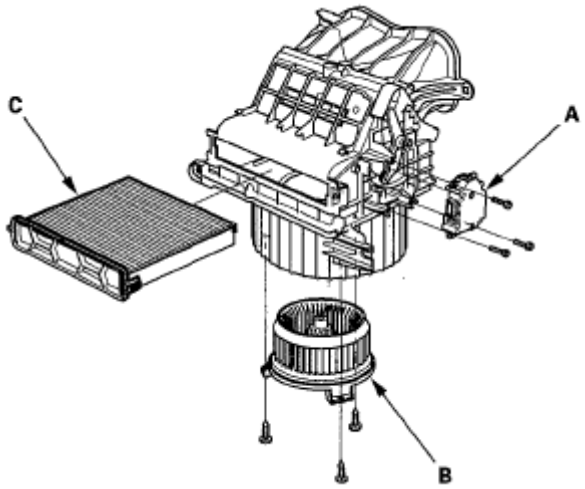


Fig. 152: Measuring Resistance Between PCM Connector Terminals B26 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 12-25 ohms?

YES -Go to step 22.

NO -Go to step 12.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminal B26 and shift solenoid harness connector terminal No. 2.

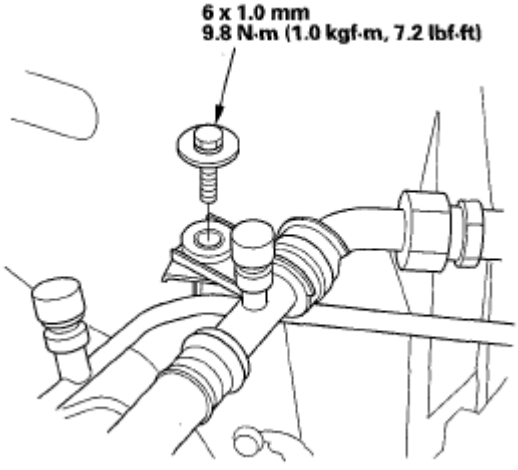


Fig. 153: Checking Continuity Between PCM Terminal B26 And Shift Solenoid Harness Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 14.

NO -Repair open in the wire between PCM connector terminal B26 and the shift solenoid harness

connector, then go to step 16.

14. Remove the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**).
15. Check for continuity between shift solenoid harness connector terminal No. 2 and the shift solenoid valve B connector terminal.

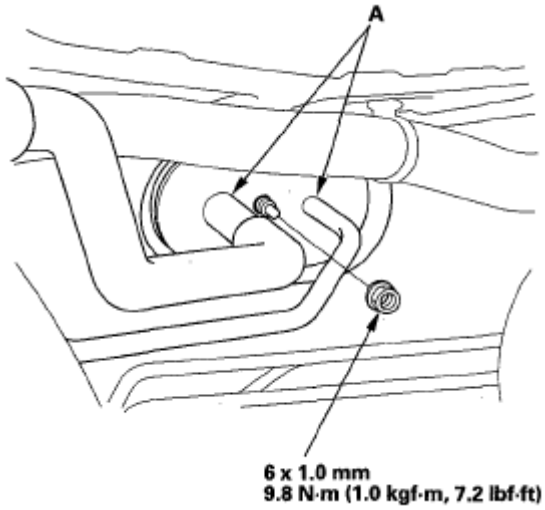


Fig. 154: Checking Continuity Between Shift Solenoid Harness Terminal 2 And Shift Solenoid Valve B Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace shift solenoid valve B (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

NO -Replace the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second. Then drive in 3rd gear for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0977 indicated?

YES -Check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Test-drive the vehicle in 1st gear with the shift lever in D, for at least 1 second. Then drive in 3rd gear for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P0977 indicated?

YES -Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

NO -Go to step 25.

25. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 3rd gear with the shift lever in D, for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0979 indicated?

YES -Go to step 8.

NO -Go to step 5.

5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Test-drive the vehicle in 3rd gear with the shift lever in D, for at least 1 second.
7. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

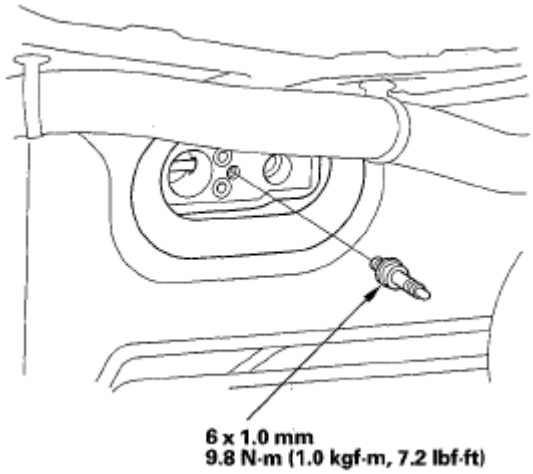


Fig. 155: Measuring Resistance Between PCM Connector Terminals B20 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 12 ohms?

YES -Go to step 12.

NO -Go to step 21.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminals B20 and C40.

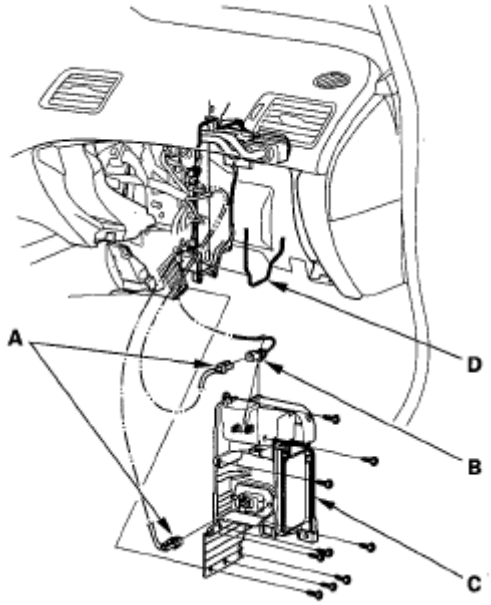


Fig. 156: Checking Continuity Between PCM Connector Terminals B20 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B20 and the shift solenoid harness connector, then go to step 15.

NO -Go to step 14.

14. Inspect shift solenoid valve C and the shift solenoid harness (see **SHIFT SOLENOID VALVE TEST**).

Is shift solenoid valve C and the harness OK?

YES -Go to step 21.

NO -Replace shift solenoid valve C or the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 15.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 3rd gear in D, for at least 1 second.

19. Check for DTCs with the HDS.

    Is DTC P0979 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1.

    NO -Go to step 20.

20. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 19, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
22. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive the vehicle in 3rd gear in D, for at least 1 second.
23. Check for DTCs with the HDS.

    Is DTC P0979 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1.

    NO -Go to step 24.

24. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 23, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 22.

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0980 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

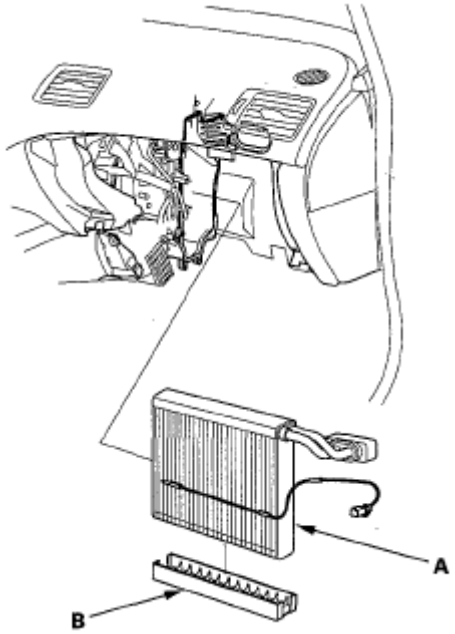


Fig. 157: Measuring Resistance Between PCM Connector Terminals B20 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 12-25 ohms?

YES -Go to step 22.

NO -Go to step 12.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminal B20 and shift solenoid harness connector terminal No. 1.

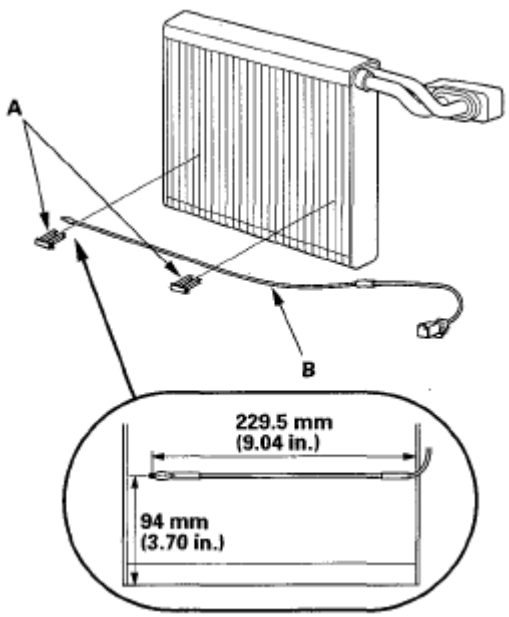


Fig. 158: Checking Continuity Between PCM Terminal B20 And Shift Solenoid Harness

Terminal 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 14.

NO -Repair open in the wire between PCM connector terminal B20 and the shift solenoid harness connector, then go to step 16.

14. Remove the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**).
15. Check for continuity between shift solenoid harness connector terminal No. 1 and the shift solenoid valve C connector terminal.

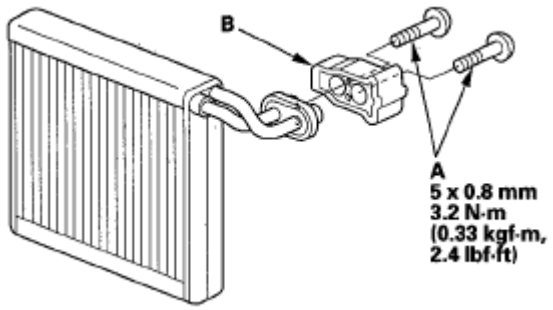


Fig. 159: Checking Continuity Between Shift Solenoid Harness Terminal 1 And Shift Solenoid Valve C Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace shift solenoid valve C (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

NO -Replace the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive in 3rd gear in D, for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0980 indicated?

YES -Check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine with the shift lever in P, and wait for at least 1 second. Then drive in 3rd gear in D, for at least 1 second.
24. Check for DTCs with the HDS.

    Is DTC P0980 indicated?

    YES -Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 25.

25. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.

3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0982 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.

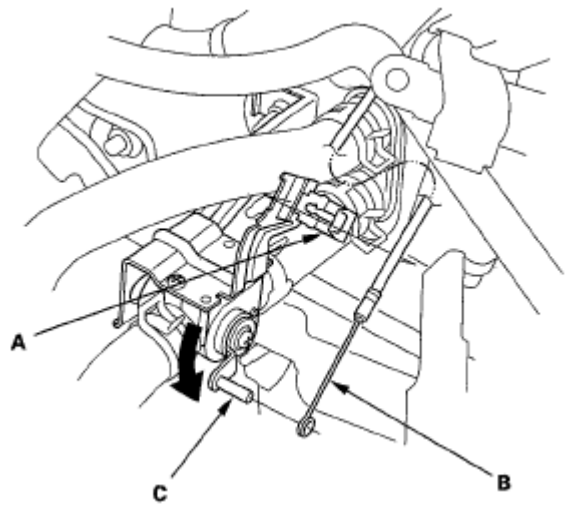


Fig. 160: Measuring Resistance Between PCM Connector Terminals B11 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there less than 12 ohms?

YES -Go to step 12.

NO -Go to step 21.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminals B11 and C40.

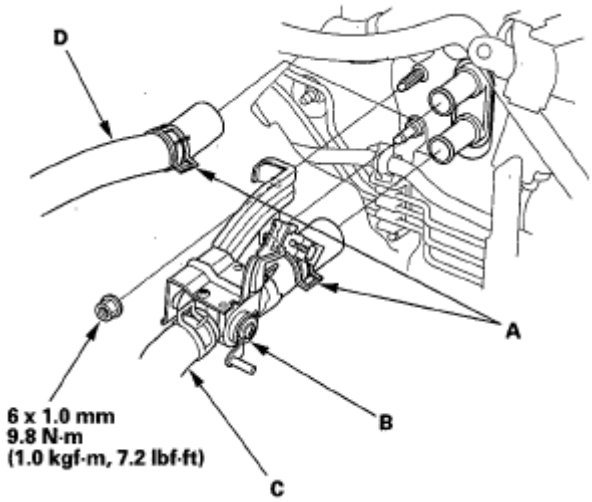


Fig. 161: Checking Continuity Between PCM Connector Terminals B11 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B11 and the shift solenoid harness connector, then go to step 15.

NO -Go to step 14.

14. Inspect shift solenoid valve D and the shift solenoid harness (see **SHIFT SOLENOID VALVE TEST**).

Is shift solenoid valve D and the harness OK?

YES -Go to step 21.

NO -Replace shift solenoid valve D or the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 15.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.

18. Start the engine with the shift lever in P, and wait for at least 1 second.
19. Check for DTCs with the HDS.

    Is DTC P0982 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1.

    NO -Go to step 20.

20. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 19, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

21. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
22. Start the engine with the shift lever in P, and wait for at least 1 second.
23. Check for DTCs with the HDS.

    Is DTC P0982 indicated?

    YES -Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1.

    NO -Go to step 24.

24. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 23, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 22. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 22.

DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, then shift to N while pressing the brake pedal, and wait for at least 1 second.
4. Check for DTCs with the HDS.

   Is DTC P0983 indicated?

   YES -Go to step 8.

   NO -Go to step 5.

5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES -Go to step 6.

   NO -Go to step 8.

6. Start the engine, then shift to N while pressing the brake pedal, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Go to step 8.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.

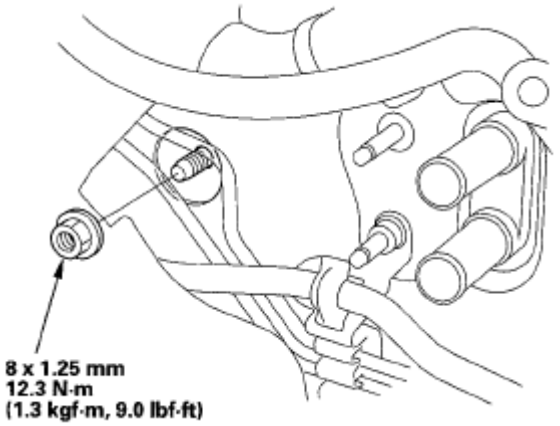


Fig. 162: Measuring Resistance Between PCM Connector Terminals B11 And C40
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 12-25 ohms?

YES -Go to step 22.

NO -Go to step 12.

12. Disconnect the shift solenoid harness connector.
13. Check for continuity between PCM connector terminal B11 and shift solenoid harness connector terminal No. 8.

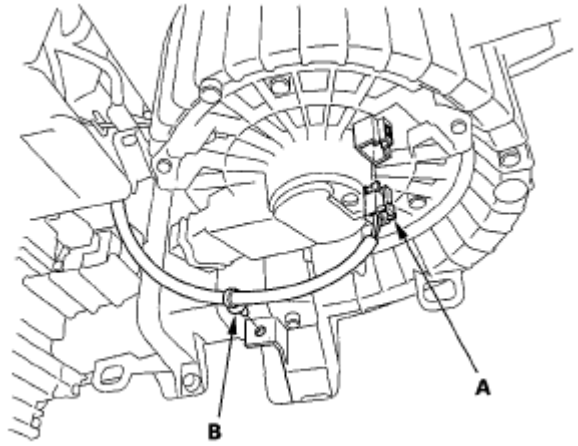


Fig. 163: Checking Continuity Between PCM Terminal B11 And Shift Solenoid Harness Connector Terminal 8
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 14.

NO -Repair open in the wire between PCM connector terminal B11 and the shift solenoid harness connector, then go to step 16.

14. Remove the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**).
15. Check for continuity between shift solenoid harness connector terminal No. 8 and the shift solenoid valve D connector terminal.

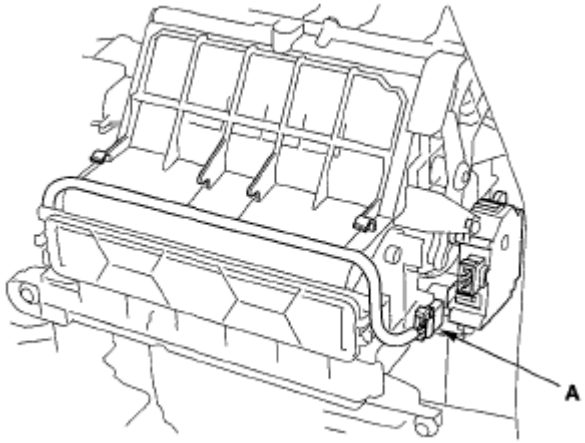


Fig. 164: Checking Continuity Between Shift Solenoid Harness Connector Terminal 8 And Shift Solenoid Valve D Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace shift solenoid valve D (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

NO -Replace the shift solenoid harness (see **SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT**), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, then shift to N while pressing the brake pedal, and wait for at least 1 second.
20. Check for DTCs with the HDS.

Is DTC P0983 indicated?

YES -Check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1.

NO -Go to step 21.

21. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
23. Start the engine, then shift to N while pressing the brake pedal, and wait for at least 1 second.
24. Check for DTCs with the HDS.

    Is DTC P0983 indicated?

    YES -Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1.

    NO -Go to step 25.

25. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 24, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 23. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 23.

DTC P16C0: PCM A/T Control System Incomplete Update

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is indicated when PCM updating is incomplete.**
- **Do not turn the ignition switch to LOCK (0) while updating the PCM. If you turn the ignition switch to LOCK (0) before completion, the PCM can be damaged.**

1. Update the PCM (see **UPDATING THE PCM**).
2. Check for DTCs with the HDS.

   Is DTC P16C0 indicated?

   YES -Replace the PCM (see **ECM/PCM REPLACEMENT**).

   NO -PCM updating is complete.

DTC P1717: Open in Transmission Range Switch ATP RVS Switch Circuit

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Turn the ignition switch to ON (II).
2. Shift to R, and check the A/T R SWITCH in the DATA LIST with the HDS.

   Is the A/T R SWITCH ON?

   YES -Go to step 3.

   NO -Check for proper transmission range switch installation (see **TRANSMISSION RANGE SWITCH REPLACEMENT**), adjust the shift cable (see **SHIFT CABLE ADJUSTMENT**), then recheck.

3. Check the REVERSE SWITCH in the DATA LIST with the HDS.

   Is the REVERSE SWITCH ON?

   YES -Intermittent failure, the system is OK at this time.

   NO -Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Disconnect the transmission range switch connector.
6. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

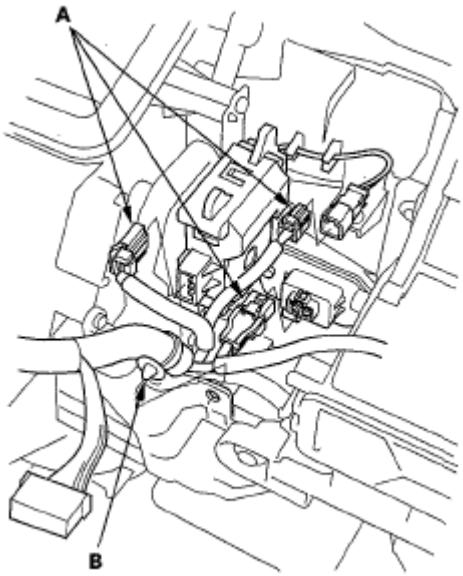


Fig. 165: Checking Continuity Between Transmission Range Switch Connector Terminal 10

And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 7.

NO -Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101), then go to step 10.

7. Turn the ignition switch to ON (II).
8. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.

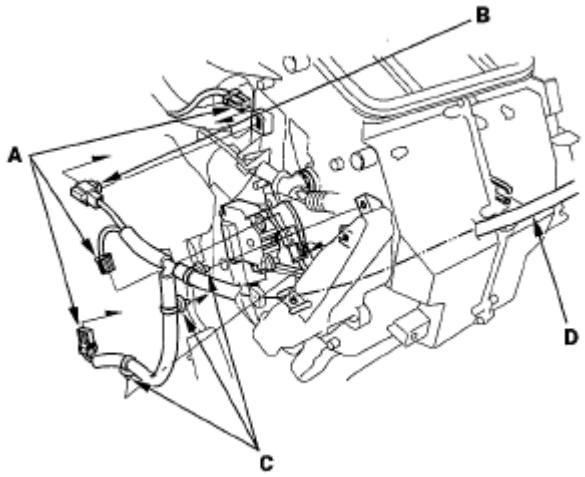


Fig. 166: Measuring Voltage Between Transmission Range Switch Connector Terminals 1 And 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 9.

NO -Repair open in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 10.

9. Check for continuity between transmission range switch connector terminals No. 1 and No. 10 while the shift lever is in R, and when the shift lever is shifted to any position other than R.

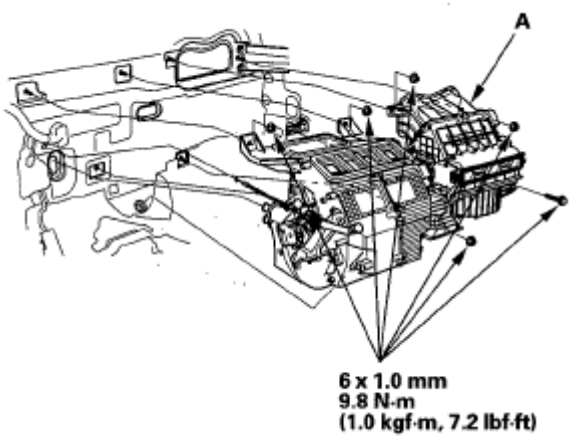


Fig. 167: Checking Continuity Between Transmission Range Switch Connector Terminals 1 And 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity while the shift lever is in R, and no continuity when the shift lever is shifted to any position other than R?

YES -Go to step 16.

NO -Replace the transmission range switch (see **TRANSMISSION RANGE SWITCH REPLACEMENT**), then go to step 10.

10. Reconnect all connectors.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in R at speeds below 3 mph (5 km/h) for at least 2 seconds. Then increase the speed and drive at speeds over 3 mph (5 km/h) for at least 2 seconds.
14. Check for DTCs with the HDS.

    Is DTC P1717 indicated?

    YES -Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO -Go to step 15.

15. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 14, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 13.

16. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
17. Test-drive the vehicle with the shift lever in R at speeds below 3 mph (5 km/h) for at least 2 seconds. Then increase the speed and drive at speeds over 3 mph (5 km/h) for at least 2 seconds.
18. Check for DTCs with the HDS.

    Is DTC P1717 indicated?

    YES -Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 17. If the PCM was substituted, go to step 1.

    NO -Go to step 19.

19. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 18, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 17. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 17.

DTC P1746: Problem in Shift Control System; Cut Valve A Stuck OFF, or Cut Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 9.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.

8. Monitor the OBD STATUS for P1746 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair cut valve A in the servo body (see **SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), cut valve B in the main valve body (see **MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), replace the main valve body or the servo body, or replace the transmission, then go to step 9.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Check for DTCs with the HDS.

    Is DTC P1746 indicated?

    YES -Go to step 4.

    NO -Go to step 12.

12. Monitor the OBD STATUS for P1746 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 11, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 4. If the HDS indicates NOT COMPLETED, go to step 9.

DTC P1747: Problem in Shift Control System; Cut Valve A Stuck ON, or Cut Valve B Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES -Replace the transmission, then go to step 9.

   NO -Replace the ATF (see step 5), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 6, then go to step 8.
8. Monitor the OBD STATUS for P1747 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES -Repair cut valve A in the servo body (see **SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), cut valve B in the main valve body (see **MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), replace the main valve body or the servo body, or replace the transmission, then go to step 9.

   NO -If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

9. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
10. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 9, then go to step 11.
11. Check for DTCs with the HDS.

    Is DTC P1747 indicated?

    YES -Go to step 4.

    NO -Go to step 12.

12. Monitor the OBD STATUS for P1747 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -Troubleshooting is complete. If any other DTCs were indicated in step 11, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, go to step 4. If the HDS indicates NOT COMPLETED, go to step 9.

DTC P1780: Problem in Shift Control System

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
4. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 3, then go to step 5.
5. Check for other DTCs indicated along with DTC P1780 with the HDS.

NOTE: DTC P1780 means there is one or more A/T DTCs regarding the shift control system.

Are there other DTCs?

YES -Go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -Go to step 6.

6. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
7. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
8. Turn the ignition switch to LOCK (0). Repeat the test-drive in step 7, then go to step 9.
9. Check for DTCs with the HDS.

Is DTC P1780 indicated?

YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1.

NO -Go to step 10.

10. Monitor the OBD STATUS for P1780 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 9, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P2122: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

Is DTC P2122 indicated in the PGM-FI SYSTEM?

YES -Go to the DTC P2122 troubleshooting in the electronic throttle control system (ETCS) (see **DTC P2122: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT LOW VOLTAGE**).

NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Start the engine, and wait for at least 2 minutes.
9. Check for DTCs the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 8. If the PCM was substituted, go to step 1.

   NO -Go to step 10.

10. Monitor the OBD STATUS for P2122 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 9, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 8. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 8.

DTC P2123: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snap shot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P2123 indicated in the PGM-FI SYSTEM?

   YES -Go to the DTC P2123 troubleshooting in the electronic throttle control system (ETCS) (see **DTC P2123: APP SENSOR A (THROTTLE POSITION SENSOR D) CIRCUIT HIGH VOLTAGE**).

   NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Start the engine, and wait for at least 2 minutes.
9. Check for DTCs the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 8. If the PCM was substituted, go to step 1.

   NO -Go to step 10.

10. Monitor the OBD STATUS for P2123 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 9, go to the **INDICATED DTC'S TROUBLESHOOTING**.

    NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 8. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 8.

DTC U0028: F-CAN Malfunction (BUS-OFF (PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES -Go to the DTC U0155 troubleshooting in the PGM-FI system (see **DTC U0155: F-CAN MALFUNCTION (ECM/PCM-GAUGE CONTROL MODULE)**).

   NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in he A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
6. Start the engine, and wait for at least 2 minutes.
7. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1.

   NO -Go to step 8.

8. Monitor the OBD STATUS for U0028 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 7, go to the **INDICATED DTC'S TROUBLESHOOTING**.

   NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to

step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0121: F-CAN Malfunction (PCM-ABS)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES -Go to the DTC U0155 troubleshooting in the PGM-FI system (see **DTC U0155: F-CAN MALFUNCTION (ECM/PCM-GAUGE CONTROL MODULE)**).

   NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0121 indicated in the A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
6. Start the engine, and wait for at least 2 minutes.
7. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0121 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1.

   NO -Go to step 8.

8. Monitor the OBD STATUS for U0121 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 7, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES -Go to the DTC U0155 troubleshooting in the PGM-FI system (see **DTC U0155: F-CAN MALFUNCTION (ECM/PCM-GAUGE CONTROL MODULE)**).

   NO -Go to step 4.

4. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES -Go to step 5.

   NO -Intermittent failure, the system is OK at this time. If any other DTCs were indicated, go to the **INDICATED DTC'S TROUBLESHOOTING**.

5. Update the PCM if it does not have the latest software (see **UPDATING THE PCM**), or substitute a known-good PCM (see **SUBSTITUTING THE PCM**).
6. Start the engine, and wait for at least 2 minutes.
7. Check for DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES -Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1.

   NO -Go to step 8.

8. Monitor the OBD STATUS for U0151 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES -If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the

original PCM (see **ECM/PCM REPLACEMENT**). If any other DTCs were indicated in step 7, go to the **INDICATED DTC'S TROUBLESHOOTING**.

NO -If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see **SUBSTITUTING THE PCM**), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

ROAD TEST

1. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels.
3. Shift to D while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
4. Repeat step 3 in all shift lever positions.
5. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover, and go to the A/T Mode Menu.

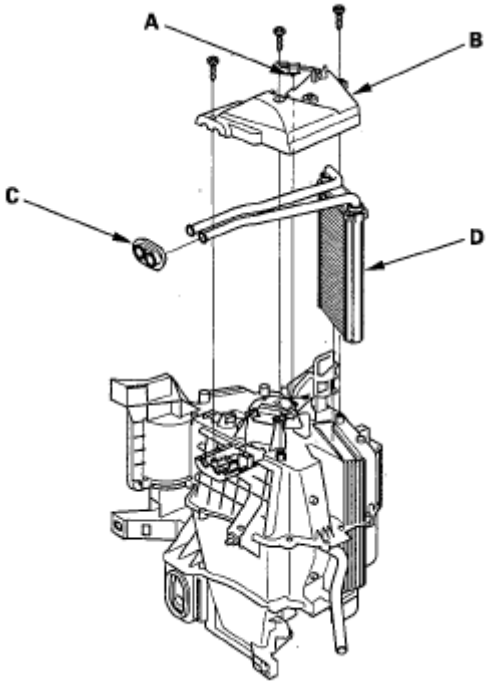


Fig. 168: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
7. Prepare the HDS to take a HIGH SPEED SNAPSHOT (Refer to the HDS user's guide for more details if needed):
    - Select High Speed Snapshot.
    - Select these parameters:
        - Vehicle Speed

    - Output Shaft (Countershaft) Speed
    - Input Shaft (Mainshaft) Speed (rpm)
    - Engine Speed
    - Relative TP Sensor
    - APP Sensor A (V)
    - ATF Temp Sensor
    - Battery Voltage
    - Shift Control
    - Brake Switch
  - Set the Trigger Type to Parameter.
  - Adjust the Parameter setting to APP Sensor A (V) above 1.3 V.
  - Set the recording time to 60 seconds.
  - Set the Trigger point to -30 seconds.
8. Find a suitable level road. When you are ready to do the test, press OK on the HDS.
9. Monitor the HDS and accelerate quickly until the APP Sensor A reads 1.3 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.
10. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 9.
11. Adjust the Parameter setting to 2.5 V. Retest-drive the vehicle. While monitoring the HDS accelerate quickly until the APP Sensor A reads 2.5 V.

    Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.

12. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 11.
13. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snap shot.
14. Review each snapshot individually and compare the Shift Command, APP Sensor A (V), and the Vehicle Speed to the table below.

    Upshift: D Position

    VEHICLE SPEED REFERENCE - UPSHIFT D POSITION

APP Sensor A voltage: 1.3 V	
1st-->2nd	9-12 mph (15-19 km/h)
2nd-->3rd	17-21 mph (28-33 km/h)
3rd-->4th	26-30 mph (42-49 km/h)
4th-->5th	35-41 mph (57-66 km/h)
Lock-->up ON	31-37 mph (50-60 km/h)
APP Sensor A voltage: 2.5 V	
1st-->2nd	18-22 mph (29-35 km/h)
2nd-->3rd	34-39 mph (54-62 km/h)
3rd-->4th	50-55 mph (80-89 km/h)

4th-->5th	75-86 mph (121-138 km/h)
Lock-->up ON	93-104 mph (150-167 km/h)
Fully-opened throttle APP Sensor A voltage: 4.4 V	
1st-->2nd	35-40 mph (57-65 km/h)
2nd-->3rd	64-72 mph (103-116 km/h)
3rd-->4th	102-112 mph (164-181 km/h)

Downshift: D Position

VEHICLE SPEED REFERENCE - DOWNSHIFT D POSITION

APP Sensor A voltage: 1.3 V	
Lock-up OFF	30-37 mph (49-59 km/h)
5th-->4th	30-35 mph (49-57 km/h)
4th-->3rd	22-25 mph (36-41 km/h)
3rd-->2nd	5-8 mph (8-13 km/h)
2nd-->1st	5-8 mph (8-13 km/h)
APP sensor A voltage: 2.5 V	
Lock-up OFF	60-68 mph (97-110 km/h)
Fully-opened throttle APP Sensor A voltage: 4.4 V	
Lock-up OFF	119-129 mph (191-208 km/h)
4th-->3rd	82-92 mph (132-148 km/h)
3rd-->2nd	54-61 mph (87-98 km/h)
2nd-->1st	26-31 mph (42-50 km/h)

15. Drive the vehicle in 4th or 5th gear in D, then shift to 2, the vehicle should immediately begin to slow down from engine braking.
16. Shift to 1, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts should not occur in this position.
17. Shift to 2, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts and downshifts should not occur in this position.
18. Shift to R, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.
19. Park the vehicle on a slope (about 16-degrees), apply the brake, and shift into P. Release the brake; the vehicle should not move.

NOTE: Always use the parking brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.

STALL SPEED TEST

1. Make sure the transmission fluid is filled to the proper level (see **ATF LEVEL CHECK**).
2. Apply the parking brake, and block all four wheels.
3. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover, and go to the A/T DATA LIST.

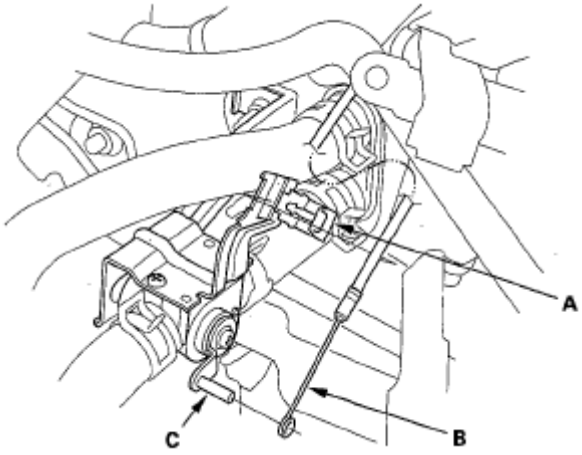


Fig. 169: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
5. Make sure the A/C switch is OFF.
6. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to 2.
7. Firmly press the brake pedal and accelerator pedal for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising the engine speed.
8. Allow 2 minutes for cooling, then repeat the test in the D, 1, and R.

NOTE:

- **Do not test stall speed for more than 10 seconds at a time.**
- **Stall speed tests should be used for diagnostic purposes only.**
- **Stall speed tests should be the same in D, 2, 1, and R.**
- **Do not test stall speed with the A/T oil pressure gauges installed.**

Stall Speed rpm:

Specification: 2,670 rpm

Service Limit: 2,520-2,820 rpm

9. If the stall speeds are out of the service limit, problems and probable causes are listed in the table.

PROBLEMS AND PROBABLE CAUSES

Problem	Probable causes
Stall speed rpm high in the D, 2, 1, and R positions	• ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in the 1 position	Slippage of 1st clutch

Stall speed rpm high in the 2 position	Slippage of 2nd clutch
Stall speed rpm high in the R position	Slippage of 5th clutch
Stall speed rpm low in the D, 2, 1, and R positions	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

PRESSURE TEST

Special Tools Required

- A/T oil pressure gauge set w/panel 07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

NOTE: There may come ABS DTC(s) during the pressure test. If the ABS DTC(s) comes on, clear the ABS DTC(s) with the HDS.

1. Make sure the transmission fluid is filled to the proper level (see **ATF LEVEL CHECK**).
2. Raise the vehicle on a lift, or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
3. Allow the front wheels to rotate freely.
4. Remove the splash shield.
5. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover, and go to the A/T Mod Menu.

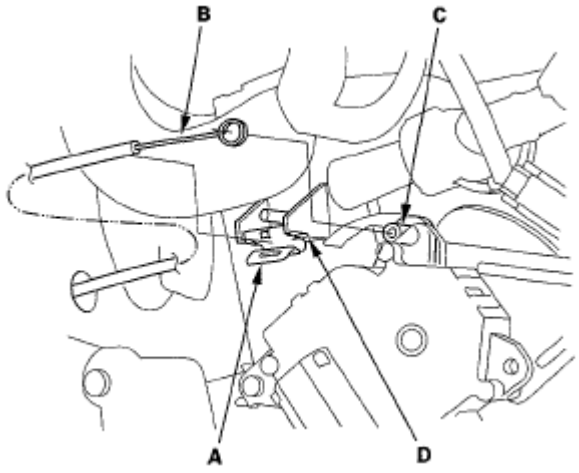


Fig. 170: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting

(see **DLC CIRCUIT TROUBLESHOOTING**).

7. Connect the A/T oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the ports while connecting the gauges.

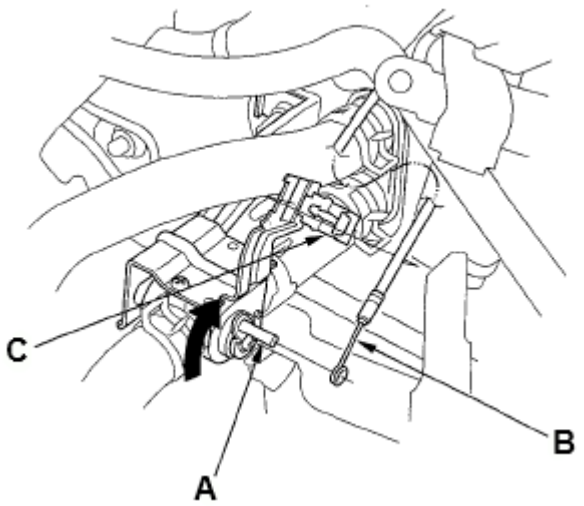


Fig. 171: Identifying Line Pressure Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
9. Measure the line pressure at the line pressure inspection port in P or N while holding the engine speed at 2,000 rpm.

NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than P or N.

FLUID PRESSURE REFERENCE

Pressure	Fluid Pressure	
	Standard	Service Limit
Line	900-960 kPa (9.2-9.8 kgf/cm^2 , 130-140 psi)	850 kPa (8.7 kgf/cm^2 , 120 psi)

10. Turn the engine off, then disconnect the A/Toil pressure gauge from the line pressure inspection port.
11. Install the sealing bolt to the line pressure inspection port with a new sealing washer, and tighten the bolt to 18 N.m (1.8 kgf.m, 13 lbf.ft). Do not reuse the old sealing washer.
12. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**) and the intake air duct.
13. Connect the A/Toil pressure gauge to the 1st clutch pressure inspection port (B). Then temporarily install the air cleaner assembly and the intake air duct.

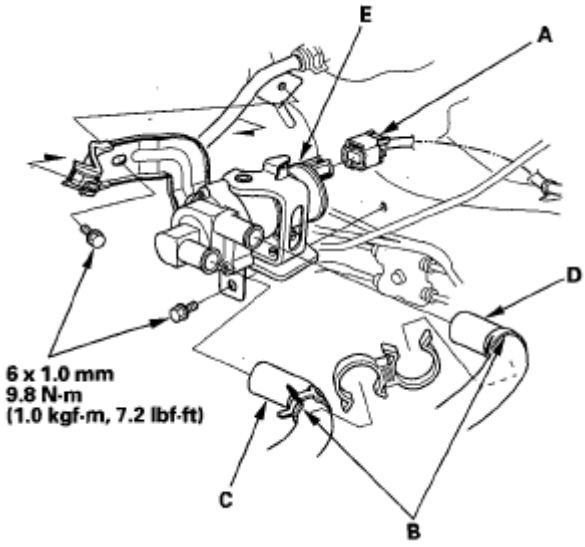


Fig. 172: Identifying 1st Clutch Pressure Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Connect the A/Toil pressure gauge to the 2nd clutch pressure inspection port (C).

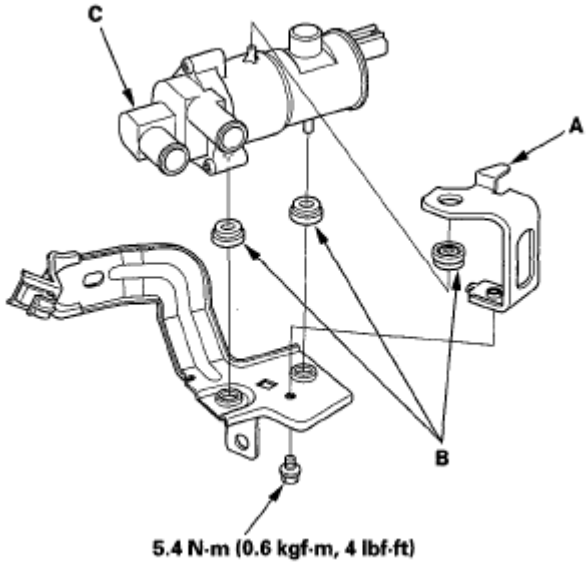


Fig. 173: Identifying 2nd Clutch Pressure Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Start the engine, and shift to 1.
16. Measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) while holding the engine speed at 2,000 rpm.
17. Shift to 2, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

FLUID PRESSURE REFERENCE

Pressure	Fluid Pressure	
	Standard	Service Limit

1st clutch (B) 2nd clutch (C)	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)

18. Turn the engine off, remove the air cleaner assembly and the intake air duct, then disconnect the A/T oil pressure gauges from the 1st clutch pressure and the 2nd clutch pressure inspection ports.
19. Install the sealing bolts to the 1st clutch pressure and the 2nd clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N.m (1.8 kgf.m, 13 lbf.ft). Do not reuse the old sealing washer.
20. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**).
21. Connect the A/T oil pressure gauge to the 3rd clutch pressure inspection port (D) and the 4th clutch pressure inspection port (E).

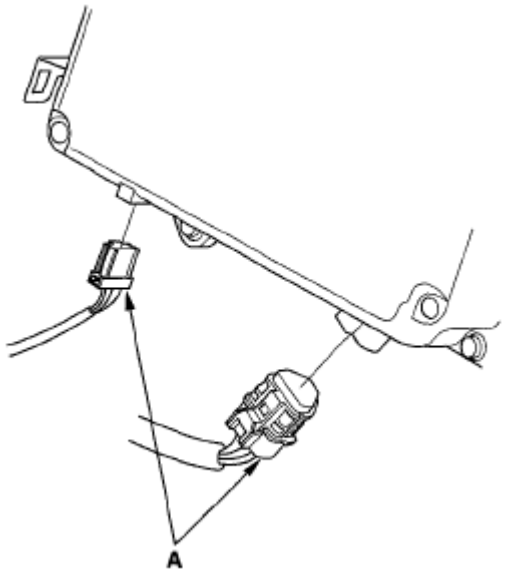


Fig. 174: Identifying 3rd Clutch Pressure Inspection Port And 4th Clutch Pressure Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Connect the A/T oil pressure gauge to the 5th clutch pressure inspection port (F).

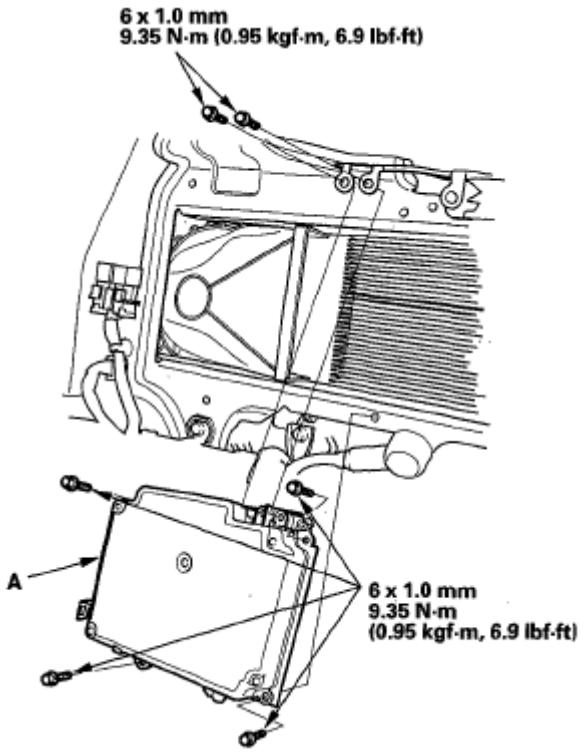


Fig. 175: Identifying 5th Clutch Pressure Inspection Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Select Pressure Test Assistance Mode in the Miscellaneous Test Menu of the A/T Mode Menu.
24. Start the engine, and shift to D3.
25. Measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.
26. Shift to D, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (E) and the 5th clutch pressure at the 5th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

FLUID PRESSURE REFERENCE

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (D) 4th clutch (E) 5th clutch (F)	890-970 kPa (9.1-9.9 kgf/cm^2 , 130-140 psi)	840 kPa (8.6 kgf/cm^2 , 120 psi)

27. Bring the engine back to an idle, then apply the brake to stop the wheels from rotating.
28. Shift to R, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (F).

FLUID PRESSURE REFERENCE

Pressure	Fluid Pressure	
	Standard	Service Limit
5th clutch (F) in R	890-970 kPa (9.1-	840 kPa (8.6

	9.9 kgf/cm^2 , 130-140 psi)	kgf/cm^2 , 120 psi)

29. Turn the engine off, then disconnect the A/T oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection ports.
30. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N.m (1.8 kgf.m, 13 lbf.ft). Do not reuse the old sealing washer.
31. If the pressures are out of the service limit, problems and probable causes are listed in the table.

PROBLEMS AND PROBABLE CAUSES

Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 5th clutch pressure in the R position	• Servo valve • 4th clutch • O-rings

32. Install the splash shield.

SHIFT SOLENOID VALVE TEST

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

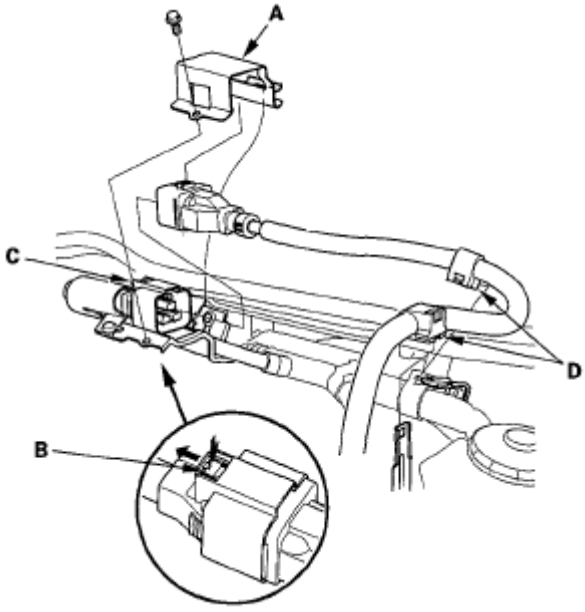


Fig. 176: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select Shift Solenoid Valve A, B, C, and D Test in the Miscellaneous Test Menu on the HDS.
4. Check that shift solenoid valve A, B, C, and D operate with the HDS. A clicking sound should be heard.
    - If a clicking sound is heard, the valves are OK.

      The test is complete, disconnect the HDS.

    - If no clicking sound is heard, go to step 5, and test the solenoid valves.
5. Raise the vehicle on a lift, or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
6. Remove the splash shield.
7. Disconnect the shift solenoid harness connector.

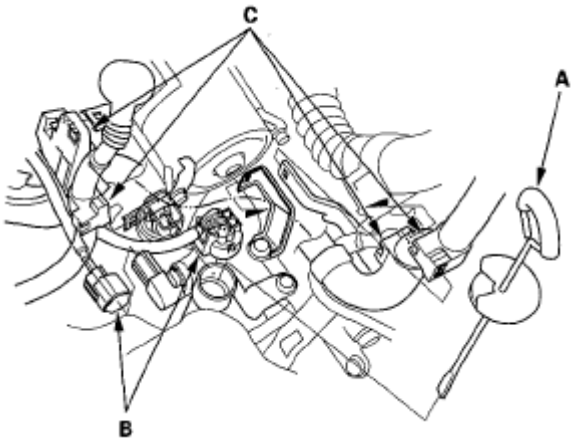


Fig. 177: Identifying Shift Solenoid Harness Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the shift solenoid valve resistance between the shift solenoid harness connector terminals below and body ground:
   - No. 1: Shift solenoid valve C
   - No. 2: Shift solenoid valve B
   - No. 5: Shift solenoid valve A
   - No. 8: Shift solenoid valve D

   Standard: 12-25 ohms

   - If the resistance is within the standard, go to step 9 and check solenoid valve for a clicking sound.
   - If the resistance is out of standard, go to step 10.
9. Connect a jumper wire from the battery positive terminal to each shift solenoid harness connector terminals individually. A clicking sound should be heard.
   - If a clicking sound is heard, the valves are OK.

     The test is complete, connect the connector.

   - If no clicking sound is heard, go to step 10 and test the shift solenoid harness.
10. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

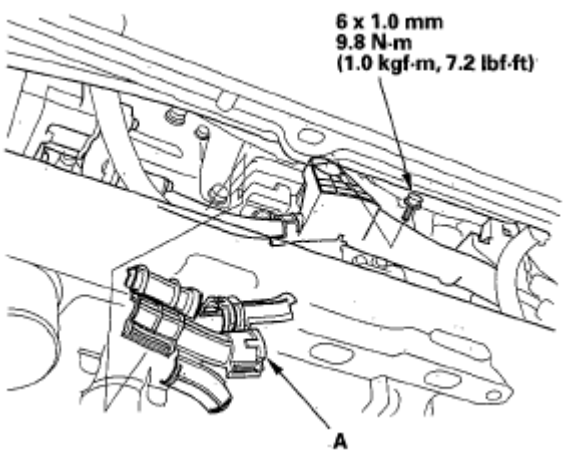


Fig. 178: Identifying Drain Plug w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Reinstall the drain plug with a new sealing washer (B).
12. Remove the shift solenoid valve cover (A), the dowel pins (B), the gasket (C), and the harness clamp bracket (D).

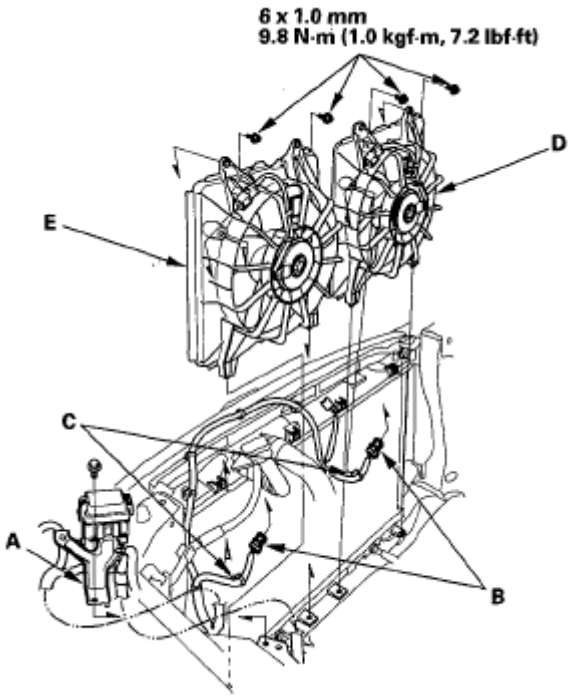


Fig. 179: Identifying Shift Solenoid Valve Cover, Dowel Pins, Gasket, Harness Clamp Bracket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Disconnect the connectors from shift solenoid valve A, shift solenoid valve B, shift solenoid valve C, and shift solenoid valve D.

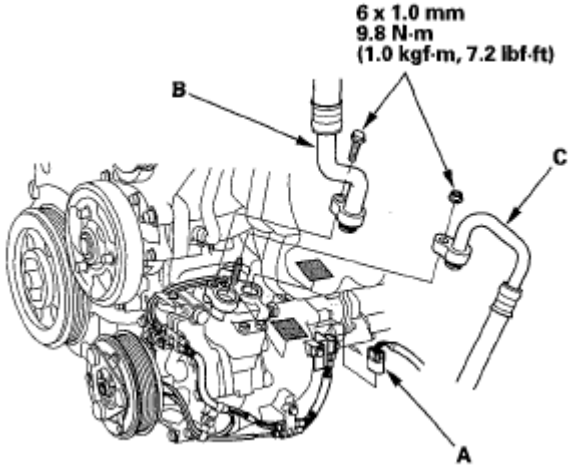


Fig. 180: Identifying Shift Solenoid Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Measure the resistance of each solenoid valve between the connector terminal and body ground.

Standard: 12-25 ohms

- If the resistance is out of standard, go to step 17 and replace the shift solenoid valve.
- If the resistance is within the standard, go to step 15 and check the solenoid valve for a clicking

sound.

15. Connect a jumper wire from the positive battery terminal to each solenoid terminal individually.
    - If a clicking sound is heard, go to step 16 and replace the solenoid harness.
    - If no clicking sound is heard, go to step 17 and replace shift solenoid valve.
16. Remove the shift solenoid harness connector (A), and replace it. Install a new O-ring (B) on the shift solenoid harness connector, and install the connector in the transmission housing, then go to step 22.

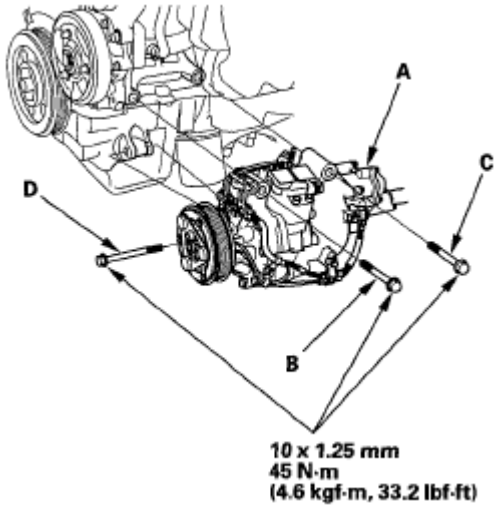


Fig. 181: Identifying Shift Solenoid Harness Connector, O-Ring w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the mounting bolts, then hold the shift solenoid valve body and remove the solenoid valves. Do not hold the connector to remove the solenoid valve.

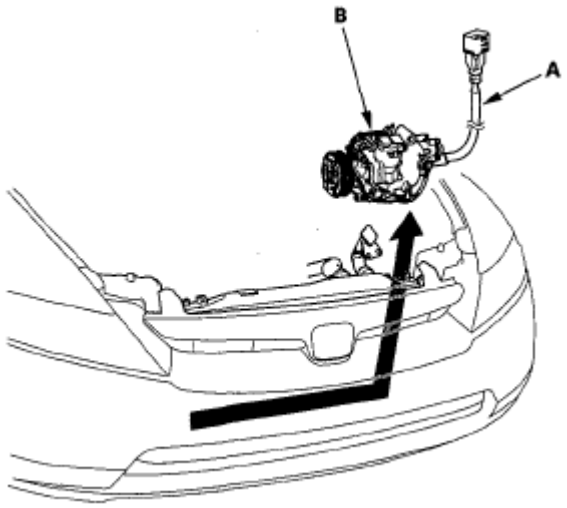


Fig. 182: Identifying Shift Solenoid Valve, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install new O-rings (two O-rings per solenoid valve) (E) on the reused solenoid valve.

NOTE: A new solenoid valve comes with new O-rings. If you install a new

solenoid valve, use the O-rings provided on it.

19. Install shift solenoid valve D (black connector) and shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.

NOTE: Do not hold the solenoid valve by the connector when installing the solenoid valve. Be sure to hold the solenoid valve body.

20. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.
21. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve B.

NOTE: Do not install shift solenoid valve A before installing shift solenoid valve B. If shift solenoid valve A is installed before installing shift solenoid valve B, it may damage to hydraulic control system.

22. Connect the shift solenoid harness connectors:
    - BLU wire to shift solenoid valve A.
    - ORN, WHT, and WHT wires to shift solenoid valve B.
    - GRN wire to shift solenoid valve C.
    - YEL wire to shift solenoid valve D.
23. Install the shift solenoid valve cover, the dowel pins, a new gasket, and the harness clamp bracket.
24. Check the connector for rust, dirt, or oil, then connect the connector securely.
25. Refill the transmission with ATF (see step 5).
26. Install the splash shield.

SHIFT SOLENOID VALVE AND SHIFT SOLENOID WIRE HARNESS REPLACEMENT

1. Raise the vehicle on a lift, or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

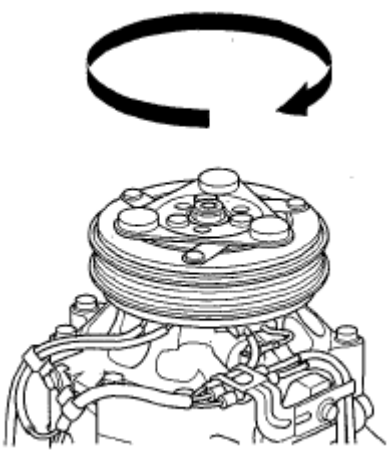


Fig. 183: Identifying Drain Plug, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Reinstall the drain plug with a new sealing washer (B).
5. Remove the shift solenoid valve cover (A), the dowel pins (B), the gasket (C), and the harness clamp bracket (D).

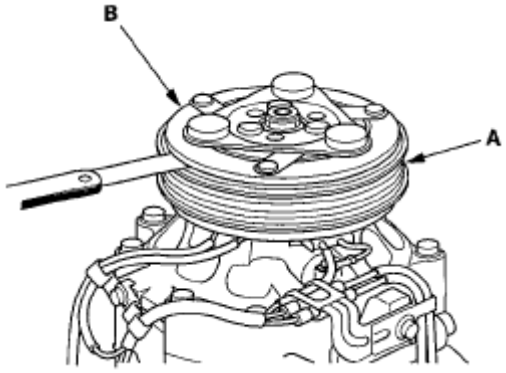


Fig. 184: Identifying Shift Solenoid Valve Cover, Dowel Pins, Gasket, Harness Clamp Bracket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the shift solenoid valve connectors.
   - If replacing shift solenoid valve(s), go to step 7.
   - If replacing the shift solenoid harness, remove the shift solenoid harness connector (A), and replace it. Install a new O-ring (B) on the new shift solenoid harness connector, and install it in the transmission housing, then go to step 12.

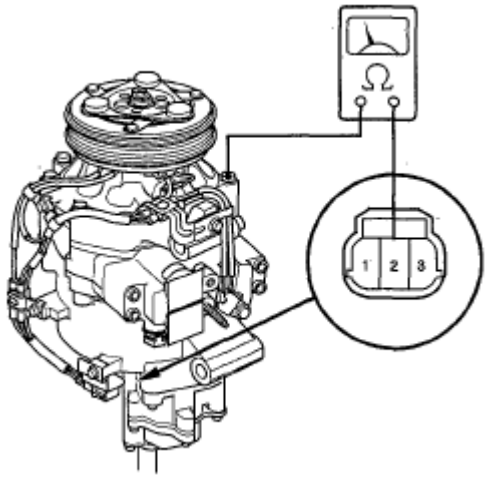


Fig. 185: Identifying Shift Solenoid Harness Connector, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the mounting bolts, then hold the shift solenoid valve body and remove the solenoid valves. Do not hold the connector to remove the solenoid valve.

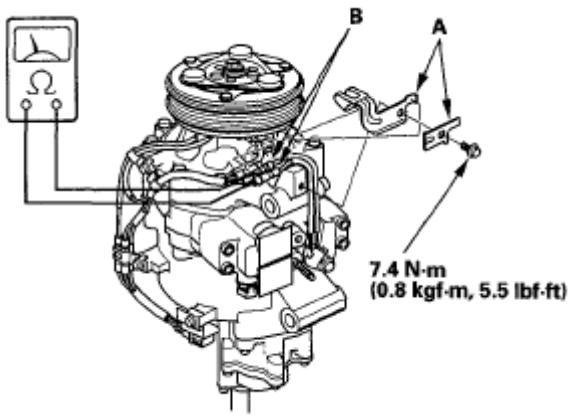


Fig. 186: Identifying Shift Solenoid Valve, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install new O-rings (two O-rings per solenoid valve) (E) on the solenoid valve.

NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.

9. Install shift solenoid valve D (black connector) and shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.

NOTE: Do not hold the solenoid valve by the connector when installing the solenoid valve. Be sure to hold the solenoid valve body.

10. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.
11. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve B.

NOTE: Do not install shift solenoid valve A before installing shift solenoid valve B. If shift solenoid valve A is installed before installing shift solenoid valve B, it may damage to hydraulic control system.

12. Connect the shift solenoid harness connectors:
    - BLU wire to shift solenoid valve A.
    - ORN, WHT, and WHT wires to shift solenoid valve B.
    - GRN wire to shift solenoid valve C.
    - YEL wire to shift solenoid valve D.
13. Install the shift solenoid valve cover, the dowel pins, a new gasket, and the harness clamp bracket.
14. Check the connector for rust, dirt, or oil, then connect the connector securely.
15. Refill the transmission with ATF (see step 5).
16. Install the splash shield.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

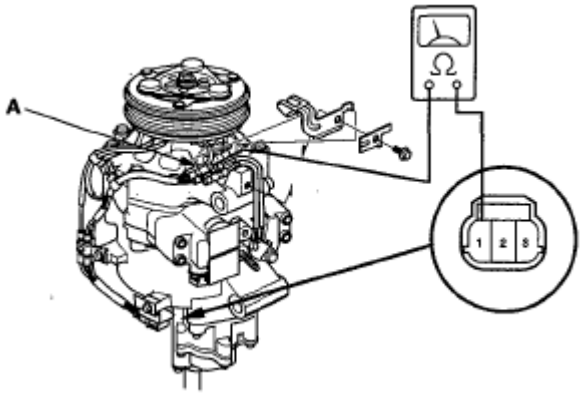


Fig. 187: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**)
3. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu with the HDS.
4. Test A/T clutch pressure control solenoid valve A with the HDS.
   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.
5. Remove the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**) and the intake air duct.
6. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (B).

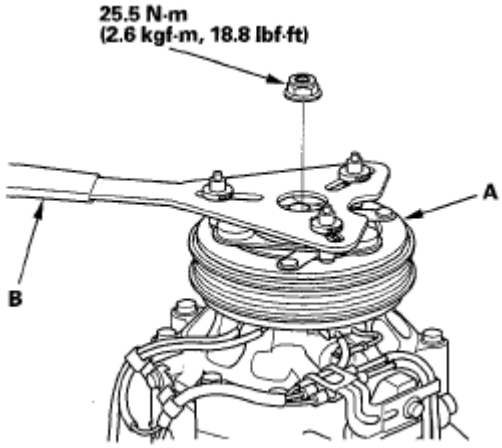


Fig. 188: Identifying Harness Cover, Harness Clamp & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the A/T clutch pressure control solenoid valve A connector (A)

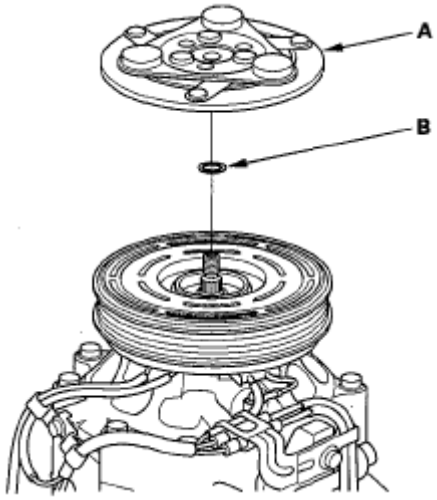


Fig. 189: Identifying A/T Clutch Pressure Control Solenoid Valve A Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the A/T clutch pressure control solenoid valve A resistance at the connector terminals.

   Standard: 3-10 ohms

   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**).
   - If the resistance is within the standard, go to step 9.
9. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.
   - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
   - If no clicking sound is heard, go to step 10.
10. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.

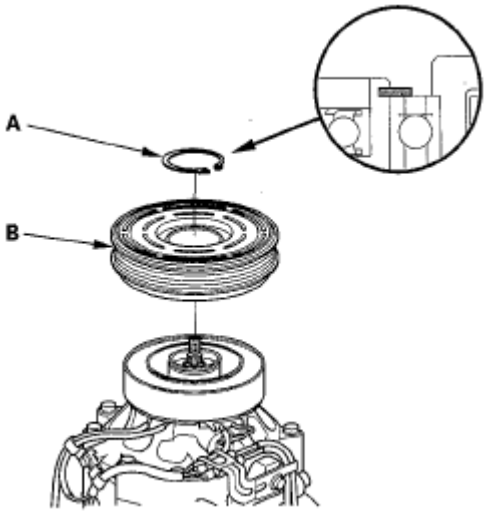


Fig. 190: Identifying ATF Pipe, ATF Joint Pipes, O-Rings, Gasket & Torque Specification

Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).
12. Check the fluid passage of the solenoid valve for contamination.
13. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.

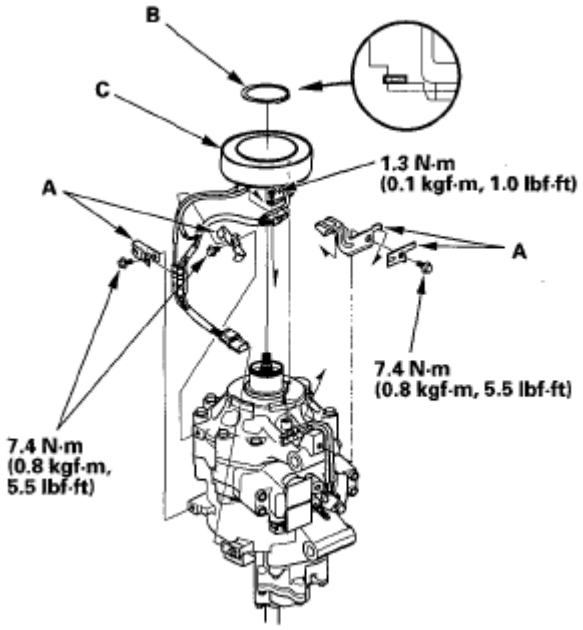


Fig. 191: Checking A/T Clutch Pressure Control Solenoid Valve A
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect one of the jumper wires and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A.
15. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.
16. Install a new gasket with the blue side down and the white side up on the transmission housing, and install the ATF pipe and the ATF joint pipes.
17. Install new O-rings over the ATF joint pipes.
18. Install A/T clutch pressure control solenoid valve A.
19. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.
20. Secure the harness cover with the mounting bolts, and install the harness clamp.
21. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER REMOVAL/INSTALLATION**)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.

2. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (B).

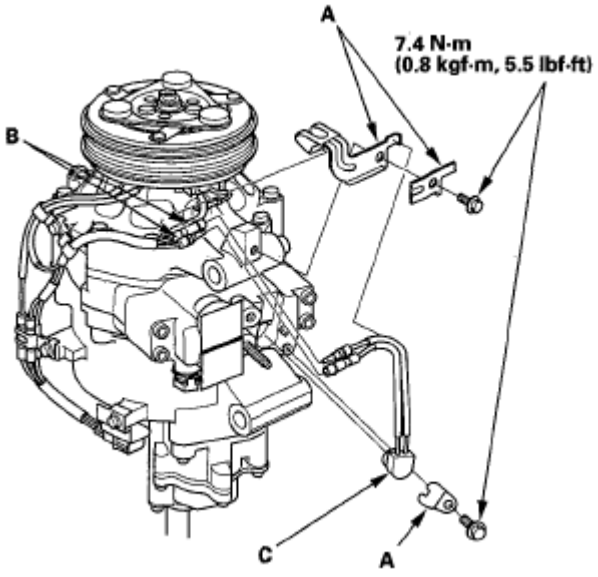


Fig. 192: Identifying Harness Cover, Harness Clamp & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the A/T clutch pressure control solenoid valve A connector.
4. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.

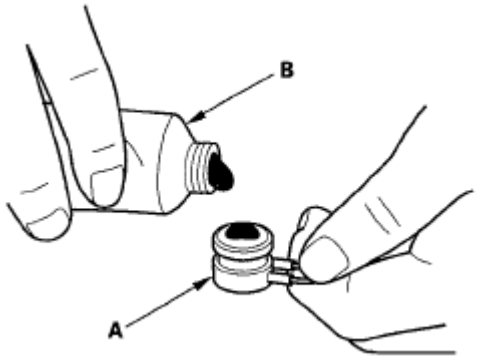


Fig. 193: Identifying ATF Pipe, ATF Joint Pipes, O-Rings, Gasket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).
6. Check the fluid passage of the transmission housing for dust or dirt, and clean the passage.
7. Install a new gasket with the blue side down and the white side up on the transmission housing, and install the ATF pipe and the ATF joint pipes.
8. Install new O-rings over the ATF joint pipes.
9. Install a new A/T clutch pressure control solenoid valve A.
10. Check the A/T clutch pressure control solenoid valve A connector for rust, dirt, or oil, then connect the connector securely.
11. Secure the harness cover with the mounting bolts, and install the harness clamp.

12. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B TEST

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

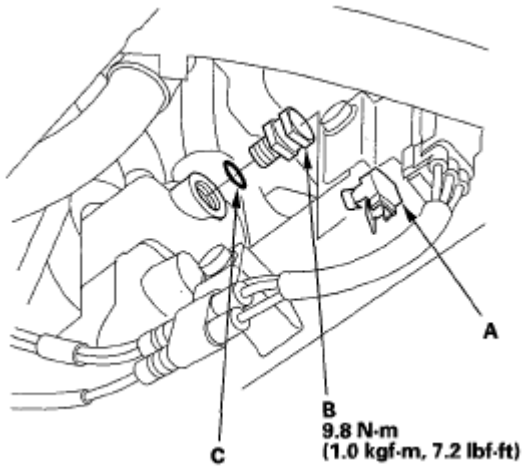


Fig. 194: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu with the HDS.
4. Test A/T clutch pressure control solenoid valve B with the HDS.
   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.
5. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
6. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (B).

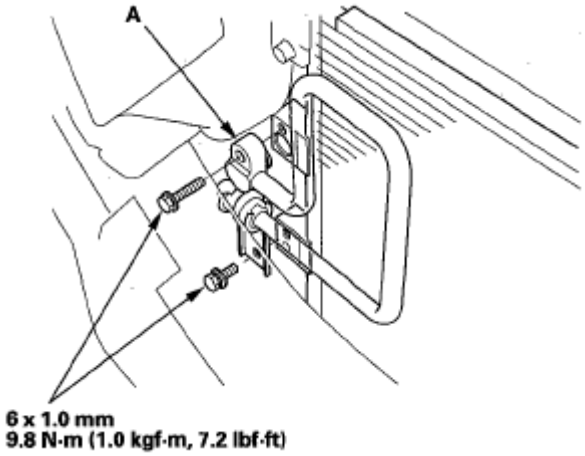


Fig. 195: Identifying Harness Cover, Harness Clamp & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the A/T clutch pressure control solenoid valve B connector (A).

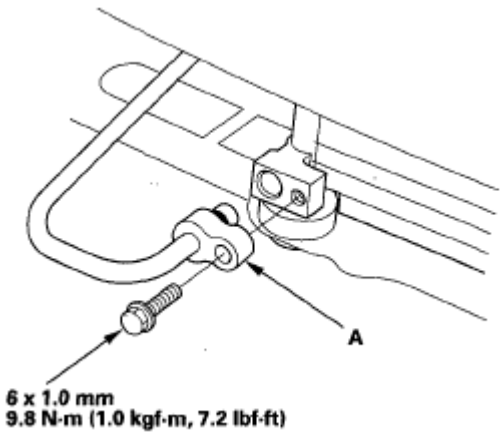


Fig. 196: Identifying A/T Clutch Pressure Control Solenoid Valve B Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the A/T clutch pressure control solenoid valve B resistance at the connector terminals.

   Standard: 3-10 ohms

   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**).
   - If the resistance is within the standard, go to step 9.
9. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.
   - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
   - If no clicking sound is heard, go to step 10.
10. Remove A/T clutch pressure control solenoid valve B and C.

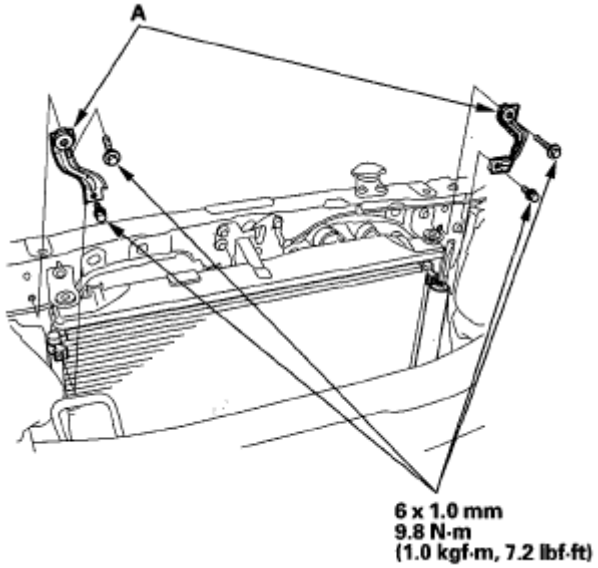


Fig. 197: Identifying ATF Pipe, ATF Joint Pipes, O-Rings, Gasket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the ATF pipe (A), the ATF joint pipes (D), the O-rings (E), and the gasket (F).
12. Check the fluid passage of the solenoid valve for contamination.
13. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.

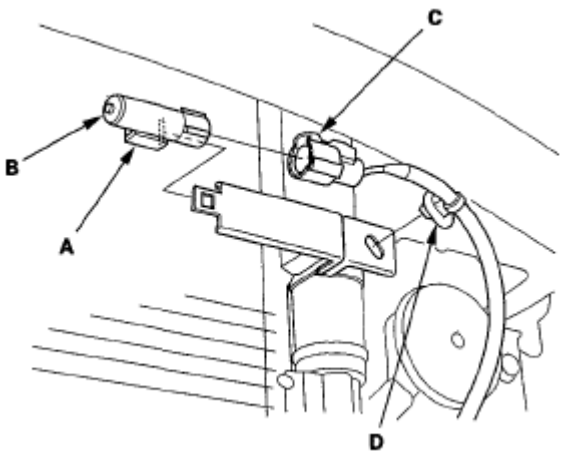


Fig. 198: Checking A/T Clutch Pressure Control Solenoid Valve B
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect one of the jumper wires and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.
15. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.
16. Install a new gasket with the blue side down and the white side up on the transmission housing.
17. Install the ATF pipe and the ATF joint pipes, and install new O-rings over the ATF joint pipes.

18. Install A/T clutch pressure control solenoid valves B and C.
19. Check the A/T clutch pressure control solenoid valve B and C connectors for rust, dirt, or oil, then connect the connectors securely.
20. Secure the harness cover with the mounting bolts, and install the harness clamp.
21. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C TEST

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

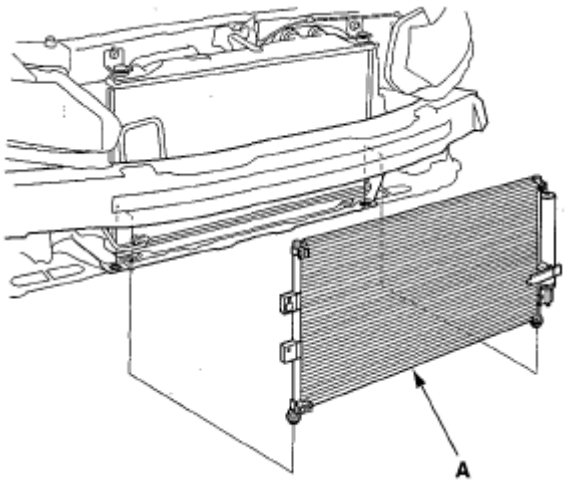


Fig. 199: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu on the HDS.
4. Test A/T clutch pressure control solenoid valve C with the HDS.
   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.
5. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
6. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (B).

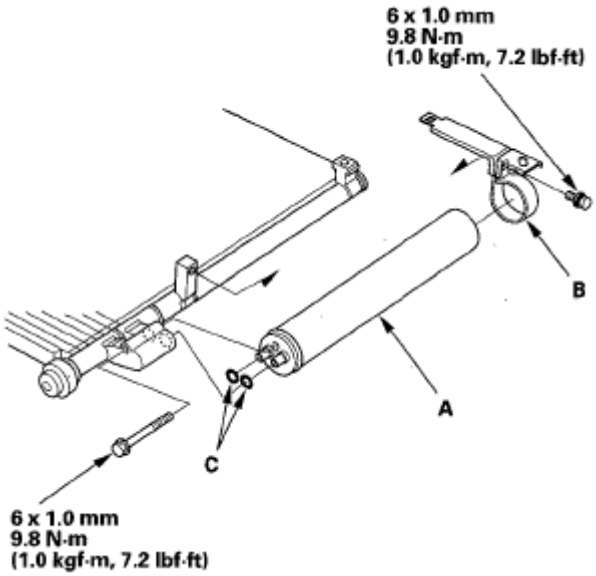


Fig. 200: Identifying Harness Cover, Clamp & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the A/T clutch pressure control solenoid valve C connector (A).

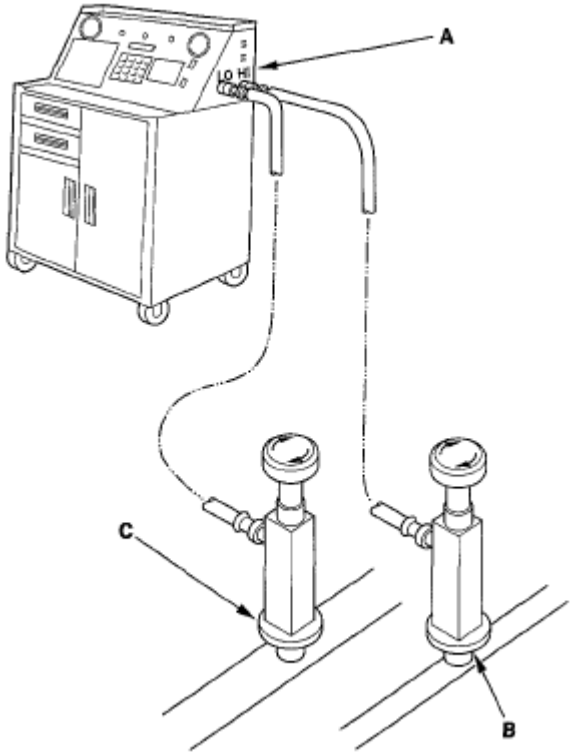


Fig. 201: Identifying A/T Clutch Pressure Control Solenoid Valve C Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the A/T clutch pressure control solenoid valve C resistance at the connector terminals.

   Standard: 3-10 ohms

- If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**).
- If the resistance is within the standard, go to step 9.

9. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.
   - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
   - If no clicking sound is heard, go to step 10.
10. Remove A/T clutch pressure control solenoid valve B and C.

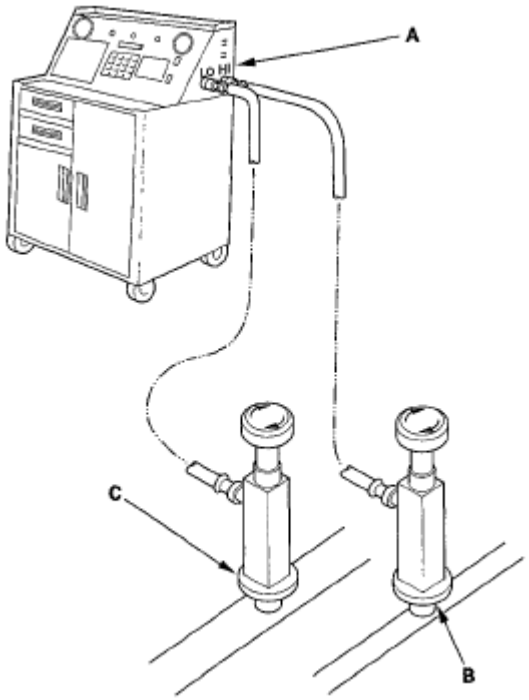


Fig. 202: Identifying ATF Pipe, ATF Joint Pipes, O-Rings, Gasket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the ATF pipe (A), the ATF joint pipes (D), the O-rings (E), and the gasket (F).
12. Check the fluid passage of the solenoid valve for contamination.
13. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.

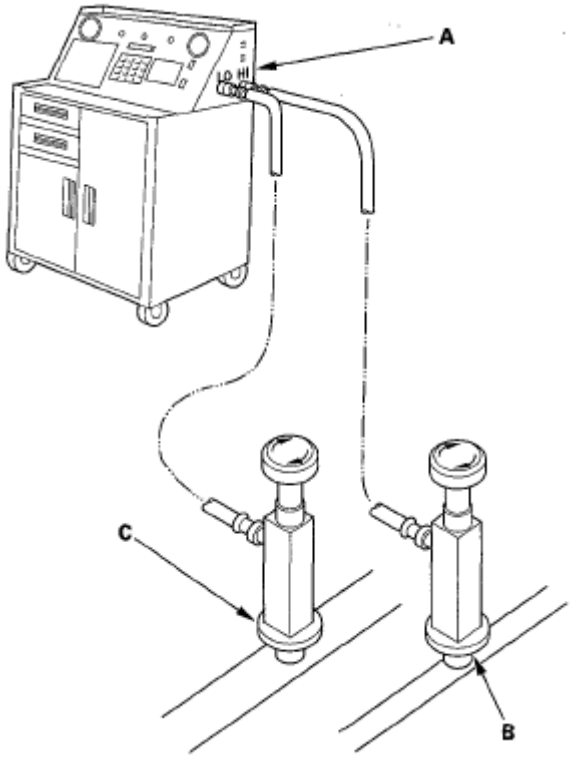


Fig. 203: Checking A/T Clutch Pressure Control Solenoid Valve C
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect one of the jumper wires and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.
15. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.
16. Install a new gasket with the blue side down and the white side up on the transmission housing.
17. Install the ATF pipe and the ATF joint pipes, and install new O-rings over the ATF joint pipes.
18. Install A/T clutch pressure control solenoid valves B and C.
19. Check the A/T clutch pressure control solenoid valve B and C connectors for rust, dirt, or oil, then connect the connectors securely.
20. Secure the harness cover with the mounting bolts, and install the harness clamp.
21. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (D).

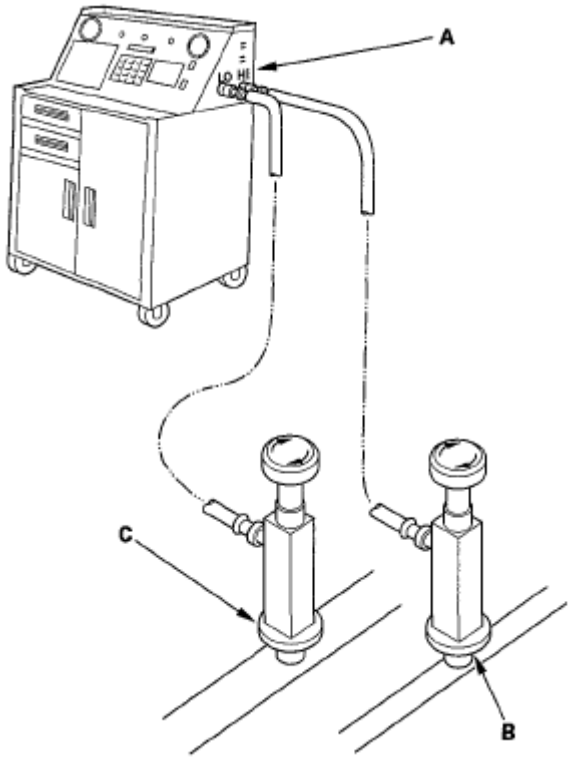


Fig. 204: Identifying Harness Cover, Clamp & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the connectors from A/T clutch pressure control solenoid valve B and C.
4. Remove A/T clutch pressure control solenoid valve B and C.

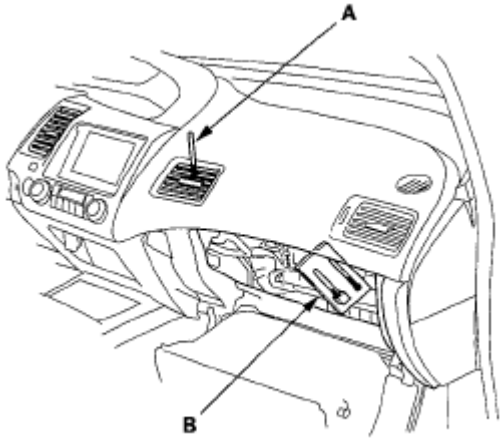


Fig. 205: Identifying ATF Pipe, ATF Joint Pipes, O-Rings, Gasket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the ATF pipe (A), the ATF joint pipes (D), the O-rings (E), and the gasket (F).
6. Clean the mounting surface and the fluid passages of the transmission housing.
7. Install a new gasket with the blue side down and the white side up on the transmission housing.
8. Install the ATF pipe and the ATF joint pipes, and install new O-rings over the ATF joint pipes.

9. Install a new A/T clutch pressure control solenoid valve B and C.
10. Check the A/T clutch pressure control solenoid valve B and C connectors for rust, dirt, or oil, then connect the connectors securely.
11. Secure the harness cover with the mounting bolts, and install the harness clamp.
12. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**)

INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Remove the harness clamp (A) from its bracket, and remove the air cleaner housing bracket (B).

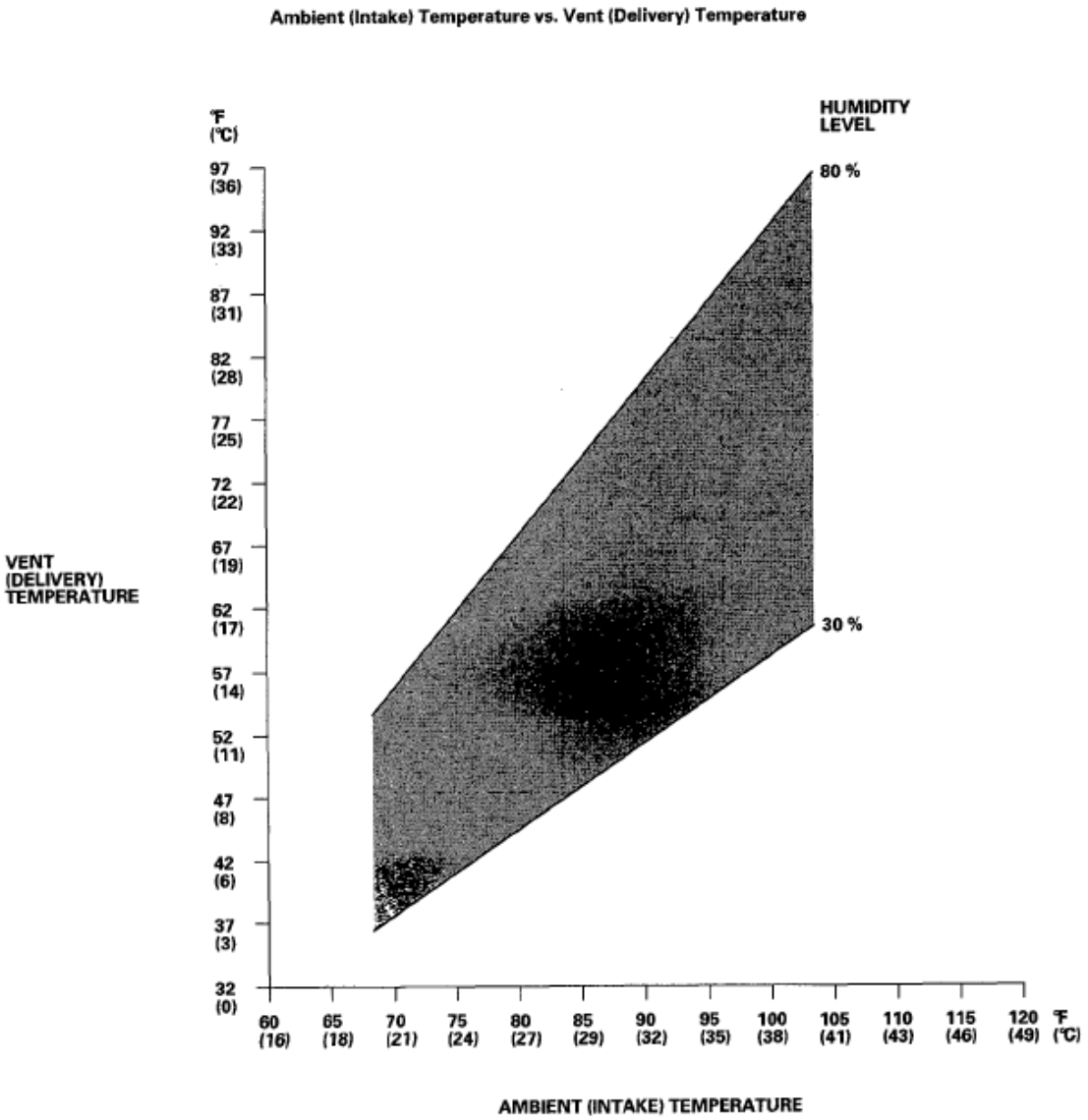


Fig. 206: Identifying Harness Clamp, Torque Specification And Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft)

speed sensor (A).

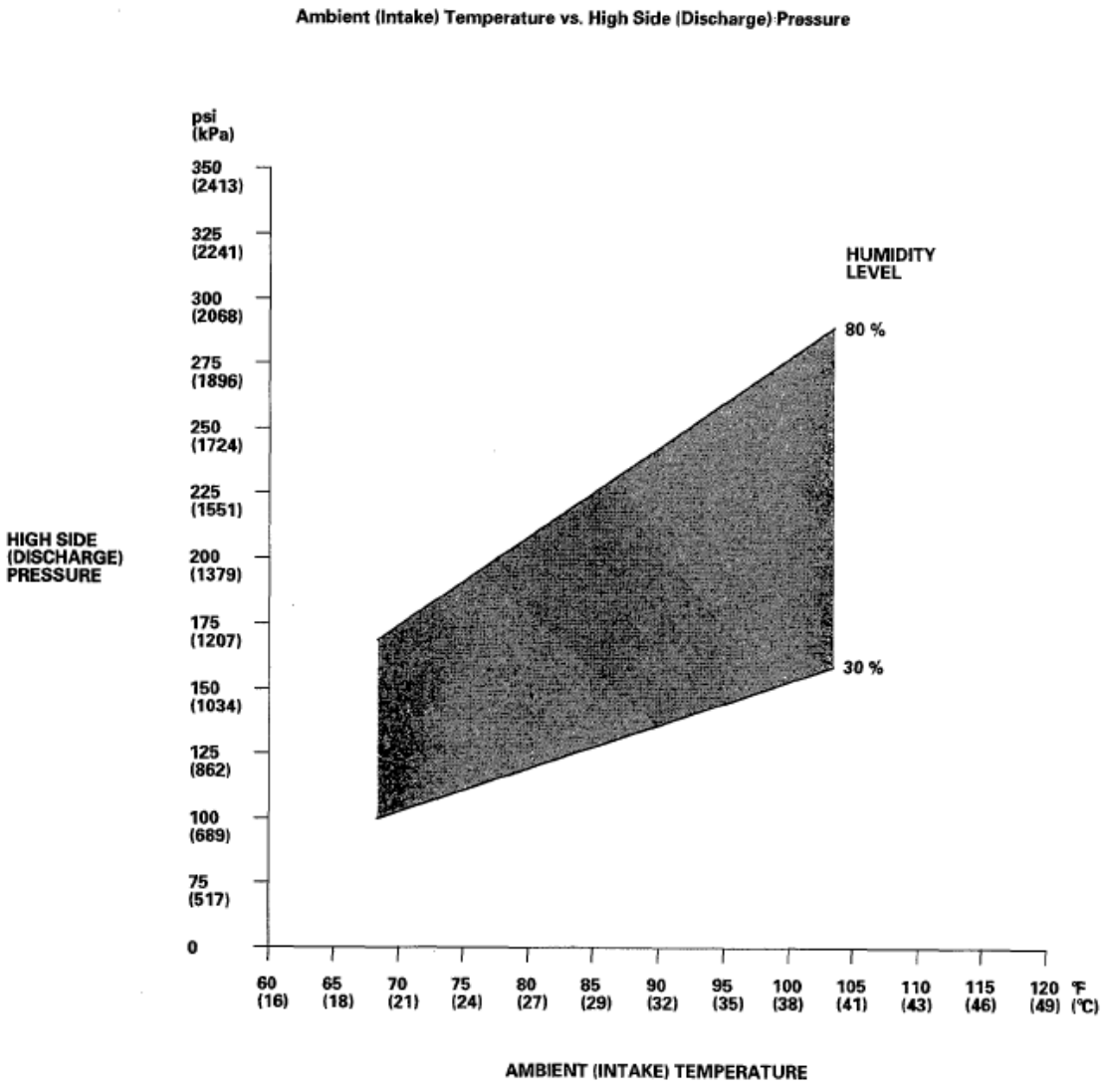


Fig. 207: Identifying Input Shaft (Mainshaft) Speed Sensor, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install a new O-ring (B) on the new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor in the transmission housing.
5. Check the connector for rust, dirt, or oil, then connect the connector securely.
6. Install the air cleaner housing bracket, and install the harness clamp on its bracket.
7. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**)

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor (A).

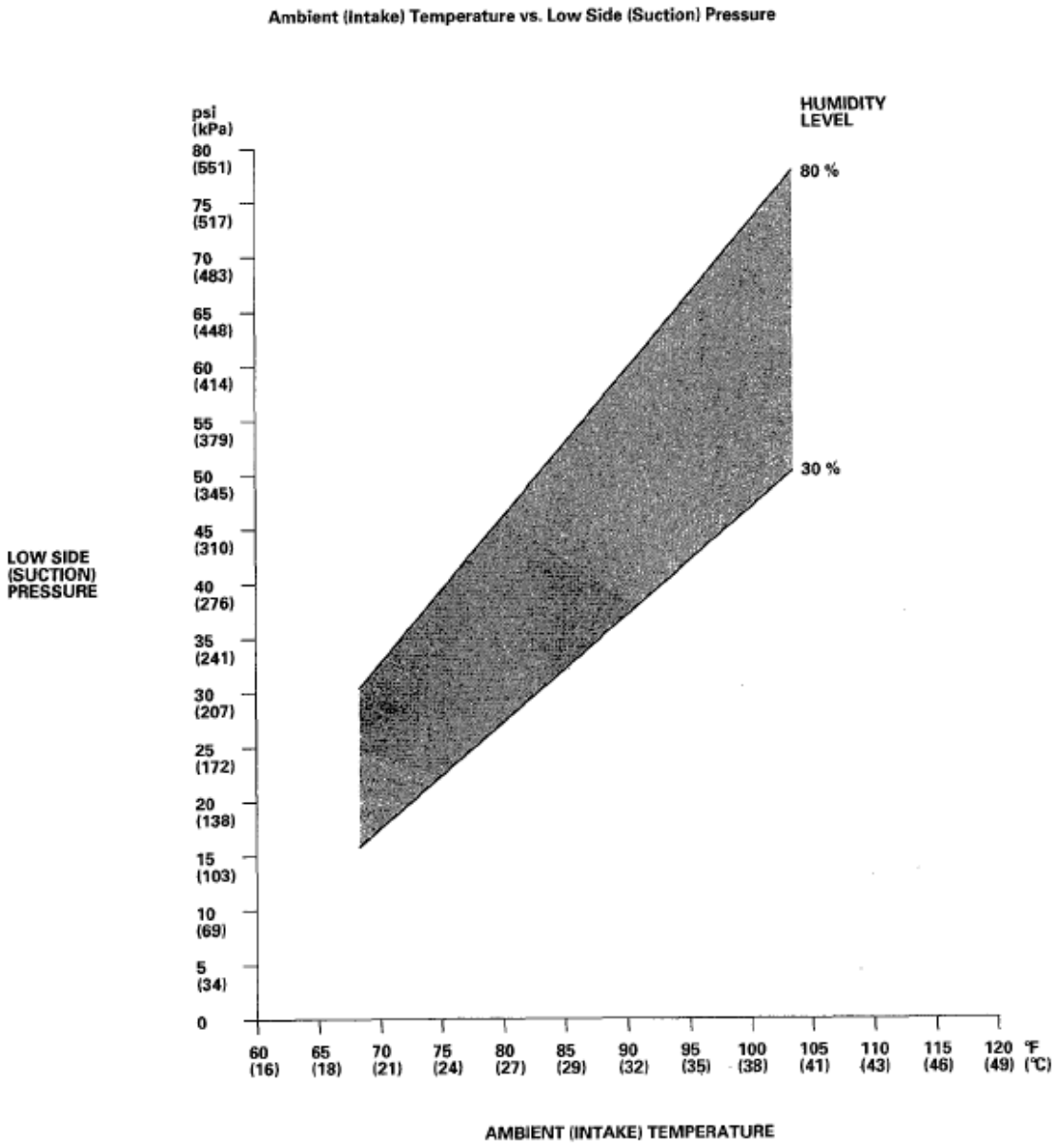


Fig. 208: Identifying Output Shaft (Countershaft) Speed Sensor, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install a new O-ring (B) on a new output shaft (countershaft) speed sensor, then install the output shaft (countershaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.
5. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Remove the harness clamp (A) from its bracket, and remove the air cleaner housing bracket (B).

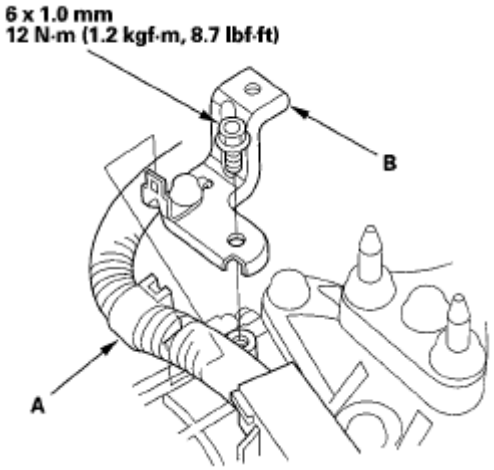


Fig. 209: Identifying Harness Clamp, Air Cleaner Housing Bracket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Disconnect the 2nd clutch transmission fluid pressure switch connector, and remove the 2nd clutch transmission fluid pressure switch (A).

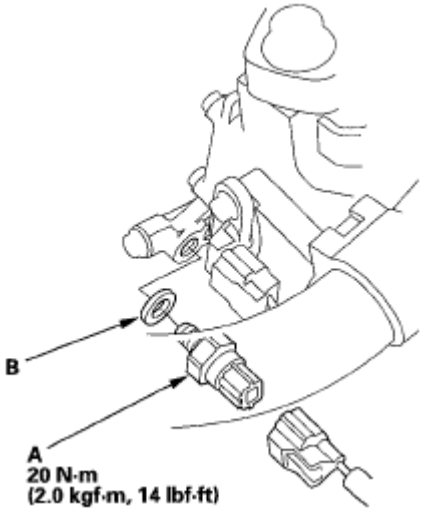


Fig. 210: Identifying 2nd Clutch Transmission Fluid Pressure Switch, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Make sure there is no water, oil, dust, or foreign particles inside the connectors.
5. Install a new 2nd clutch transmission fluid pressure switch with a new sealing washer (B), and tighten the switch to the specified torque by turning the metal part, not the plastic part.
6. Connect the connector securely.
7. Install the air cleaner housing bracket, and install the harness clamp on its bracket.
8. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Disconnect the 3rd clutch transmission fluid pressure switch connector, then remove the 3rd clutch transmission fluid pressure switch (A).

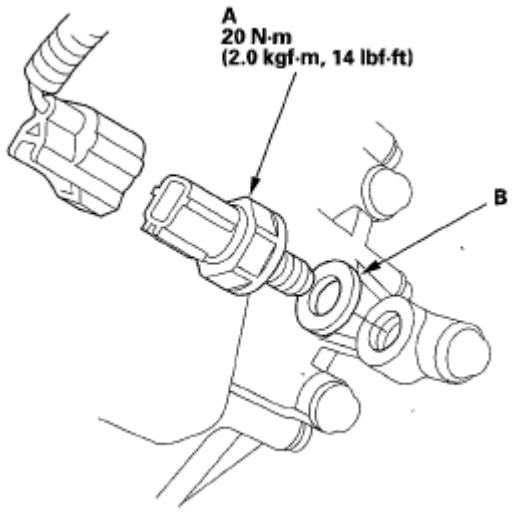


Fig. 211: Identifying 3rd Clutch Transmission Fluid Pressure Switch, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Make sure there is no water, oil, dust, or foreign particles inside the connector.
5. Install a new 3rd clutch transmission fluid pressure switch with a new sealing washer (B), and tighten the switch to the specified torque by turning the metal part, not the plastic part.
6. Connect the connector securely.
7. Install the splash shield.

ATF TEMPERATURE SENSOR TEST/REPLACEMENT

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Disconnect the shift solenoid harness connector.

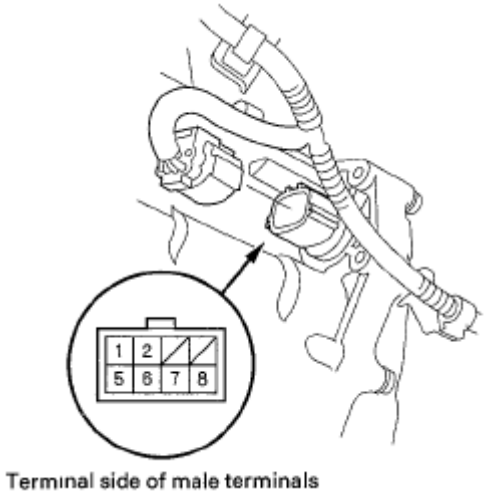


Fig. 212: Identifying Shift Solenoid Harness Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the ATF temperature sensor resistance between shift solenoid harness connector terminals No. 6 and No. 7.

   Standard: 50 ohms-25 kohms

5. If the resistance is out of standard, go to step 6, and replace the ATF temperature sensor and solenoid harness. The ATF temperature sensor is not available separately from the shift solenoid harness.

   If the resistance is within the standard, the test is complete, connect the connector securely, and install the splash shield.

6. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

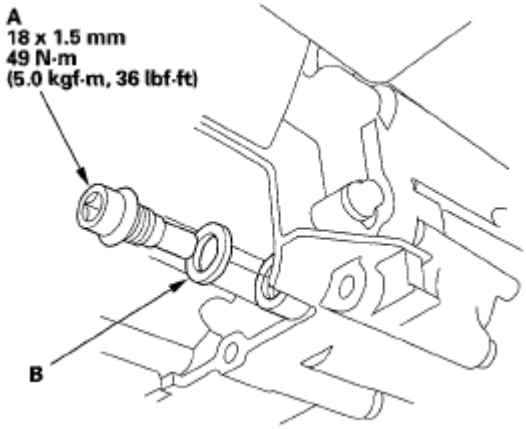
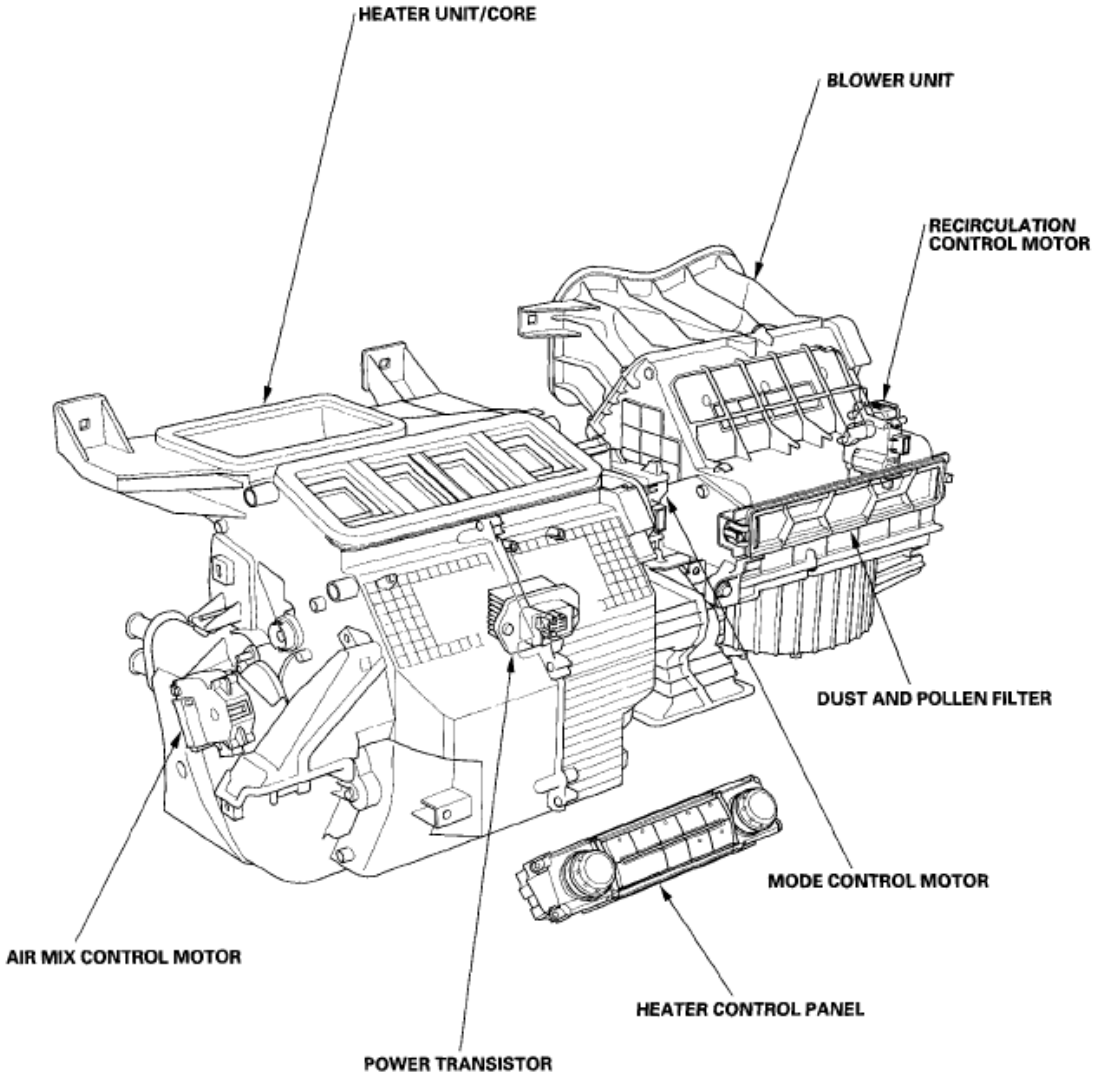


Fig. 213: Identifying Drain Plug, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Reinstall the drain plug with a new sealing washer (B).
8. Remove the shift solenoid valve cover (A), the dowel pins (B), the gasket (C), and the harness clamp bracket (D).



4-door is shown, 2-door is similar.

Fig. 214: Identifying Shift Solenoid Valve Cover, Dowel Pins, Gasket, Harness Clamp Bracket & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the shift solenoid harness connector (E), and replace it.

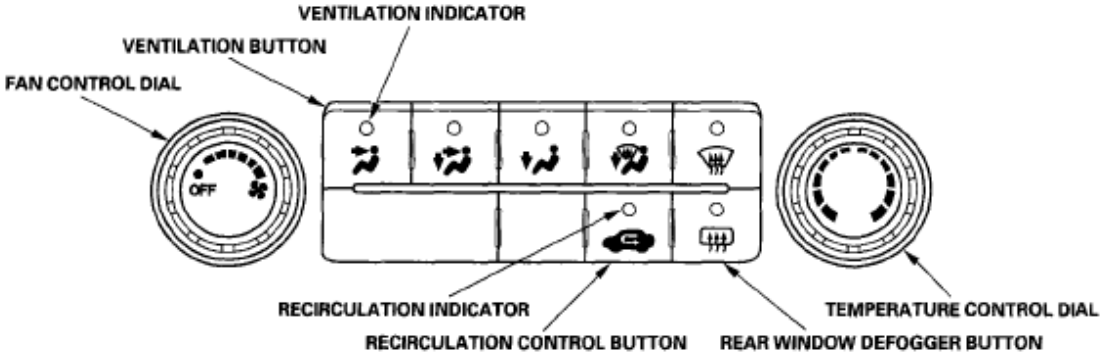


Fig. 215: Identifying Shift Solenoid Harness Connector, O-Ring & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install a new O-ring (F) on a new shift solenoid harness connector, and install the connector in the transmission housing.
11. Connect WHT harnesses and ORN harness connector to shift solenoid valve B. ATF temperature sensor is assembled in the connector with WHT harnesses.
12. Connect the shift solenoid harness connectors:
    - BLU wire to shift solenoid valve A.
    - GRN wire to shift solenoid valve C.
    - YEL wire to shift solenoid valve D.
13. Install the shift solenoid valve cover, the dowel pins, a new gasket, and the harness clamp bracket.
14. Check the connector for rust, dirt, or oil, then connect the connector securely.
15. Refill the transmission with ATF (see step 5).
16. Install the splash shield.

ATF LEVEL CHECK

NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on the level ground.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and turn the engine off. Do not allow the engine to warm up more than two cycles of the cooling fan.

NOTE: Check the fluid level within 60-90 seconds after turning the engine off. Higher fluid level may be indicated if the radiator fan comes on twice or more.

3. Remove the dipstick (yellow loop) (A), and wipe it with a clean cloth.

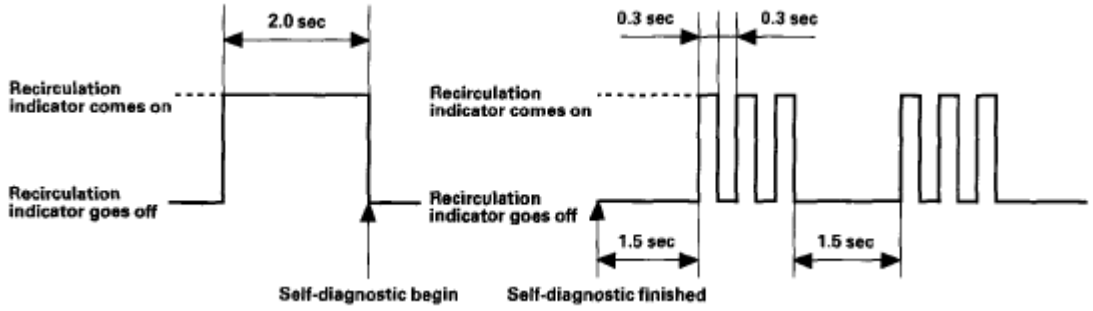


Fig. 216: Identifying Dipstick (Yellow Loop)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the dipstick into the transmission.
5. Remove the dipstick and check the fluid level. It should be between the upper mark (A) and the lower mark (B).

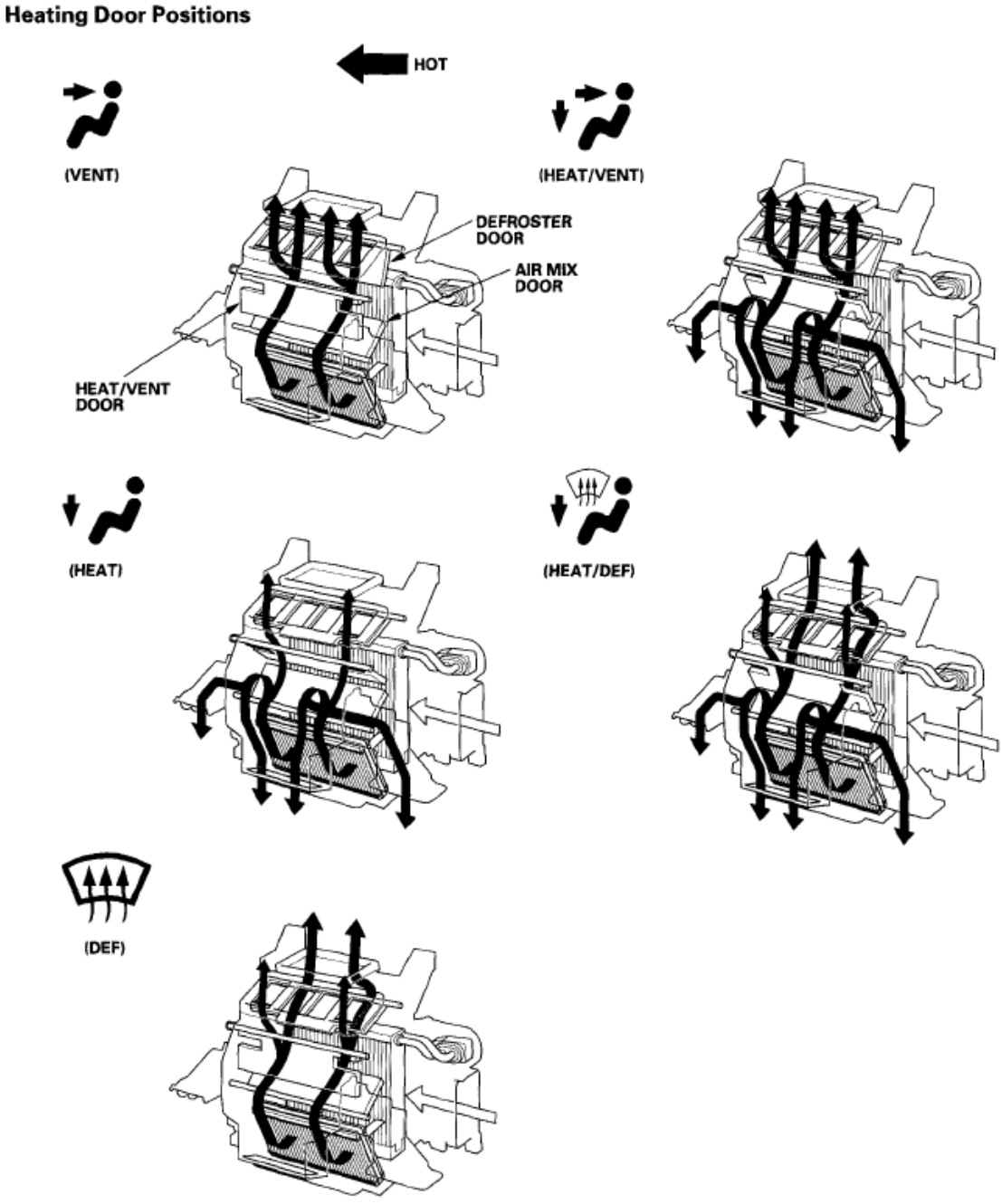


Fig. 217: Identifying Upper Mark And Lower Mark On Dipstick
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the level is below the lower mark, check for fluid leaks at the transmission, the hoses, and the line joints. If a problem is found, fix it before filling the transmission with ATF.

NOTE: If the vehicle is driven when the ATF level is below the lower mark:

- **Transmission damage will result.**
- **The vehicle might not move in any gear.**
- **The vehicle may accelerate poorly, and flare when starting off in D and R.**

- **The engine may vibrate at idle.**

7. If the level is above the upper mark, drain the ATF to proper level (see step 3).

NOTE: If the vehicle is driven when the ATF level is above the upper mark, the vehicle may creep forward while in N, or have problems shifting.

8. If necessary, fill the transmission with ATF through the dipstick hole (A) to bring the fluid level between the upper mark and the lower mark of the dipstick. Do not fill the fluid above the upper mark. Always use genuine Honda ATF-Z1 automatic transmission fluid (ATF). Using a non-Honda ATF can affect shift quality.

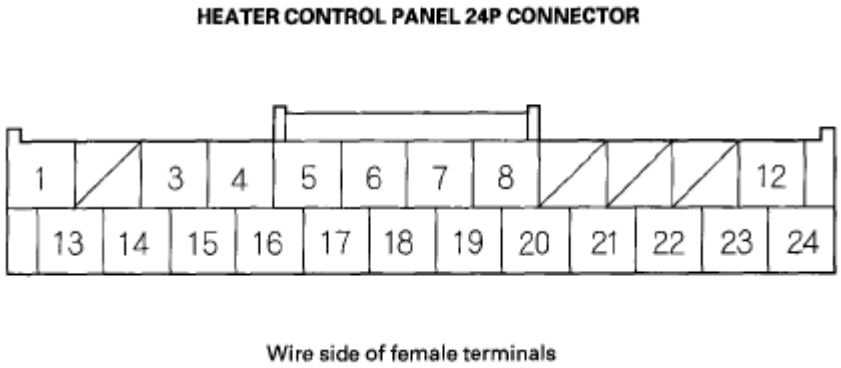


Fig. 218: Identifying Dipstick Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Insert the dipstick back into the transmission.

ATF REPLACEMENT

NOTE: Keep all foreign particles out of the transmission.

1. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on the level ground, and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

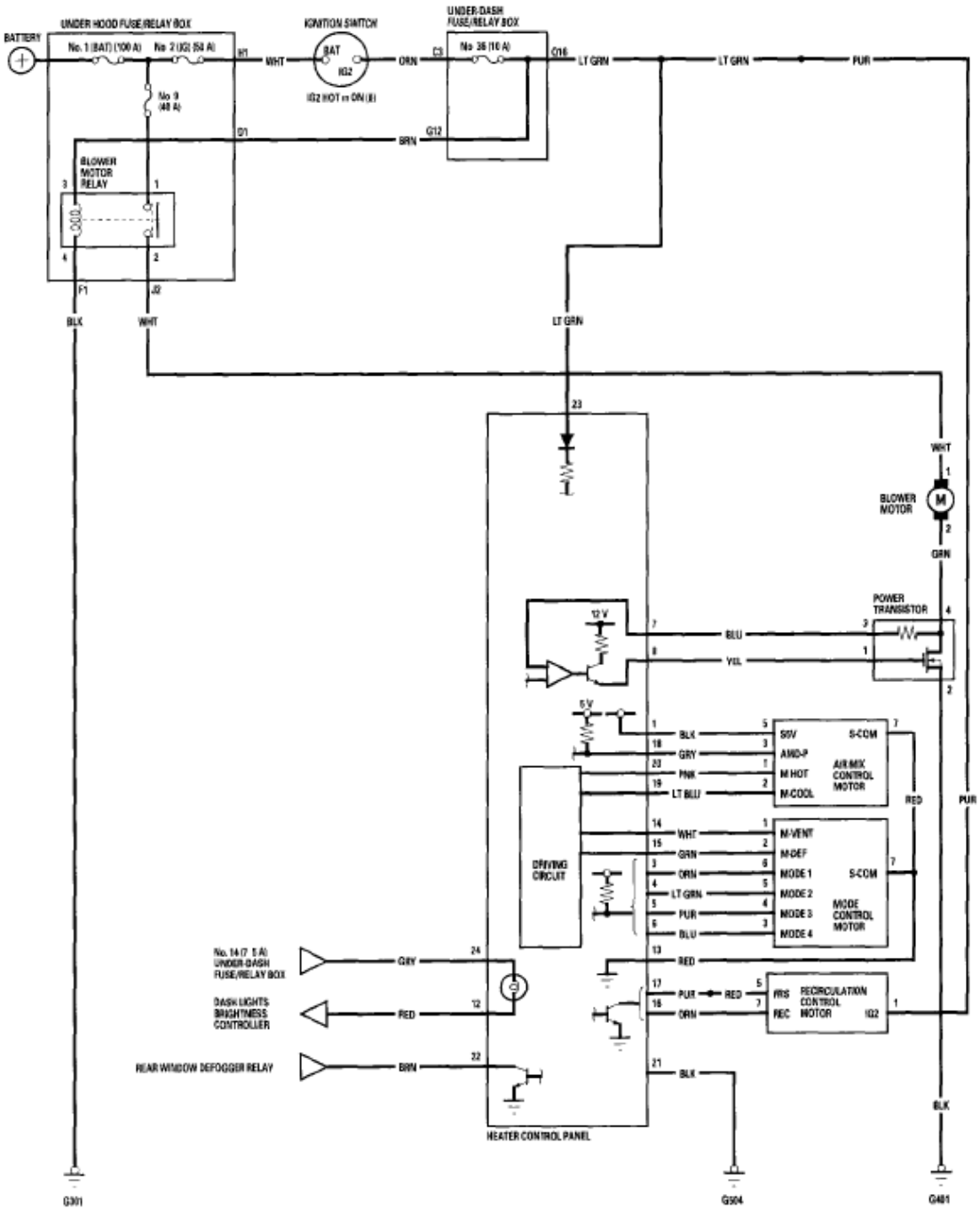


Fig. 219: Identifying Drain Plug, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Reinstall the drain plug with a new sealing washer (B).
5. Refill the transmission with the recommended fluid into the dipstick hole to bring the fluid level between the upper mark and the lower mark of the dipstick. Always use Honda ATF-Z1 automatic transmission fluid (ATF). Using a non-Honda ATF can affect shift quality.

Automatic Transmission Fluid Capacity:

2.4 L (2.5 US qt, 2.1 Imp qt) at change

5.9 L (6.2 US qt, 5.2 Imp qt) at overhaul

6. Check that the fluid level is between the upper mark and the lower mark of the dipstick.
7. Insert the dipstick back into the transmission.
8. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

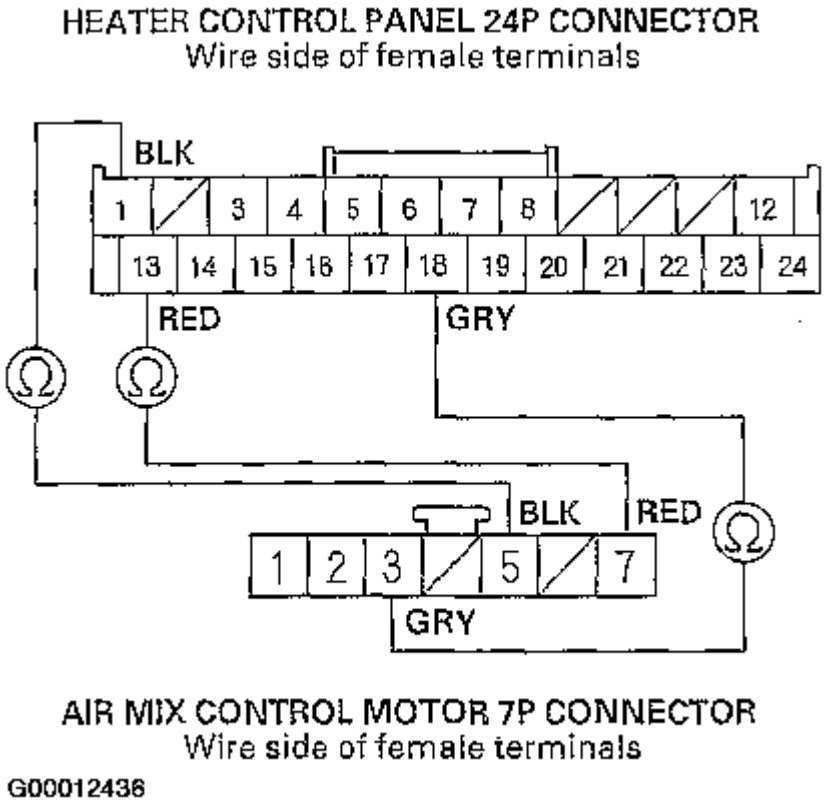


Fig. 220: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
10. Turn the ignition switch to ON (II), and reset the ATF life with the HDS.
11. '06 4-door model and '07-08 2 and 4 door models: If the maintenance minder recommends replacing the ATF, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), and this procedure is complete. If the maintenance minder did not recommend replacing the ATF, go to step 12.

    '06 2-door model: If the maintenance minder recommends replacing the ATF, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), and this procedure is complete. If the maintenance minder did not recommend replacing the ATF, notify the customer that the maintenance minder service interval has not been reached and the maintenance minder will still be on the same interval as before.

12. Select BODY ELECTRICAL with the HDS.
13. Select ADJUSTMENT in the GAUGES MENU with the HDS.

14. Select RESET in the MAINTENANCE MINDER with the HDS.
15. Select RESETTING THE ATF with the HDS.

NOTE: If you changed the engine oil at the same time with the ATF, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

TRANSMISSION REMOVAL

Special Tools Required

- 1.8 support eyelet 07AAK-SNAA400
- 1.8 support bolt 07AAK-SNAA500
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *
- Front subframe adapter VSB02C000016 *
- * These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **Special tool engine hanger must be used with the side engine mount installed.**

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Remove the cowl cover (see **COWL COVER REPLACEMENT**) and the under-cowl panel.
3. Remove the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
4. Make sure the ignition switch is in LOCK (0).

   Disconnect the negative cable from the battery, then disconnect the positive cable.

5. Remove the battery hold-down bracket, and remove the battery and the battery tray.
6. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
7. Remove the battery base and the resonator.
8. Raise the vehicle on a lift, make sure it is securely supported, and remove the wheels.
9. Remove the splash shield (see step 23 on **ENGINE REMOVAL**).
10. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

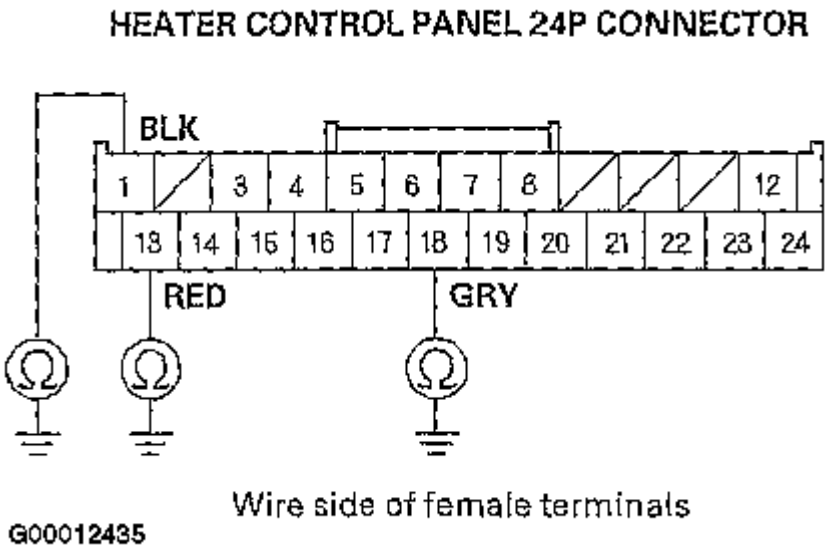


Fig. 221: Identifying Drain Plug, Sealing Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Reinstall the drain plug with a new sealing washer (B).
12. Secure the hood in the vertical position.
13. Remove the mounting bolts securing the harness cover (A), and remove the harness clamp (B).

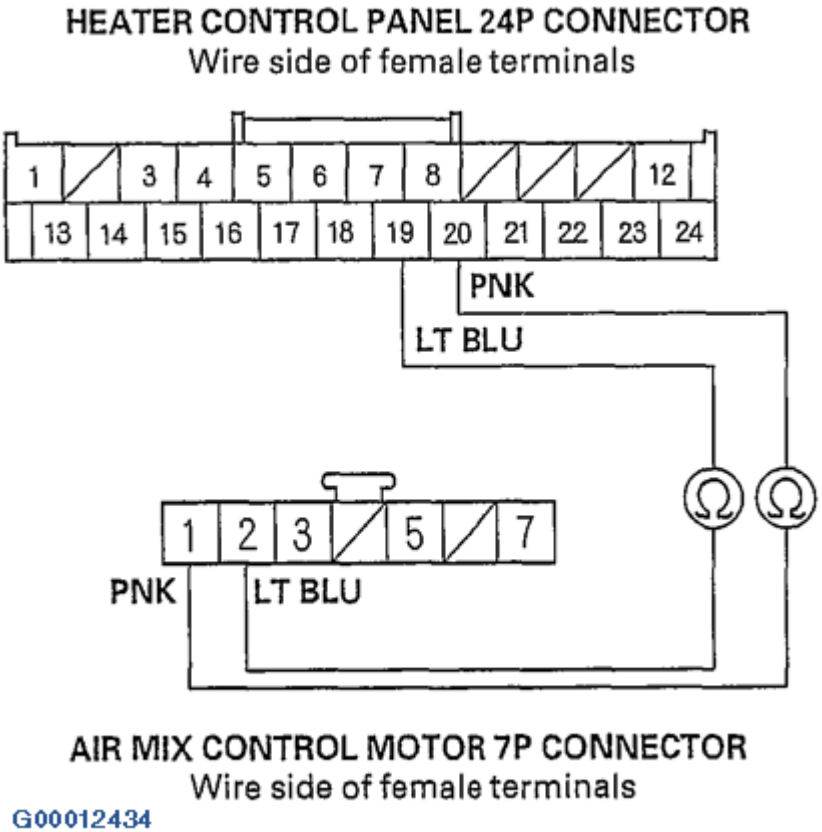


Fig. 222: Identifying Harness Cover And Clamp

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Disconnect the A/T clutch pressure control solenoid valve A connector (C), the A/T clutch pressure control solenoid valve B connector (D), and the A/T clutch pressure control solenoid valve C connector (E).
15. Remove the harness clamp (A) from its bracket, and remove the air cleaner housing mounting bracket (B).

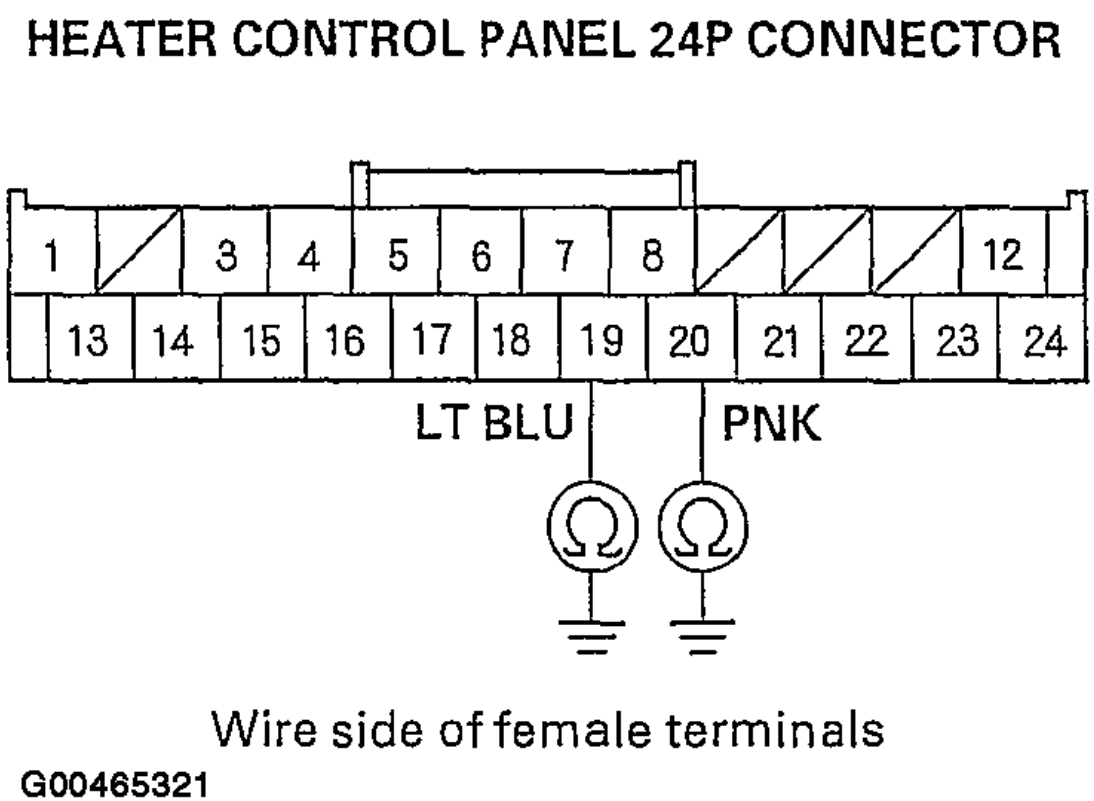


Fig. 223: Identifying Air Cleaner Housing Mounting Bracket And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Disconnect the transmission range switch connector (A).

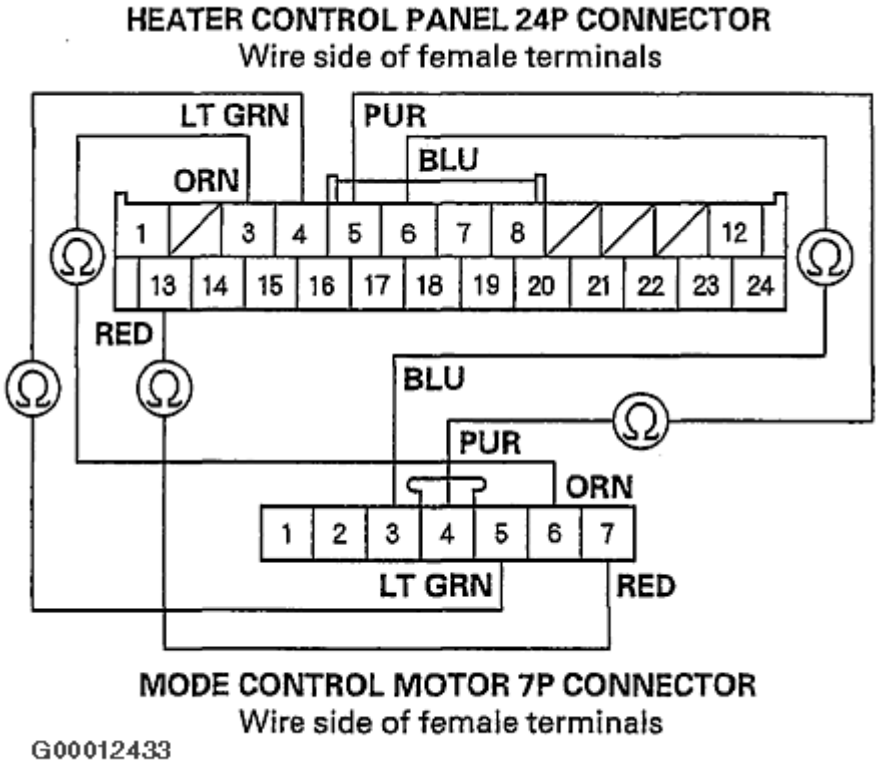


Fig. 224: Identifying Transmission Range Switch Connector, Output Shaft (Countershaft) Speed Sensor Connector And Harness Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Disconnect the output shaft (countershaft) speed sensor connector (B), and remove the harness clamps (C) from the clamp brackets (D).
18. Disconnect the input shaft (mainshaft) speed sensor connector (A) and the 2nd clutch transmission fluid pressure switch connector (B).

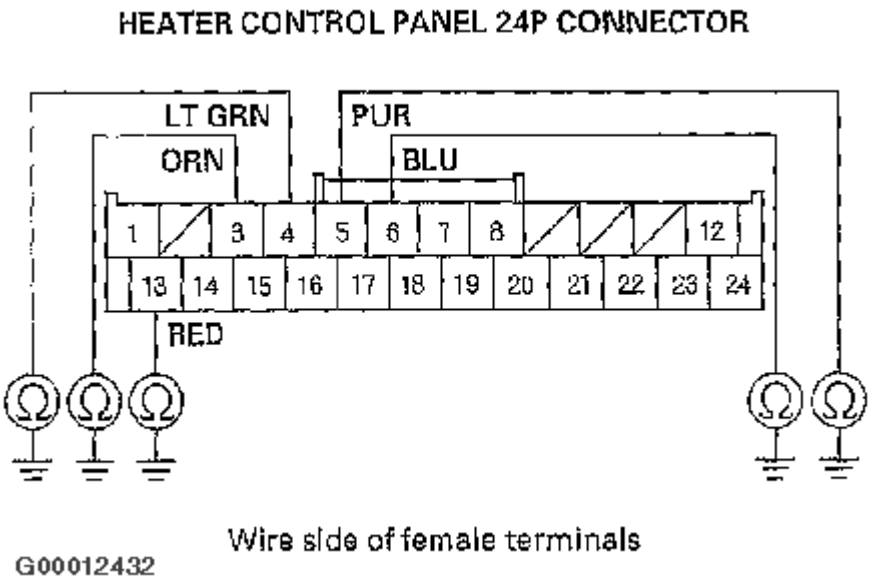


Fig. 225: Identifying Input Shaft (Mainshaft) Speed Sensor And 2nd Clutch Transmission Fluid Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Disconnect the ATF warmer hoses (A) from the ATF lines (B). Turn the end of the ATF warmer hoses up to prevent ATF from flowing out, then plug the hoses and lines.

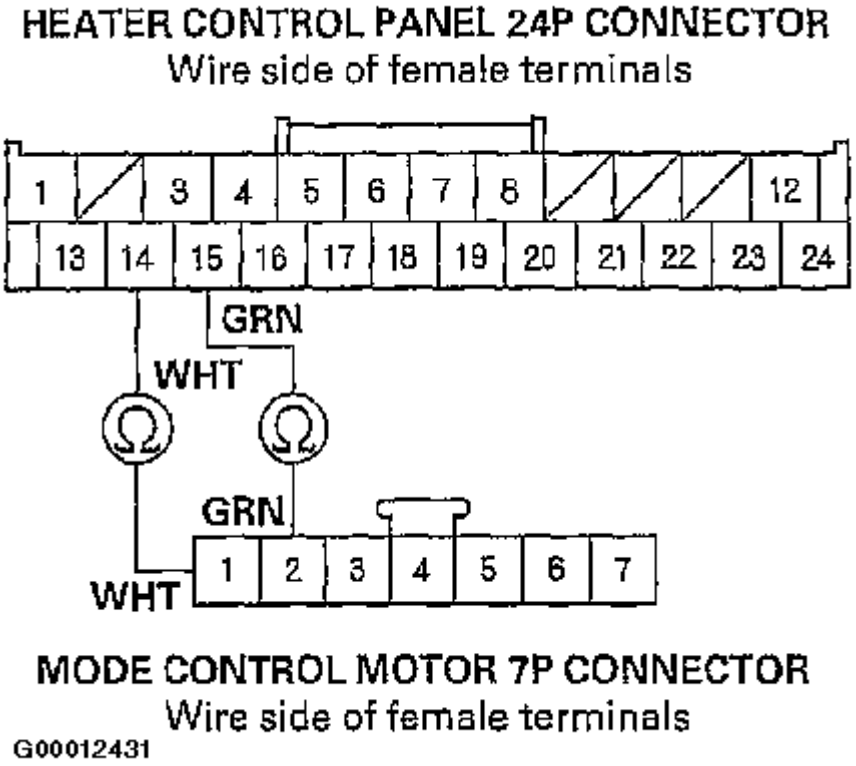


Fig. 226: Identifying ATF Warmer Hoses And ATF Lines
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the bolts securing the ATF warmer. Do not disconnect the ATF hoses and water by-pass hoses from the ATF warmer.

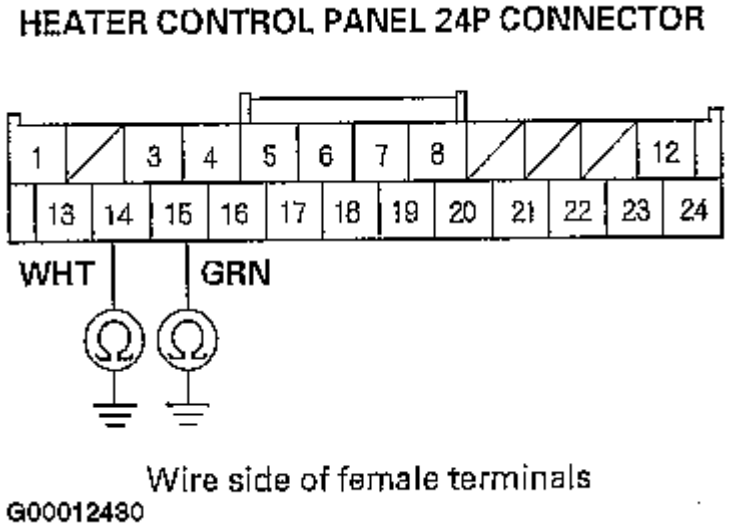


Fig. 227: Identifying ATF Hoses And Water By-Pass Hoses With Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Disconnect the shift solenoid harness connector (A) and the 3rd clutch transmission fluid pressure switch connector (B), and remove the harness clamps (C) from the clamp brackets (D).

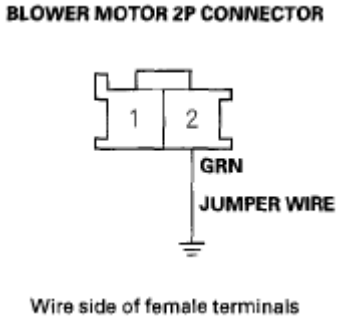


Fig. 228: Identifying Shift Solenoid Harness Connector And 3rd Clutch Transmission Fluid Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the harness clamp (A) from its bracket (B), and remove the radiator hose (C) from the clamp (D).

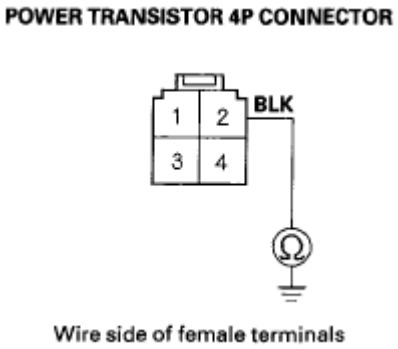


Fig. 229: Identifying Harness Clamp, Bracket, Radiator Hose And Clamp

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the air cleaner housing mounting bracket (A).

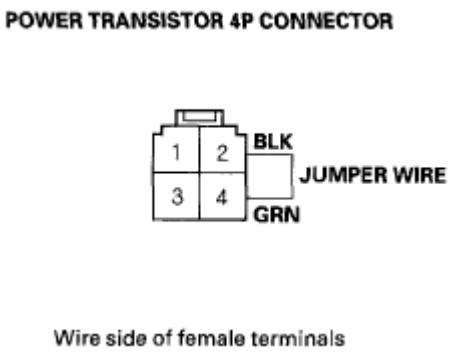


Fig. 230: Identifying Air Cleaner Housing Mounting Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Install the support eyelet behind the breather pipe (A) and down to the threaded hole (B) on the cylinder head.

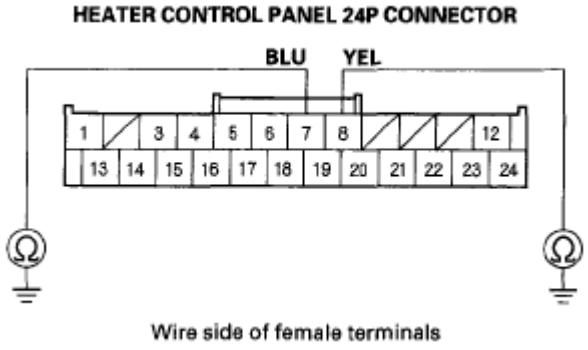


Fig. 231: Identifying Breather Pipe And Threaded Hole
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Attach the support eyelet to the cylinder head with the support bolt. Tighten the bolt by hand.

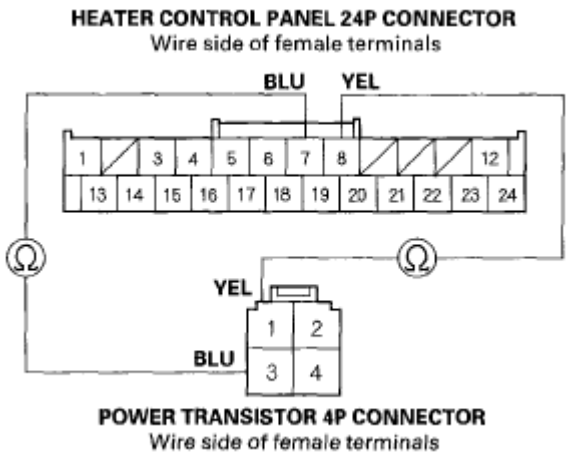


Fig. 232: Identifying Support Eyelet And Support Bolt

Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wing nut by hand to lift and support the engine/transmission assembly.

NOTE: Use care when working around the windshield.

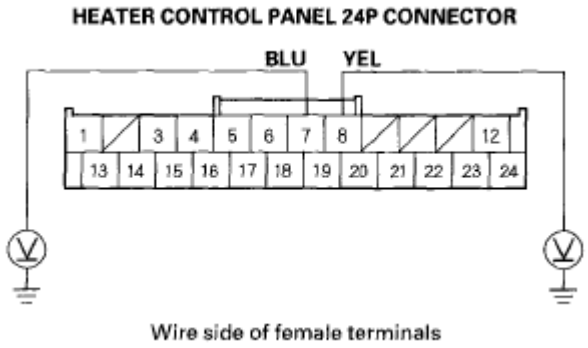


Fig. 233: Identifying Engine Support Hanger On Vehicle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the nuts and bolt securing the lower arm and ball joint, and separate the lower arms from the ball joints.

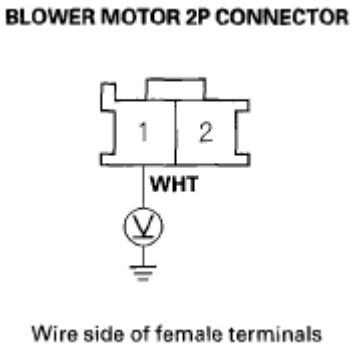


Fig. 234: Identifying Lower Arms From Ball Joints
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Remove both body mount brackets.

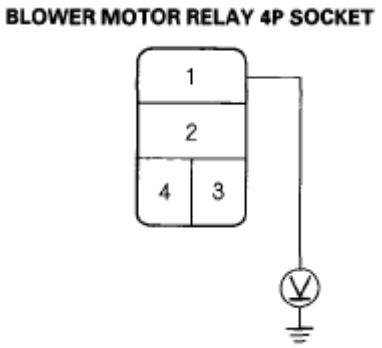


Fig. 235: Identifying Body Mount Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Remove the steering gearbox mounting bracket bolts.

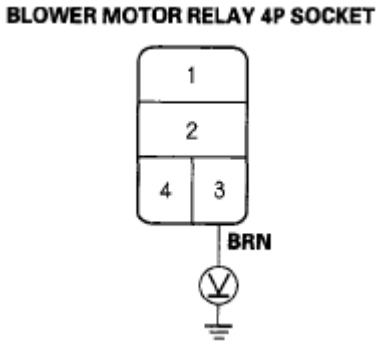


Fig. 236: Identifying Steering Gearbox Mounting Bracket Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Remove the rear steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).

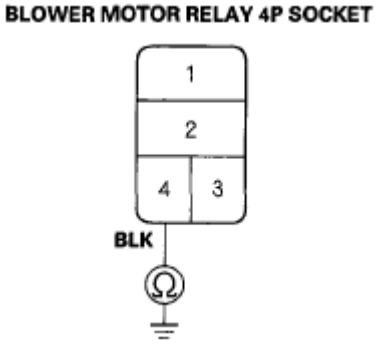


Fig. 237: Identifying Rear Steering Gearbox Mounting Bolt, Stiffener Mounting Bolt And Stiffener
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Remove the bolt (D) securing the power steering fluid line clamp bracket (E).
32. Remove the front steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).

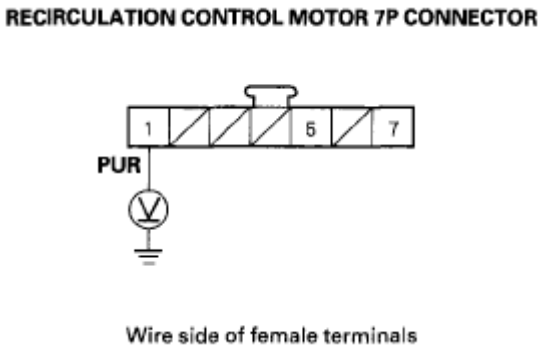


Fig. 238: Identifying Front Steering Gearbox Mounting Bolt, Stiffener Mounting Bolt And Stiffener
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Remove the bolt (A) securing the power steering fluid line bracket (B) on the right of the front subframe, and remove the power steering fluid line (C) from the clamp (D).

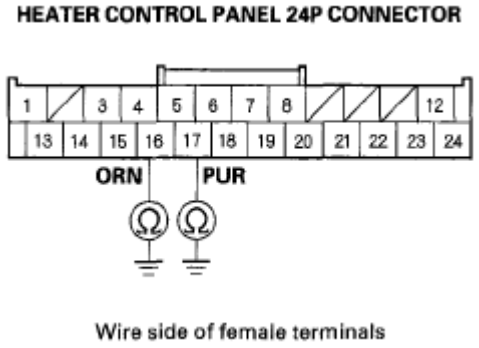


Fig. 239: Identifying Power Steering Fluid Line Bracket, Power Steering Fluid Line And Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Remove the lower torque rod bolts.

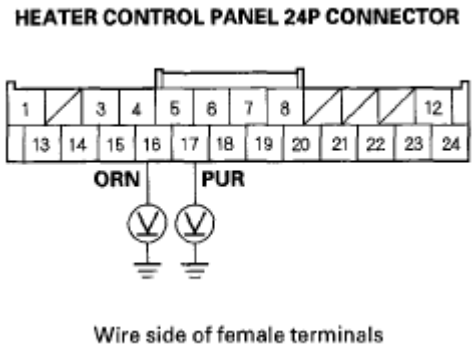


Fig. 240: Identifying Lower Torque Rod Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Make reference marks (A) on both sides of the front subframe that line up with the body (B).

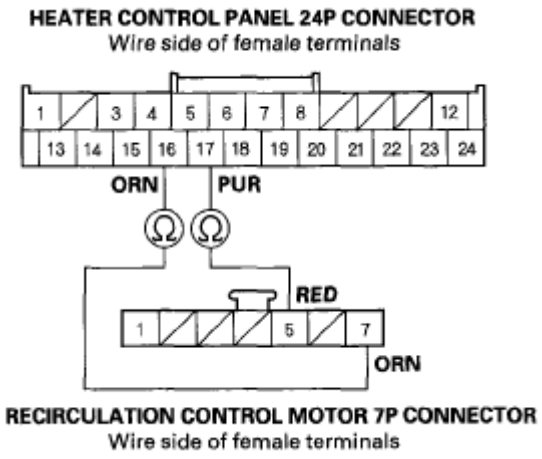


Fig. 241: Identifying Reference Marks On Both Sides Of Front Subframe Line Up With Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Attach the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the subframe, then secure the strap with the stop (B), then tighten the wing nut (C).

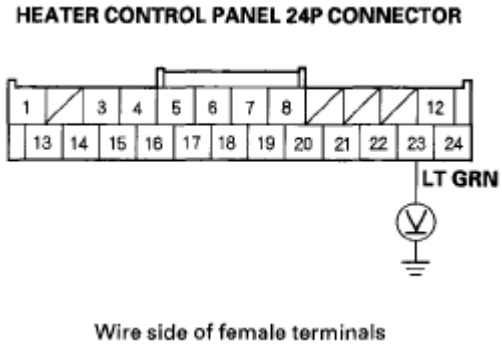


Fig. 242: Attaching Front Subframe Adapter (VSB02C000016) To Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then tighten the bolts.
38. Remove the four bolts securing the front subframe, and lower the front subframe.

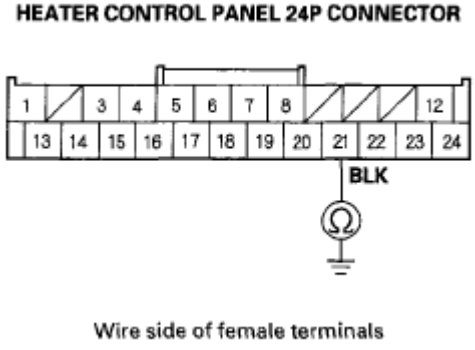


Fig. 243: Lifting Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Hang the steering gearbox to the body with a rope.
40. Remove the driveshafts from the differential. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the driveshaft ends.

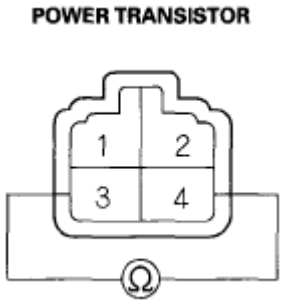


Fig. 244: Identifying Driveshafts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Remove the shift cable cover (A), and remove the three bolts securing the shift cable holder (B).

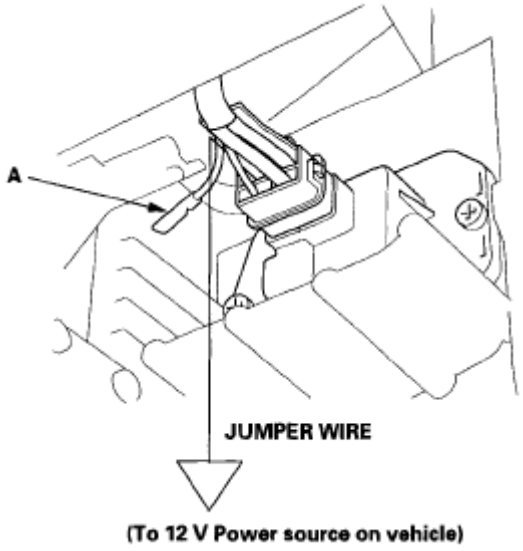


Fig. 245: Identifying Shift Cable Cover And Shift Cable Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the control shaft (F). Do not bend the shift cable excessively.
43. Remove the shift cable holder bracket from the transmission.

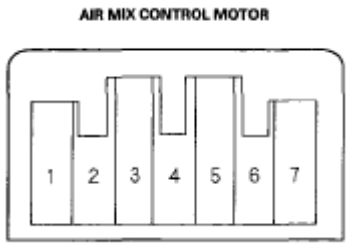


Fig. 246: Identifying Shift Cable Holder Bracket

Courtesy of AMERICAN HONDA MOTOR CO., INC.

44. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.

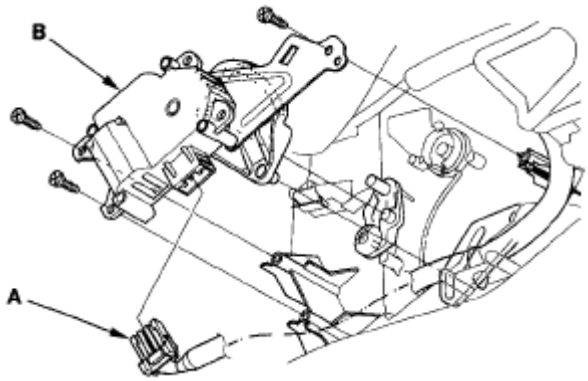


Fig. 247: Identifying Torque Converter Cover And Drive Plate Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Remove the upper transmission housing mounting bolts.

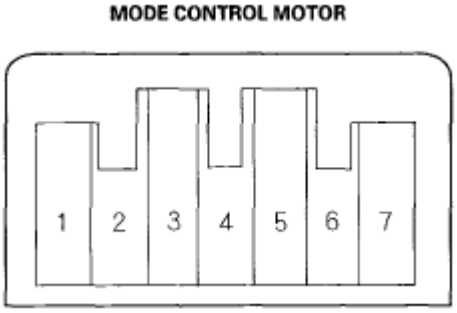


Fig. 248: Identifying Upper Transmission Housing Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. Remove the transmission mount bracket bolts.

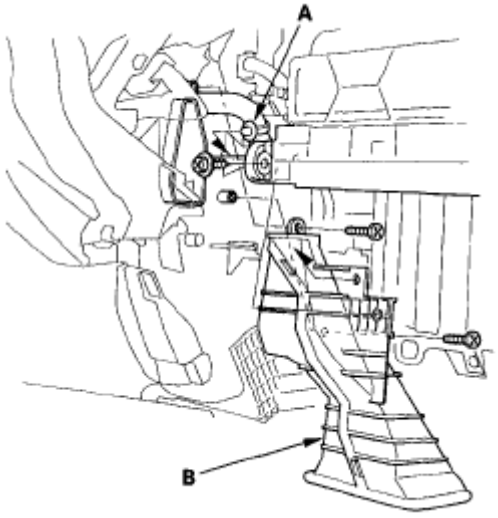


Fig. 249: Identifying Transmission Mount Bracket Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Remove the front transmission housing mounting bolts.

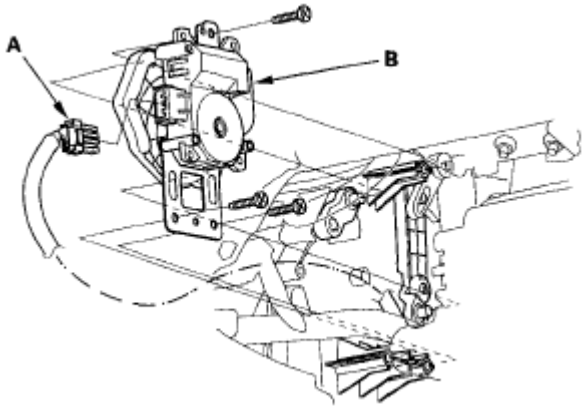


Fig. 250: Identifying Front Transmission Housing Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Remove the rear transmission housing mounting bolts.

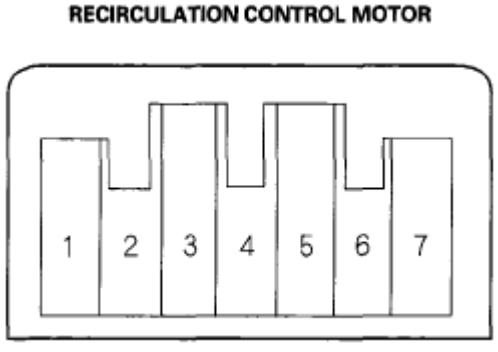


Fig. 251: Identifying Rear Transmission Housing Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear the side frame.
50. Place a jack under the transmission.
51. Remove the lower transmission housing mounting bolts.

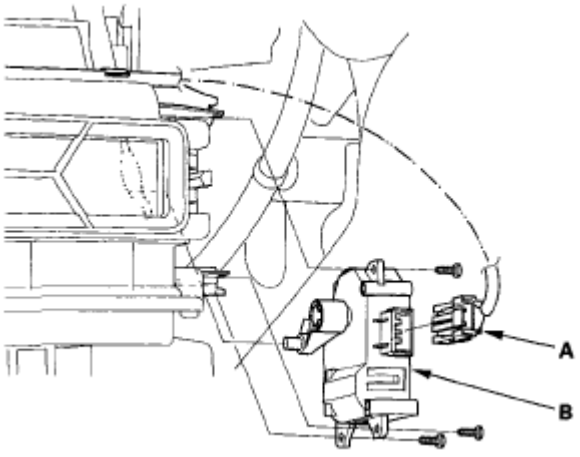


Fig. 252: Identifying Lower Transmission Housing Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

52. Slide the transmission away from the engine to remove it from the vehicle.
53. Remove the torque converter, the O-ring, and the dowel pins.

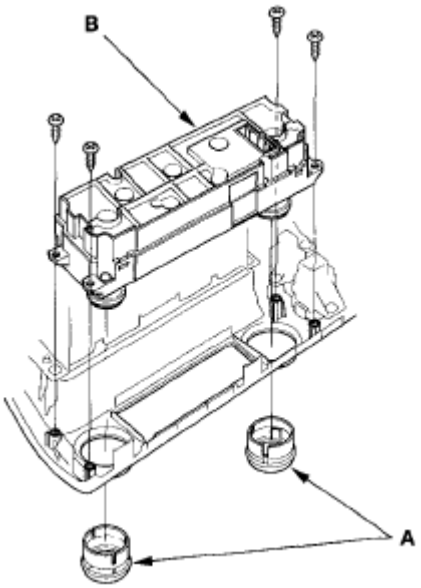


Fig. 253: Identifying Torque Converter, O-Ring And Dowel Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

54. Inspect the drive plate, and replace it if it is damaged.

TRANSMISSION INSTALLATION

Special Tools Required

- 1.8 support eyelet 07AAK-SNAA400
- 1.8 support bolt 07AAK-SNAA500
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hanger, A and Reds AAR-T-12566 *
- Front subframe adapter VSB02C000016 *

* These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Install the torque converter (A) on the mainshaft (B) with a new O-ring (C).

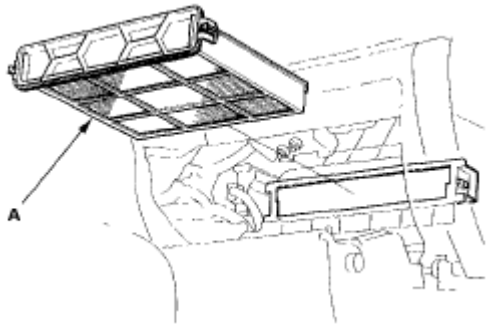


Fig. 254: Identifying Torque Converter On Mainshaft With O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.
3. Place the transmission on a jack, and raise the transmission to the engine level.
4. Install the lower transmission housing mounting bolt (A) part-way in the bolt hole on the engine, then attach the transmission to the engine.

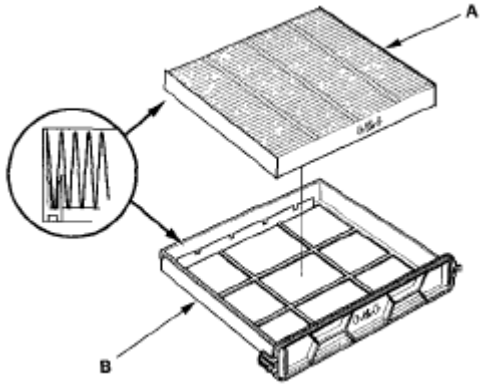


Fig. 255: Identifying Lower Transmission Housing Mounting Bolt w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the lower transmission housing mounting bolt (B), and tighten the bolts.
6. Install the rear transmission housing mounting bolts.

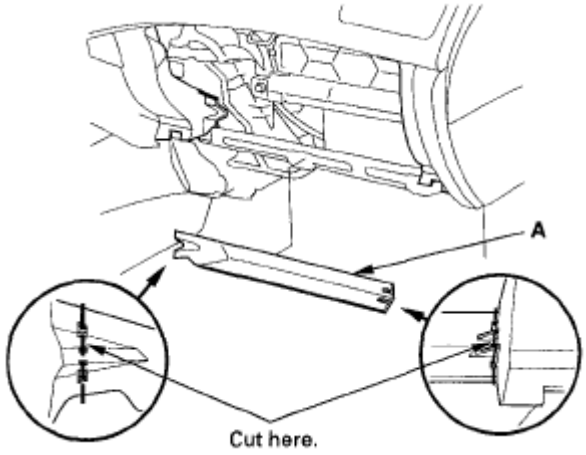


Fig. 256: Identifying Rear Transmission Housing Mounting Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the front transmission housing mounting bolts.

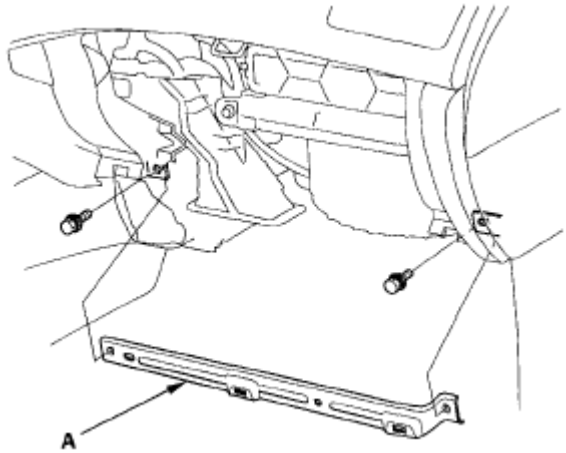


Fig. 257: Identifying Front Transmission Housing Mounting Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the upper transmission housing mounting bolts.

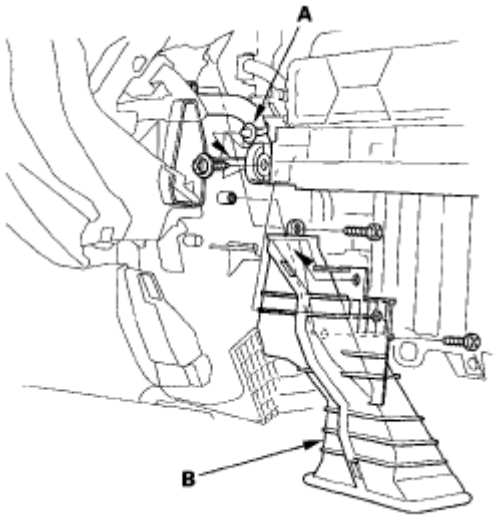


Fig. 258: Identifying Upper Transmission Housing Mounting Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Secure the transmission mount bracket on the transmission housing with new mounting bolts.

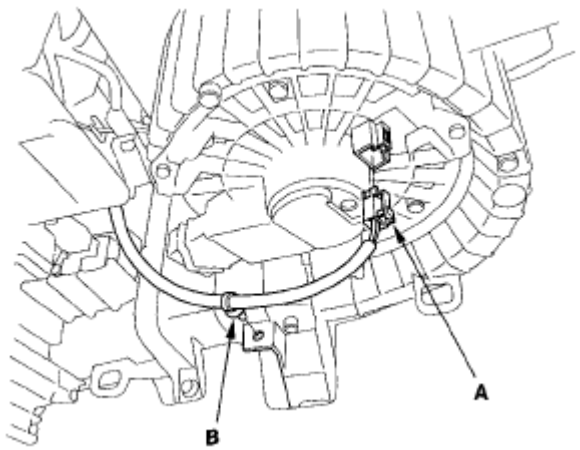


Fig. 259: Identifying Transmission Mount Bracket & Mounting Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install a new set ring (A) on both driveshafts (B).

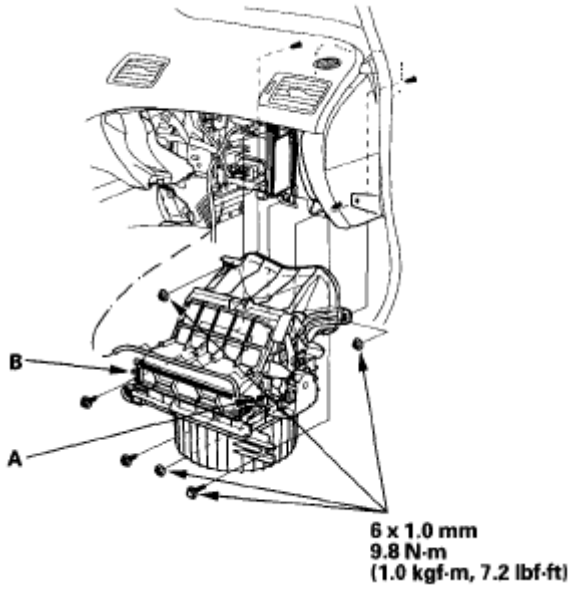


Fig. 260: Identifying Set Ring On Driveshafts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Clean the areas where the driveshaft contacts the transmission (differential) with solvent, and dry with compressed air. Then install the driveshaft, be sure not to allow dust or other foreign particles to enter the transmission. Turn the steering knuckle fully outward, and slide the driveshaft into the differential until you feel its set ring fully engage the side gear.
12. Attach the torque converter to the drive plate with the eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotate freely.

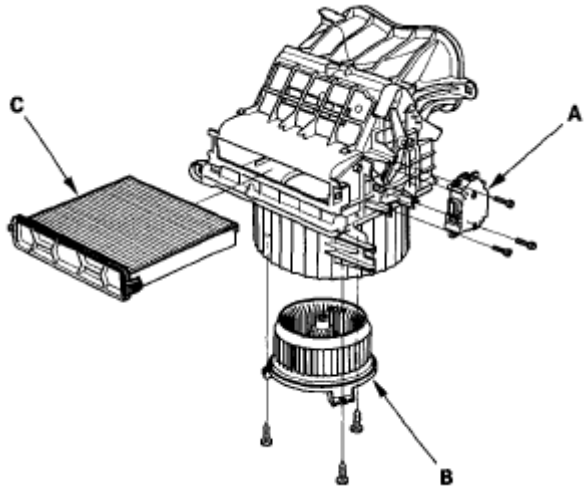


Fig. 261: Identifying Torque Converter Cover And Bolts w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the torque converter cover.
14. Install the shift cable holder bracket.

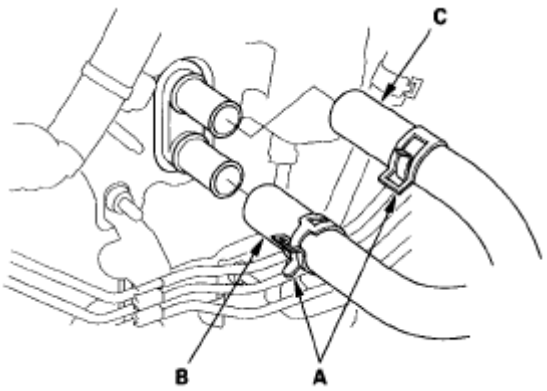


Fig. 262: Identifying Shift Cable Holder Bracket And Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the control lever (A) over the control shaft (B).

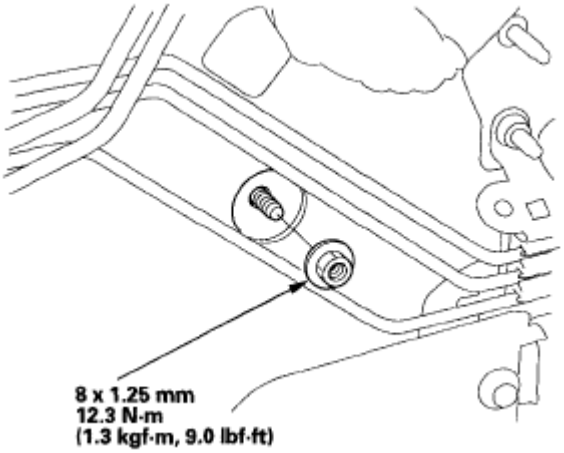


Fig. 263: Identifying Control Lever, Control Shaft, Shift Cable Holder & Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the shift cable holder (C) on the holder bracket (D) with tightening bolts loosely. Tighten the bolts (E) in the lateral position to the specified torque, then tighten the bolt (F) in the vertical position.
17. Secure the control lever with a new lock washer (G) and the lock bolt (H), then bend the lock tab of the lock washer against the bolt head.
18. Install the shift cable cover (I).
19. Set the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).

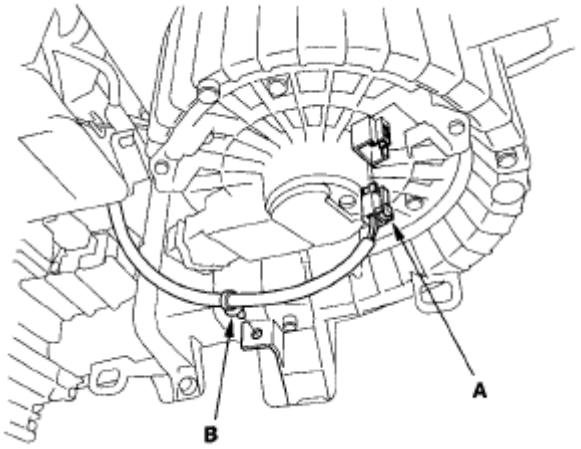


Fig. 264: Setting Front Subframe Adapter (VSB02C000016) To Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Line up the slots in the arms with the bolt holes on the corner of the jack base, and tighten the bolts, then lift the front subframe up to the body.
21. Loosely install the new front subframe mounting bolts.

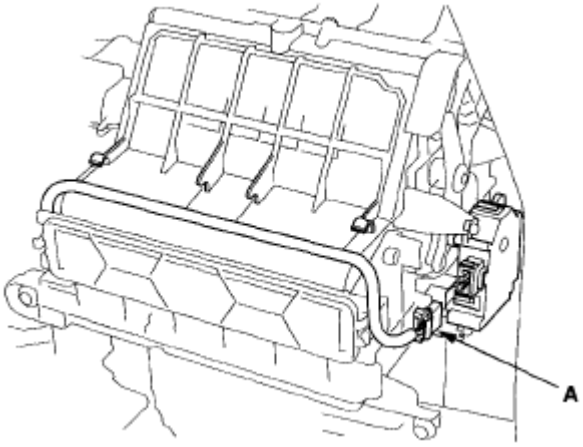


Fig. 265: Lifting Front Subframe Up To Body, Bolts & Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the front subframe mounting bolts to the specified torque.

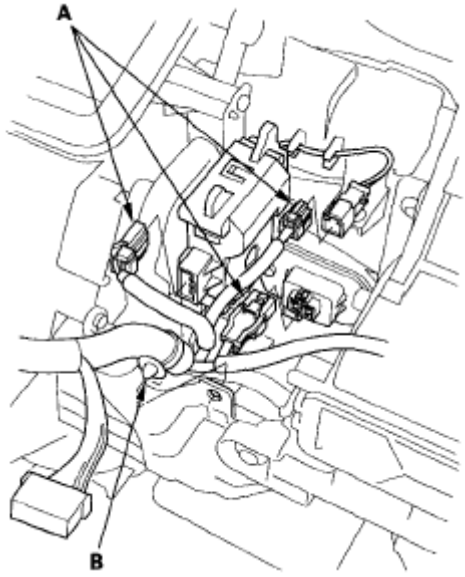


Fig. 266: Aligning Front Subframe Reference Marks To Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Secure the lower torque rod with new bolts.

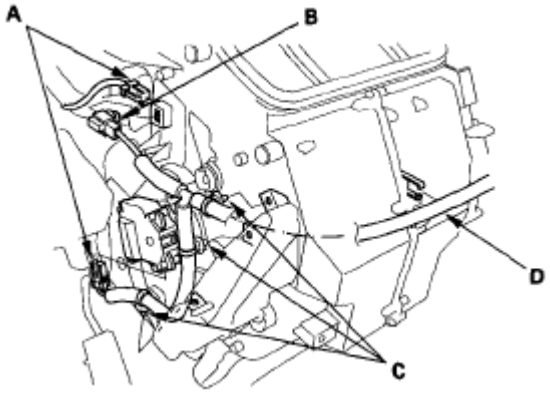


Fig. 267: Identifying Lower Torque Rod, Bolts & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Remove the engine support hanger, support bolt, and support eyelet from the vehicle.
25. Position the steering gearbox on the gearbox mounting bracket of the front subframe.
26. Install the gearbox stiffener (A) and the bolts, and tighten the bolts loosely.

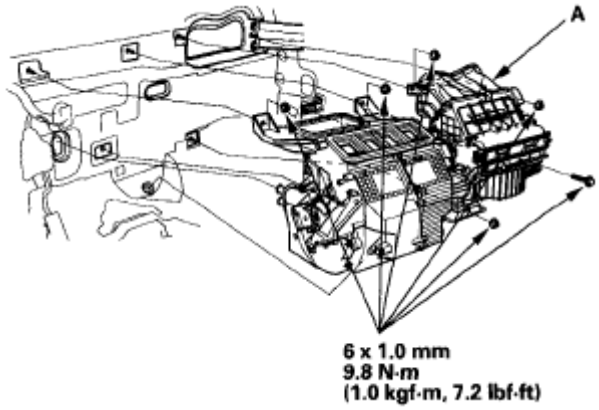


Fig. 268: Identifying Gearbox Stiffener And Bolts w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the gearbox stiffener (A) and the bolts, and tighten the bolts loosely.

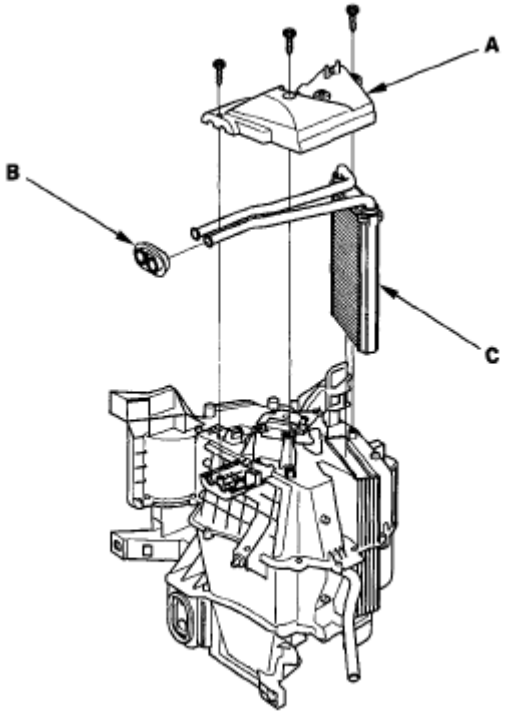


Fig. 269: Identifying Gearbox Stiffener, Power Steering Fluid Line Clamp Bracket, Bolts & Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Secure the power steering fluid line clamp bracket (B) with the bolt.
29. Align the slit (A) of the gearbox mounting rubber (B) with the rear bracket surface (C), and install the steering gearbox mounting bracket (D) with pointing the arrow (E) up.

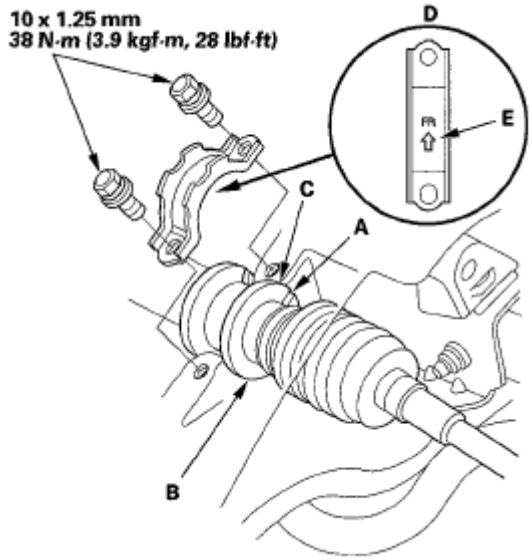


Fig. 270: Aligning Slit Of Gearbox Mounting Rubber, Rear Bracket Surface, And Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Tighten the steering gearbox mounting bolts and the stiffener mounting bolts to the specified torque.
31. Secure the power steering fluid line bracket (A) with the bolt, and secure the line (B) with the clamp (C).

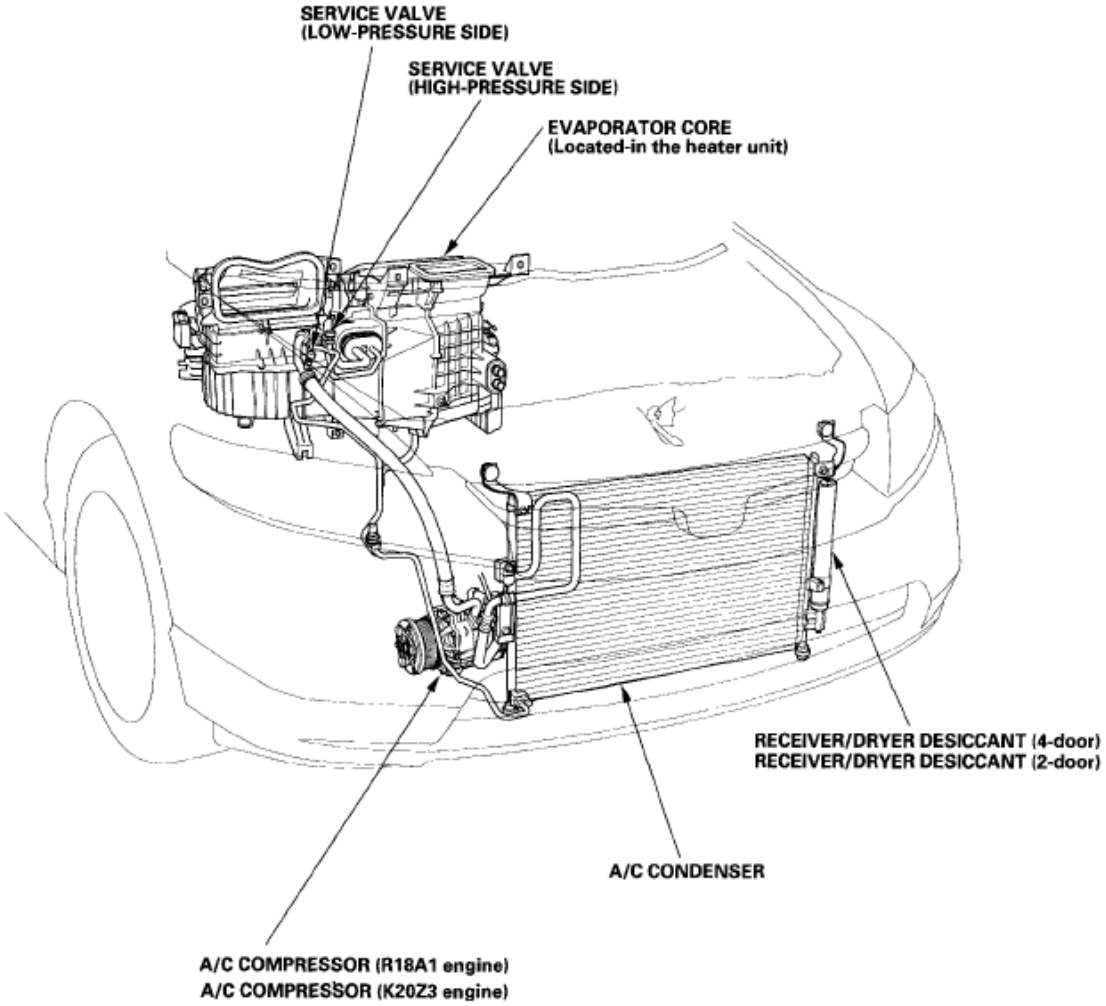


Fig. 271: Identifying Power Steering Fluid Line Bracket With Line, Clamp, Bolts & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Install both body mount brackets with new bolts.

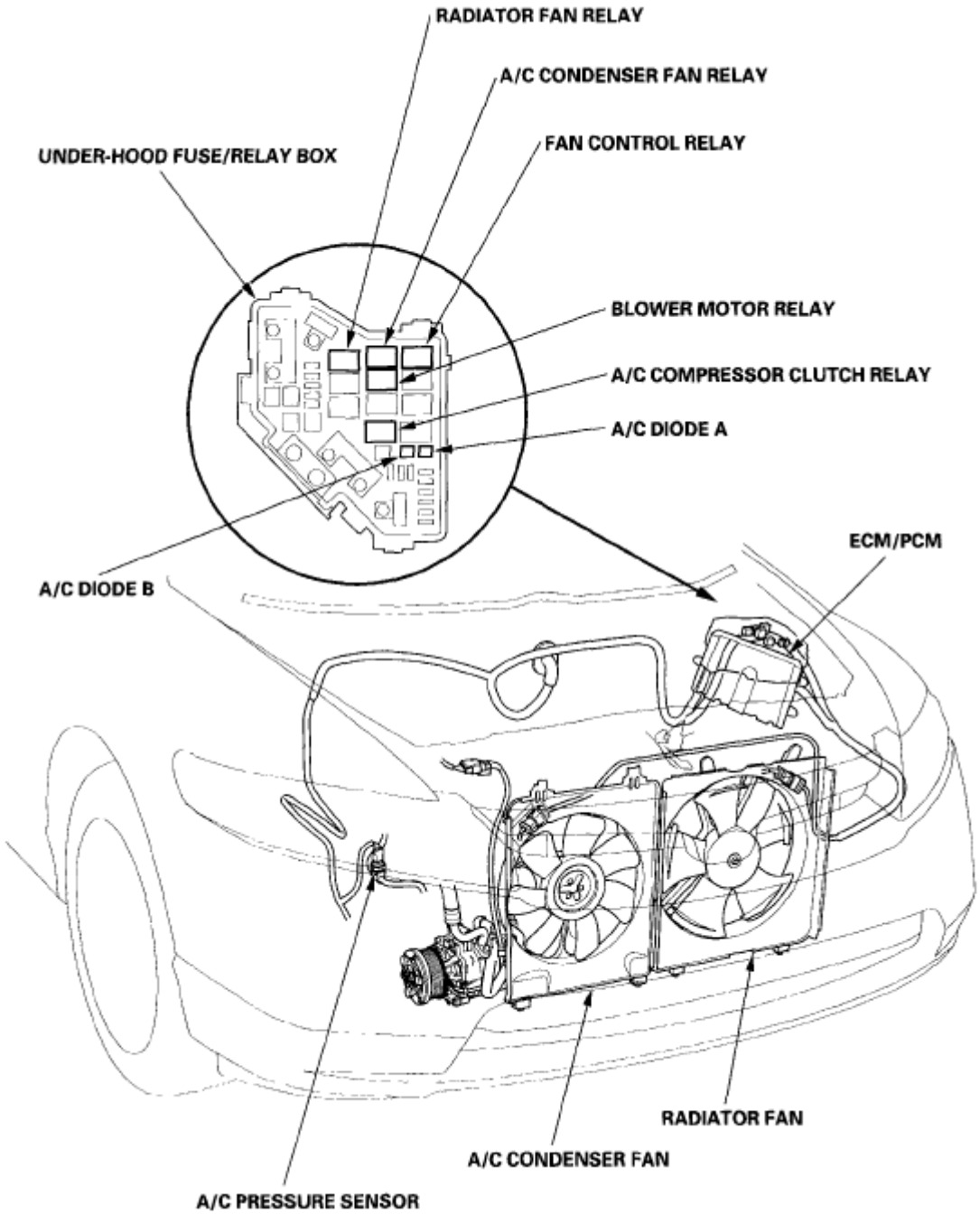


Fig. 272: Identifying Body Mount Brackets & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Install both of the lower arms (A) to the ball joints (B), and loosely install new mounting nuts and bolts.

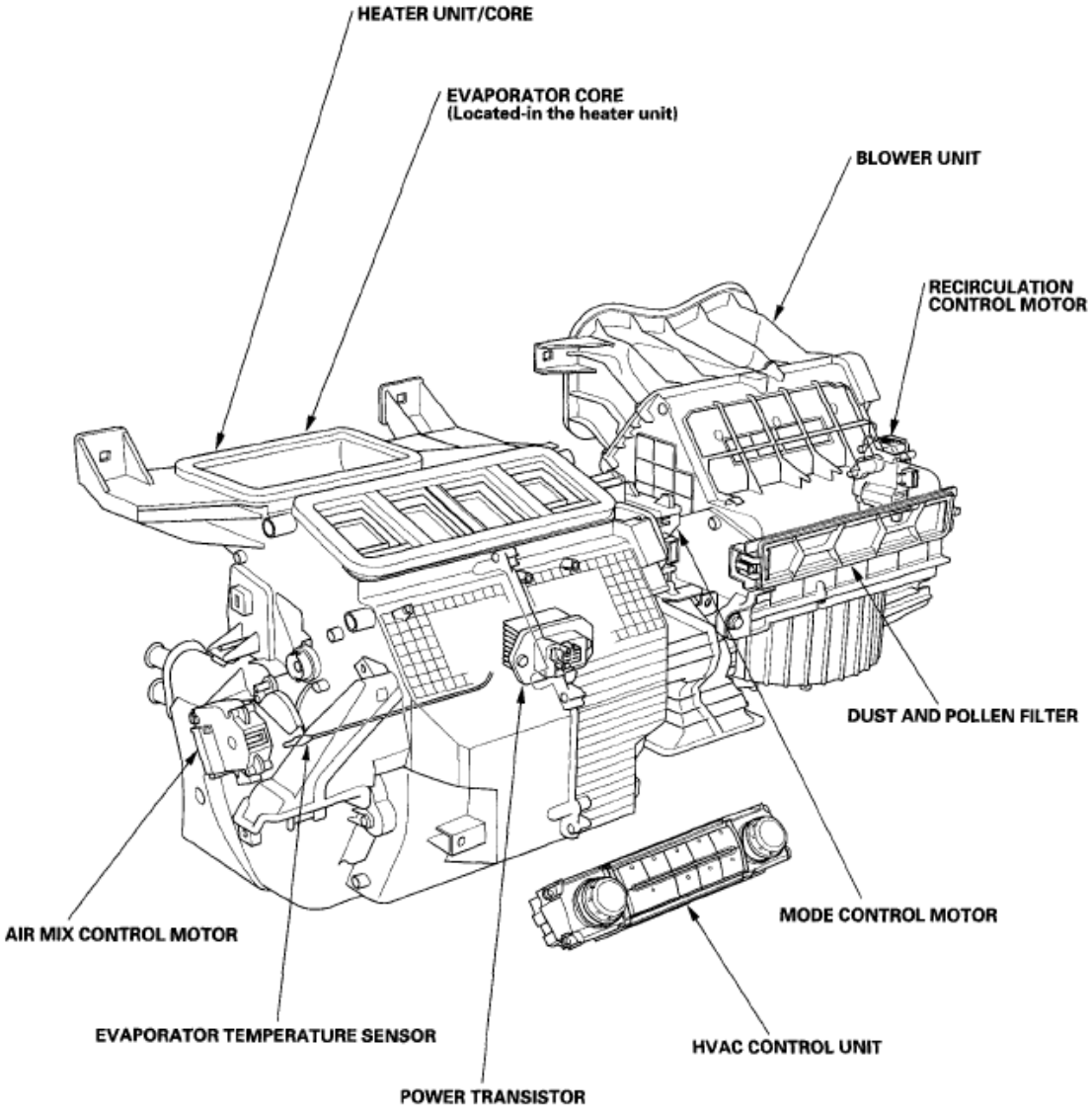
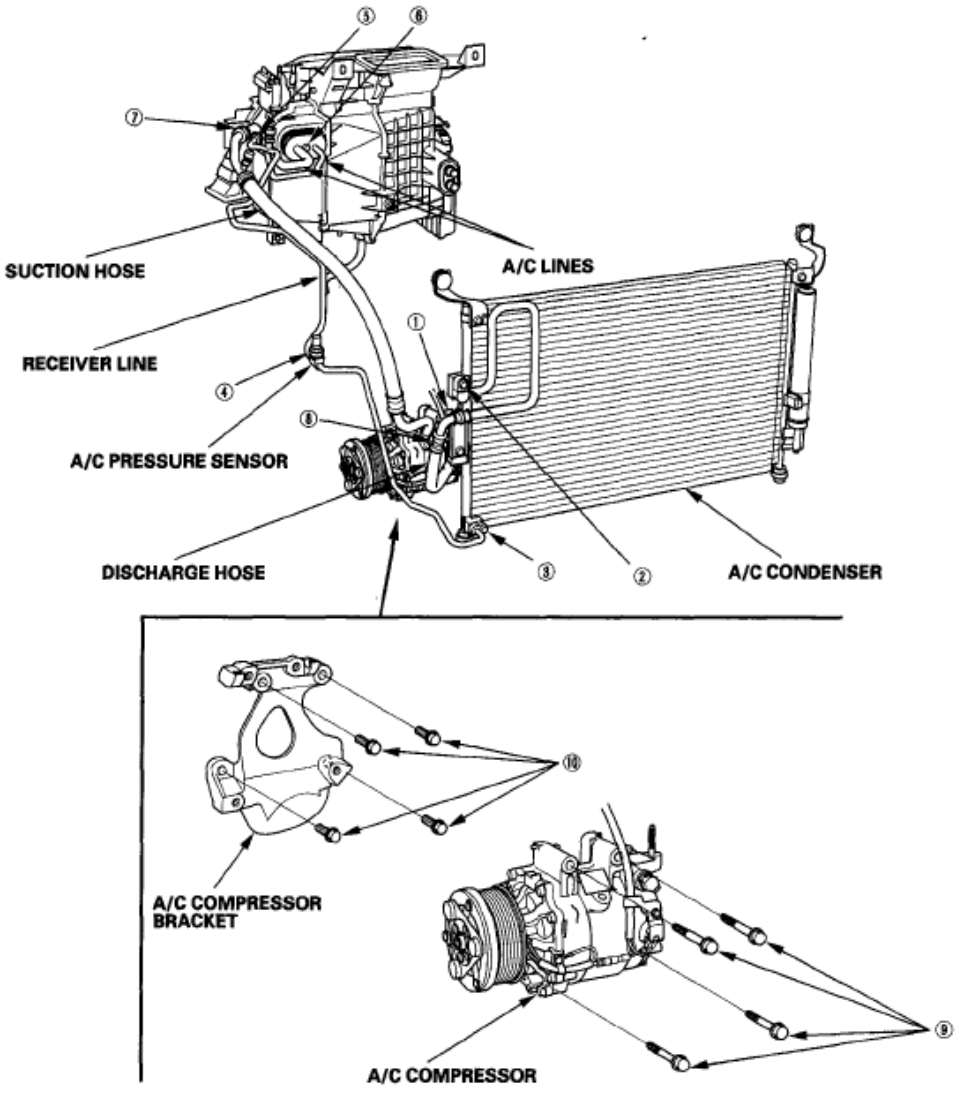


Fig. 273: Identifying Lower Arms, Ball Joints & Bolts w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Tighten the nuts and the bolts to 59 N.m (6.0 kgf.m, 43 lbf.ft) in the following order; (C), (D), then (E).
35. Remove the support bolt and support eyelet from the cylinder head.



① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ A/C pressure sensor to receiver line (11 x 1.0 mm): 11.3 N·m (1.2 kgf·m, 8.3 lbf·ft)
⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.3 N·m (1.4 kgf·m, 9.8 lbf·ft)
⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ A/C line to the suction hose (24 x 1.5 mm): 31.9 N·m (3.2 kgf·m, 23.5 lbf·ft)
⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑨ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑩ A/C compressor bracket to the engine block (8 x 1.25 mm): 24 N·m (2.4 kgf·m, 17.7 lbf·ft)

Fig. 274: Identifying Support Bolt And Support Eyelet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Install the air cleaner housing mounting bracket (A) on the cylinder head.

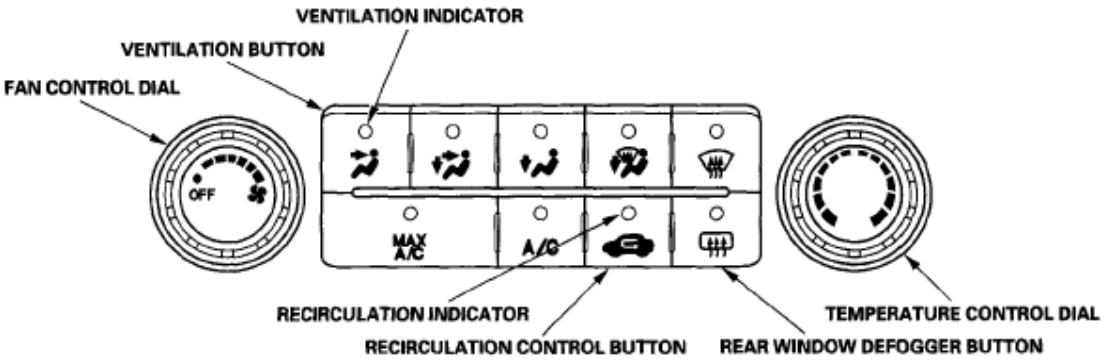


Fig. 275: Identifying Air Cleaner Housing Mounting Bracket & Bolt w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Connect the shift solenoid harness connector (A) and the 3rd clutch transmission fluid pressure switch connector (B), and install the harness clamps (C) on the clamp brackets (D).

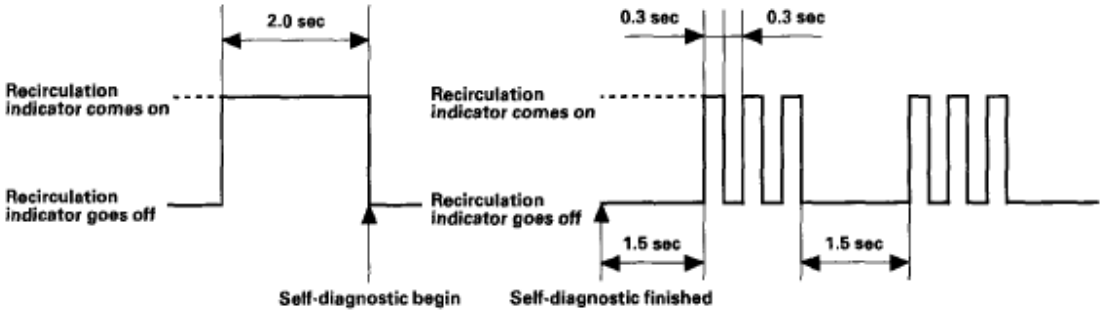


Fig. 276: Identifying Shift Solenoid Connector, 3rd Clutch Transmission Fluid Pressure Switch Connector, Clamps And Clamp Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Install the harness clamp (A) in its bracket (B), and install the radiator hose (C) in the clamp (D).

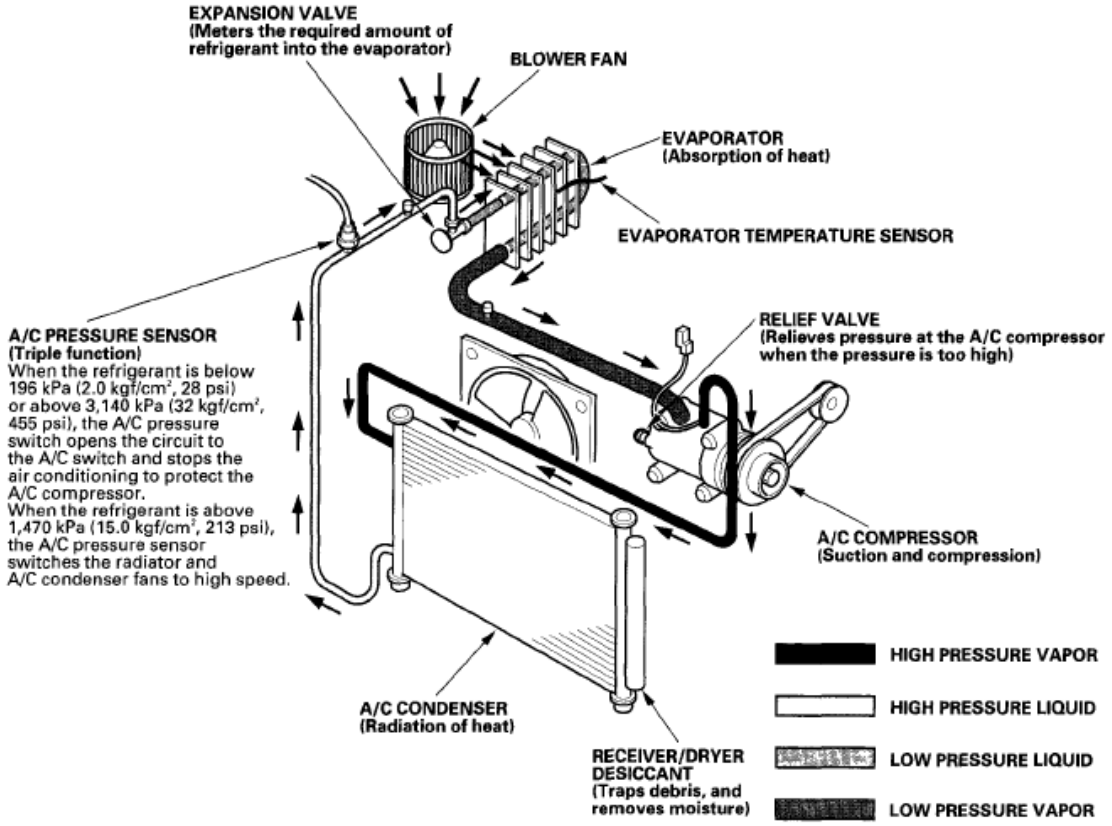


Fig. 277: Identifying Harness Clamp, Bracket, Radiator Hose And Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Install the ATF warmer (A) on the bracket (B).

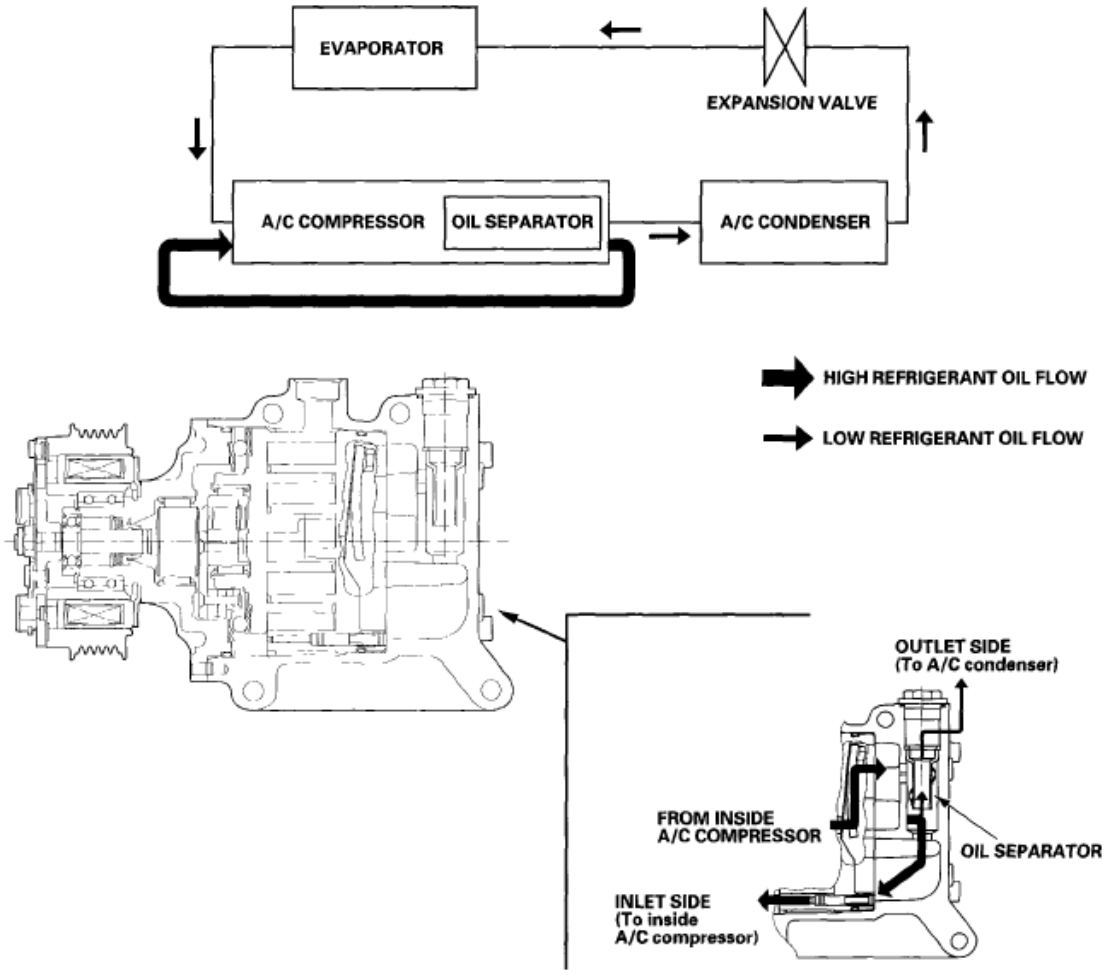


Fig. 278: Identifying ATF Warmer, Bracket & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Connect the ATF warmer hoses (A) to the ATF lines (B), and secure the hoses with the clips (C) (see **DRIVE PLATE REMOVAL AND INSTALLATION**).

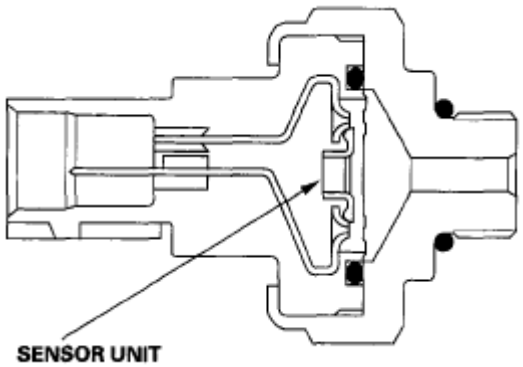


Fig. 279: Identifying ATF Warmer Hoses, ATF Lines, Hoses And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Connect the input shaft (mainshaft) speed sensor connector (A) and the 2nd clutch transmission fluid pressure switch connector (B).

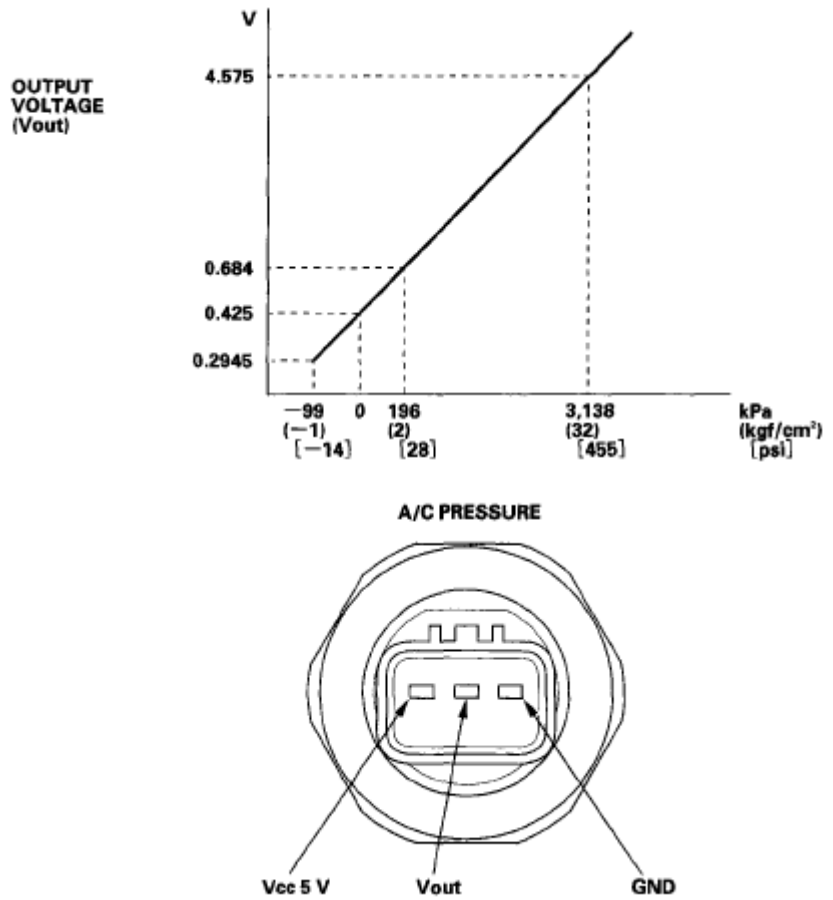


Fig. 280: Identifying Input Shaft (Mainshaft) Speed Sensor Connector And 2nd Clutch Transmission Fluid Pressure Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Connect the transmission range switch connector (A) and the output shaft (countershaft) speed sensor connector (B), and install the harness clamps (C) on the brackets (D).

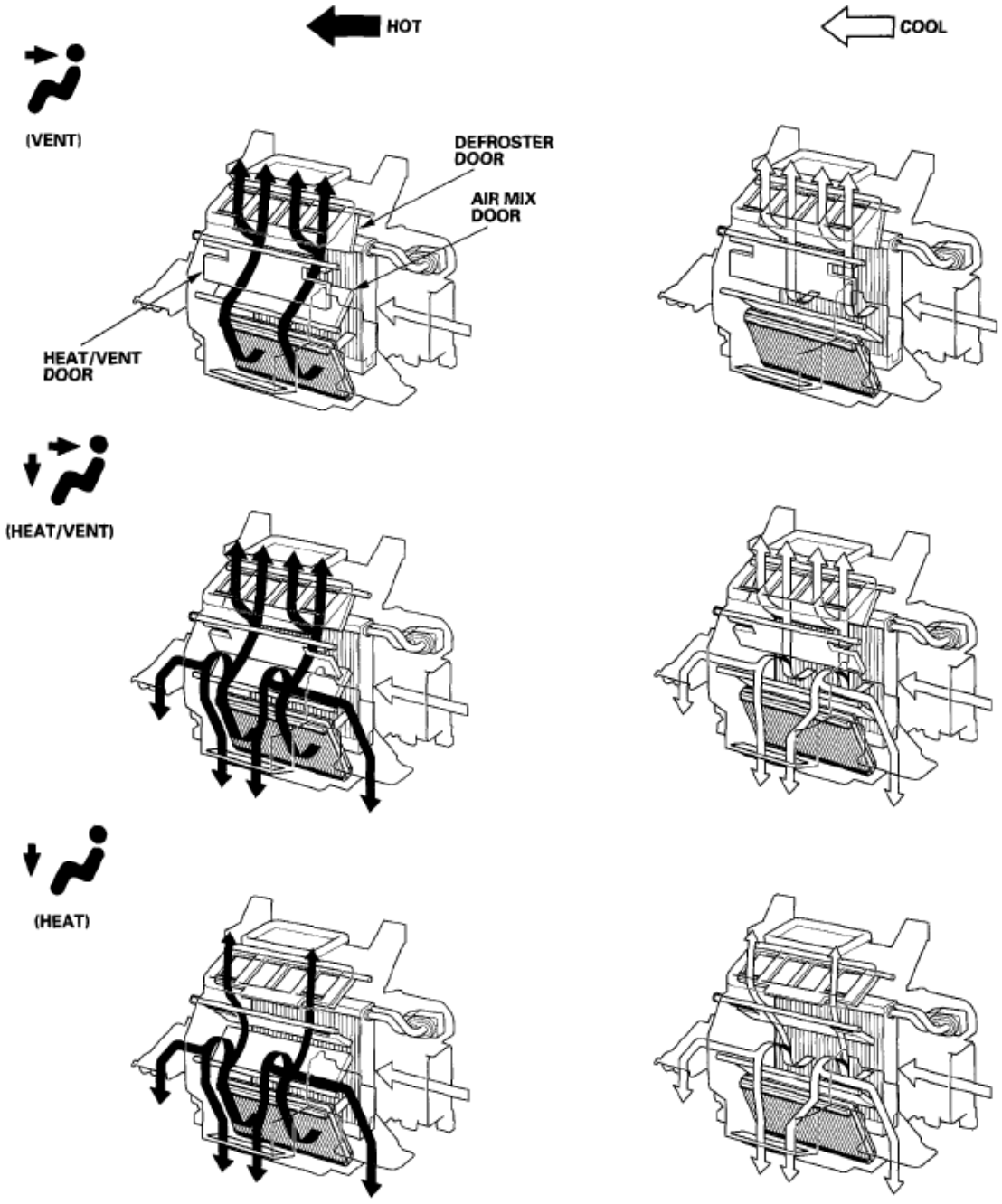


Fig. 281: Identifying Transmission Range Switch Connector And Output Shaft (Countershaft) Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Install the air cleaner housing mounting bracket (A), and install the harness clamp (B) on its bracket (C).

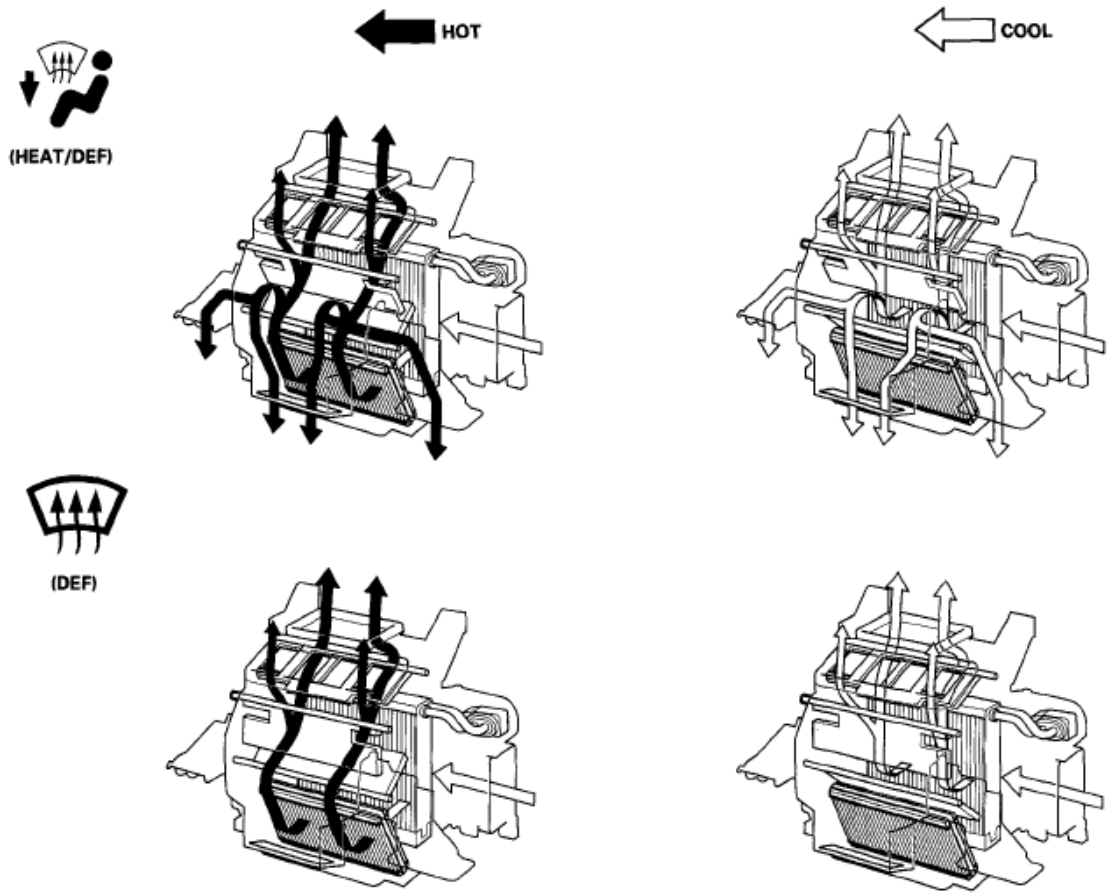


Fig. 282: Identifying Air Cleaner Housing Mounting Bracket w/Torque Specification And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

44. Connect the A/T clutch pressure control solenoid valve A connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C).

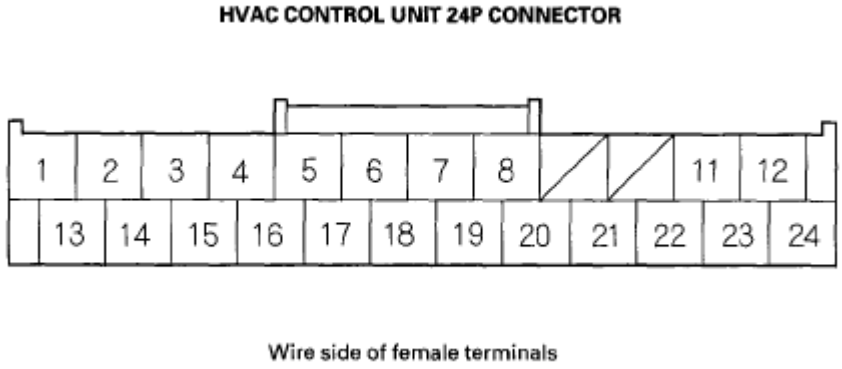


Fig. 283: Identifying A/T Clutch Pressure Control Solenoid Valve A Connector And A/T Clutch Pressure Control Solenoid Valve B Connector w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Secure the harness cover (D) with the mounting bolts, and install the harness clamp (E) on its bracket (F).

46. Loosen the upper torque rod bolt (A).

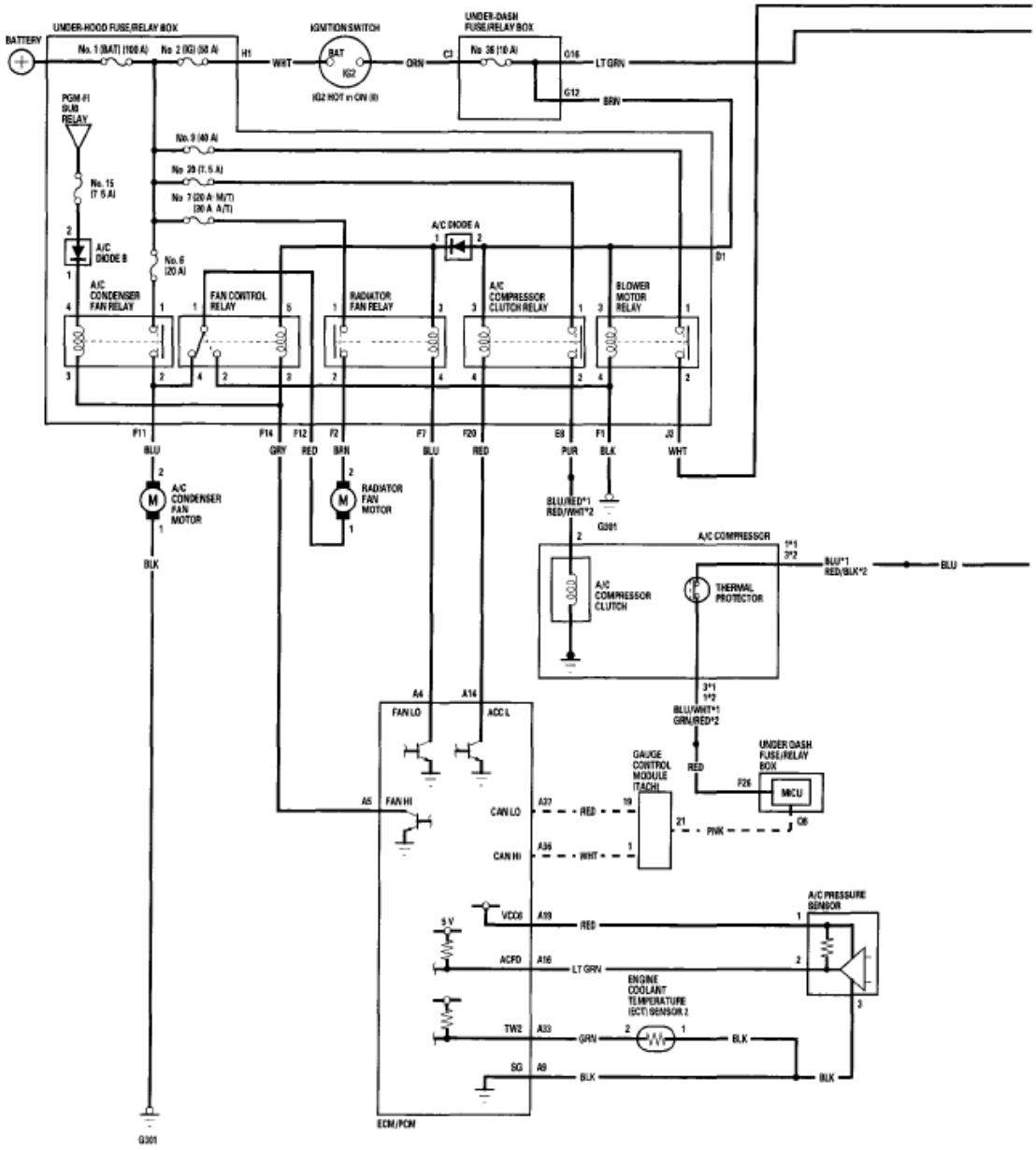


Fig. 284: Identifying Upper Torque Rod Bolt w/Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

47. Loosen the transmission mounting bolt (A) and the nuts (B).

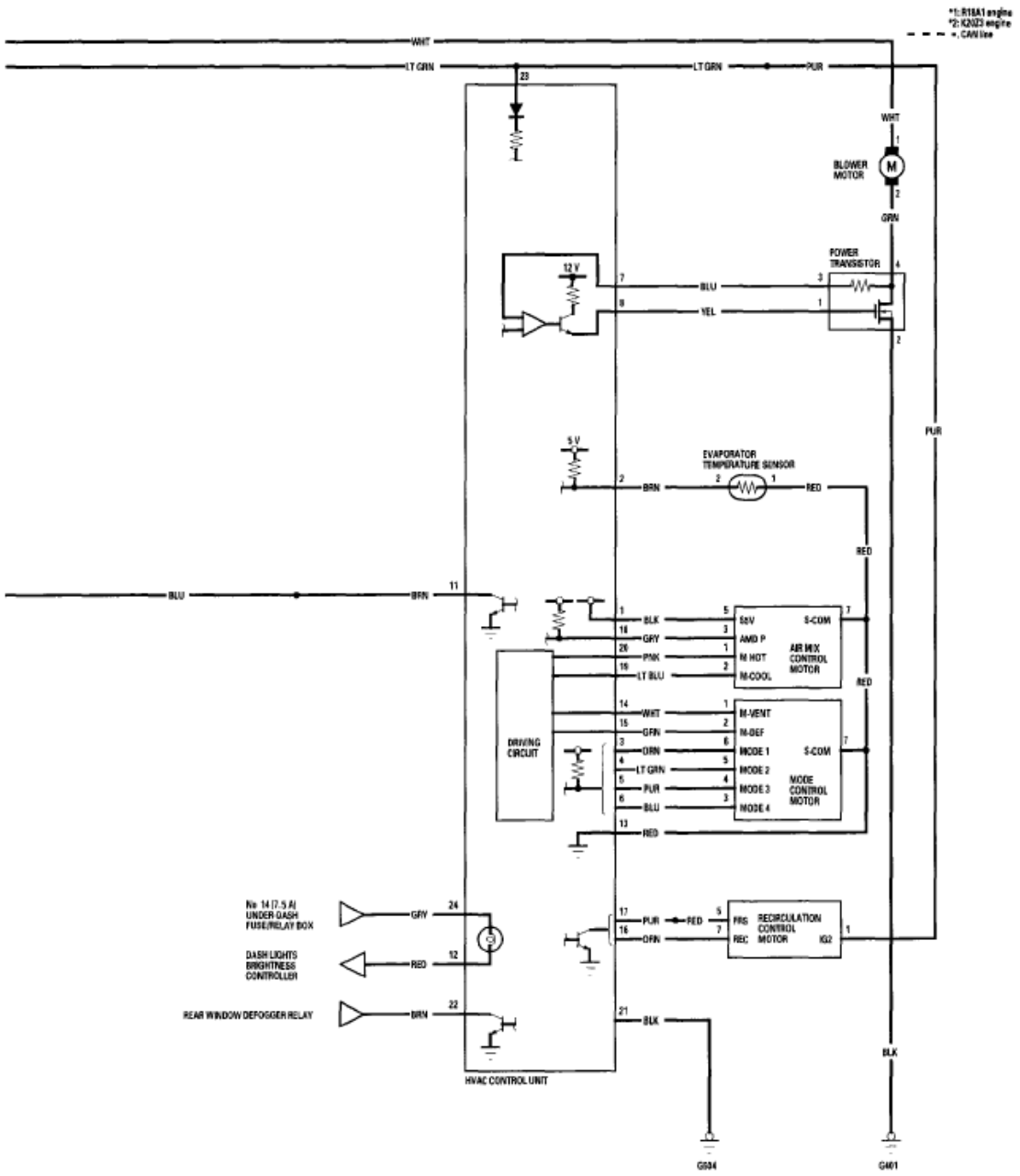


Fig. 285: Identifying Transmission Mounting Bolt, Nuts & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Loosen the lower torque rod bolt (A).

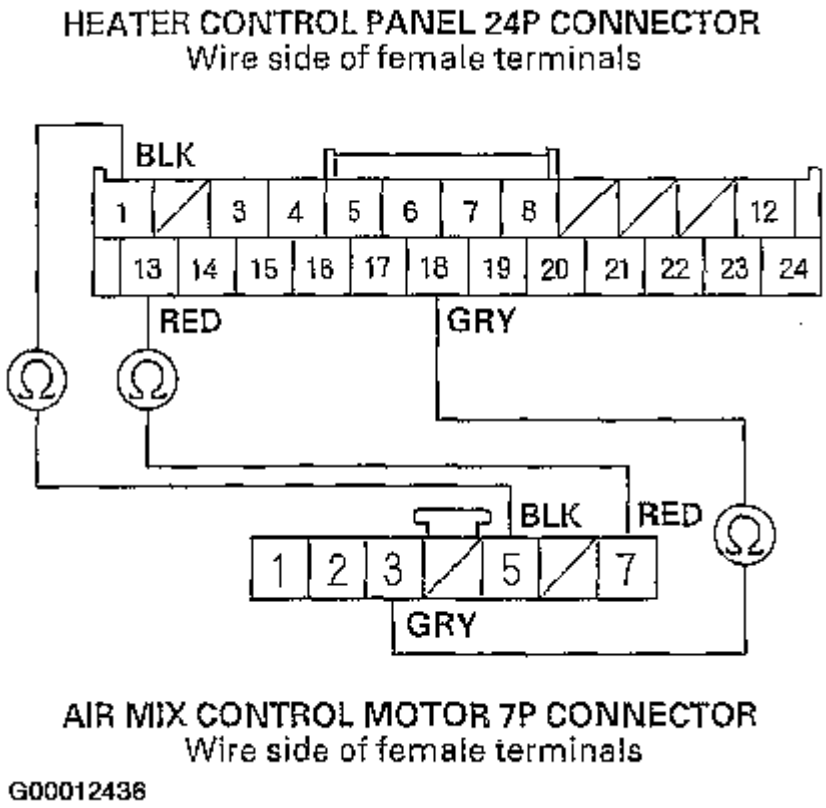


Fig. 286: Identifying Lower Torque Rod Bolt w/Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Tighten the lower torque rod bolt.
50. Tighten the transmission mounting bolt and the nuts.
51. Tighten the upper torque rod bolt.
52. Refill the transmission with ATF (see step 5).
53. Install the battery base and the resonator.
54. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
55. Install the grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
56. Install the under-cowl panel and the cowl cover (see **COWL COVER REPLACEMENT**).
57. Install the battery tray and the battery, then secure the battery with its hold-down bracket.
58. Install the wheels.
59. Reconnect the positive cable to the battery, then connect the negative cable.
60. Set the parking brake. Start the engine, and shift the transmission through all positions three times.
61. Check the shift lever operation, the A/T gear position indicator operation, and the shift cable adjustment.
62. Check and adjust the front wheel alignment (see **WHEEL ALIGNMENT**).
63. Install the splash shield.
64. Start the engine in P or N, and warm it up to normal operating temperature (the radiator fan comes on). Turn off the engine, and check the ATF level (see **ATF LEVEL CHECK**).
65. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the

audio presets. Set the clock (on vehicles without navigation).

66. Do the road test (see **ROAD TEST**).

DRIVE PLATE REMOVAL AND INSTALLATION

1. Remove the transmission assembly (see **TRANSMISSION REMOVAL**).
2. Remove the drive plate (A) and the washer (B) from the engine.

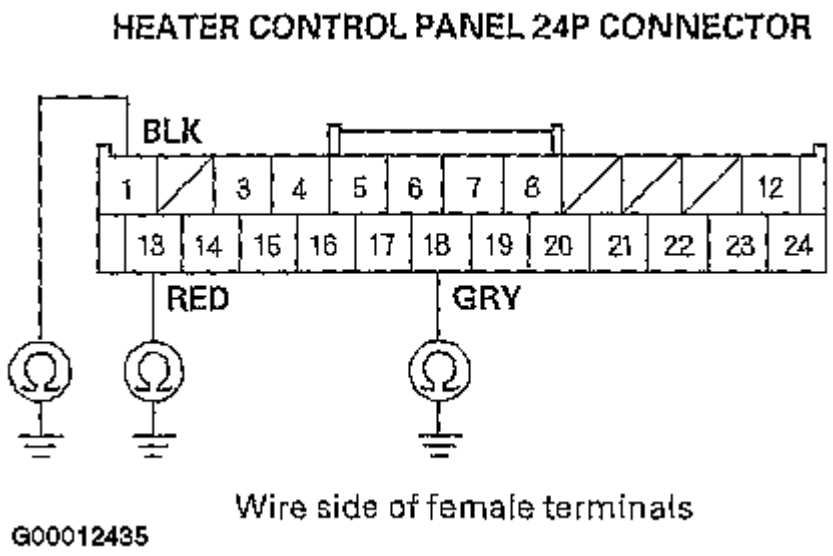


Fig. 287: Identifying Drive Plate, Washer & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive plate and the washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.
4. Install the transmission assembly (see **TRANSMISSION INSTALLATION**).

ATF WARMER HOSE REPLACEMENT

1. Slide the ATF warmer hoses (A) on the ATF filter (B) until the hose ends contact the filter housing, and secure the hoses with the clips (C) at 6-8 mm (0.24-0.31 in.) (D) from the filter housing.

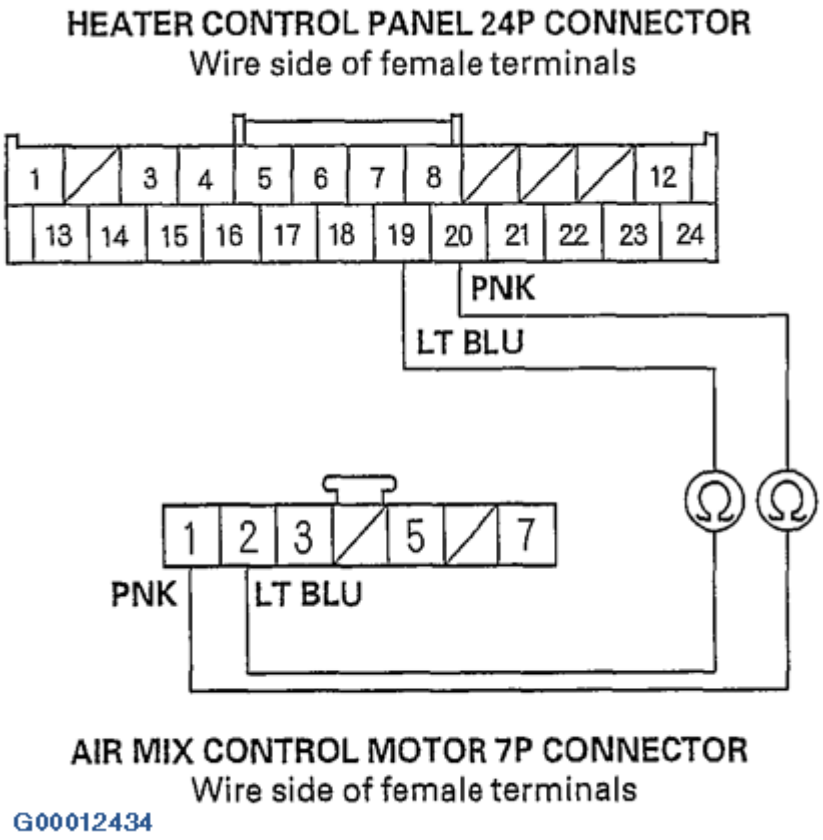


Fig. 288: Identifying ATF Warmer Hoses And ATF Filter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Slide the ATF warmer hoses (E) over the ATF lines (F) until the hoses stop, and secure the hoses with the clip (G) at 6-8 mm (0.24-0.31 in.) (H) from the hose end.
3. Slide the ATF warmer hoses (I) over the ATF warmer lines (J) until the hose ends contact the bulge (K), and secure the hoses with the clip (L) at 6-8 mm (0.24-0.31 in.) (M) from the hose end.

ATF WARMER REPLACEMENT

1. Remove the splash shield.
2. Drain the engine coolant (see **COOLANT REPLACEMENT**).
3. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
4. Disconnect the negative cable from the battery, then disconnect the positive cable.
5. Remove the battery hold-down bracket, and remove the battery and the battery tray.
6. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
7. Remove the battery base and the resonator.
8. Disconnect the water by-pass hoses (A) and the ATF warmer hoses (B) from the ATF warmer (C), and turn the hose ends up to prevent fluid from flowing out.

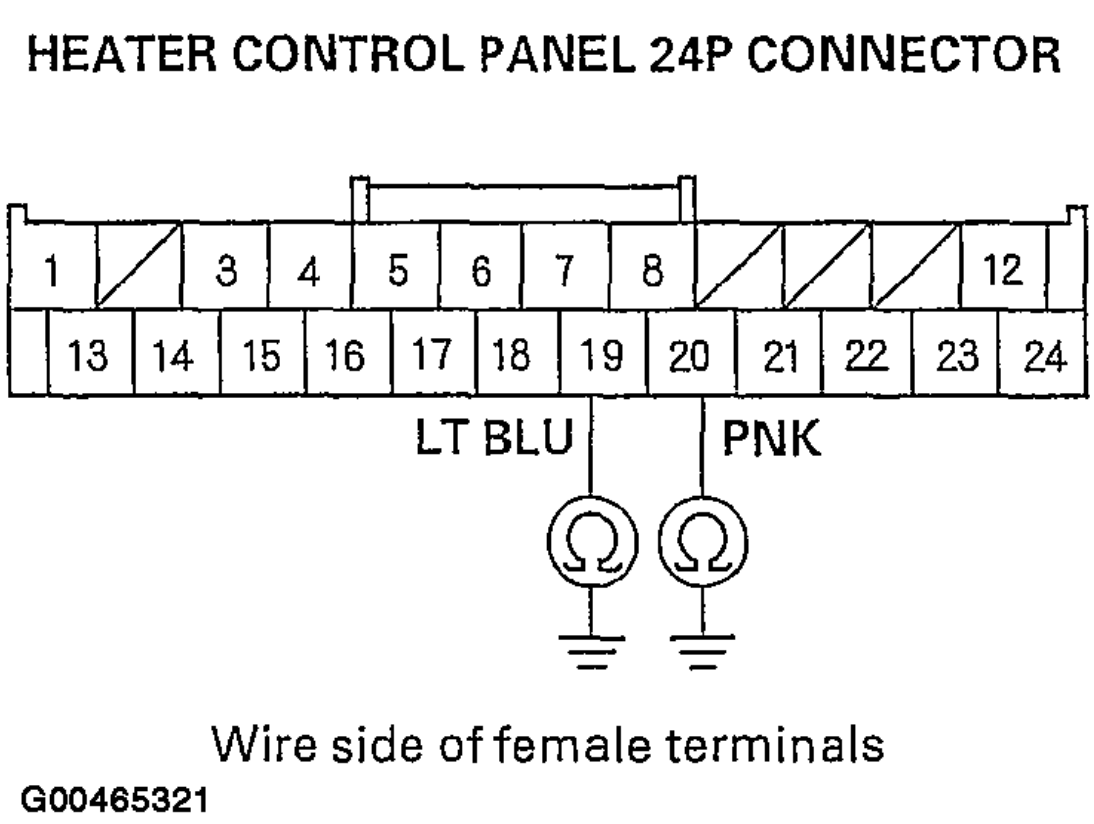


Fig. 289: Identifying Water By-Pass Hoses, ATF Warmer Hoses & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the ATF warmer, and replace it with new one.
10. Install a new ATF warmer on its bracket (D).
11. Slide the water by-pass hoses to the ATF warmer, and secure the hoses with the clips.
12. Slide the ATF warmer hoses over the ATF warmer lines (E) until the hose ends contact the bulge (F), and secure the hoses with the clip (G) at 6-8 mm (0.24-0.31 in.) (H) from the hose end.
13. Install the battery base and the resonator.
14. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
15. Install the battery tray and the battery, then secure the battery with its hold-down bracket.
16. Reconnect the positive cable to the battery, then connect the negative cable.
17. Install the splash shield.
18. Check the ATF level, and add ATF to proper level if necessary (see **ATF LEVEL CHECK**).
19. Fill the engine cooling system with recommended coolant (see step 9 on **COOLANT REPLACEMENT**).
20. Start the engine in P or N, and warm it up to normal operating temperature (the radiator fan comes on). Turn off the engine, and recheck the ATF level (see **ATF LEVEL CHECK**).
21. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).

ATF FILTER REPLACEMENT

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Disconnect the ATF warmer hose (A) from the ATF filter (B).

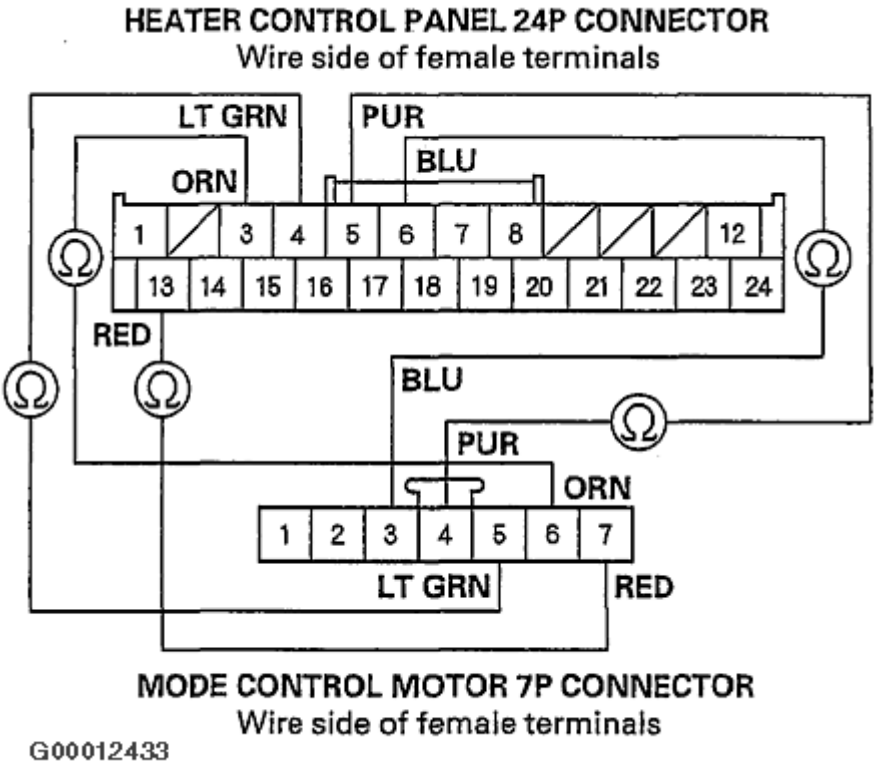


Fig. 290: Identifying ATF Warmer Hose, ATF Filter & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ATF filter holder (C).
4. Remove the bolt (D) securing the ATF inlet line (E).
5. Remove the joint bolt (F) from the ATF inlet line.
6. Disconnect the ATF filter from the ATF warmer hose (G), and replace it with new one.
7. Slide the ATF warmer hose (A) on the new ATF filter until the hose end contacts the filter housing, and secure the hose with the clip (H) at 6-8 mm (0.24-0.31 in.) (I) from the filter housing.
8. Install the ATF filter and the ATF inlet line/hose with the joint bolt and new sealing washers (J).
9. Secure the ATF filter with the ATF filter holder and the bolt.
10. Slide the ATF warmer hose (G) on the ATF filter until the hose end contacts the filter housing, and secure the hose with the clip (K) at 6-8 mm (0.24-0.31 in.) (L) from the filter housing.
11. Install the intake air duct and the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).

SHIFT LEVER REMOVAL

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Shift the shift lever into R.

3. Pry the socket holder lock (A) up using a screwdriver.

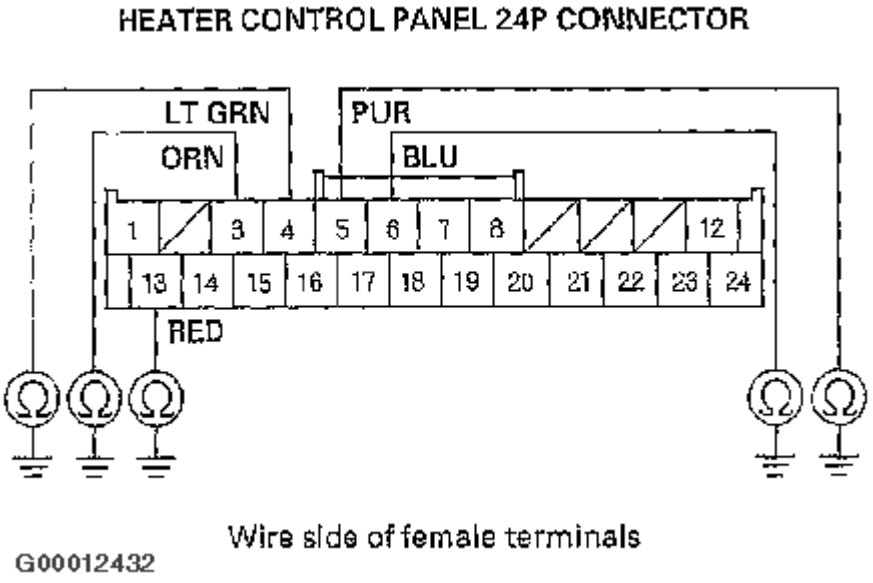


Fig. 291: Prying Socket Holder Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the nut securing the shift cable end.

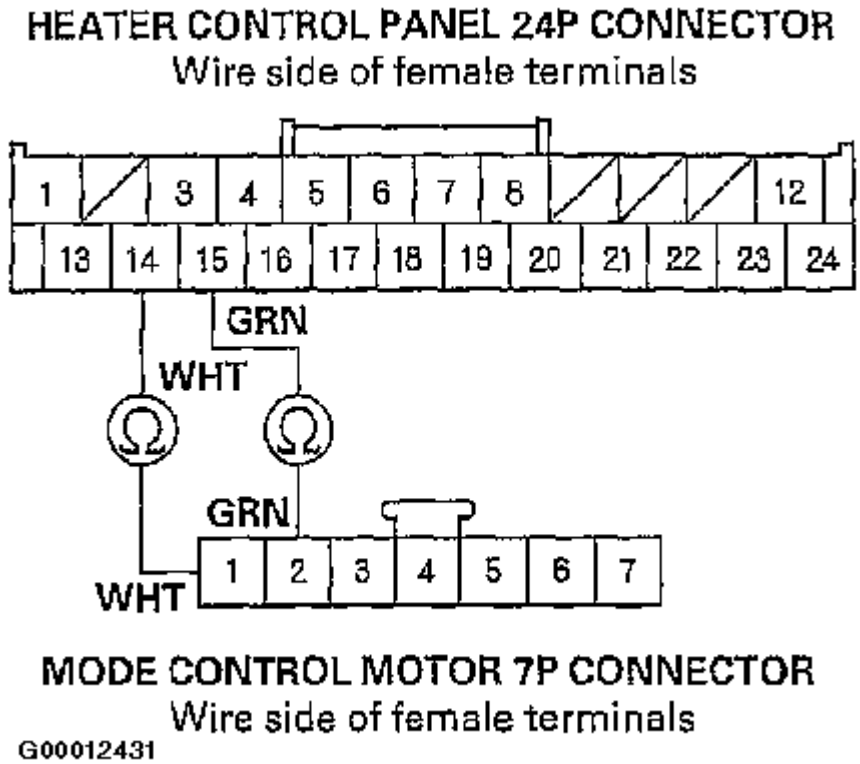


Fig. 292: Identifying Shift Cable Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the bracket.

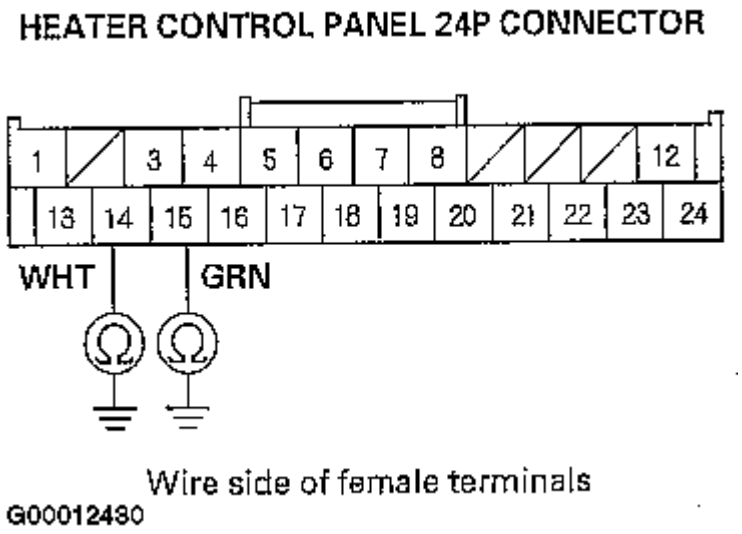


Fig. 293: Identifying Socket Holder Retainer, Socket Holder Bracket And Shift Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Disconnect the shift lock solenoid connector (A) and the park pin switch/A/T gear position indicator panel light connector (B).

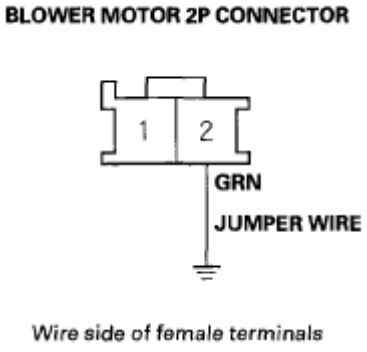


Fig. 294: Identifying Shift Lock Solenoid Connector And Park Pin Switch/A/T Gear Position Indicator Panel Light Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the shift lever assembly.

SHIFT LEVER INSTALLATION

1. Install the shift lever assembly.

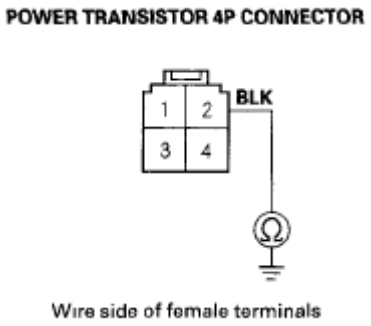


Fig. 295: Identifying Shift Lock Solenoid Connector, Park Pin Switch/A/T Gear Position Indicator Panel Light Connector & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the shift lock solenoid connector (A) and the park pin switch/A/T gear position indicator panel light connector (B).
3. Install the shift cable on the shift lever, and adjust the cable (see **SHIFT CABLE ADJUSTMENT**).

SHIFT LEVER DISASSEMBLY/REASSEMBLY

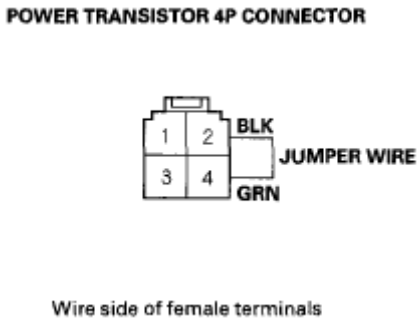


Fig. 296: Disassembling Shift Lever & Screws w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT CABLE REPLACEMENT

1. Raise the vehicle on a lift or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
3. Pry the socket holder lock (A) up using a screwdriver.

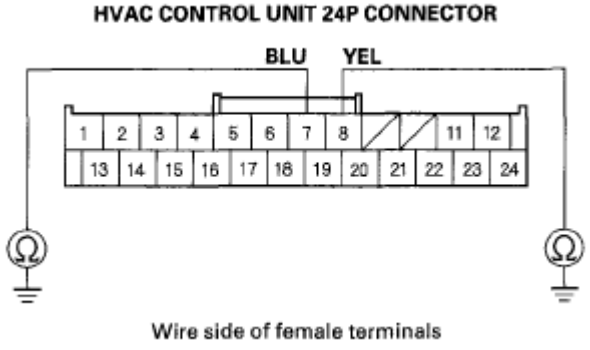


Fig. 297: Prying Socket Holder Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the nut securing the shift cable end.

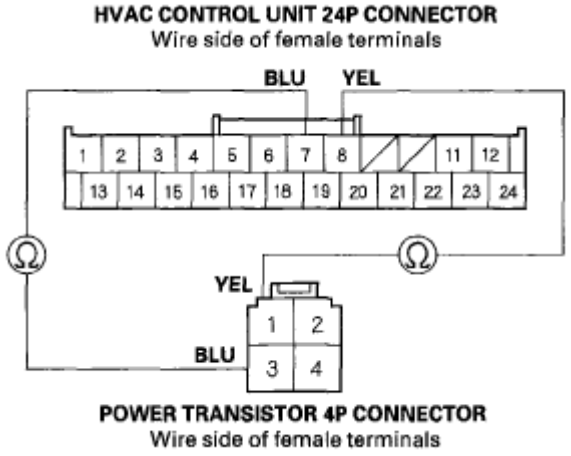


Fig. 298: Identifying Shift Cable Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the bracket.

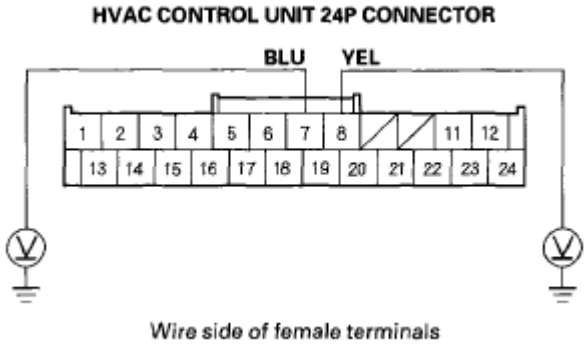


Fig. 299: Identifying Socket Holder Retainer, Socket Holder Bracket And Shift Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the shift cable cover (A), and remove the three bolts securing the shift cable holder (B).

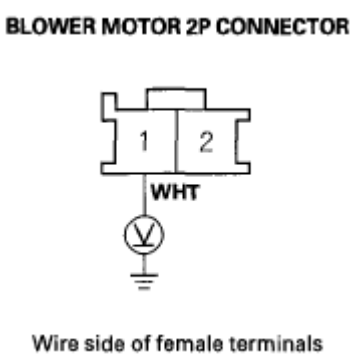


Fig. 300: Identifying Shift Cable Cover And Shift Cable Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the control shaft (F).
8. Remove the nuts securing the shift cable bracket (A) and the grommet (B).

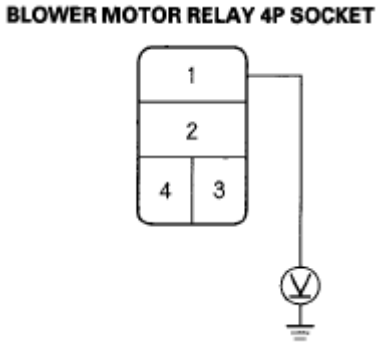


Fig. 301: Identifying Shift Cable Bracket, Grommet & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the shift cable grommet, and pull out the shift cable (C).
10. Insert a new shift cable through the grommet hole (D), and install the grommet in its hole. Do not bend the shift cable excessively.
11. Secure the shift cable bracket and the grommet with the nuts.
12. Make sure that the transmission is in the R position at the selector control shaft.
13. Install the control lever (A) over the control shaft (B).

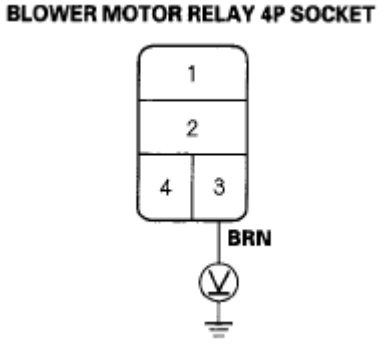


Fig. 302: Identifying Control Lever, Control Shaft, Shift Cable Holder & Bolts w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the shift cable holder (C) on the holder bracket (D) and tighten the bolts loosely. Tighten the bolts (E) in the lateral position to the specified torque, then tighten the bolt (F) in the vertical position.
15. Secure the control lever with a new lock washer (G) and the lock bolt (H), then bend the lock tab of the lock washer against the bolt head.
16. Install the shift cable cover (I).
17. Install the shift cable on the shift lever, and adjust the cable (see step 5).

SHIFT CABLE ADJUSTMENT

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Pry the socket holder lock (A) up with a screwdriver.

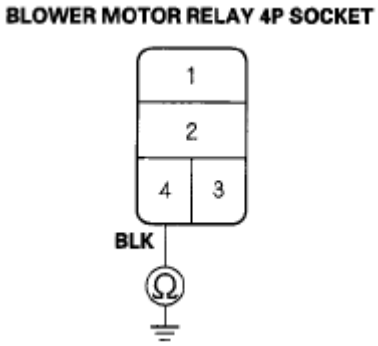


Fig. 303: Prying Socket Holder Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the nut securing the shift cable end.

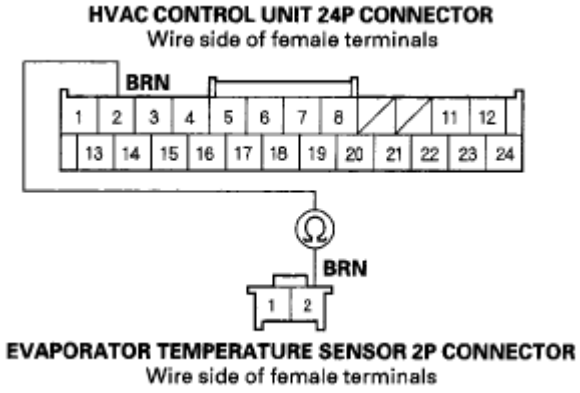


Fig. 304: Identifying Shift Cable Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the bracket.

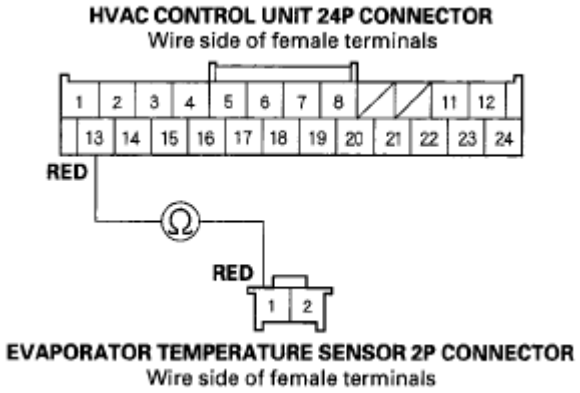


Fig. 305: Identifying Socket Holder Retainer And Socket Holder Bracket With Shift Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. While holding the socket holder (A), rotate the socket holder retainer (B) fully counterclockwise, and press in the socket holder lock (C) between the holder and retainer.

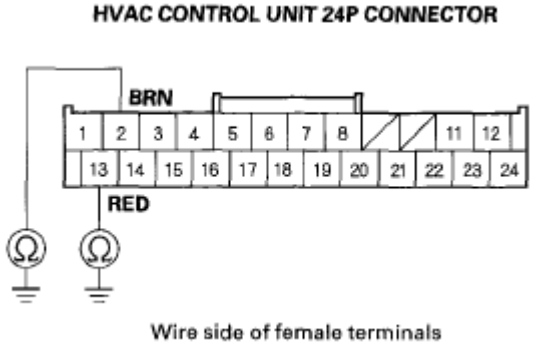


Fig. 306: Pressing Socket Holder Lock Between Holder And Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Align the socket holder (A) with the slot (B) in the socket holder bracket (C), then slide the holder into the bracket.

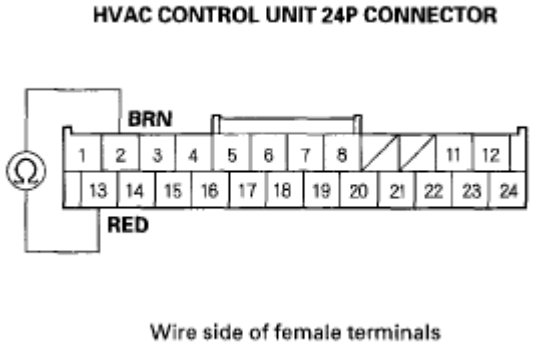


Fig. 307: Identifying Socket Holder And Socket Holder Bracket With Slot
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Rotate the socket holder retainer (A) clockwise, and push the socket holder lock (B). Rotate the holder retainer counterclockwise until the retainer stops at the stop (C) of the holder lock to secure the shift cable.

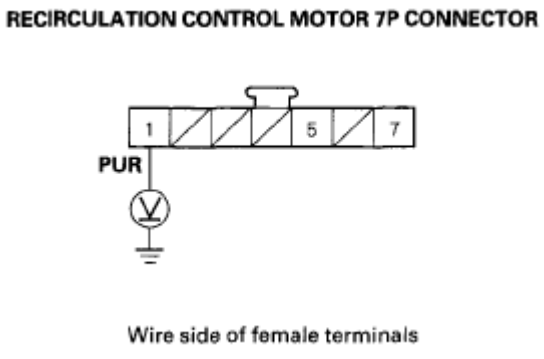


Fig. 308: Pushing Socket Holder Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) to adjust the shift cable.

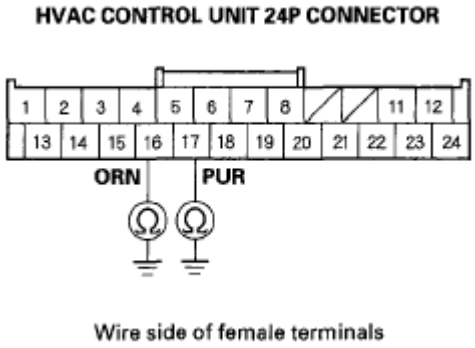


Fig. 309: Pushing Shift Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Turn the ignition switch to ON (II), and check that the R indicator comes on.

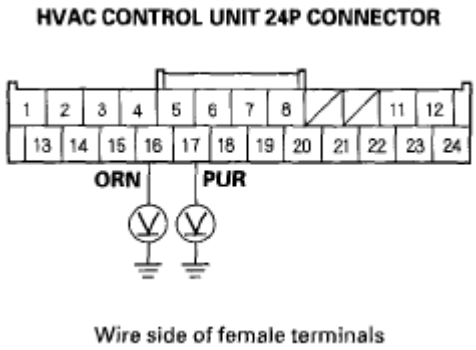


Fig. 310: Identifying R Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch to LOCK (0).
11. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) into the positioning hole (B) on the shift lever bracket, through the positioning hole on the shift lever, and into the positioning hole on the bracket. Use only a 6.0 mm pin that is free any burns.

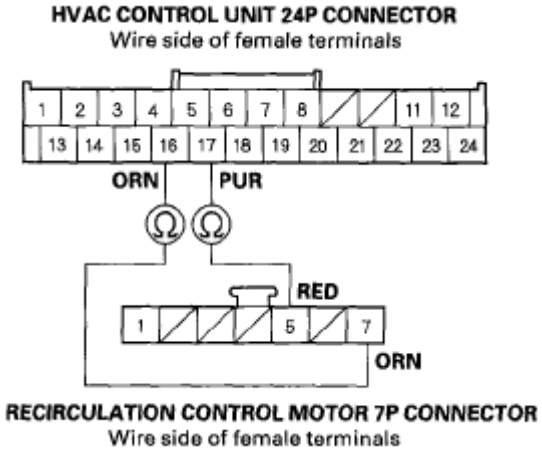


Fig. 311: Inserting Pin Into Hole On Shift Lever Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check that the shift lever is secured in R.
13. Install the shift cable end (A) over the mounting stud (B) by aligning its square hole (C) with the square fitting (D) at the bottom of the stud. Do not install the shift cable by holding the shift cable guide (E).

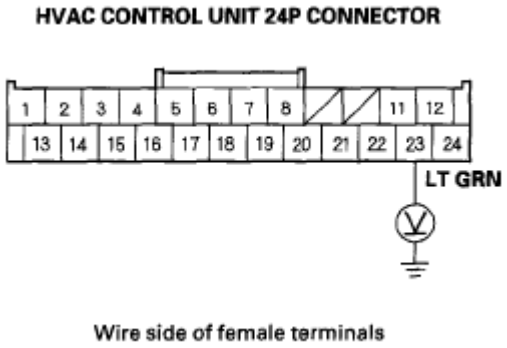


Fig. 312: Aligning Square Hole With Square Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Check that the shift cable end (A) is properly installed on the mounting stud (B).

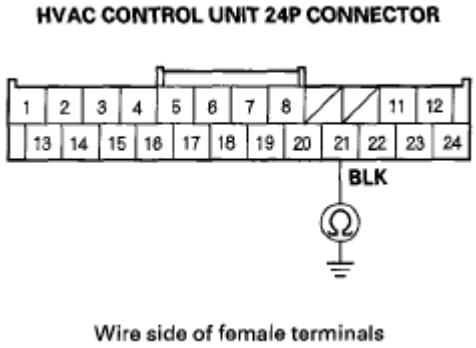


Fig. 313: Identifying Shift Cable Properly And Improperly Installation Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. If improperly installed, align the square fitting with the square hole by rotating the mounting stud.
16. Install and tighten the nut.

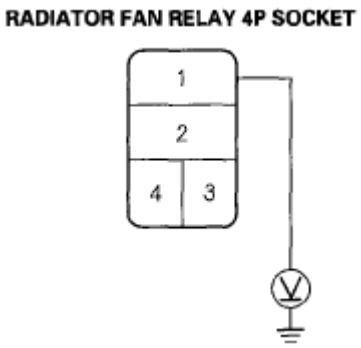


Fig. 314: Identifying Shift Cable Nuts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
18. Turn the ignition switch to ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.
19. Shift to P, and check that the shift lock works properly. Push the shift lock release, and check that the shift lever releases.
20. Install the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

A/T GEAR POSITION INDICATOR

COMPONENT LOCATION INDEX

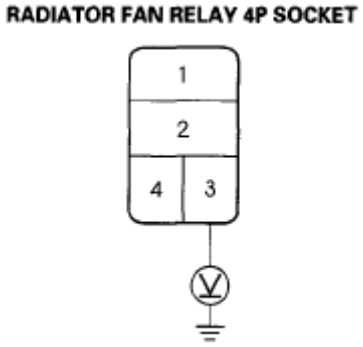


Fig. 315: Identifying A/T Gear Position Indicator Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

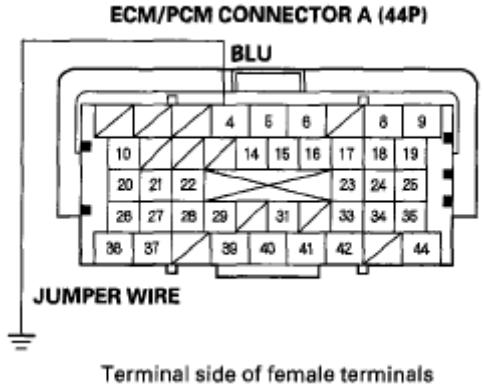


Fig. 316: A/T Gear Position Indicator - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TRANSMISSION RANGE SWITCH TEST

1. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**) and the intake air duct.
2. Disconnect the transmission range switch harness connector (A).

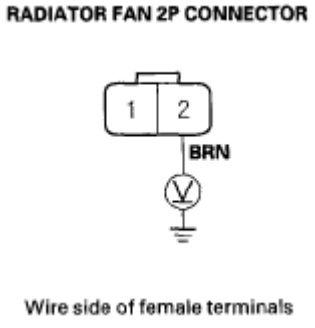


Fig. 317: Identifying Transmission Range Switch Harness Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

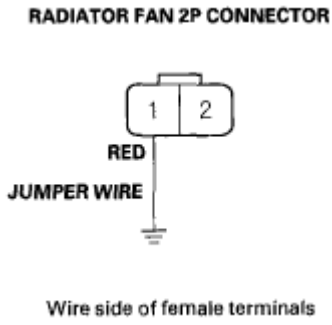


Fig. 318: Transmission Range Switch Harness Connector Continuity Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Transmission range switch test is completed if the test results are OK.

   If there is no continuity between any terminals, go to step 5.

5. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
6. Remove the transmission range switch cover.

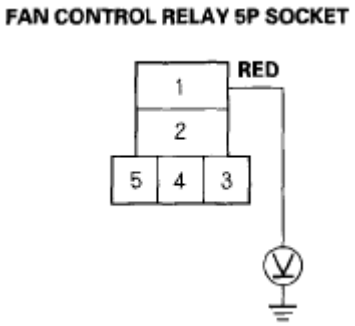


Fig. 319: Identifying Transmission Range Switch Cover & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Disconnect the transmission range switch connector.

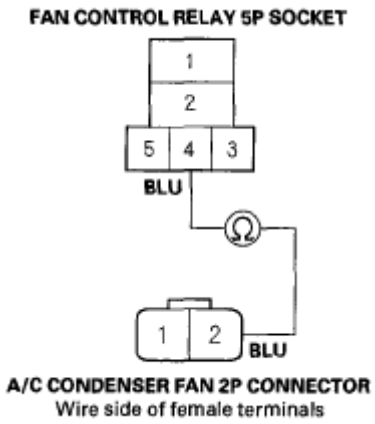


Fig. 320: Identifying Transmission Range Switch Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

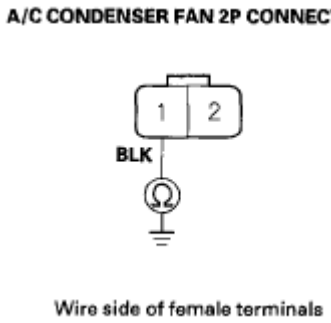


Fig. 321: Transmission Range Switch Connector Continuity Chart
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the transmission range switch test is OK, replace the faulty transmission range switch harness. If there is no continuity between any terminals, go to step 10.
10. Remove the transmission range switch, and check the end of the selector control shaft (A).

Selector Control Shaft Specification:

Width (B): 6.1-6.2 mm (0.240-0.244 in.)

End Gap (C): 1.8-2.0 mm (0.07-0.08 in.)

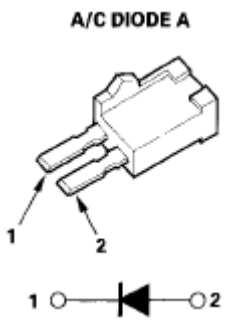


Fig. 322: Identifying Transmission Range Switch Gap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. If the measurement at the end of the selector control shaft end is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the selector control shaft end, and recheck the transmission range switch continuity.

TRANSMISSION RANGE SWITCH REPLACEMENT

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Shift the shift lever to N.
3. Remove the transmission range switch cover.

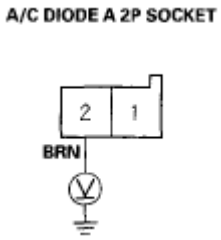


Fig. 323: Identifying Transmission Range Switch Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the transmission range switch.

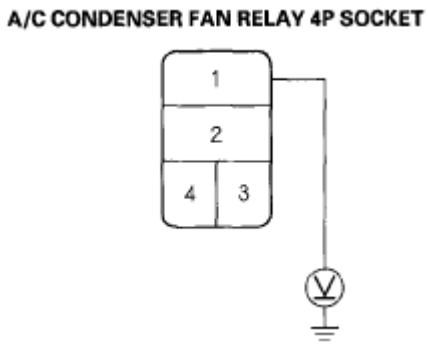


Fig. 324: Identifying Transmission Range Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Make sure the selector control shaft is in the N position. If necessary, move the shift lever to the N position from the P position.

NOTE: Do not use the selector control shaft to adjust the shift position. If the selector control shaft tips are squeezed together it will cause a faulty signal or position due to play between the selector control shaft and switch.

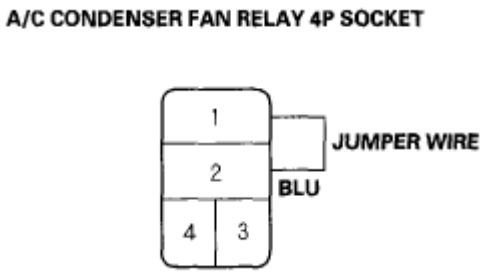


Fig. 325: Identifying Shift Lever Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.

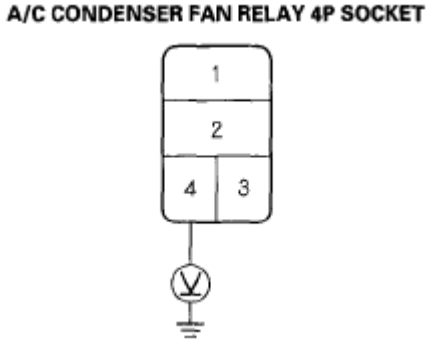


Fig. 326: Aligning Cutouts On Rotary-Frame With Neutral Positioning Cutouts On Transmission Range Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in.) blade (C).

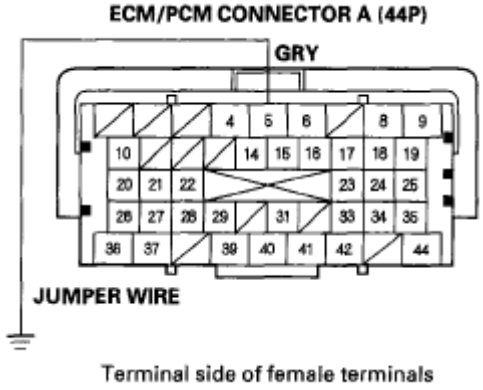


Fig. 327: Holding Transmission Range Switch N Position With Blade
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Tighten the bolts on the transmission range switch while you continue holding the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.

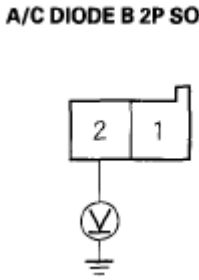


Fig. 328: Moving Transmission Range Switch & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
10. Turn the ignition switch to ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.
11. Check that the engine will start in P and N, and will not start in any other shift lever position.
12. Check that the back-up lights come on when the shift lever is in R.
13. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.
14. Install the transmission range switch cover.

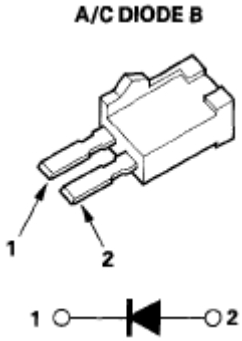


Fig. 329: Identifying Transmission Range Switch Cover & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

A/T GEAR POSITION INDICATOR PANEL LIGHT HARNESS/PARK PIN SWITCH REPLACEMENT

NOTE: The A/T gear position indicator light and the park pin switch are not available separately. Replace the A/T gear position indicator light and the park pin switch as a set.

1. Remove the shift lever assembly (see **SHIFT LEVER REMOVAL**).
2. Loosen the A/T gear position indicator panel (see **SHIFT LEVER DISASSEMBLY/REASSEMBLY**).
3. Remove the park pin switch (A) while pressing the park pin switch lock (B).

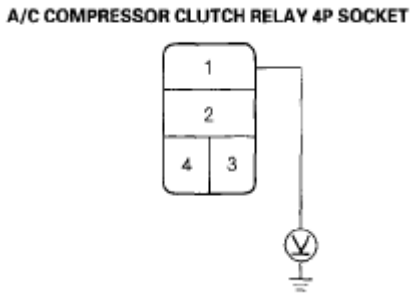


Fig. 330: Pressing Park Pin Switch Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the A/T gear position indicator panel light and socket (A) from the indicator panel (B), and remove the light bulb (C) from the socket.

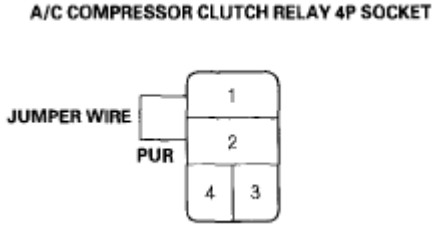


Fig. 331: Identifying A/T Gear Position Indicator Panel Light, Socket, Indicator Panel And Light Bulb
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the harness clamp (D), and remove the park pin switch/A/T gear position indicator panel light connector (E) from the shift lever assembly/ bracket base (F).
6. Install a new park pin switch (G) on the shift lever.
7. Install the A/T gear position indicator panel light bulb in the new socket, and install it in the indicator panel.
8. Clamp the harnesses together with the harness clamp, then install the harness clamp on the shift lever bracket base.
9. Route the harnesses along the harness guides, and install the new connector in the bracket base.
10. Install the A/T gear position indicator panel (see **SHIFT LEVER DISASSEMBLY/REASSEMBLY**).
11. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION**).
12. Install the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

A/T INTERLOCK SYSTEM

COMPONENT LOCATION INDEX

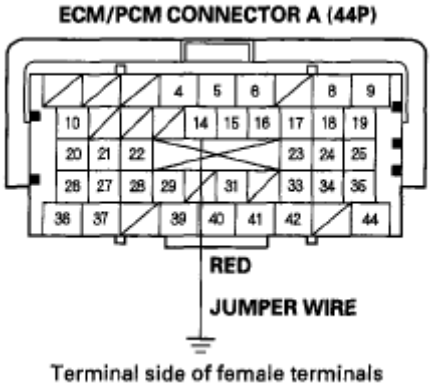


Fig. 332: Identifying A/T Interlock System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

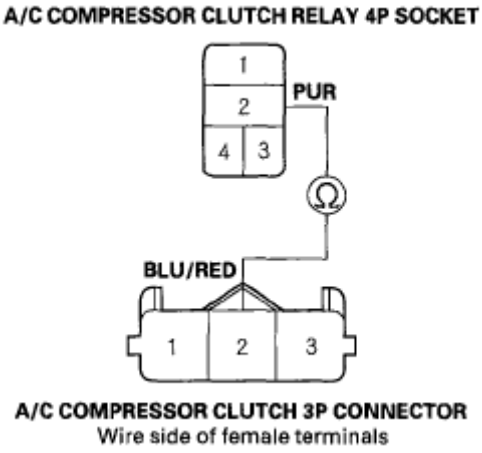


Fig. 333: A/T Interlock System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT LOCK SYSTEM CIRCUIT TROUBLESHOOTING

1. Connect the HDS tot he DLC located behind the driver's dashboard lower cover.
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

   Does the shift lock solenoid work properly?

   YES -Go to step 15.

   NO -Go to step 4.

4. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
5. Disconnect the shift lock solenoid connector.
6. Turn the ignition switch to ON (II).
7. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

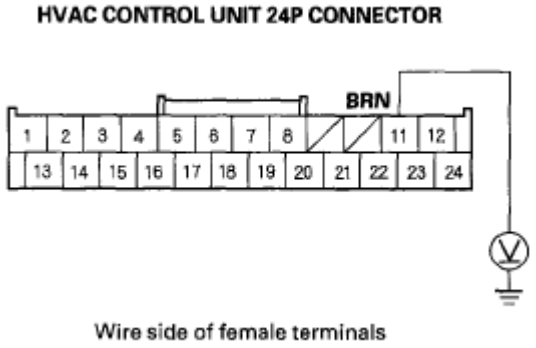


Fig. 334: Measuring Voltage Between Shift Lock Solenoid Connector Terminal 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 8.

NO -Check for a blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open or short to body ground in the wire between the shift lock solenoid connector and the under-dash fuse/relay box.

8. Shift to P, and press the brake pedal. Do not press the accelerator.
9. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

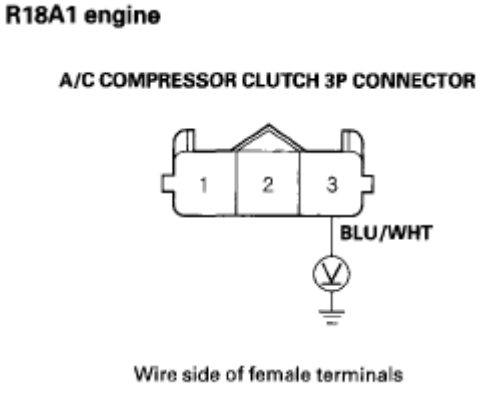


Fig. 335: Measuring Voltage Between Shift Lock Solenoid Connector Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 10.

NO -Go to step 11.

10. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift lever must be in P.

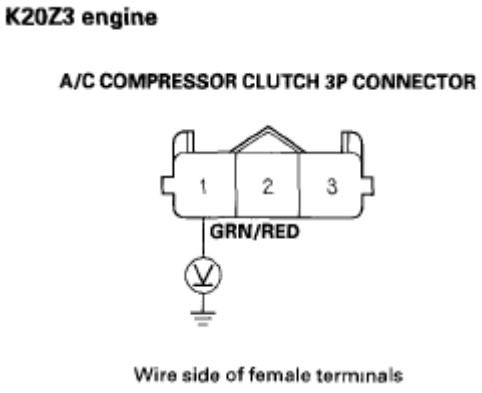


Fig. 336: Measuring Voltage Between Shift Lock Solenoid Connector Terminals 1 And 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Repair short to body ground in the wire between PCM connector terminal A27 and the shift lock solenoid.

NO -Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see **SHIFT LOCK SOLENOID REPLACEMENT**).

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector A (44P).
14. Check for continuity between PCM connector terminal A27 and shift lock solenoid connector terminal No. 2.

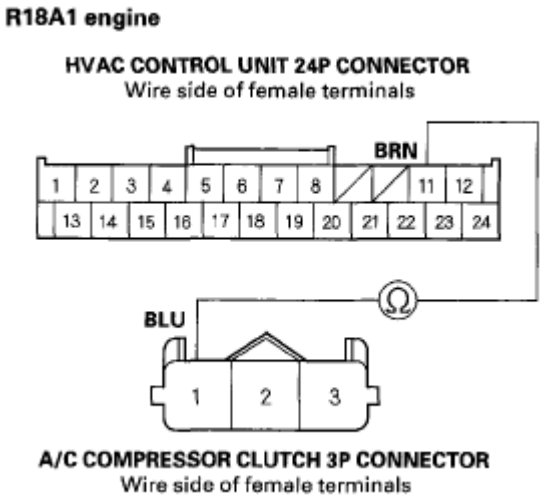


Fig. 337: Checking Continuity Between PCM Connector Terminal A27 And Shift Lock Solenoid

Connector Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good PCM (see **SUBSTITUTING THE PCM**) and recheck.

NO -Repair open in the wire between PCM connector terminal A27 and the shift lock solenoid connector.

15. Press the brake pedal.

    Are the brake lights ON?

    YES -Go to step 16.

    NO -Repair faulty brake light circuit.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Measure the voltage between PCM connector terminal A40 and body ground while pressing the brake pedal and when the brake pedal is released.

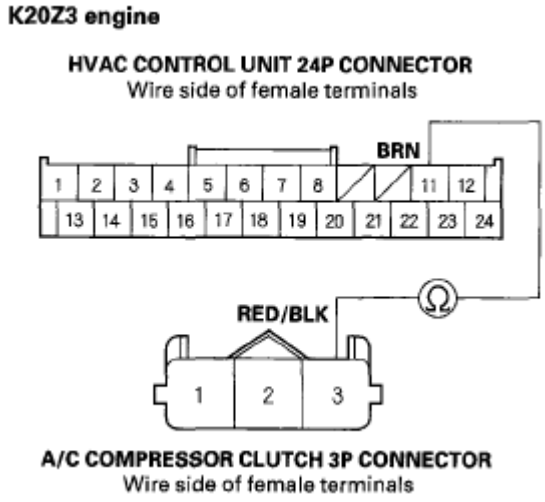


Fig. 338: Measuring Voltage Between PCM Connector Terminal A40 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage while the brake pedal is pressed, and no voltage when the pedal is released?

YES -Go to step 21.

NO -Go to step 20.

20. Check for continuity between PCM connector terminal A40 and brake pedal position switch 4P connector terminal No. 2.

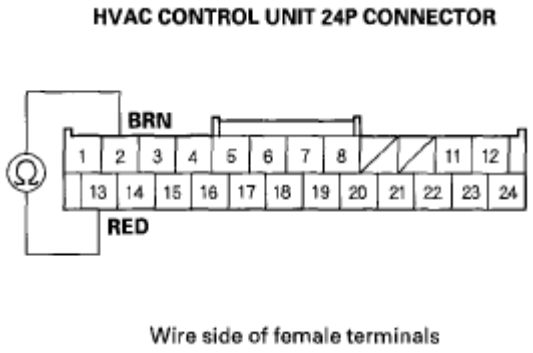


Fig. 339: Checking Continuity Between PCM Terminal A40 And Brake Pedal Position Switch 4P Terminal 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good PCM (see **SUBSTITUTING THE PCM**) and recheck.

NO -Repair open in the wire between PCM connector terminal A40 and the brake pedal position switch.

21. Connect PCM connector A (44P).
22. Disconnect the transmission range switch connector.
23. Turn the ignition switch to ON (II).
24. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

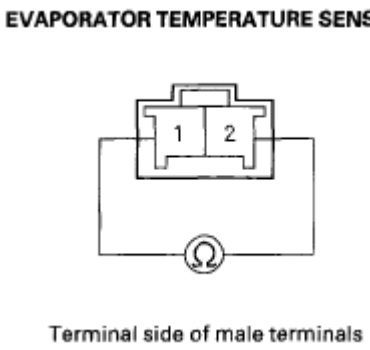


Fig. 340: Measuring Voltage Between Transmission Range Switch Connector Terminals 6 And 10
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES -Go to step 30.

NO -Go to step 25.

25. Turn the ignition switch to LOCK (0).
26. Disconnect PCM connector B (44P).

27. Check for continuity between PCM connector : terminal B13 and body ground.

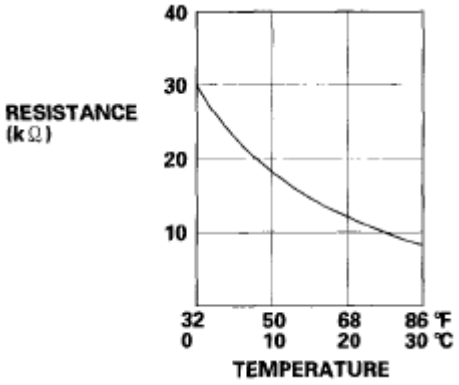


Fig. 341: Checking Continuity Between PCM Connector Terminal B13 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch.

NO -Go to step 28.

28. Check for continuity between PCM connector terminal B13 and transmission range switch connector terminal No. 6.

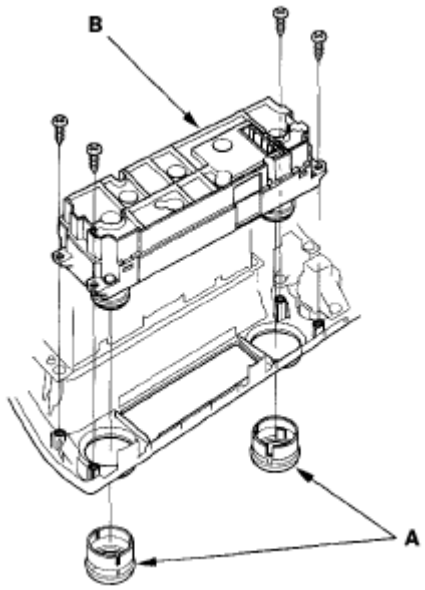


Fig. 342: Checking Continuity Between PCM Connector Terminal B13 And Transmission Range Switch Connector Terminal 6
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 29.

NO -Repair open in the wire between PCM connector terminal B13 and the transmission range switch.

29. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

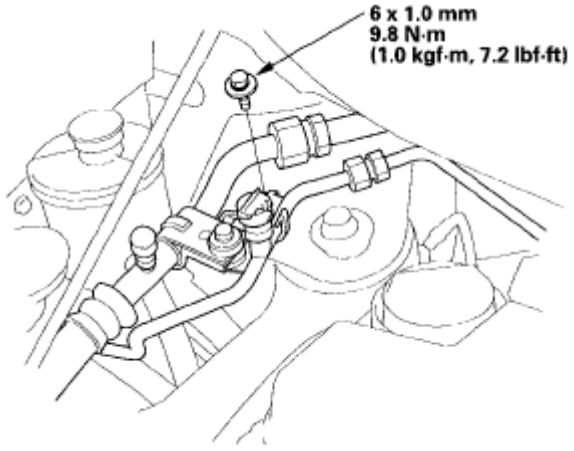


Fig. 343: Checking Continuity Between Transmission Range Switch Connector Terminal 10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Substitute a known-good PCM (see **SUBSTITUTING THE PCM**) and recheck

NO -Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101) (see **CONNECTOR TO HARNESS INDEX**), or repair poor ground (G101).

30. Test the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST**).

Is the switch OK?

YES -Go to step 30.

NO -Replace the transmission range switch (see **TRANSMISSION RANGE SWITCH REPLACEMENT**).

31. Connect the HDS to the DLC.
32. Check the accelerator pedal position sensor 1 in the DATA LIST with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor 1 opening 11 % and above, or the sensor 1 voltage 0.90 V and above?

YES -Check the APP Sensor (see **APP SENSOR SIGNAL INSPECTION**).

NO -Substitute a known-good PCM (see **SUBSTITUTING THE PCM**) and recheck.

KEY INTERLOCK SYSTEM CIRCUIT TROUBLESHOOTING

SRS components are located in this area. Review the SRS component locations, 4-door (see **COMPONENT LOCATION INDEX**), 2-door (see **COMPONENT LOCATION INDEX**), and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) before doing repair or service.

1. Turn the ignition switch to ACCESSORY (I). The shift lever must be in P.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned the LOCK (0) position?

   YES -Go to step 4.

   NO -Replace the ignition key cylinder/steering lock assembly (see **STEERING COLUMN REMOVAL AND INSTALLATION**).

4. Turn the ignition switch to LOCK (0).
5. Move the shift lever out of P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

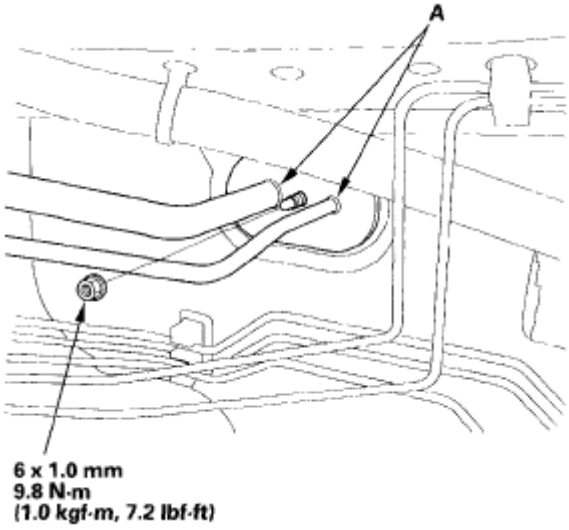


Fig. 344: Checking Continuity Between Steering Lock Assembly Connector Terminal 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the key interlock solenoid and the MICU.

NO -Go to step 7.

7. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
8. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and body ground.

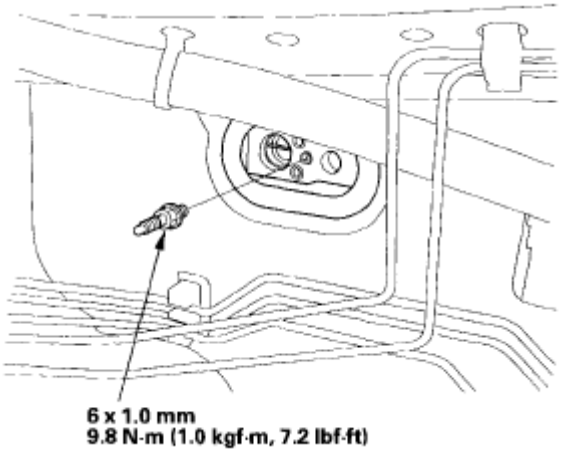


Fig. 345: Checking Continuity Between Park Pin Switch/A/T Gear Position Indicator Panel Light Connector Terminal 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and the MICU.

NO -Go to step 9.

9. Shift to P.
10. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. Do not push the shift lever button.

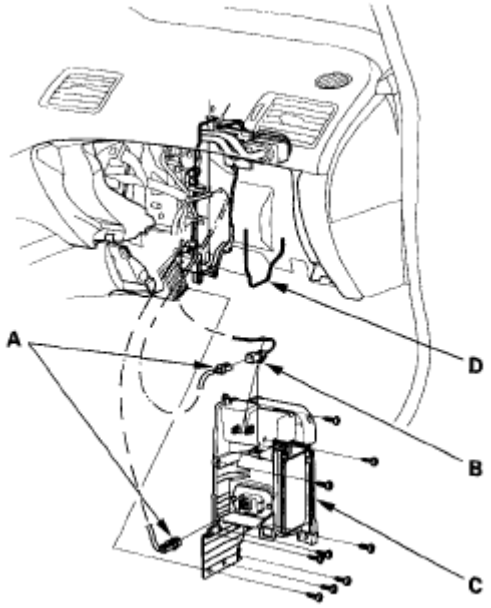


Fig. 346: Checking Continuity Between Park Pin Switch/A/T Gear Position Indicator Panel Light Connector Terminals 3 And 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the park pin switch (see **A/T GEAR POSITION INDICATOR PANEL LIGHT HARNESS/PARK PIN SWITCH REPLACEMENT**).

NO -Substitute 8 known-good MICU and recheck.

SHIFT LOCK SOLENOID TEST

1. Connect the HDS to the DLC (A) located behind the driver's dashboard lower cover.

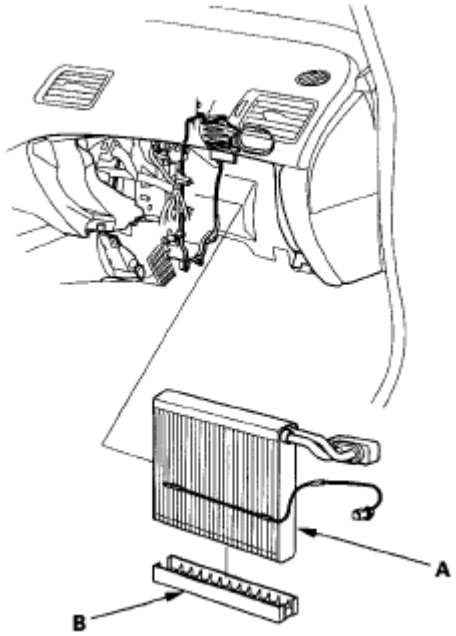


Fig. 347: Identifying Data Link Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.
4. Make sure that the shift lever can be moved out of P when Shift Lock Solenoid is ON. Move the shift lever back in P, and make sure it locks when Shift Lock Solenoid is OFF.
5. Make sure that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
6. If the shift lock solenoid does not work properly, go to the shift lock system troubleshooting (see **SHIFT LOCK SYSTEM CIRCUIT TROUBLESHOOTING**).

SHIFT LOCK SOLENOID REPLACEMENT

1. Remove the shift lever assembly (see **SHIFT LEVER REMOVAL**).
2. Remove the shift lock solenoid connector.
3. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).

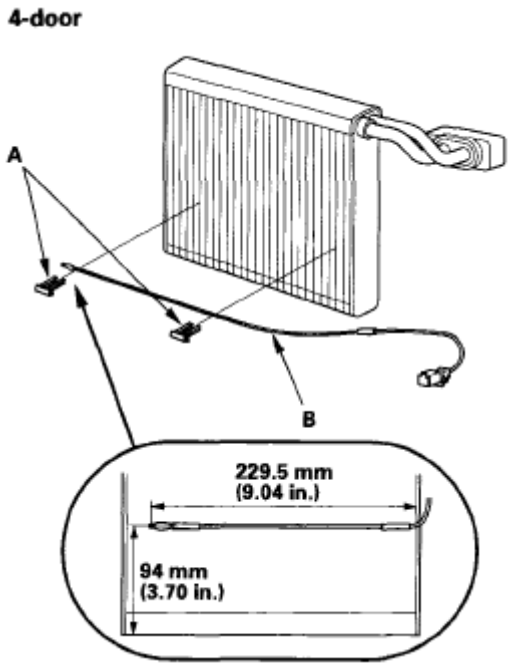


Fig. 348: Removing Shift Lock Solenoid Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Replace the shift lock solenoid (A), solenoid plunger (B), and plunger spring (C) assembly.

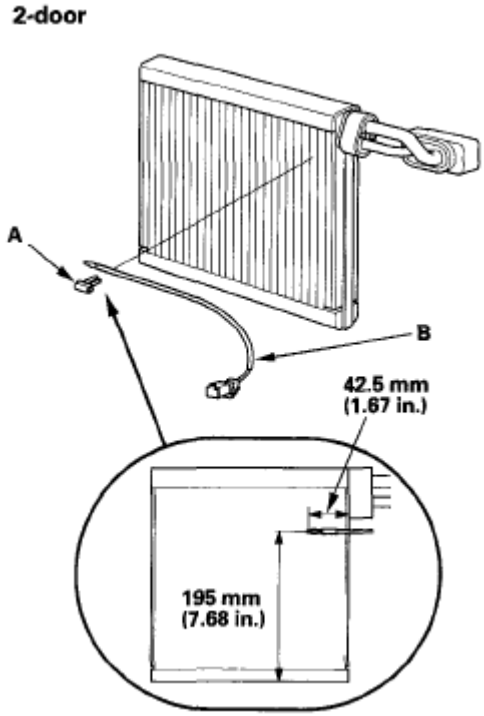


Fig. 349: Identifying Shift Lock Solenoid, Solenoid Plunger And Plunger Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Apply silicone grease to the tip (D) of the shift lock stop (E), and install a new shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

6. Route the shift lock solenoid harness in the guide, and install the connector (F) on the bracket base.
7. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION**).

SHIFT LOCK STOP, SHIFT LOCK STOP CUSHION REPLACEMENT

1. Remove the shift lever assembly (see **SHIFT LEVER REMOVAL**).
2. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).

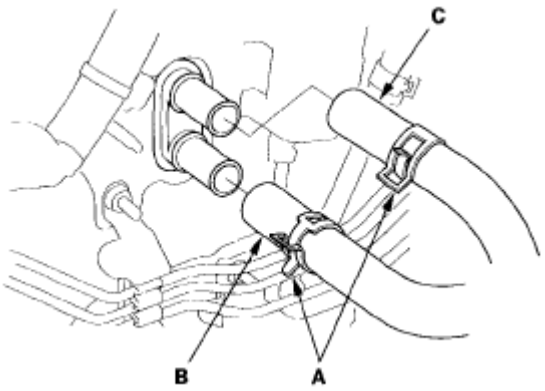


Fig. 350: Removing Shift Lock Solenoid Lock
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the shift lock release (A) and release the spring (B).

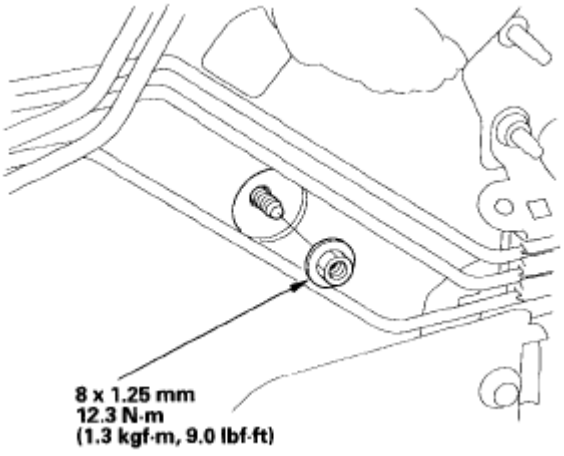


Fig. 351: Identifying Shift Lock Stop And Stop Cushion
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the shift lock stop (C) and the stop cushion (D), and replace the shift lock stop or the stop cushion.
5. Install the shift lock stop cushion on the shift lock stop.
6. Apply silicone grease to the pin on the shift lever bracket base, and install the shift lock stop over the pin.
7. Install the shift lock release spring and the shift lock release, apply silicone grease to the shift lock release mounting tip if necessary.

8. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.
9. Route the shift lock solenoid harness in the guide.
10. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION**).

PARK PIN SWITCH TEST

1. Remove the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).
2. Move the shift lever into P, and check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. There should be no continuity.

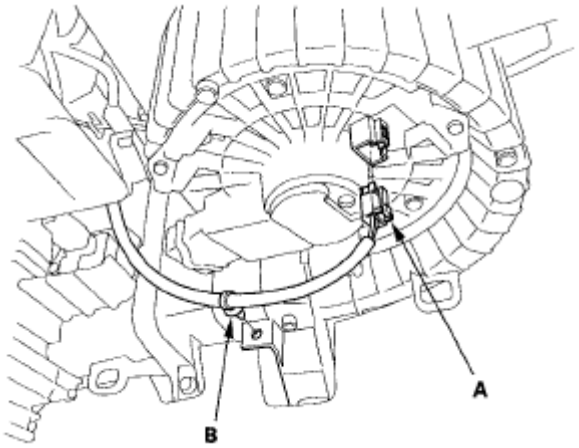


Fig. 352: Identifying A/T Gear Position Indicator Panel Light Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Shift out of P, and check for continuity between connector terminals No. 3 and No. 4. There should be continuity.
4. If the park pin switch tests OK, install the center console (see **CENTER CONSOLE REMOVAL/INSTALLATION**).

   If the park pin switch fails the test, replace the park pin switch (see **A/T GEAR POSITION INDICATOR PANEL LIGHT HARNESS/PARK PIN SWITCH REPLACEMENT**).

TRANSMISSION END COVER

END COVER REMOVAL

Special Tools Required

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

1. Remove the ATF dipstick.
2. Remove the five bolts (D) securing the ATF inlet line brackets, the ATF filter bracket bolts (E), the line bolt and the sealing washers, and remove the ATF inlet line, the ATF hose, and the ATF filter (F).

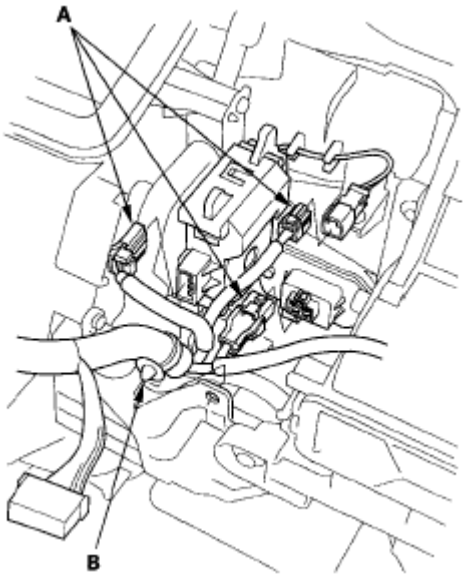


Fig. 353: Disassembling Transmission
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ATF outlet line bolt, the line mounting bolt, the sealing washers, and the ATF outlet line (G).
4. Remove A/T clutch pressure control solenoid valve A, the ATF joint pipes, the O-rings, the ATF pipe, and the gasket.
5. Remove A/T clutch pressure control solenoid valves B and C, the O-rings, the ATF pipe, the ATF joint pipes, and the gasket.
6. Remove the input shaft (mainshaft) speed sensor (H) and the output shaft (countershaft) speed sensor (I).
7. Remove the ATF warmer bracket (J).
8. Remove the transmission range switch cover (K).
9. Remove the transmission range switch harness clamps (L) from the clamp bracket (M), then remove the transmission range switch (N).
10. Remove the clamp bracket from the end cover (O).
11. Remove the end cover, the dowel pins, the O-rings, and the end cover gasket.
12. Remove the ATF lubrication pipe (P) from the idler gear shaft.
13. Slip the mainshaft holder onto the mainshaft.

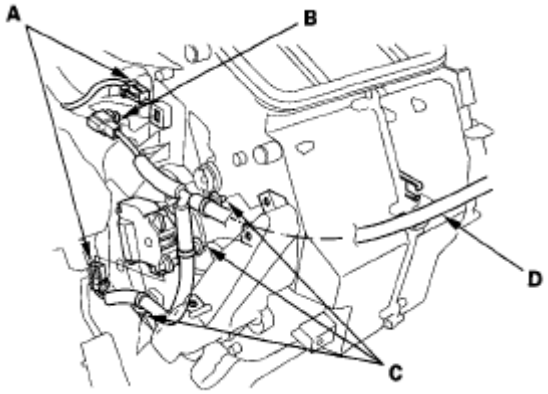


Fig. 354: Identifying Mainshaft Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Engage the park pawl with the park gear.
15. Cut the lock tab (A) of the each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.

NOTE:

- **Countershaft and secondary shaft locknuts have left-hand threads.**
- **Keep all of the chiseled particles out of the transmission.**
- **Clean the old locknuts; they are used to install the press fit idler gears and park gear.**

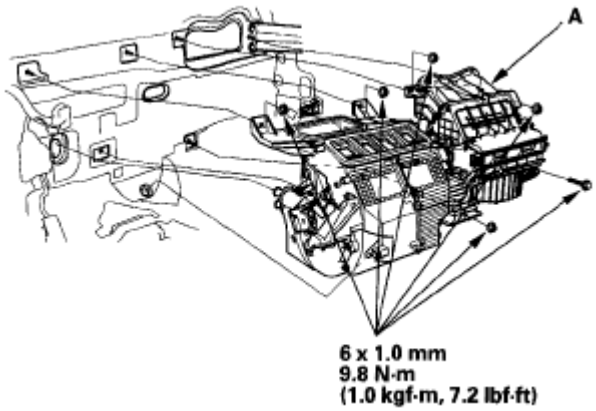


Fig. 355: Cutting Lock Tab
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the snap ring securing the idler gear to the idler gear shaft.
17. Install 6 x 1.0 mm bolts (A) on the idler gear shaft idler gear (B). Set a puller (C) on the idler gear shaft (D) with putting a spacer (E) between the puller and the idler gear shaft, then remove the idler gear shaft idler gear.

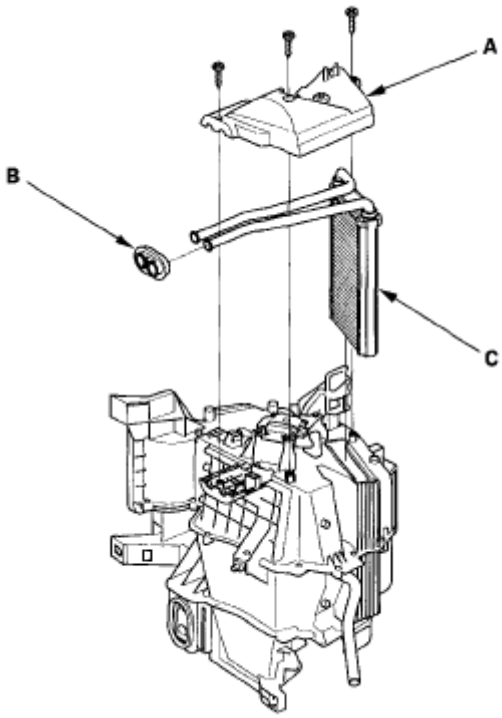


Fig. 356: Removing Idler Gear Shaft Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Set the puller, 6 x 1.0 mm bolts, and spacer on the secondary shaft idler gear (F), and remove the secondary shaft idler gear from the secondary shaft in the same manner as the removal of the idler gear shaft idler gear.
19. Set the puller, 6 x 1.0 mm bolts, and spacer on the mainshaft idler gear (G), and remove the mainshaft idler gear from the mainshaft in the same manner as the removal of the idler gear shaft idler gear.
20. Set the puller, 6 x 1.0 mm bolts, and spacer on the park gear (H), and remove the park gear from the countershaft in the same manner as the removal of the idler gear shaft idler gear.
21. Remove the park pawl, the park pawl spring, the park pawl shaft, and the stop shaft.
22. Remove the park lever from the selector control shaft.

PARK LEVER STOP INSPECTION AND ADJUSTMENT

1. Set the park lever in the P position.
2. Measure the distance (A) between the park pawl shaft center (B) and the extension line (C) connected centers of the park lever roller pin (D) and the control shaft (E) in the vertical direction from the extension line.

Standard: 46.8-47.8 mm (1.84-1.88 in.)

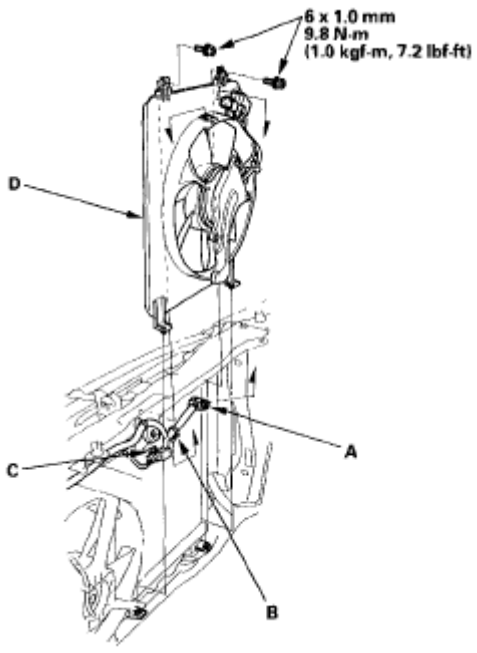


Fig. 357: Measuring Distance Between Park Pawl Shaft Center And Extension Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the measurement is out of standard, select and install the appropriate park lever stop (A) from the table.

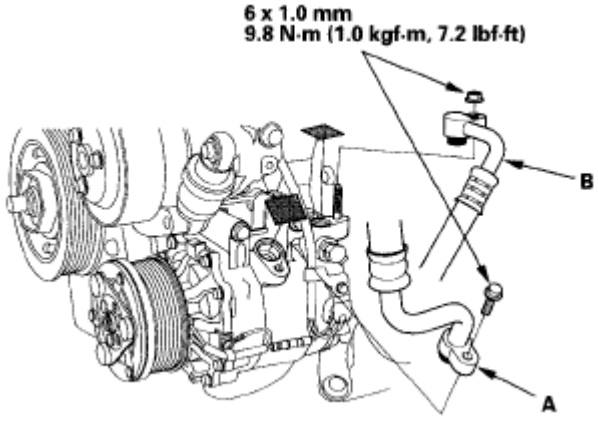


Fig. 358: Identifying Park Lever Stop Measurement
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PARK LEVER STOP

PART NUMBER REFERENCE

Mark	Part Number	B	C
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-	10.60 mm	10.30 mm

	003	(0.417 in.)	(0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

IDLER GEAR SHAFT BEARING REPLACEMENT

Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Remove the idler gear shaft bearing from the end cover using the adjustable bearing puller and a commercially available 3/8"-16 slide hammer (A).

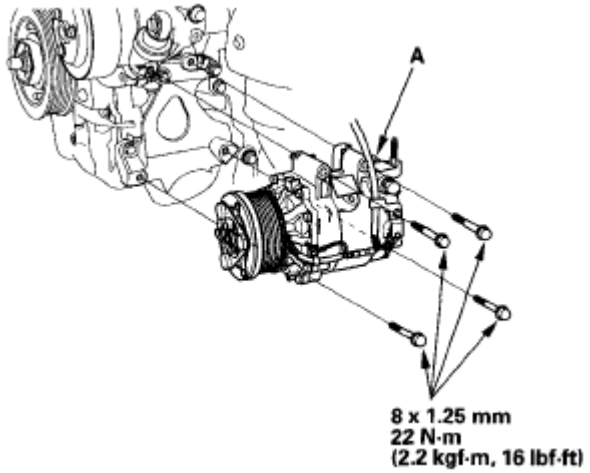


Fig. 359: Identifying Idler Gear Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new bearing in the end cover using the driver and the 52 x 55 mm attachment.

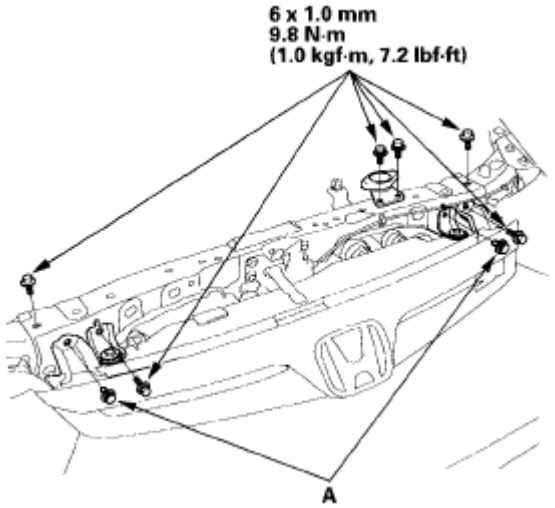


Fig. 360: Tapping Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SELECTOR CONTROL SHAFT OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover.

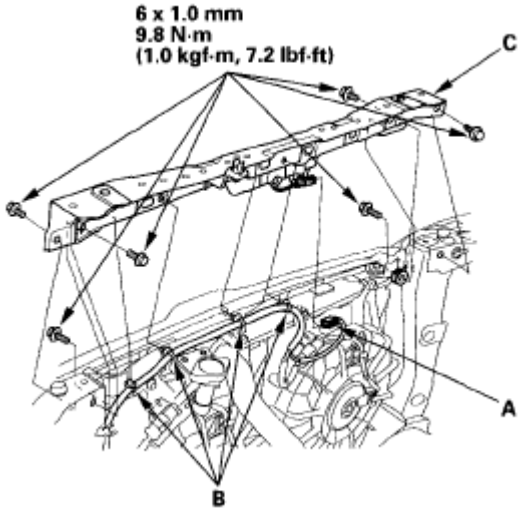


Fig. 361: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new oil seal flush to the end cover using the driver and the 22 x 24 mm attachment.

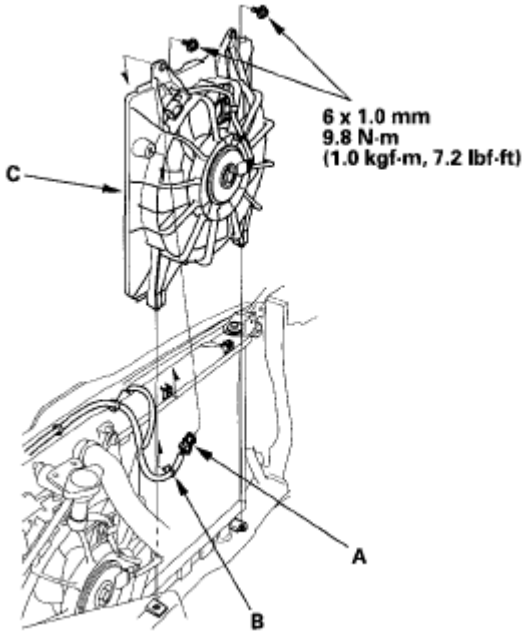


Fig. 362: Pressing Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SELECTOR CONTROL SHAFT BEARING REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover.

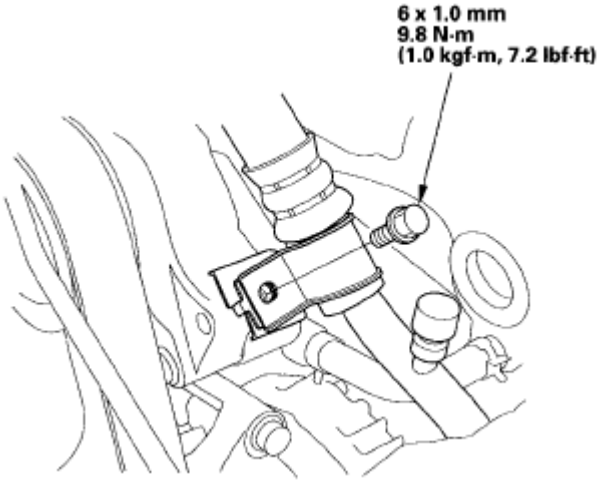


Fig. 363: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the selector control shaft bearing from the end cover.

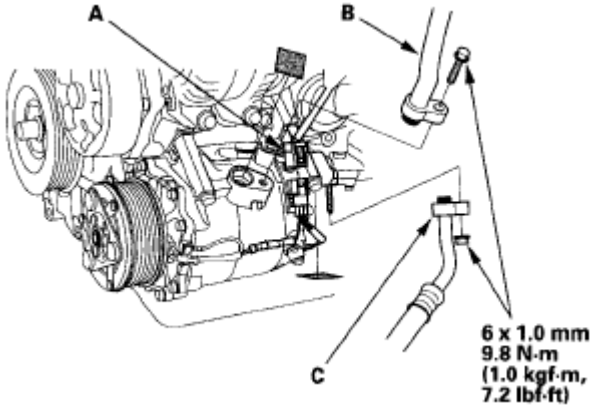


Fig. 364: Tapping Selector Control Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install a new bearing flush to the end cover using the driver and the 22 x 24 mm attachment.

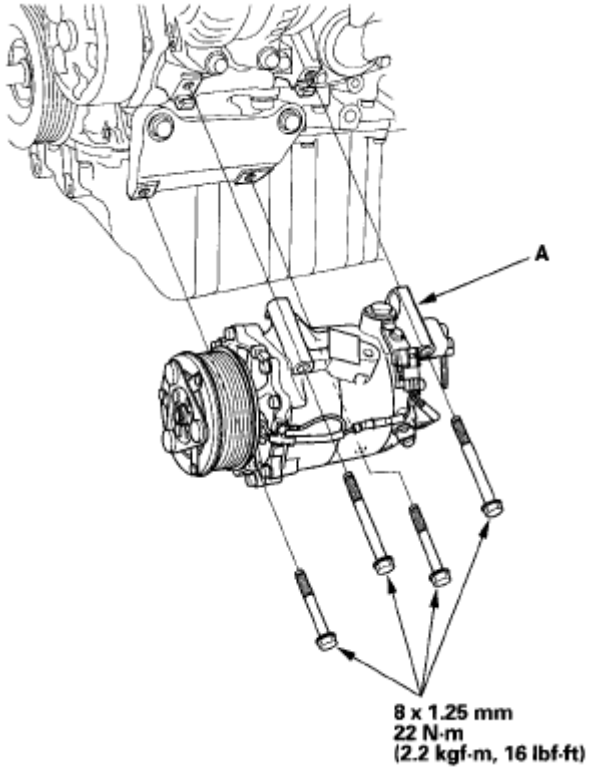


Fig. 365: Pressing Bearing Flush
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install a new oil seal flush to the end cover using the driver and the 22 x 24 mm attachment.

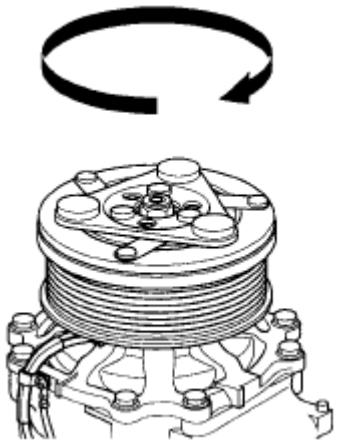


Fig. 366: Pressing Oil Seal Flush
Courtesy of AMERICAN HONDA MOTOR CO., INC.

ATF FEED PIPE REPLACEMENT

1. Remove the snap ring (A), the 3rd clutch feed pipe (B), and the feed pipe flange (C) from the end cover (D).

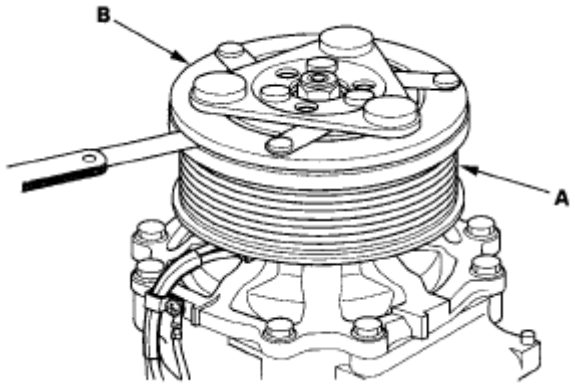


Fig. 367: Identifying Snap Ring, 3rd Clutch Feed Pipe And Feed Pipe Flange
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new O-ring (E) over a new 3rd clutch feed pipe.
3. Install the 3rd clutch feed pipe in the end cover by aligning the feed pipe tabs (F) with the indentations in the end cover.
4. Install a new O-ring (G) in the end cover, then install the feed pipe flange over the 3rd clutch feed pipe.
5. Secure the 3rd clutch feed pipe and the feed pipe flange with the snap ring.
6. Remove the snap ring (H) and feed pipe flange (I).
7. Check the 4th clutch feed pipe (J) and 2nd clutch feed pipe (K) for scoring and damage. Replace the end cover, if the feed pipes are scored or damaged.
8. Install a new O-ring (L) over a new 4th clutch feed pipe.
9. Install a new O-ring (M) in the end cover, then install the feed pipe flange over the 4th clutch feed pipe.
10. Secure the 4th clutch feed pipe and feed pipe flange with the snap ring.

TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT

1. Remove the 2nd clutch transmission fluid pressure switch (A).

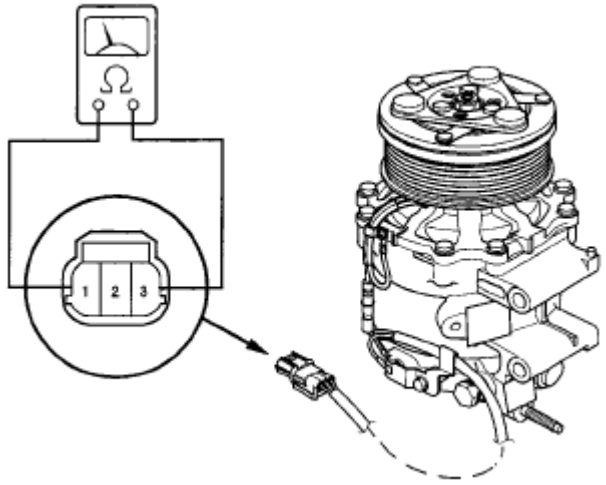


Fig. 368: Identifying 2nd Clutch Transmission Fluid Pressure Switch, 3rd Clutch Transmission Fluid Pressure Switch & Bolts w/Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Make sure there is no water, oil, dust, or foreign particles inside the connector.
3. Install a new 2nd clutch transmission fluid pressure switch and a new sealing washer (B), then tighten the switch to the specified torque on the metal part, not the plastic part.
4. Remove the 3rd clutch transmission fluid pressure switch (C).
5. Make sure there is no water, oil, dust, or foreign particles inside the connector.
6. Install a new 3rd clutch transmission fluid pressure switch and a new sealing washer (D), then tighten the switch to the specified torque on the metal part, not the plastic part.

AIR CHECK VALVE INSPECTION AND REPLACEMENT

1. Check the air check valve filter for clogging. If the filter is clogged, remove the air check valve (A), and clean the filter thoroughly by pouring clean ATF. Do not blow out the filter with compressed air. Replace the air check valve, if the filter or check valve (ball) is clogged or damaged.

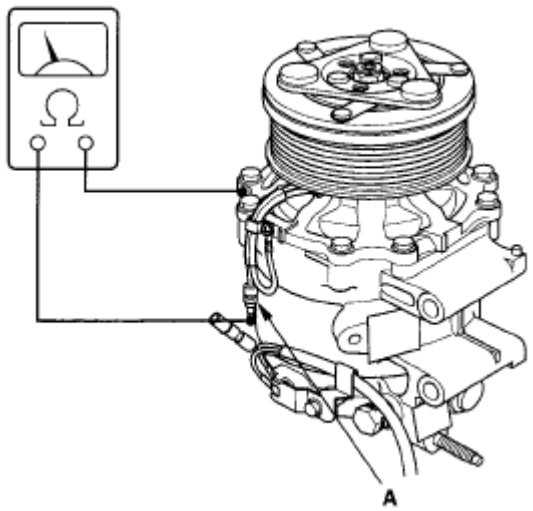


Fig. 369: Identifying Air Check Valve, Sealing Washer & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the air check valve and a new sealing washer (B).

TRANSMISSION HOUSING

HOUSING AND SHAFT ASSEMBLY REMOVAL

Special Tools Required

Housing puller 07HAC-PK40102

1. Remove the shift solenoid valve cover (A), the dowel pins (B), the gasket (C), and the harness clamp bracket (D).

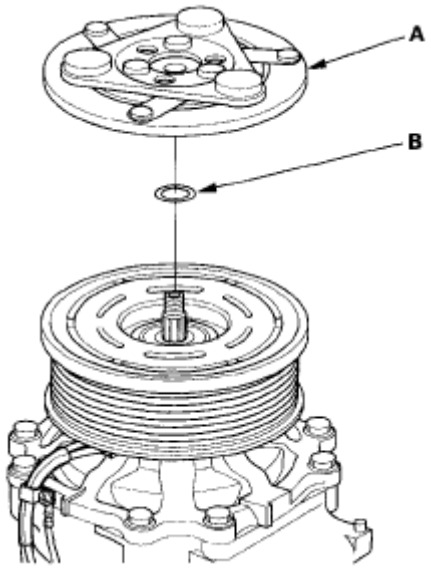


Fig. 370: Disassembling Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Disconnect the connectors from the shift solenoid valves, and remove the solenoid harness connector (E).
3. Remove the transmission housing mounting bolts (F) (19).
4. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the selector control shaft with the detent plate.

NOTE: Do not squeeze the end of the selector control shaft tips together when turning the control shaft.

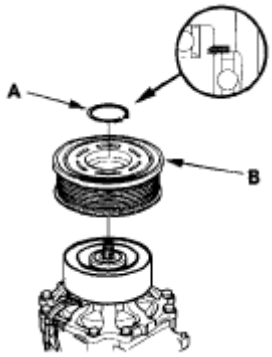


Fig. 371: Aligning Spring Pin On Selector Control Shaft With Transmission Housing Groove
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the housing puller over the countershaft, then remove the transmission housing.

NOTE: If the top arm of your housing puller is too short, replace it with housing puller arm, 205 mm 07SAC-P0Z0101.

6. Remove the countershaft reverse gear and the needle bearing.
7. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.
8. Remove the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together. If the reverse selector hub is removed by hand, remove the 4th-5th gear and the needle bearings, and remove the mainshaft subassembly. Then remove the countershaft subassembly and the secondary shaft subassembly together.

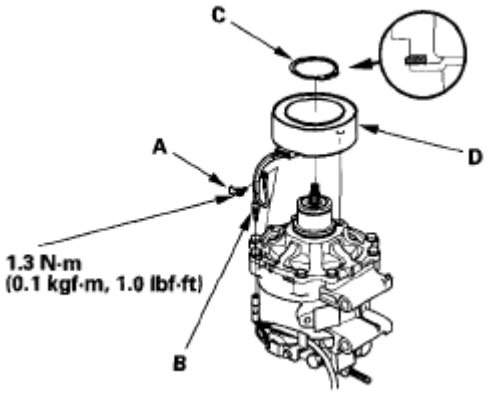


Fig. 372: Identifying Mainshaft Subassembly, Countershaft Subassembly And Secondary Shaft Subassembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the differential assembly.

BEARING REMOVAL

Special Tools Required

- Attachment, 72 x 75 mm 07746-0010600

- Attachment, 78 x 80 mm 07NAD-PX40100
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C) from the idler gear shaft (D), then remove the idler gear shaft. Do not distort the snap ring.

NOTE: If you are not removing the idler gear shaft bearing, idler gear shaft removal is not needed.

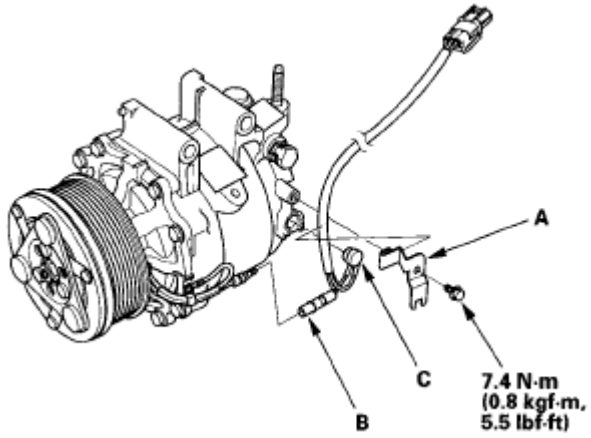


Fig. 373: Identifying Snap Ring, Cotter Retainer And Cotters
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. To remove the mainshaft bearing (A), the countershaft bearing (B), the secondary shaft bearing (C), and the idler gear shaft bearing (D) from the transmission housing, expand each snap ring using snap ring pliers, then push the bearing out using the driver and the attachment.

NOTE: Do not remove the snap ring unless it is necessary to clean the grooves in the housing.

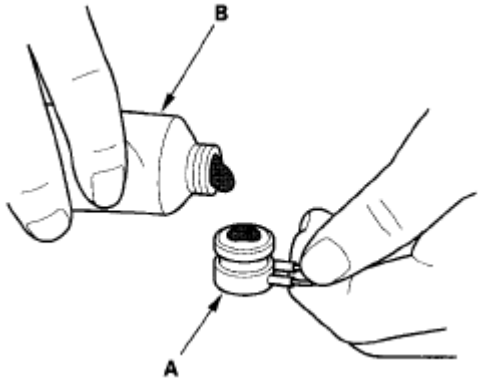


Fig. 374: Removing Mainshaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BEARING INSTALLATION

Special Tools Required

- Attachment, 72 x 75 mm 07746-0010600
- Attachment, 78 x 80 mm 07NAD-PX40100
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000

1. Install the mainshaft bearing (A), the countershaft bearing (B), the secondary shaft bearing (C), and the idler gear shaft bearing (D) in the transmission housing in the direction shown.

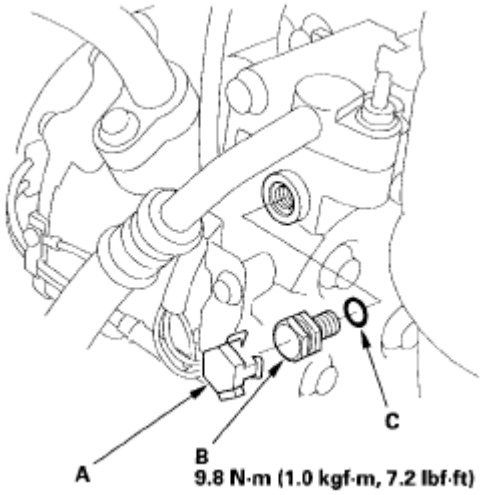


Fig. 375: Installing Mainshaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Expand each snap ring using snap ring pliers, and install the bearing part-way into the housing.
3. Release the pliers, then push the beating down into the housing using the driver and the attachment until the snap ring snaps in place around it.
4. After installing the bearings check that the snap rings (A) are seated in the bearing and housing grooves, and that the ring end gaps (B) are 0-7 mm (0-0.28 in.)

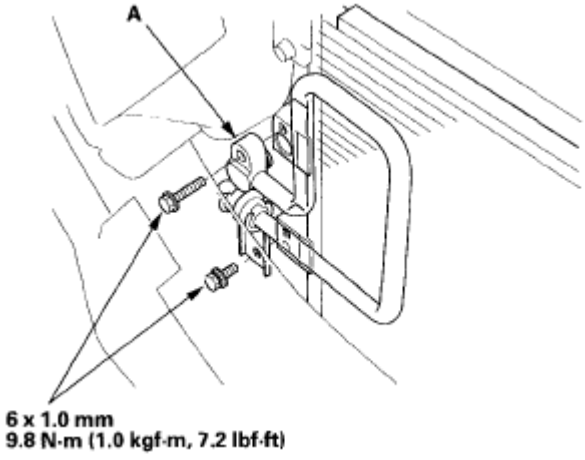


Fig. 376: Identifying Snap Ring Gap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the idler gear shaft (A) in the idler gear shaft bearing.

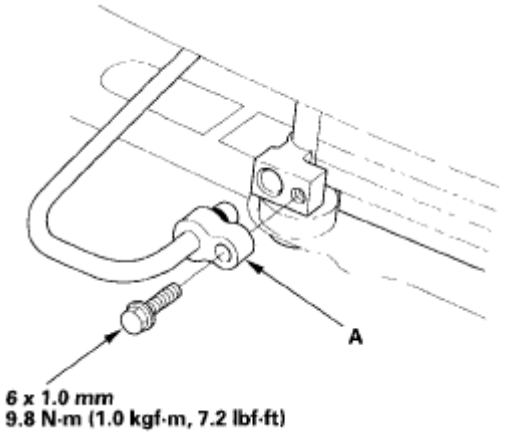


Fig. 377: Identifying Idler Gear Shaft, Cotters And Cotter Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the cotters (B) and the cotter retainer (C), and secure the idler gear shaft with the snap ring (D).

REVERSE IDLER GEAR REMOVAL

1. Remove the bolts (A) securing the reverse idler gear shaft holder (B).

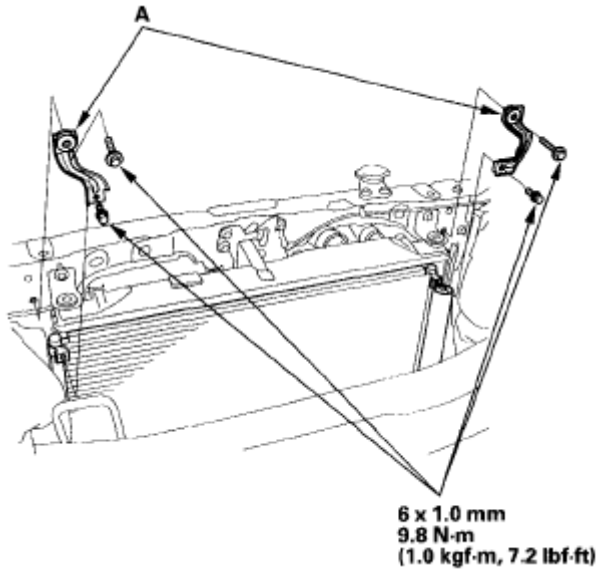


Fig. 378: Identifying Idler Gear Shaft Holder And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a 5 x 0.8 mm bolt (C) in the reverse gear shaft, and pull it to remove the reverse idler gear shaft (D) and the reverse idler gear shaft holder together.
3. Remove the reverse idler gear.

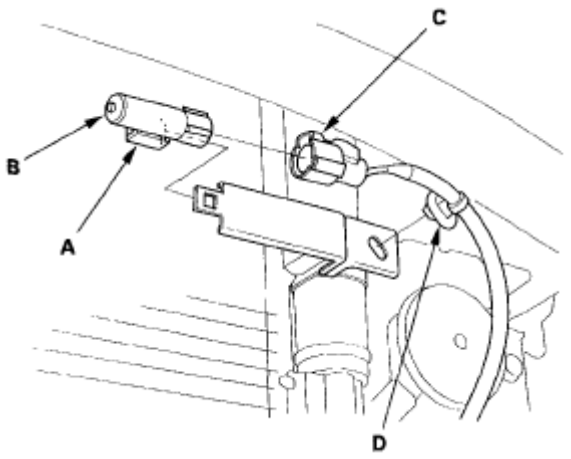


Fig. 379: Removing Reverse Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE IDLER GEAR INSTALLATION

1. Lightly coat the reverse idler gear shaft (A), the needle bearing (B), and new O-rings (C) with lithium grease.

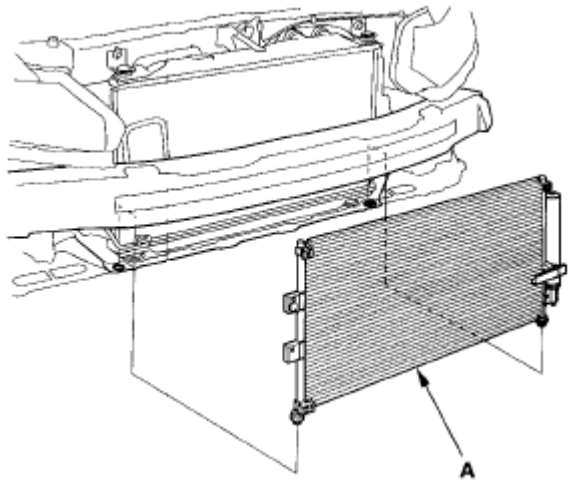


Fig. 380: Identifying Reverse Idler Gear Shaft, Needle Bearing And O-Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Assemble new O-rings and needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped (E) cutout of the shaft with the D-shaped area (F) of the holder.
3. Install the reverse idler gear in the transmission housing in the direction shown.

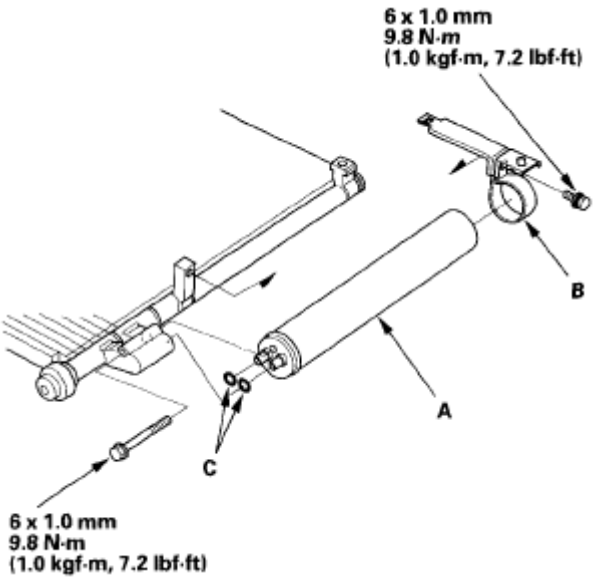


Fig. 381: Installing Reverse Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the reverse idler gear shaft/holder assembly in the reverse idler gear.

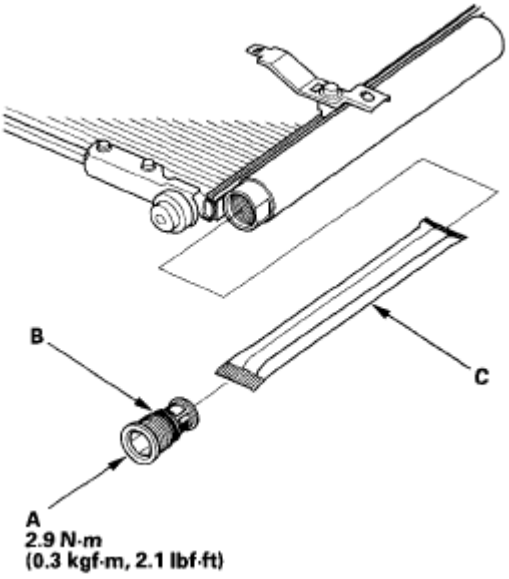


Fig. 382: Identifying Reverse Idler Gear Shaft/Holder Assembly & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Secure the holder with the bolts.

IDLER GEAR SHAFT REMOVAL AND INSTALLATION

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C) from the idler gear shaft (D), then remove the idler gear shaft. Do not distort the snap ring.

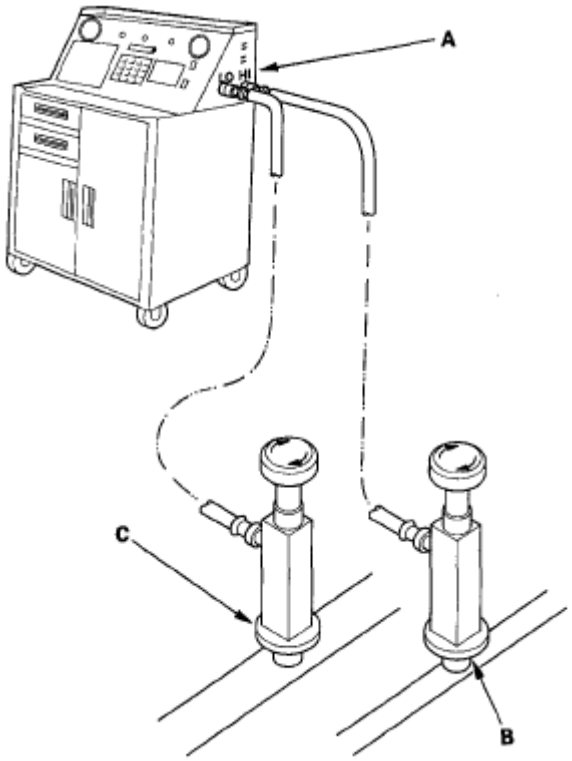


Fig. 383: Identifying Snap Ring, Cotter Retainer, Cotters And Idler Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the snap ring and the cotter retainer for wear and damage. Replace the snap ring and/or the cotter retainer if the snap ring or the cotter retainer is worn, distorted, or damaged.
3. Install the idler gear shaft in the idler gear shaft bearing.
4. Install the cotters and the cotter retainer, and secure the idler gear shaft with the snap ring.

VALVE BODY

VALVE BODY AND ATF STRAINER REMOVAL

1. Remove the ATF feed pipe (A) from the regulator valve body (B).

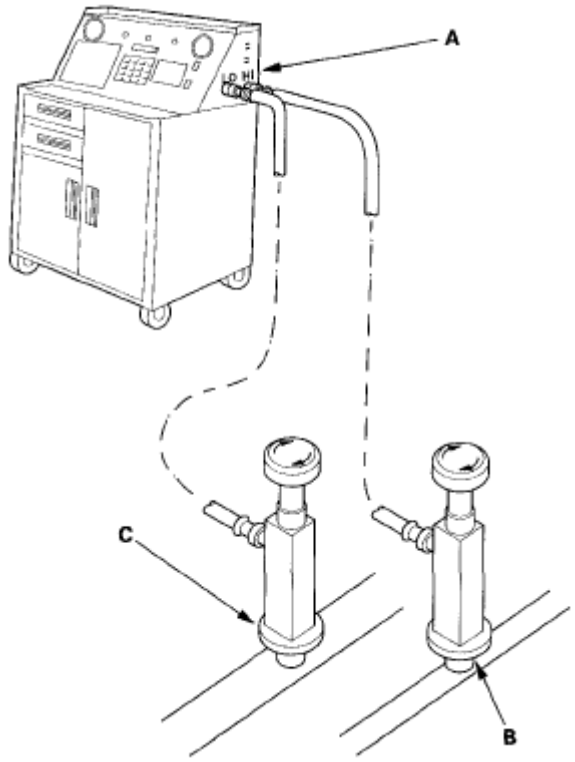


Fig. 384: Disassembling Valve Body And ATF Strainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the ATF feed pipes (C) (D) from the servo body (E).
3. Remove the ATF strainer (F) (two bolts).
4. Unhook the detent spring (G) from the detent arm (H), and remove the selector control shaft (I).
5. Remove the regulator valve body (10 bolts).
6. Remove the stator shaft (J) and the stator shaft stop (K), then remove the regulator separator plate (L) and the two dowel pins (M).
7. Remove the servo body (13 bolts), then remove the separator plate (N) and the two dowel pins (O).
8. Remove the ATF joint pipes (P) (Q).
9. Remove the cooler check valve spring (R) and the cooler check valve (S), then remove the main valve body (T) (three bolts). Do not let the check balls (U) fall out.
10. Remove the ATF pump driven gear shaft (V), then remove the ATF pump gears (W).
11. Remove the main separator plate (X) and the two dowel pins (Y).
12. Remove the ATF magnet (Z), clean and reinstall it in the torque converter housing (AA).
13. Remove the O-ring (BB) from the stator shaft, and remove the O-ring (CC) from the ATF strainer. Install new ones when installing the valve bodies.
14. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it

is in good condition and that the inlet opening is not clogged.

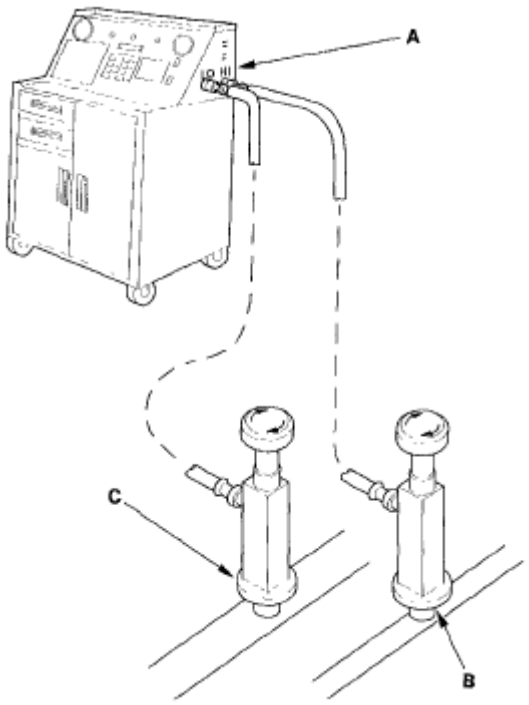


Fig. 385: Identifying Inlet Opening Of ATF Strainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

VALVE BODY REPAIR

NOTE: Valve body repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half of the ATF-soaked #600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

NOTE: The valve body is aluminum and does not require much polishing to remove any burrs.

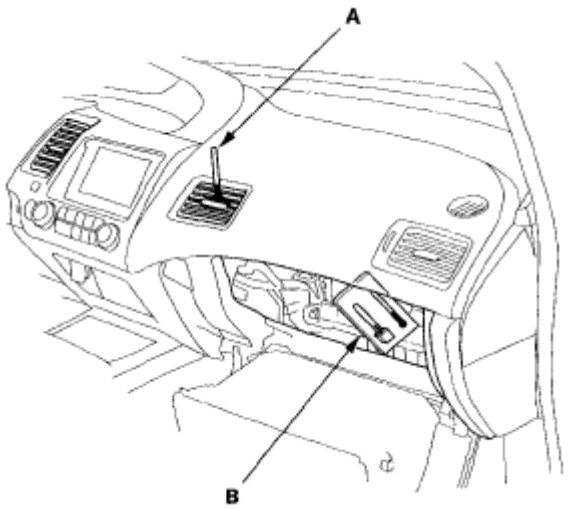


Fig. 386: Inspecting Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.

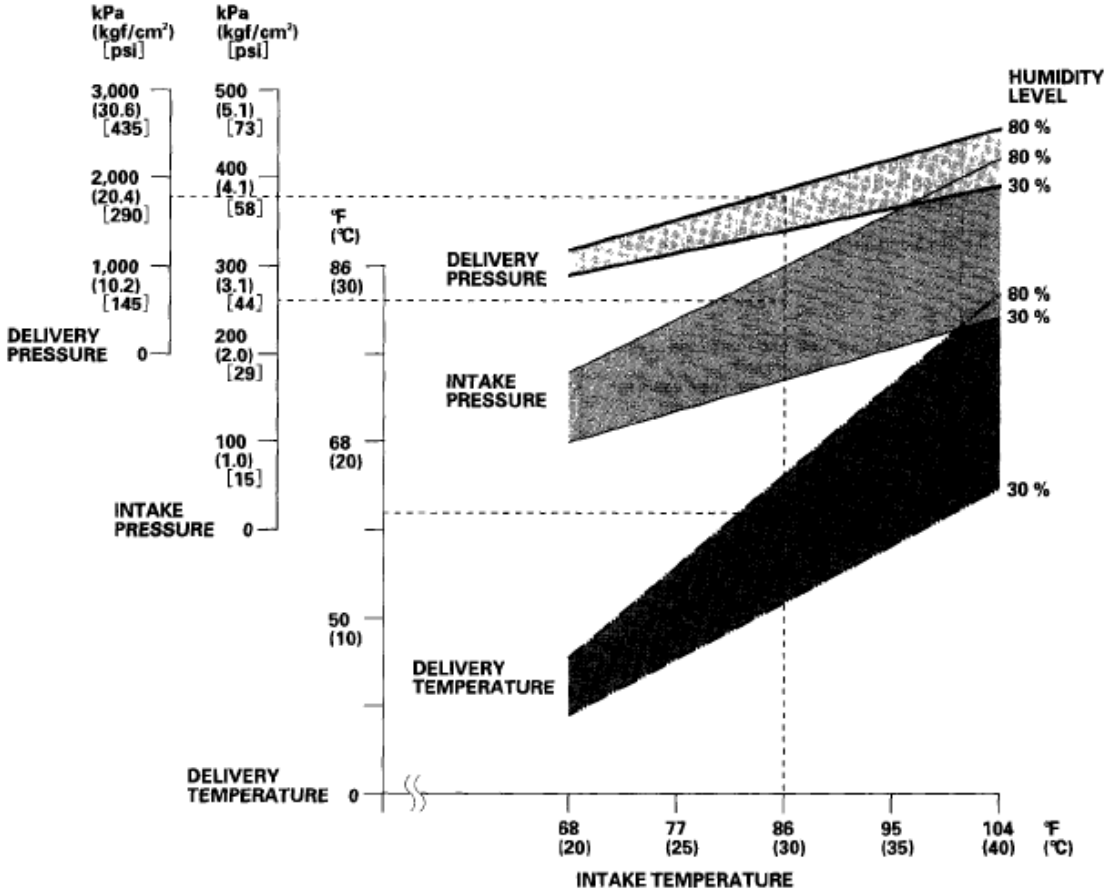


Fig. 387: [Identifying Valve]
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

VALVE BODY VALVE INSTALLATION

1. Coat all parts with ATF before assembly.
2. Install the valves and springs in the sequence shown for the main valve body (see **MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), the regulator valve body (see **REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), and the servo body (see **SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**). Refer to the following valve cap illustrations, and install the each valve cap so the end shown facing up will be facing the outside of the valve body, then secure the valve cap with the valve cap clip.

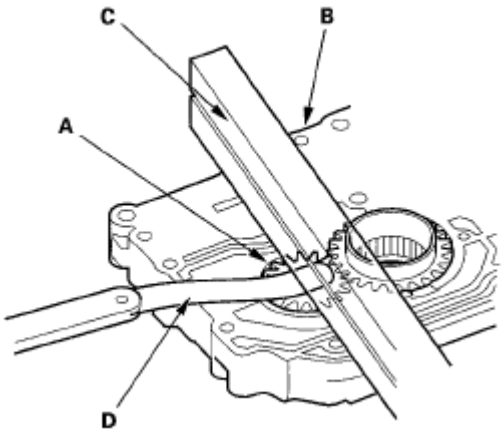


Fig. 388: Identifying Valves And Springs
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the valve and the valve spring (A) in the valve body (B). Push the valve spring in with a screwdriver, then install the spring seat (C).

4-door except Si model

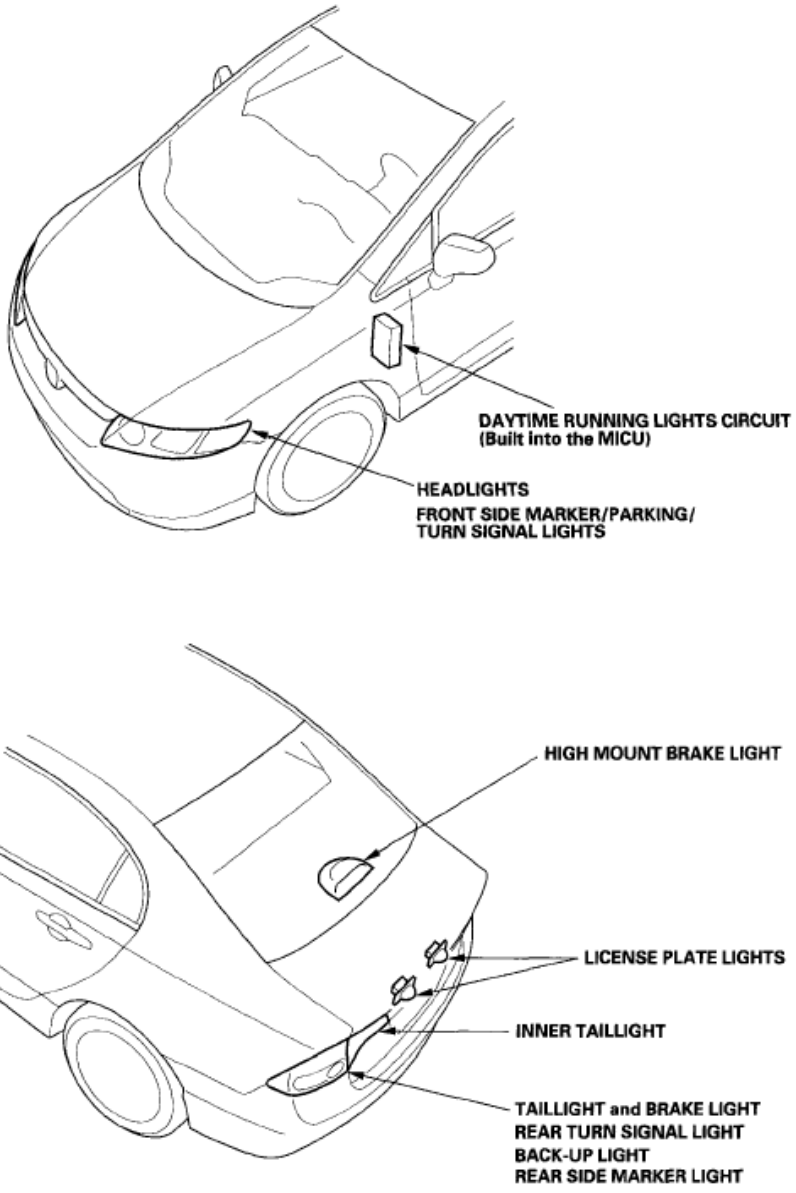


Fig. 389: Pushing Valve Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the check balls.
3. Inspect the main valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to **VALVE BODY REPAIR** .
5. Coat all parts with ATF during assembly.

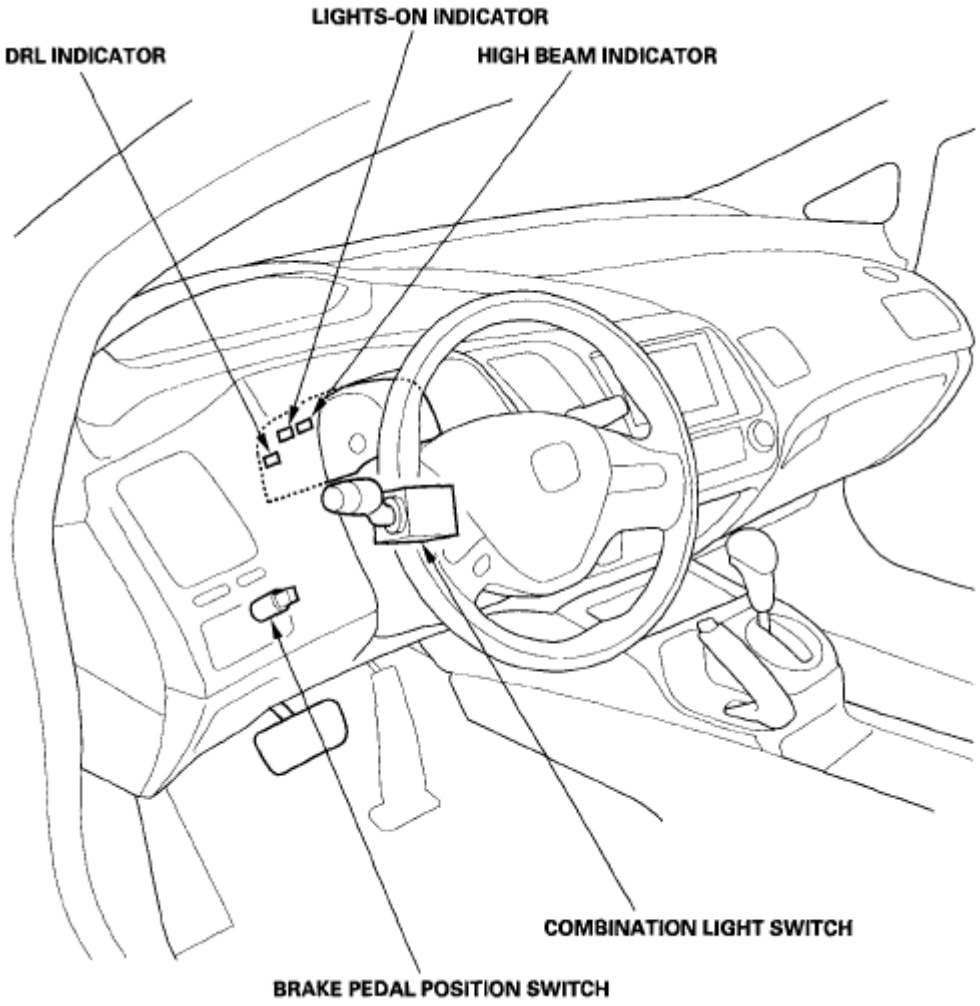


Fig. 390: Disassembling Main Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE SPRING SPECIFICATIONS

VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Cut valve B spring	0.8 (0.031)	9.9 (0.390)	27.3 (1.075)	8.0
B	Shift valve A spring	0.8 (0.031)	7.1 (0.280)	23.7 (0.933)	9.7
C	Shift valve C spring	0.8 (0.031)	7.1 (0.280)	23.7 (0.933)	9.7
D	Relief valve spring	1.0 (0.039)	9.6 (0.378)	34.1 (1.343)	10.2

E	Lock-up control valve spring	0.6 (0.024)	7.1 (0.280)	31.2 (1.228)	11.2
F	Cooler check valve spring	0.85 (0.033)	6.6 (0.260)	27.0 (1.063)	11.3
G	Shift valve D spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
H	Servo control valve spring	0.8 (0.031)	9.9 (0.390)	27.3 (1.075)	8.0

ATF PUMP INSPECTION

1. Install the ATF pump drive gear (A), the ATF pump driven gear (B), and the ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.

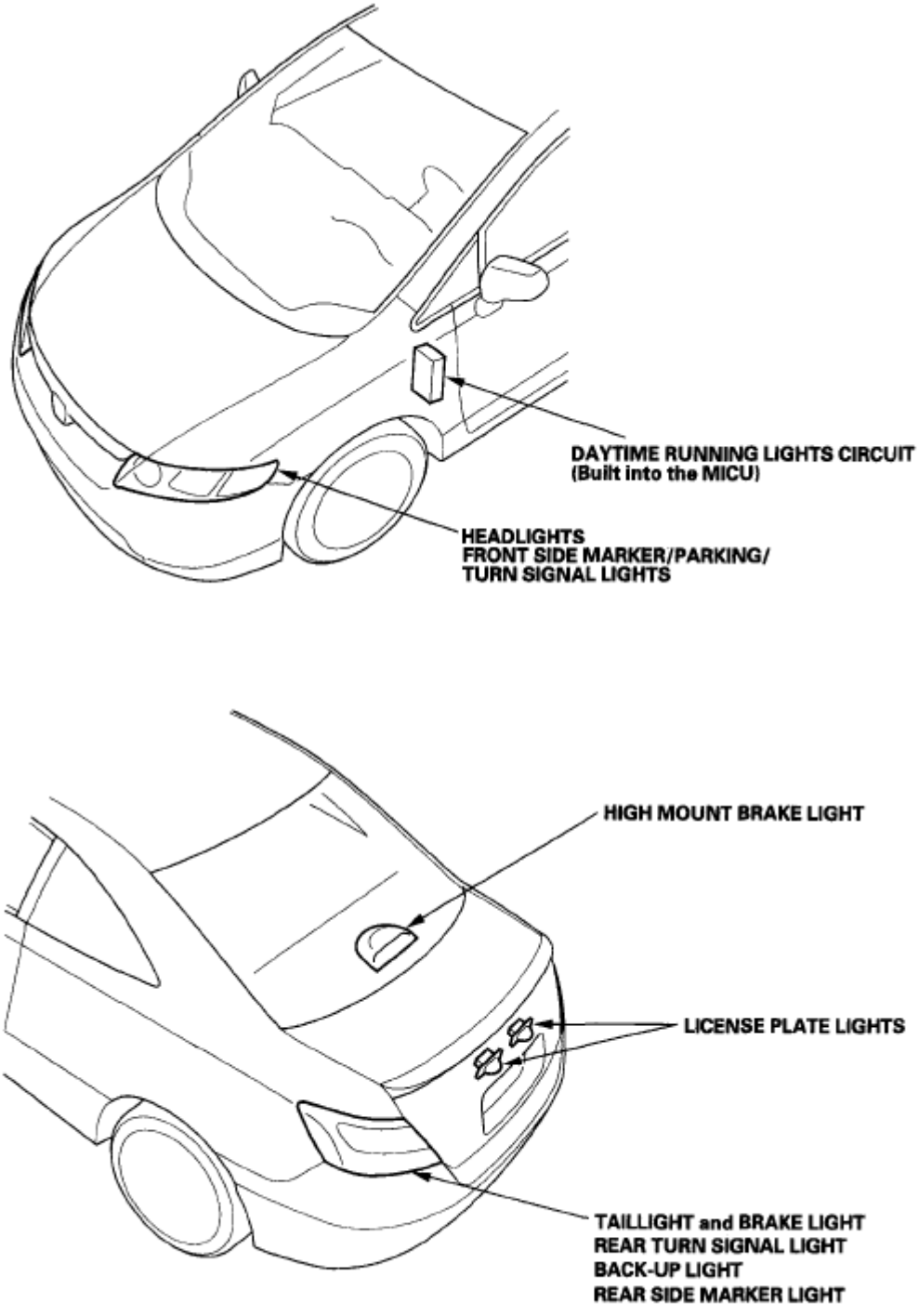


Fig. 391: Identifying ATF Pump Drive Gear, ATF Pump Driven Gear, ATF Pump Driven Gear Shaft And Main Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the side clearance of the ATF pump drive gear (A) and the ATF pump driven gear (B).

ATF Pump Gears Side (Radial) Clearance

Standard (New)

ATF Pump Drive Gear:

0.210-0.265 mm (0.0083-0.0104 in.)

ATF Pump Driven Gear:

0.070-0.125 mm (0.0028-0.0049 in.)

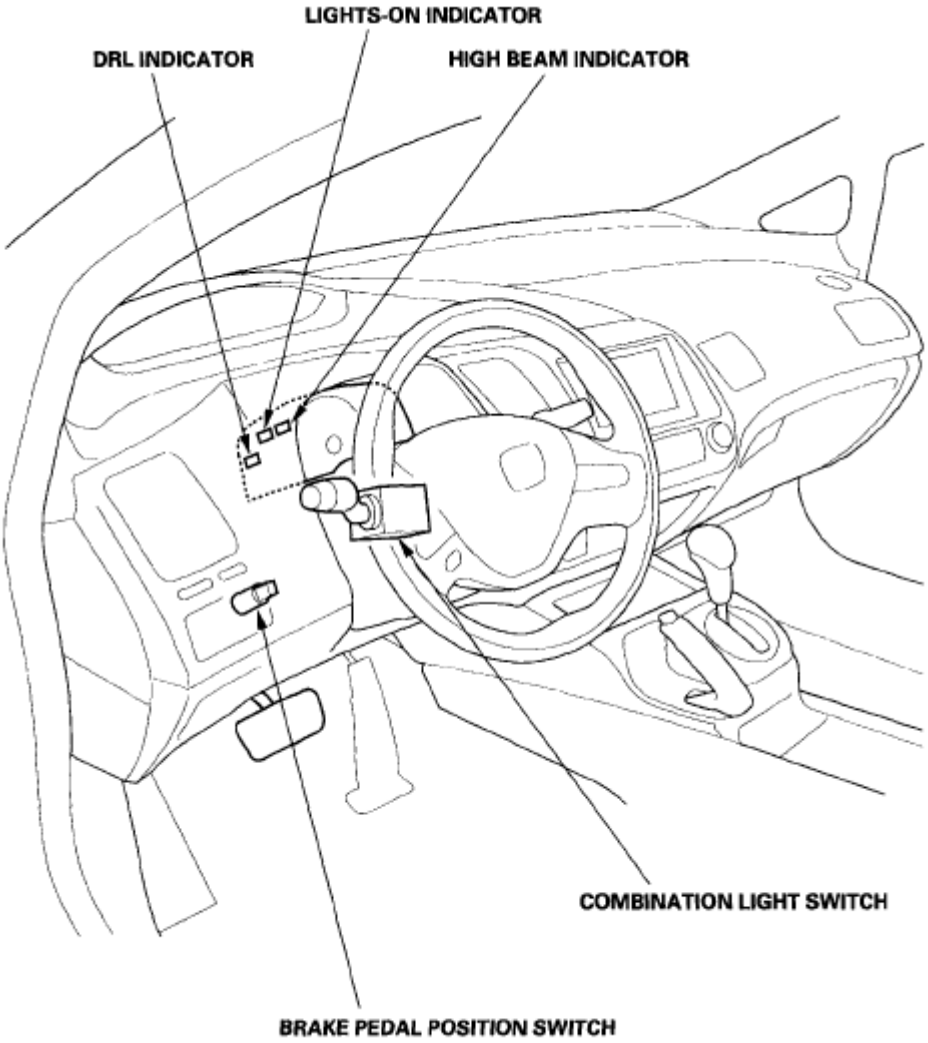


Fig. 392: Measuring Side Clearance Of ATF Pump Drive Gear And ATF Pump Driven Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial)

Clearance:

Standard (New): 0.03-0.06 mm (0.001-0.002 in.)

Service Limit: 0.07 mm (0.003 in.)

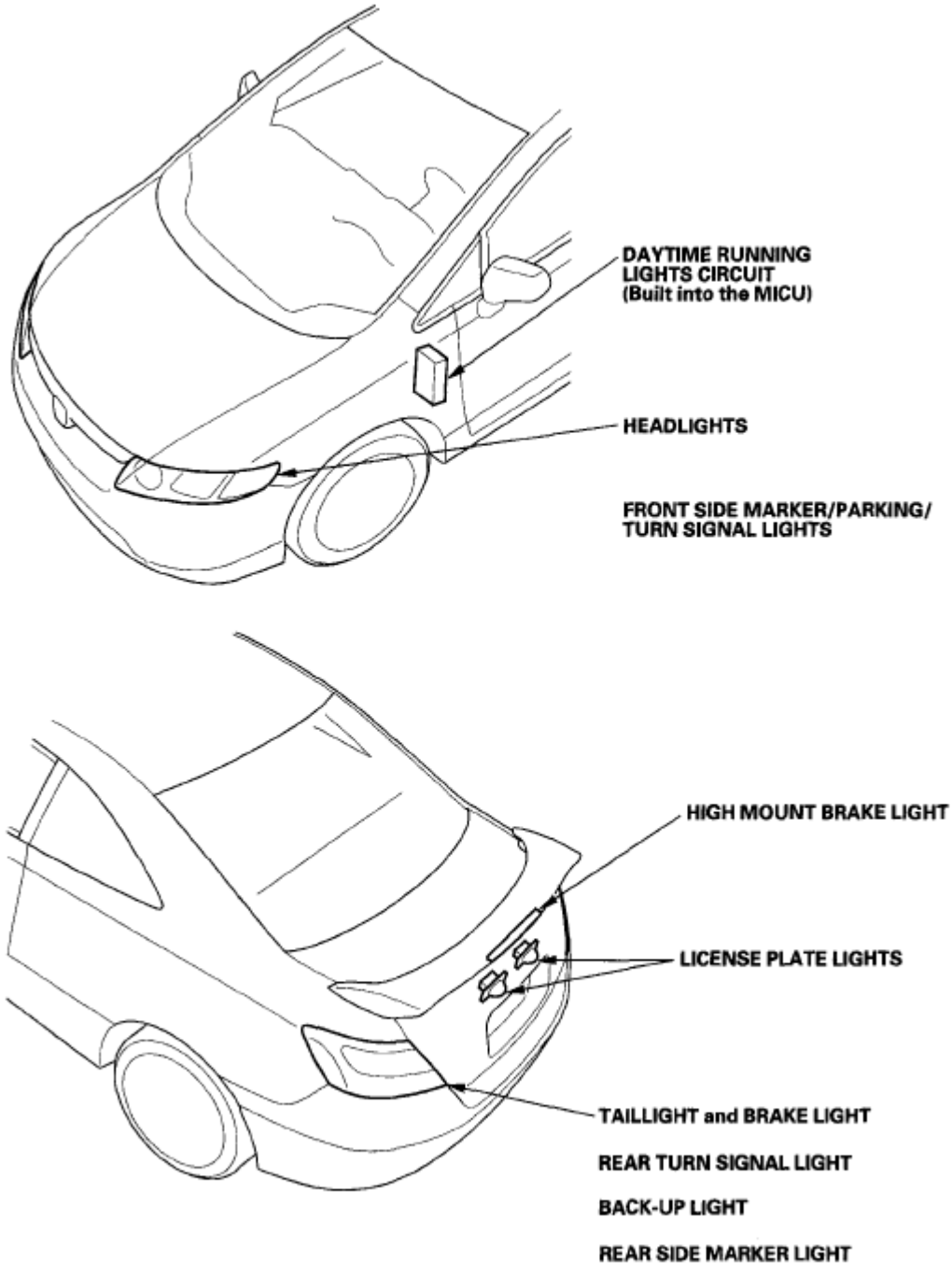


Fig. 393: Measuring Thrust Clearance Between ATF Pump Driven Gear And Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages except the air check valve filter.

2. Inspect the regulator valve body for scoring and damage.
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Check all valves for free movement. If any fail to slide freely, refer to **VALVE BODY REPAIR** .
5. Check the air check valve filter for clogging. If the filter is clogged, remove the air check valve, and clean the filter thoroughly by pouring clean ATF. Do not blow out the filter with compressed air. Replace the air check valve, if the filter or check valve (ball) is clogged or damaged.
6. Coat all parts with ATF during assembly.
7. Align the hole in the regulator spring cap with the stop bolt hole, then press the spring cap into the valve body, and tighten the stop bolt.

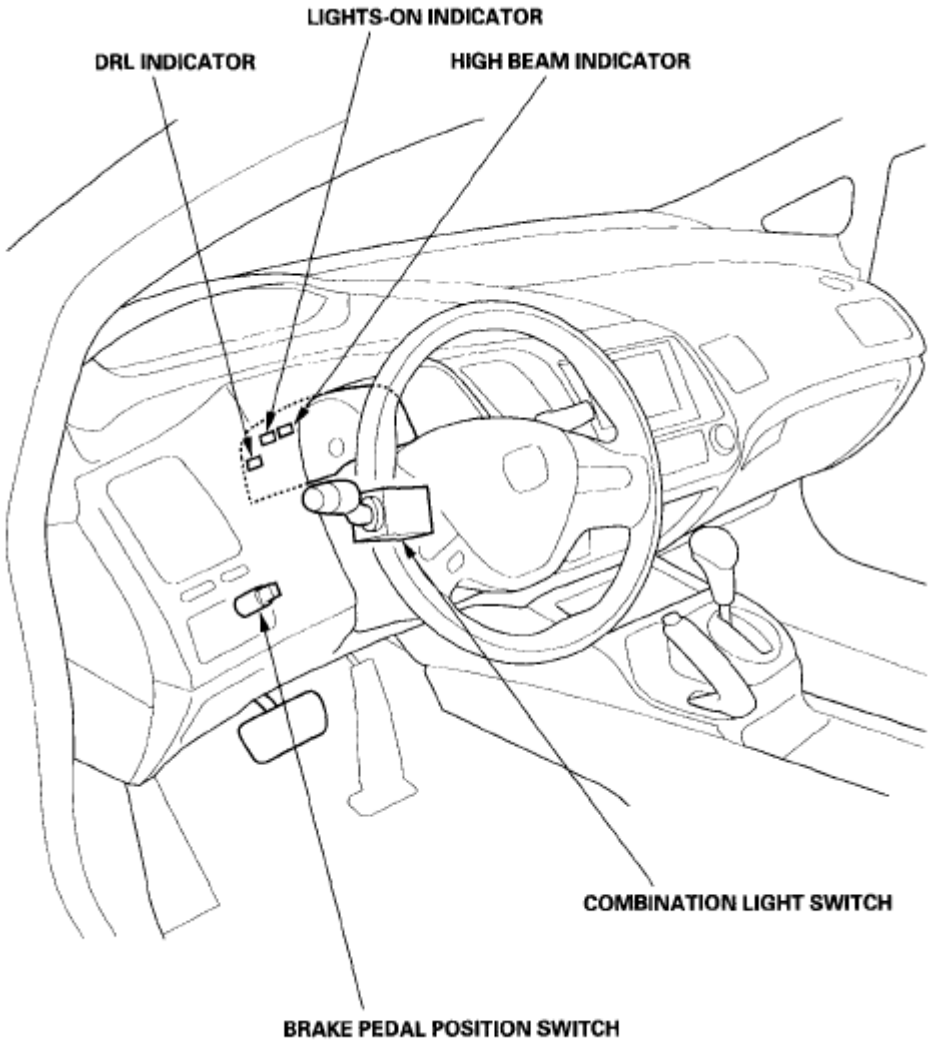


Fig. 394: Disassembling Regulator Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE SPRING SPECIFICATIONS

VALVE SPRING SPECIFICATIONS

	Standard (New)-Unit: mm (in.)

Valve Springs		Wire Diameter	O.D.	Free Length	No. of Coils
A	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F	1st accumulator spring B	2.4 (0.094)	12.2 (0.480)	35.0 (1.378)	7.7
G	1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	50.1 (1.972)	6.7
H	4th accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the servo body for scoring and damage.
3. Check all valves for free movement. If any fail to slide freely, refer to **VALVE BODY REPAIR** .
4. Coat all parts with ATF during assembly.

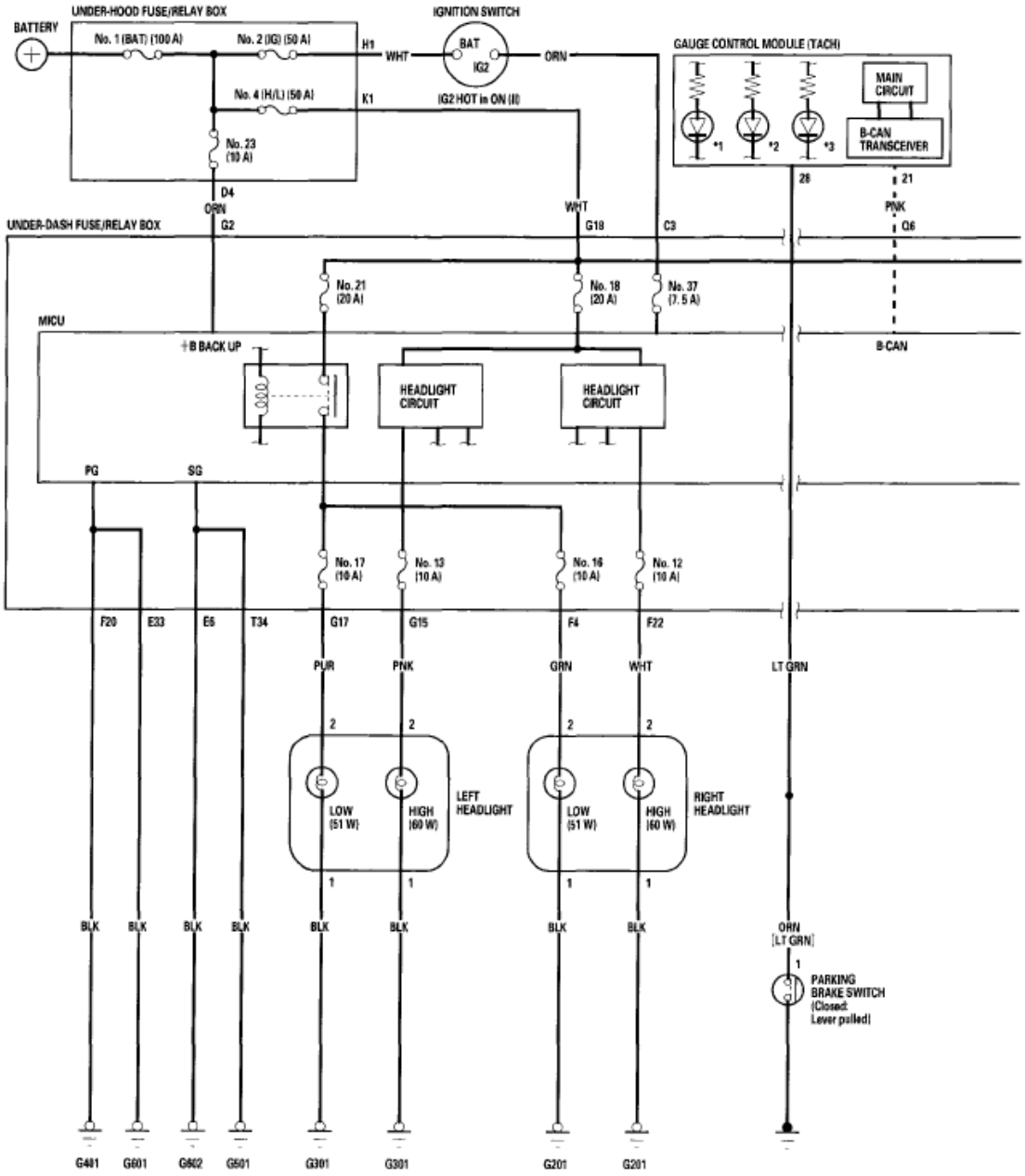


Fig. 395: Disassembling Servo Body & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE SPRING SPECIFICATIONS

VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Cut valve A spring	0.9 (0.035)	9.9 (0.390)	22.3 (0.878)	6.9
B	Shift valve B spring	0.8 (0.031)	7.1 (0.280)	23.7 (0.933)	9.7
C	5th	2.5	16.6	46.9	7.8

	accumulator spring A	(0.098)	(0.654)	(1.846)	
D	5th accumulator spring B	1.9 (0.075)	10.0 (0.394)	38.5 (1.516)	10.6
E	2nd accumulator spring A	1.8 (0.071)	14.6 (0.575)	43.8 (1.724)	7.9
F	2nd accumulator spring B	1.85 (0.073)	9.4 (0.370)	32.5 (1.280)	8.7
G	3rd accumulator spring A	1.8 (0.071)	14.6 (0.575)	43.8 (1.724)	7.9
H	3rd accumulator spring B	1.85 (0.073)	9.4 (0.370)	32.5 (1.280)	8.7

SHIFT SOLENOID VALVE REMOVAL AND INSTALLATION

NOTE: Do not hold the solenoid valve connector to remove and install the solenoid valves. Be sure to hold the solenoid valve body.

1. Remove the mounting bolts, then remove the solenoid valves by holding the solenoid valve body.
2. Install new O-rings (E) on each solenoid valve.

NOTE: A new shift solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.

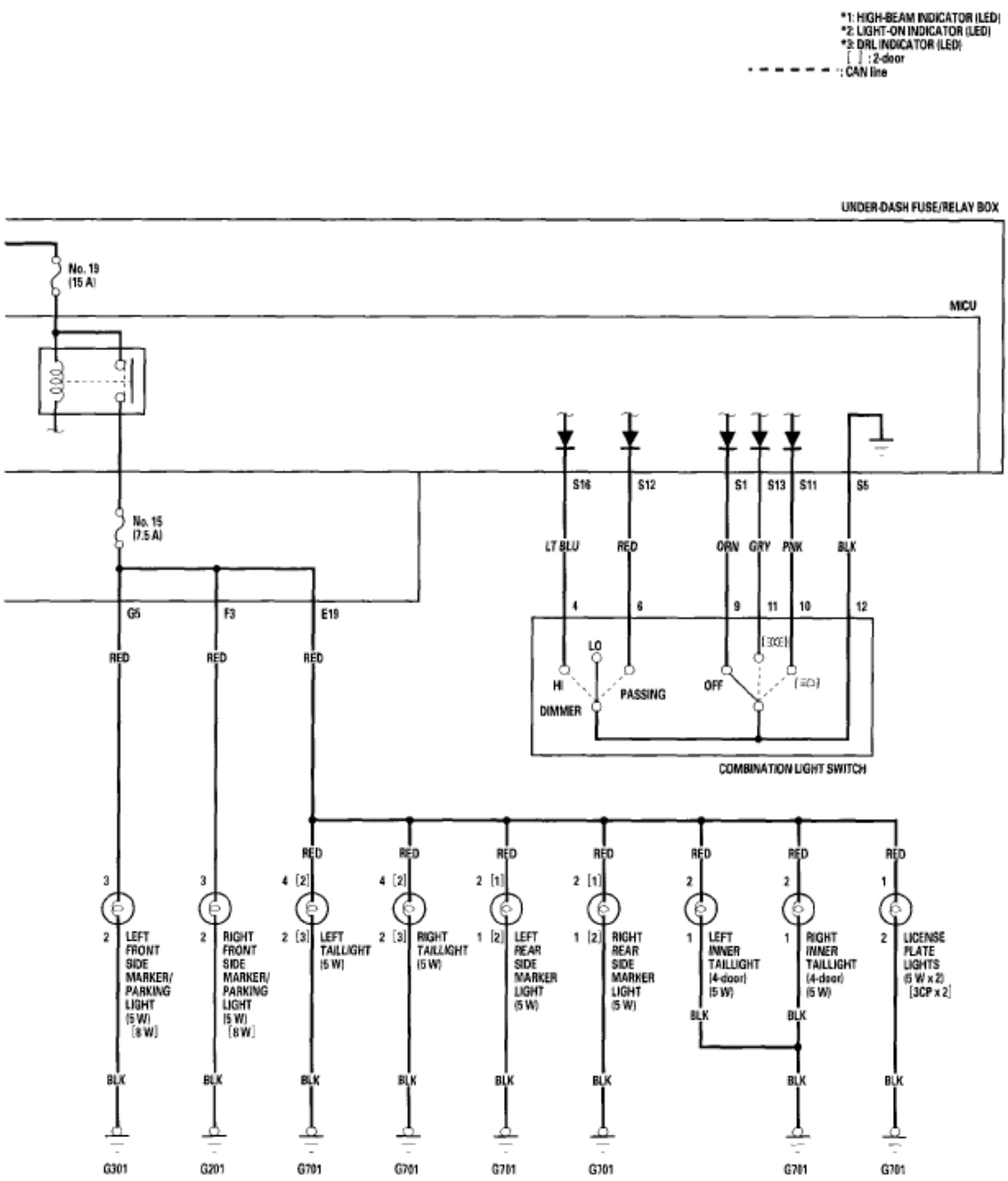


Fig. 396: Identifying Shift Solenoid Valve, O-Ring & Bolts w/Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install shift solenoid valve D (black connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the servo body.
4. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the servo body.
5. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; be sure to install the mounting bracket Contacts to the servo body.
6. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the bracket of shift solenoid valve B.

NOTE: Do not install shift solenoid valve A before installing shift solenoid

valve B. If shift solenoid valve A is installed before installing shift solenoid valve B, it may damage to hydraulic control system.

TORQUE CONVERTER HOUSING

MAINSHAFT BEARING AND OIL SEAL REPLACEMENT

Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

1. Remove the mainshaft bearing and oil seal using the adjustable bearing puller and a commercially available 3/8"-16 slide hammer (A).

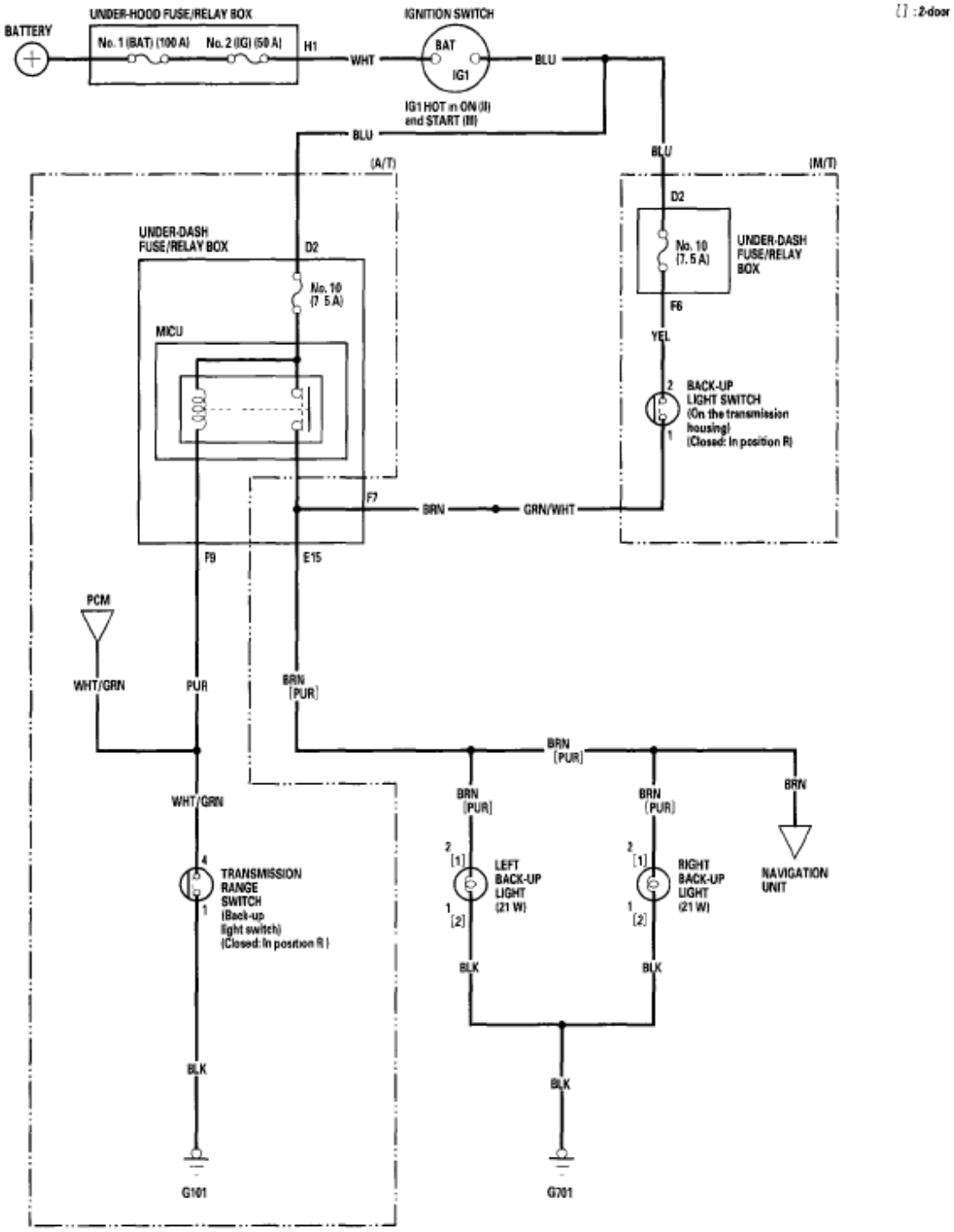


Fig. 397: Removing Mainshaft Bearing And Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new mainshaft bearing until it bottoms in the torque converter housing using the driver and the 62 x 68 mm attachment.

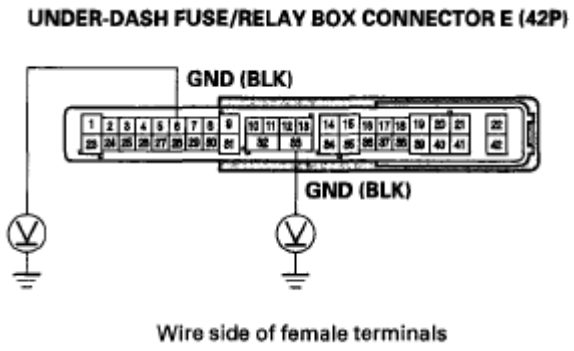


Fig. 398: Tapping Mainshaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install a new oil seal flush with the housing using the driver and the 72 x 75 mm attachment.

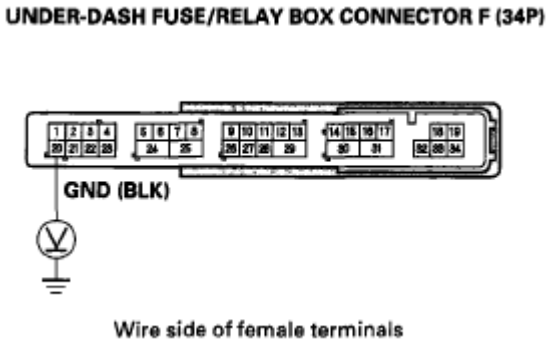


Fig. 399: Tapping Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing using the adjustable bearing puller and a commercially available 3/8"-16 slide hammer (A).

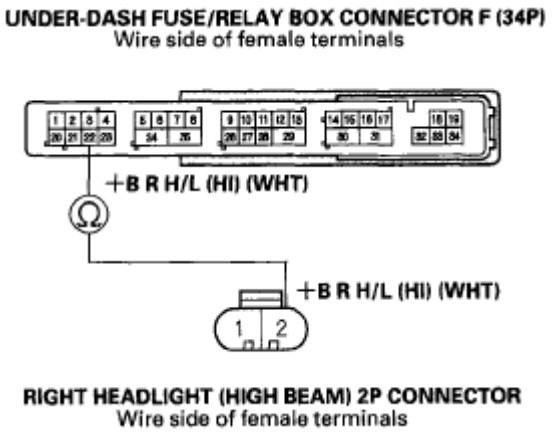


Fig. 400: Removing Countershaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the ATF guide plate (A).

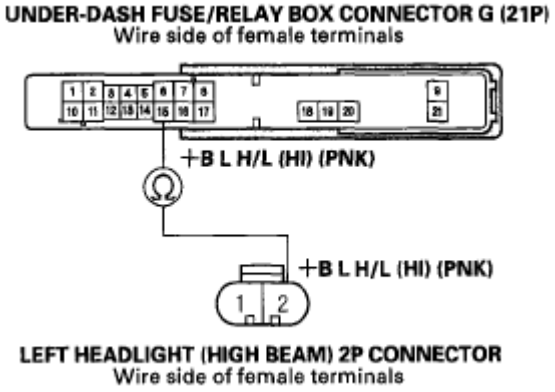


Fig. 401: Tapping ATF Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install a new countershaft bearing (B) in the housing using the driver and the 62 x 68 mm attachment; install the bearing outer race surface in height (C) of 0-0.03 mm (0-0.001 in.) above the housing surface (D). Do not install the bearing exceeding 0.03 mm (0.001 in.) high from housing surface.

SECONDARY SHAFT BEARING REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the bolt, then remove the lock washer (A) and the bearing set plate (B).

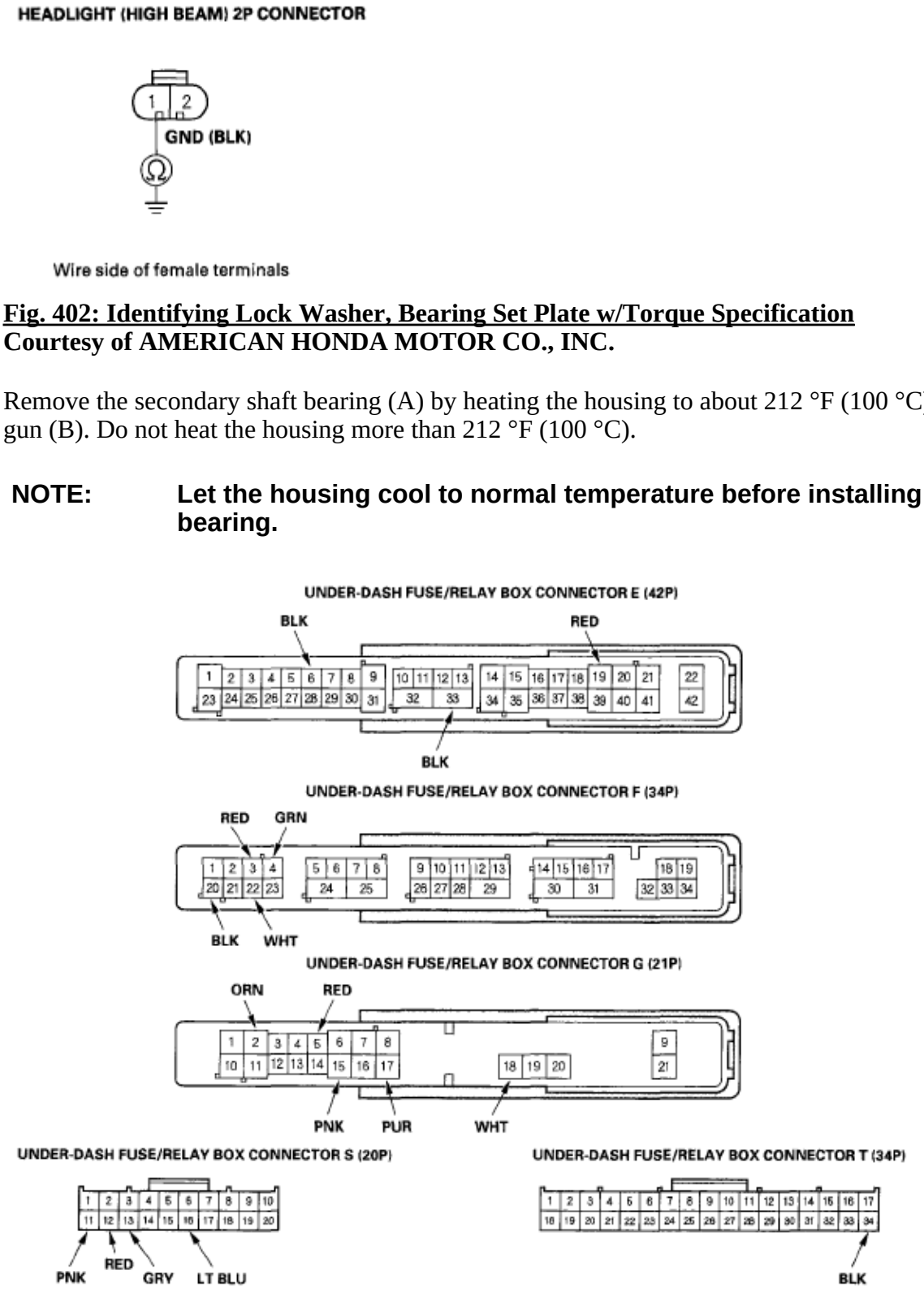


Fig. 402: Identifying Lock Washer, Bearing Set Plate w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the secondary shaft bearing (A) by heating the housing to about 212 °F (100 °C) with a heat gun (B). Do not heat the housing more than 212 °F (100 °C).

NOTE: Let the housing cool to normal temperature before installing the bearing.

Fig. 403: Heating Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the housing.

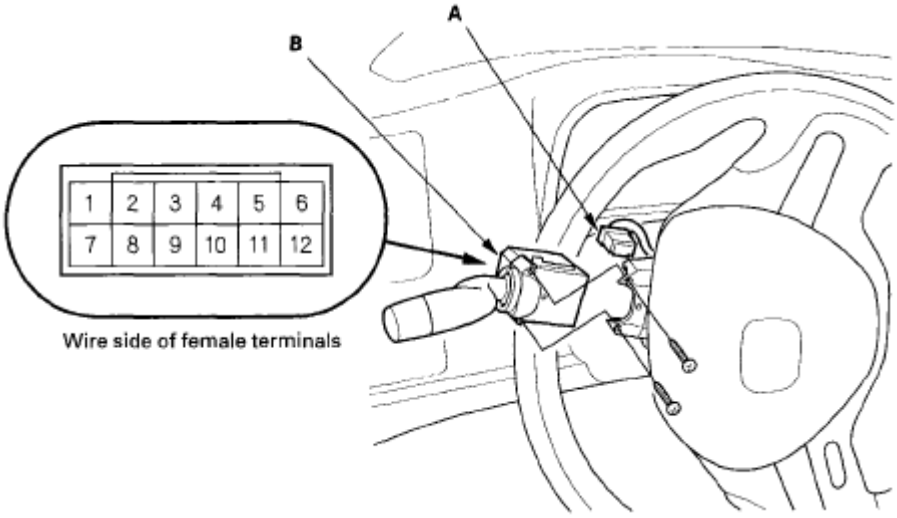


Fig. 404: Identifying O-Rings And ATF Guide Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install a new secondary shaft bearing (C) in the direction shown.
5. Install the secondary shaft bearing using the driver and the 62 x 68 mm attachment securely in the housing.

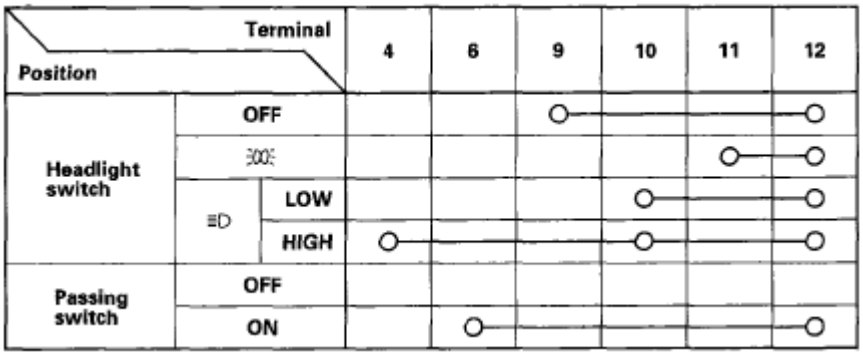


Fig. 405: Tapping Secondary Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Check that the bearing groove aligns with the housing surface, then install the bearing set plate aligned with the bearing groove.
7. Install a new lock washer and the bolt, then bend the lock tab of the lock washer against the bolt head.

LUBRICATION CHECK VALVE REPLACEMENT

1. Remove the sealing bolt (A) and the sealing washer (B).

Position \ Terminal	1	2	12
LEFT		O	O
Neutral			
RIGHT	O		O

Fig. 406: Identifying Lubrication Check Valve, Sealing Bolt, Sealing Washer & Bolt w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the lubrication check valve (C) from the torque converter housing (D).
3. Install a new lubrication check valve, a new sealing washer, and the sealing bolt.

SELECTOR CONTROL SHAFT OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 07947-ZV00100

1. Remove the oil seal from the torque converter housing.

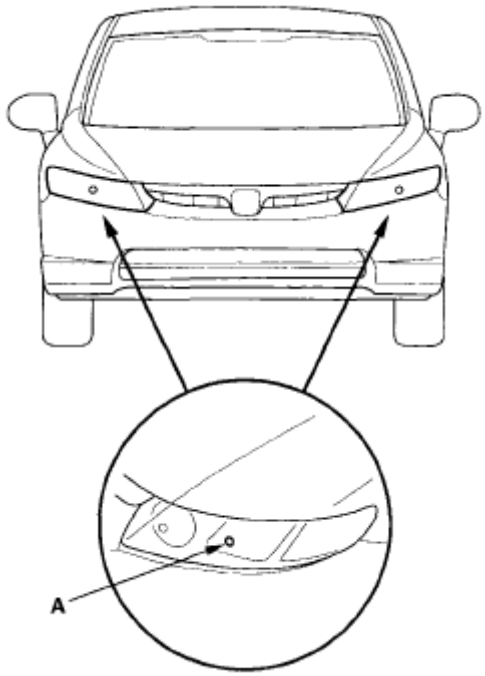


Fig. 407: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. install a new oil seal (A) in the torque converter housing to a depth (B) of 0.5-1.5 mm (0.02-0.06 in.) below the housing surface using the driver and the oil seal driver attachment.

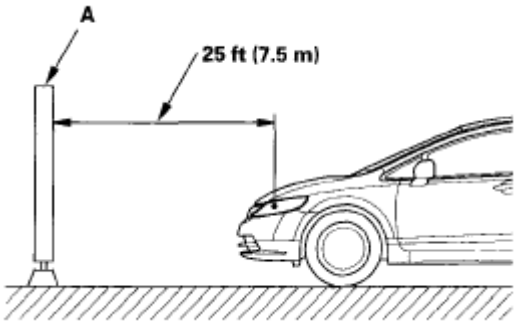


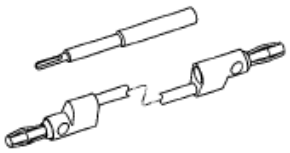
Fig. 408: Pressing Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHAFTS AND CLUTCHES

MAINSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Fig. 409: Exploded View Of Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer, the 40 x 63 mm thrust washer in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission.
8. Check the axial clearance of 3rd gear (see **MAINSHAFT 3RD GEAR AXIAL CLEARANCE INSPECTION**).

MAINSHAFT 3RD GEAR AXIAL CLEARANCE INSPECTION

1. Remove the mainshaft transmission housing bearing (see **BEARING REMOVAL**).
2. Install the thrust needle bearing (A), 3rd gear (B), the needle bearing (C), the thrust needle bearing (D), the 40 x 63 mm thrust washer (E), the 3rd/5th clutch (F), the 5th gear collar (G), and the transmission housing bearing (H) on the mainshaft (I). Do not install the O-rings during inspection.

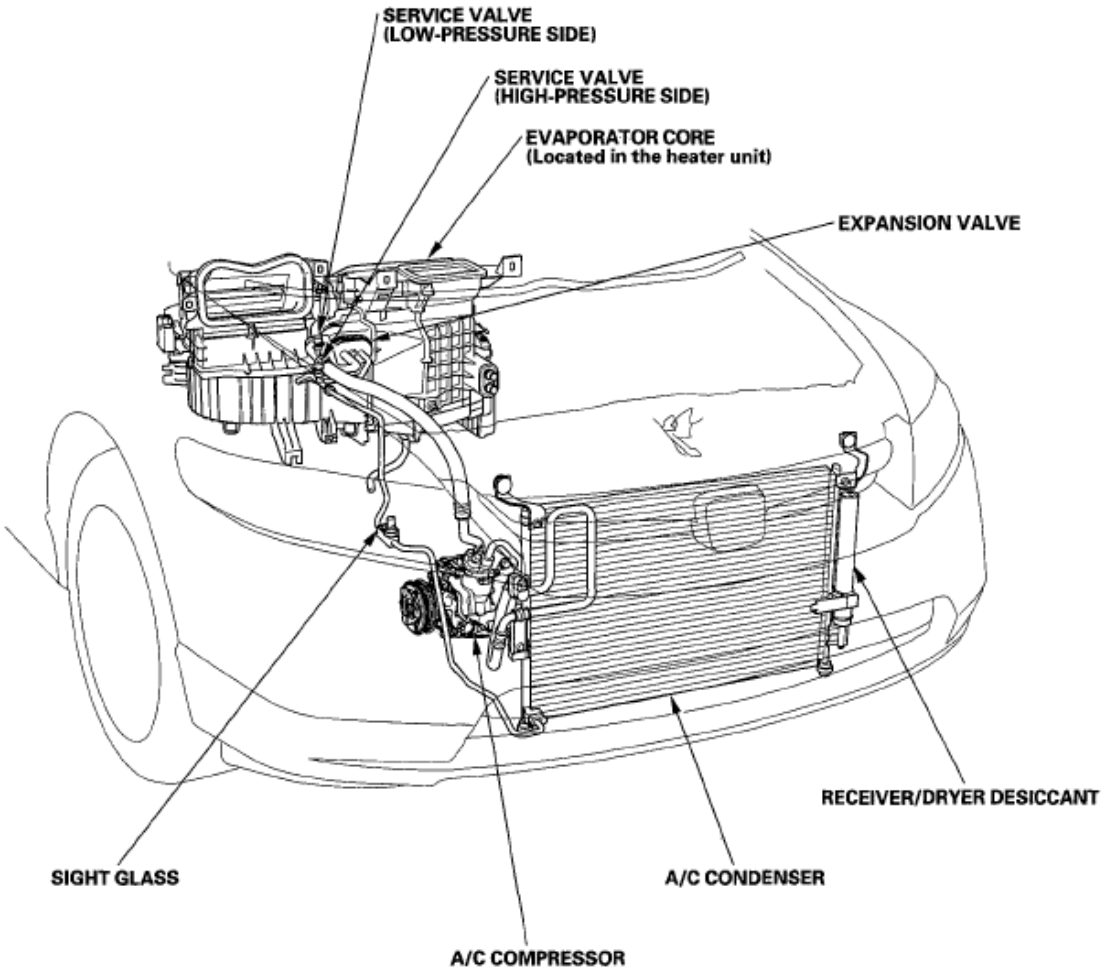


Fig. 410: Identifying Thrust Needle Bearing, 3rd Gear, Needle Bearing And Thrust Needle Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the idler gear (J) on the mainshaft by a press, then install the conical spring washer (K) and the locknut (L).
4. Tighten the locknut to 29 N.m (3.0 kgf.m, 22 lbf.ft).
5. Set the dial indicator (A) on 3rd gear (B).

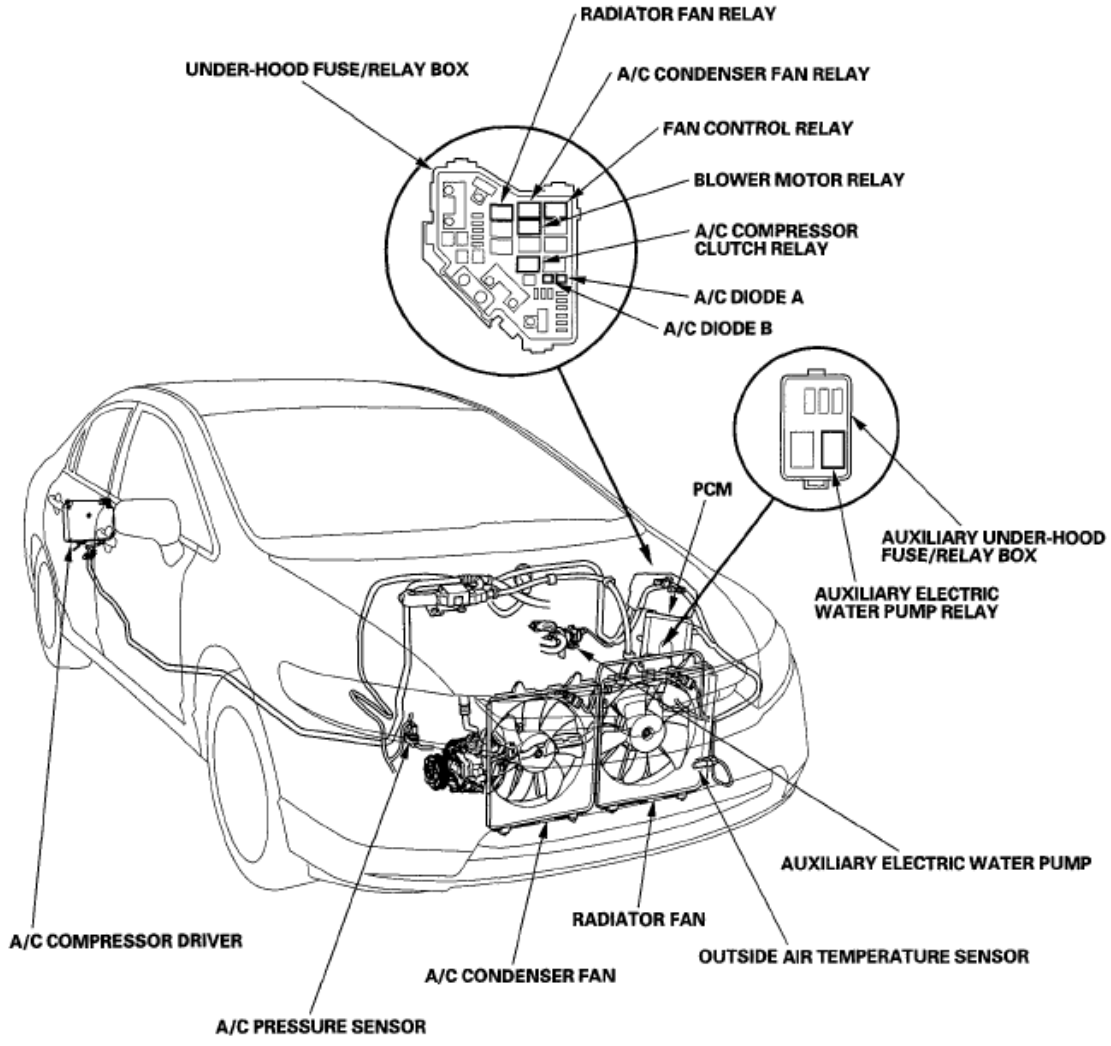


Fig. 411: Setting Dial Indicator On 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Lift 3rd gear (A) up while holding the mainshaft, and use the dial indicator (B) to read the 3rd gear axial clearance.

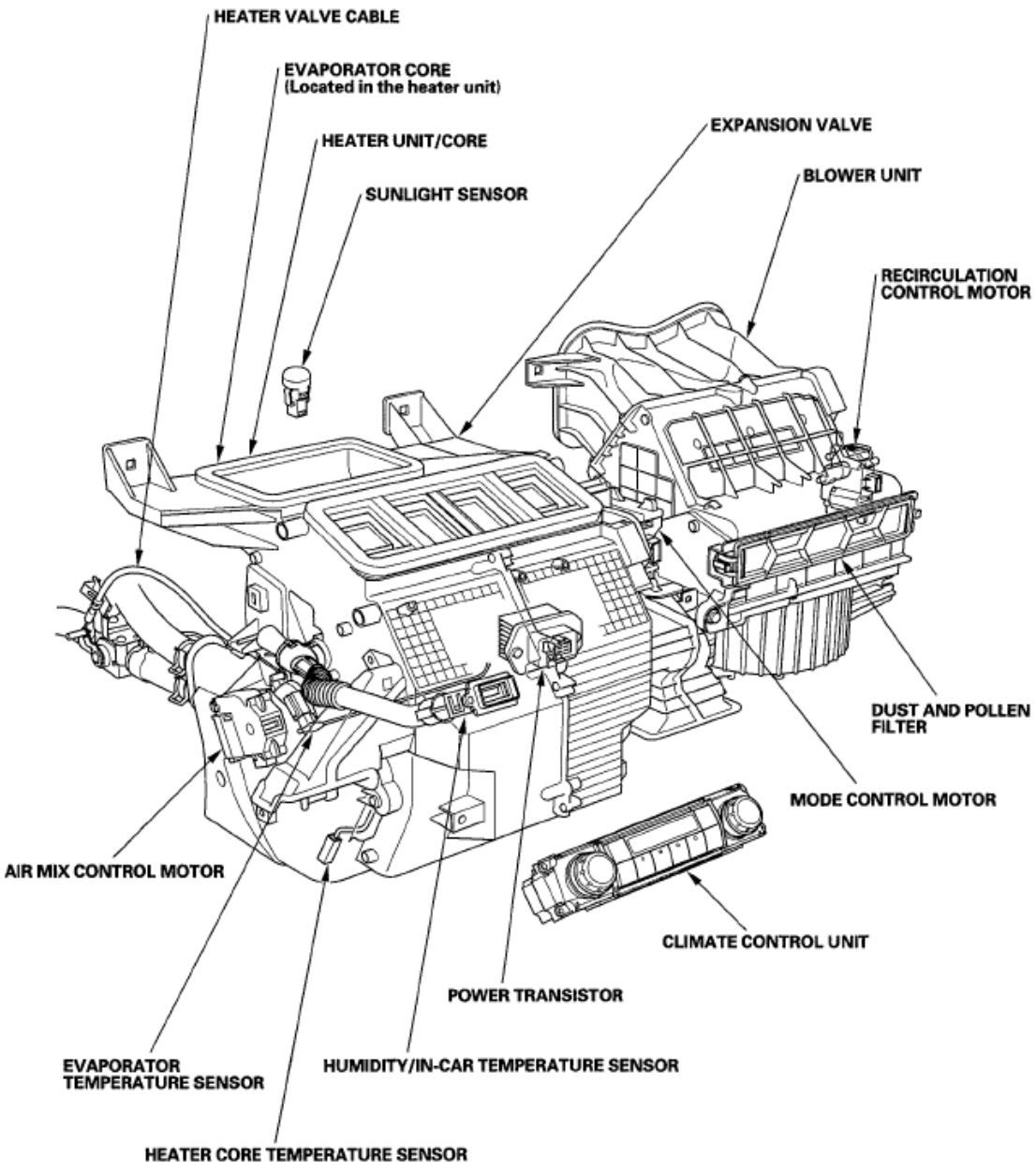


Fig. 412: Measuring 3rd Gear Axial Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure the 3rd gear axial clearance in at least three places while moving 3rd gear. Use the average as the actual clearance.

   Standard: 0.04-0.10 mm (0.002-0.004 in.)

8. If the clearance is out of standard, remove the 40 x 63 mm thrust washer and measure its thickness (A).

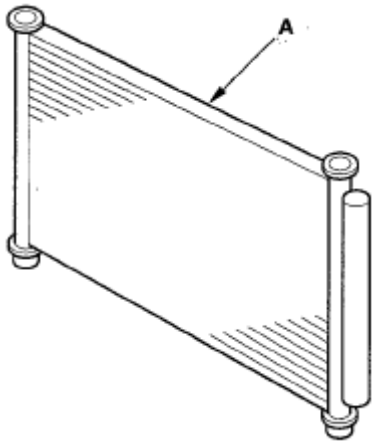


Fig. 413: Identifying Thrust Washer Thickness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 63 mm

THRUST WASHER THICKNESS SPECIFICATION

No.	Part Number	Thickness
1	90414-RPC-002	3.750 mm (0.1476 in.)
2	90415-RPC-002	3.775 mm (0.1486 in.)
3	90416-RPC-002	3.800 mm (0.1496 in.)
4	90417-RPC-002	3.825 mm (0.1506 in.)
5	90418-RPC-002	3.850 mm (0.1516 in.)
6	90419-RPC-002	3.875 mm (0.1526 in.)
7	90420-RPC-002	3.900 mm (0.1535 in.)
8	90421-RPC-002	3.925 mm (0.1545 in.)
9	90422-RPC-002	3.950 mm (0.1555 in.)
10	90423-RPC-002	3.975 mm (0.1565 in.)
11	90424-RPC-002	4.000 mm (0.1575 in.)

10. After replacing the thrust washer, make sure the clearance is within standard.
11. Disassemble the installed parts from the mainshaft.
12. Reinstall the bearing in the transmission housing (see **BEARING INSTALLATION**).

COUNTERSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

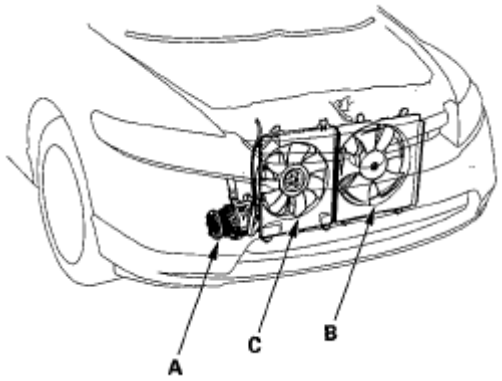


Fig. 414: Exploded View Of Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, the park gear, the reverse selector, the 33 x 45 x 7.8 mm collar, and gears in the direction shown.
6. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs are press-fitted to the countershaft; remove the hubs with a press (see **COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL**), and install them with the special tool and a press (see **COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL**).

COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL

1. Remove the reverse selector hub from the countershaft by hand. If the reverse selector hub (A) cannot be removed by hand, it is press-fitted to the countershaft (B), and remove it from the countershaft with a press. Place 4th-5th gear (C) on press bases (D), and place a shaft protector (E) between the countershaft and press to prevent damaging the countershaft.

NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using a press.

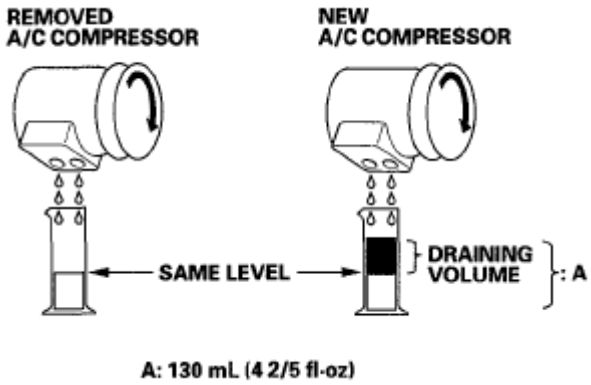


Fig. 415: Removing Countershaft Reverse Selector Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Support the bottom of the countershaft with one hand, then press the countershaft out of the press-fitted reverse selector hub, and remove the countershaft while holding the underside the countershaft. The countershaft will drop down after pressing it out of the press-fitted reverse selector hub.
3. Remove the remaining parts from the countershaft, if necessary.

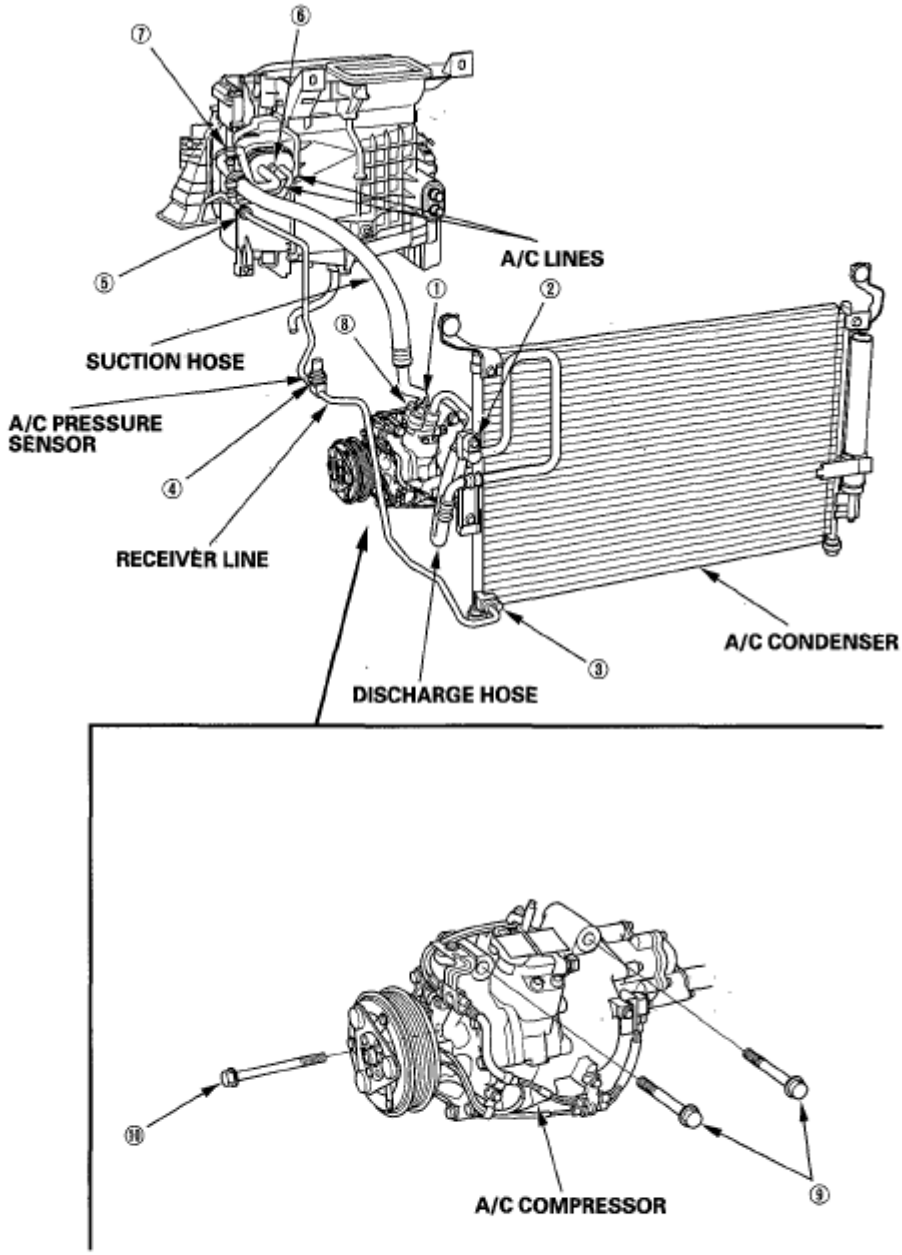
COUNTERSHAFT REVERSE SELECTOR HUB INSTALLATION

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Install 1st gear, 2nd gear, 3rd gear, the 33.2 x 40 x 26 mm collar, the 29 mm cotters, and the 33 x 45 x 7.8 mm collar on the countershaft, and secure them with the snap ring.
2. Install the needle bearings and 4th-5th gear.
3. Slide the reverse selector hub (A) over the countershaft (B), then press it in place using the 40 mm I.D. driver and a press.

NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the special tool and a press.



① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ A/C pressure sensor to the receiver line (11 x 1.0 mm): 11.8 N·m (1.2 kgf·m, 8.7 lbf·ft)
⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.7 N·m (1.4 kgf·m, 10.1 lbf·ft)
⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ A/C line to the suction hose (24 x 1.5 mm): 31.4 N·m (3.2 kgf·m, 23.1 lbf·ft)
⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑨ A/C compressor to the engine block (10 x 1.25 mm): 45 N·m (4.6 kgf·m, 33.2 lbf·ft)
⑩ A/C compressor to the oil pan (10 x 1.25 mm): 45 N·m (4.6 kgf·m, 33.2 lbf·ft)

Fig. 416: Installing Countershaft Reverse Selector Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SECONDARY SHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

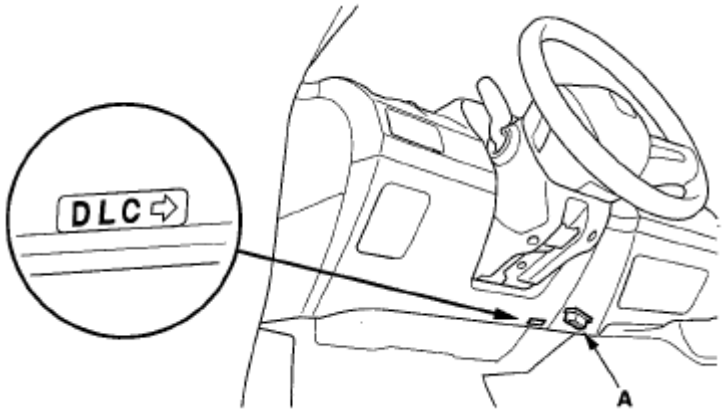


Fig. 417: Exploded View Of Secondary Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer, the idler gear, and the 31 x 54 mm thrust washer in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The locknut has left-hand threads.
8. Check the axial clearance of 1st gear (see **SECONDARY SHAFT 1ST GEAR AXIAL CLEARANCE INSPECTION**) and 2nd gear (see **SECONDARY SHAFT 2ND GEAR AXIAL CLEARANCE INSPECTION**).
9. Inspect the condition of the sealing rings. If the sealing rings are worn, distorted, or damaged, replace them (see **SECONDARY SHAFT SEALING RING REPLACEMENT**).

SECONDARY SHAFT 1ST GEAR AXIAL CLEARANCE INSPECTION

1. Install the thrust needle bearing (A), 1st gear (B), the needle bearing (C), the thrust needle bearing (D), the 31 x 54 mm thrust washer (E), and the 1st clutch (F) on the secondary shaft (G), then secure them with the snap ring (H).

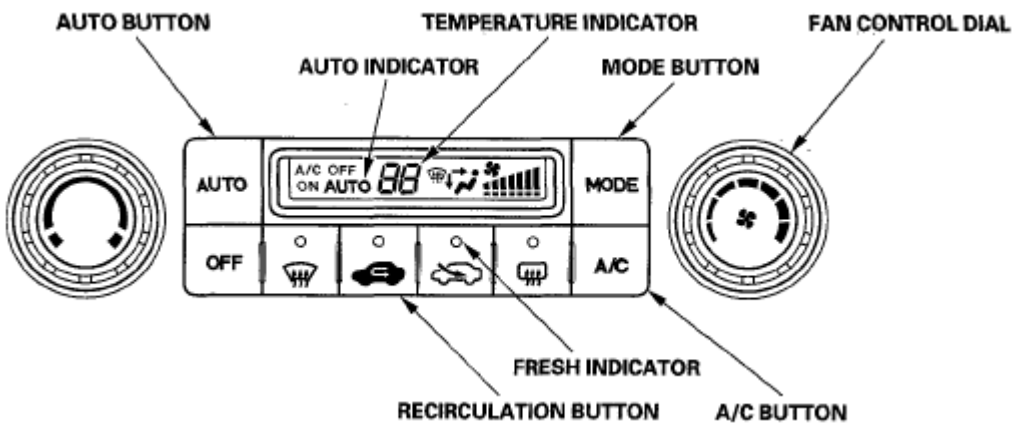


Fig. 418: Identifying Thrust Needle Bearing, 1st Gear, Needle Bearing And Thrust Needle

Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the clearance between the snap ring (A) and the 1st clutch drum (B) using a feeler gauge (C), in at least three places. Use the average as the actual clearance.

Standard: 0.04-0.12 mm (0.002-0.005 in.)

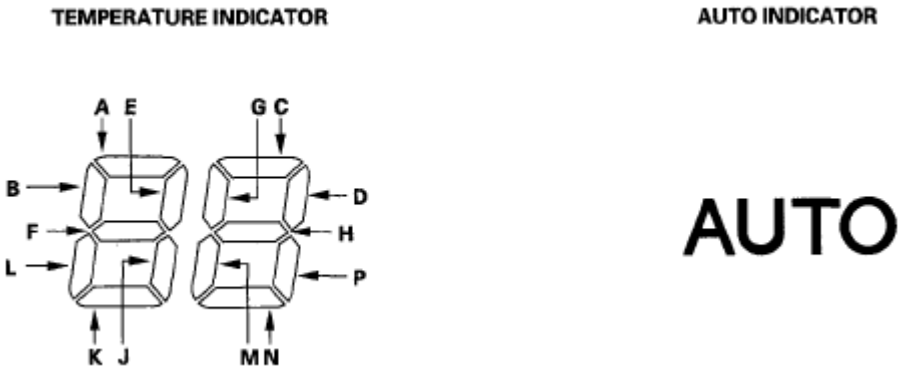


Fig. 419: Measuring Clearance Between Snap Ring And 1st Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the clearance is out of standard, remove the 31 x 54 mm thrust washer and measure its thickness (A).

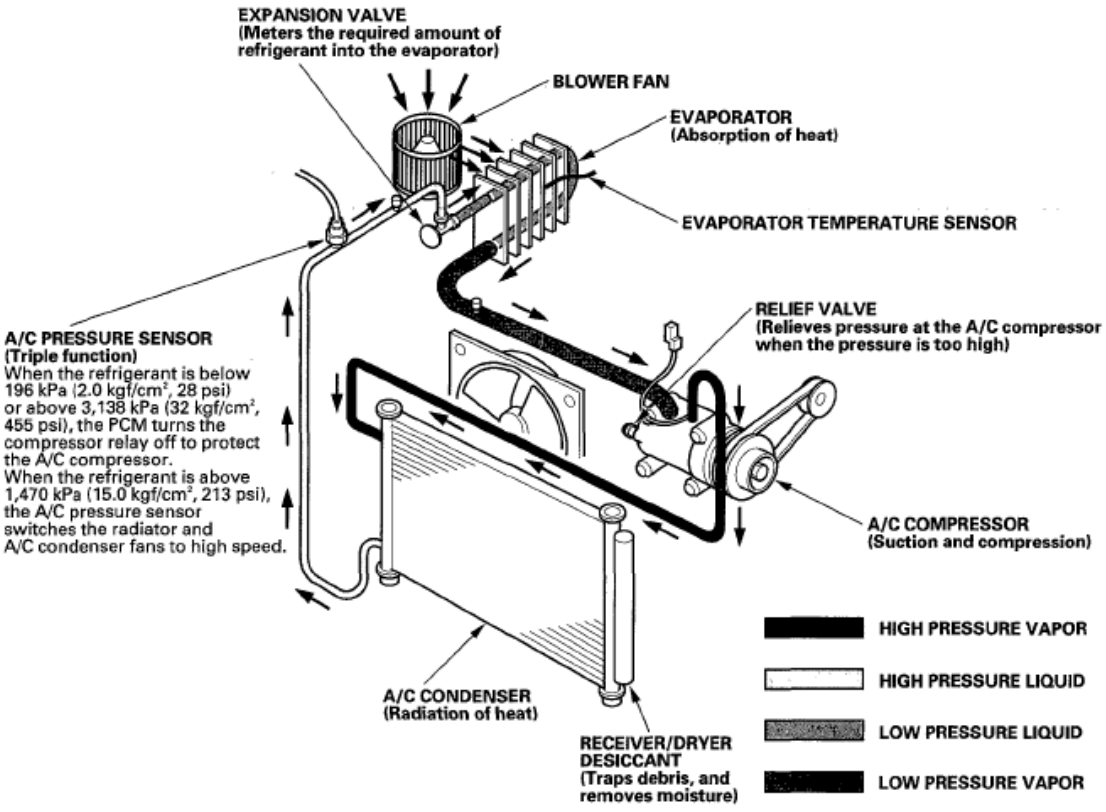


Fig. 420: Identifying Thrust Washer Thickness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 31 x 54 mm

THRUST WASHER THICKNESS SPECIFICATION

No.	Part Number	Thickness
1	90521-RPC-001	3.925 mm (0.1545 in.)
2	90522-RPC-001	3.950 mm (0.1555 in.)
3	90523-RPC-001	3.975 mm (0.1565 in.)
4	90524-RPC-001	4.000 mm (0.1575 in.)
5	90525-RPC-001	4.025 mm (0.1585 in.)
6	90526-RPC-001	4.050 mm (0.1594 in.)
7	90527-RPC-001	4.075 mm (0.1604 in.)
8	90528-RPC-001	4.100 mm (0.1614 in.)
9	90529-RPC-001	4.125 mm (0.1624 in.)
10	90530-RPC-000	4.150 mm (0.1634 in.)
11	90531 -RPC-000	4.175 mm (0.1644 in.)
12	90532-RPC-000	4.200 mm (0.1654 in.)
13	90533-RPC-000	4.225 mm (0.1663 in.)
14	90534-RPC-000	4.250 mm (0.1673 in.)
15	90535-RPC-000	4.275 mm (0.1683 in.)
16	90536-RPC-000	4.300 mm (0.1693 in.)
17	90537-RPC-000	4.325 mm (0.1703 in.)

5. After replacing the thrust washer, make sure the clearance is within standard.
6. Disassemble the installed parts from the secondary shaft.

SECONDARY SHAFT 2ND GEAR AXIAL CLEARANCE INSPECTION

1. Install the thrust needle bearing (A), the needle bearing (B), 2nd gear (C), the thrust needle bearing

(D), the 43 x 54.5 mm thrust washer (E), the 39 mm cotters (F), and the cotter retainer (G) on the secondary shaft (H), then secure them with the snap ring (I).

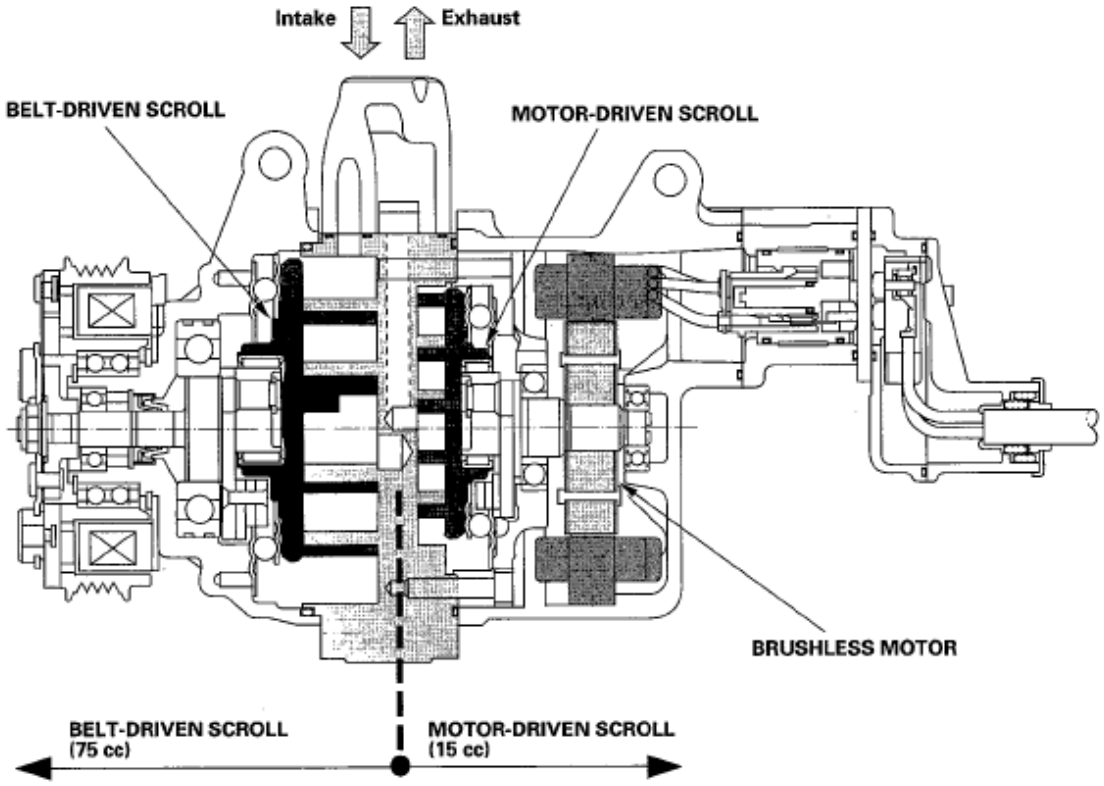


Fig. 421: Identifying Thrust Needle Bearing, Needle Bearing, 2nd Gear, Thrust Needle Bearing And Thrust Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Set the dial indicator (A) on 2nd gear (B).

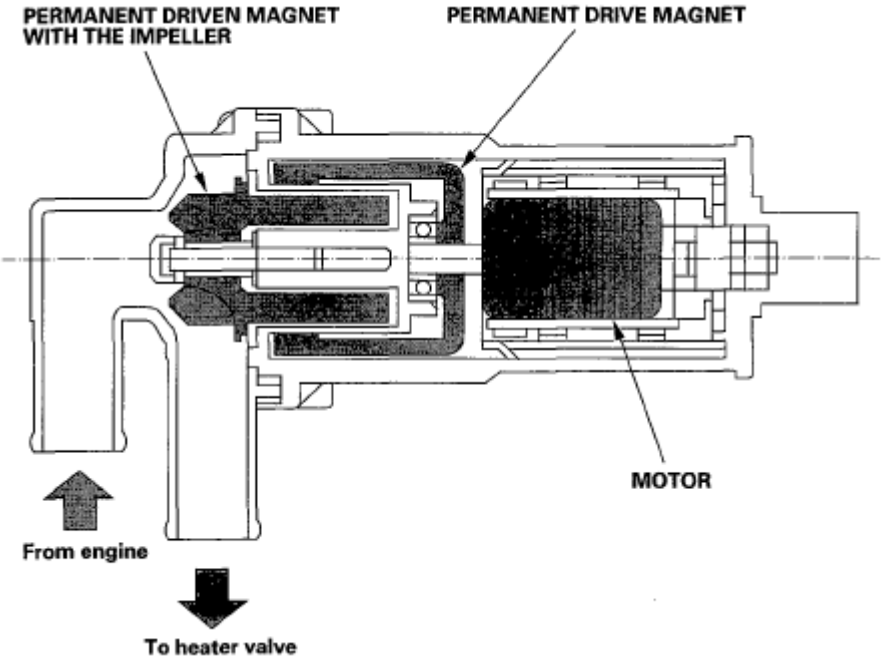


Fig. 422: Setting Dial Indicator On 2nd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Lift 2nd gear (A) up while holding the secondary shaft (B), and use the dial indicator (C) to read the 2nd gear axial clearance.

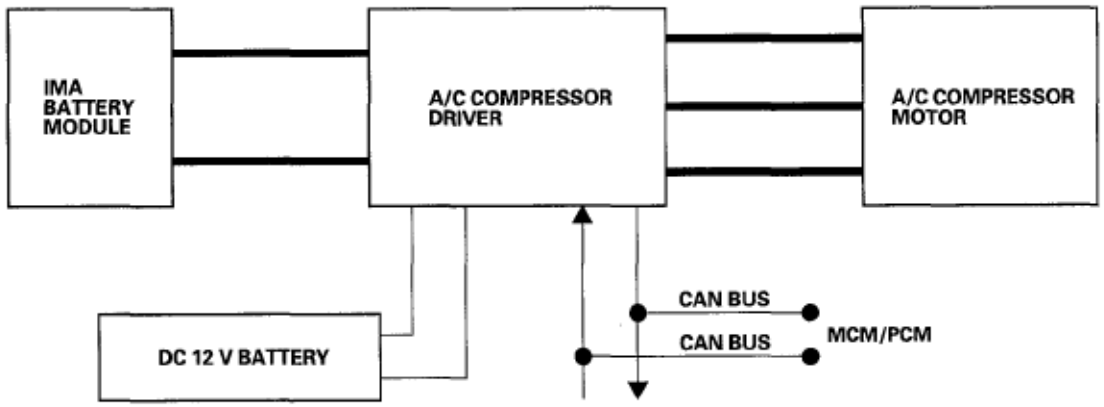


Fig. 423: Measuring 2nd Gear Axial Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the 2nd gear axial clearance in at least three places while turning 2nd gear. Use the average as the actual clearance.

   Standard: 0.04-0.12 mm (0.002-0.005 in.)

5. If the clearance is out of standard, remove the 43 x 54.5 mm thrust washer and measure its thickness.
6. Select and install a new thrust washer, then recheck.

   THRUST WASHER, 43 x 54.5 mm

THRUST WASHER THICKNESS SPECIFICATION

No.	Part Number	Thickness
1	90502-RPC-000	2.900 mm (0.1142 in.)
2	90503-RPC-000	2.925 mm (0.1152 in.)
3	90504-RPC-000	2.950 mm (0.1161 in.)
4	90505-RPC-000	2.975 mm (0.1171 in.)
5	90506-RPC-000	3.000 mm (0.1181 in.)
6	90507-RPC-000	3.025 mm (0.1191 in.)
7	90508-RPC-000	3.050 mm (0.1201 in.)
8	90509-RPC-000	3.075 mm (0.1211 in.)

9	90510-RPC-000	3.100 mm (0.1220 in.)
10	90511-RPC-000	3.125 mm (0.1230 in.)
11	90512-RPC-000	3.150 mm (0.1240 in.)
12	90513-RPC-000	3.175 mm (0.1250 in.)
13	90514-RPC-000	3.200 mm (0.1260 in.)

7. After replacing the thrust washer, make sure the clearance is within standard.
8. Disassemble the installed parts from the secondary shaft.

SECONDARY SHAFT SEALING RING REPLACEMENT

The sealing rings are synthetic resin with chamfered ends. Check the condition of the sealing rings, and replace them only if they are worn, distorted, or damaged.

1. For a better fit, squeeze sealing rings together slightly before installing them.

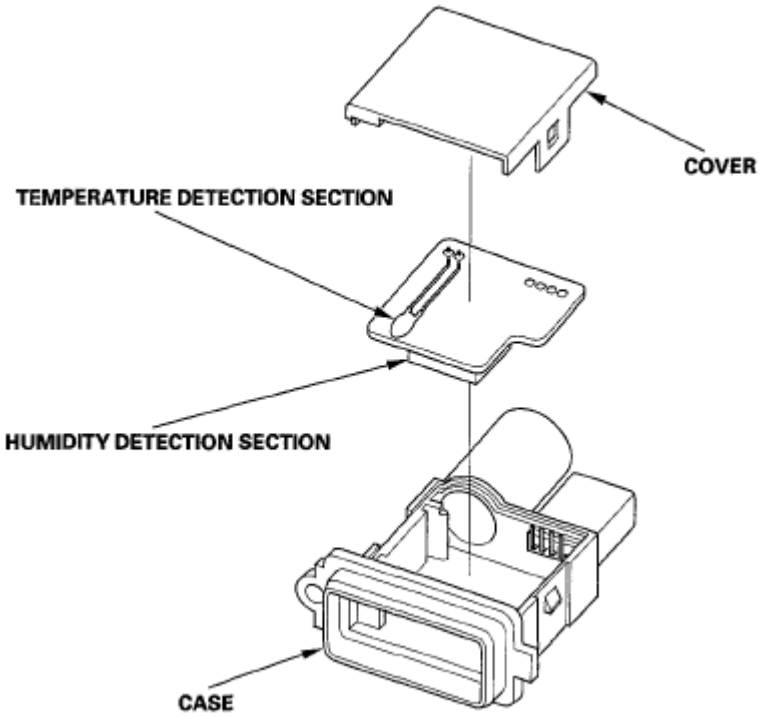


Fig. 424: Identifying Sealing Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Apply ATF to new sealing rings, then install them on the mainshaft.

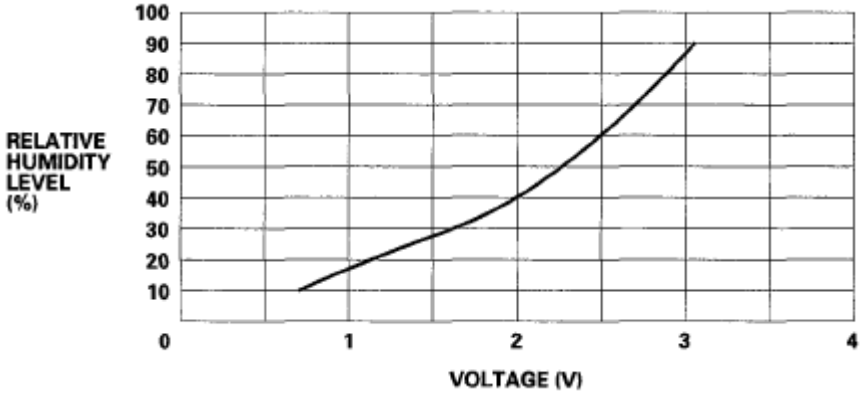


Fig. 425: Identifying Sealing Rings On Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. After installing the sealing rings, check the following:
   - The rings are fully seated in the groove.
   - The rings are not twisted.
   - The chamfered ends of the rings are properly joined.

CLUTCH DISASSEMBLY

Special Tools Required

- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring using a screwdriver.

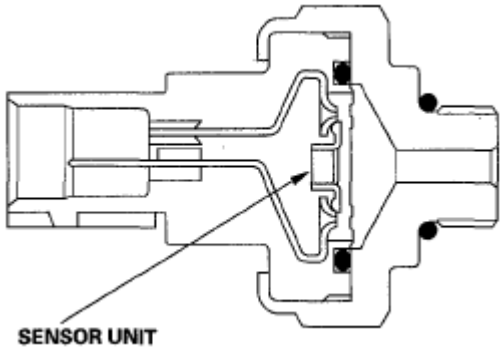


Fig. 426: Removing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the clutch end-plate (A), the clutch discs (B) (6), the clutch wave-plates (C) (6), and the waved spring (D) from the 1st clutch drum (E)

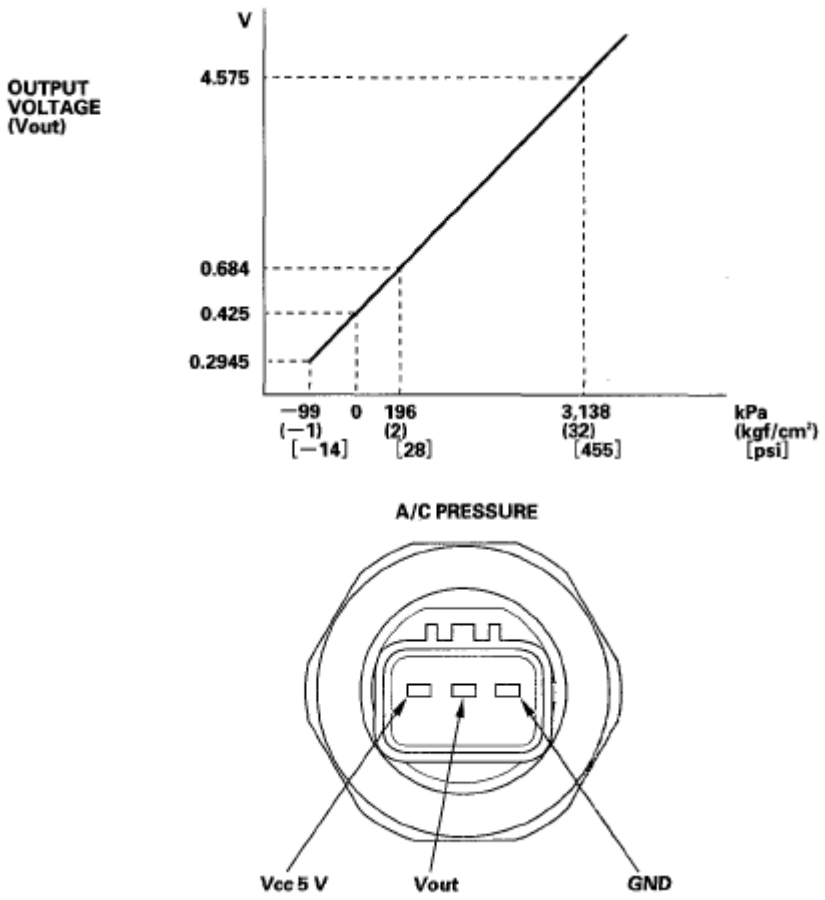


Fig. 427: Identifying Clutch End-Plate, Clutch Discs, Clutch Wave-Plates, Waved Spring And 1st Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch flat-plates (C) (4), and the waved spring (D) from the 2nd clutch drum (E).

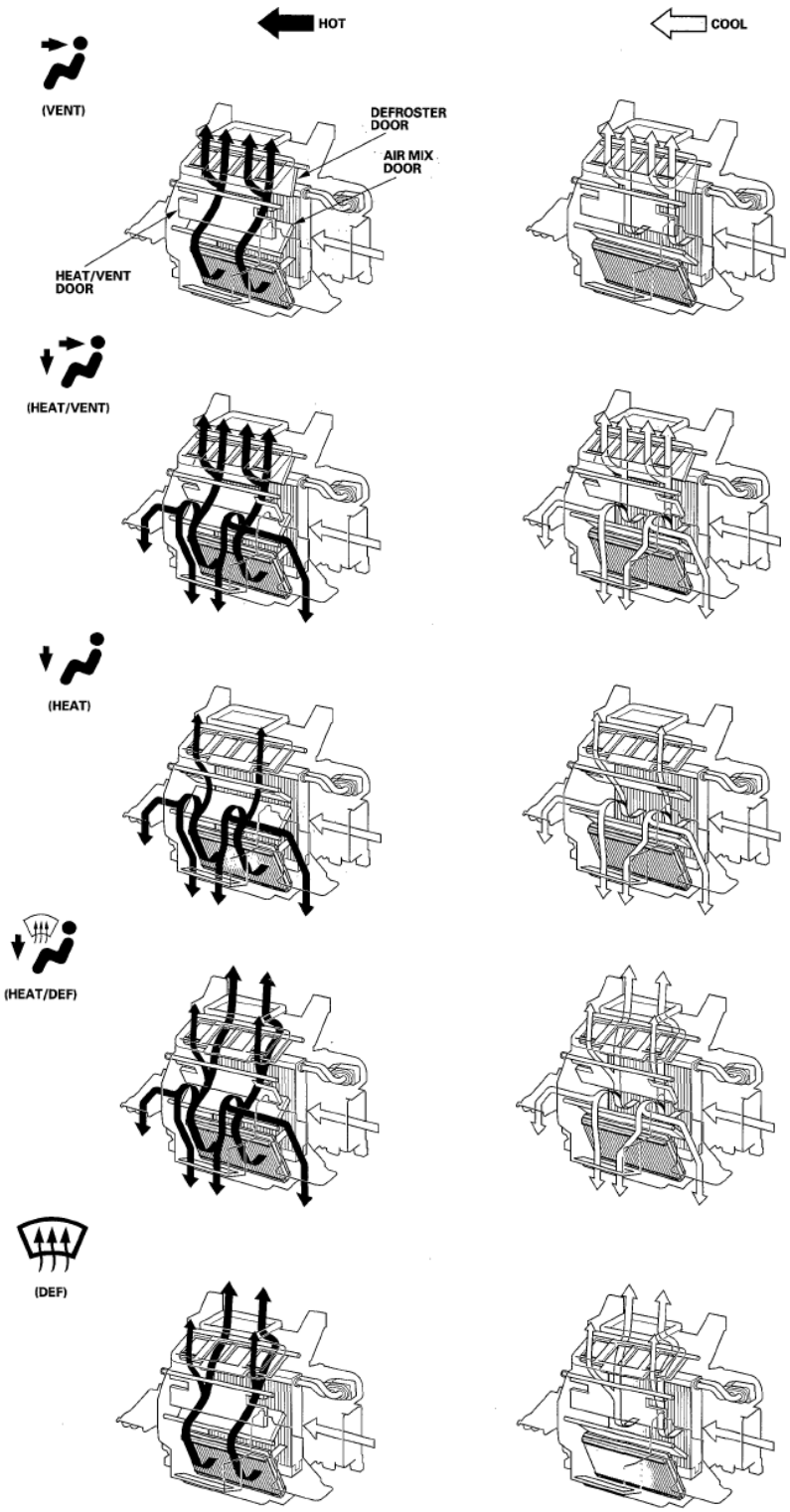


Fig. 428: Disassembling 2nd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch flat-plates (C) (4), and the waved spring (D) from the 4th clutch drum (E).

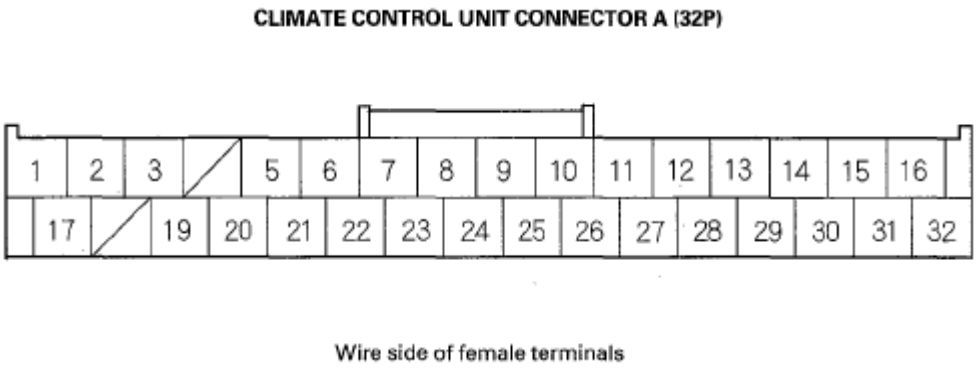


Fig. 429: Disassembling 4th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 3rd clutch drum (E).

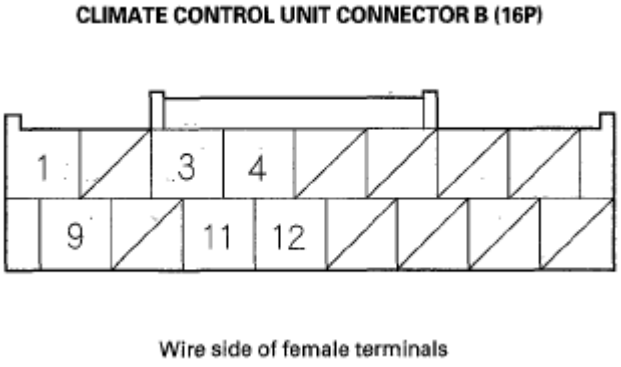


Fig. 430: Disassembling 3rd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 5th clutch drum (E).

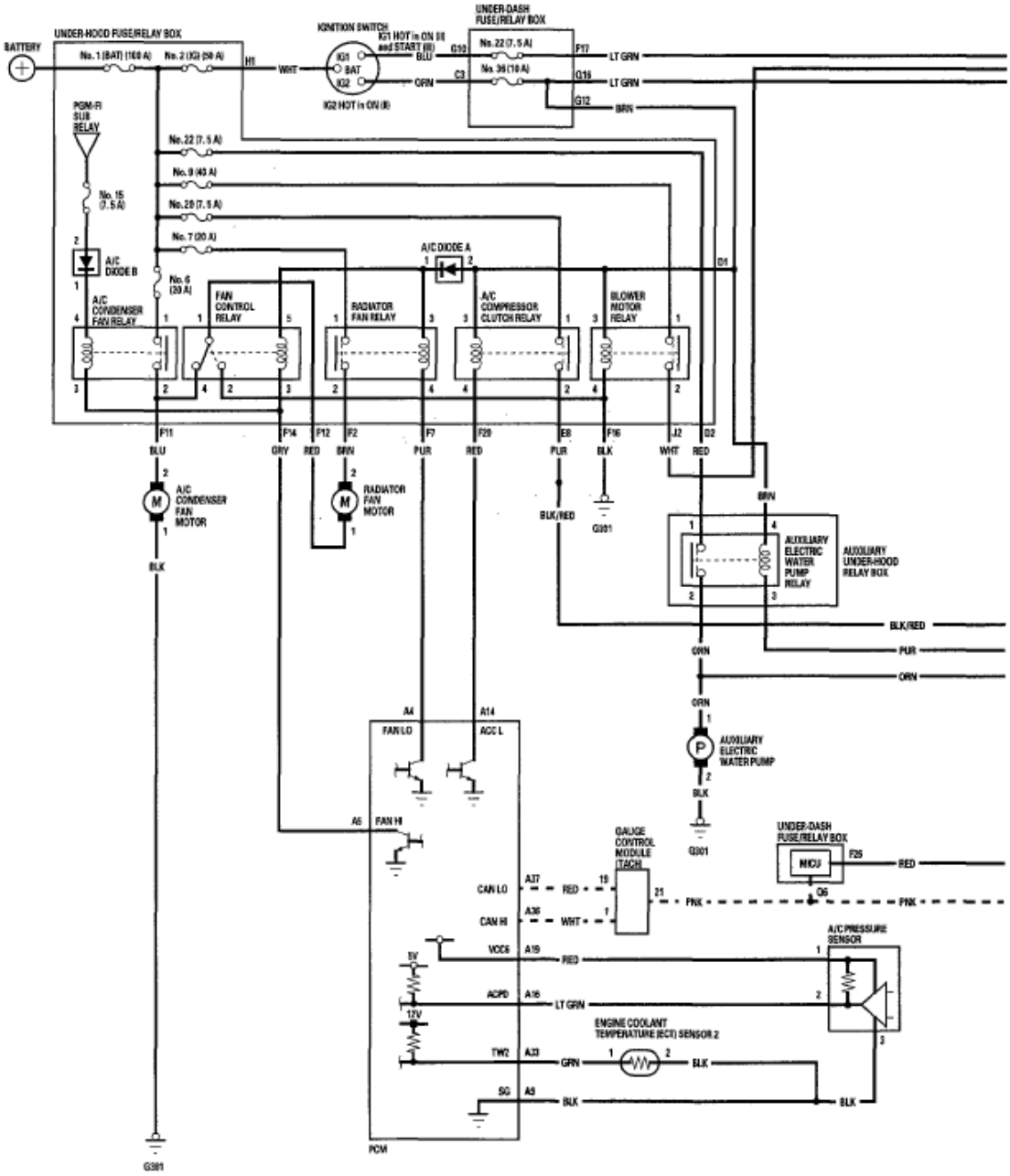


Fig. 431: Disassembling 5th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.

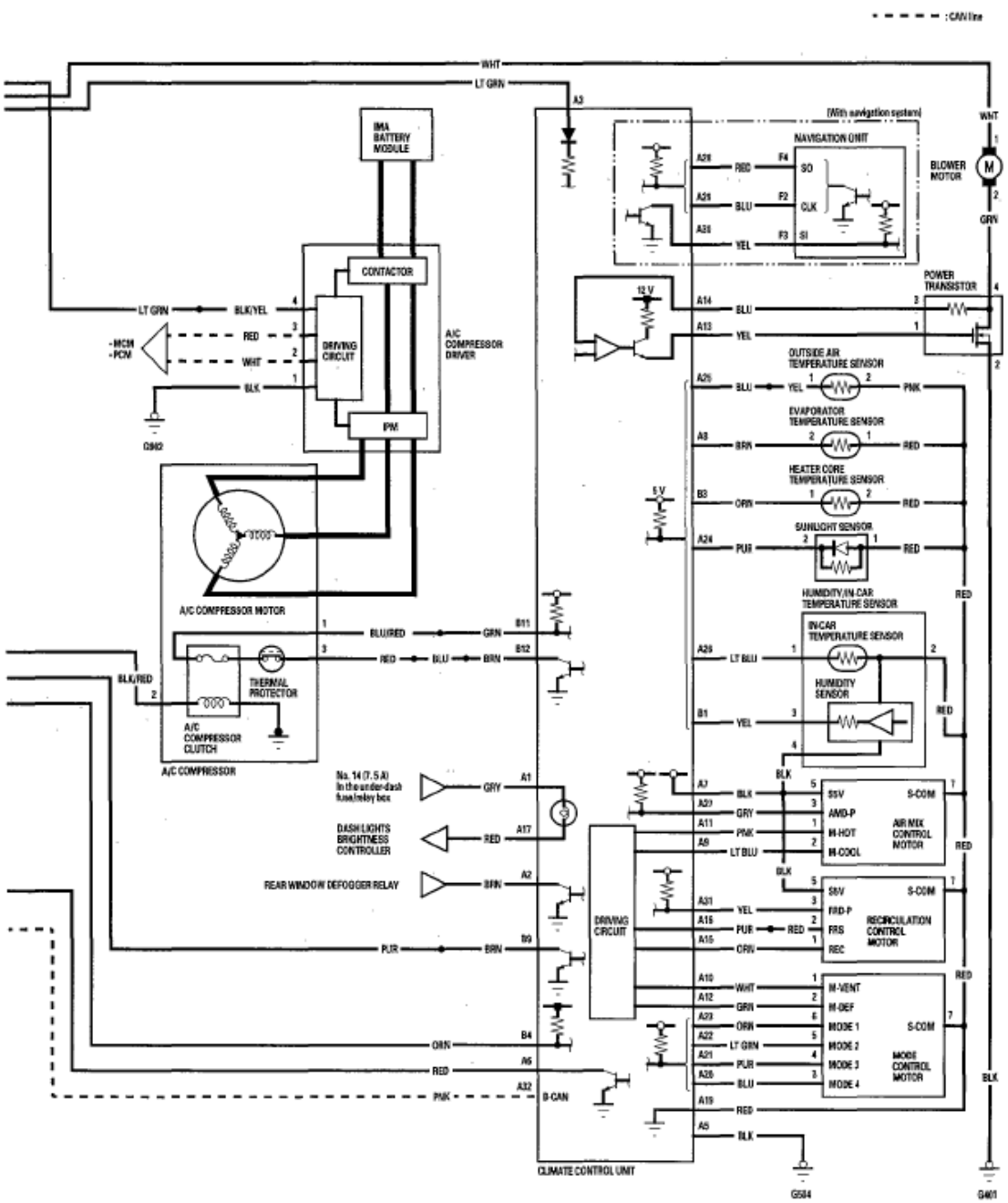


Fig. 432: Identifying Clutch Spring Compressor Attachment And Clutch Spring Compressor Bolt Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 1st clutch in such a way that it works on the clutch return spring (C).

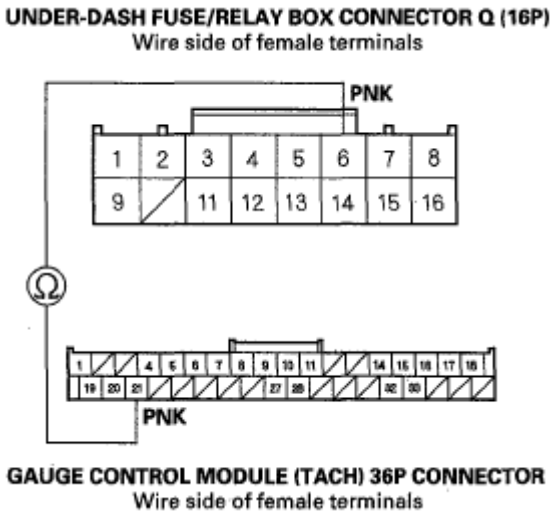


Fig. 433: Setting Clutch Spring Compressor Attachment On Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the return spring retainer (B).

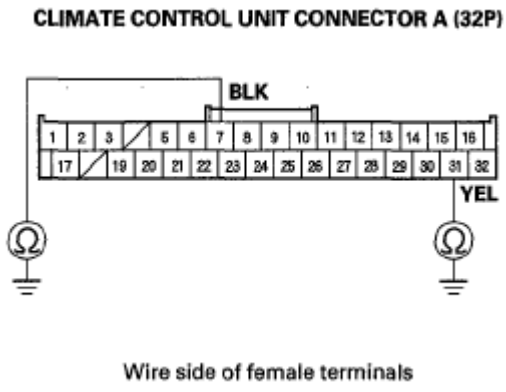


Fig. 434: Identifying Clutch Spring Compressor Attachment And Return Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Check the placement of the clutch spring compressor attachment. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

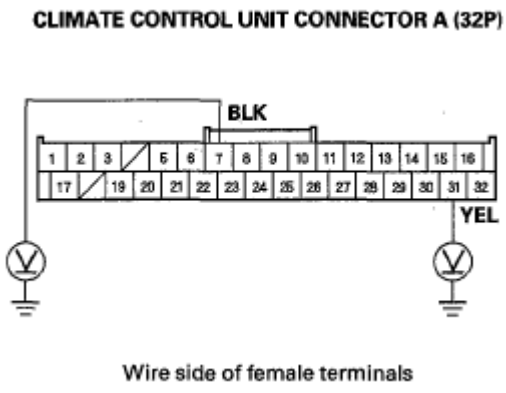


Fig. 435: Identifying Clutch Spring Compressor Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Compress the return spring until the snap ring can be removed.

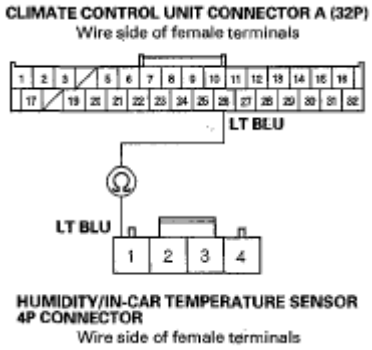


Fig. 436: Compressing Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the snap ring using snap ring pliers.

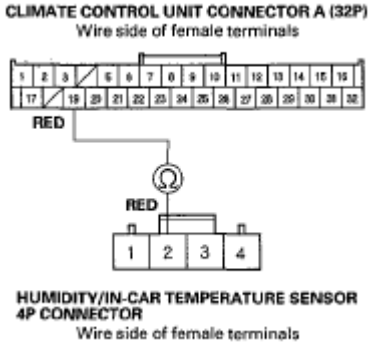


Fig. 437: Removing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the clutch spring compressor attachment and the clutch spring compressor bolt assembly.
14. Remove the snap ring (A), the spring retainer (B), and the return spring (C).

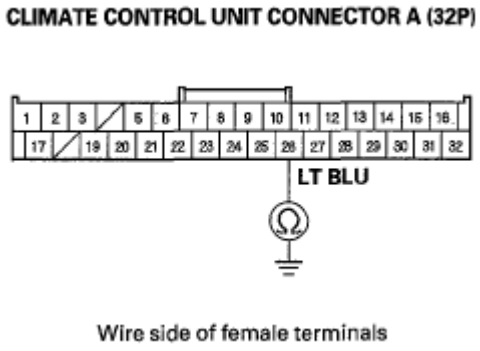


Fig. 438: Identifying Snap Ring, Spring Retainer And Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Wrap a shop rag around the clutch drum, and apply air pressure to the fluid passage to remove the piston. Place a finger tip on the other passage while applying air pressure.

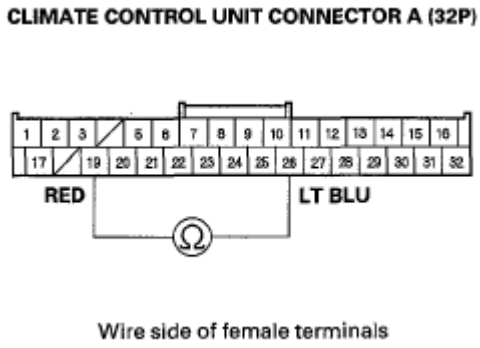


Fig. 439: Applying Air Pressure To Fluid Passage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the clutch piston (A), and remove the outer O-ring (B) and the inner O-ring (C) from the piston.

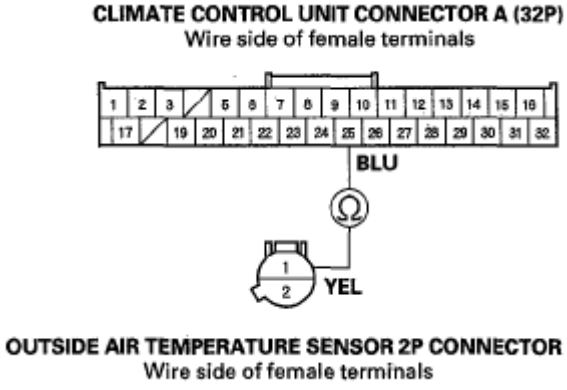


Fig. 440: Identifying Clutch Piston, Outer O-Ring And Inner O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH INSPECTION

1. Inspect the 4th and 5th clutch pistons and the clutch piston check valves (A).

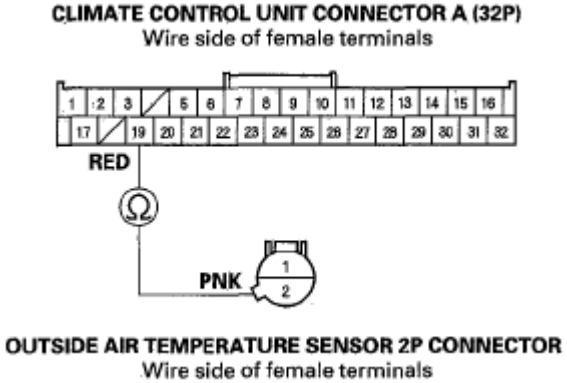


Fig. 441: Identifying Clutch Piston Check Valves

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. Check the oil seal (A) on the spring retainer of the 1st, 2nd, and 3rd clutches for wear, damage, and peeling.

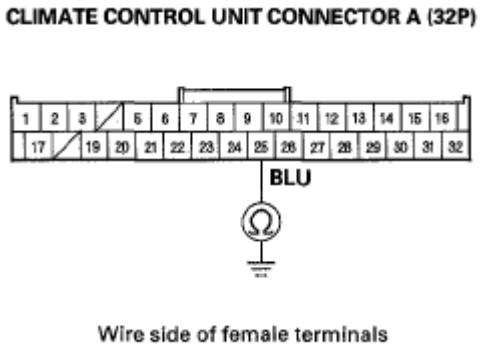


Fig. 442: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the oil seal is worn, damaged, or peeling, replace the spring retainer.
6. Inspect the clutch discs, the clutch plates, and the clutch end-plate for wear, damage, and discoloration.

Clutch Discs Standard Thickness:

1st Clutch: 1.94 mm (0.076 in.)

2nd Clutch: 1.96 mm (0.077 in.)

3rd Clutch: 1.94 mm (0.076 in.)

4th Clutch: 1.96 mm (0.077 in.)

5th Clutch: 1.94 mm (0.076 in.)

Clutch Plates Standard Thickness:

1st Clutch (wave-plates): 1.6 mm (0.063 in.)

2nd Clutch (flat-plates): 2.0 mm (0.079 in.)

3rd Clutch (wave-plates): 1.6 mm (0.063 in.)

4th Clutch (flat-plates): 1.6 mm (0.063 in.)

5th Clutch (wave-plates): 1.6 mm (0.063 in.)

7. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect

the clearance between the clutch end-plate and the top disc.

8. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clearance between the clutch end-plate and the top disc.
9. If the clutch end-plate is worn, damaged, or discolored, inspect the clearance between the clutch end-plate and the top disc, then replace the clutch end-plate.

CLUTCH WAVE-PLATE PHASE DIFFERENCE INSPECTION

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.

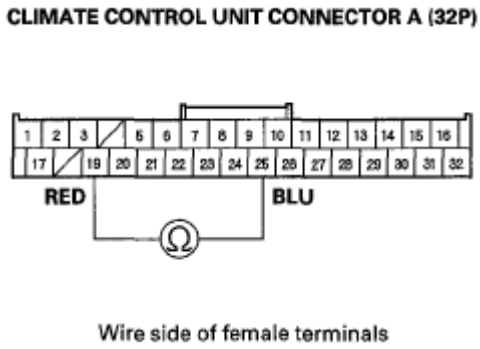


Fig. 443: Checking Clutch Wave-Plate Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.
3. Rotate the 1st clutch wave-plate about 56-degrees or 67-degrees apart from the bottom while holding the wave-plate by its circumference, and rotate the 3rd and 5th clutch wave-plate about 60-degrees apart from the bottom while holding the wave-plate by its circumference. The dial indicator should be at the top (D) of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it by holding its circumference.
4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between the bottom and top.

   Standard: 0.07-0.20 mm (0.003-0.008 in.)

5. Rotate the 1st clutch wave-plate about 67-degrees or 56-degrees from the top, and rotate the 3rd and 5th clutch wave-plate about 60-degrees. The dial indicator should be at the bottom of a phase difference (F and G), and zero the dial indicator.
6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.
7. If the two values of the three measurements are within the standard, the wave-plate is OK. If the two values of the three measurements are out of the standard, replace the wave-plate.

CLUTCH CLEARANCE INSPECTION

Special Tools Required

Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and the end-plate for wear and damage (see **CLUTCH INSPECTION**), and inspect the clutch wave-plate phase difference (see **CLUTCH WAVE-PLATE PHASE DIFFERENCE INSPECTION**), if necessary.
2. Install the clutch pistons in the clutch drums. Do not install the O-rings during inspection.

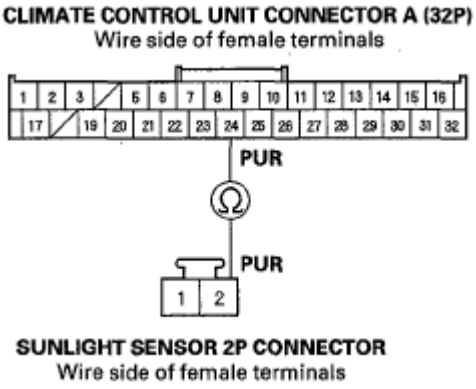


Fig. 444: Identifying Clutch Pistons
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (6) and the discs (D) (6). Install the clutch end-plate (E) with the flat side down on the top disc.

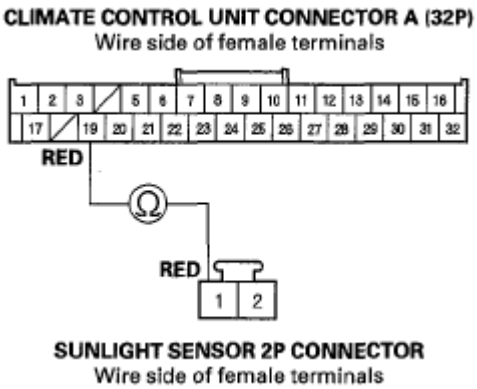


Fig. 445: Disassembling 1st Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the waved spring (A) in the 2nd clutch drum (B). Starting with the clutch flat-plate, alternately install the flat-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

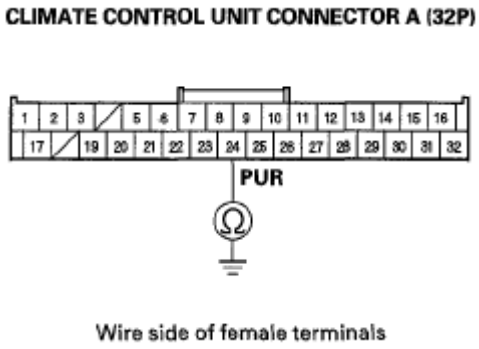


Fig. 446: Disassembling 2nd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch flat-plate, alternately install the flat-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

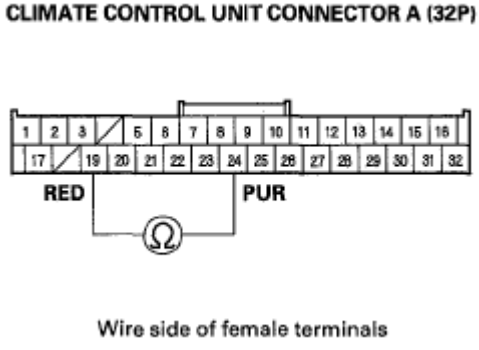


Fig. 447: Disassembling 4th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the waved spring (A) in the 3rd clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

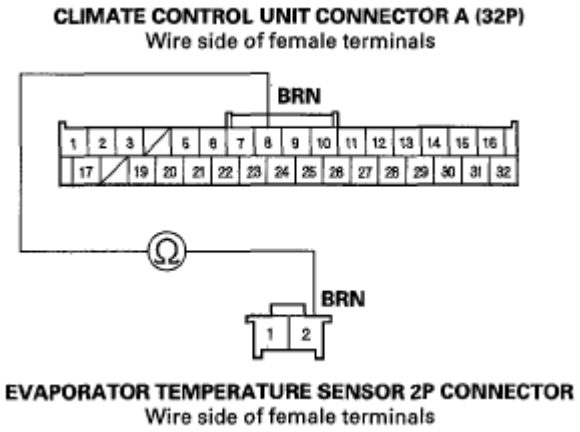


Fig. 448: Disassembling 3rd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

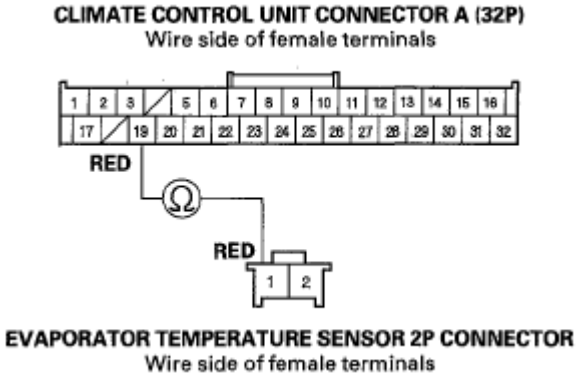


Fig. 449: Disassembling 5th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the snap ring using a screwdriver to secure the clutch end-plate.

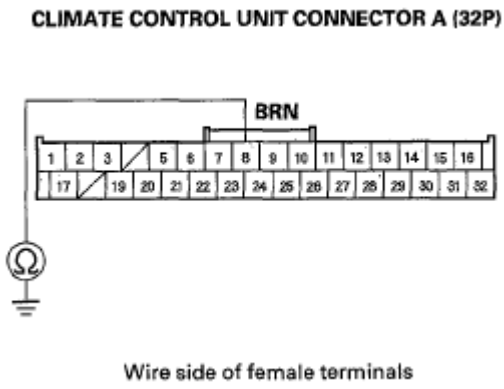


Fig. 450: Installing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Set a dial indicator (A) on the clutch end-plate (B).

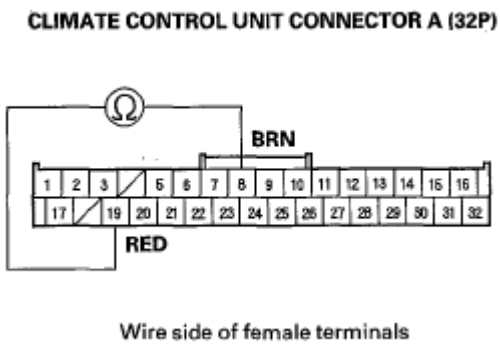


Fig. 451: Setting Dial Indicator On Clutch End-Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).
11. Release the clutch end-plate to lower the clutch end-plate, then put the clutch compressor attachment on the end-plate (A).

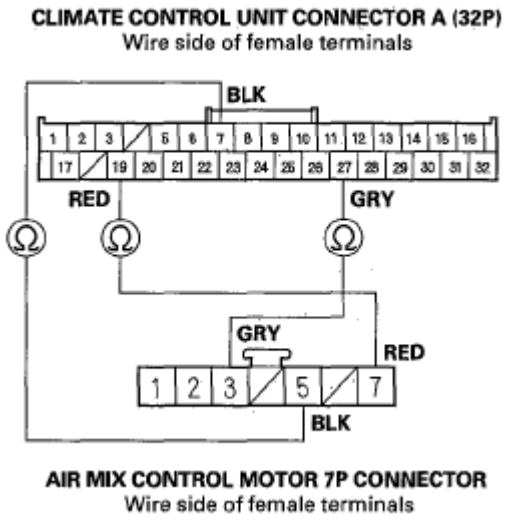


Fig. 452: Pressing Clutch Compressor Attachment Down
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. For the 1st, 3rd, and 5th clutches: Press the clutch compressor attachment down with 150-160 N (15-16 kgf, 33-35 lbf) (B) using a force gauge, and read the dial indicator (C). The dial indicator reads the clearance (D) between the clutch end-plate and top disc (E). Take measurements in at least three places, and use the average as the actual clearance.
13. For 2nd and 4th clutches: Press the clutch compressor attachment down with 39 N (4 kgf, 9 lbf) (B) using a force gauge, and read the dial indicator (C). The dial indicator reads the clearance (D) between the clutch end-plate and top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clearance between Clutch End-Plate and Top Disc Service Limit:

1st Clutch: 1.62-1.82 mm (0.064-0.072 in.)

2nd Clutch: 0.7-0.9 mm (0.028-0.035 in.)

3rd Clutch: 0.93-1.13 mm (0.037-0.044 in.)

4th Clutch: 0.7-0.9 mm (0.028-0.035 in.)

5th Clutch: 0.93-1.13 mm (0.037-0.044 in.)

14. If the clearance of the 1st, 3rd, or 5th clutch is out of the service limit, select a new clutch end-plate from the following table.

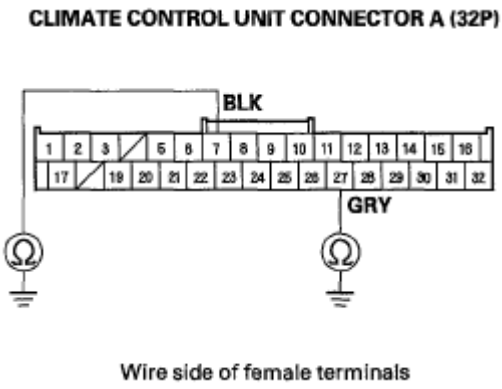


Fig. 453: Identifying Clearance Between Clutch And Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1ST CLUTCH END-PLATES

1ST CLUTCH END-PLATES THICKNESS SPECIFICATION

Mark	Part Number	Thickness
1	22551-RPC-003	2.1 mm (0.083 in.)
2	22552-RPC-003	2.2 mm (0.087 in.)
3	22553-RPC-003	2.3 mm (0.091 in.)
4	22554-RPC-003	2.4 mm (0.094 in.)
5	22555-RPC-003	2.5 mm (0.098 in.)
6	22556-RPC-003	2.6 mm (0.102 in.)
7	22557-RPC-003	2.7 mm (0.106 in.)
8	22558-RPC-003	2.8 mm (0.110 in.)
9	22559-RPC-003	2.9 mm (0.114 in.)

3RD and 5TH CLUTCH END-PLATES

3RD AND 5TH CLUTCH END-PLATES THICKNESS SPECIFICATION

Mark	Part Number	Thickness
1	22561-RPC-003	2.1 mm (0.083 in.)
2	22562-RPC-003	2.2 mm (0.087 in.)
3	22563-RPC-003	2.3 mm (0.091 in.)
4	22564-RPC-003	2.4 mm (0.094 in.)
5	22565-RPC-003	2.5 mm (0.098 in.)
6	22566-RPC-003	2.6 mm (0.102 in.)
7	22567-RPC-003	2.7 mm (0.106 in.)
8	22568-RPC-003	2.8 mm (0.110 in.)
9	22569-RPC-003	2.9 mm (0.114 in.)

15. If the clearance of the 2nd or 4th clutch is out of the service limit, remove the clutch end-plate and check the clutch end-plate mark. Select a new clutch end-plate from the following tables by the mark on the old clutch end-plate; use the AC-AL Plates table with the old clutch end-plate is marked with between AC and AL, and use the AM-AV Plates table with the old clutch end-plate is marked with between AM and AV.

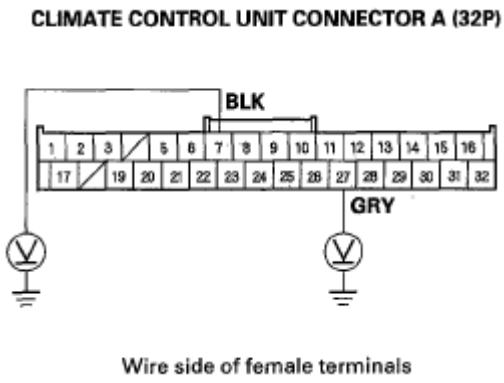


Fig. 454: Identifying Clearance Between Clutch And Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2ND and 4TH CLUTCH END-PLATES

AC-AL Plates

2ND AND 4TH CLUTCH END-PLATES THICKNESS SPECIFICATION (AC-AL PLATES)

Mark	Part Number	Thickness
AC	22551-RPC-004	2.1 mm (0.083 in.)
AD	22552-RPC-004	2.2 mm (0.087 in.)
AE	22553-RPC-004	2.3 mm (0.091 in.)
AF	22554-RPC-004	2.4 mm (0.094 in.)
AG	22555-RPC-004	2.5 mm (0.098 in.)
AH	22556-RPC-004	2.6 mm (0.102 in.)
AJ	22557-RPC-004	2.7 mm (0.106 in.)
AK	22558-RPC-004	2.8 mm (0.110 in.)
AL	22559-RPC-004	2.9 mm (0.114 in.)

AM-AV Plates

2ND AND 4TH CLUTCH END-PLATES THICKNESS SPECIFICATION (AM-AV PLATES)

Mark	Part Number	Thickness
AM	22561-RPC-004	2.1 mm (0.083 in.)
AN	22562-RPC-004	2.2 mm (0.087 in.)
AP	22563-RPC-004	2.3 mm (0.091 in.)
AQ	22564-RPC-004	2.4 mm (0.094 in.)
AR	22565-RPC-004	2.5 mm (0.098 in.)
AS	22566-RPC-004	2.6 mm (0.102 in.)
AT	22567-RPC-004	2.7 mm (0.106 in.)
AU	22568-RPC-004	2.8 mm (0.110 in.)
AV	22569-RPC-004	2.9 mm (0.114 in.)

16. Install a new clutch end-plate, and recheck the clearance. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

1ST CLUTCH REASSEMBLY

Special Tools Required

- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

NOTE:

- **Hold the spring compressor attachment in a vise with soft jaws. Be careful not to damage the clutch drum.**
- **Insert the spring retainer can be adjusted (center of tolerance) to prevent damaging the spring retainer oil seal.**

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Install a new O-ring (A) in the 1st clutch piston (B), and install a new O-ring (C) on the clutch drums (D).

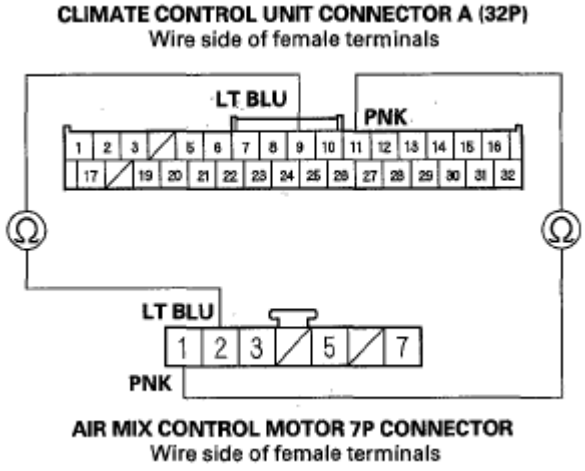


Fig. 455: Installing O-Ring In 1st Clutch Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the clutch piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating. Lubricate the piston O-ring with ATF before installing. Do not pinch the O-ring by installing the piston with too much force.

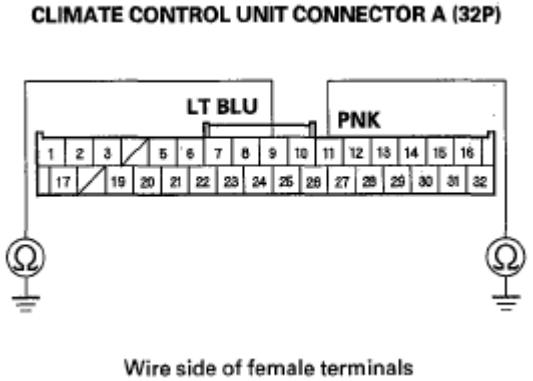


Fig. 456: Installing Clutch Piston In Clutch Drum

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Set the return spring (A) and the spring retainer (B), and position the snap ring (C) on the spring retainer.

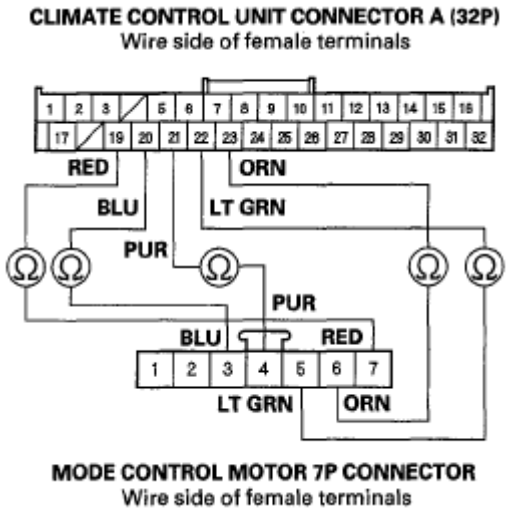


Fig. 457: Identifying Return Spring, Spring Retainer And Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.

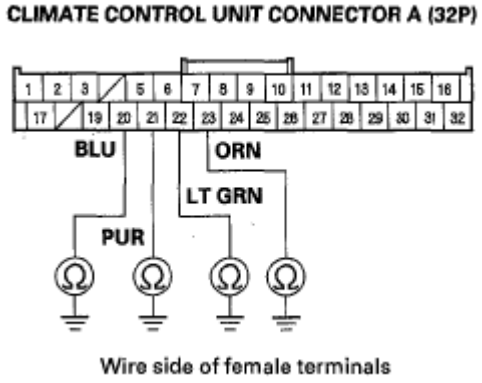


Fig. 458: Identifying Clutch Spring Compressor Attachment And Clutch Spring Compressor Bolt Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Set the clutch spring compressor attachment (A) on the spring retainer (B) so that it compresses the clutch return spring (C).

NOTE: Coat the circumference of the spring retainer and the areas where the spring retainer contacts the clutch piston with ATF before installation.

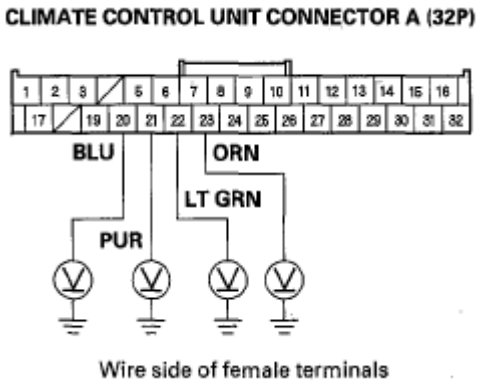


Fig. 459: Setting Clutch Spring Compressor Attachment On Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Compress the return spring carefully until the snap ring can be installed. Check that the spring retainer (A) is properly installed on the clutch hub (B). If improperly installed, change the position of the spring compressor attachment and the spring retainer.

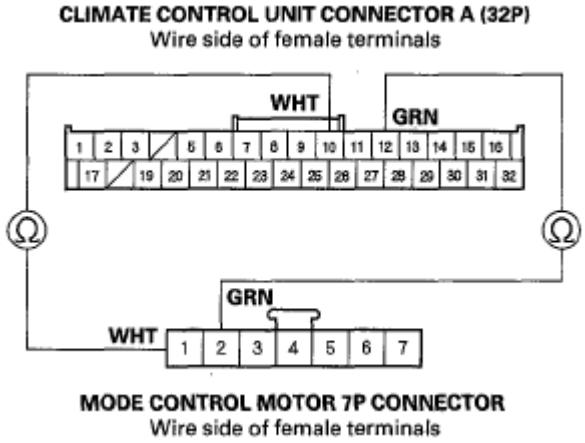


Fig. 460: Identifying Spring Retainer And Clutch Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the snap ring with snap ring pliers.

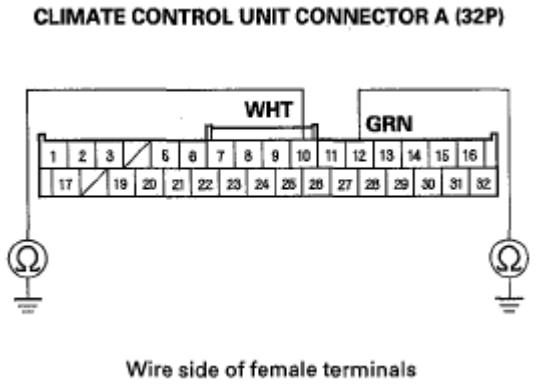


Fig. 461: Installing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Make sure the oil seal of the spring retainer (A) is properly installed on the clutch piston (B). If the oil seal was damaged or cracked, replace the spring retainer.

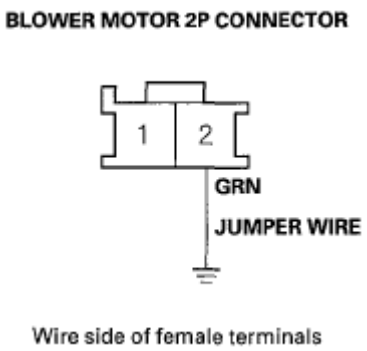


Fig. 462: Identifying Spring Retainer Proper And Improper Installation Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (6) and the discs (D) (6). Install the clutch end-plate (E) with the flat side down on the top disc.

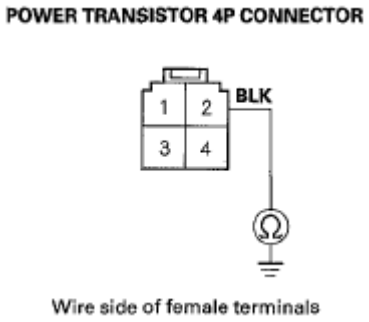


Fig. 463: Disassembling 1st Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the snap ring using a screwdriver to secure the clutch end-plate.

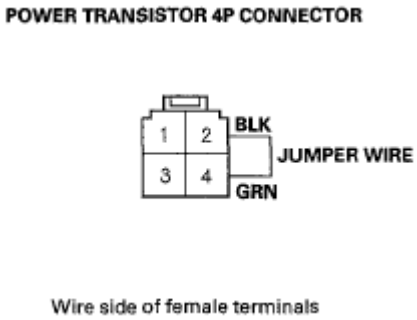


Fig. 464: Installing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Check that the clutch piston moves by applying air pressure into fluid passage.

2ND, 3RD, 4TH, AND 5TH CLUTCH REASSEMBLY

Special Tools Required

- Clutch spring compressor attachment 07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Install new O-rings (A) on the clutch piston (B).

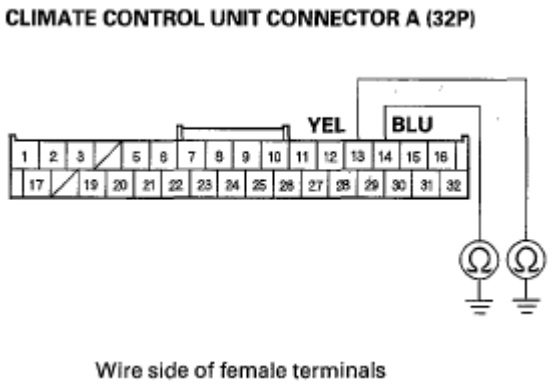


Fig. 465: Installing O-Rings On Clutch Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.

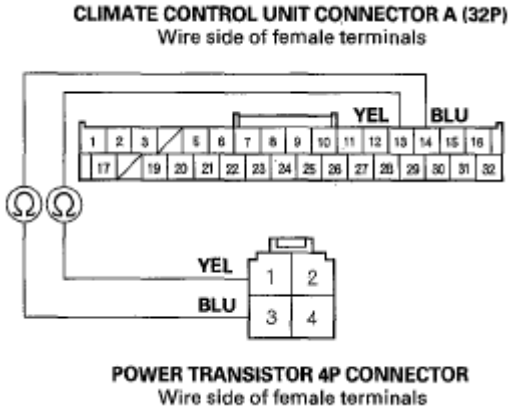


Fig. 466: Installing Clutch Piston In Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Set the return spring (A) and the spring retainer (B), and position the snap ring (C) on the spring retainer.

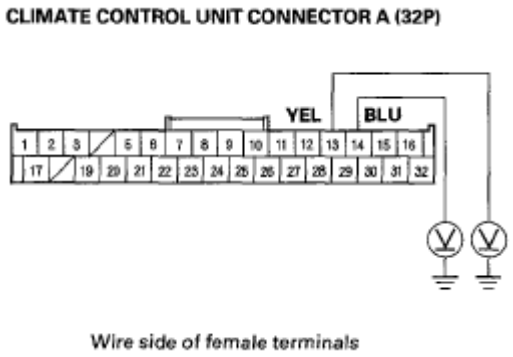


Fig. 467: Identifying Return Spring, Spring Retainer And Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.

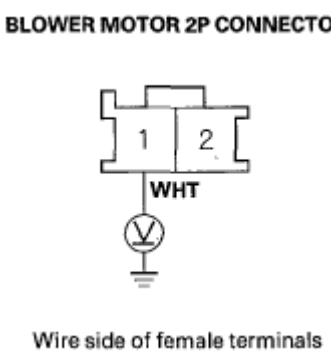


Fig. 468: Identifying Clutch Spring Compressor Attachment And Clutch Spring Compressor Bolt Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B).

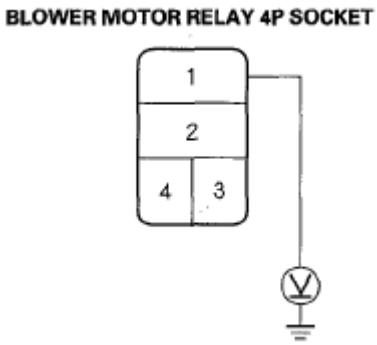


Fig. 469: Identifying Clutch Spring Compressor Attachment With Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Check the placement of the clutch spring compressor attachment. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

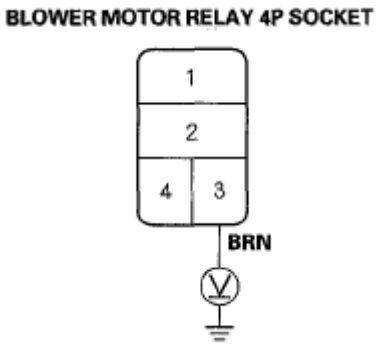


Fig. 470: Identifying Clutch Spring Compressor Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Compress the return spring until the snap ring can be installed.

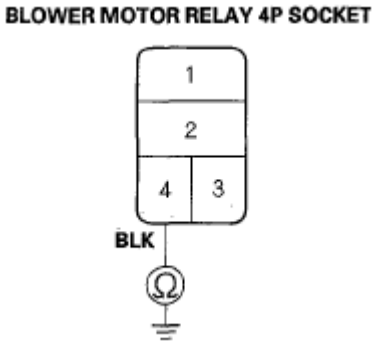


Fig. 471: Compressing Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the snap ring using snap ring pliers.

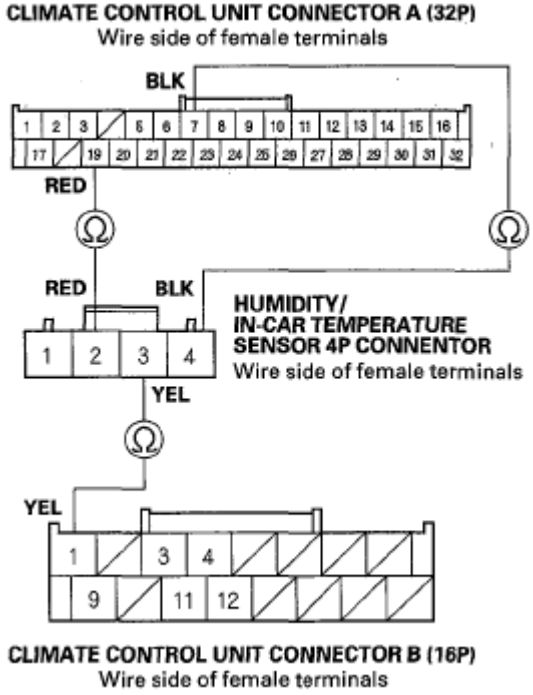


Fig. 472: Installing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the clutch spring compressor attachment and the clutch spring compressor bolt assembly.
11. Install the waved spring (A) in the 2nd clutch drum (B). Starting with the clutch flat-plate, alternately install the flat-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

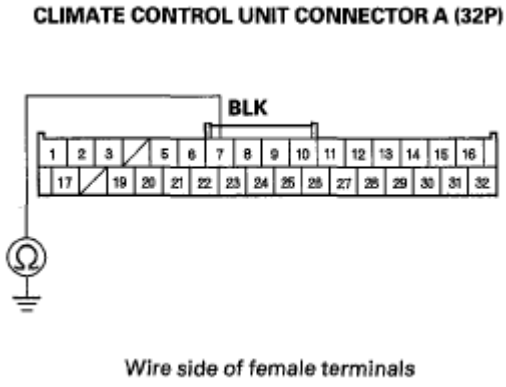


Fig. 473: Disassembling 2nd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch flat-plate, alternately install the flat-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

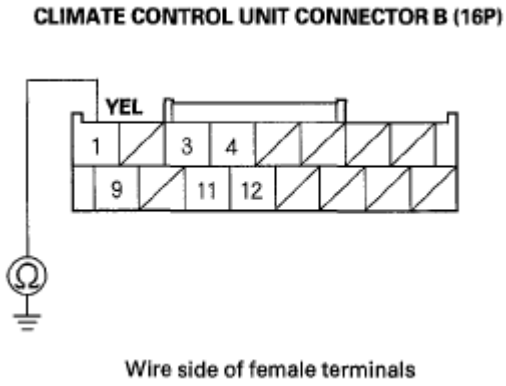


Fig. 474: Disassembling 4th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the waved spring (A) in the 3rd clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

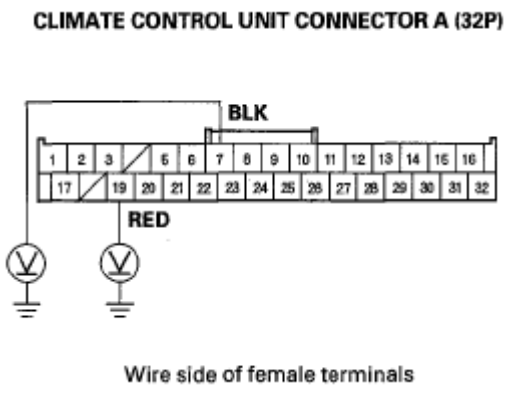


Fig. 475: Disassembling 3rd Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the discs (D) (4). Install the clutch end-plate (E) with the flat side down on the top disc.

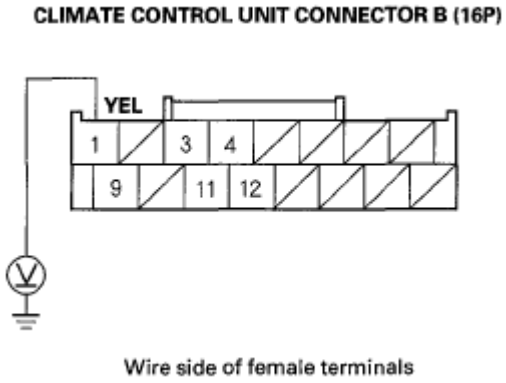


Fig. 476: Disassembling 5th Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the snap ring using a screwdriver to secure the clutch end-plate.

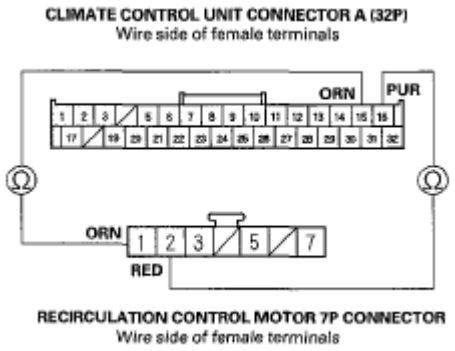


Fig. 477: Installing Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Check that the clutch piston moves by applying air pressure into fluid passage.

VALVE BODY AND ATF STRAINER INSTALLATION

1. Make sure that the ATF magnet is cleaned and installed in the torque converter housing.

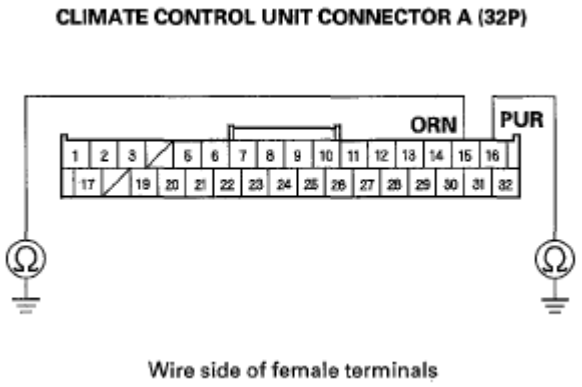


Fig. 478: Exploded View Of Valve Body And ATF Strainer w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the main separator plate and the two dowel pins on the torque converter housing.
3. Install the ATF pump drive gear (A), the ATF pump driven gear (B), and the ATF pump driven gear shaft (C). Install the ATF pump driven gear with its grooved and chamfered side facing down.

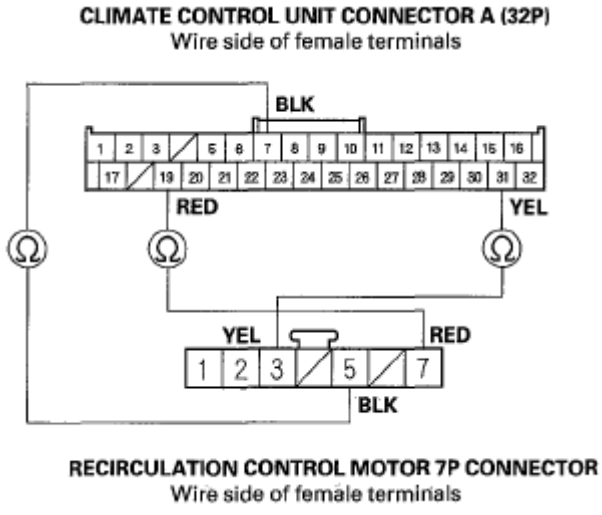


Fig. 479: Identifying ATF Pump Drive Gear, ATF Pump Driven Gear And ATF Pump Driven Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the main valve body.
5. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and normal operating direction.

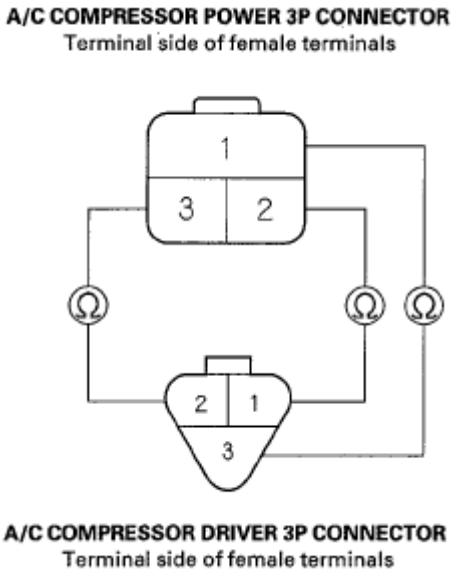


Fig. 480: Checking ATF Pump Drive Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the ATF pump drive gear and the ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
7. Make sure that the three check balls and the cooler check valve are in the main valve body, then install the cooler check valve spring in the cooler check valve.
8. Install the ATF joint pipes between the main valve body and the torque converter housing.
9. Install the regulator separator plate and the two dowel pins on the main valve body.
10. Install a new O-ring on the stator shaft, and install the stator shaft and the stator shaft stop.
11. Install the regulator valve body (10 bolts).
12. Install the servo separator plate and the two dowel pins on the main valve body.
13. Install the servo body (13 bolts).
14. If the detent arm was removed, install the detent arm (A) with arm collar (B) on the servo body (C), and install a new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab (G) of the lock washer against the bolt head.

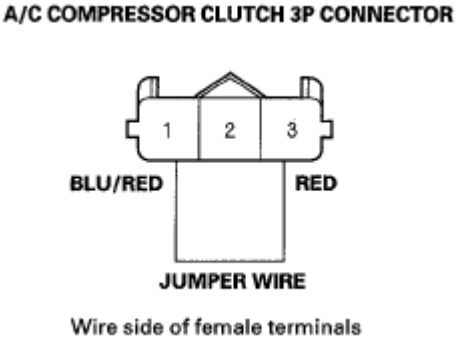


Fig. 481: Aligning Cutout With Projection Of Servo Body & Bolt w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the selector control shaft (A) in the torque converter housing while aligning the manual valve lever pin (B) on the selector control shaft with the guide of the manual valve (C).

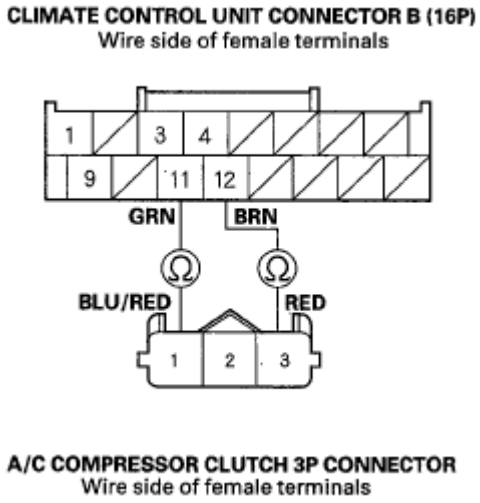


Fig. 482: Aligning Manual Valve Lever Pin On Selector Control Shaft With Guide Of Manual Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Hook the detent arm spring (A) to the detent arm (B).

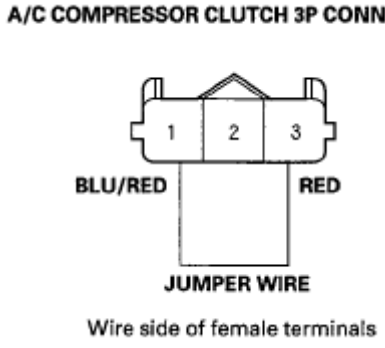


Fig. 483: Hooking Detent Arm Spring To Detent Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install a new O-ring on the ATF strainer, and install the ATF strainer (two bolts).
18. Install the 8 x 180.5 mm ATF feed pipe in the regulator valve body.
19. Install the 8 x 192.5 mm ATF feed pipe and the 8 x 180.5 mm ATF feed pipe in the servo body.

SHAFT ASSEMBLY AND HOUSING INSTALLATION

1. Install the spacer in the torque converter housing with the spacer tab into the guide of the torque converter housing. Do not mix-up the spacers from the transmission housing and the torque converter housing. Install the differential assembly in the torque converter housing, and put the spacer on the differential.

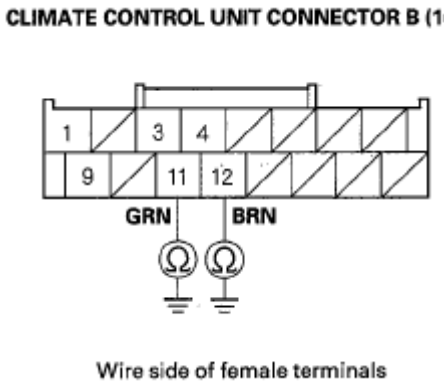


Fig. 484: Exploded View Of Shaft Assembly, Housing & Bolt Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the differential assembly securely in the torque converter housing so there is no clearance.
3. Install the 90 mm thrust shim in the transmission housing.
4. Assemble the mainshaft, the countershaft, and the secondary shaft.
   - Countershaft reverse selector hub is press-fitted type, go to step 5.
   - Countershaft reverse selector hub is not press-fitted type, go to step 6.
5. Join the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together, and install them in the torque converter housing.

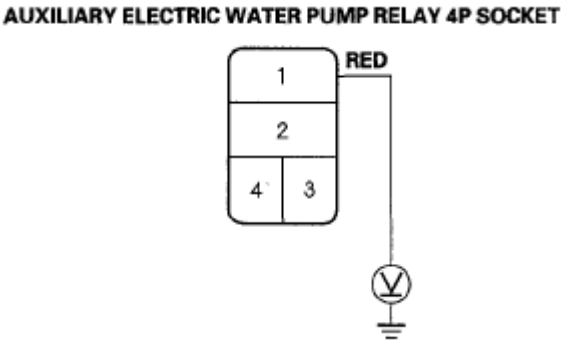


Fig. 485: Identifying Mainshaft Subassembly, Countershaft Subassembly And Secondary Shaft Subassembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Join the countershaft subassembly and the secondary shaft subassembly together, then install them in the torque converter housing, and install the mainshaft subassembly. Install the needle bearings, 4th-5th gear, and the reverse selector hub over the countershaft.
7. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the shift fork (D).

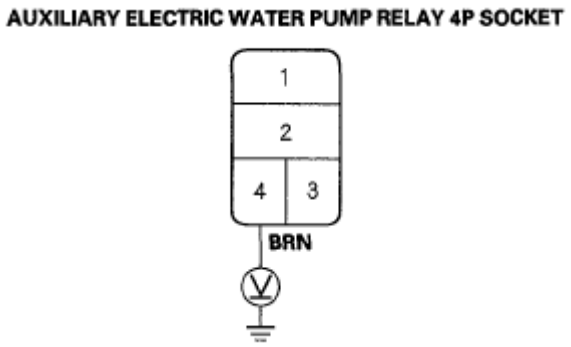


Fig. 486: Identifying Shift Fork Shaft, Shift Fork, Lock Washer & Bolt Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the shift fork and the reverse selector together on the shift fork shaft and the countershaft. Secure the shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.
9. Install the needle bearing and the countershaft reverse gear on the countershaft.
10. Install the reverse idler gear in the transmission housing (see **REVERSE IDLER GEAR INSTALLATION**).
11. Install the three dowel pins (A) and a new gasket (B) on the torque converter housing (C).

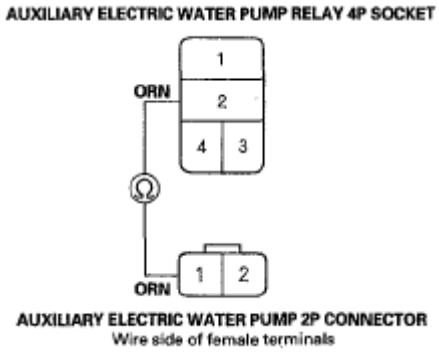


Fig. 487: Disassembling Torque Converter Housing & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Align the spring pin (D) of the control shaft (E) with the transmission housing groove (F) by turning the selector control shaft detent plate. Do not squeeze the end of the selector control shaft tips together when turning the shaft. If the tips are squeezed together, it will causes a faulty shift position signal or position due to the play between the selector control shaft and the switch.
13. Place the transmission housing (G) on the torque converter housing. Do not install the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor before installing the transmission housing on the torque converter housing.
14. Wrap a screwdriver tip with tape to prevent damage to the reverse idler gear teeth. Engage the reverse idler gear with the reverse gears by rotating the idler gear using the screwdriver.

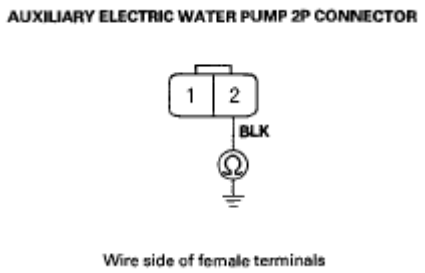


Fig. 488: Engaging Reverse Idler Gear With Reverse Gears
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the transmission housing mounting bolts, and tighten the 19 bolts to 44 N.m (4.5 kgf.m, 33 lbf.ft) in two or more steps in a crisscross pattern.
16. Install the shift solenoid harness connector (E) in the transmission housing with a new O-ring (F).

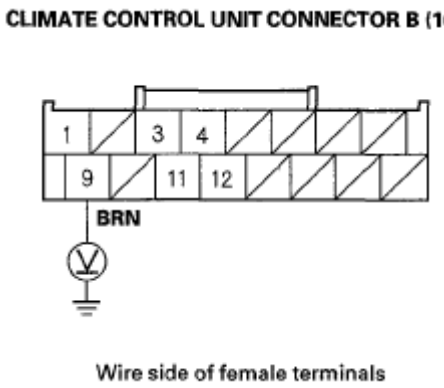


Fig. 489: Identifying Shift Solenoid Harness Connector, Transmission Housing, O-Ring & Bolt Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Connect WHT harnesses and ORN harness connector to shift solenoid valve B. ATF temperature sensor is assembled in the connector with WHT harnesses.
18. Connect the shift solenoid harness connectors:
    - BLU wire to shift solenoid valve A.
    - GRN wire to shift solenoid valve C.
    - YEL wire to shift solenoid valve D.
19. Install the shift solenoid valve cover (A), the two dowel pins (B), a new gasket (C), and the harness clamp bracket (D).

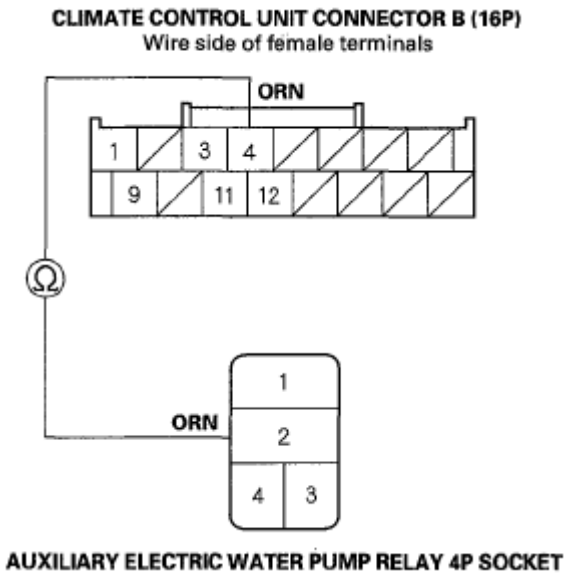


Fig. 490: Identifying Shift Solenoid Valve Cover, Dowel Pins, Gasket, Harness Clamp Bracket & Bolt Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

END COVER INSTALLATION

Special Tools Required

- Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100
- Gear installer set 070AC-XFD0100

1. Install the mainshaft holder onto the mainshaft.

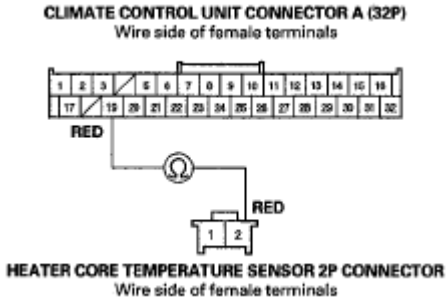


Fig. 491: Identifying Mainshaft Holder Onto Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Lubricate the following parts with ATF:
   - Splines and threads of the mainshaft.
   - Splines of the mainshaft idler gear.
   - Old conical spring washer and old locknut.
3. Install the mainshaft idler gear (A), the old conical spring washer (B), and the old locknut (C) on the mainshaft (D), and tighten the locknut to 216 N.m (22.0 kgf.m, 159 lbf.ft).

NOTE:

- **Do not tap the idler gear to install.**
- **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**

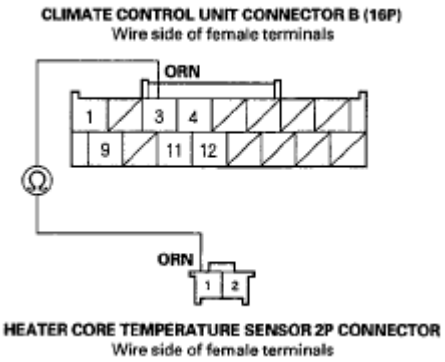


Fig. 492: Identifying Mainshaft Idler Gear, Old Conical Spring Washer, Old Locknut And Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Lubricate the following parts with ATF:
   - Splines and threads of the secondary shaft and the idler gear shaft.
   - Splines of the secondary shaft idler gear.
   - Old conical spring washer and old locknut.
5. Install the secondary shaft idler gear (A) on the secondary shaft (B), and install the idler gear shaft idler gear (C) on the idler gear shaft (D).

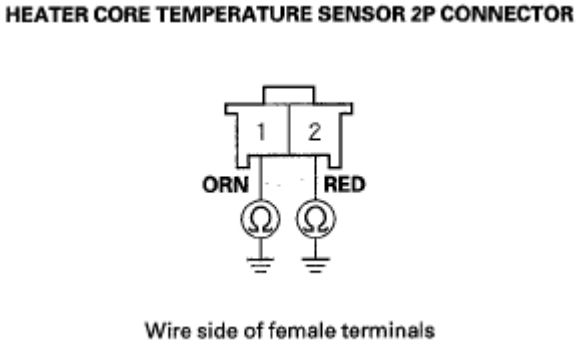


Fig. 493: Identifying Secondary Shaft Idler Gear, Secondary Shaft, Idler Gear Shaft Idler Gear And Idler Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Set the gear installer set on the idler gear shaft and the idler gear, and tighten the installer nut to install the idler gear part-way.

NOTE: **The installer nut has left-hand threads.**

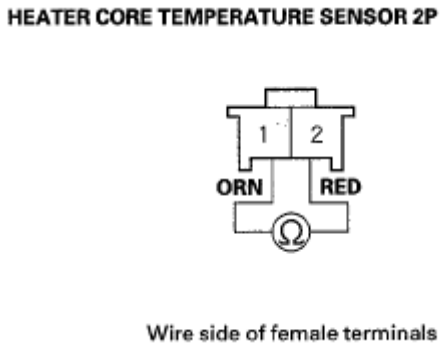


Fig. 494: Tightening Installer Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the old conical spring washer (A) and the old locknut (B) on the secondary shaft (C), and tighten the locknut to 226 N.m (23.0 kgf.m, 166 lbf.ft).

NOTE:

- **Do not tap the idler gear to install.**
- **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**
- **Secondary shaft locknut has left-hand threads.**

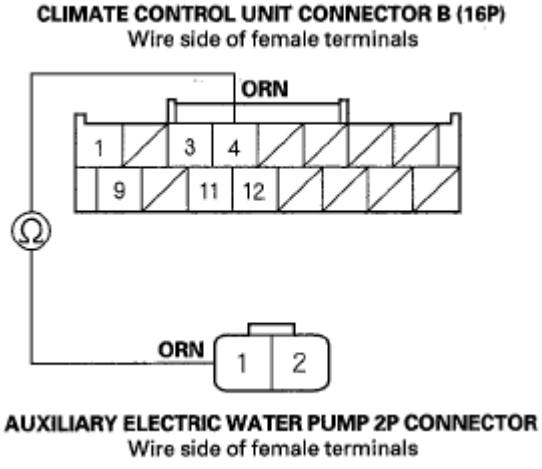


Fig. 495: Identifying Conical Spring Washer, Locknut And Secondary Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Retighten the installer nut to seat the idler gear in the idler gear shaft until it stops. Remove the gear installer set from the idler gear shaft.

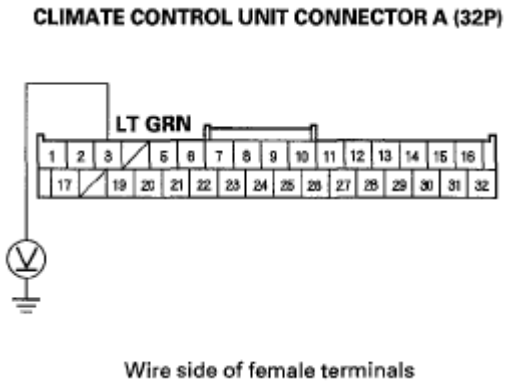


Fig. 496: Tightening Installer Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install a new snap ring (A) on the idler gear shaft (B), and check that the snap ring is seated securely into the groove.

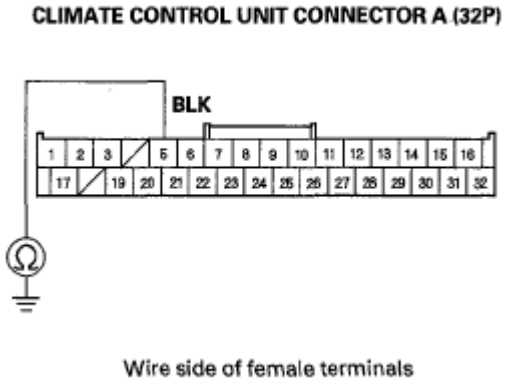


Fig. 497: Identifying Snap Ring And Idler Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the park lever (A) and the park lever stop (B) on the selector control shaft (C), then install the lock bolt and a new lock washer (D). Do not bend the lock tab of the lock washer until step 23.

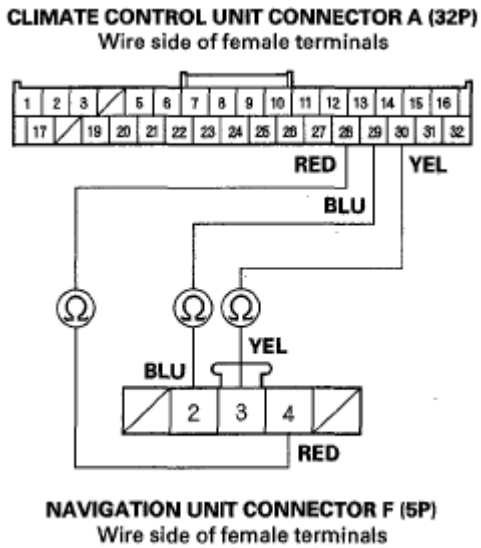


Fig. 498: Identifying Park Lever, Park Lever Stop, Selector Control Shaft & Screw w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install the park pawl shaft (E), the park pawl spring (F), the park pawl (G), and the stop shaft (H) on the transmission housing.
12. Lubricate the following parts with ATF:
    - Threads and splines of the countershaft.
    - Old conical spring washer and old locknut.
    - Areas where the park gear contacts the conical spring washer.
13. Install the park gear (I), the old conical spring washer (J), and the old locknut (K) on the countershaft.
14. Lift the park pawl up, and engage it with the park gear, then tighten the locknut to 226 N.m (23.0kgf.m, 166 lbf.ft).

NOTE:
- **Do not tap the park gear to install.**
- **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**
- **Countershaft locknut has left-hand threads.**

15. Remove the locknuts and the conical spring washers from the mainshaft, the countershaft, and the secondary shaft.
16. Lubricate the threads of the shafts, the new locknuts and the new conical spring washers with ATF.
17. Install new conical spring washers (A) (B) with facing stamped mark side up in the direction shown, and install a new mainshaft locknut (C), a new countershaft locknut (D), and a new secondary shaft locknut (E).

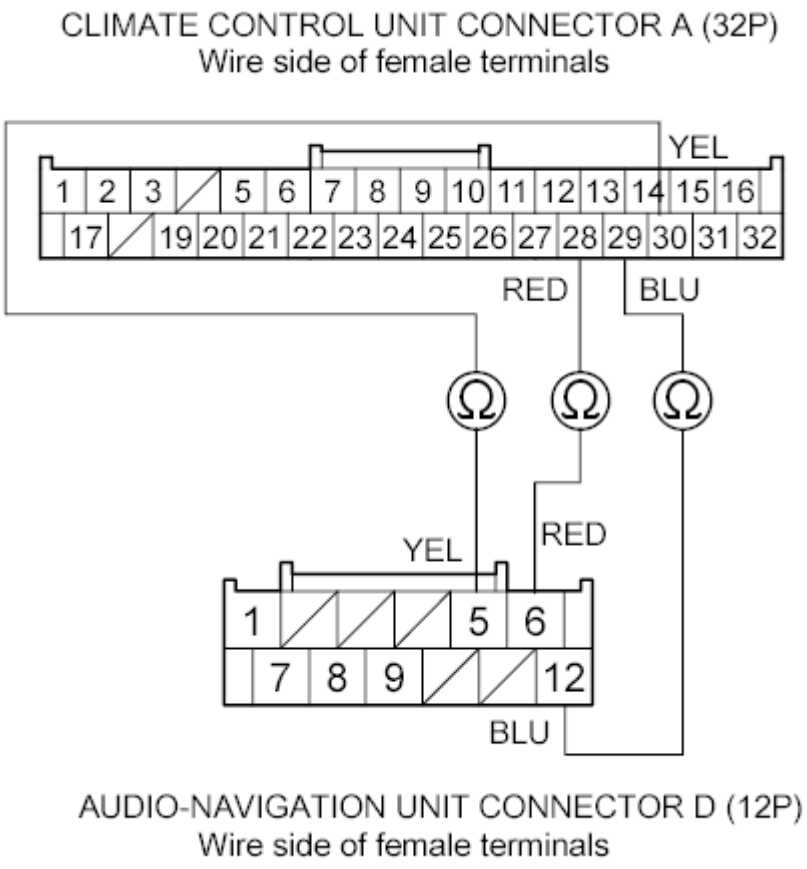


Fig. 499: Identifying Conical Spring Washers, Mainshaft Locknut And Countershaft Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Tighten the countershaft locknut and the secondary shaft locknut to 167 N.m (17.0 kgf.m, 123 lbf.ft), and tighten the mainshaft locknut to 155 N.m (15.8 kgf.m, 114 lbf.ft).

NOTE:

- **Be sure to install the conical spring washers in the direction shown.**
- **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**
- **Countershaft and secondary shaft locknuts have left-hand threads.**

19. Remove the mainshaft holder from the mainshaft.
20. Stake the locknuts into the shafts to a depth (A) of 0.7-1.3 mm (0.03-0.05 in.) using a 3.5 mm punch (B).

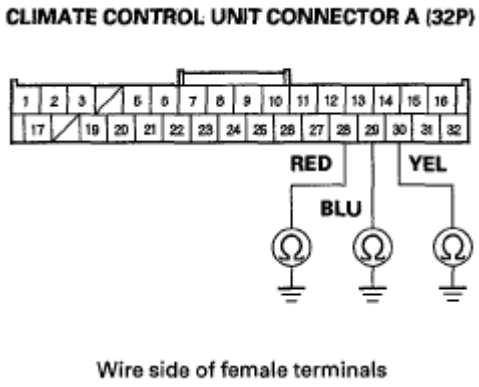


Fig. 500: Staking Locknuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Set the park pawl (A) in the P position, then check that the park pawl engages with the park gear (B).

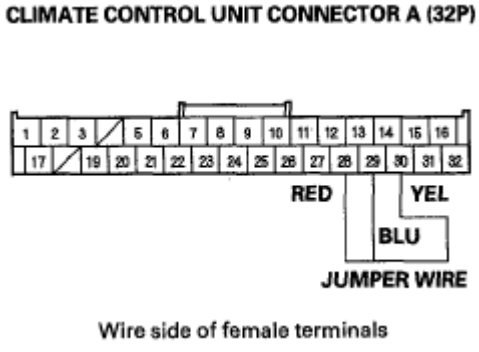


Fig. 501: Identifying Distance Between Park Pawl Shaft, Extension Line & Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. If the park pawl does not engage fully, check the distance (C) between the park pawl shaft and the extension line connected centers of the park lever roller pin and the selector control shaft (see **PARK LEVER STOP INSPECTION AND ADJUSTMENT**).
23. Tighten the lock bolt (D), and bend the lock tab of the lock washer (E) against the bolt head.
24. Install the ATF lubrication pipe (A) into the idler gear shaft (B).

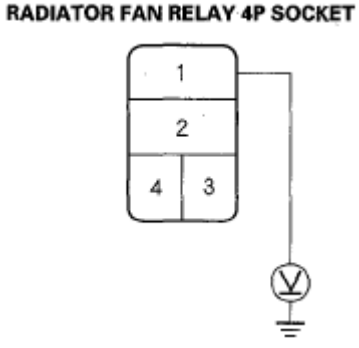


Fig. 502: Identifying ATF Lubrication Pipe, Idler Gear Shaft, Gasket, Dowel Pins & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install a new gasket (C) on the transmission housing, and install the two dowel pins (D) and new O-rings (E) over the top of the ATF feed pipes (F).
26. Install the end cover (G), and tighten the 17 bolts.
27. Set the selector control shaft (A) to the N position by turning the selector control shaft on the torque converter side.

NOTE: Do not squeeze the end of the selector control shaft tips together when turning the shaft. If the selector control shaft tips are squeezed together it will cause a faulty signal or position due to play between the selector control shaft and the transmission range switch.

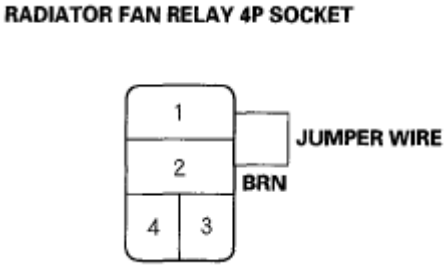


Fig. 503: Setting Selector Control Shaft To N Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.

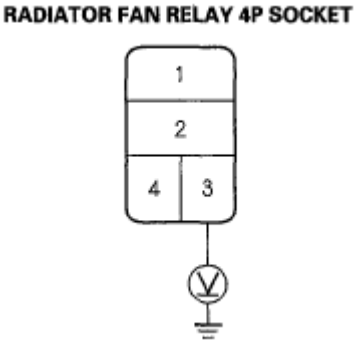


Fig. 504: Aligning Cutouts On Rotary-Frame With Neutral Positioning Cutouts On Transmission Range Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in.) blade (C).

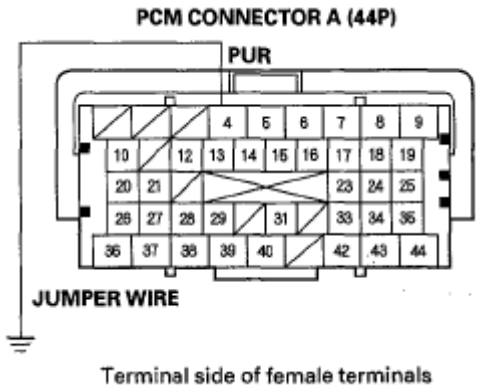


Fig. 505: Holding N Position With Blade
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Tighten the bolts on the transmission range switch while you continue to hold it in the N position. Do not move the transmission range switch while tightening the bolts. Remove the feeler gauge.

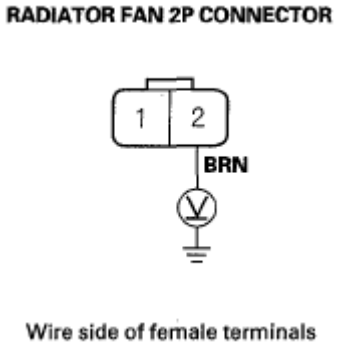


Fig. 506: Tightening Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Install the harness clamp bracket (A) on the end cover (B).

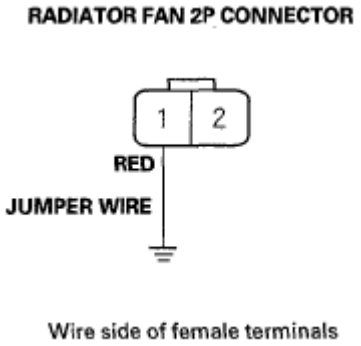


Fig. 507: Identifying Transmission Range Switch Cover, Harness Clamp Bracket, Cover & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Connect the transmission range switch connector (C) securely, then install the harness clamps (D) on the clamp bracket.
33. Install the transmission range switch cover (E).

34. Install a new O-ring (A) on the input shaft (mainshaft) speed sensor (B), then install the input shaft (mainshaft) speed sensor.

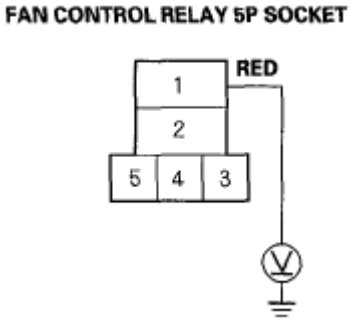


Fig. 508: Identifying Input Shaft (Mainshaft) Speed Sensor, O-Ring & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install a new O-ring (C) on the output shaft (countershaft) speed sensor (D), then install the output shaft (countershaft) speed sensor.
36. Install a new gasket (B) on the transmission housing, and install the ATF pipe (C) and the ATF joint pipes (D).

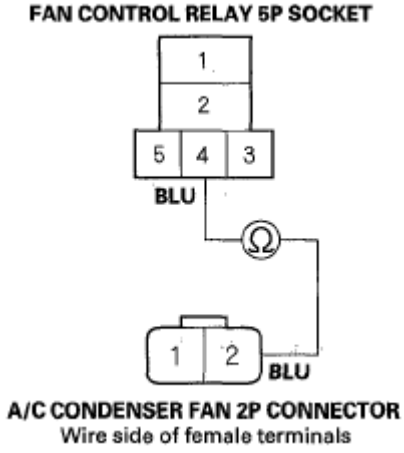


Fig. 509: Identifying ATF Pipe, ATF Joint Pipes, Gasket, O-Ring & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Install new O-rings (E) over the ATF joint pipes, and install A/T clutch pressure control solenoid valve A.
38. Install a new gasket (A) with facing the blue side to the transmission housing and the white side faces to the A/T clutch pressure control solenoid valve body.

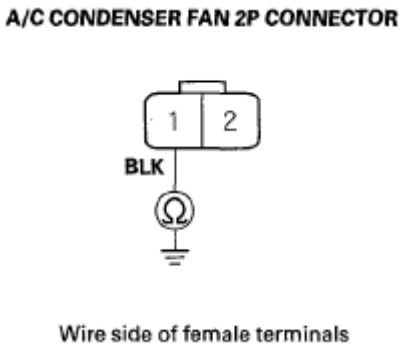


Fig. 510: Identifying ATF Pipe, ATF Joint Pipes, O-Ring & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Install the ATF pipe (D) and the ATF joint pipes (E), and install new O-rings (F) over the ATF joint pipes.
40. Install A/T clutch pressure control solenoid valves B and C.
41. Install the ATF warmer bracket.

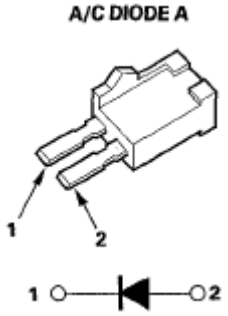


Fig. 511: Identifying ATF Warmer Bracket & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the ATF outlet line (A) on the torque converter housing, and secure it with the line bolt (B) and new sealing washers (C).

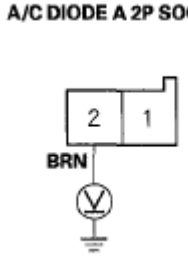


Fig. 512: Identifying ATF Outlet Line, Sealing Washers & Bolts w/ Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Secure the ATF outlet line with the bracket bolt.
44. Install the transmission hanger (A).

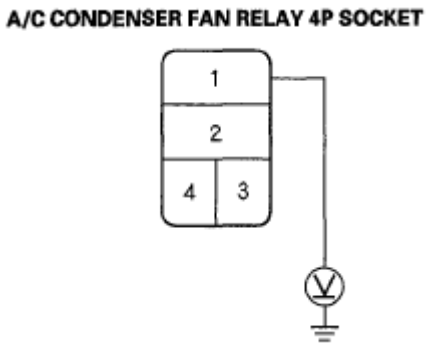


Fig. 513: Identifying Transmission Hanger, ATF Filter Bracket, Line Brackets & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Install the ATF filter bracket (B).
46. Install the ATF inlet line and the hose (C) on the torque converter housing, and secure it with the line bolt (D) and new sealing washers (E).
47. Put the ATF filter (F) on its bracket, and secure with the bracket (G) and the bolt.
48. Secure the line brackets (H) with the bolts on the transmission hanger and the torque converter housing.
49. Install the breather cap on the breather pipe.
50. Install the ATF dipstick.

A/T DIFFERENTIAL

COMPONENT LOCATION INDEX

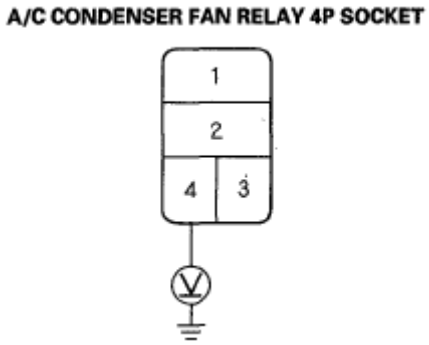


Fig. 514: Identifying A/T Differential Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BACKLASH INSPECTION

1. Install both axles into the differential, and place the axles on V-blocks (A).

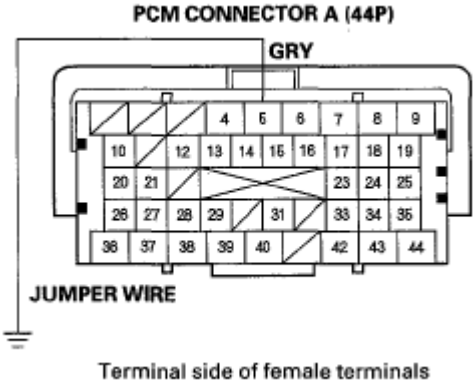


Fig. 515: Measuring Backlash Of Pinion Gears
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the backlash of the pinion gears (B) using a dial indicator (C).

   Standard: 0.05-0.15 mm (0.002-0.006 in.)

3. If the backlash is out of standard, replace the differential carrier (see **DIFFERENTIAL CARRIER AND FINAL DRIVEN GEAR REPLACEMENT**).

DIFFERENTIAL CARRIER AND FINAL DRIVEN GEAR REPLACEMENT

1. Remove the final driven gear (A) from the differential carrier (B). The final driven gear bolts have left-hand threads.

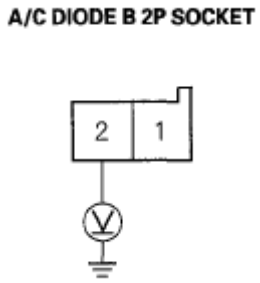


Fig. 516: Identifying Final Driven Gear, Differential Carrier & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new final driven gear on the differential carrier in the direction shown. Tighten the bolts to 101 N.m (10.3 kgf.m, 74.5 lbf.ft) in a crisscross pattern in two or more steps.

CARRIER BEARING REPLACEMENT

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

NOTE: Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

1. Place a collar (A) on the differential carrier, and remove the carrier bearing (B) using the commercially available bearing puller (C).

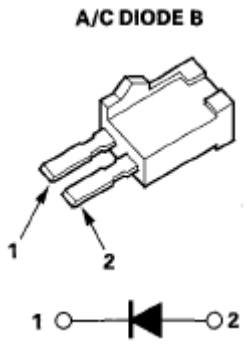


Fig. 517: Removing Carrier Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install a new bearing using the 40 mm I.D. driver and a press. Press the bearing on until it bottoms.

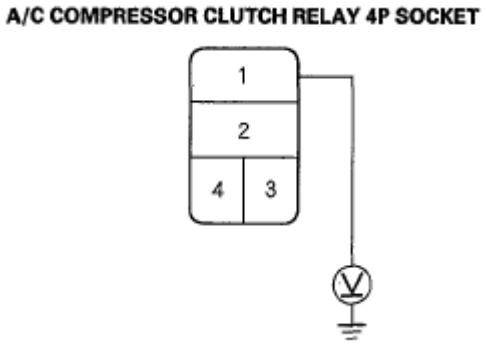


Fig. 518: Pressing Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 07JAD-PH80101

1. Remove the oil seal from the transmission housing.

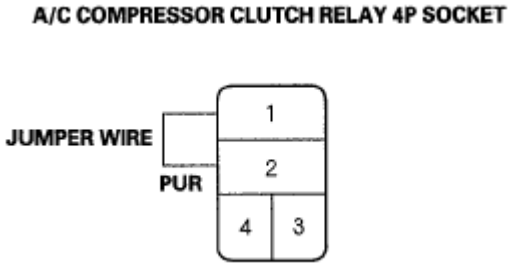


Fig. 519: Identifying Oil Seal From Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal from the torque converter housing.

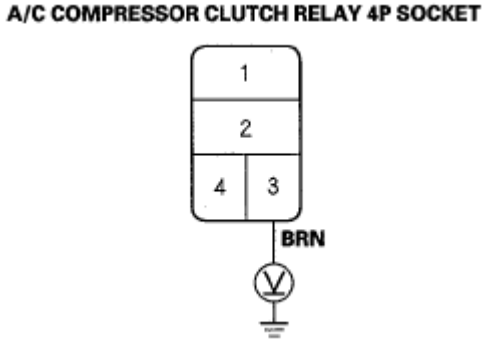


Fig. 520: Identifying Oil Seal From Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install a new oil seal flush with the transmission housing using the driver and the oil seal driver

attachment.

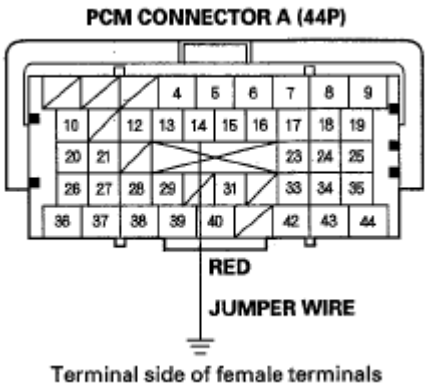


Fig. 521: Identifying Oil Seal Flush With Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install a new oil seal in the torque converter housing using the driver and the oil seal driver attachment.

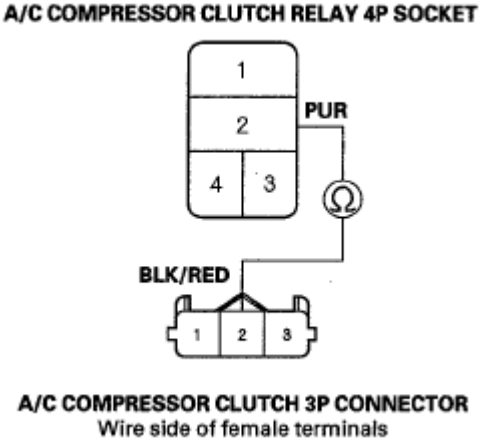


Fig. 522: Identifying Oil Seal In Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CARRIER BEARING SIDE CLEARANCE INSPECTION

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

1. Install the spacer (A) in the torque converter housing with the spacer tab (B) into the guide. Do not install the spacers mix-up in the transmission housing and the torque converter housing.

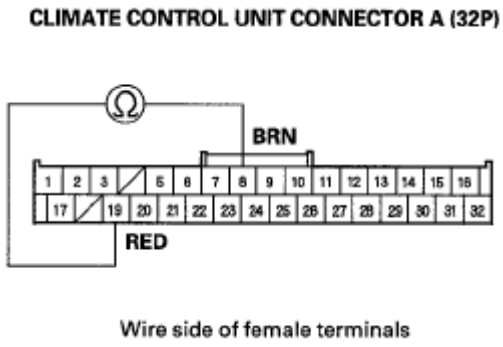


Fig. 523: Identifying Differential Assembly, Spacer And Spacer Tab
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the differential assembly (C) in the torque converter housing, and put the spacer (D) on the differential.
3. Install the differential assembly securely using the 40 mm I.D. driver and the 30 mm I.D. attachment in the torque converter housing, so there is no clearance between the bearing, the spacer, and the torque converter housing.

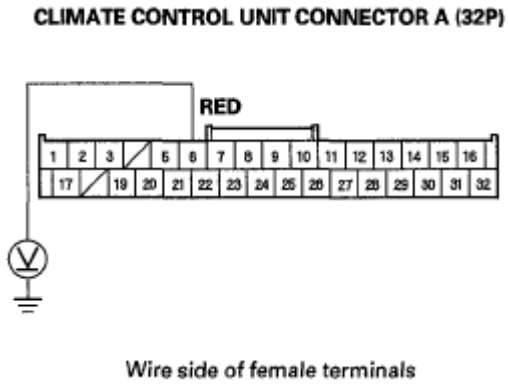


Fig. 524: Identifying Differential Assembly In Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the 90 mm thrust shim (A) in the transmission housing (B).

   If you replace the 90 mm thrust shim with a new one, use the same thickness as the old one.

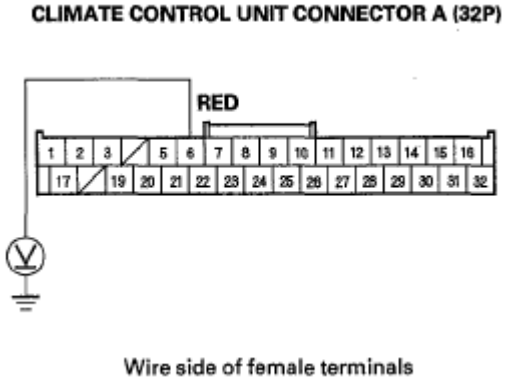


Fig. 525: Installing Thrust Shim

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the control shaft with the detent plate (D).

NOTE: Do not squeeze the end of the selector control shaft tips together when turning the control shaft.

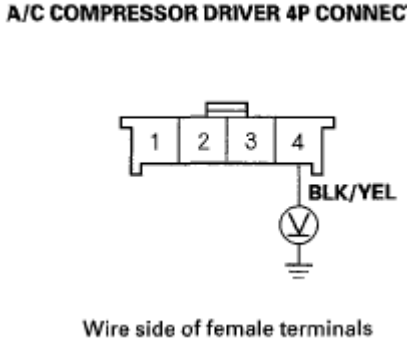


Fig. 526: Disassembling Torque Converter Housing & Bolts w/Torque Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the gasket (E) and the three dowel pins (F) on the torque converter housing (G).
7. Place the transmission housing (H), and install the mounting bolts (19 bolts). Tighten the bolts to 44 N.m (4.5 kgf.m, 33 lbf.ft) in a crisscross pattern in two or more steps.
8. Measure the clearance between the 90 mm thrust shim and the spacer using a feeler gauge.

Standard: 0-0.07 mm (0-0.003 in.)

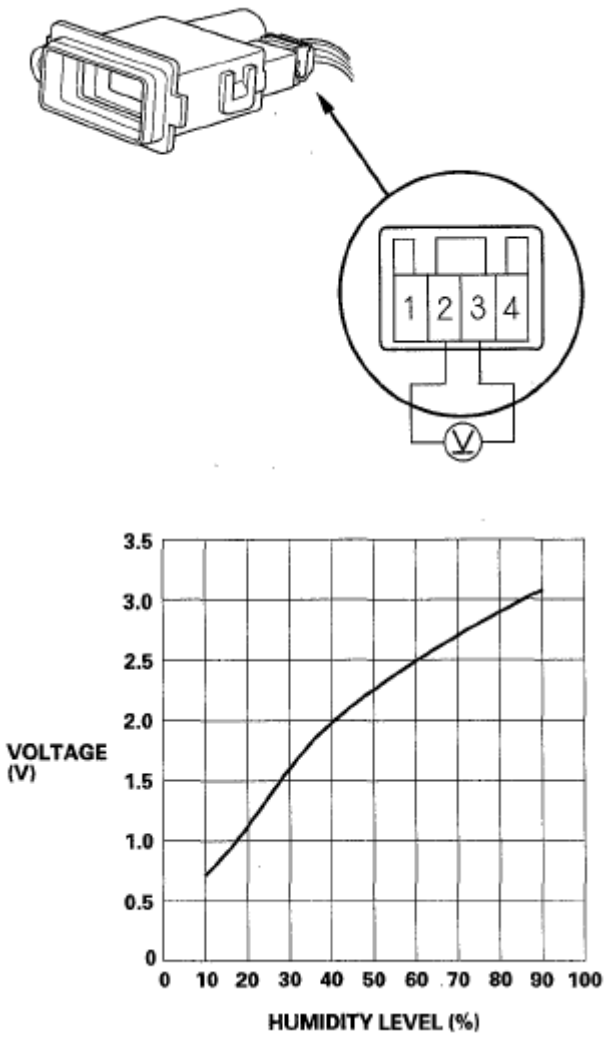


Fig. 527: Measuring Clearance Between Thrust Shim And Spacer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If the clearance is out of standard, remove the 90 mm thrust shim, and measure its thickness.
10. Select and install a new thrust shim. Recheck the clearance and make sure it is within the standard.

THRUST SHIM, 90 mm

THRUST SHIM THICKNESS SPECIFICATION

No.	Part Number	Thickness
A	41441-RPC-000	1.30 mm (0.051 in.)
B	41442-RPC-000	1.35 mm (0.053 in.)
C	41443-RPC-000	1.40 mm (0.055 in.)
D	41444-RPC-000	1.45 mm (0.057 in.)
E	41445-RPC-000	1.50 mm (0.059 in.)
F	41446-RPC-000	1.55 mm (0.061 in.)
G	41447-RPC-000	1.60 mm (0.063 in.)
H	41448-RPC-000	1.65 mm (0.065 in.)
I	41449-RPC-000	1.70 mm (0.067 in.)

J	41450-RPC-000	1.75 mm (0.069 in.)
K	41451-RPC-000	1.80 mm (0.071 in.)
L	41452-RPC-000	1.85 mm (0.073 in.)
M	41453-RPC-000	1.90 mm (0.075 in.)
N	41454-RPC-000	1.95 mm (0.077 in.)
O	41455-RPC-000	2.00 mm (0.079 in.)
P	41456-RPC-000	2.05 mm (0.081 in.)
Q	41457-RPC-000	2.10 mm (0.083 in.)
R	41458-RPC-000	2.15 mm (0.085 in.)
S	41459-RPC-000	2.20 mm (0.087 in.)
T	41460-RPC-000	2.25 mm (0.089 in.)
U	41461-RPC-000	2.30 mm (0.091 in.)
V	41462-RPC-000	2.35 mm (0.093 in.)
W	41463-RPC-000	2.40 mm (0.095 in.)

2006-08 TRANSMISSION

Clutch - Civic (All Except Si)

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07JAF-PM7011A	Clutch Alignment Disc	1
②	07LAB-PV00100 or 07924-PD20003	Ring Gear Holder	1
③	07LAF-PT00110	Clutch Alignment Shaft	1
④	07ZAF-PR8A100	Clutch Alignment Shaft	1
⑤	07936-KC10500	Bearing Remover Shaft	1
⑥	07741-0010201	Sliding Hammer Weight	1
⑦	07746-0010800	Attachment, 22 x 24 mm	1
⑧	07749-0010000	Driver	1
⑨	07936-3710100	Remover Handle	1

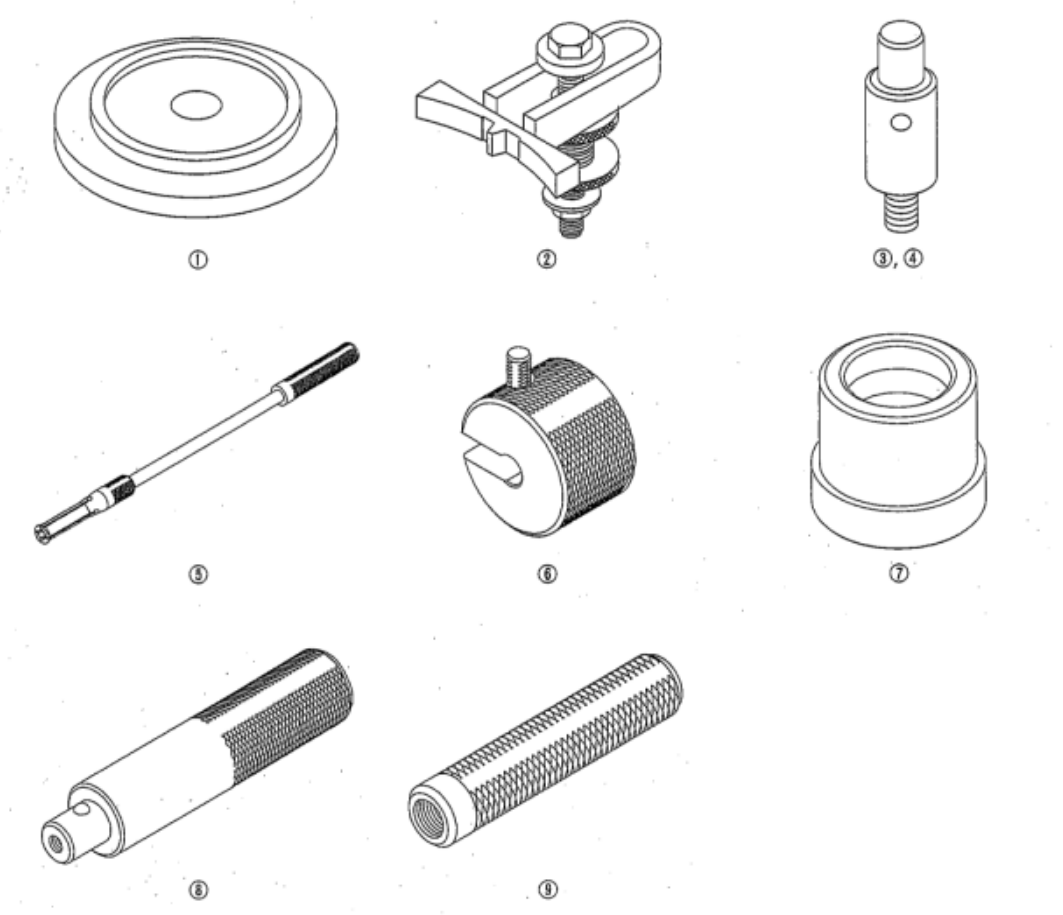


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

5-SPEED MODEL

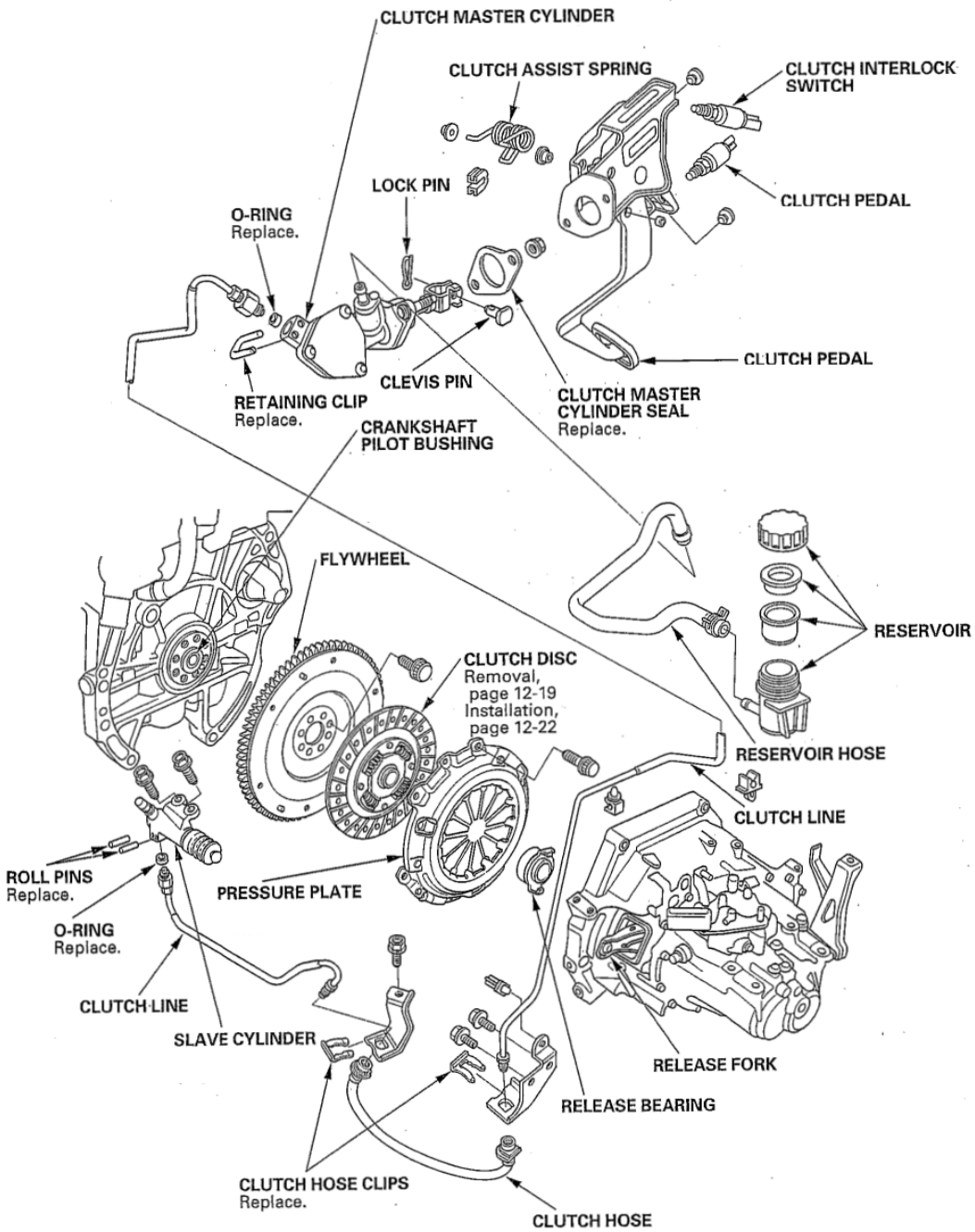


Fig. 2: Identifying Clutch Component Location - 5-Speed Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6-SPEED MODEL

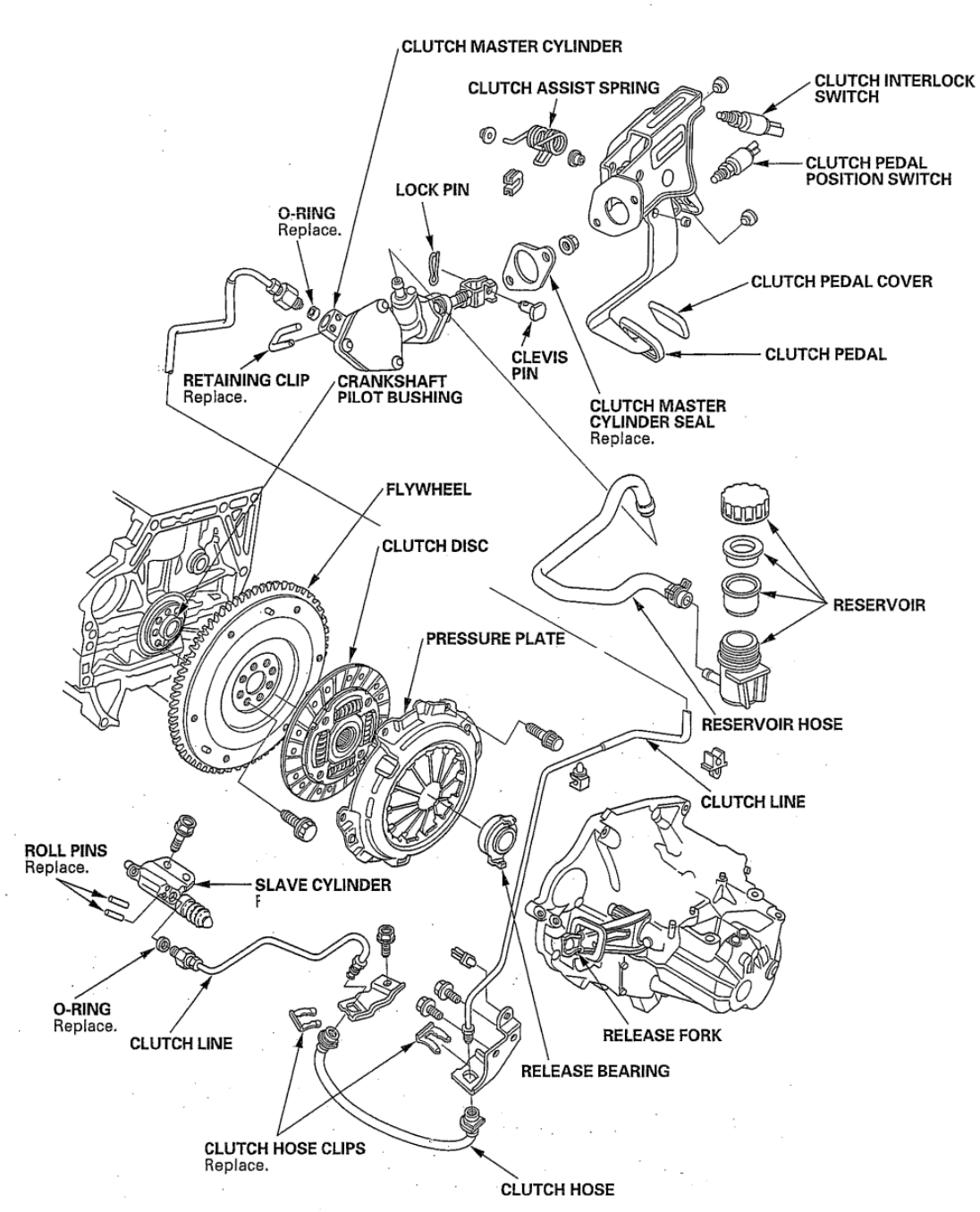


Fig. 3: Identifying Clutch Component Location - 6-Speed Model
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM DESCRIPTION

6-SPEED MODEL

Delay Orifice Mechanism

Function

The delay orifice mechanism improves clutch operation by delaying the slave cylinder release speed when

the clutch pedal is suddenly released. The delay orifice mechanism is built into the slave cylinder.

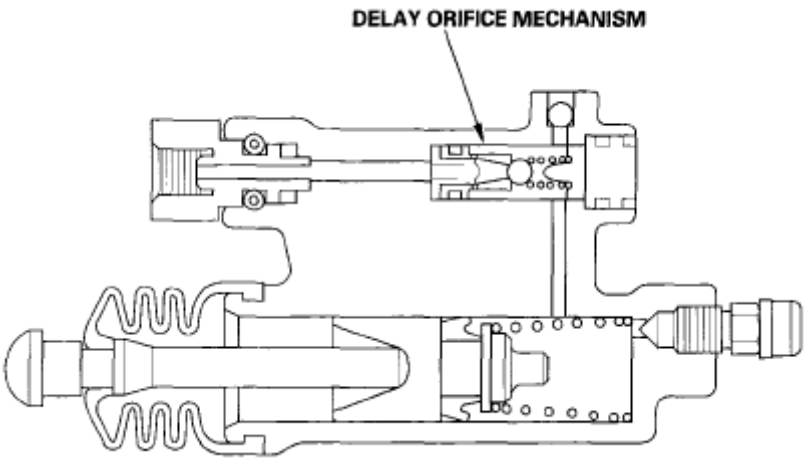


Fig. 4: Identifying Delay Orifice Mechanism Operation
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Operation

When the clutch pedal is pressed, the fluid pressure from the master cylinder moves the one-way valve in the direction shown in the illustration. The fluid flows through two passages: the orifice part and the filter part. It then flows out to the slave cylinder to release the pressure plate and clutch disc joint.

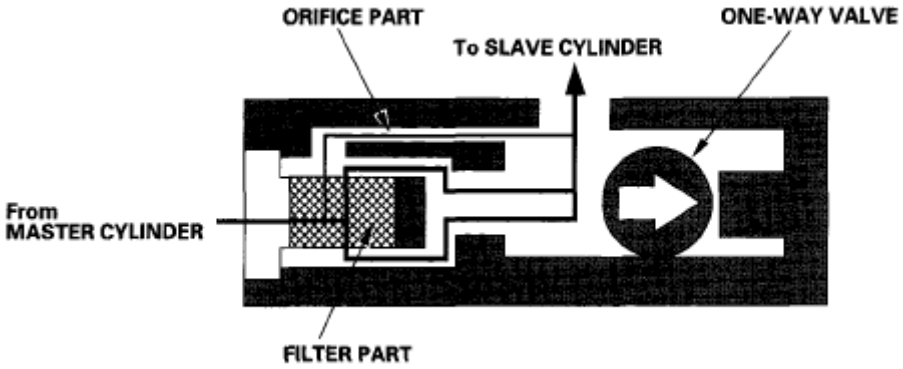


Fig. 5: Master Cylinder Moves One-Way Valve In Direction
Courtesy of AMERICAN HONDA MOTOR CO., INC.

When the clutch pedal is released, the fluid pressure from the slave cylinder moves the one-way valve in the direction shown in the illustration. The one-way valve blocks the filter-part passage and delays the clutch release speed by returning the fluid to the master cylinder through only the orifice-part passage.

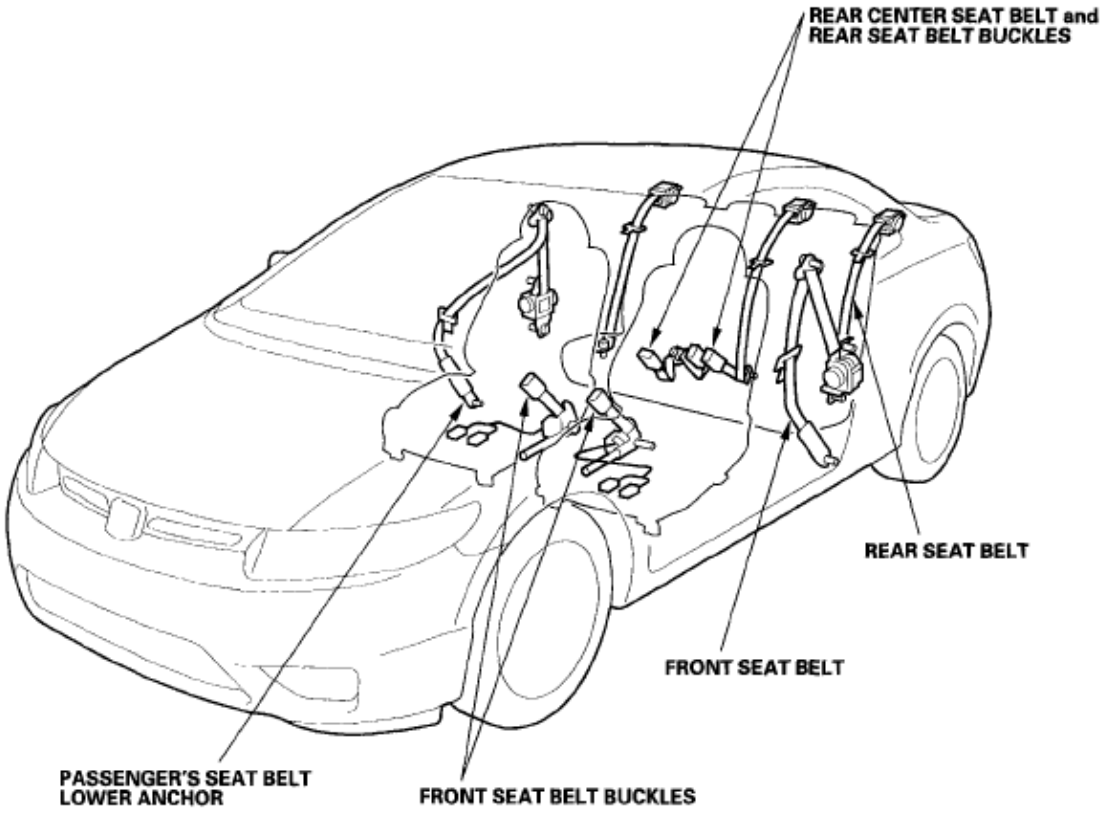


Fig. 6: Cylinder Moves One-Way Valve In Direction
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH HYDRAULIC SYSTEM BLEEDING

NOTE:

- **Do not reuse the drained fluid. Always use Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.**
- **Do not mix different brands of brake fluid; they may not be compatible.**
- **Make sure dirt or other foreign matter is not allowed to contaminate the brake fluid.**
- **Do not spill brake fluid on the vehicle it may damage the paint. If brake fluid does contact the paint, wash it off immediately with water.**
- **It may be necessary to limit the movement of the release for with a block of wood to remove all the air from the system.**
- **Use fender covers to avoid damaging painted surfaces.**

1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).

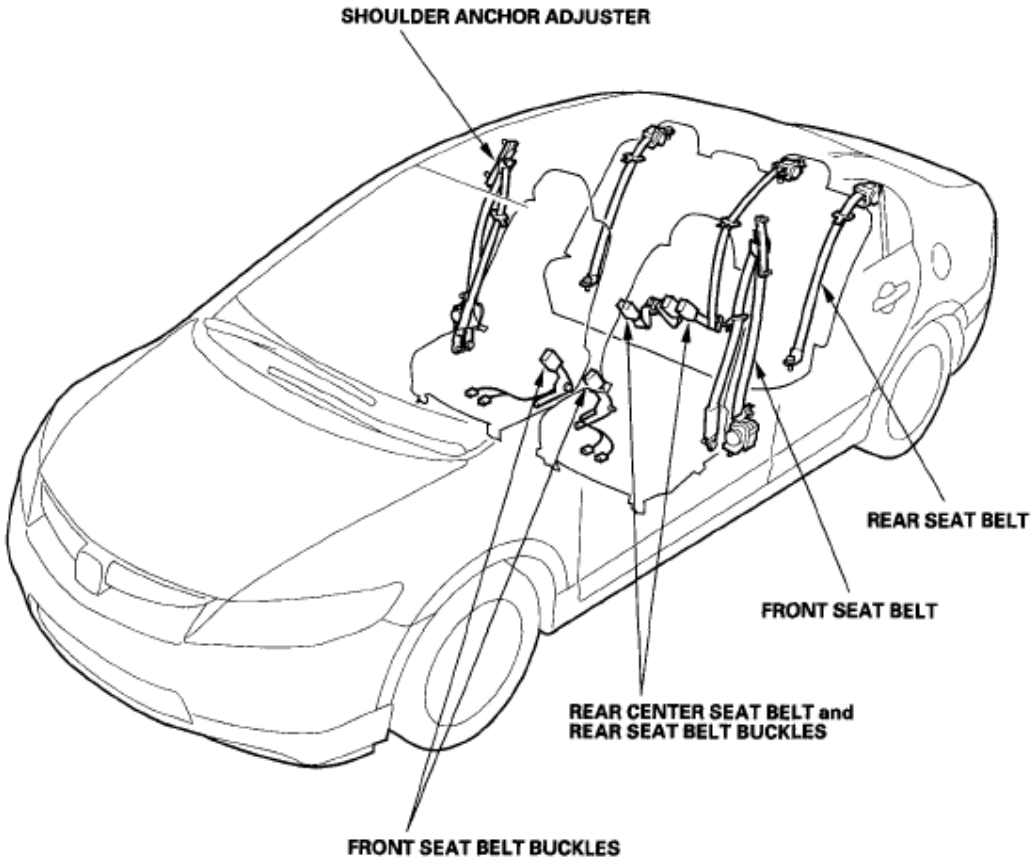


Fig. 7: Identifying Brake Fluid In Reservoir To MAX (Upper) Level
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Attack the one end of the clear tube to the bleeder screw (A), and the other end to the container of brake fluid. Loosen the bleeder screw to allow air to escape from the system.

5-speed model

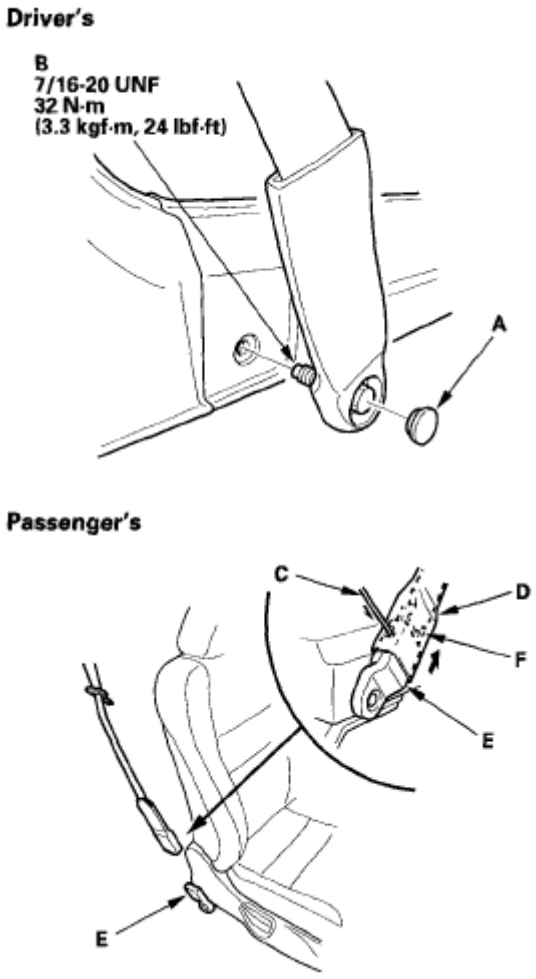


Fig. 8: Identifying Bleeder Screw - Torque Specifications (5-Speed Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6-speed model

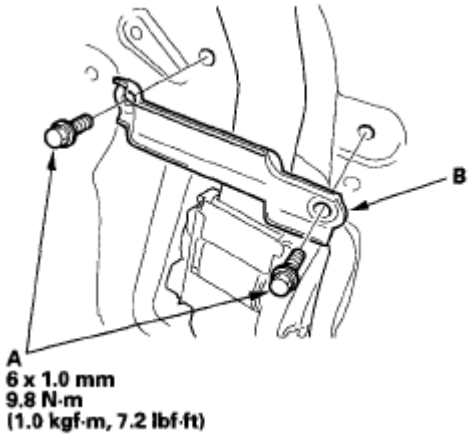


Fig. 9: Identifying Bleeder Screw - Torque Specifications (6-Speed Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure there is an adequate supply of fluid in the reservoir, then slowly pump the clutch pedal until no more bubbles appear in the clear tube.

4. Tighten the bleeder screw securely.
5. Refill the brake fluid in the reservoir to the MAX (upper) level line.

CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT

NOTE:

- **Check the clutch pedal position switch; 5-speed model (see CLUTCH PEDAL POSITION SWITCH TEST), 6-speed model (see CLUTCH PEDAL POSITION SWITCH TEST).**
- **Check the clutch interlock switch; 5-speed model (see CLUTCH INTERLOCK SWITCH TEST), 6-speed model (see CLUTCH INTERLOCK SWITCH TEST).**
- **The clutch is self-adjusting to compensate for wear.**
- **If there is no clearance between the master cylinder piston and pushrod, the release bearing will be held against the diaphragm spring, which can result in clutch slippage or other clutch problems.**

1. Lift up the carpet (A). At the insulator cutout, measure the pedal height from the right side of the pedal pad (B).

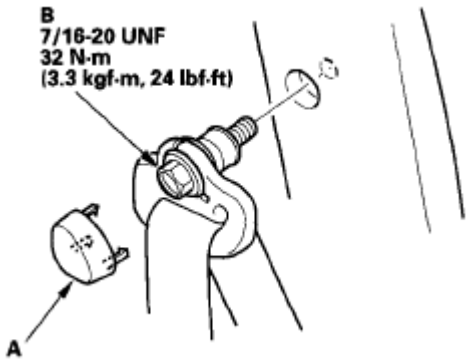


Fig. 10: Identifying Pedal Height From Right Side Of Pedal Pad
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Loosen the clutch pedal position switch locknut (A), and back off the clutch pedal position switch (B) until it no longer touches the clutch pedal (C).

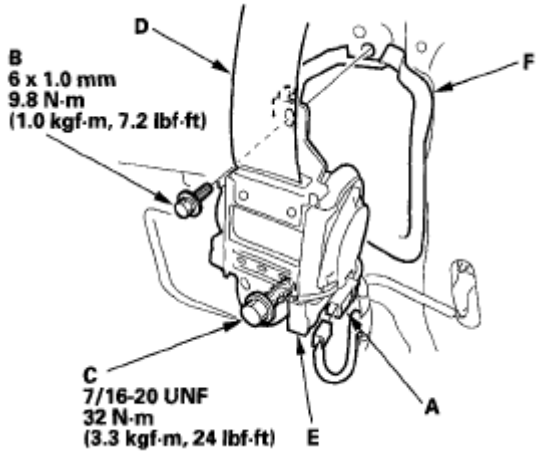


Fig. 11: Identifying Area Applying Grease (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Loosen the clutch pushrod locknut (D), and turn the pushrod (E) in or out to get the specified height (F), stroke (G), free play (H), and disengagement height (I) at the clutch pedal.

   Clutch Pedal Stroke: 130-140 mm (5.12-5.51 in.)

   Clutch Pedal Free

   Play: 10-18 mm (0.39-0.71 in.)

   Clutch Pedal Height: 157 mm (6.18 in.)

   Clutch Pedal

   Disengagement

   Height: 77 mm (3.03 in.)

4. Tighten the clutch pushrod locknut.
5. With the clutch pedal released, turn in the clutch pedal position switch until it contacts the clutch pedal.
6. Turn in the clutch pedal position switch an additional 3/4 to 1 turn.
7. Tighten the clutch pedal position switch locknut.
8. Loosen the clutch interlock switch locknut (J).
9. Press the clutch pedal to the floor.
10. Release the clutch pedal 9-12 mm (0.35-0.47 in.) from the fully pressed position, and hold it there. Adjust the position of the clutch interlock switch (K) so the engine will start with the clutch pedal in this position.
11. Tighten the clutch interlock switch locknut.
12. Check the clutch operation.

CLUTCH PEDAL ASSEMBLY REPLACEMENT

1. Disconnect the clutch pedal position switch connector (A) and clutch interlock switch connector (B).

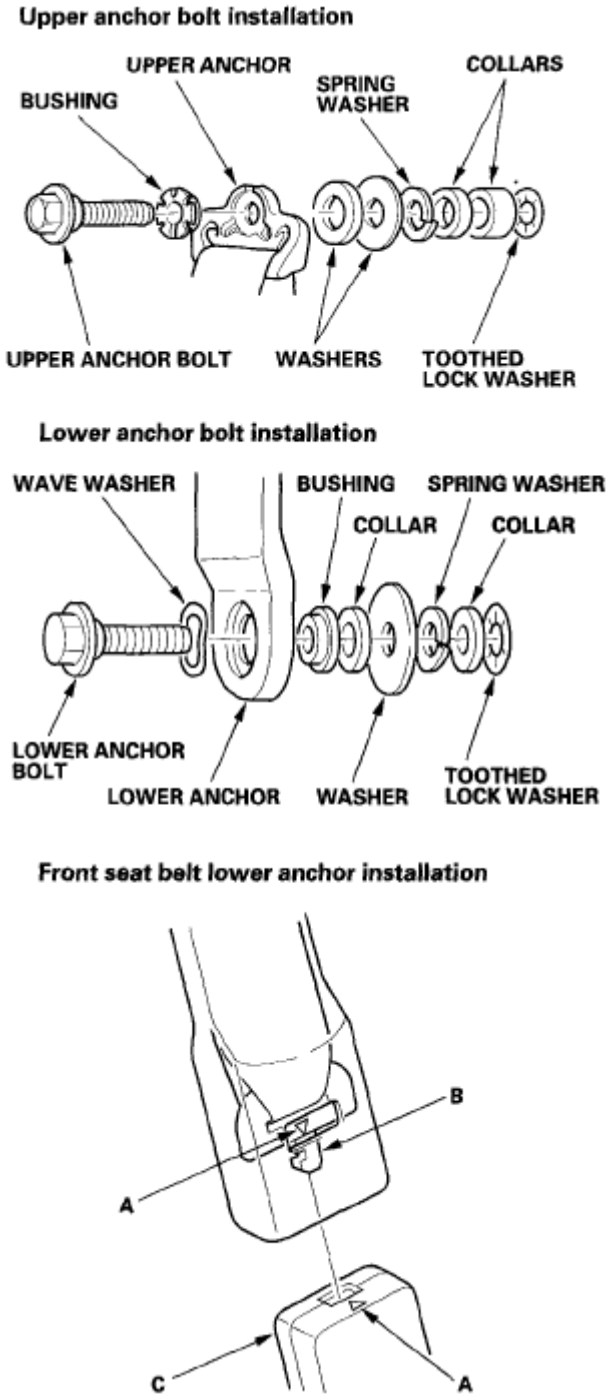


Fig. 12: Identifying Clutch Pedal Position Switch Connector And Clutch Interlock Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Pry out the lock pin (C), and pull the pedal pin (D) out of the yoke.
3. Remove the master cylinder mounting nuts (E) and clutch pedal mounting bolt (F).
4. Remove the clutch pedal (A).

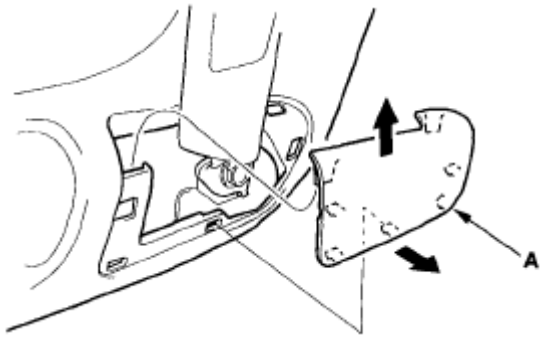


Fig. 13: Removing The Clutch Pedal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the clutch pedal (A).

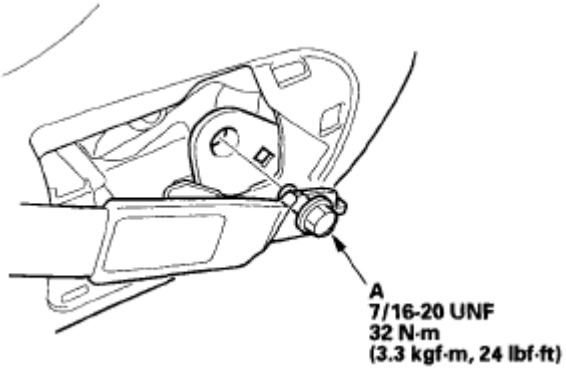


Fig. 14: Identifying Clutch Pedal Components (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the clutch pedal mounting bolt (B) and master cylinder mounting nuts (C).
7. Apply grease to the pedal pin (D), and slide it into the yoke, then install a new lock pin (E).
8. Connect the clutch pedal position switch connector (F) and clutch interlock switch connector (G).
9. Adjust the clutch pedal, clutch pedal position switch, and clutch interlock switch (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**).
10. Check the clutch operation.

CLUTCH MASTER CYLINDER REPLACEMENT

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid does contact the paint, wash it off immediately with water.**

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.
2. Make sure you have the anti-theft code for the audio unit or the navigation system, then write down the audio presets.
3. Disconnect the negative cable from the battery, then disconnect the positive cable.

4. Remove the battery.
5. Remove the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
6. Remove the air cleaner assembly; 5-speed model (see **THROTTLE BODY CLEANING**), 6-speed model (see **AIR CLEANER REMOVAL/INSTALLATION**)
7. Remove the battery base; 5-speed model (see step 6 on **TRANSMISSION REMOVAL**), 6-speed model (see step 6 on **TRANSMISSION REMOVAL**)
8. Pry out the lock pin (A), and pull the pedal pin (B) out of the yoke. Remove the master cylinder mounting nuts (C).

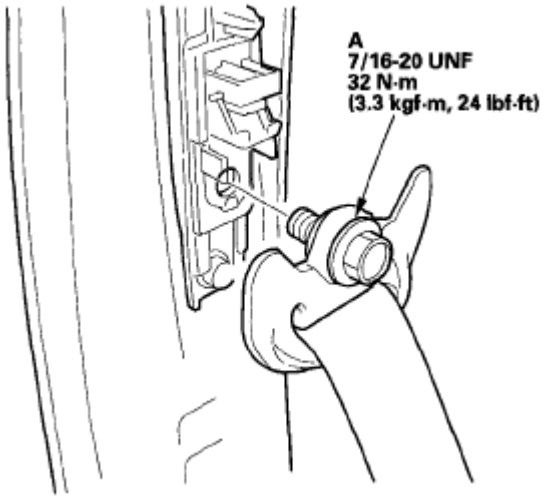


Fig. 15: Identifying Master Cylinder Mounting Nuts, Lock Pin And Pedal Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
10. Remove the clutch line bracket (A).

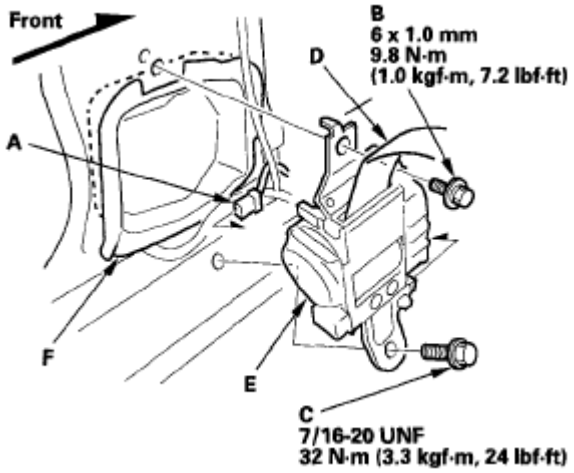


Fig. 16: Identifying Clutch Line Bracket And Clamps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the clutch line from the clamps (B).

12. Remove the clutch master cylinder (A) with the clutch line (B) and the reservoir hose (C).

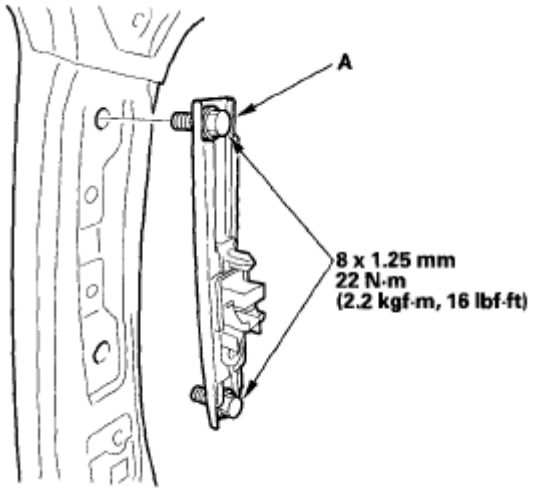


Fig. 17: Identifying Clutch Master Cylinder, Clutch Line And Reservoir Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Disconnect the reservoir hose (A), then remove the retaining clip (B), and the clutch line (C) from the clutch master cylinder (D). Plug or wrap the end of the reservoir hose and the clutch line with a shop towel to prevent brake fluid from coming out.

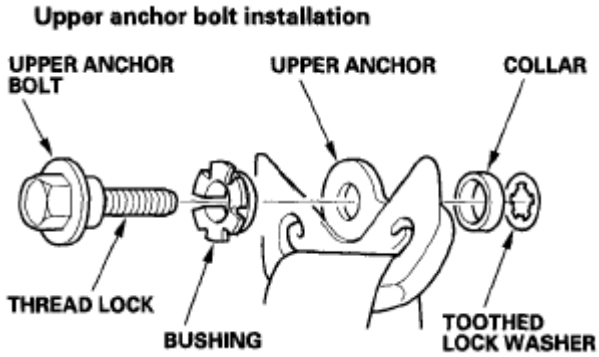


Fig. 18: Identifying Reservoir Hose, Retaining Clip And Clutch Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the O-ring (E) and clutch master cylinder seal (F) from the clutch master cylinder.
15. Install the new O-ring (A) and clutch master cylinder seal (B) to the clutch master cylinder (C).

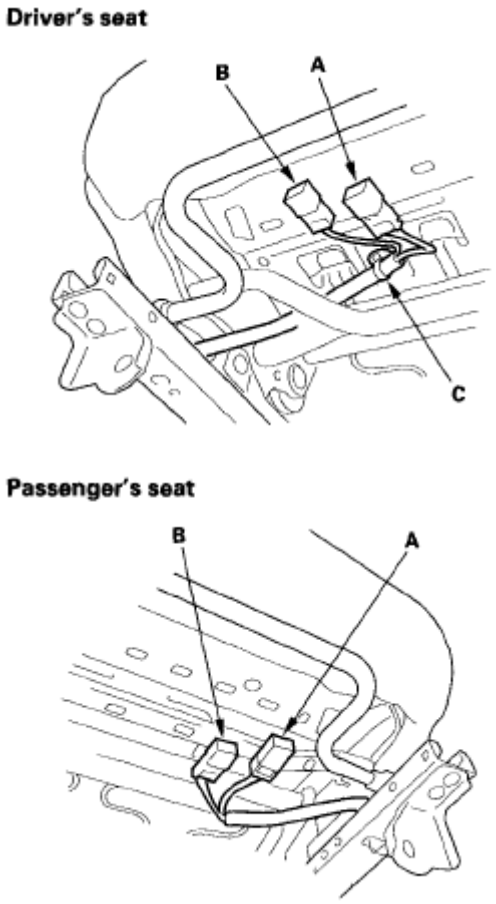


Fig. 19: Identifying Clutch Master Cylinder Seal And Clutch Master Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the clutch line (D), then install the new retaining clip (E). Connect the reservoir hose (F).
17. To prevent the retaining clip (A) from coming off, pry apart the tip of the retaining clip (B) with a screwdriver.

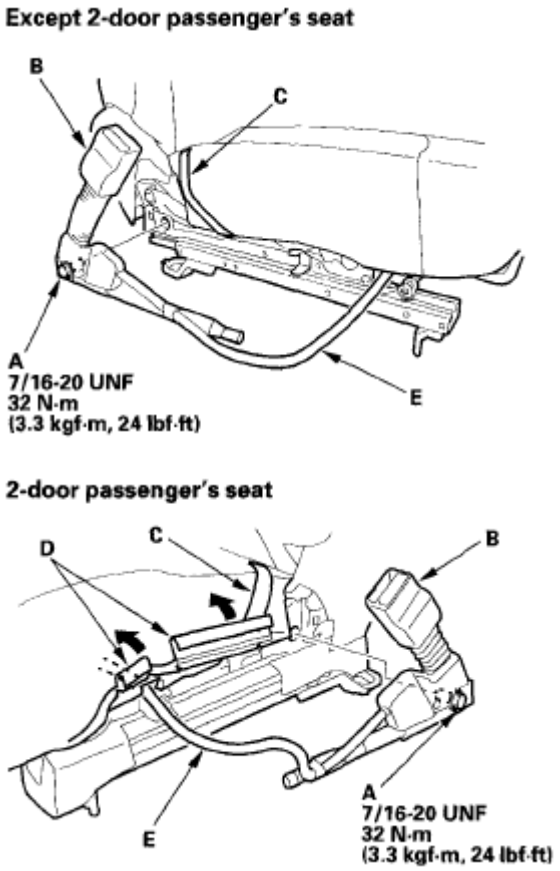


Fig. 20: Identifying Retaining Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the clutch master cylinder (A) with the clutch line (B) and the reservoir hose (C).

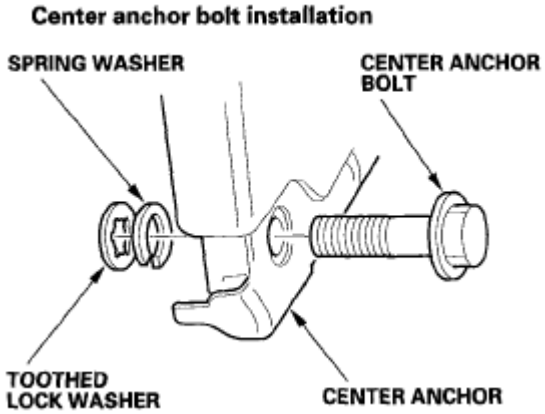


Fig. 21: Identifying Clutch Master Cylinder With Clutch Line And Reservoir Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the clutch line to the clamps (A).

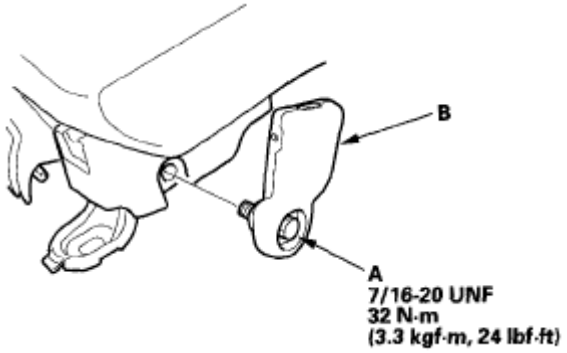


Fig. 22: Identifying Clutch Line Clamps And Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the clutch line bracket (B).
21. Make sure the hose clamps (A) are positioned on the master cylinder (B) and reservoir (C) as shown.

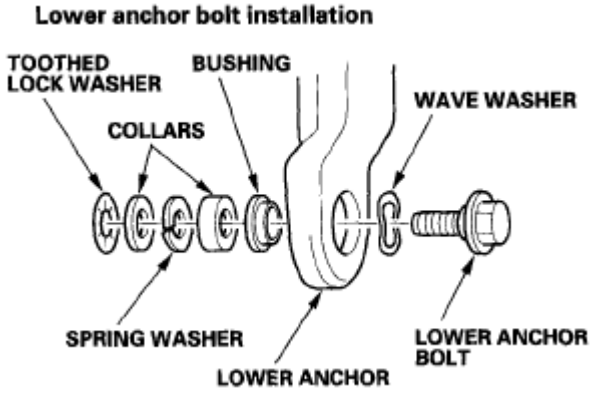


Fig. 23: Identifying Master Cylinder And Reservoir
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
23. Install the master cylinder mounting nuts (A).

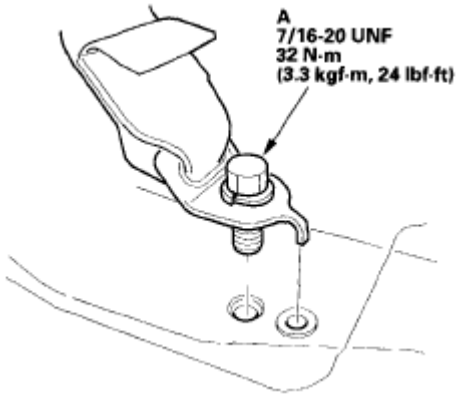


Fig. 24: Identifying Master Cylinder Mounting Nuts - Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Apply grease to the pedal pin (B), and slide it into the yoke, then install a new lock pin (C).
25. Adjust the clutch pedal, clutch pedal position switch, and clutch interlock switch (see **CLUTCH PEDAL, CLUTCH PEDAL POSITION SWITCH, AND CLUTCH INTERLOCK SWITCH ADJUSTMENT**).
26. Do the clutch hydraulic system bleeding (see **Clutch Hydraulic System Bleeding**).
27. Install the battery base; 5-speed model (see step 34 on **TRANSMISSION INSTALLATION**), 6-speed model (see step 38 on **TRANSMISSION INSTALLATION**).
28. Install the air cleaner assembly; 5-speed model (see **THROTTLE BODY CLEANING**), 6-speed model (see **AIR CLEANER REMOVAL/INSTALLATION**).
29. Install the driver's dashboard undercover (see **DRIVER's DASHBOARD UNDERCOVER REMOVAL/INSTALLATION**).
30. Install the battery. Clean the posts and cable terminals. Connect the positive cable to the battery, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
31. Enter the anti-theft code for the audio unit or the navigation system, then enter the audio presets, and set the clock.
32. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).
33. Check the clutch operation, and check for leaks.
34. Test-drive the vehicle.

SLAVE CYLINDER REPLACEMENT

NOTE:

- **Use fender covers to avoid damaging painted surfaces.**
- **Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid does contact the paint, wash it off immediately with water.**

5-SPEED MODEL

1. Remove the clutch line bracket (A), the mounting bolts (B) and the slave cylinder (C).

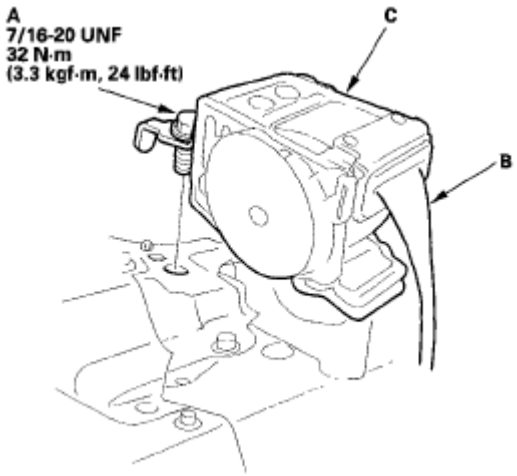


Fig. 25: Identifying Clutch Line Bracket, Mounting Bolts And Slave Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a shop towel to prevent brake fluid from coming out.

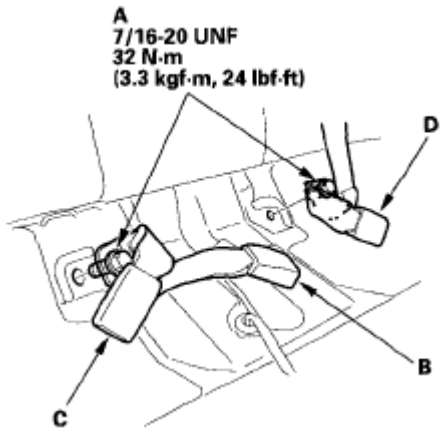


Fig. 26: Identifying Clutch Line And O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the slave cylinder in the reverse order of removal. Install the new O-ring (A).

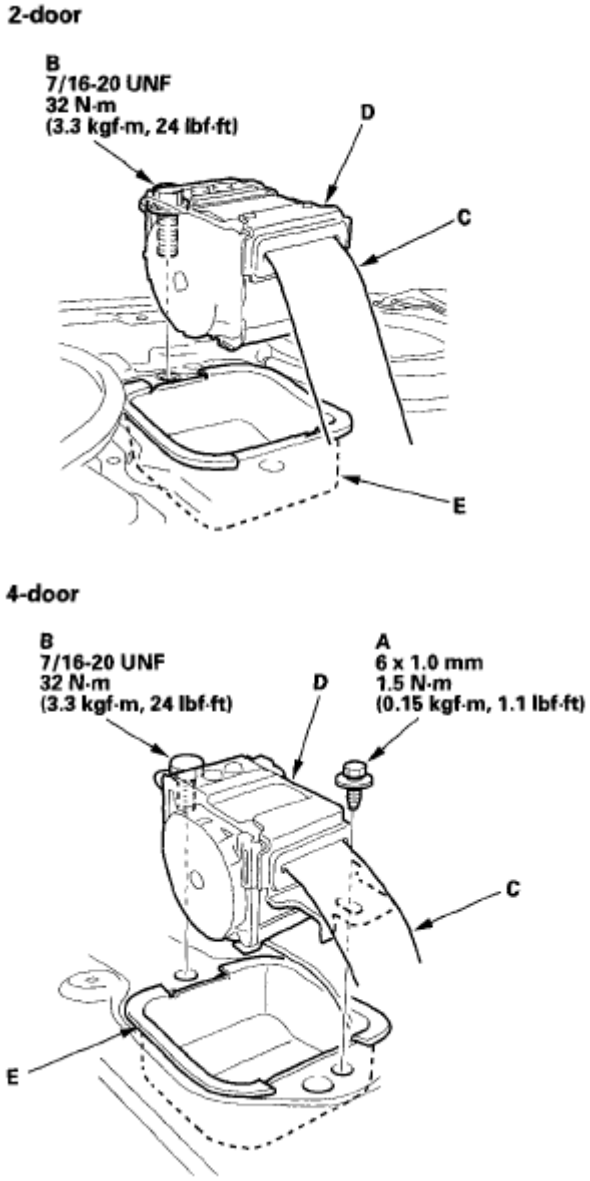


Fig. 27: Identifying O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Pull back the boot (A), and apply brake assembly lube to the boot and slave cylinder rod (B). Reinstall the boot.

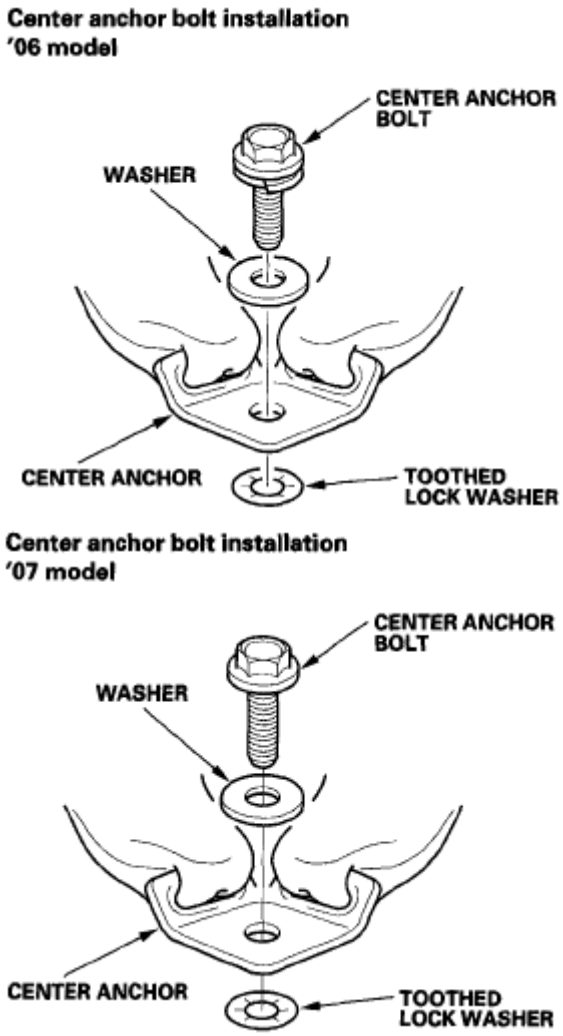


Fig. 28: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Apply super high temp area grease (P/N 08798-9002) to the pushrod of the slave cylinder and the release fork. Tighten the slave cylinder mounting bolts to 22 N.m (2.2 kgf.m, 16 lbf.ft).
6. Do the clutch hydraulic system bleeding (see **Clutch Hydraulic System Bleeding**).
7. Check the clutch operation, and check for leaks.
8. Test-drive the vehicle.

6-SPEED MODEL

1. Remove the clutch line bracket (A), the mounting bolts (B), and the slave cylinder (C).

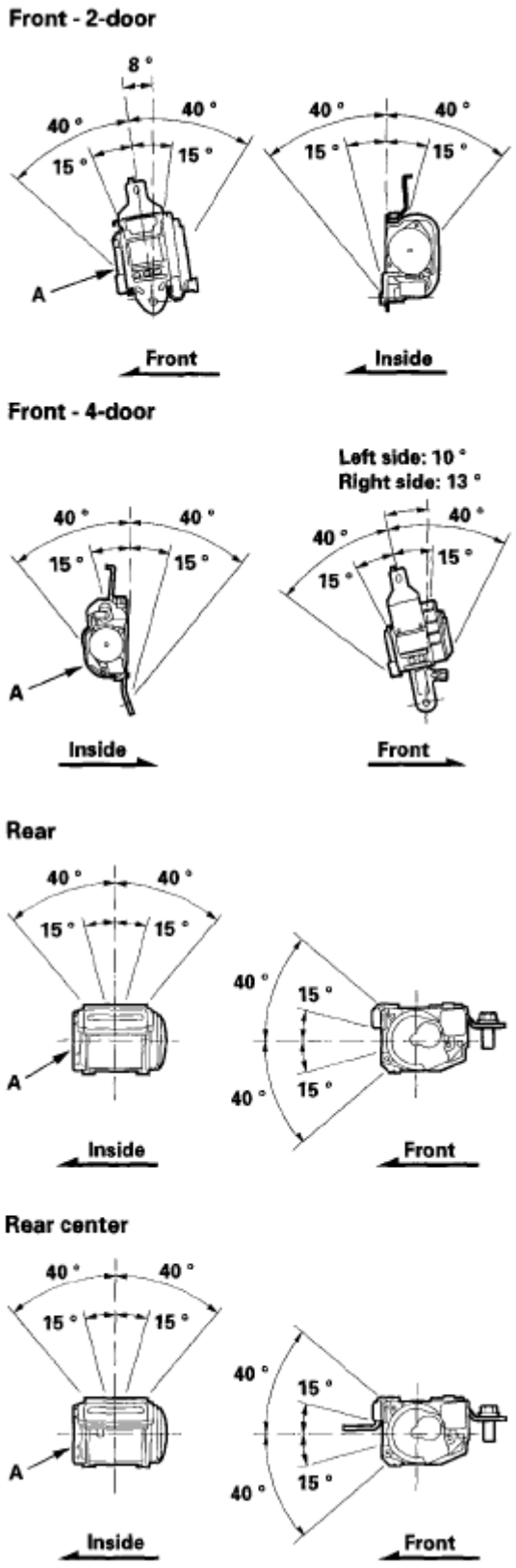


Fig. 29: Identifying Clutch Line Bracket, Mounting Bolts And Slave Cylinder (6-Speed Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a shop towel to prevent brake fluid from coming out.

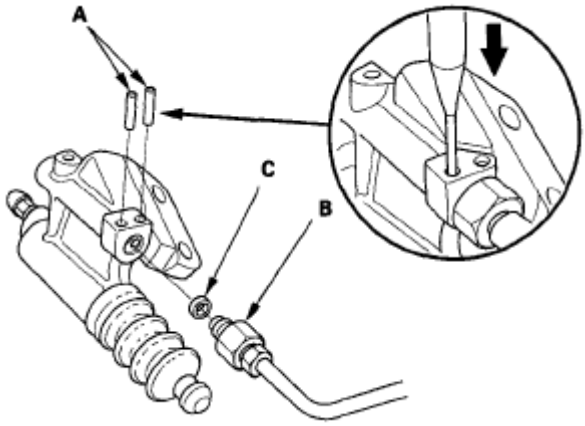


Fig. 30: Identifying Roll Pins, Clutch Line And O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the slave cylinder in the reverse order of removal. Install the new O-ring (A).

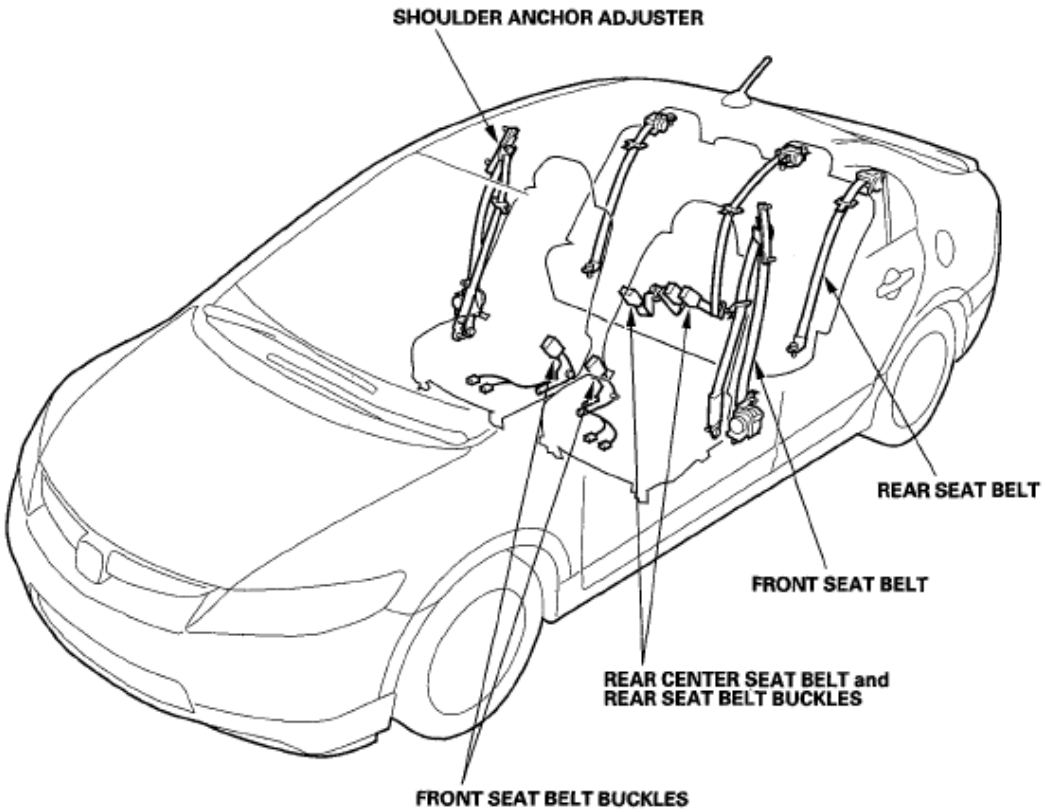


Fig. 31: Identifying O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Pull back the boot (A), and apply brake assembly lube to the boot and slave cylinder rod (B). Reinstall the boot.

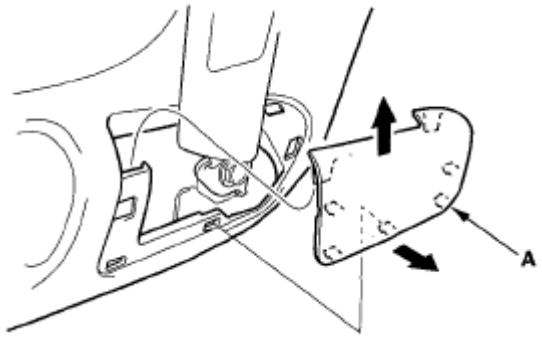


Fig. 32: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Apply super high temp area grease (P/N 08798-9002) to the pushrod of the slave cylinder and the release fork. Tighten the slave cylinder mounting bolts to 22 N.m (2.2 kgf.m, 16 lbf.ft).
6. Do the clutch hydraulic system bleeding (see **Clutch Hydraulic System Bleeding**).
7. Check the clutch operation, and check for leaks.
8. Test-drive the vehicle.

CLUTCH HOSE REPLACEMENT

NOTE:

- **Replace the clutch hose if the hose is twisted, cracked, or if it leaks.**
- **Use fender covers to avoid damaging painted surfaces.**
- **Do not spill brake fluid on the vehicle; it may damage the paint. If brake fluid does contact the paint, wash it off immediately water.**

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.
2. Disconnect the clutch hose (A) from the clutch line (B).

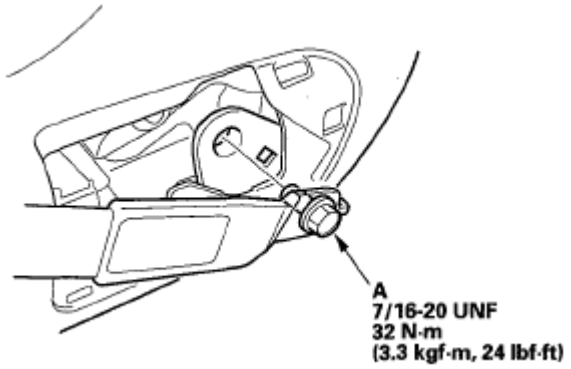


Fig. 33: Identifying Clutch Hose And Clutch Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the clutch hose clips (A) from the clutch hose (B).

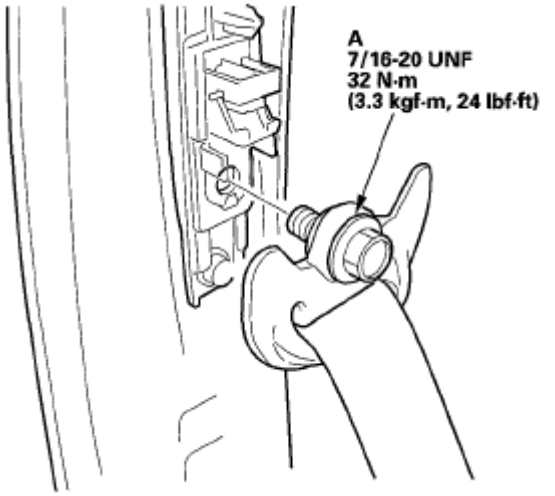


Fig. 34: Identifying Clutch Hose Clips And Clutch Hose Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the clutch hose from the body (C) and clutch hose bracket (D).
5. Install the clutch hose (A) on the body (B) and clutch hose bracket (C) with the new clutch hose clips (D).

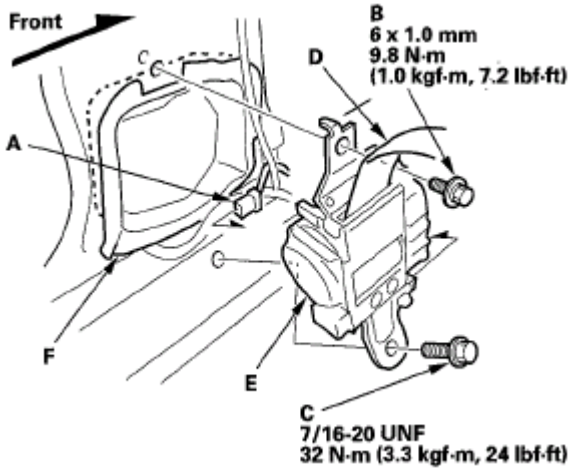


Fig. 35: Identifying Clutch Hose, Clutch Hose Bracket And Clutch Hose Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the clutch line (A) to the clutch hose (B).

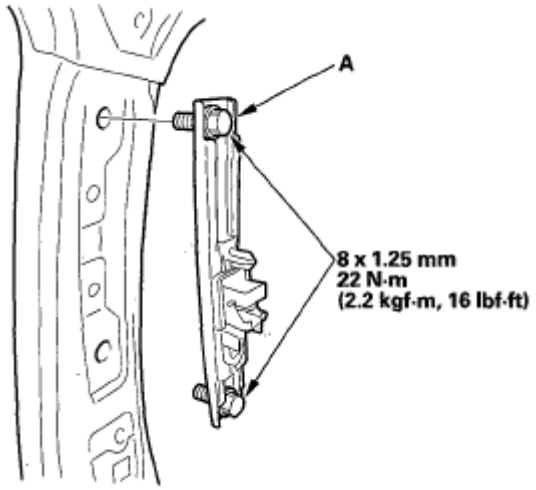


Fig. 36: Identifying Clutch Line To Clutch Hose - Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Do the clutch hydraulic system bleeding (see **Clutch Hydraulic System Bleeding**).
8. Check the clutch operation, and check for leaks.
9. Test-drive the vehicle.

CLUTCH PEDAL COVER REPLACEMENT

NOTE: This procedure is for models equipped with a metal clutch pedal plate model.

1. Cover the carpet under the clutch pedal to prevent metal shavings from getting on the carpet.
2. Center-punch each of the rivets (A), and drill their heads off with a 3 mm (0.12 in.) drill bit (B).

NOTE: Do not drill the clutch pedal pad (C).

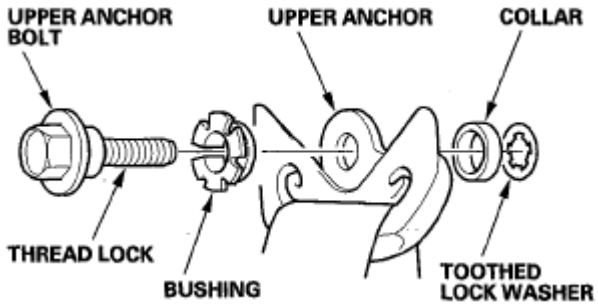


Fig. 37: Identifying Rivets, Heads And Drill Bit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the clutch pedal plate (A) and the clutch pedal cover (B) from the clutch pedal pad (C).

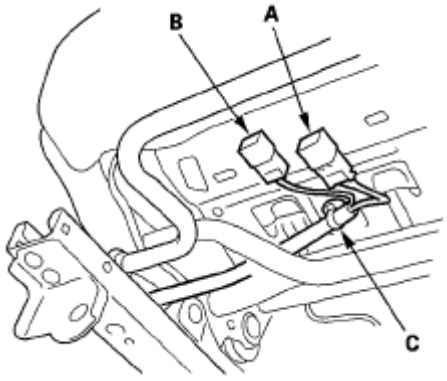


Fig. 38: Identifying Clutch Pedal Plate, Clutch Pedal Cover And Clutch Pedal Pad
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Set the clutch pedal cover to the clutch pedal plate.
5. Install the clutch pedal plate (A) with the rivets (B) firmly.

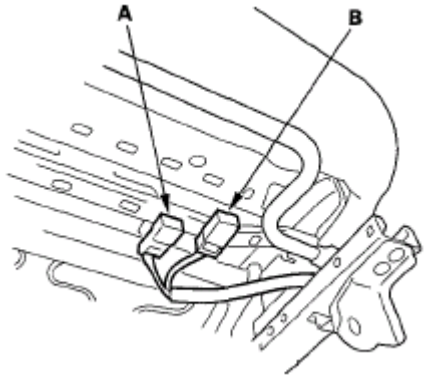


Fig. 39: Identifying Clutch Pedal Plate With The Rivets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Using your hand, make sure the clutch pedal cover is firmly fastened to the pedal.
7. Check the clutch pedal height (see **Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment**).

CLUTCH REPLACEMENT

Special Tools Required

- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100 or 07924-PD20003
- Clutch alignment shaft 07LAF-PT00110
- Slide hammer weight 07741-0010201
- Attachment, 22 x 24 mm 07746-0010800
- Driver 07749-0010000
- Remover handle 07936-3710100
- Bearing remover shaft 07936-KC10500

PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)

1. Transmission removal (see **TRANSMISSION REMOVAL**).
2. Check the height of the diaphragm spring fingers using the clutch alignment disc (A), clutch alignment shaft (B), remover handle (C), and a feeler gauge (D). If the height is more than the service limit, replace the pressure plate.

   Standard (New): 0.6 mm (0.02 in.) max.

   Service Limit: 0.8 mm (0.03 in.)

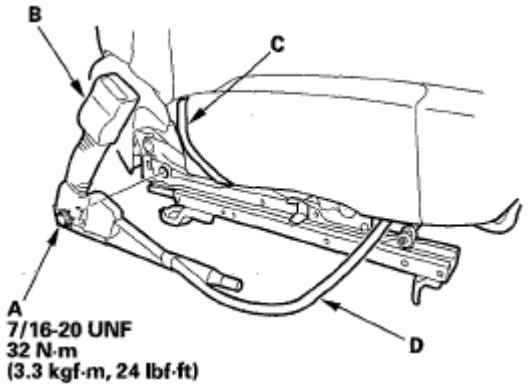


Fig. 40: Checking Height Of Diaphragm Spring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the ring gear holder (A), clutch alignment shaft (B), and remover handle (C).

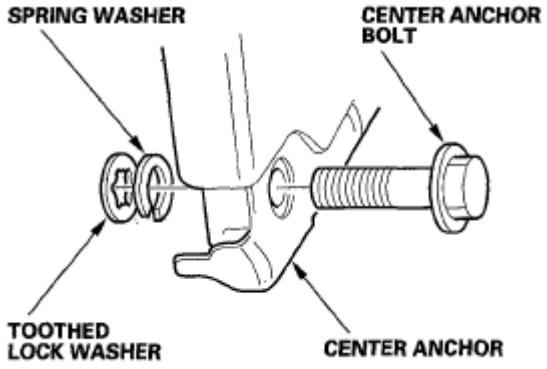


Fig. 41: Identifying Ring Gear Holder And Clutch Alignment Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. To prevent warping, unscrew the pressure plate mounting bolts (D) in a crisscross pattern in several steps, then remove the pressure plate (E).
5. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.

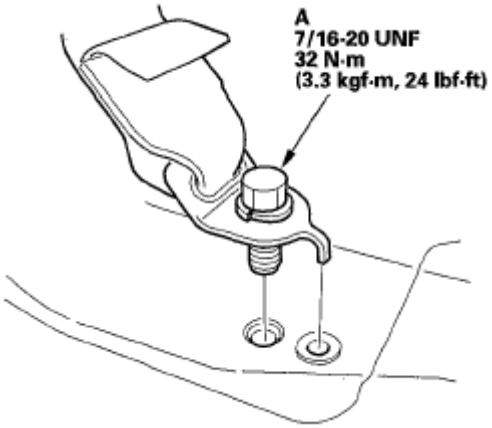


Fig. 42: Identifying Diaphragm Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Inspect the pressure plate surface (A) for wear, cracks, and burning.

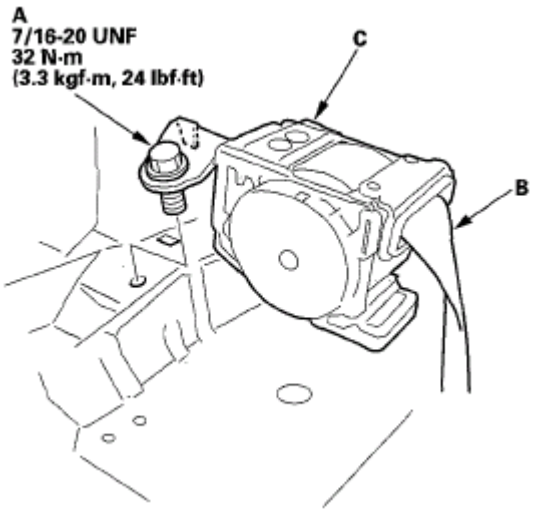


Fig. 43: Identifying Pressure Plate Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate (C). If the warpage is more than the service limit, replace the pressure plate.

   Standard (New): 0.03 mm (0.001 in.) max.

   Service Limit: 0.15 mm (0.006 in.)

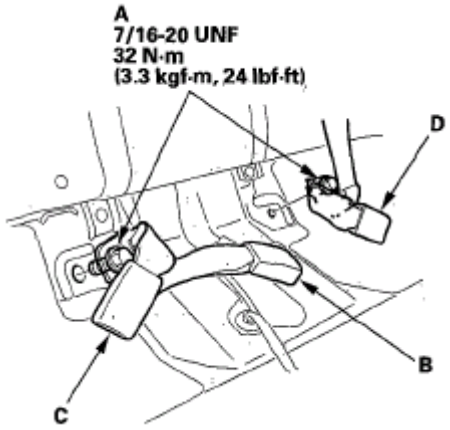


Fig. 44: Inspecting Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Clutch Disc Removal and Inspection

8. Remove the clutch disc (A), clutch alignment shaft (B), and remover handle (C).

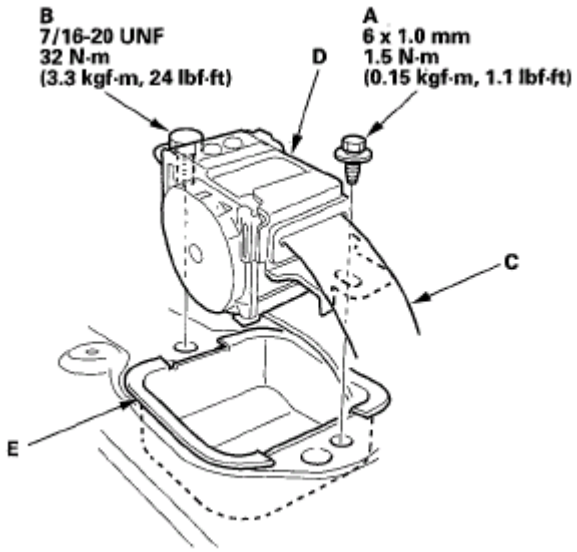


Fig. 45: Identifying Clutch Disc And Clutch Alignment Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the lining of the clutch disc for signs of slippage or oil. If the clutch disc looks burnt or is oil soaked, replace it and the pressure plate as a set. Find and repair the source of the oil leak, if the clutch disc is soaked.
10. Measure clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

Standard (New): 7.8-8.4 mm (0.30-0.33 in.)

Service Limit: 6.0 mm (0.24 in.)

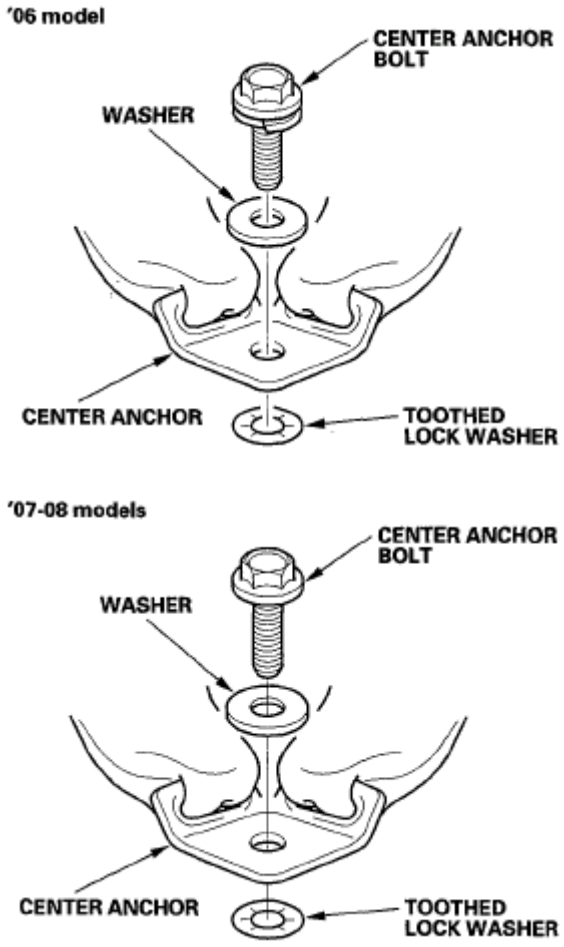


Fig. 46: Measuring Clutch Disc Thickness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Measure rivet depth from the clutch disc lining surface (A) to the rivets (B) on both sides. If the rivet depth is less than the service limit, replace the clutch disc.

    Standard (New): 1.35-1.95 mm (0.053-0.077 in.)

    Service Limit: 0.2 mm (0.008 in.)

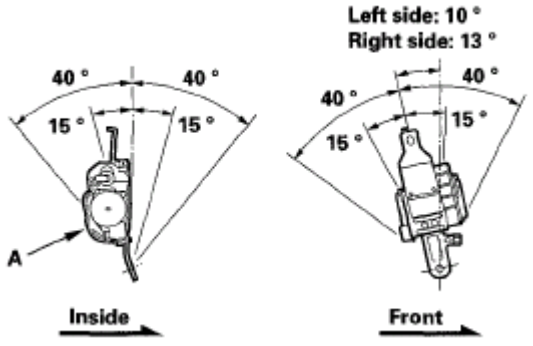


Fig. 47: Measuring Rivet Depth From Clutch Disc Lining Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the ring gear holder.

Crankshaft Pilot Bushing Inspection

13. Inspect the crankshaft pilot bushing for wear and damage.
14. Inspect the inside surface of the crankshaft pilot bushing with your finger. If the crankshaft pilot bushing is not smooth, replace it.

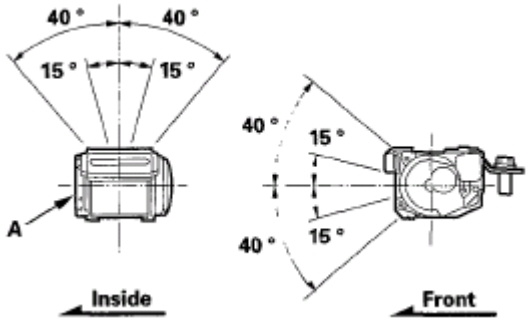


Fig. 48: Identifying Crankshaft Pilot Bushing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Crankshaft Pilot Bushing Replacement

15. Remove the crankshaft pilot bushing (A) using the bearing remover shaft (B) and the slide hammer (C).

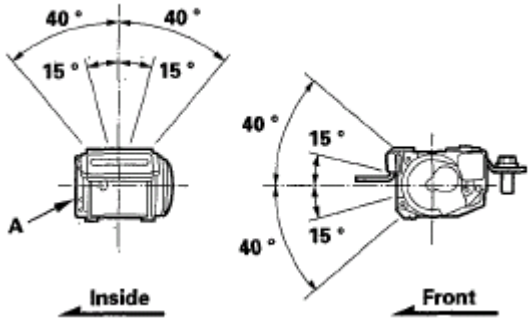


Fig. 49: Identifying Crankshaft Pilot Bushing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the new crankshaft pilot bushing (A) into the crankshaft using the driver (B) and 22 x 24 mm attachment (C). Apply a light coat of super high temp area grease (P/N 08798-9002) to the crankshaft pilot bushing surface.

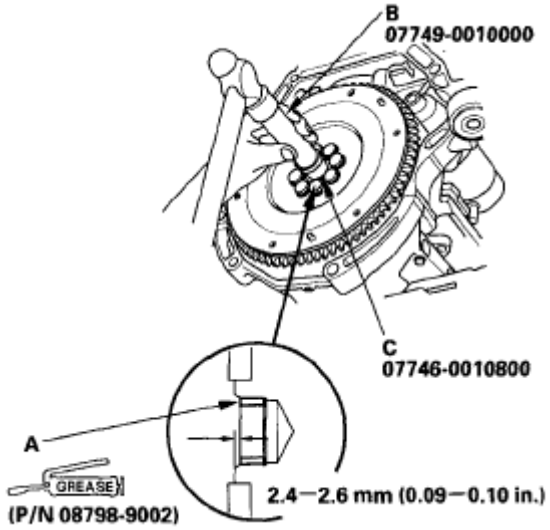


Fig. 50: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Flywheel Inspection

17. Inspect the ring gear teeth for wear and damage.
18. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.
19. Measure flywheel (A) runout using a dial indicator (B) through at least two full turns with the engine installed. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the runout is more than the service limit, replace the flywheel, and recheck the runout. Resurfacing the flywheel is not recommended.

Standard (New): 0.05 mm (0.002 in.) max.

Service Limit: 0.15 mm (0.006 in.)

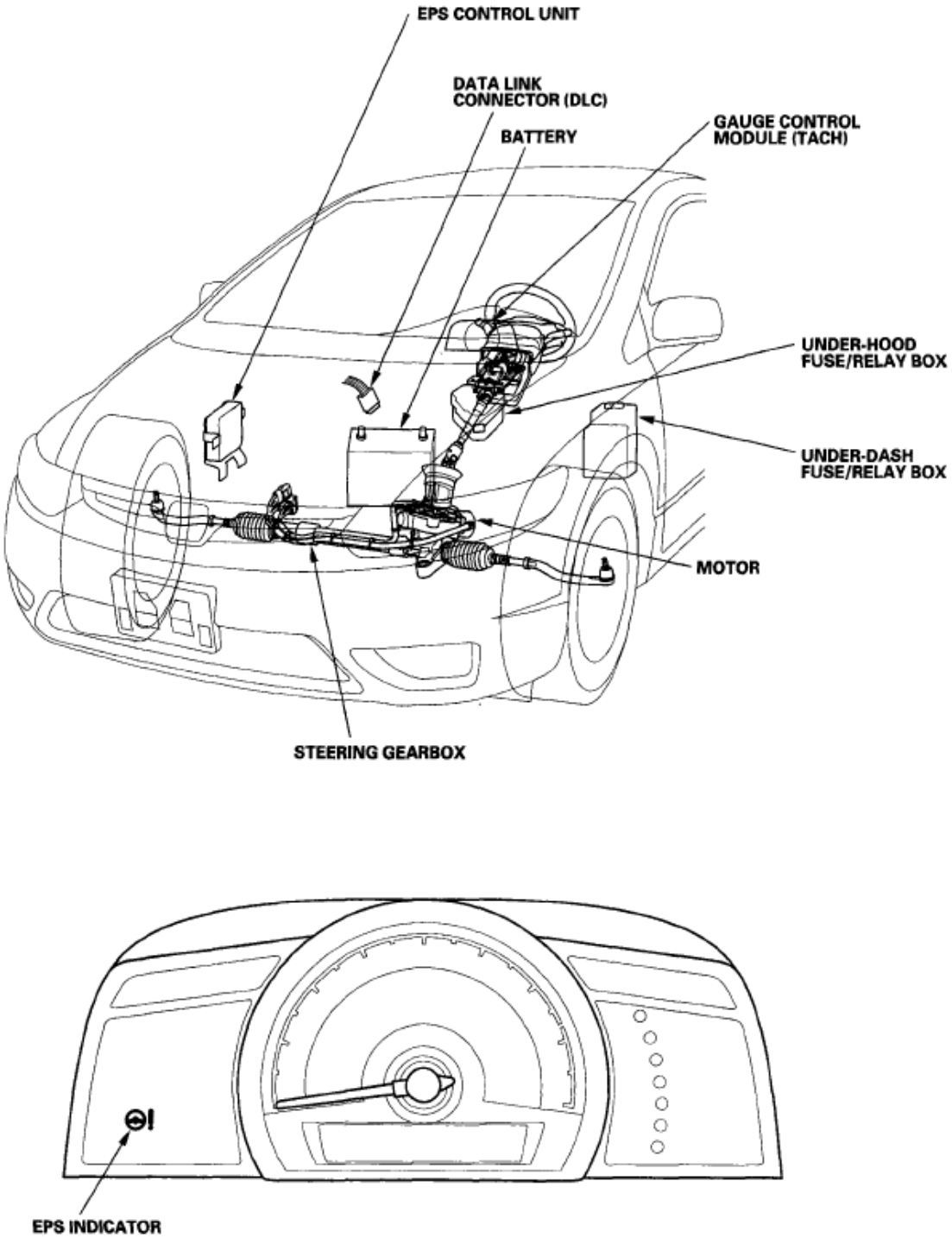


Fig. 51: Inspecting Clutch Disc Mating Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Flywheel Replacement

20. Install the ring gear holder (A).

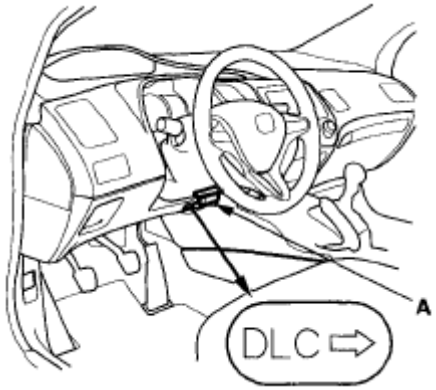


Fig. 52: Identifying Ring Gear Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the flywheel mounting bolts in a crisscross pattern in several steps, then remove the flywheel and ring gear holder.
22. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
23. Install the ring gear holder (A), then torque the flywheel mounting bolts (B) in a crisscross pattern in several steps.

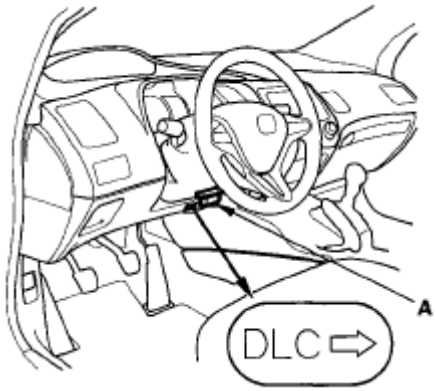


Fig. 53: Identifying Flywheel Mounting Bolts - Specified Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Clutch Disc and Pressure Plate Installation

24. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.
25. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the crankshaft pilot bushing (A).

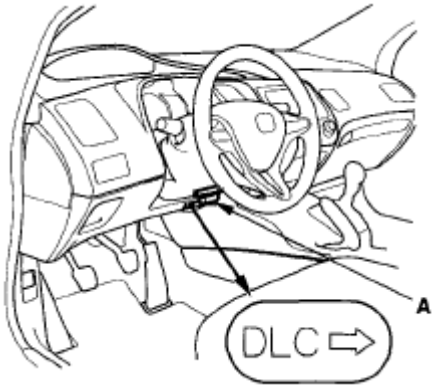


Fig. 54: Identifying Clutch Disc Onto Splines Of Transmission Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Apply super high temp area grease (P/N 08798-9002) to the splines (B) of the clutch disc (C), then install the clutch disc using the clutch alignment shaft (D) and remover handle (E).
27. Install the pressure plate (A) and the mounting bolts (B) finger-tight.

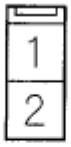


Fig. 55: Identifying Pressure Plate And Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Torque the mounting bolts in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

Specified Torque: 25 N.m (2.6 kgf.m, 19 lbf.ft)

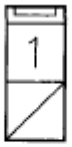


Fig. 56: Identifying Mounting Bolts - Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Remove the ring gear holder (A), clutch alignment shaft (B), and remover handle (C).
30. Make sure the diaphragm spring fingers are all the same height.

Release Bearing Replacement

31. Remove the release fork boot (A) from the clutch housing (B).

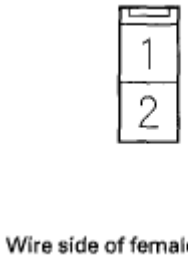


Fig. 57: Identifying Fork Set Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).
33. Check the play of the release bearing by spinning it with your hand. If there is excessive play or noise, replace the release bearing.

NOTE: The release bearing is packed with grease. Do not wash it in solvent.

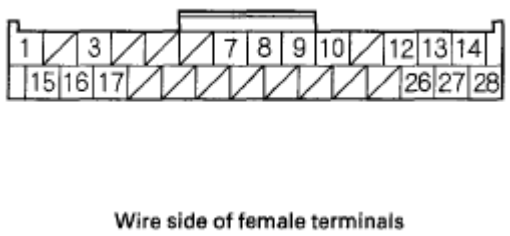


Fig. 58: Identifying Play Of Release Bearing With Your Hand
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Apply super high temp area grease (P/N 08798-9002) to the release fork (A), the release fork bolt (B), the release bearing (C), and the release bearing guide (D) in the shaded areas.

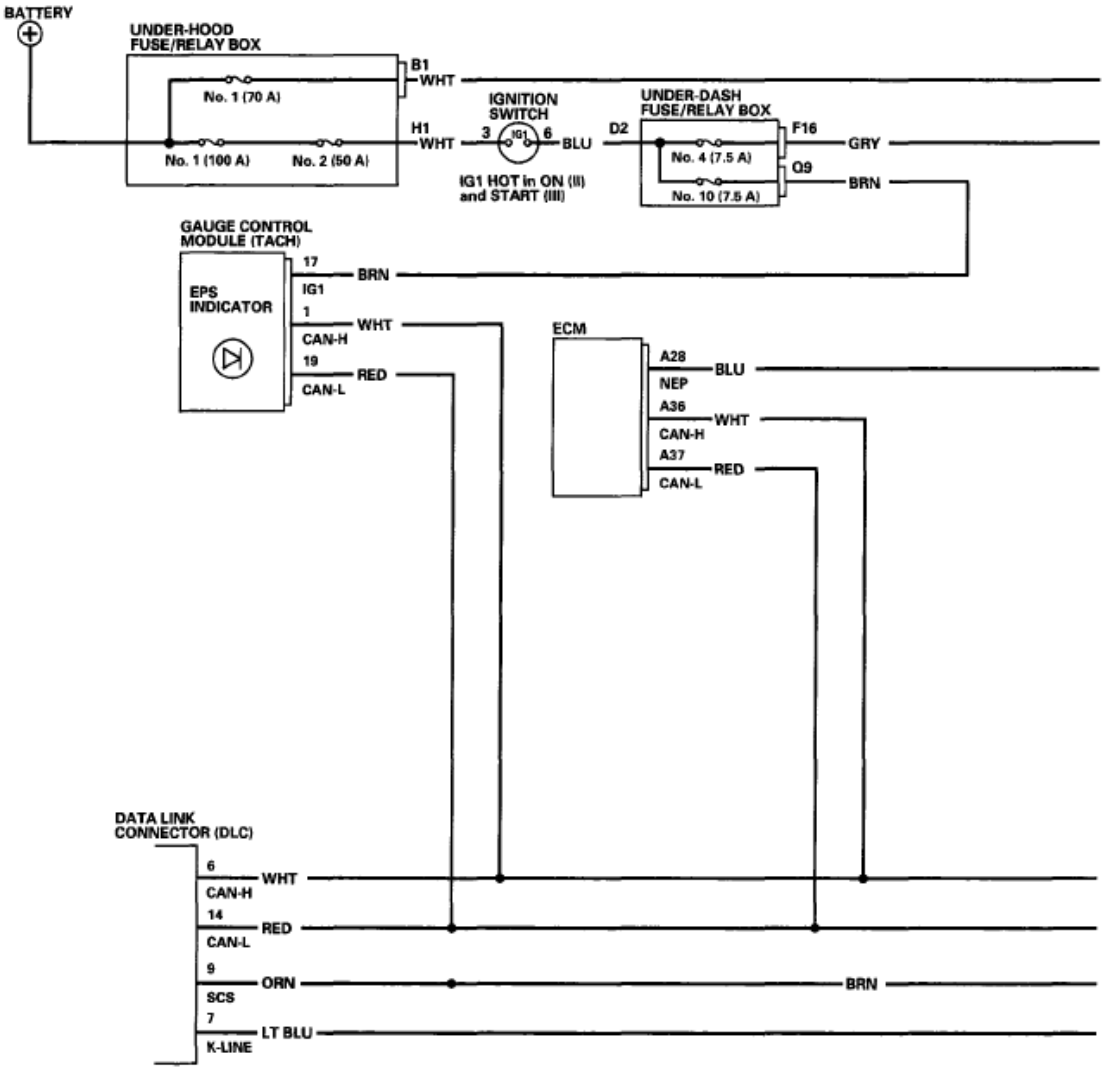


Fig. 59: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.
36. Align the detent of the release fork with the release fork bolt, then squarely press the release fork over the release fork bolt.
37. Install the release fork boot (E). Make sure the boot seals around the release fork and clutch housing.
38. Move the release fork (A) right and left to make sure that it fits properly against the release bearing (B) and that the release bearing slides smoothly.

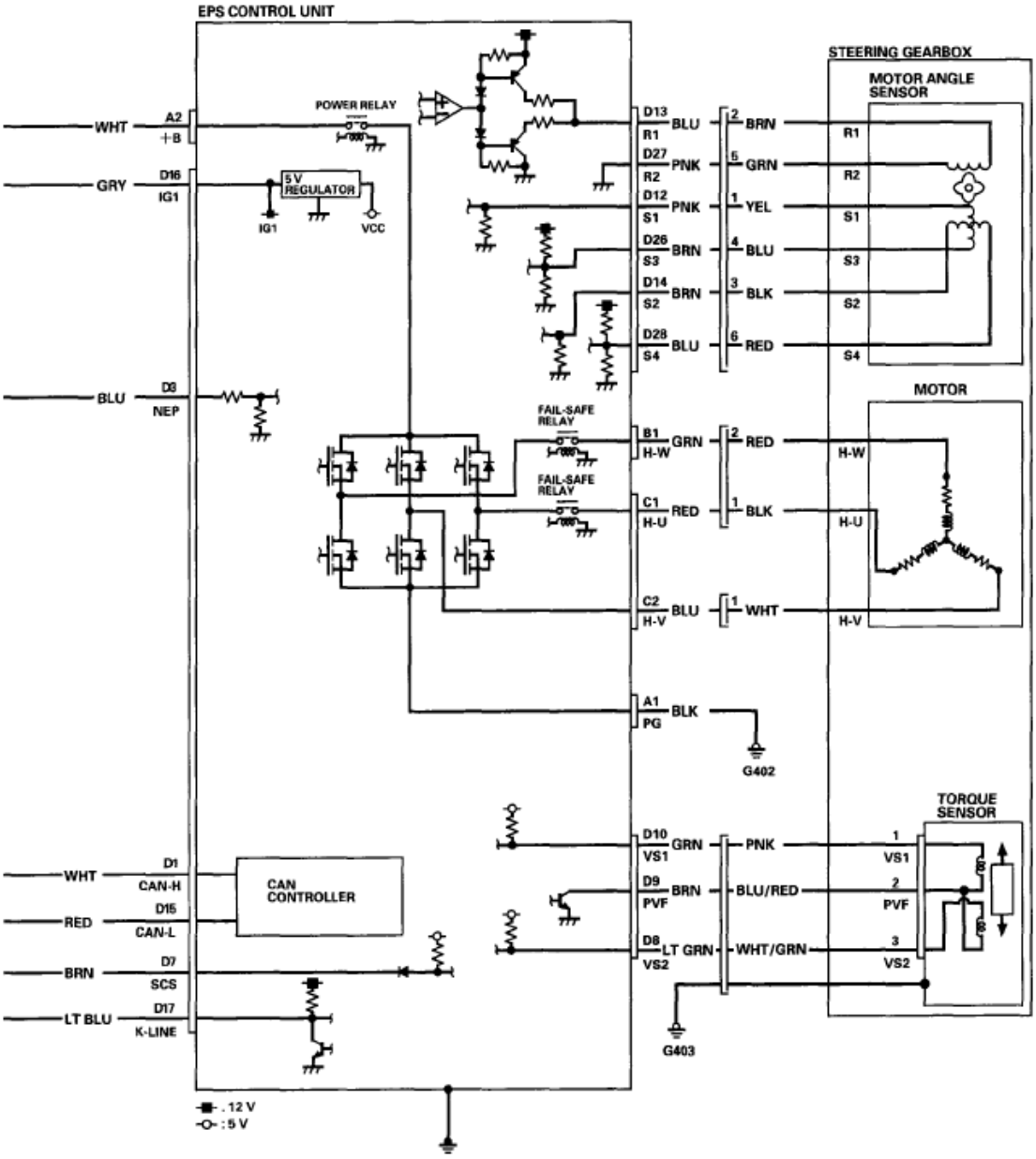


Fig. 60: Identifying Move Release Fork Right And Left
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Install the transmission (see **TRANSMISSION INSTALLATION**).

PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)

Special Tools Required

- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100 or 07924-PD20003
- Clutch alignment shaft 07ZAF-PR8A100
- Bearing remover shaft 07936-KC10500
- Attachment, 22 x 24 mm 07746-0010800

- Driver 07749-0010000
- Remover handle 07936-3710100
- Slide hammer, 3/8"-16 UNF commercially available

1. Transmission removal (see **TRANSMISSION REMOVAL**).
2. Check the height of the diaphragm spring fingers using the clutch alignment disc (A), clutch alignment shaft (B), remover handle (C), and a feeler gauge (D). If the height is more than the service limit, replace the pressure plate.

   Standard (New): 0.6 mm (0.02 in.) max.

   Service Limit: 0.8 mm (0.03 in.)

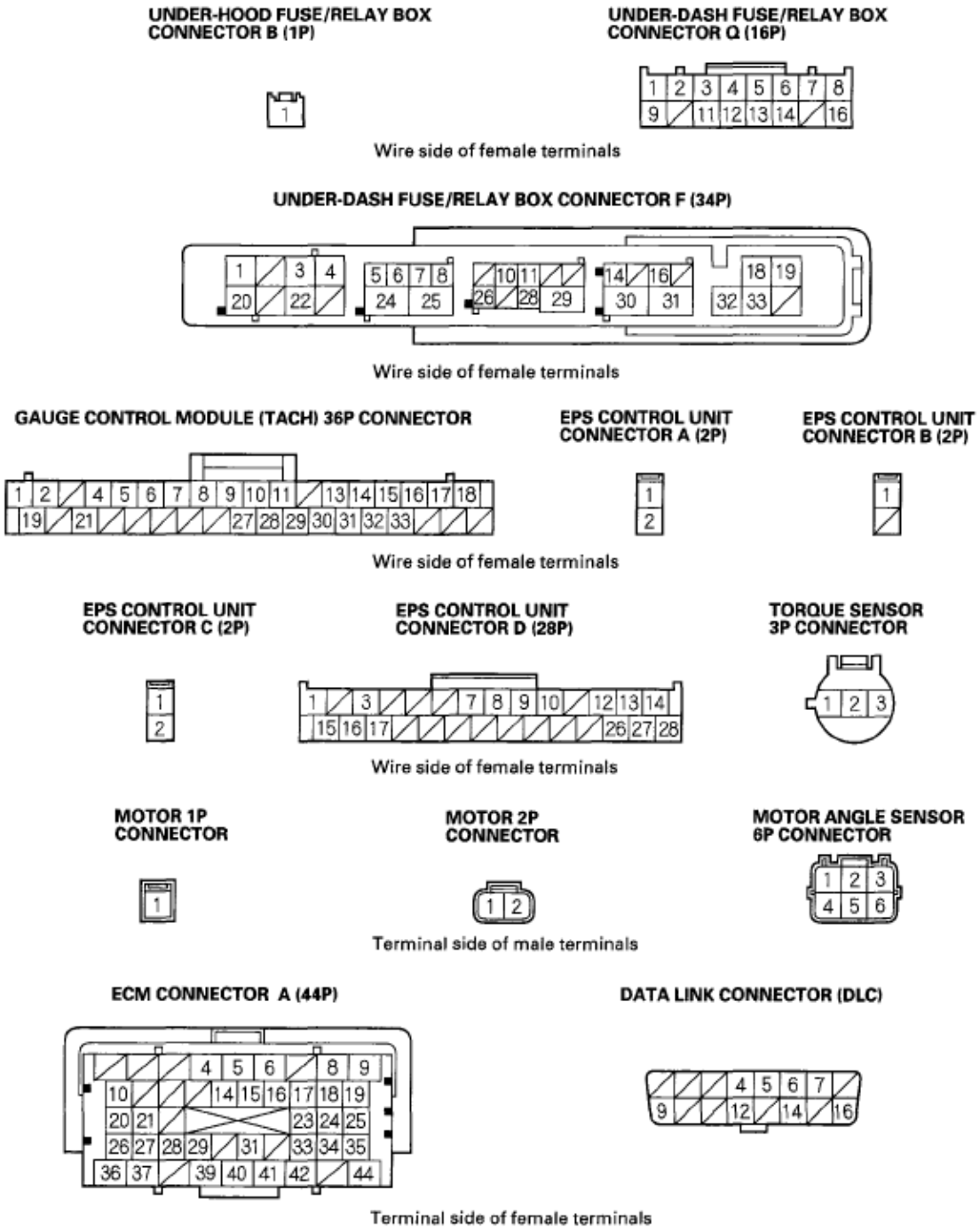


Fig. 61: Checking Height Of Diaphragm Spring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the ring gear holder (A), clutch alignment shaft (B), and remover handle (C).

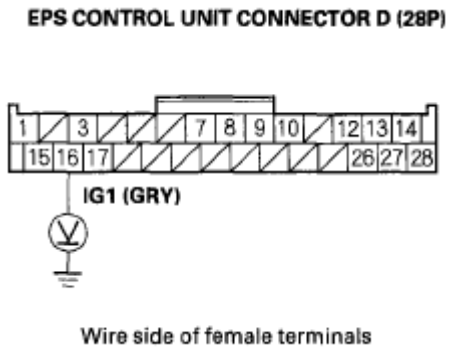


Fig. 62: Identifying Ring Gear Holder And Clutch Alignment Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. To prevent warping, unscrew the pressure plate mounting bolts (D) in a crisscross pattern in several steps, then remove the pressure plate (E).
5. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.

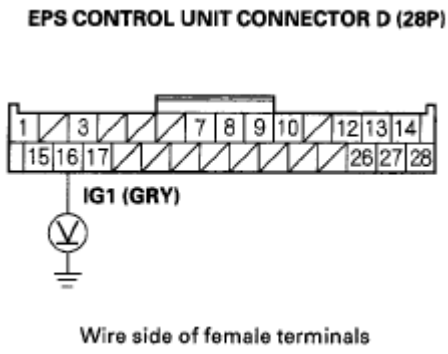


Fig. 63: Identifying Diaphragm Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Inspect the pressure plate surface (A) for wear, cracks, and burning.

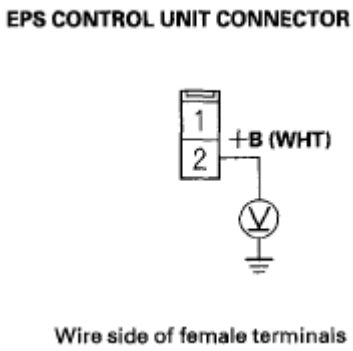


Fig. 64: Identifying Pressure Plate Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate (C). If the warpage is more than the service limit, replace the pressure plate.

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.15 mm (0.006 in.)

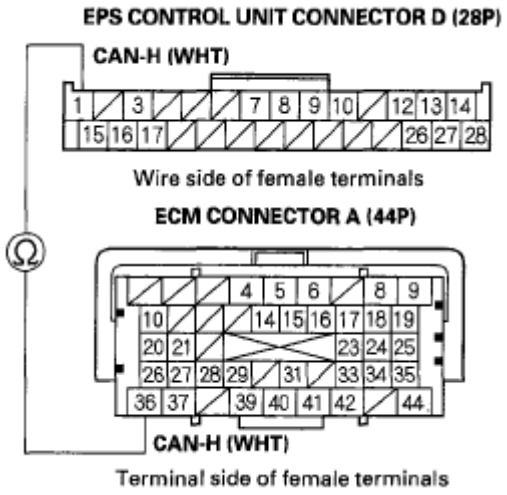


Fig. 65: Inspecting Warpage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the clutch disc (A), clutch alignment shaft (B), and remover handle (C).

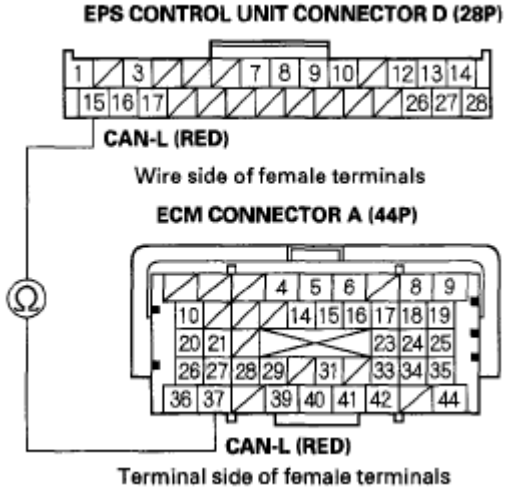


Fig. 66: Identifying Clutch Disc And Clutch Alignment Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the lining of the clutch disc for signs of slippage or oil. If the clutch disc looks burnt or is oil soaked, replace it and the pressure plate as a set. Find and repair the source of the oil leak, if the clutch disc is soaked.
10. Measure clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

Standard (New): 8.3-8.9 mm (0.33-0.35 in.)

Service Limit: 6.0 mm (0.24 in.)

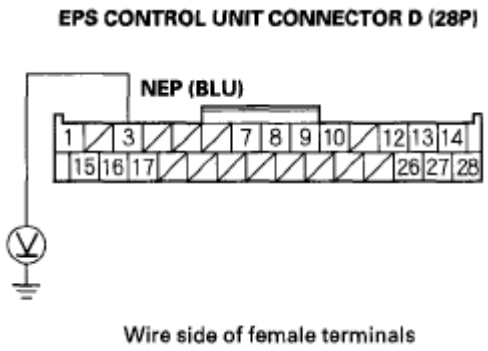


Fig. 67: Measuring Clutch Disc Thickness
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Measure rivet depth from the clutch disc lining surface (A) to the rivets (B) on both sides. If the rivet depth is less than the service limit, replace the clutch disc.

    Standard (New): 1.65-2.25 mm (0.065-0.089 in.)

    Service Limit: 0.7 mm (0.03 in.)

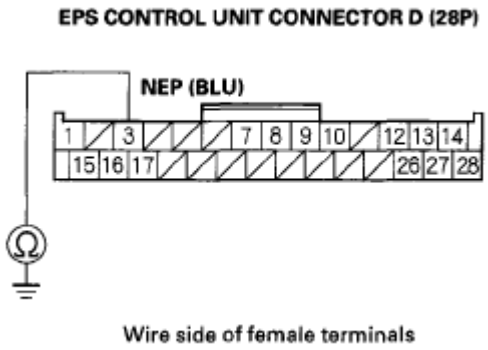


Fig. 68: Measuring Rivet Depth From Clutch Disc Lining Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the ring gear holder.

    Crankshaft Pilot Bushing Inspection

13. Inspect the crankshaft pilot bushing for wear and damage.
14. Inspect the inside surface of the crankshaft pilot bushing with your finger. If the crankshaft pilot bushing is not smooth, replace it.

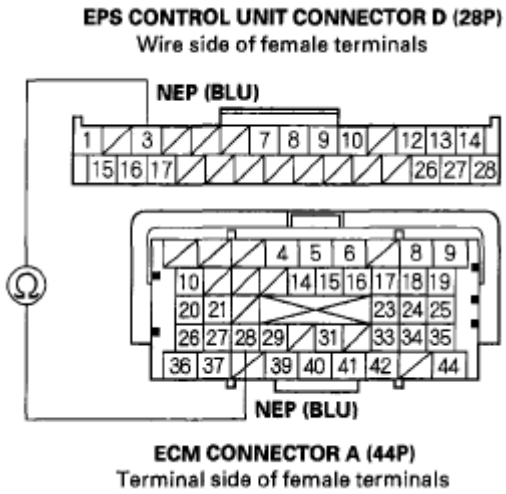


Fig. 69: Inspecting Inside Surface Of Crankshaft Pilot Bushing With Your Finger (6-Speed Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Crankshaft Pilot Bushing Replacement

15. Remove the crankshaft pilot bushing (A) using the bearing remover shaft (B) and the slide hammer (C).

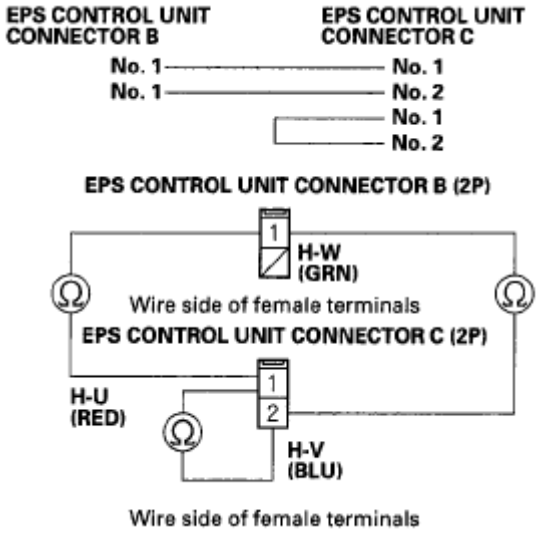


Fig. 70: Identifying Crankshaft Pilot Bushing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the new crankshaft pilot bushing (A) into the crankshaft using the driver (B) and 22 x 24 mm attachment (C). Apply a light coat of super high temp area grease (P/N 08798-9002) to the crankshaft pilot bushing surface.

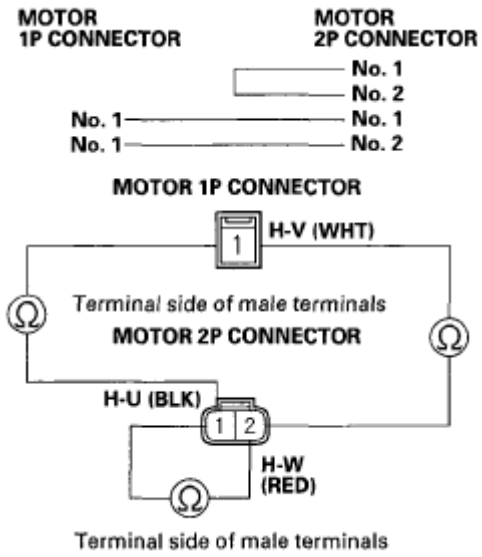


Fig. 71: Identifying Area Applying Grease (P/N 08798-9002) To Crankshaft Pilot Bushing Surface
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Flywheel Inspection

17. Inspect the ring gear teeth for wear and damage.
18. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.
19. Measure flywheel (A) runout using a dial indicator (B) through at least two full turns with pushing against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the runout is more than the service limit, replace the flywheel, go to step 20, and recheck the runout.

Standard (New): 0.05 mm (0.002 in.) max.

Service Limit: 0.15 mm (0.006 in.)

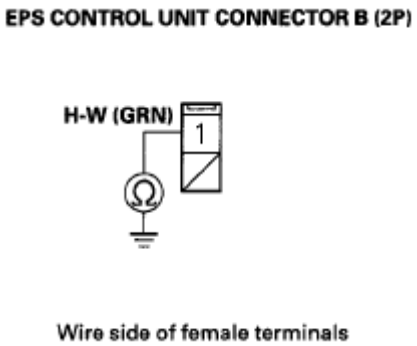


Fig. 72: Inspecting Clutch Disc Mating Surface On Flywheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Flywheel Replacement

20. Install the ring gear holder (A).

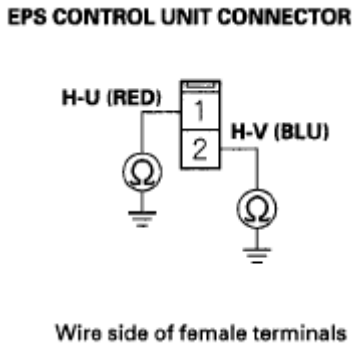


Fig. 73: Identifying Ring Gear Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the flywheel mounting bolts in a crisscross pattern in several steps, then remove the flywheel and ring gear holder.
22. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
23. Install the ring gear holder (A), then torque the flywheel mounting bolts (B) in a crisscross pattern in several steps.

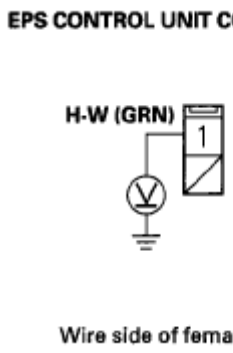


Fig. 74: Identifying Flywheel Mounting Bolts - Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Clutch Disc and Pressure Plate Installation

24. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.
25. Apply a light coat of super high temp area grease (P/N 08798-9002) to the crankshaft pilot bushing (A).

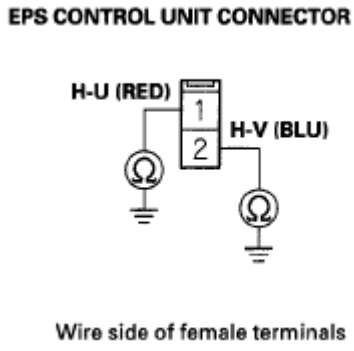


Fig. 75: Identifying Clutch Disc Onto Splines Of Transmission Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Apply super high temp area grease (P/N 08798-9002) to the splines (B) of the clutch disc (C), then install the clutch disc using the clutch alignment shaft (D) and remover handle (E).
27. Install the pressure plate (A) and the mounting bolts (B) finger-tight.

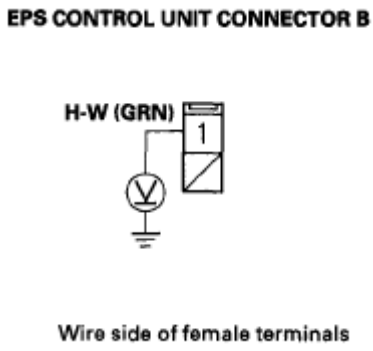


Fig. 76: Identifying Pressure Plate And Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Torque the mounting bolts in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

Specified Torque: 25 N.m (2.6 kgf.m, 19 lbf.ft)

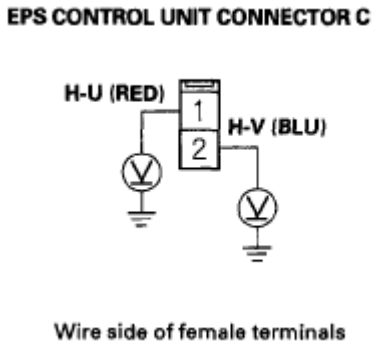


Fig. 77: Identifying Mounting Bolts - Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Remove the ring gear holder (A), clutch alignment shaft (B), and remover handle (C).
30. Make sure the diaphragm spring fingers are all the same height.

Release Bearing Replacement

31. Remove the release fork boot (A) from the clutch housing (B).

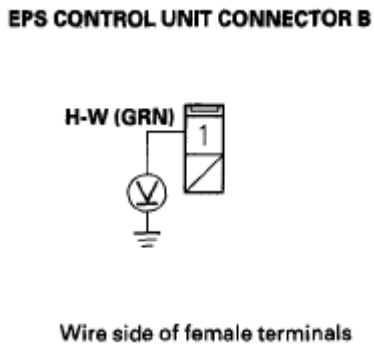


Fig. 78: Identifying Fork Set Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).
33. Check the play of the release bearing by spinning it with your hand. If there is excessive play or noise, replace the release bearing.

NOTE: The release bearing is packed with grease. Do not wash it in solvent.

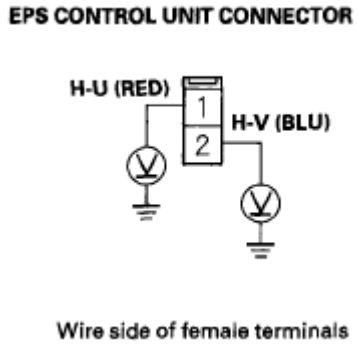


Fig. 79: Identifying Play Of Release Bearing With Your Hand
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Apply super high temp area grease (P/N 08798-9002) to the release fork (A), the release fork bolt (B), the release bearing (C), and the release bearing guide (D) in the shaded areas.

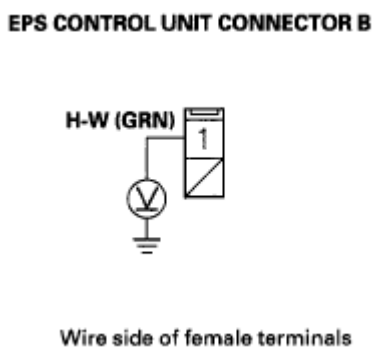


Fig. 80: Identifying Area Applying Grease
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.
36. Align the detent of the release fork with the release fork bolt, then squarely press the release fork over the release fork bolt.
37. Install the release fork boot (E). Make sure the boot seals around the release fork and clutch housing.
38. Move the release fork (A) right and left to make sure that it fits properly against the release bearing (B), and that the release bearing slides smoothly.

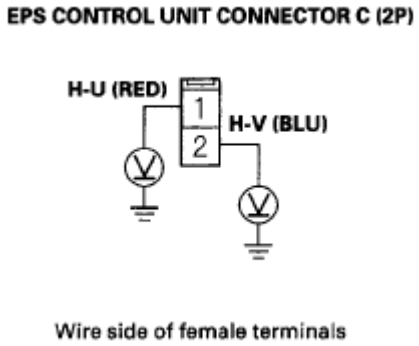


Fig. 81: Identifying Move Release Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

39. Install the transmission (see **TRANSMISSION INSTALLATION**).

2006-08 TRANSMISSION

Manual Transmission (6-Speed)(Except Hybrid) - Civic

6-SPEED MANUAL TRANSMISSION

SPECIAL TOOLS

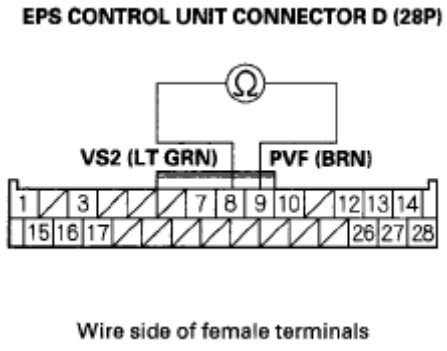


Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE LOCKOUT SYSTEM

GENERAL TROUBLESHOOTING INFORMATION

How to Troubleshoot Circuits at the ECM Connectors

NOTE: The ECM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned to OFF. Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the ECM during this function, without jumping the SCS line first, can damage the ECM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).

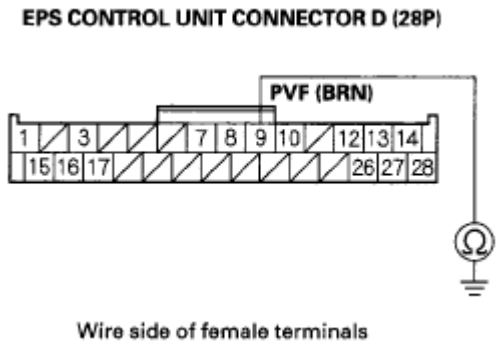


Fig. 2: Identifying Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Lift up the under-hood fuse/relay box (D).

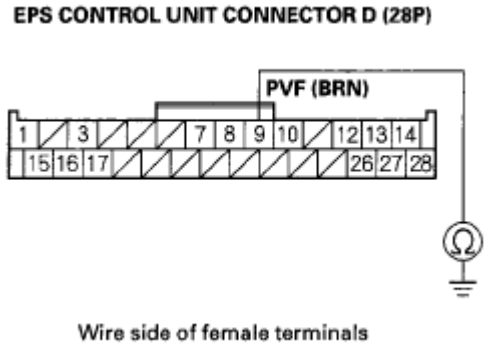


Fig. 3: Identifying Under-Hood Fuse/Relay Box And ECM Connectors
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the coolant reservoir (E). Disconnect ECM connectors A, B, and C.

NOTE: ECM connectors A, B and C have a symbols (A = [], B = triangle symbol , C = o) embossed on them for identification.

5. When diagnosis/troubleshooting is done at the ECM connector, use the terminal test port (A) above the terminal you need to check.

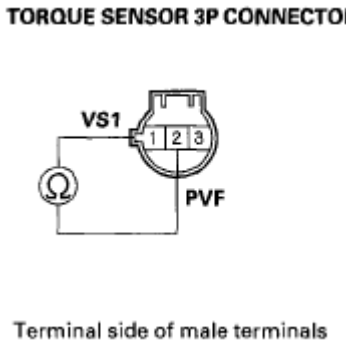


Fig. 4: Identifying Terminal Test Port
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).

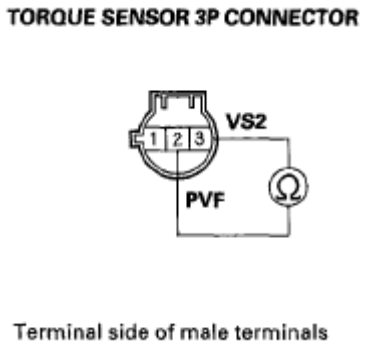


Fig. 5: Connecting Patch Cord Terminals To Digital Multimeter
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTE:

- **For accurate results, always use the pin probe (male).**
- **To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.**
- **Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.**

COMPONENT LOCATION INDEX

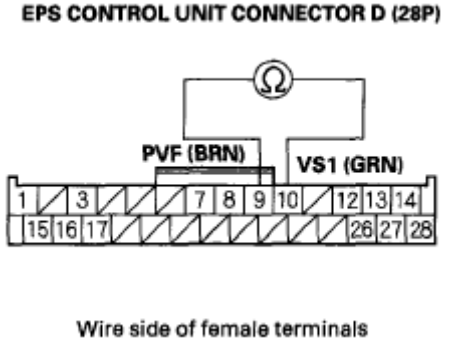


Fig. 6: Identifying Reverse Lockout System Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYSTEM DESCRIPTION

At a vehicle speed of 12 mph (20 km/h) or more, the ECM receives a signal from the output shaft (countershaft) speed sensor and activates the reverse lockout solenoid, which pushes select lock cam B into the locked position. As a result, the select lever can not rotate to the reverse select position, making it impossible to engage reverse gear. At a vehicle speed of 9 mph (15 km/h) or less, the signal from the output shaft (countershaft) speed sensor is interrupted, the ECM turns off the reverse lockout solenoid. The select lock return spring pulls back select lock cam B, enabling the select lever to move freely so the reverse gear can be selected.

VEHICLE SPEED CHART

Vehicle speed	Inhibitor	Reverse selection
Above 12 mph (20 km/h)	ON	Not allowed
Below 9 mph (15 km/h)	OFF	Allowed
Ignition switch LOCK (0)	OFF	Allowed

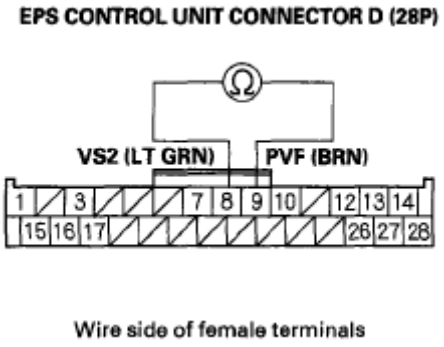


Fig. 7: Reverse Lockout System Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT DIAGRAM

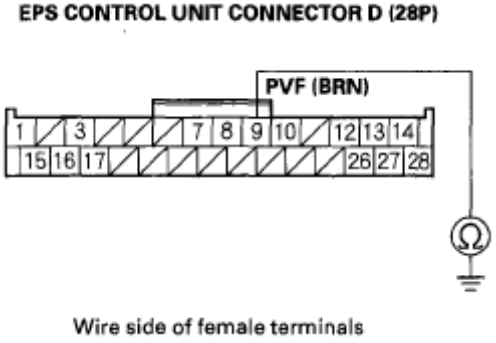


Fig. 8: Reverse Lockout System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CIRCUIT TROUBLESHOOTING

1. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES -Go to step 2.

   NO -Replace the fuse, and recheck.

2. Start the engine, and check the Malfunction Indicator Lamp (MIL).

   Does the MIL come on?

   YES -Troubleshoot the DTC (see **GENERAL TROUBLESHOOTING INFORMATION**), and

recheck.

NO -Go to step 3.

3. Turn the ignition switch to LOCK (0).
4. Shift into reverse.

Can you shift the transmission into reverse?

YES -Go to step 5.

NO -Repair the transmission, and recheck.

5. Raise the vehicle on the lift, make sure it is securely supported, and allow the front wheels to rotate freely.
6. Start the engine. With the vehicle moving slowly (vehicle speed below 9 mph (15 km/h), shift the transmission into reverse, but do not release the clutch pedal.

Can you shift the transmission into reverse?

YES -Go to step 7.

NO -Turn the ignition switch to LOCK (0), then go to step 20.

7. Shift the transmission into 1st gear, and lightly press the throttle until the speedometer reads above 12 mph (20 km/h). Try to the shift the transmission into reverse.

Can you shift the transmission into reverse?

YES -Go to step 8.

NO -Intermittent failure, system is OK at this time.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the reverse lockout solenoid 2P connector (A).

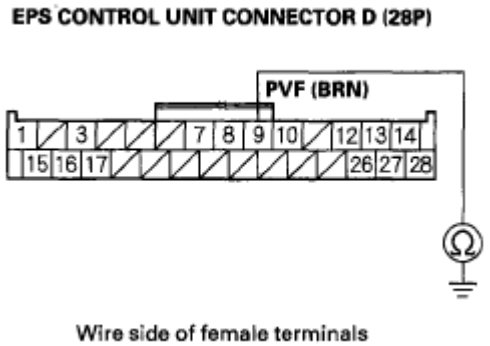


Fig. 9: Identifying Reverse Lockout Solenoid 2P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Turn the ignition switch to ON (II).
11. Measure the voltage between the reverse lockout solenoid 2P connector terminal No. 2 and body ground.

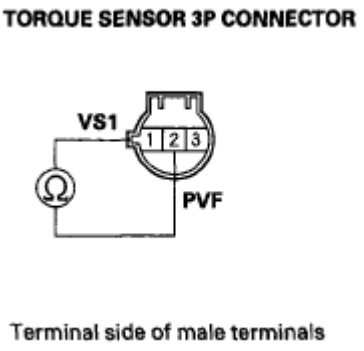


Fig. 10: Measuring Voltage Between Reverse Lockout Solenoid 2P Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Go to step 12.

NO -Check for loose terminals or poor connections at connector. If the connections are OK, repair open or short in the wire between No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid.

12. Turn the ignition switch to LOCK (0).
13. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).
14. At the reverse lockout solenoid side, connect the reverse lockout solenoid 2P connector terminal No.2 to the battery positive terminal, and connect the terminal No. 1 to the battery negative terminal. Make sure the reverse lockout solenoid works.

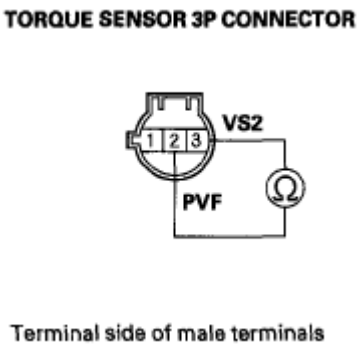


Fig. 11: Connecting Reverse Lockout Solenoid 2P Connector Terminal To Battery Positive Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Does the reverse lockout solenoid work properly?

YES -Go to step 15.

NO -Replace the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).

15. Reinstall the reverse lockout solenoid, and reconnect the reverse lockout solenoid 2P connector.
16. Jump the SCS line with the HDS.
17. Disconnect ECM connector A (44P).
18. Turn the ignition switch to ON (II).
19. Measure the voltage between ECM connector A27 and body ground.

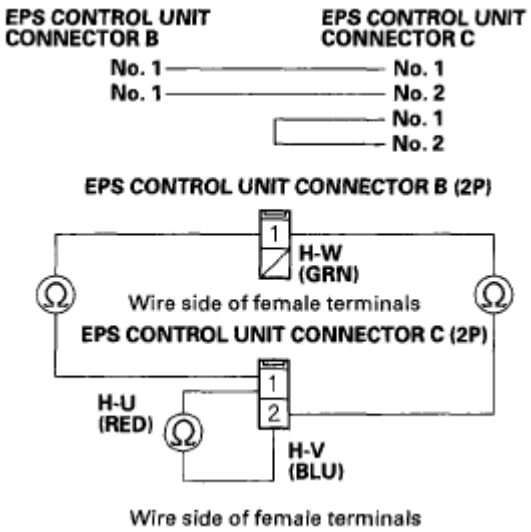


Fig. 12: Measuring Voltage Between ECM Connector Terminals A27 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there battery voltage?

YES -Check for loose terminals or poor connections at ECM connector A (44P). If necessary, update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO -Repair open in the wire between the reverse lockout solenoid and ECM (A27).

20. Jump the SCS line with the HDS.
21. Disconnect ECM connector A (44P).
22. Disconnect the reverse lockout solenoid 2P connector.
23. Check for continuity between the reverse lockout solenoid 2P connector terminal No. 1 and body ground.

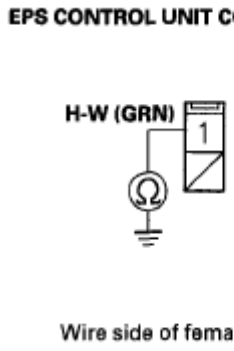


Fig. 13: Checking Continuity Between Reverse Lockout Solenoid 2P Connector Terminal And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short to body ground in the wire between the reverse lockout solenoid and the ECM (A27).

NO -Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

REVERSE LOCKOUT SOLENOID TEST

1. Remove the reverse lockout solenoid (see **REVERSE LOCKOUT SOLENOID TEST**).
2. Connect battery positive terminal to the reverse lockout solenoid 2P connector No. 2 terminal, and connect the battery negative terminal to the No. 1 terminal.

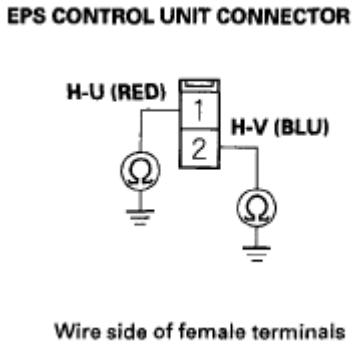


Fig. 14: Connecting Reverse Lockout Solenoid 2P Connector Terminal To Battery Positive Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Make sure the reverse lockout solenoid works. If the reverse lockout solenoid does not work, replace it.

REVERSE LOCKOUT SOLENOID DISASSEMBLY/REASSEMBLY

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery.
4. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
5. Remove the battery base (see step 6).
6. Disconnect the output shaft (countershaft) speed sensor connector, back-up light switch connector, and reverse lockout solenoid connector (see step 8).
7. Carefully remove the shift cables, and cable bracket together to avoid bending the shift cables (see step 9).
8. Remove the three bolts (A) and reverse lockout solenoid (B).

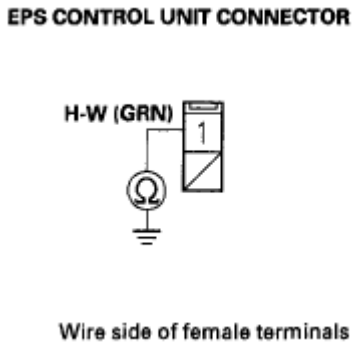


Fig. 15: Identifying Reverse Lockout Solenoid And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the roller (A), the select lock return spring (C), and select lock cam B.

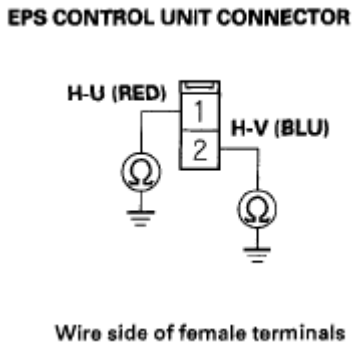


Fig. 16: Identifying Roller And Select Lock Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the components in the reverse order of removal.
11. Clean any the dirt and oil from the sealing surface.
12. Apply liquid gasket, P/N 08718-0001 evenly to the transmission housing mating surface of the reverse lockout solenoid. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If apply liquid gasket P/N 08718-0012, the component must be**

installed within 4 minutes.

- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

13. Install the reverse lockout solenoid.

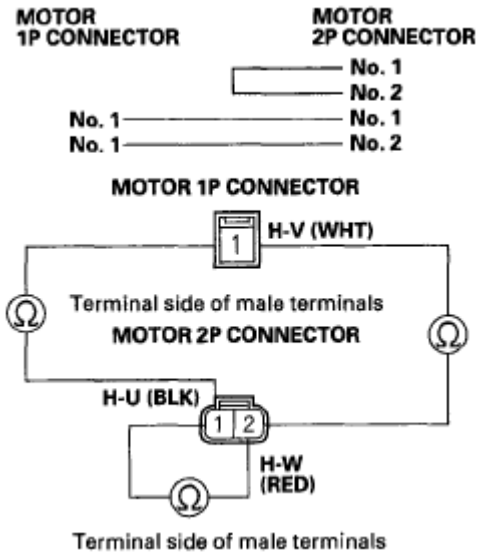


Fig. 17: Identifying Reverse Lockout Solenoid And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the cable bracket and shift cables (see step 37).
15. Connect the reverse lockout solenoid connector, back-up light switch connector, and output shaft (countershaft) speed sensor connector (see step 39).
16. Install the battery base (see step 41).
17. Install the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
18. Install the battery. Clean the battery posts and cable terminals. Connect the positive cable to the battery, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
19. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
20. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

MANUAL TRANSMISSION

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Probable cause(s)	Diagnostic procedure
	1. 1st synchro ring defective.	• Check the 1st synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**).

Hard to shift into 1st gear	2. 1st/2nd synchro sleeve and hub defective. 3. 1st gear defective. 4. Change lever assembly defective.	• Check the 1st/2nd synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 1st gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 2nd gear	1. 2nd synchro ring defective. 2. 1st/2nd synchro sleeve and hub defective. 3. 2nd gear defective. 4. Change lever assembly defective.	• Check the 2nd synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 1st/2nd synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 2nd gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 3rd gear	1. 3rd synchro ring defective. 2. 3rd/4th synchro sleeve and hub defective. 3. 3rd gear defective. 4. Change lever assembly defective.	• Check the 3rd synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 3rd gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 4th gear	1. 4th synchro ring defective. 2. 3rd/4th synchro sleeve and hub defective. 3. 4th gear defective. 4. Change lever assembly defective.	• Check the 4th synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 4th gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 5th gear	1. 5th synchro ring defective. 2. 5th/6th synchro sleeve defective. 3. 5th gear defective. 4. Change lever	• Check the 5th synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 5th/6th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 5th gear (see **SYNCHRO RING AND GEAR INSPECTION**).

	assembly defective.	• Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 6th gear	1. 6th synchro ring defective. 2. 5th/6th synchro sleeve defective. 3. 6th gear defective. 4. Change lever assembly defective.	• Check the 6th synchro ring (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the 5th/6th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 6th gear (see **SYNCHRO RING AND GEAR INSPECTION**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into reverse	1. Reverse shift fork defective. 2. Reverse idler gear defective. 3. Reverse gear defective. 4. Change lever assembly defective. 5. Reverse lockout system defective.	• Check the reverse shift fork (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check the reverse idler gear (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check reverse gear. • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**). • Check the reverse lockout system (see **CIRCUIT TROUBLESHOOTING**).
Noise from the transmission	1. Low transmission fluid level. 2. Worn or damaged transmission gears. 3. Worn or damaged transmission bearings.	• Check the transmission fluid level (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**). • Check the transmission gears. • Check the transmission bearings.
Shift lever does not operate smoothly	1. Shift cable defective. 2. Joint in shift cable and transmission or body.	• Check the shift cables. • Check the joint in the shift cables (see **GEARSHIFT MECHANISM REPLACEMENT**).
Transmission jumps out of gear	1. Detent ball springs defective. 2. Worn synchro teeth.	• Check the detent ball springs. • Check the synchro teeth.

TRANSMISSION FLUID INSPECTION AND REPLACEMENT

1. Raise the vehicle on a lift.
2. Remove the filler plug (A) and sealing washer (B), check the condition of the fluid, and make sure it is at the proper level (C).

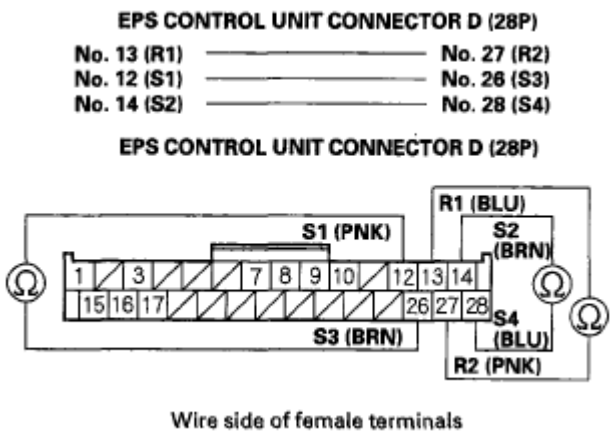


Fig. 18: Identifying Filler Plug And Sealing Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the fluid is dirty, remove the drain plug (A), and sealing washer (B) drain it.

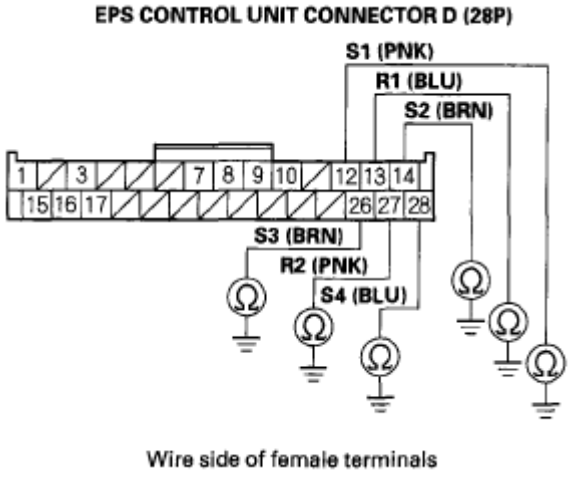


Fig. 19: Identifying Drain Plug And Sealing Washer w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the drain plug with a new sealing washer, and refill the transmission fluid to the proper level.

Fluid Capacity

1.5 L (1.6 US qt) at fluid change

1.7 L (1.8 US qt) at overhaul

Always use Honda Manual Transmission Fluid (MTF). Using engine oil can cause stiffer shifting because it does not contain the proper additives.

5. Install the filler plug (C) with a new sealing washer (D).
6. If the maintenance minder required to replace the fluid, reset the maintenance minder (see **MAINTENANCE MINDER**).

   If it did not reset, select BODY ELECTRICAL, GAUGES, ADJUSTMENT, MAINTENANCE MINDER, RESET, MAINTENANCE SUB ITEM 3 with the HDS.

BACK-UP LIGHT SWITCH TEST

1. Disconnect the back-up light switch connector (A).

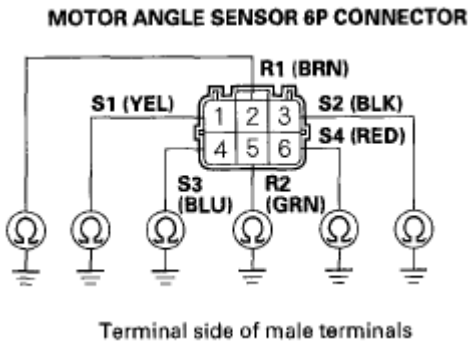


Fig. 20: Identifying Back-Up Light Switch Connector w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the change lever is only in reverse.
3. If necessary, replace the back-up light switch. Apply liquid gasket (P/N 08718-0001) evenly to the threads of the transmission housing. Install the switch within 5 minutes of applying the liquid gasket. Tighten the back-up light switch to the specified torque.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

TRANSMISSION REMOVAL

Special Tools Required

- Engine hanger/adapter VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566
- Front subframe adapter VSB02C000016
- 2006 Civic engine hanger VSB02C000025

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
2. Remove the cowl cover and under-cowl panel (see **COWL COVER REPLACEMENT**).
3. Disconnect the negative cable from the battery, then disconnect the positive cable.
4. Remove the battery.
5. Remove the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
6. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

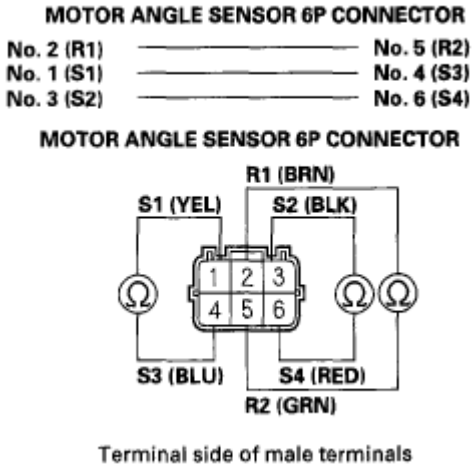


Fig. 21: Identifying Intake Air Duct And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the clutch line bracket (A), then carefully remove the slave cylinder (B) to avoid bending the clutch line.

NOTE: Do not press the clutch pedal after the slave cylinder has been removed.

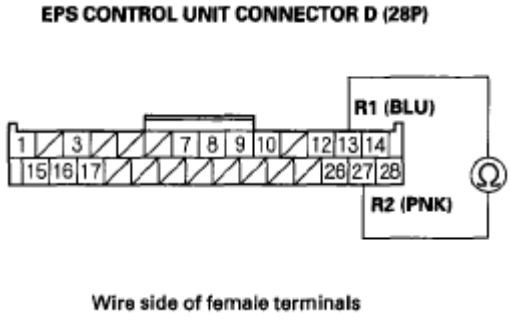


Fig. 22: Identifying Clutch Line Bracket And Slave Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor

connector (B), the reverse lockout solenoid connector (C), and the harness clips (D).

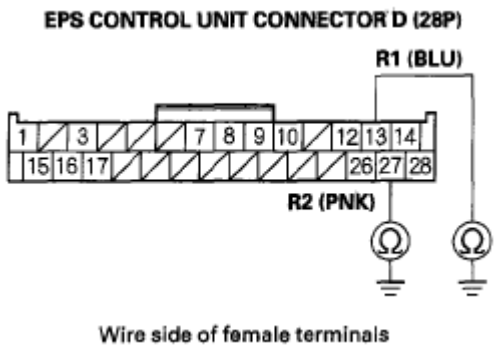


Fig. 23: Identifying Back-Up Light Switch Connector And Countershaft Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the cotter pins (A) and lock pins (B), shift cable bracket (C), then disconnect the shift cables (D) from the top of the transmission housing. Carefully remove both cables and the bracket together to avoid bending the cables.

'06 model

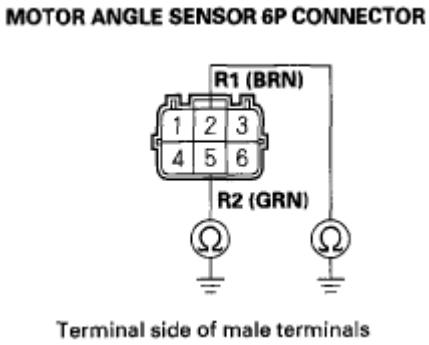


Fig. 24: Identifying Shift Cable Bracket Cotter Pins And Lock Pins (06 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'07-08 models

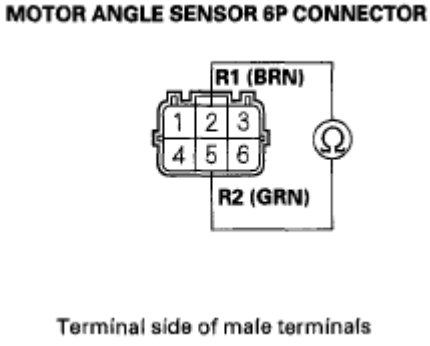


Fig. 25: Identifying Shift Cable Bracket Cotter Pins And Lock Pins (07-08 Models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the harness clips (A) from the clutch cable bracket (B) and harness bracket (C).

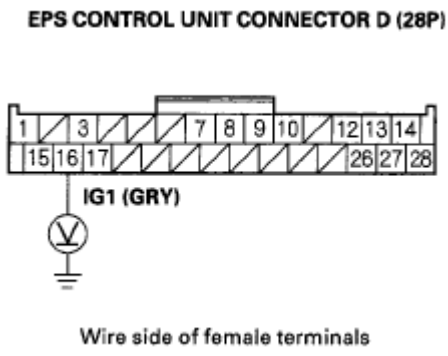


Fig. 26: Identifying Clutch Cable Bracket And Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the air cleaner housing bracket (A).

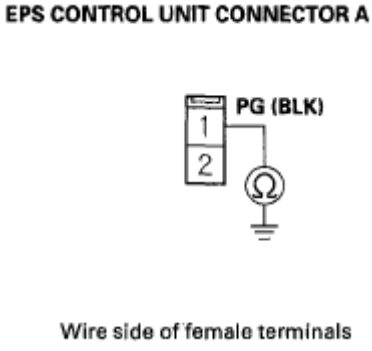


Fig. 27: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness forward off the air cleaner housing mounting bracket (C).

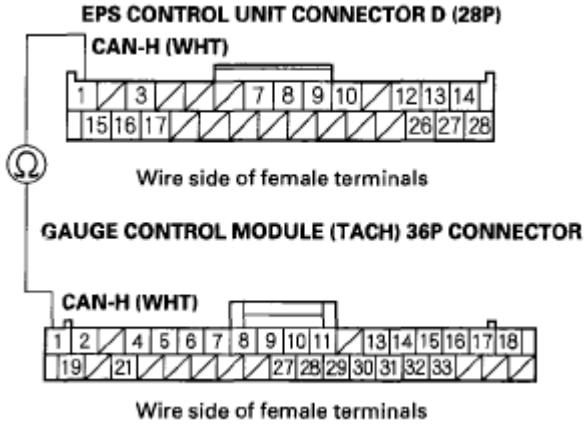


Fig. 28: Identifying Engine Wire Harness Cover On Lock Tab
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Attach the engine hanger (A) to the threaded holes in the cylinder head.

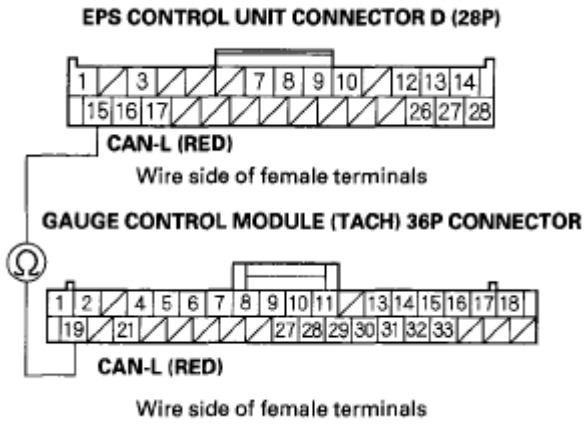


Fig. 29: Identifying Engine Hanger
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the front leg assembly (A), hook (B), and wingnut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the 2006 Civic engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger/adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

NOTE: Use care when working around the windshield.

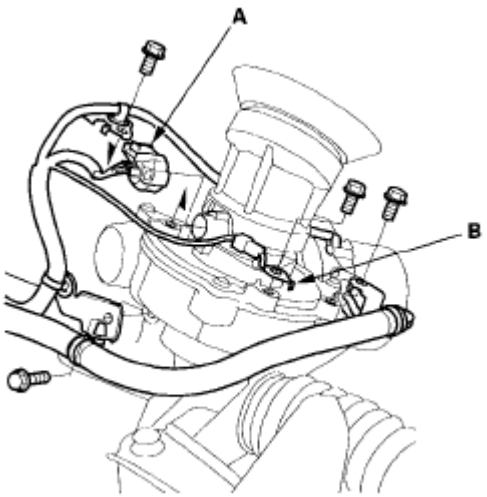


Fig. 30: Identifying Front Leg Assembly With Hook And Wingnut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the two upper transmission mounting bolts.

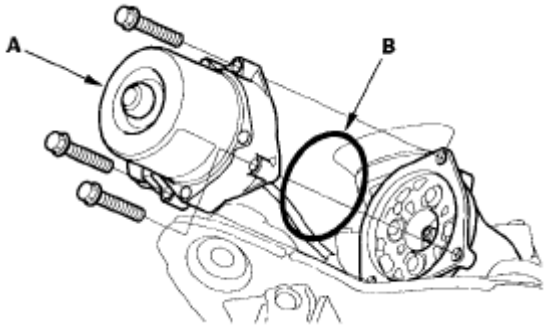


Fig. 31: Identifying Upper Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.

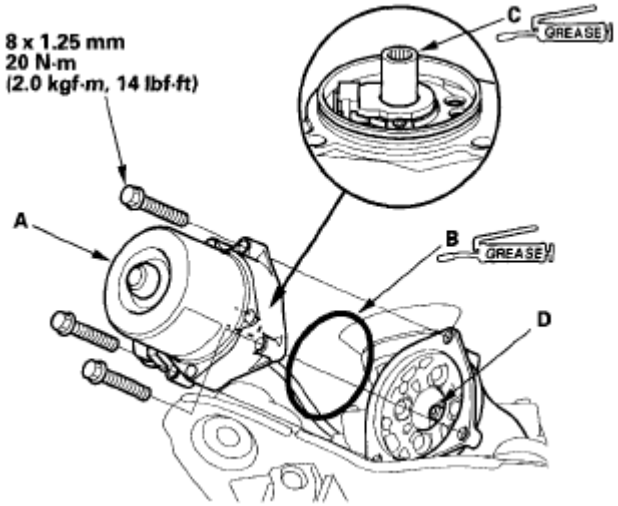


Fig. 32: Identifying Under-Hood Fuse/Relay Box On Lock Tabs
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the engine control module (ECM) stay (A), then move it aside. Remove the clutch line clamp (B).

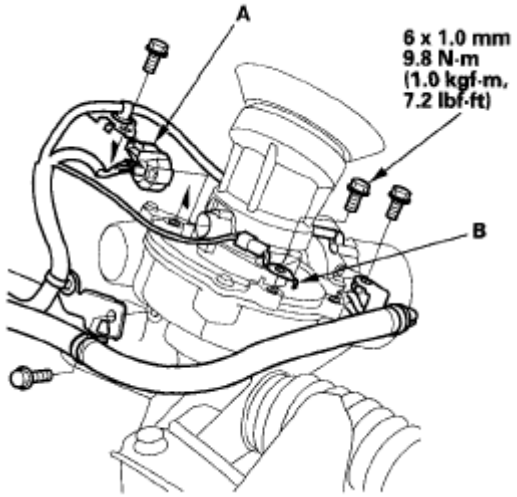


Fig. 33: Identifying Engine Control Module (ECM) Stay And Clutch Line Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).

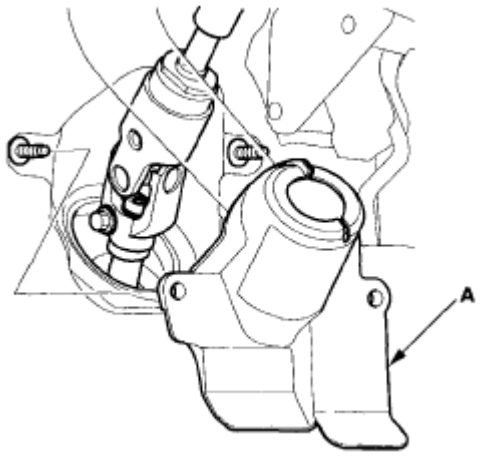


Fig. 34: Identifying Transmission Mount Bracket Bolts And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Raise the vehicle on the lift.
20. Remove the splash shield.

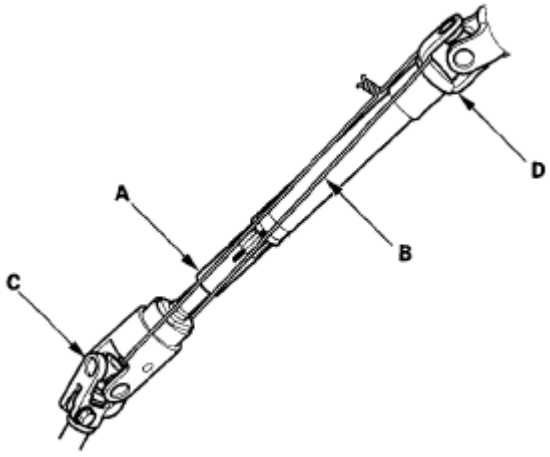


Fig. 35: Identifying Splash Shield And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Drain the transmission fluid. Reinstall the drain plug with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
22. Separate the lower arm (see step 5 on **DRIVESHAFT REMOVAL**).
23. Remove the stiffner plate (A) and mounting bracket (B) from the steering gearbox. Disconnect the exhaust mounting rubber (C).

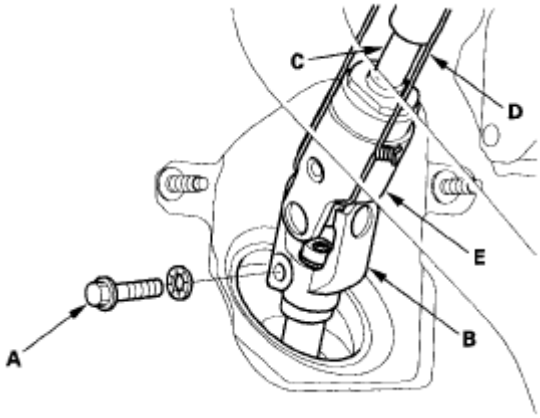


Fig. 36: Identifying Stiffner Plate And Mounting Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Remove the stiffner plate (A) and harness clip (B).

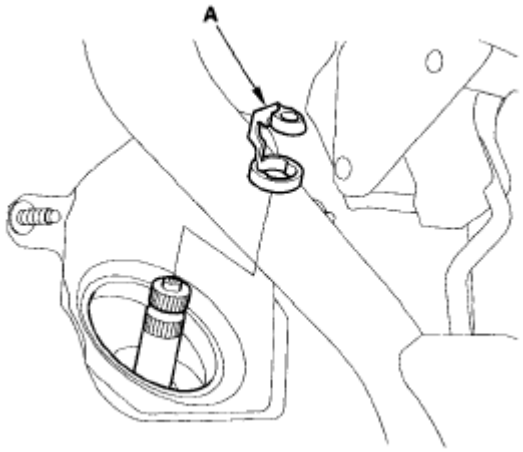


Fig. 37: Identifying Stiffner Plate And Harness Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Remove the front mount mounting bolt (A) and nut (B) then, remove the lower radiator hose from the front mount bracket.

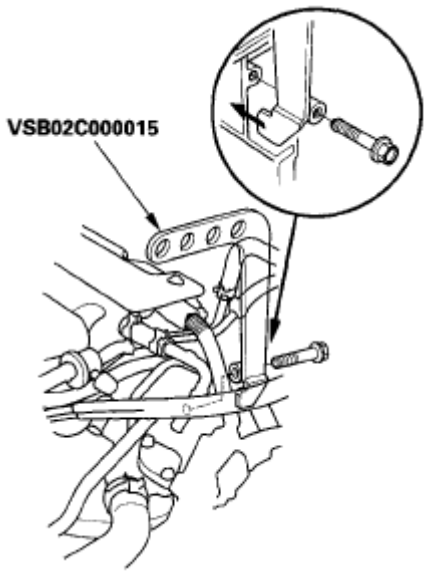


Fig. 38: Identifying Front Mount Mounting Bolt And Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Remove the front engine mount bracket (A) from the transmission and engine.

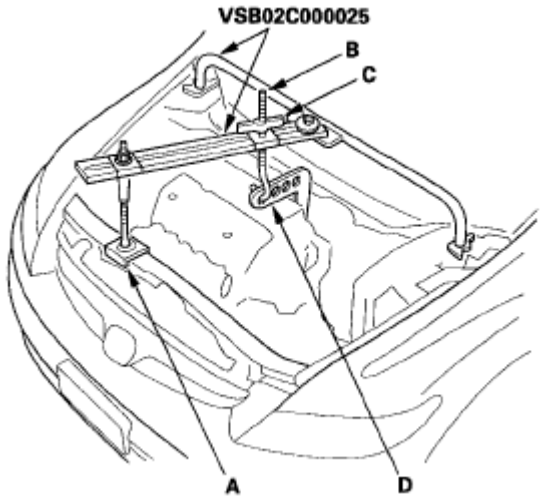


Fig. 39: Identifying Front Engine Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the lower torque rod mounting bolt.

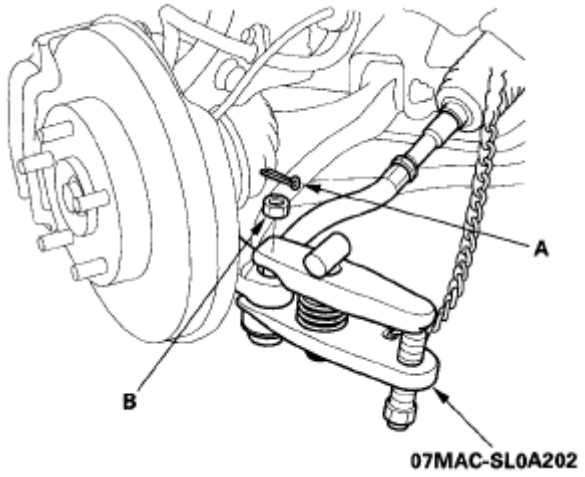


Fig. 40: Identifying Lower Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Remove the middle subframe mounting bolts (A).

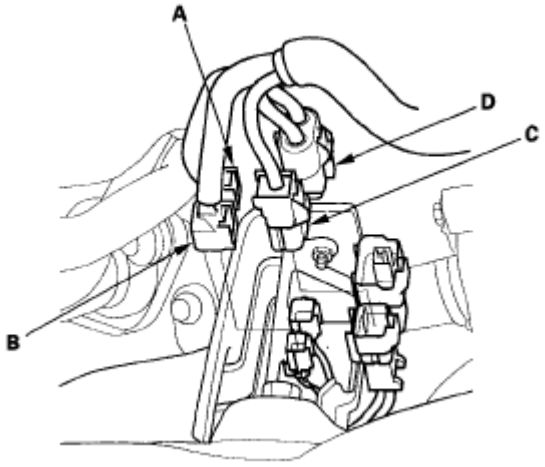


Fig. 41: Identifying Middle Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Note the reference marks (A) on both sides of the subframe that lines up with the body (B).

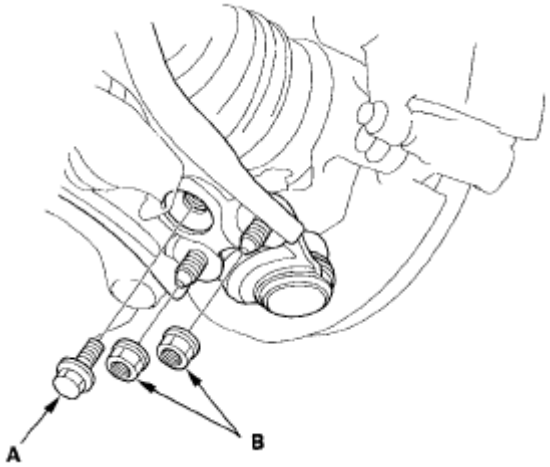


Fig. 42: Identifying Marks On Both Sides Of Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Attach the front subframe adapter to the front subframe by wrapping the band over the front subframe and attaching the end of the band to the front subframe adapter with the pin (A).

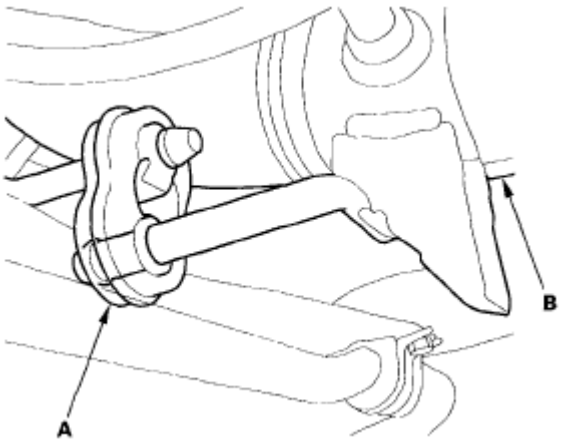


Fig. 43: Identifying Front Subframe Adapter With Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (B), then attach them securely.
32. Remove the front subframe mounting bolts (A) and front subframe (B).

NOTE: Suspend the steering gearbox with an appropriate size wire.

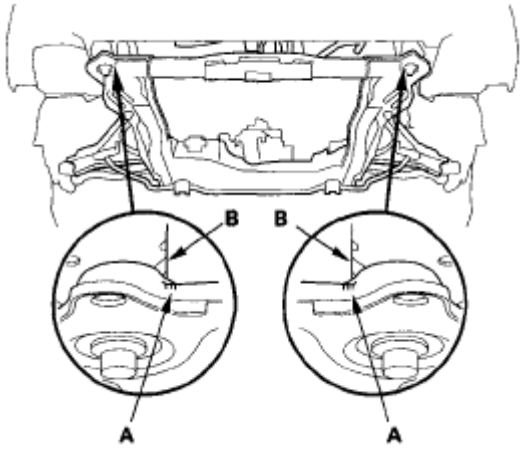


Fig. 44: Identifying Front Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Pry out the driveshafts inboard joint (see step 8 on **DRIVESHAFT REMOVAL**).
34. Remove the intermediate shaft (see **INTERMEDIATE SHAFT REMOVAL**).
35. Remove the clutch cover.

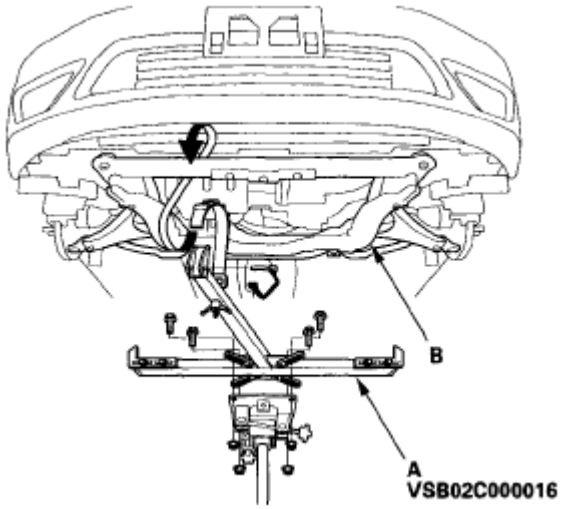


Fig. 45: Identifying Clutch Cover And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Support the transmission with the transmission jack.
37. Remove the transmission mounting bolts.

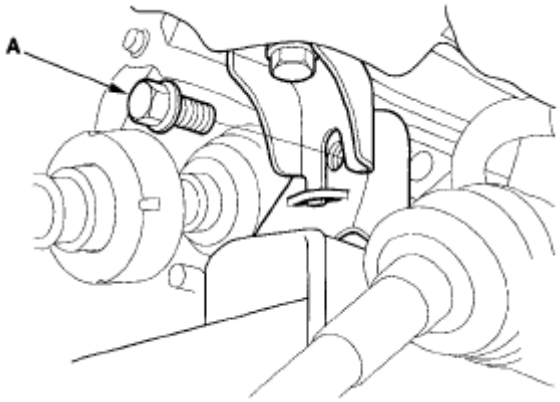


Fig. 46: Identifying Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.
39. Slowly lower the transmission about 150 mm (6 in). Check once again that all hoses and electrical wiring are disconnected and free from the transmission, then lower it all the way.
40. Remove the release fork boot (A) from the clutch housing (B).

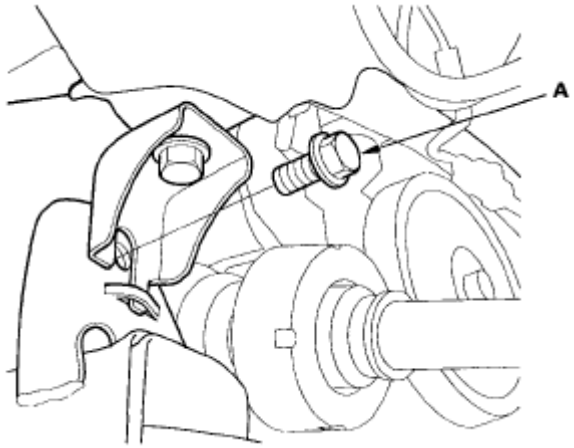


Fig. 47: Identifying Release Fork Boot From Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

TRANSMISSION INSTALLATION

Special Tools Required

- Engine hanger/adapter VSB02C000015
- Engine support hanger, A & Reds AAR-T-12566
- Front subframe adapter VSB02C000016
- 2006 Civic engine hanger VSB02C000025

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).

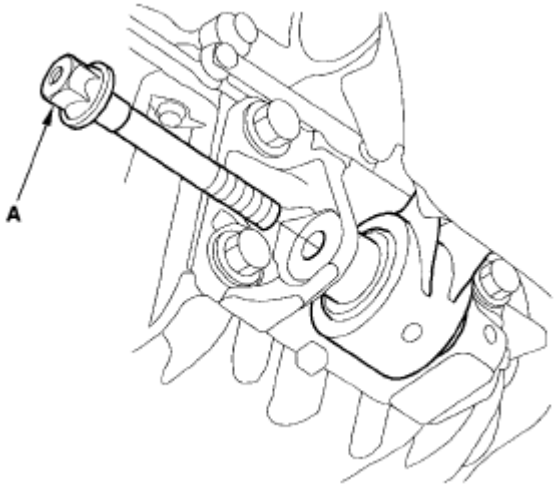


Fig. 48: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Make sure the two dowel pins (A) are installed in the clutch housing.

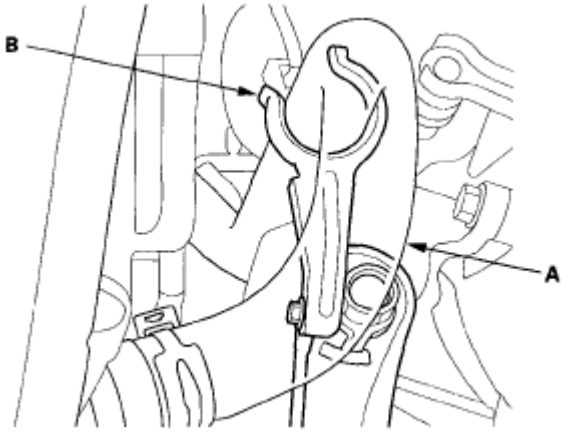


Fig. 49: Identifying Dowel Pins In Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the release fork and the release bearing (see step 35 on **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**), then install the release fork boot (see step 37 on page **PRESSURE PLATE AND CLUTCH DISC REMOVAL (6-SPEED MODEL)**).
4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the transmission mounting bolts.

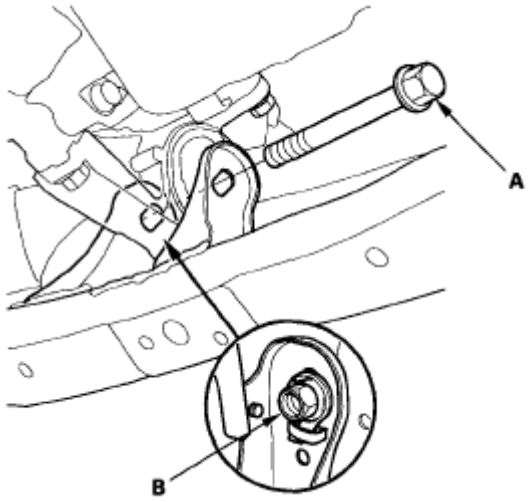


Fig. 50: Identifying Transmission Mounting Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the clutch cover.

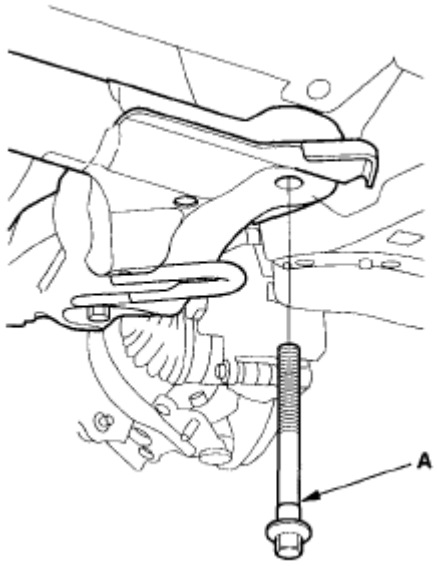


Fig. 51: Identifying Clutch Cover And Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the intermediate shaft (see **INTERMEDIATE SHAFT INSTALLATION**).
8. Install the driveshafts inboard joint (see **DRIVESHAFT INSTALLATION**).
9. Support the front subframe with the front subframe adapter and a jack.

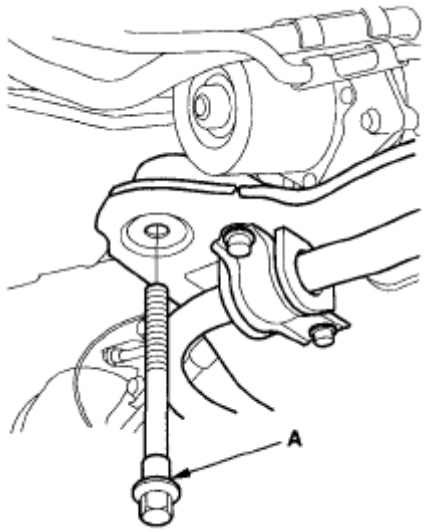


Fig. 52: Supporting Front Subframe With Front Subframe Adapter And Jack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the front subframe (A). Loosely install the new subframe mounting bolts (B).

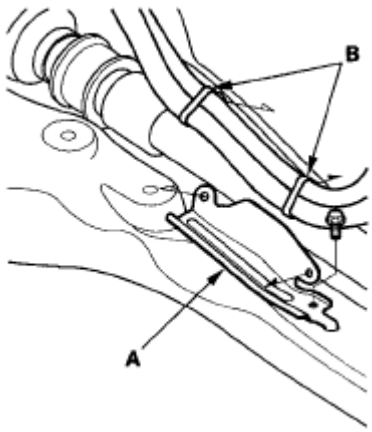


Fig. 53: Identifying Front Subframe And Subframe Mounting Bolts w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the subframe mounting bolts to the specified torque.

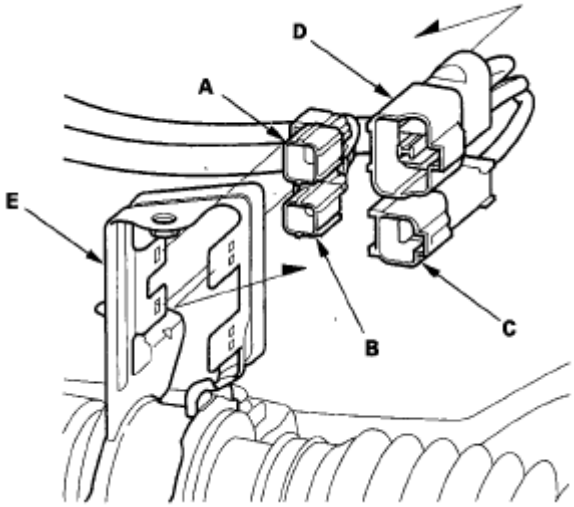


Fig. 54: Identifying Front Subframe Reference Marks To Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the lower torque rod mounting bolt.

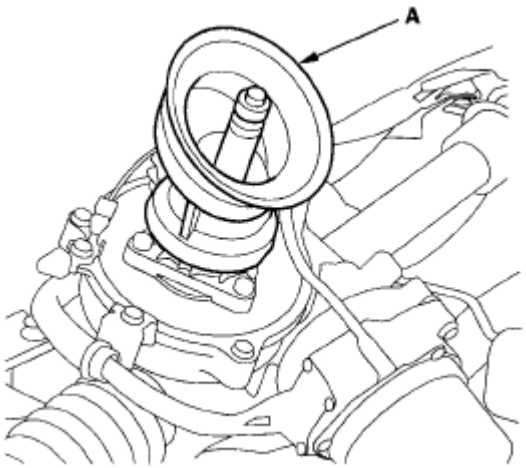


Fig. 55: Identifying Lower Torque Rod Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the front engine mount bracket (A) on the transmission and engine.

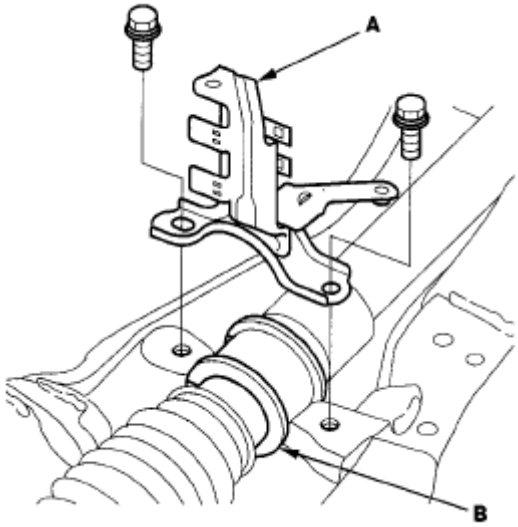


Fig. 56: Identifying Front Engine Mount Bracket w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Loose tighten the new front mount mounting bolt (A). Then attach the lower radiator hose to the front engine mount bracket.

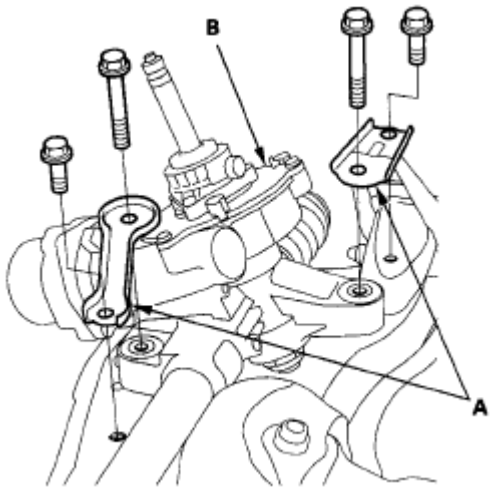


Fig. 57: Identifying Front Mount Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the middle subframe mounting bolts.

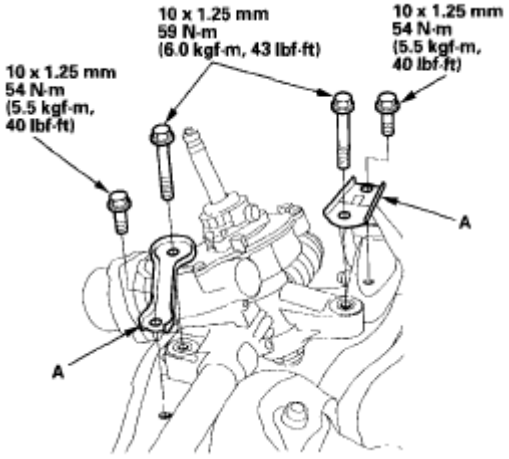


Fig. 58: Identifying Middle Subframe Mounting Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the steering gearbox stiffner plate (A) and harness clip (B).

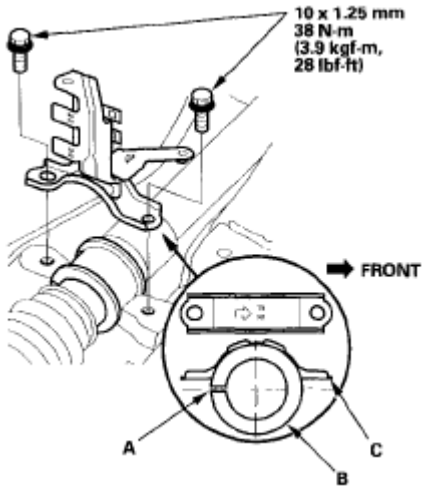


Fig. 59: Identifying Steering Gearbox Stiffner Plate And Harness Clip w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the stiffner plate (A) and mounting bracket (B). Connect the exhaust mounting rubber (C).

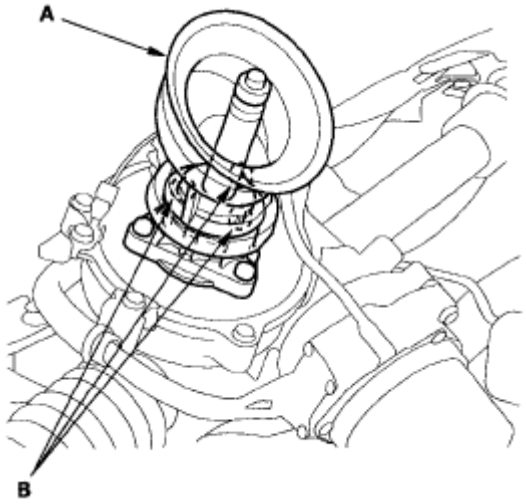


Fig. 60: Identifying Stiffner Plate And Mounting Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Connect the lower arm (see step 7 on **DRIVESHAFT INSTALLATION**).
19. Lower the vehicle on the lift.
20. Install the transmission mount bracket (A) and connect the ground cable (B).

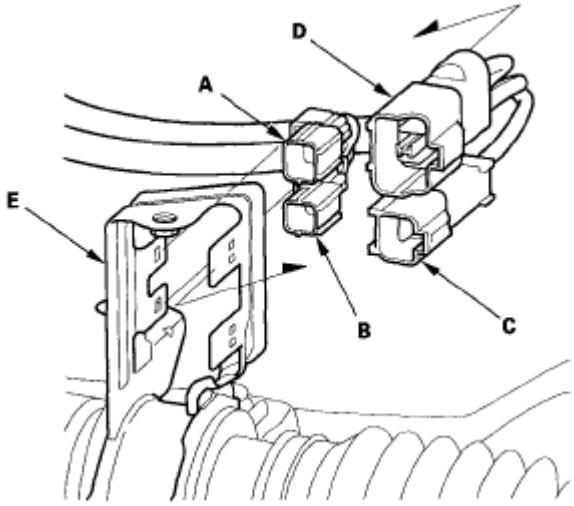


Fig. 61: Identifying Transmission Mount Bracket And Ground Cable w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Raise the vehicle on the lift.
22. Loosen and retighten the lower torque rod mounting bolt.

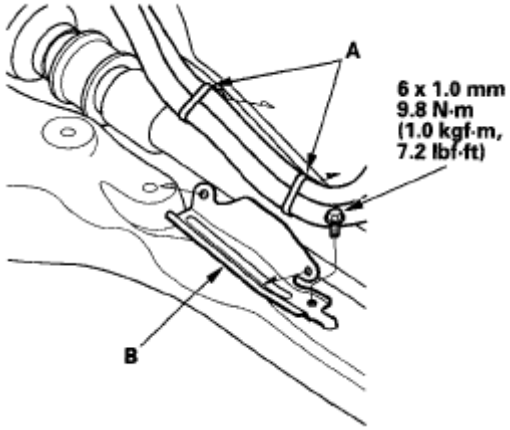


Fig. 62: Identifying Lower Torque Rod Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Lower the vehicle on the lift.
24. Tighten the upper torque rod mounting bolt.

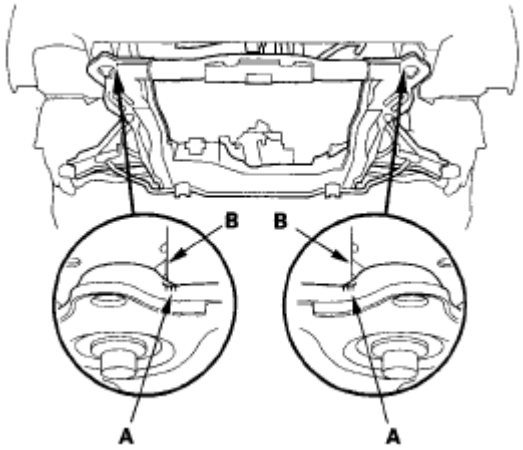


Fig. 63: Identifying Upper Torque Rod Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Raise the vehicle on the lift.
26. Tighten the front mount mounting bolt.

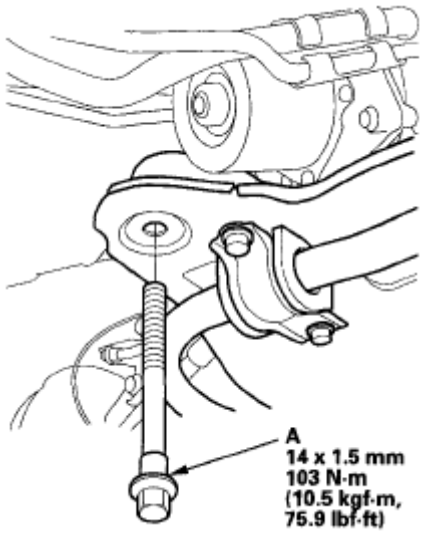


Fig. 64: Identifying Front Mount Mounting Bolt w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Refill the transmission with the recommended transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
28. Install the splash shield.

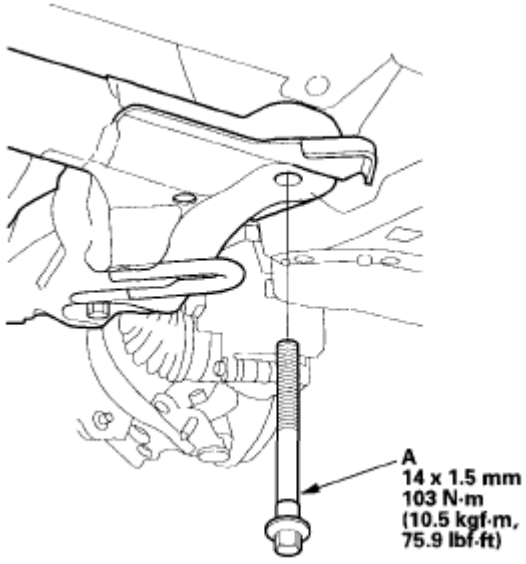


Fig. 65: Identifying Splash Shield And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Lower the vehicle on the lift.
30. Remove the engine hanger and the hanger/adapter from the engine.
31. Install the engine control module (ECM) bracket (A), then install the clutch line clamp (B).

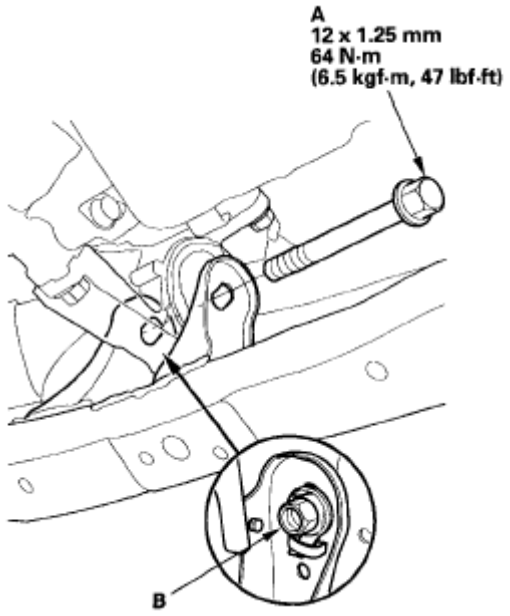


Fig. 66: Identifying Engine Control Module (ECM) Bracket And Clutch Line Clamp w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.

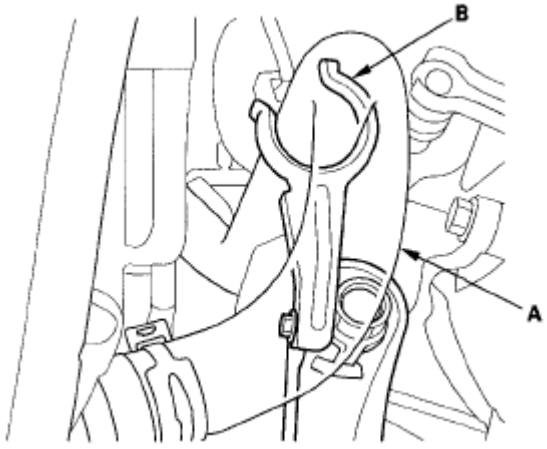


Fig. 67: Identifying Under-Food Fuse/Relay Box On Under-Hood Fuse/Relay Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Install the two upper transmission mounting bolts.

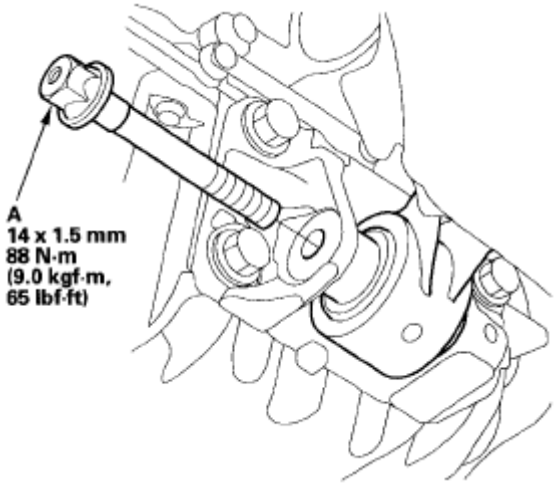


Fig. 68: Identifying Upper Transmission Mounting Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Install the engine harness cover (A).

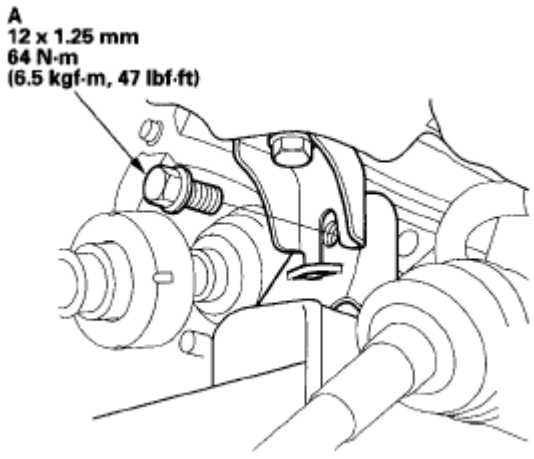


Fig. 69: Identifying Engine Harness Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the air cleaner housing mounting bracket.

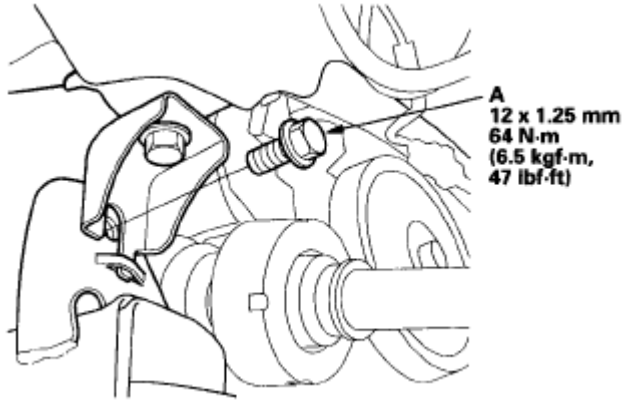


Fig. 70: Identifying Air Cleaner Housing Mounting Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Install the harness clips (A) on the shift cable bracket (B) and harness bracket (C).

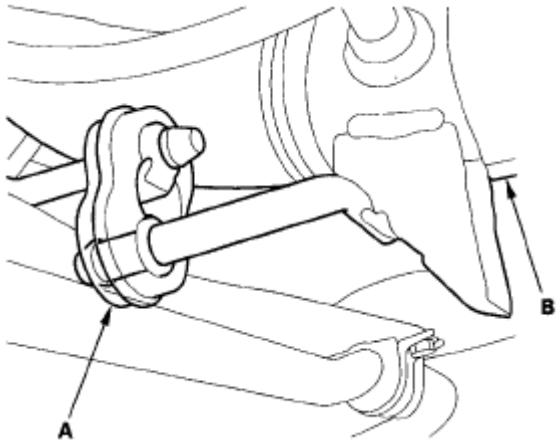


Fig. 71: Identifying Shift Cable Bracket And Harness Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the shift cable ends (A).

'06 model

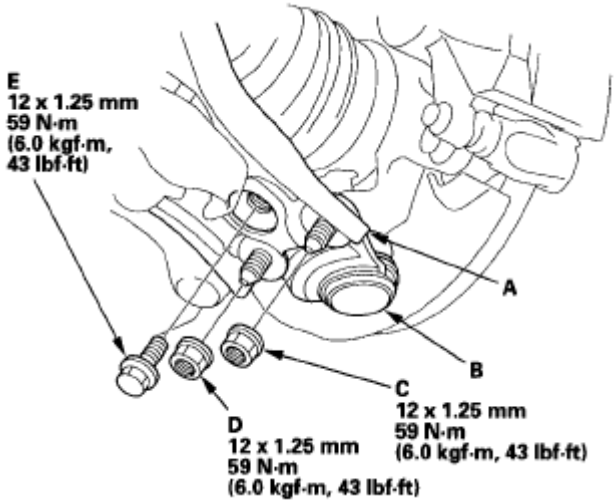


Fig. 72: Identifying Shift Cable Ends And Shift Cable Bracket w/Torque Spec. (06 Model)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

'07-08 models

Fig. 73: Identifying Shift Cable Ends And Shift Cable Bracket w/Torque Spec.(07-08 Models)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Install the shift cable bracket (B) and the shift cables (C), then install the new cotter pins (D) and lock pins (E).
39. Connect the back-up light switch connector (A), and the output shaft (countershaft) speed sensor connector (B), and the reverse lockout solenoid connector (C). Install the harness clips (D).

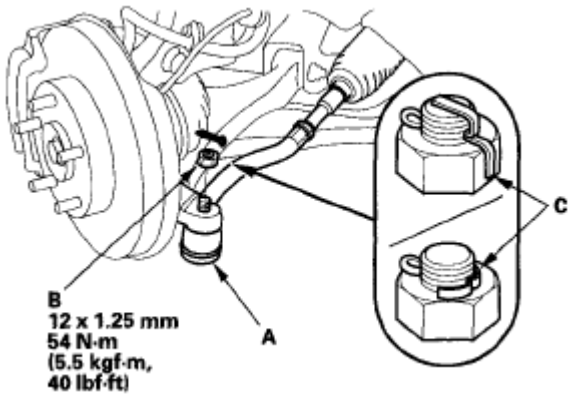


Fig. 74: Identifying Back-Up Light Switch Connector And Countershaft Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder rod. Install the slave cylinder (A) then install the clutch line bracket (B). Be careful not to bend the clutch line.

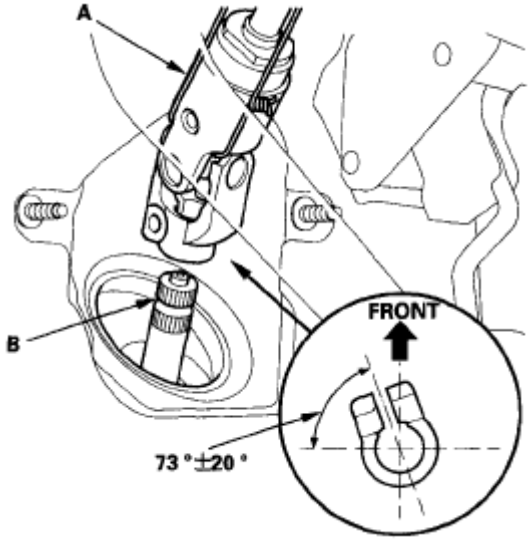


Fig. 75: Identifying Slave Cylinder And Clutch Line Bracket w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

41. Install the battery base (A) with the coolant reservoir (B).

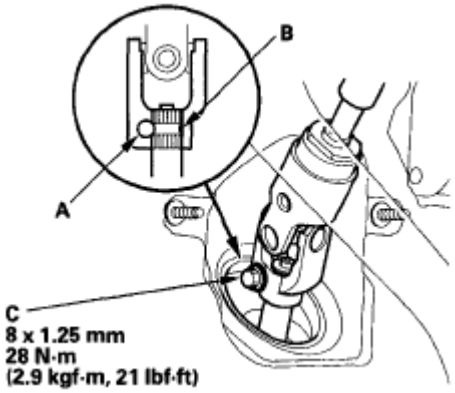


Fig. 76: Identifying Battery Base With Coolant Reservoir w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Install the harness clips (C) and the intake air duct (D).
43. Install the air cleaner assembly (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
44. Install the battery. Clean the battery posts and cable terminals. Connect the positive cable to the battery, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
45. Install the under-cowl panel and cowl cover (see **COWL COVER REPLACEMENT**).
46. Check the change lever and the clutch operation.
47. Check the front wheel alignment (see **WHEEL ALIGNMENT**).
48. Test-drive the vehicle.
49. Enter the anti-theft code for the audio system or the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
50. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

TRANSMISSION DISASSEMBLY

Exploded View-Clutch Housing

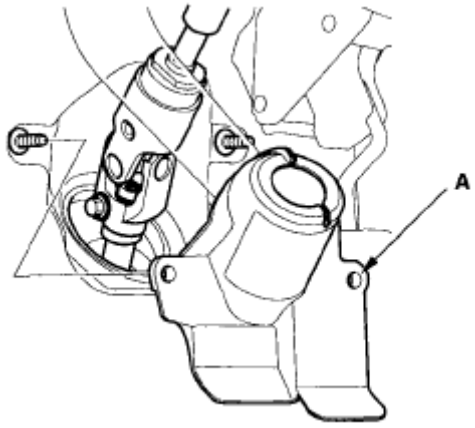


Fig. 77: Exploded View Of Clutch Housing Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Exploded View-Transmission Housing

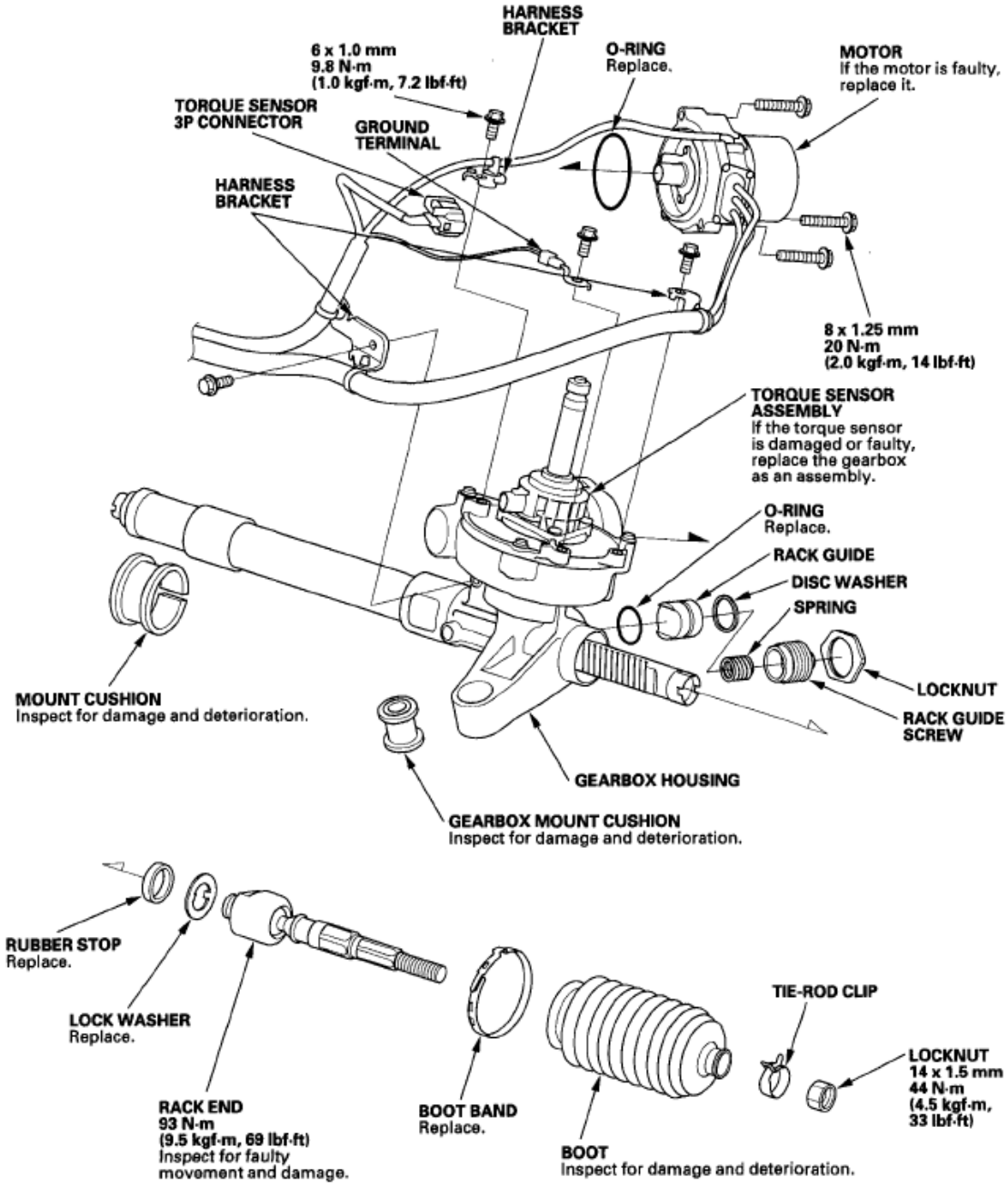


Fig. 78: Exploded View Of Transmission Housing Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the detent bolts (A), 12 mm washers (B) springs, steel balls, and the back-up light switch (C). Then remove the transmission hanger (D).

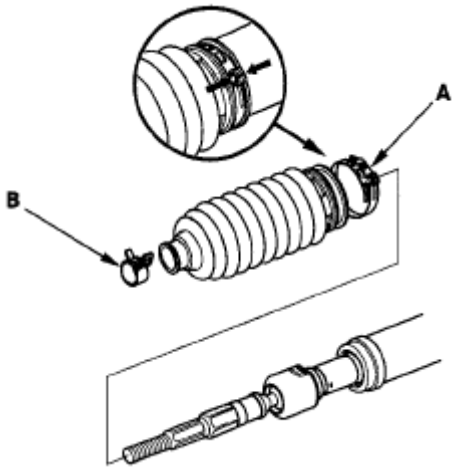


Fig. 79: Identifying Back-Up Light Switch With Bolts And Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the 20 mm bolt (A) and the 20 mm washer (B).

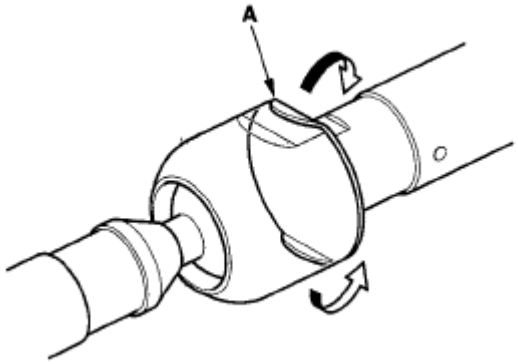


Fig. 80: Identifying Bolts And Washers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the interlock bolt (B), change lever assembly (C), 8 x 14 mm dowel pins (D), and harness bracket A.

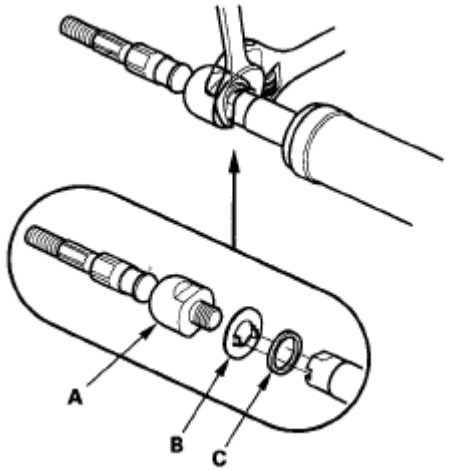


Fig. 81: Identifying Change Lever Assembly And Interlock Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the drain plug (A), the 14 mm sealing washer (B), the filler plug (C), 20 mm sealing washer (D), the 10 mm flange bolt (E), 10 mm washer (F), the output shaft (countershaft) speed sensor (G), and the O-ring (H).

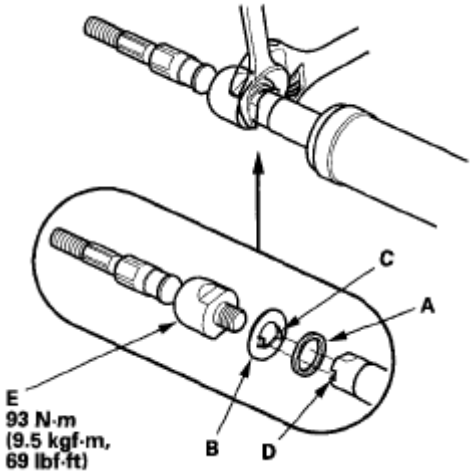


Fig. 82: Identifying Drain Plug And Sealing Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the transmission hanger A, the transmission hanger B, and the harness bracket (C).

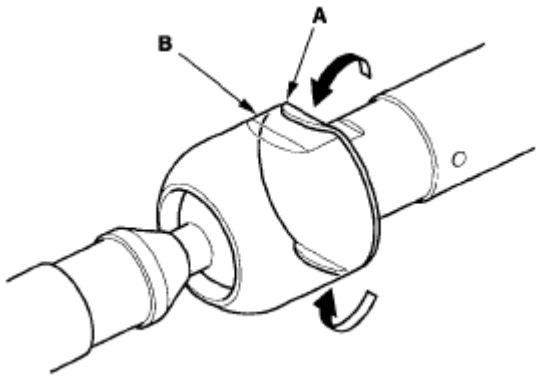


Fig. 83: Identifying Transmission Hanger And Harness Bracket With Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the 8 mm flange bolts in a crisscross pattern in several steps.
7. Remove the 32 mm sealing cap (A).

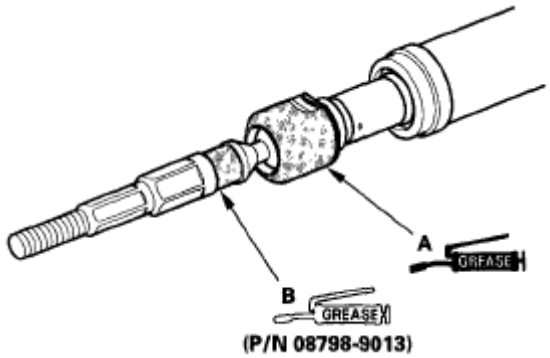


Fig. 84: Identifying Sealing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Expand the 72 mm snap ring (B) on the countershaft ball bearing, and remove it from the groove using a pair of snap ring pliers.
9. Remove the transmission housing (C) and the three 14 x 20 mm dowel pins (D).
10. Remove the reverse idler gear (A) and the reverse gear shaft (B).

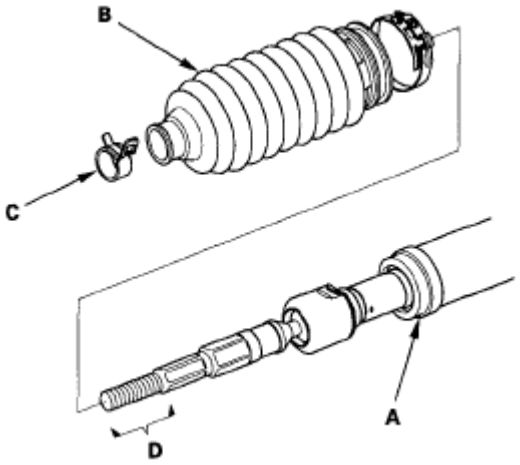


Fig. 85: Identifying Reverse Idler Gear And Reverse Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the reverse shift fork.

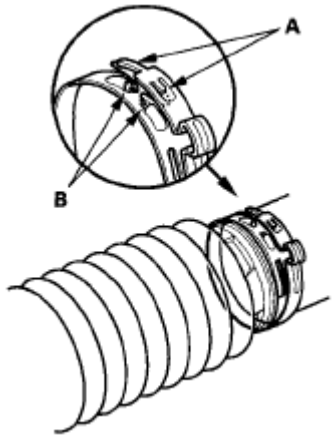


Fig. 86: Identifying Reverse Shift Fork And Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

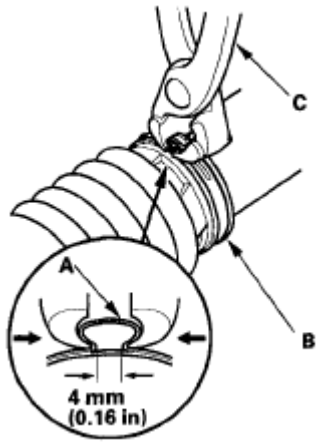


Fig. 87: Identifying Mainshaft Assembly, Countershaft Assembly. Shift Forks And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the 28 mm spring washer (E) and 28 mm washer (F).
14. Remove the differential assembly (A) and the magnet (B).

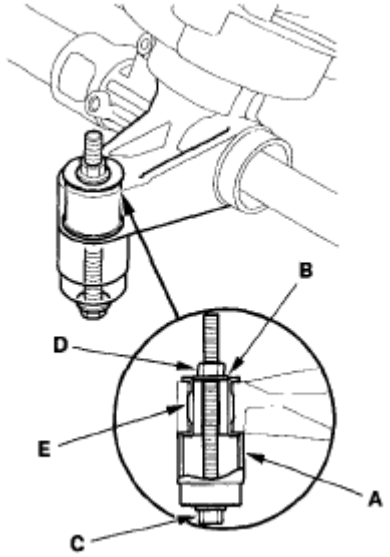


Fig. 88: Identifying Differential Assembly And Magnet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the oil gutter plate (A), the oil guide plate M, and the 72 mm shim (B).

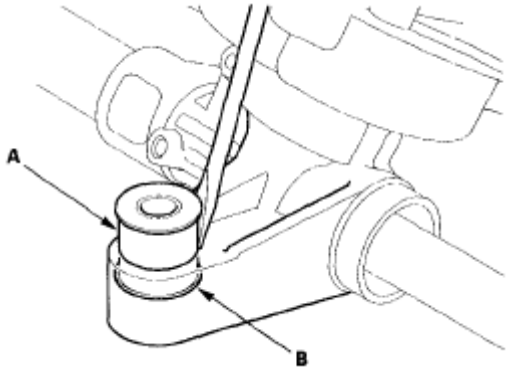


Fig. 89: Identifying Oil Gutter Plate And Shim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE SHIFT FORK CLEARANCE INSPECTION

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.20-0.59 mm (0.007-0.024 in.) Service Limit: 1.3 mm (0.051 in.)

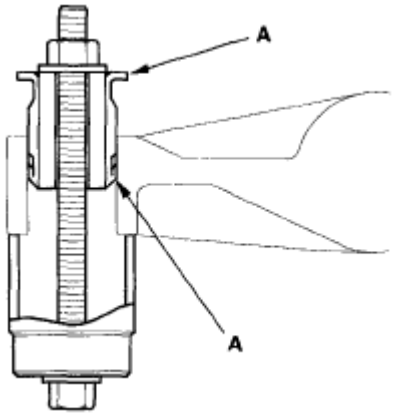


Fig. 90: Identifying Reverse Idler Gear, Reverse Shift Fork And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the width of the reverse shift fork.
   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace reverse idler gear.

   Standard: 13.4-13.7 mm (0.527-0.539 in.)

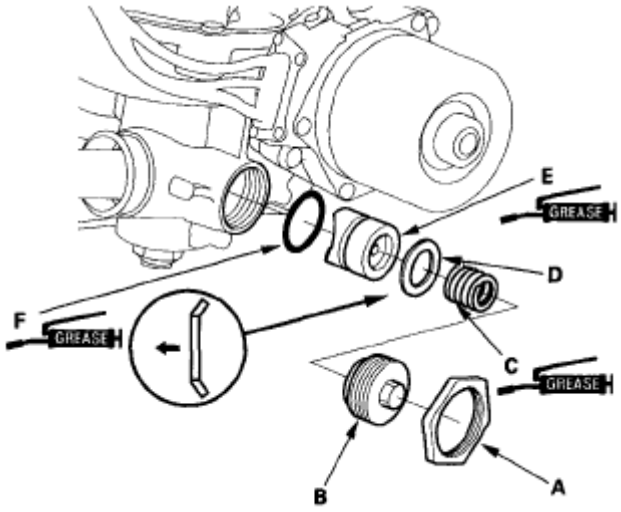


Fig. 91: Identifying Width Of Reverse Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHANGE LEVER CLEARANCE INSPECTION

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.05-0.25 mm (0.002-0.010 in.) Service Limit: 0.50 mm (0.020 in.)

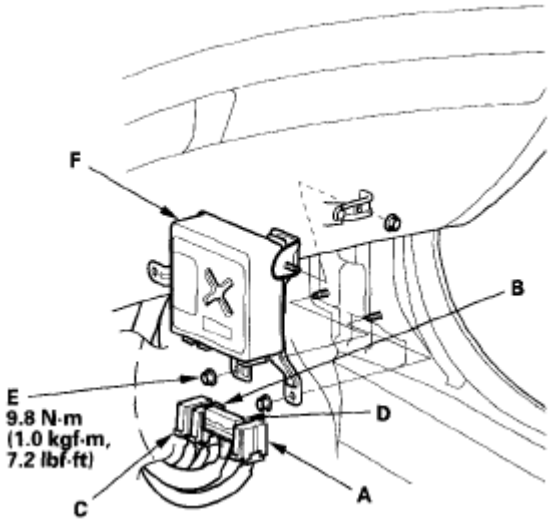


Fig. 92: Identifying Lever, Select Lever And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the groove of the change lever.
   - If the groove is not within the standard, replace the shift lever.
   - If the groove is within the standard, replace the select lever.

   Standard: 15.00-15.10 mm (0.591-0.594 in.)

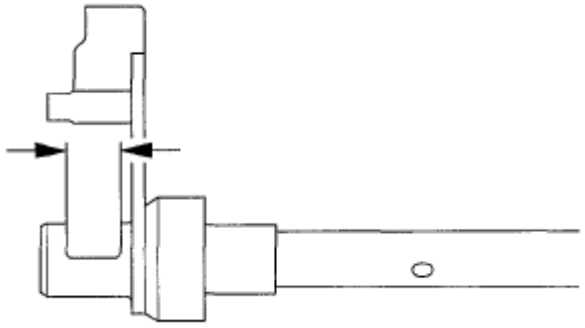


Fig. 93: Identifying Groove Of Change Lever
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY

NOTE:

- **If 5 minutes have passed after applying liquid gasket, reapply it, and assemble the shift arm cover.**
- **Prior to reassembling, clean all parts in solvent, dry them, and apply grease to the contact surfaces as shown.**

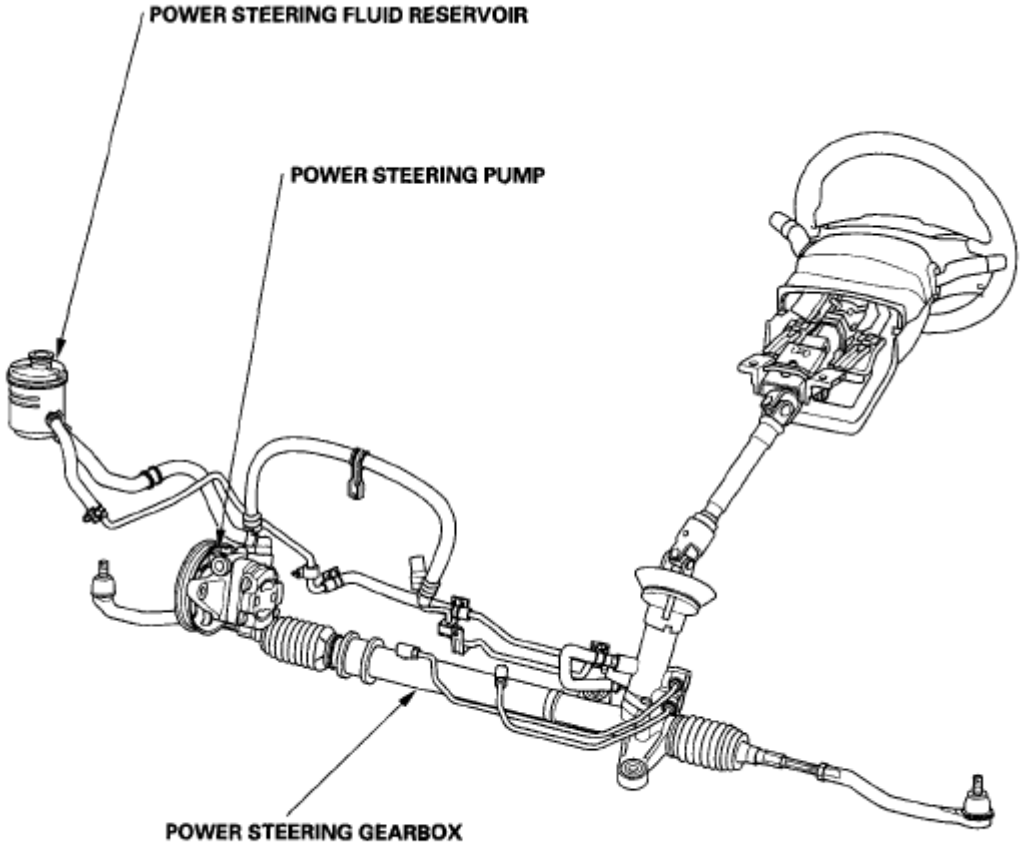


Fig. 94: Exploded View Of Change Lever Assembly & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK CLEARANCE INSPECTION

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.35-0.65 mm (0.014-0.026 in.) Service Limit: 1.0 mm (0.039 in.)

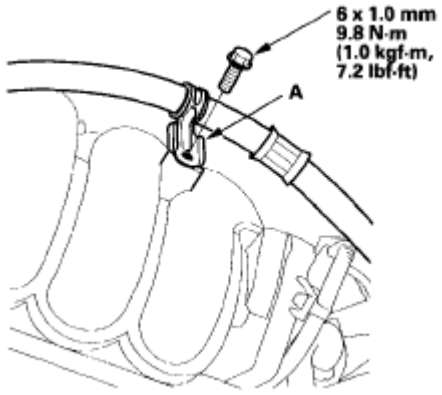


Fig. 95: Identifying Shift Fork And Synchro Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the thickness of the shift fork fingers.
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

   Standard: 7.4-7.6 mm (0.29-0.30 in.)

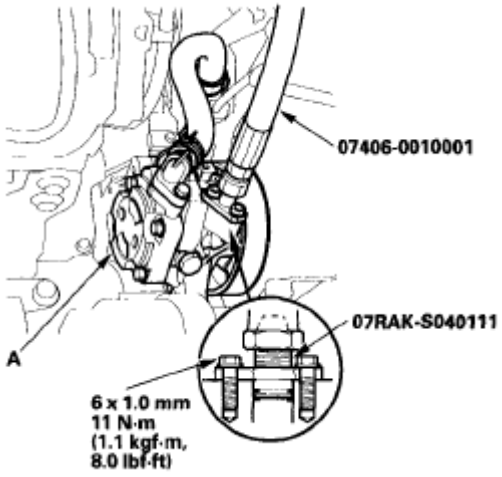


Fig. 96: Identifying Thickness Of Shift Fork Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

   Standard: 0.2-0.5 mm (0.007-0.020 in.) Service Limit: 0.62 mm (0.024 in.)

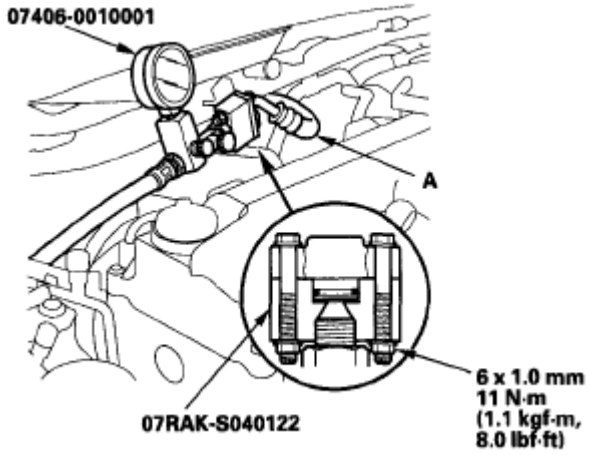


Fig. 97: Identifying Shift Fork And Shift Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the width of the shift arm.
   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork or reverse shift piece.

   Standard: 16.9-17.0 mm (0.665-0.669 in.)

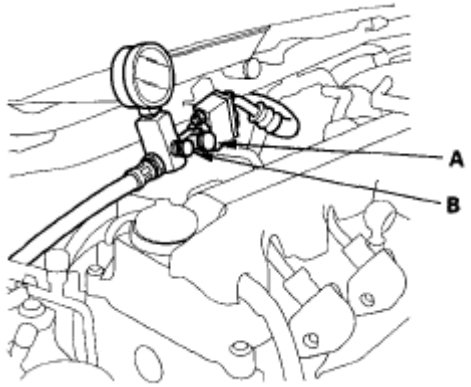


Fig. 98: Identifying Width Of Shift Arm
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK DISASSEMBLY/REASSEMBLY

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to all contact surfaces.

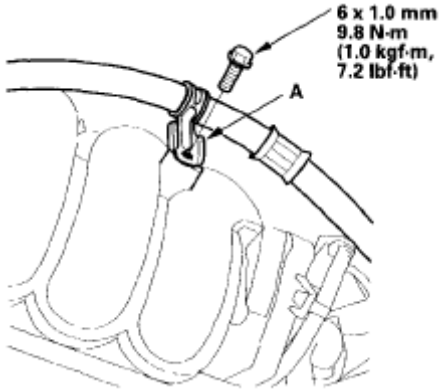


Fig. 99: Exploded View Of Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT ASSEMBLY CLEARANCE INSPECTION

NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).

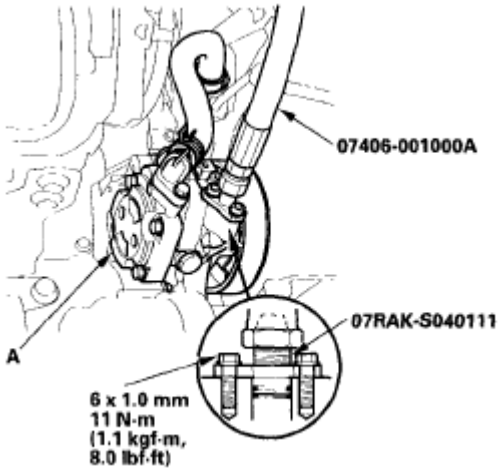


Fig. 100: Identifying Socket And Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

3. Measure the thickness of 3rd gear.
   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro

sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

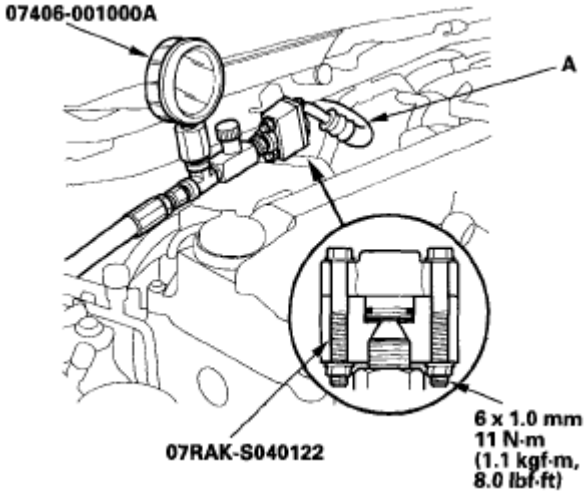


Fig. 101: Identifying Thickness Of 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the clearance between 4th gear (A) and the distance collar (B) with a dial indicator (C).
   - If the clearance is more than the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

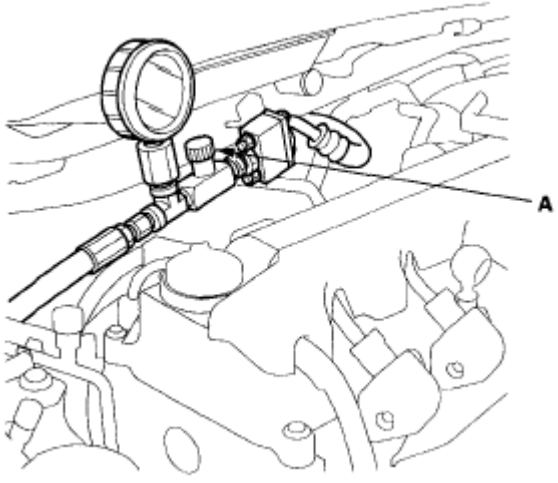


Fig. 102: Identifying 4th Gear, Distance Collar And Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the length (1) of the distance collar as shown.
   - If the length (1) is not within the standard, replace the distance collar.
   - If the length (1) is within the standard, go to step 6.

Standard: 24.03-24.08 mm (0.946-0.948 in.)

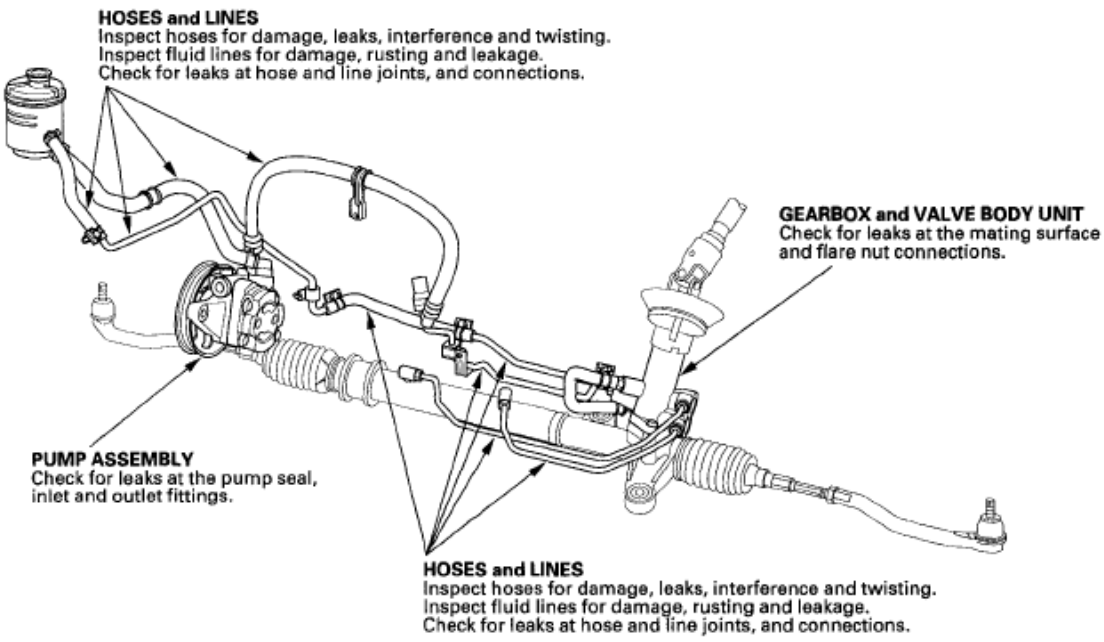


Fig. 103: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the thickness of 4th gear.
   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

System capacity:
0.8 L (0.85 US. qt) at disassembly
Reservoir capacity:
0.26 L (0.27 US. qt)

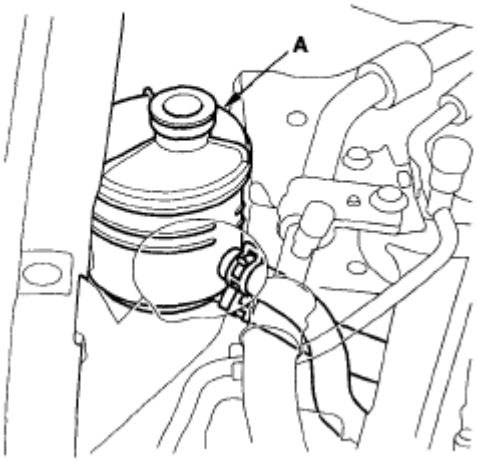


Fig. 104: Identifying Thickness Of 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure the clearance between the distance collar (A) and 5th gear (B) with a dial indicator (C).
   - If the clearance is more than the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

   Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

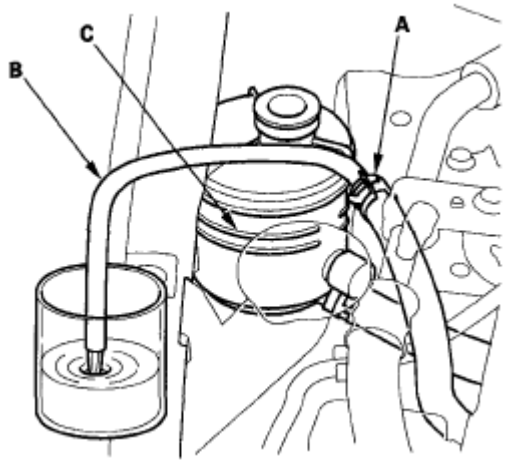


Fig. 105: Identifying Distance Collar, 5th Gear And Dial Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure the length (2) of the distance collar as shown.
   - If the length (2) is not within the standard, replace the distance collar.
   - If the length (2) is within the standard, go to step 9.

   Standard: 24.03-24.08 mm (0.946-0.948 in.)

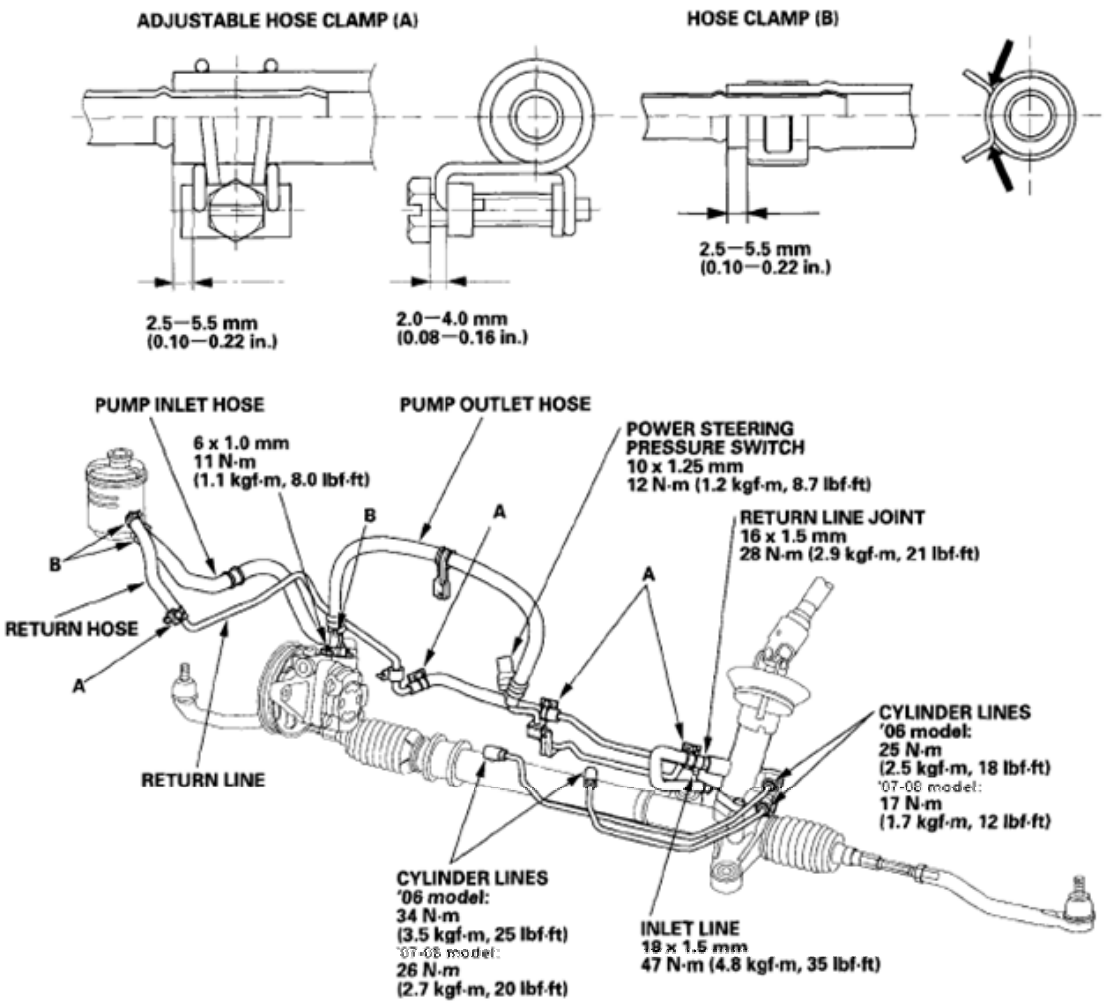


Fig. 106: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Measure the thickness of 5th gear.
    - If the thickness is less than the service limit, replace 5th gear.
    - If the thickness, is within the service limit, replace the 5th/6th synchro hub and 5th/6th synchro sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

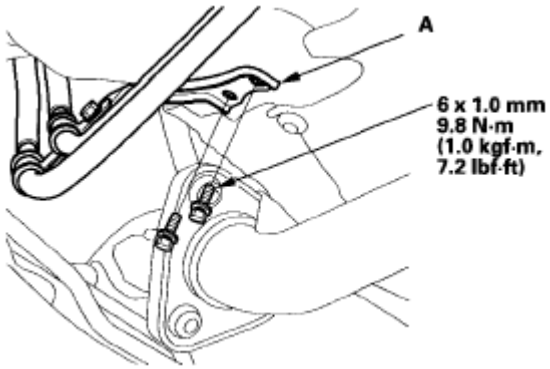


Fig. 107: Identifying Thickness Of 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Measure the clearance between 6th gear (A) and the angular ball bearing (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 11.

Standard: 0.06-0.16 mm (0.002-0.006 in.) Service Limit: 0.25 mm (0.010 in.)

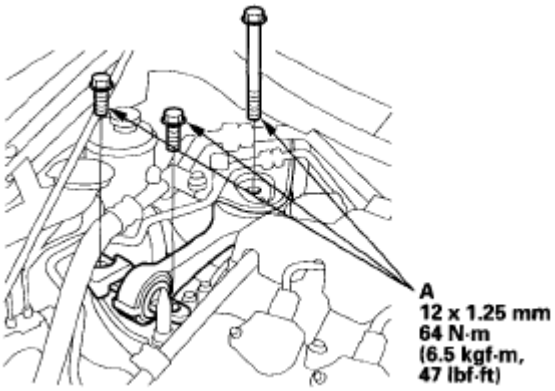


Fig. 108: Identifying 6th Gear, Angular Ball Bearing And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Measure the length of the 6th gear distance collar.
    - If the length is not within the standard, replace the 6th gear distance collar.
    - If the length is within the standard, go to step 12.

Standard: 24.03-24.08 mm (0.946-0.948 in.)

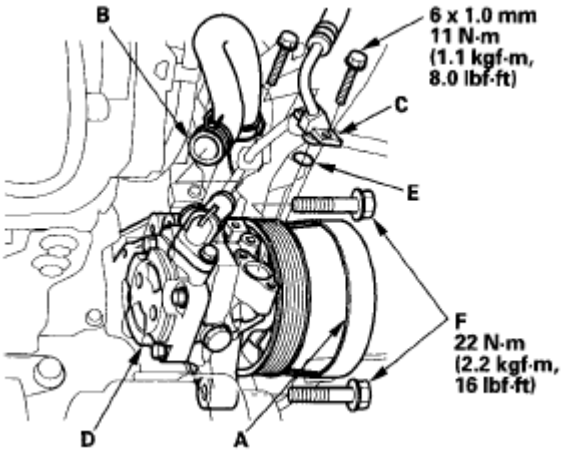


Fig. 109: Identifying Length Of 6th Gear Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Measure the thickness of 6th gear.
    - If the thickness is less than the service limit, replace 6th gear.
    - If the thickness is within the service limit, replace the 5th/6th synchro hub and 5th/6th synchro sleeve as a set.

Standard: 23.92-23.97 mm (0.941-0.944 in.) Service Limit: 23.80 mm (0.937 in.)

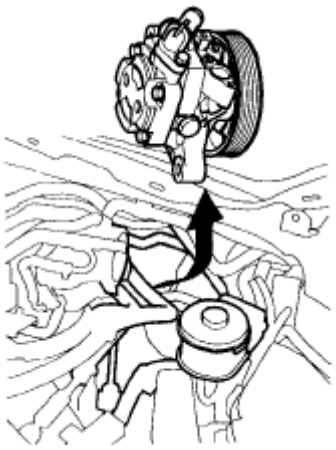


Fig. 110: Identifying Thickness Of 6th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT DISASSEMBLY

1. Remove the angular ball bearing (A) using a commercially available bearing separator (B) and bearing puller (C).

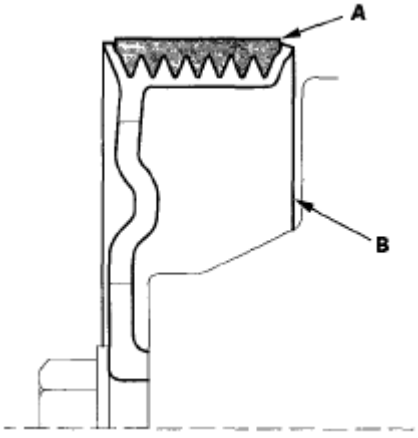


Fig. 111: Identifying Angular Ball Bearing, Bearing Separator And Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

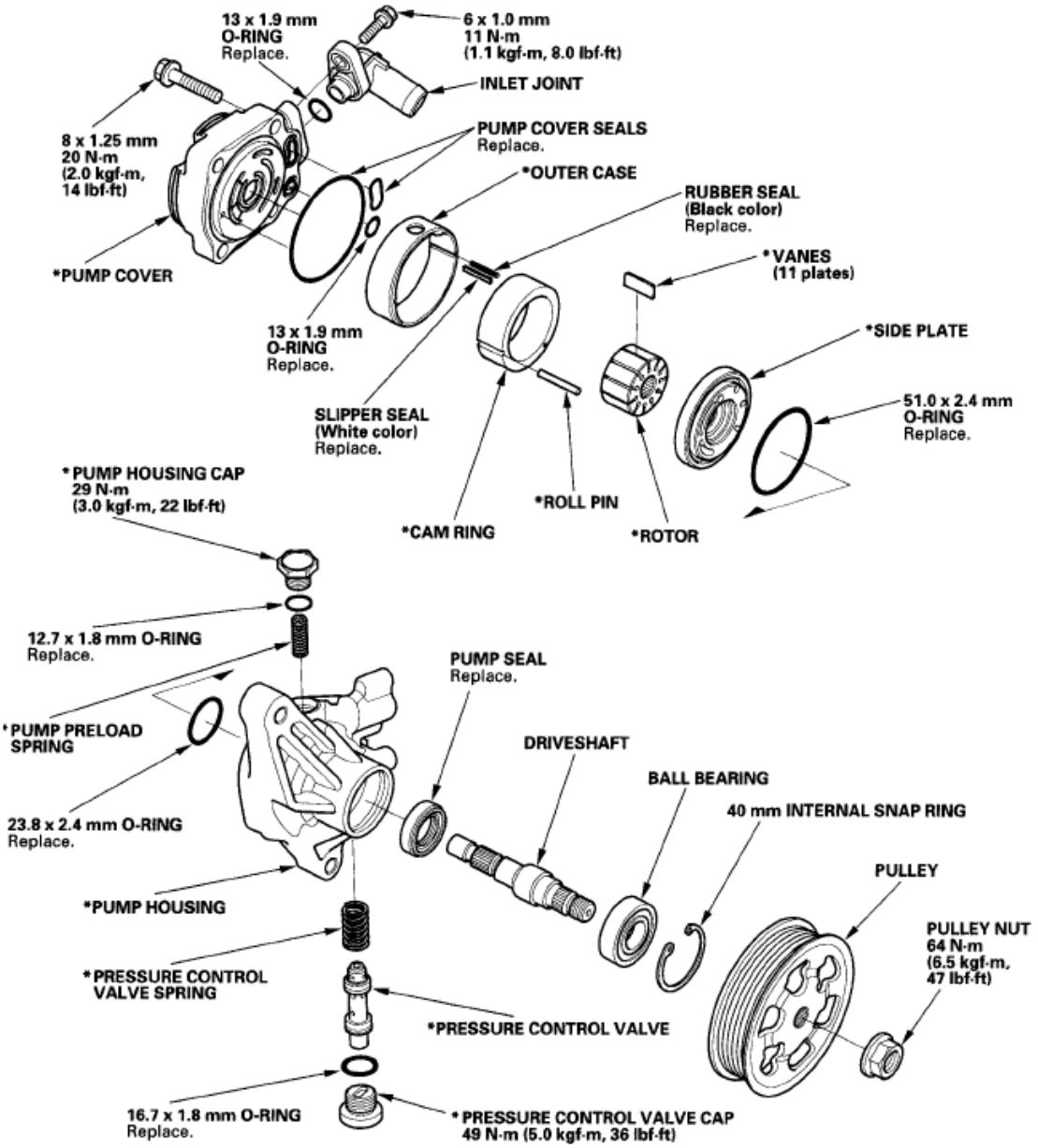


Fig. 112: Identifying 5th Gear And 5th/6th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

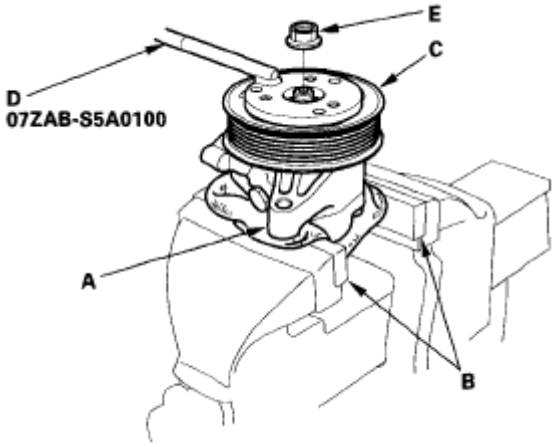


Fig. 113: Identifying 3rd Gear And 3rd/4th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

   Standard:

   A Ball Bearing Contact Area (Transmission Housing Side): 27.987-28.000 mm (1.1019-1.1024 in.)

   B Distance Collar Contact Area: 31.984-32.000 mm (1.2594-1.2598 in.)

   C Needle Bearing Contact Area: 38.984-39.000 mm (1.5348-1.5354 in.)

   D Ball Bearing Contact Area (Clutch Housing Side): 27.977-27.990 mm (1.1015-1.1020 in.)

   E Bushing Contact Area: 20.80-20.85 mm (0.819-0.821 in.)

   Service Limit:

   A: 27.93 mm (1.100 in.)

   B: 31.93 mm (1.257 in.)

   C: 38.93 mm (1.533 in.)

   D: 27.92 mm (1.099 in.)

   E: 20.75 mm (0.817 in.)

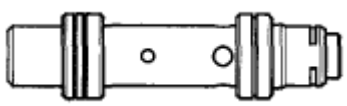


Fig. 114: Inspecting Gear And Bearing Contact Areas
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the mainshaft.

   Standard:

   0.02 mm (0.001 in.) max. Service Limit: 0.05 mm (0.002 in.)

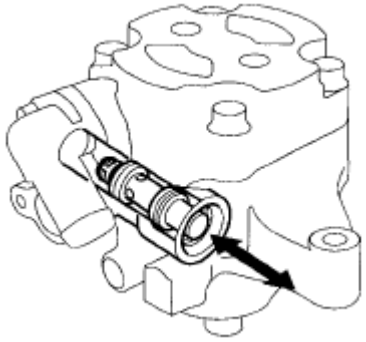


Fig. 115: Inspecting Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT REASSEMBLY

Exploded View

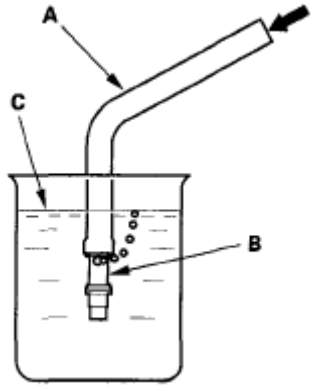


Fig. 116: Exploded View Of Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the EXPLODED VIEW, as needed, during this procedure.

1. Clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to all contact surfaces except the 3rd/4th and 5th/6th synchro hubs.
2. Install the needle bearing and 3rd gear on the mainshaft.
3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 3rd gear (C), then install the synchro spring (D).

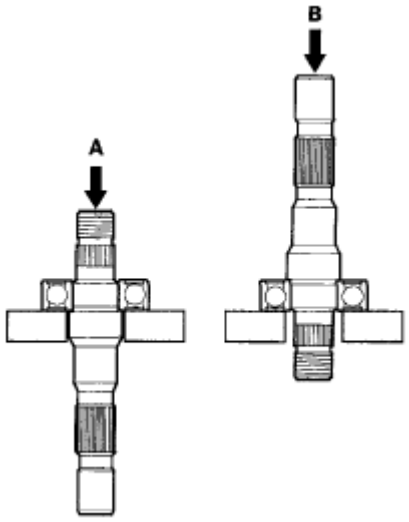


Fig. 117: Identifying Double Cone Synchro Assembly, Synchro Cone Fingers, 3rd Gear And Synchro Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 3rd/4th synchro hub (C).

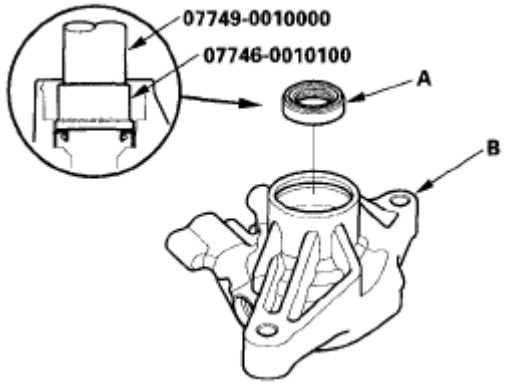


Fig. 118: Identifying 3rd/4th Synchro Hub, Synchro Ring Fingers And 3rd/4th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the 3rd/4th synchro hub (A) using the 40 mm I.D. driver (B).

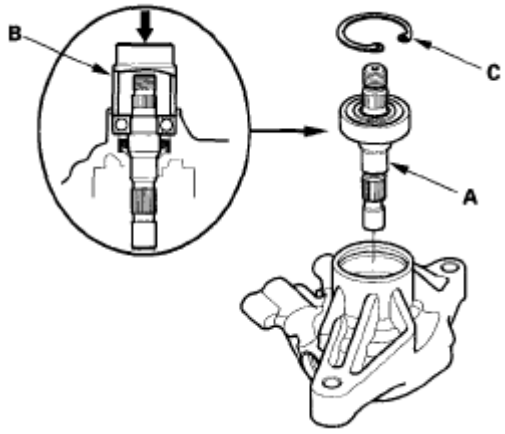


Fig. 119: Identifying 3rd/4th Synchro Hub And Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.

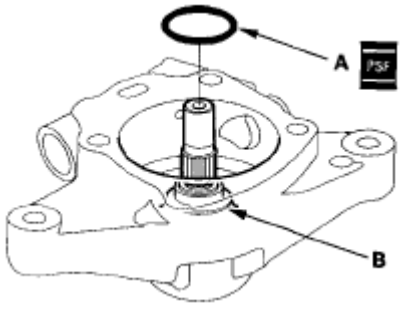


Fig. 120: Identifying 3rd/4th Synchro Sleeve And Stops
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the synchro spring (A).

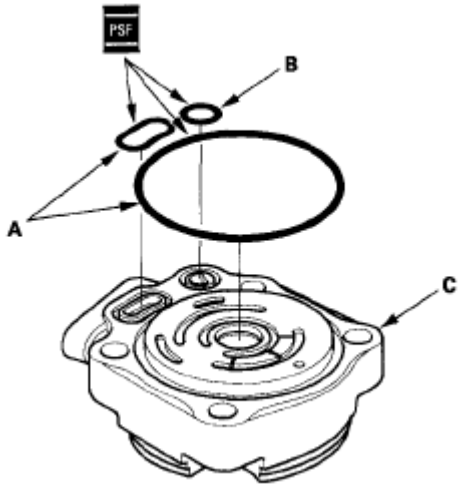


Fig. 121: Identifying Synchro Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the double cone synchro assembly (B) by aligning the synchro ring fingers (C) with the grooves in the 3rd/4th synchro hub (D).
9. Install 4th gear (A) by aligning the synchro cone fingers (B) with the holes in 4th gear (C).

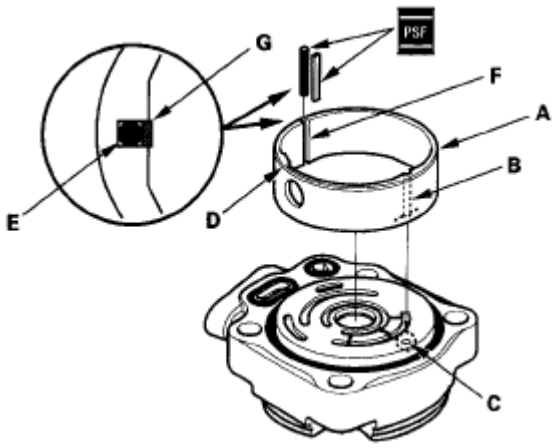


Fig. 122: Identifying 4th Gear, Synchro Cone Fingers And 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the needle bearings, 4th/5th gear distance collar, 5th gear, 5th gear synchro spring, and the synchro ring.
11. Install the 5th/6th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 5th/6th synchro hub (C).

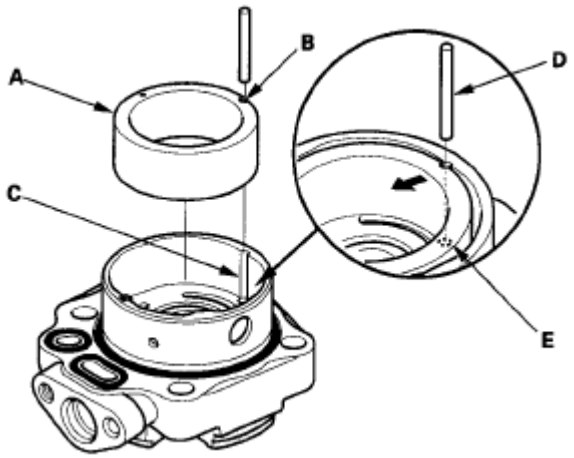


Fig. 123: Identifying 5th/6th Synchro Hub, Synchro Ring Fingers And 5th/6th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the 5th/6th synchro hub (A) using the 40 mm I.D. driver (B) and 30 mm I.D. attachment (C).

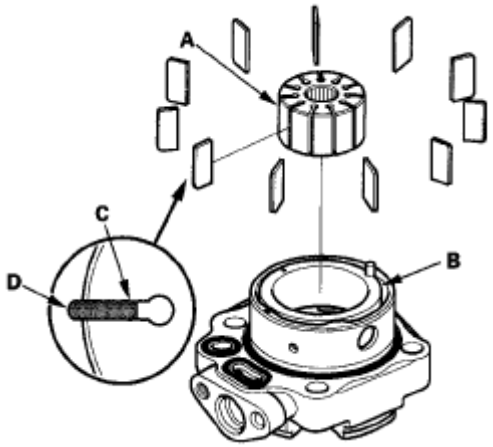


Fig. 124: Identifying 5th/6th Synchro Hub, I.D. Driver And I.D. Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the 5th/6th synchro sleeve.
14. Install the synchro spring (A).

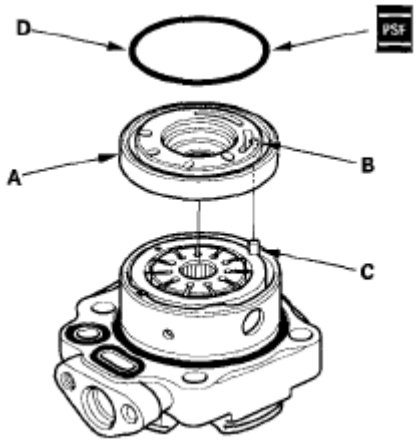


Fig. 125: Identifying Synchro Spring, Synchro Ring And Synchro Ring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the synchro ring (B) by aligning the synchro ring fingers (C) with the grooves in the 5th/6th synchro hub (D).
16. Install the 6th gear distance collar, needle bearing, and 6th gear.
17. Install the new angular ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and press (D).

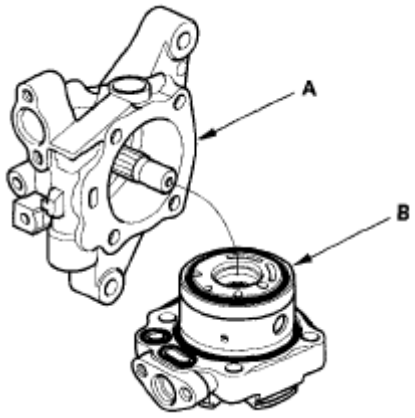


Fig. 126: Identifying Angular Ball Bearing, I.D. Driver And I.D. Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT ASSEMBLY CLEARANCE INSPECTION

1. Measure the clearance between 1st gear (A) and the distance collar (B) with a feeler gauge (C).
   - If the clearance is more than the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

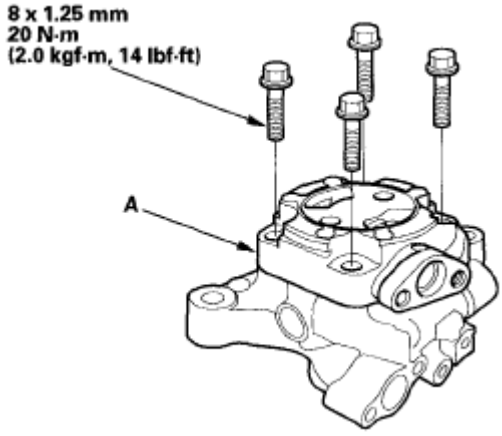


Fig. 127: Identifying 1st Gear, Distance Collar And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the length of the distance collar as shown.
   - If the length is not within the standard, replace the distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03-23.08 mm (0.907-0.909 in.)

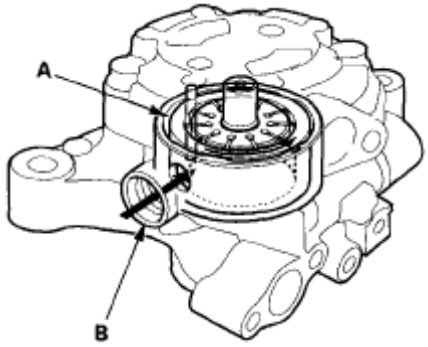


Fig. 128: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the thickness of 1st gear.
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

   Standard: 22.92-22.97 mm (0.902-0.904 in.)

   Service Limit: 22.87 mm (0.900 in.)

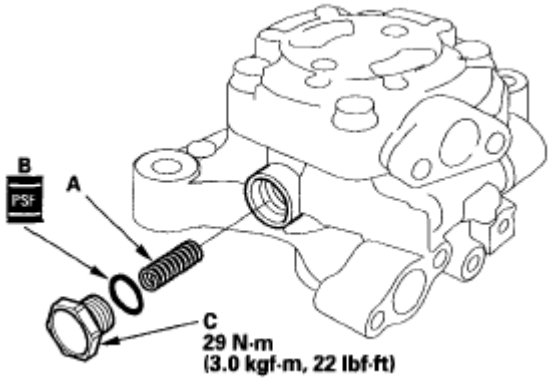


Fig. 129: Identifying Thickness Of 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.16 mm (0.002-0.006 in.)

   Service Limit: 0.25 mm (0.010 in.)

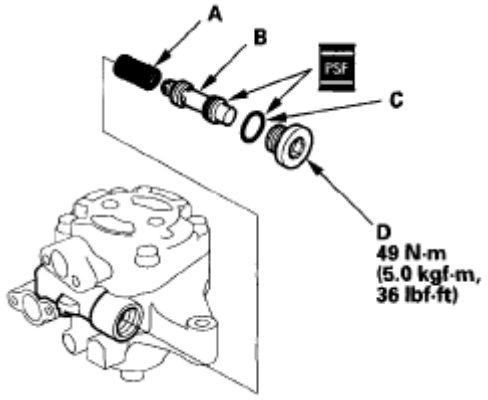


Fig. 130: Identifying 1st Gear, Distance Collar And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the length of the distance collar.
   - If the length is not within the standard, replace the distance collar.
   - If the length is within the standard, go to step 6.

   Standard: 28.03-28.08 mm (1.104-1.106 in.)

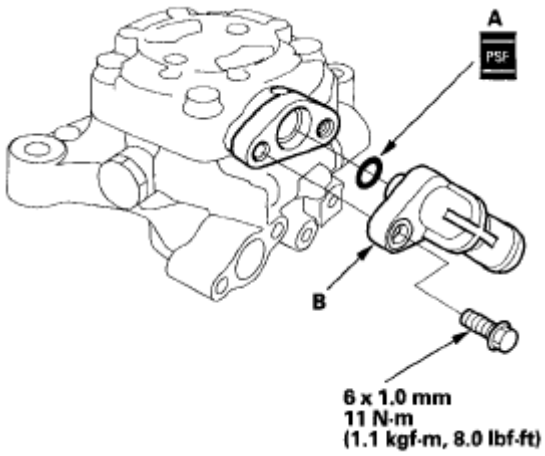


Fig. 131: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure the thickness of 2nd gear.
   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

   Standard: 27.92-27.97 mm (1.099-1.101 in.)

   Service Limit: 27.87 mm (1.097 in.)

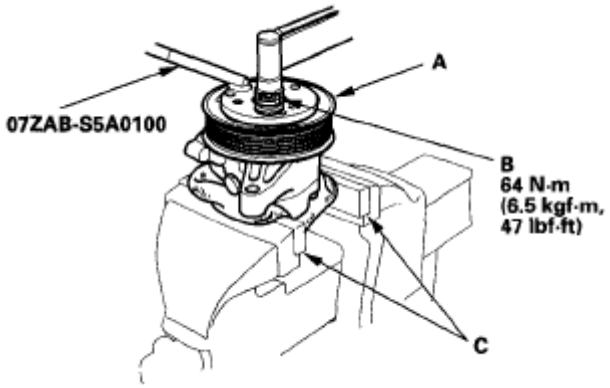


Fig. 132: Identifying Thickness Of 2nd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT DISASSEMBLY

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.

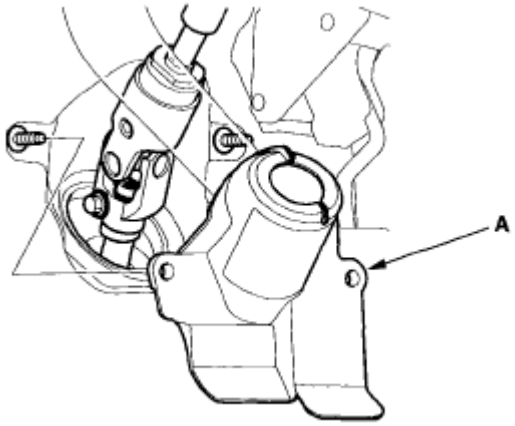


Fig. 133: Identifying Countershaft Assembly In Bench Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the special bolt (left-hand threads).
3. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

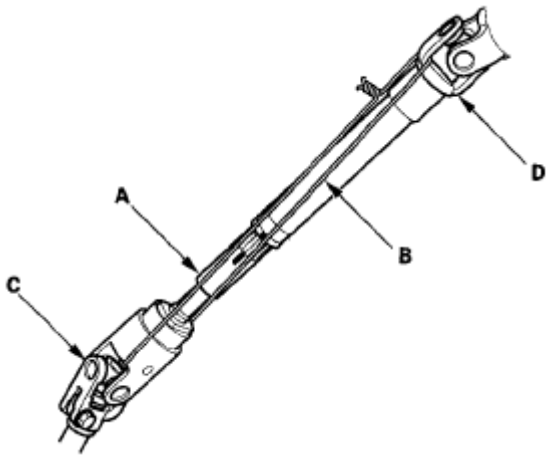


Fig. 134: Identifying 6th Gear, Steel Blocks, Press And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the 35 mm shim.
5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 5th gear.

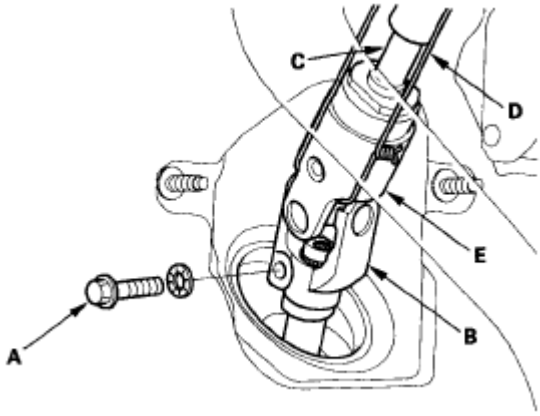


Fig. 135: Identifying 4th Gear, Steel Blocks, Press, Attachment And Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 3rd gear.

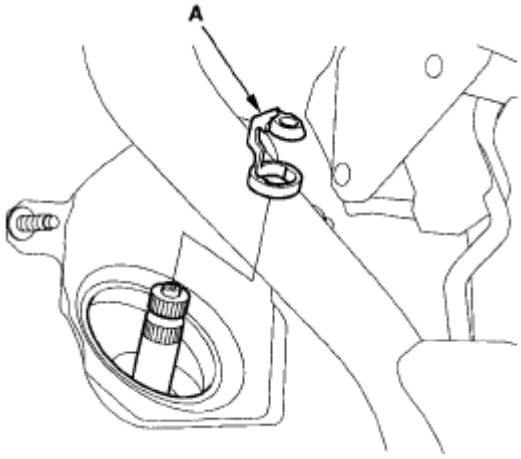


Fig. 136: Identifying 2nd Gear, Steel Blocks, Press And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:

   A Ball Bearing Contact Area (Transmission Housing Side):

   30.020-30.033 mm (1.1819-1.1824 in.)

   B Distance Collar Contact Area:

   39.937-39.950 mm (1.5723-1.5728 in.)

   C Needle Bearing Contact Area (Clutch Housing Side):

   35.000-35.015 mm (1.3780-1.3785 in.)

   Service Limit:

   A: 29.97 mm (1.180 in.)

   B: 39.883 mm (1.5702 in.)

   C: 34.95 mm (1.3760 in.)

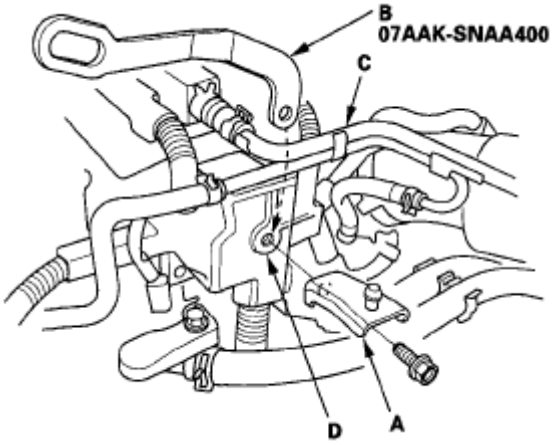


Fig. 137: Inspecting Gear And Bearing Contact Areas
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the countershaft.

   Standard: 0.02 mm (0.001 in.) max.

   Service Limit: 0.05 mm (0.002 in.)

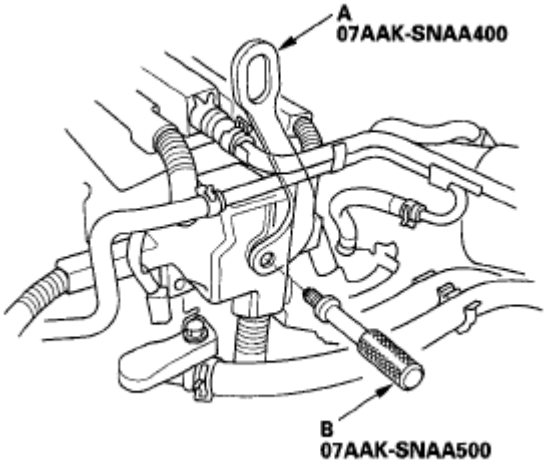


Fig. 138: Inspecting Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT REASSEMBLY

Exploded View

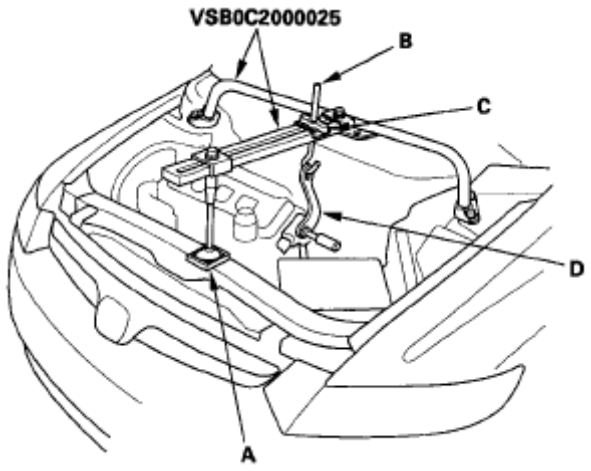


Fig. 139: Exploded View Of Countershaft w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the EXPLODED VIEW, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply manual transmission fluid (MTF) to all contact surfaces.
2. Install the distance collar and needle bearing onto the countershaft.
3. Install 1st gear.
4. Install the triple cone synchro assembly (A) by aligning the synchro ring fingers (B) with the grooves in 1st gear (C), then install the synchro spring (D).

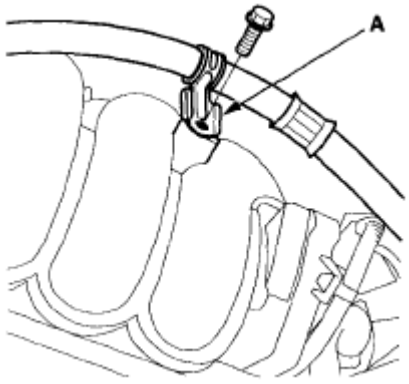


Fig. 140: Identifying Triple Cone Synchro Assembly, Synchro Ring Fingers And 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 1st/2nd synchro hub (C).

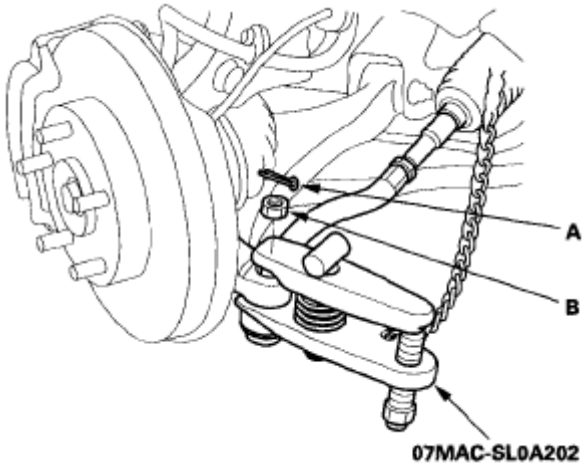


Fig. 141: Identifying 1st/2nd Synchro Hub, Synchro Ring Fingers And 1st/2nd Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install reverse gear.
7. Install the synchro spring (A).

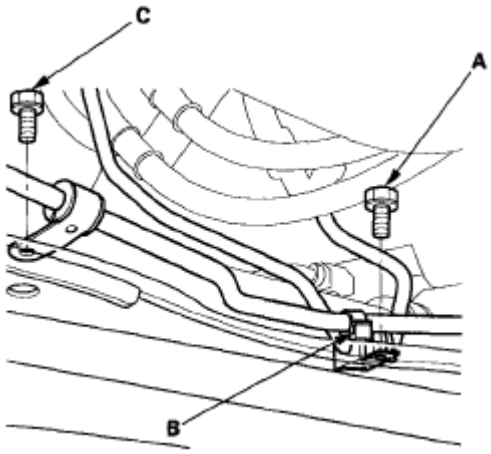


Fig. 142: Identifying Synchro Spring, Triple Cone Synchro Assembly And Synchro Ring Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Install the triple cone synchro assembly (B) by aligning the synchro ring fingers (C) with the grooves in the 1st/2nd synchro hub (D).
9. Install the distance collar (A) and friction damper (B) by aligning the friction damper fingers (C) with the grooves in the 1st/2nd synchro hub (D).

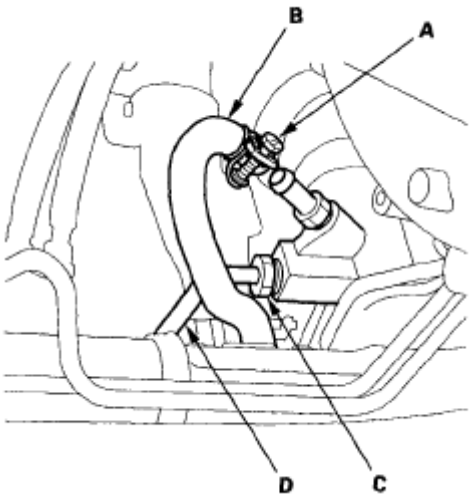


Fig. 143: Identifying Distance Collar, Friction Damper And Friction Damper Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the needle bearing.
11. Install 2nd gear (A) by aligning the synchro cone fingers (B) with the grooves (C) in 2nd gear.

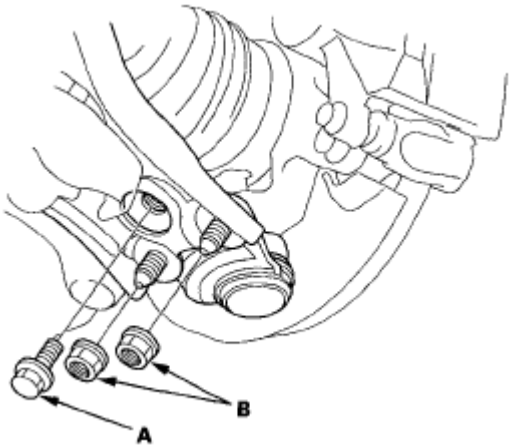


Fig. 144: Identifying 2nd Gear, Synchro Cone Fingers And Grooves
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Support the countershaft (A) on steel blocks, then install 3rd gear (B) using the 40 mm I.D. driver (C) and a press (D).

NOTE: Do not exceed the maximum pressure.

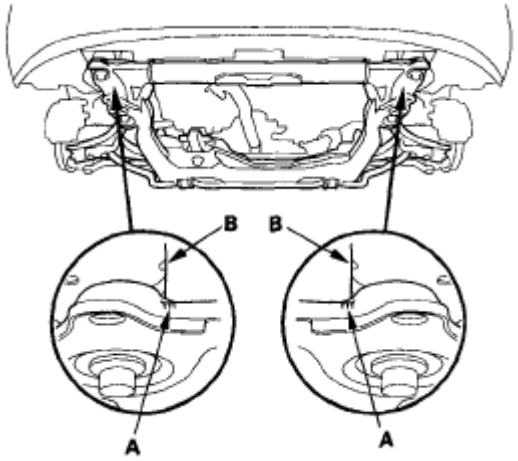


Fig. 145: Identifying Countershaft And 3rd Gear w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install 4th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

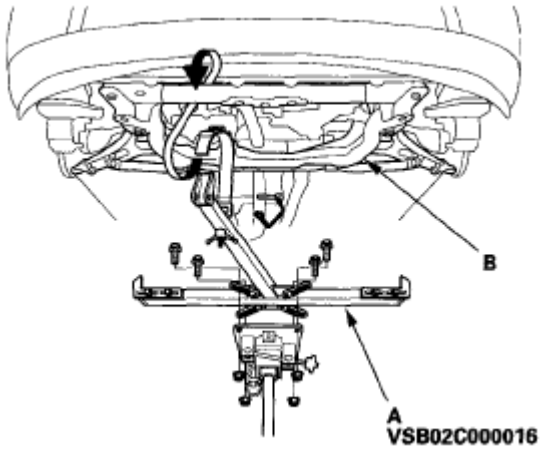


Fig. 146: Identifying 4th Gear, I.D. Driver, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install 5th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

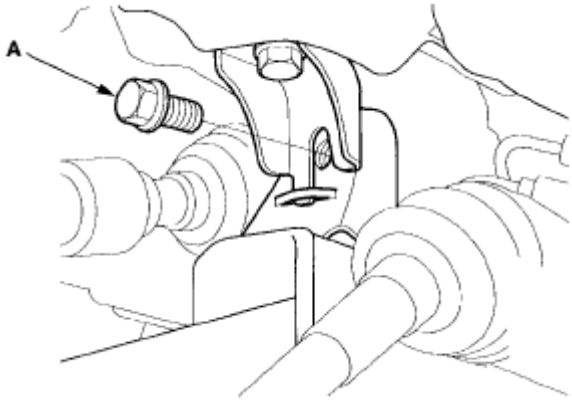


Fig. 147: Identifying 5th Gear, I.D. Driver, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install 6th gear (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

NOTE: Do not exceed the maximum pressure.

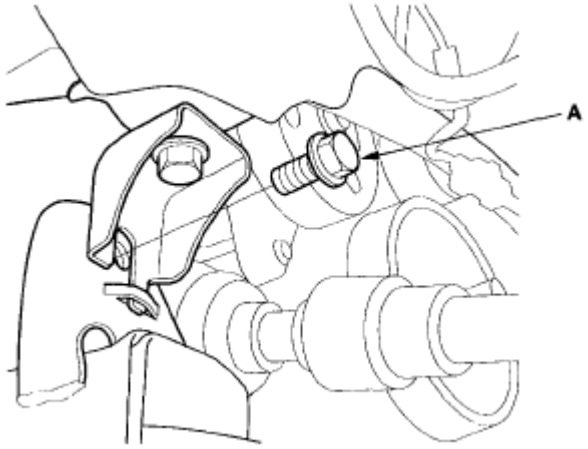


Fig. 148: Identifying 6th Gear, I.D. Driver, I.D. Attachment, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the 35 mm shim and the old ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

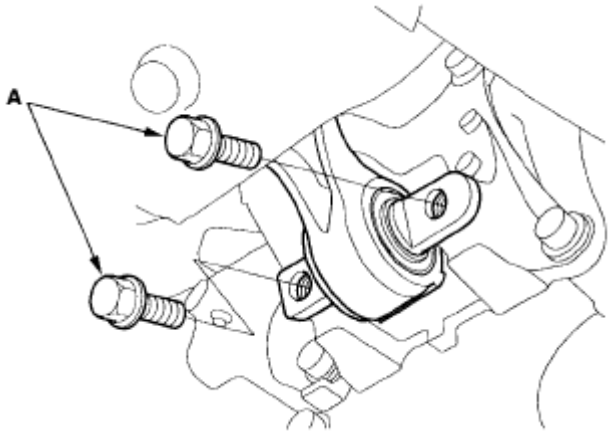


Fig. 149: Identifying Ball Bearing, I.D. Driver, I.D. Attachment And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

    Standard: 0.04-0.10 mm (0.0016-0.0039 in.)

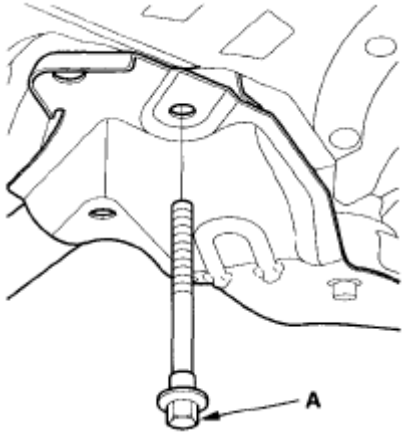


Fig. 150: Identifying Bearing, Shim And Feeler Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 16 is within the standard, replace only the ball bearing.

    35 mm Shim

    PART THICKNESS CHART

	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)

D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

19. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

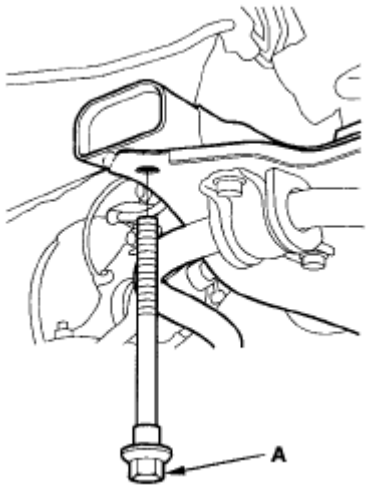


Fig. 151: Identifying 6th Gear, Steel Blocks, Press And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. If necessary, install the 35 mm shim selected in step 18.
21. Install 6th gear (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D).

NOTE: Do not exceed the maximum pressure.

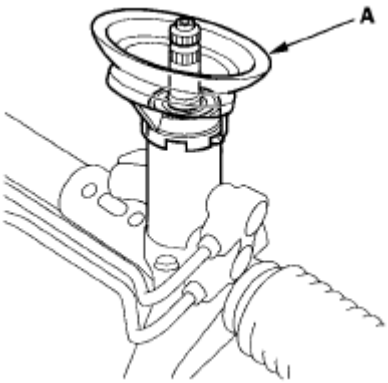


Fig. 152: Identifying 6th Gear, I.D. Driver, I.D. Attachment, Press & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the new ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press (D), then recheck the clearance.

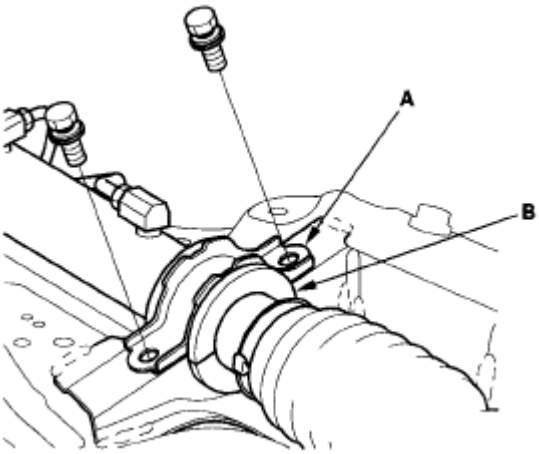


Fig. 153: Identifying Ball Bearing, I.D. Driver, I.D. Attachment And Press
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).

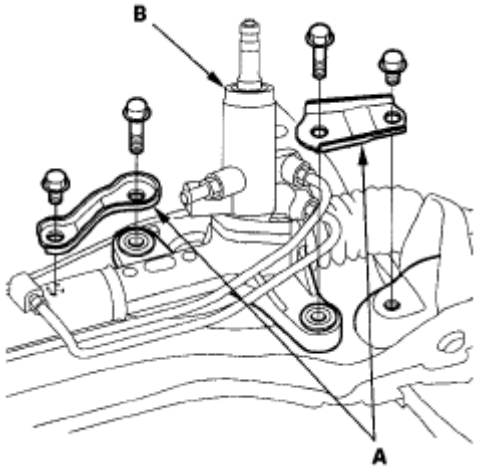


Fig. 154: Identifying Clamp Countershaft Assembly In Bench Vise, Wood Blocks & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Tighten the new special bolt (B) (left-hand threads).

SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY

1. Inspect gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.
2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

NOTE:

- **Do not install the synchro sleeve with its longer teeth in the synchro hub slots (E) because it will damage the spring ring.**
- **If replacement is required, always replace the synchro sleeve and synchro hub as a set.**

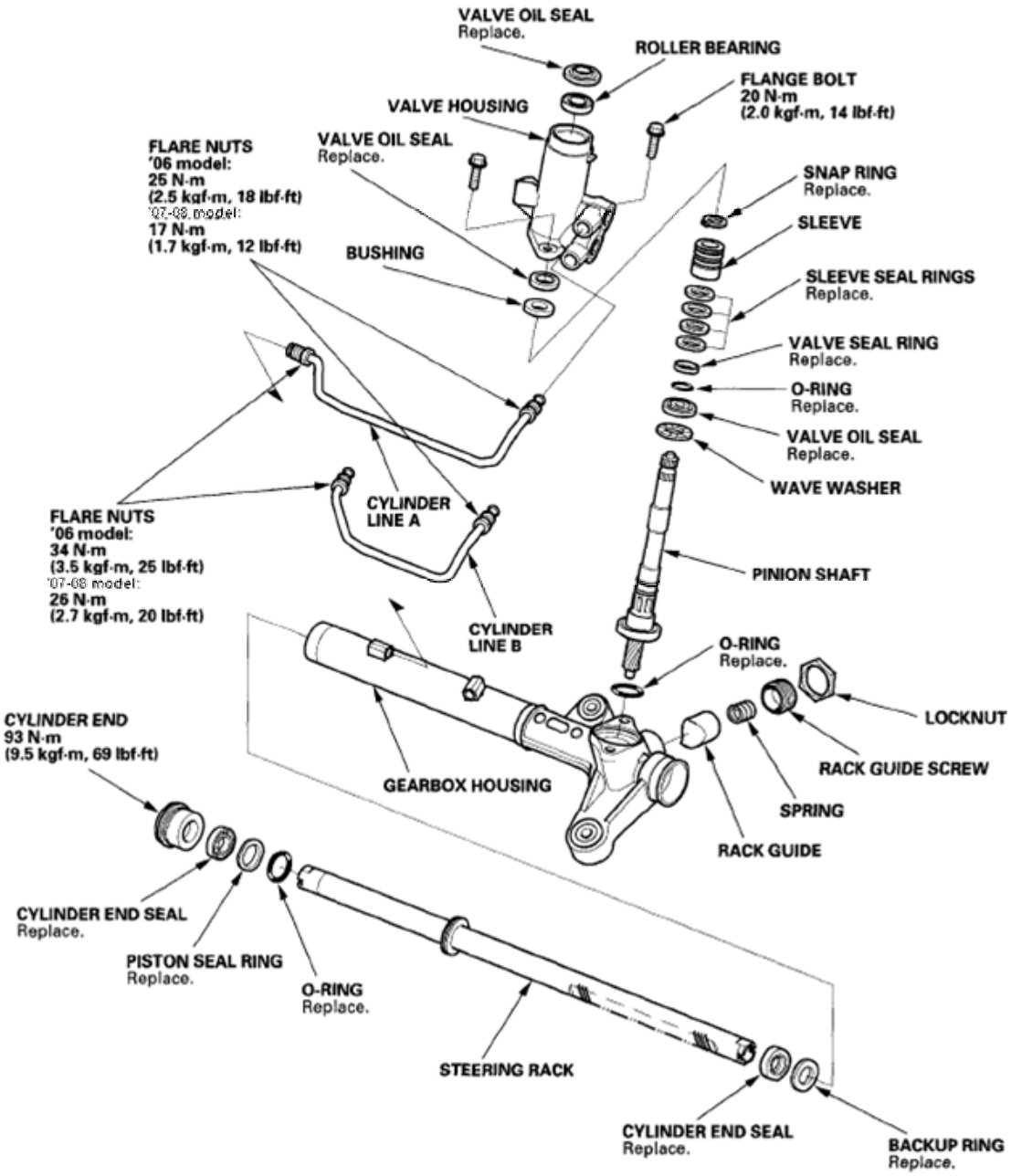


Fig. 155: Identifying Synchro Hub, Mating Synchro Sleeve And Longer Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYNCHRO RING AND GEAR INSPECTION

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

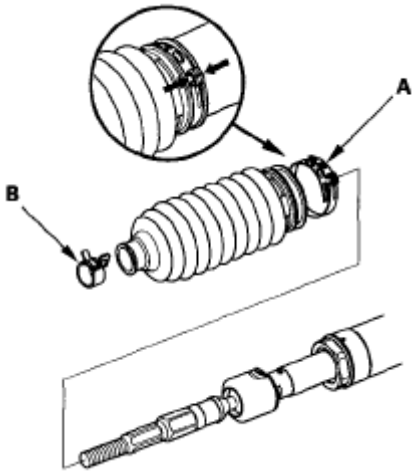


Fig. 156: Identifying Synchro Ring And Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).

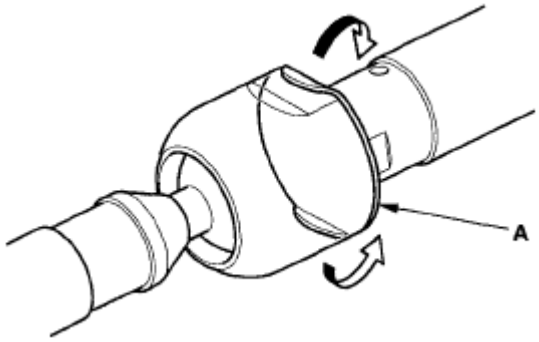


Fig. 157: Inspecting Teeth On Synchro Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect the thrust surface (A) on each gear hub for wear.

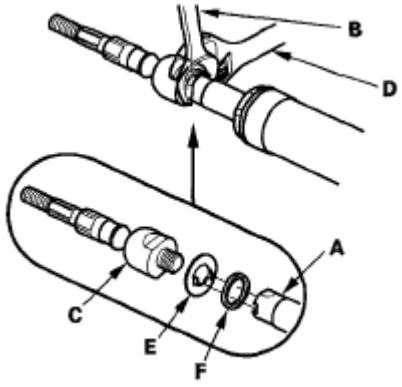


Fig. 158: Identifying Thrust Surface, Cone Surface And Gears
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the cone surface (B) on each gear hub for wear and roughness.

5. Inspect the teeth on all gears (C) for uneven wear, scoring, and cracks.
6. Coat the cone surface of each gear with manual transmission fluid (MTF), and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.
7. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

   Synchro-Ring-to-Gear Clearance

   Standard: 0.70-1.49 mm (0.028-0.059 in.)

   Service Limit: 0.4 mm (0.016 in.)

   Double Cone Synchro-to-Gear Clearance Standard:

   (1): Outer Synchro Ring (B) to Synchro Cone (C)

   0.70-1.19 mm (0.028-0.047 in.)

   (2): Synchro Cone (C) to Gear (A)

   0.50-1.04 mm (0.020-0.041 in.)

   (3): Outer Synchro Ring (B) to Gear (A)

   0.95-1.68 mm (0.037-0.066 in.)

   Service Limit:

   (1): 0.3 mm (0.012 in.)

   (2): 0.3 mm (0.012 in.)

   (3): 0.6 mm (0.024 in.)

   Triple Cone Synchro-to-Gear Clearance Standard:

   (1): Outer Synchro Ring (B) to Synchro Cone (C)

   0.70-1.19 mm (0.028-0.047 in.)

   (2): Synchro Cone (C) to Gear (A)

   0.50-1.04 mm (0.020-0.041 in.)

   (3): Outer Synchro Ring (B) to Gear (A)

   0.95-1.68 mm (0.037-0.066 in.)

Service Limit:

(1): 0.3 mm (0.012 in.)

(2): 0.3 mm (0.012 in.)

(3): 0.6 mm (0.024 in.)

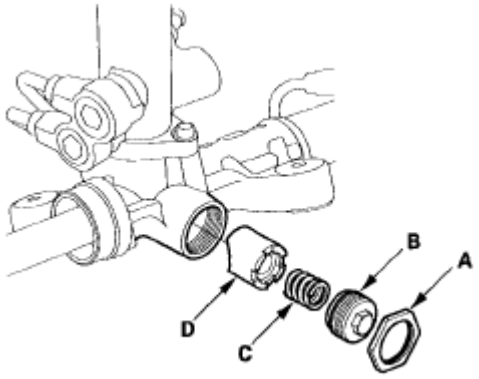


Fig. 159: Identifying Gear And Synchro Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT BEARING AND OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-001000
- Slide hammer, 3/8"-16 UNF commercially available

1. Remove the ball bearing (A) from the clutch housing (B) using the 20-40 mm adjustable bearing puller (C) and a commercially available 3/8"-16 UNF slide hammer (D).

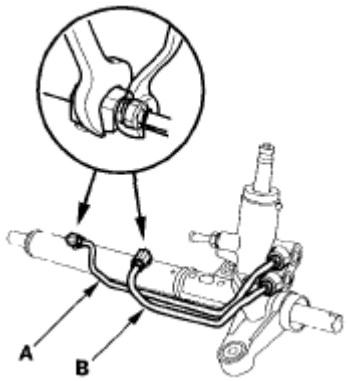


Fig. 160: Identifying Ball Bearing, Clutch Housing And Adjustable Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the transmission side. Be careful when removing the oil seal so the clutch housing is not damaged.

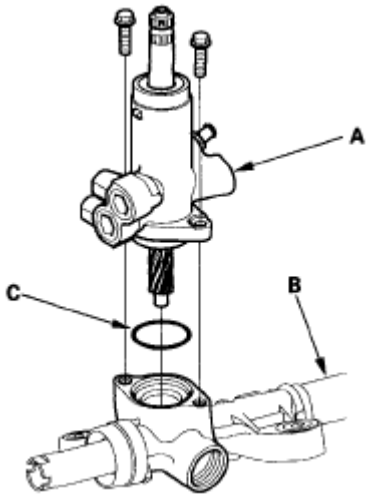


Fig. 161: Identifying Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Drive in the new oil seal from the transmission side using the driver (A) and 42 x 47 mm attachment (B).

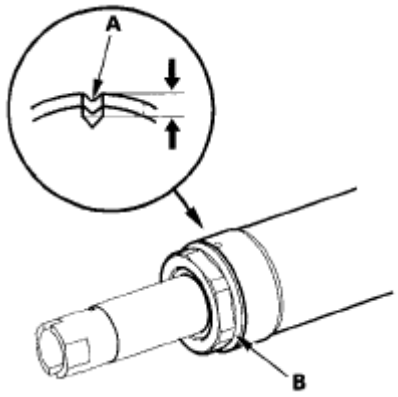


Fig. 162: Identifying Driver And Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Drive in the new ball bearing (A) from the transmission side using the oil seal driver (B).

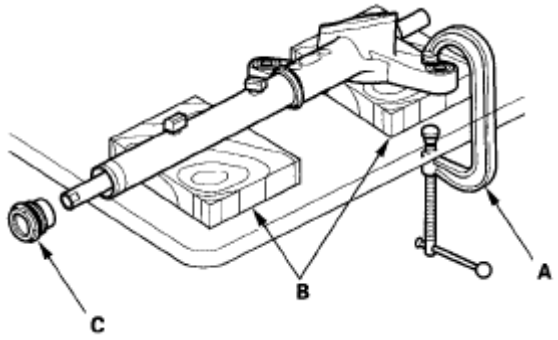


Fig. 163: Identifying Ball Bearing And Oil Seal Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Slide hammer, 3/8"-16 UNF commercially available.

1. Remove the bearing set plate (A) from the clutch housing (B).

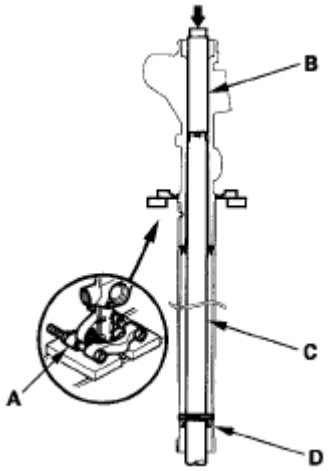


Fig. 164: Identifying Bearing Set Plate And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the needle bearing (A) using the 20-40 mm adjustable bearing puller (B) and a commercially available 3/8"-16 UNF slide hammer (D), then remove oil guide plate C.

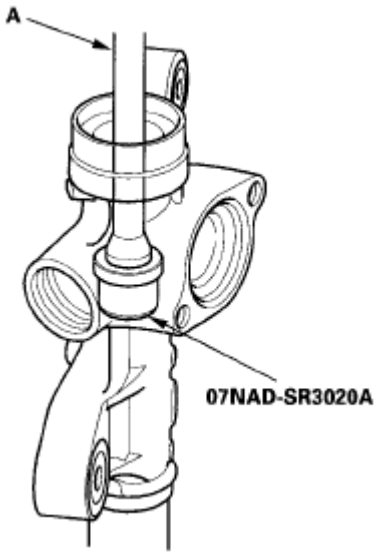


Fig. 165: Identifying Needle Bearing, Adjustable Bearing Puller, Slide Hammer And Oil Guide

Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).

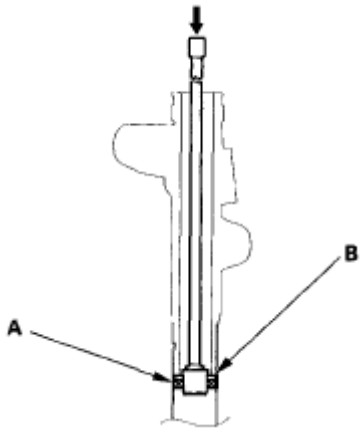


Fig. 166: Identifying Needle Bearing And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the needle bearing using the oil seal driver (D).
5. Install the bearing set plate (A) with the bolts (B).

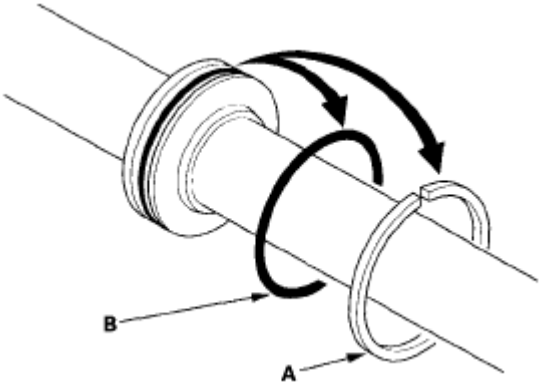


Fig. 167: Identifying Bearing Set Plate, Bolts w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT THRUST CLEARANCE ADJUSTMENT

Special Tools Required

- Mainshaft holder 07GAJ-PG20110
- Mainshaft base 07GAJ-PG20130

NOTE:

- **Take measurement at normal room temperature.**
- **Clean all the parts thoroughly before installation.**

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).

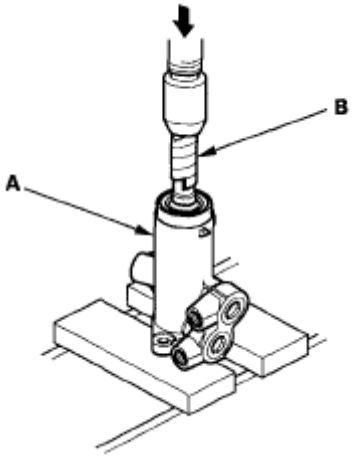


Fig. 168: Identifying Shim And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Thoroughly clean the 28 mm spring washer (A) and 28 mm washer (B) before installing them on the clutch housing side ball bearing (C).

NOTE: Install the spring washer in the direction shown.

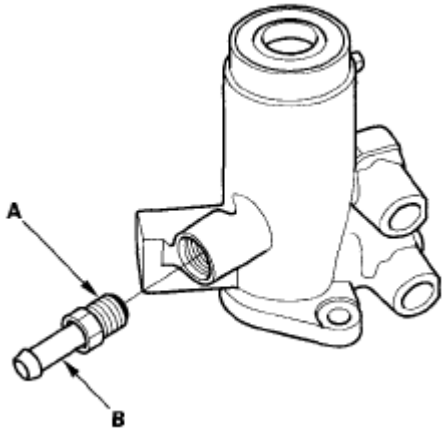


Fig. 169: Identifying Spring Washer, Washer And Clutch Housing Side Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 3rd/4th synchro hub, the distance collar, the 5th/6th synchro hub, the distance collar, and the angular ball bearing on the mainshaft.

NOTE: Refer to the MAINSHAFT REASSEMBLY Exploded View .

4. Install the mainshaft in the clutch housing.
5. Place the transmission housing over the mainshaft and onto the clutch housing.
6. Tighten the clutch and transmission housings with several 8 mm bolts.

NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.
8. Attach the mainshaft holder (A) and mainshaft base (B) to the mainshaft as follows:
   - Backout the mainshaft holder bolt (C), and loosen the two hex bolts (D).
   - Fit the holder over the mainshaft so its lip is towards the transmission.
   - Align the mainshaft holder lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

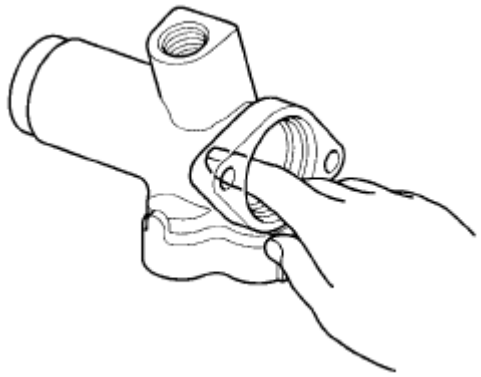


Fig. 170: Identifying Mainshaft Holder And Mainshaft Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fully seat the mainshaft by tapping its end with a plastic hammer.
10. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.
11. Zero a dial gauge (A) on the end of the mainshaft.

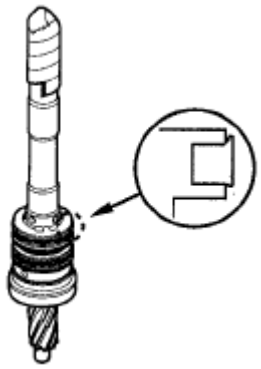


Fig. 171: Identifying Dial Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the mainshaft holder bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, select the appropriate shim needed from the table, and recheck the thrust clearance.

Standard: 0.11-0.17 mm (0.004-0.007 in.)

(Example)

Measure reading: 1.93 mm (0.0759 in.)

Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.).

1.93 - 0.14 = 1.79 mm (0.0704 in.)

Select the shim closest to the amount calculated. For this example, the 1.80 mm (0.0709 in.) shim is best.

14. With oil guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to make sure the clearance is within the standard.

72 mm Shim

PART THICKNESS CHART

	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.0236 in.)
B	23932-P21-000	0.63 mm (0.0248 in.)
C	23933-P21-000	0.66 mm (0.0260 in.)
D	23934-P21-000	0.69 mm (0.0271 in.)
E	23935-P21-000	0.72 mm (0.0283 in.)
F	23936-P21-000	0.75 mm (0.0295 in.)
G	23937-P21-000	0.78 mm (0.0307 in.)
H	23938-P21-000	0,81 mm (0.0319 in.)
I	23939-P21-000	0.84 mm (0.0331 in.)
J	23940-P21-000	0.87 mm (0.0343 in.)
K	23941-P21-000	0.90 mm (0.0354 in.)
L	23942-P21-000	0.93 mm (0.0366 in.)
M	23943-P21-000	0.96 mm (0.0378 in.)
N	23944-P21-000	0.99 mm (0.0390 in.)
O	23945-P21-000	1.02 mm (0.0402 in.)
P	23946-P21-000	1.05 mm (0.0413 in.)
Q	23947-P21-000	1.08 mm (0.0425 in.)
R	23948-P21-000	1.11 mm (0.0437 in.)
S	23949-P21-000	1.14 mm (0.0449 in.)
T	23950-P21-000	1.17 mm (0.0461 in.)
U	23951-P21-000	1.20 mm (0.0472 in.)
V	23952-P21-000	1.23 mm (0.0484 in.)
W	23953-P21-000	1.26 mm (0.0496 in.)
X	23954-P21-000	1.29 mm (0.0508 in.)
Y	23955-P21-000	1.32 mm (0.0520 in.)

Z	23956-P21-000	1.35 mm (0.0531 in.)
AA	23957-P21-000	1.38 mm (0.0543 in.)
AB	23958-P21-000	1.41 mm (0.0555 in.)
AC	23959-P21-000	1.44 mm (0.0567 in.)
AD	23960-P21-000	1.47 mm (0.0579 in.)
AE	23961-P21-000	1.50 mm (0.0591 in.)
AF	23962-P21-000	1.53 mm (0.0602 in.)
AG	23963-P21-000	1.56 mm (0.0614 in.)
AH	23964-P21-000	1.59 mm (0.0626 in.)
AI	23965-P21-000	1.62 mm (0.0638 in.)
AJ	23966-P21-000	1.65 mm (0.0650 in.)
AK	23967-P21-000	1.68 mm (0.0661 in.)
AL	23968-P21-000	1.71 mm (0.0673 in.)
AM	23969-P21-000	1.74 mm (0.0685 in.)
AN	23970-P21-000	1.77 mm (0.0697 in.)
AO	23971-P21-000	1.80 mm (0.0709 in.)
AP	23972-PPP-J00	1.83 mm (0.0720 in.)
AQ	23973-PPP-J00	1.86 mm (0.0732 in.)
AR	23974-PPP-J00	1.89 mm (0.0744 in.)
AS	23975-PPP-J00	1.92 mm (0.0756 in.)
AT	23976-PPP-J00	1.95 mm (0.0768 in.)
AV	23977-PPP-J00	1.98 mm (0.0779 in.)
AW	23978-PPP-J00	2.01 mm (0.0791 in.)
AX	23979-PPP-J00	2.04 mm (0.0803 in.)
AY	23980-PPP-J00	2.07 mm (0.0815 in.)
AZ	23981-PPP-J00	2.10 mm (0.0827 in.)
BA	23982-PPP-J00	2.13 mm (0.0839 in.)
BB	23983-PPP-J00	2.16 mm (0.0850 in.)
BC	23984-PPP-J00	2.19 mm (0.0862 in.)
BD	23985-PPP-J00	2.22 mm (0.0874 in.)
BE	23986-PPP-J00	2.25 mm (0.0886 in.)

TRANSMISSION REASSEMBLY

NOTE:

- **Prior to reassembling, clean all the parts in solvent, dry them, and apply manual transmission fluid (MTF) to any contact surfaces.**
- **Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.**

1. Install the magnet (A) and the differential assembly (B).

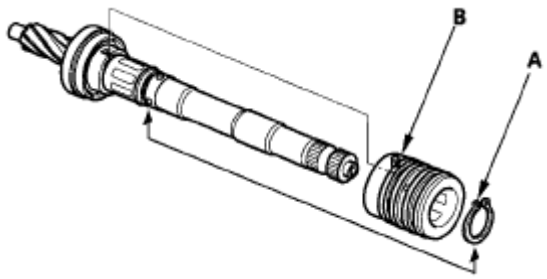


Fig. 172: Identifying Magnet And Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

NOTE: Install the spring washer in the direction shown.

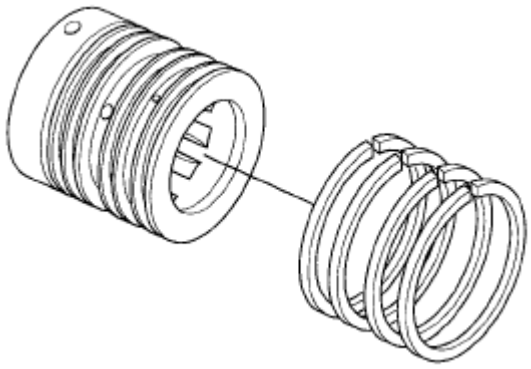


Fig. 173: Identifying Spring Washer, Washer And Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Apply tape to the mainshaft (D) splines to protect the seal. Install the mainshaft assembly and the countershaft (E) into the shift forks (F), and install them as an assembly.
4. Install the reverse shift fork.

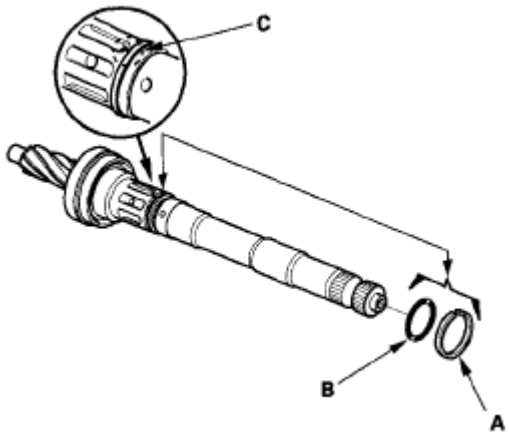


Fig. 174: Identifying Mainshaft, Countershaft & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the reverse idler gear (A) and the reverse gear shaft (B) by aligning the mark (C) with the reverse gear shaft hole (D).

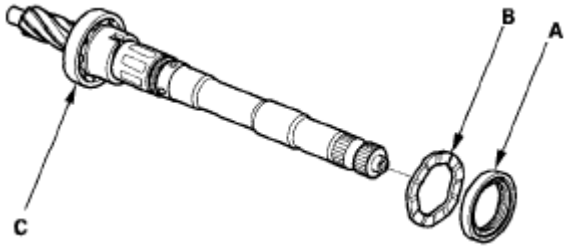


Fig. 175: Identifying Reverse Idler Gear, Reverse Gear Shaft And Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see **MAINSHAFT THRUST CLEARANCE ADJUSTMENT**). Install the oil gutter plate (B), the oil guide plate M, and the 72 mm shim into the transmission housing (C).

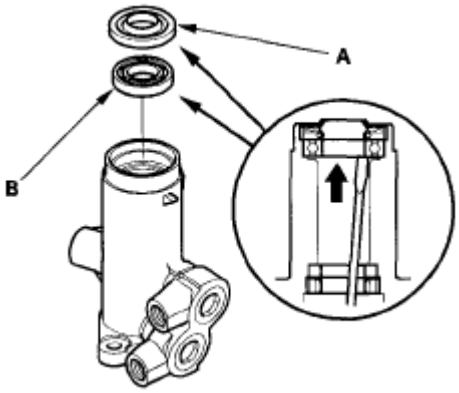


Fig. 176: Identifying Oil Gutter Plate And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean any dirt and oil from the transmission housing sealing surface.
8. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

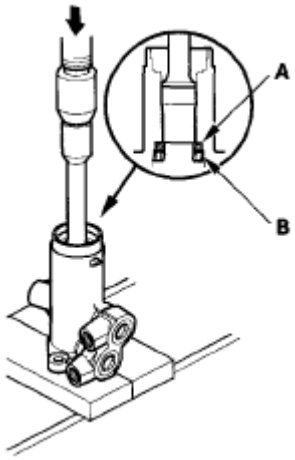


Fig. 177: Applying Liquid Gasket To Mating Surface Of Transmission Housing And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the three 14 x 20 mm dowel pins (A).

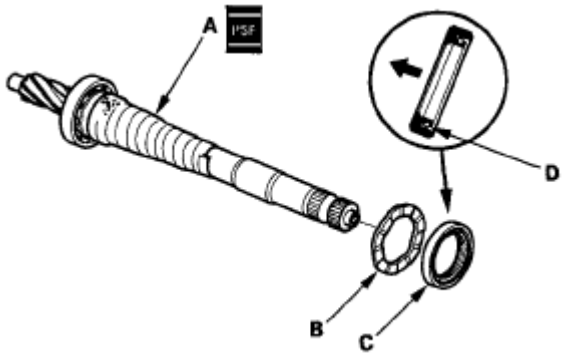


Fig. 178: Identifying Dowel Pins w/Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Place the transmission housing over the clutch housing, being careful to line up the shafts.
11. Lower the transmission housing the rest of the way as you expand the 72 mm snap ring (B). Release the snap ring so it seats in the groove of the countershaft bearing.
12. Make sure the 72 mm snap ring is securely seated in the groove of the countershaft bearing.

Dimension (1) as installed: 3.3-6.0 mm (0.13-0.24 in.)

13. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap (C) mating surface of the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid**

gasket.

14. Install the transmission hanger A, the transmission hanger B, the harness bracket (C), and the 8 mm flange bolts finger-tight.

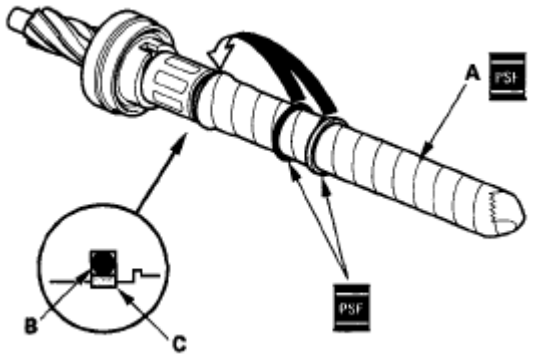


Fig. 179: Identifying Transmission Hanger A, Transmission Hanger B And Harness Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

Specified Torque:

8 x 1.25 mm

27 N.m (2.8 kgf.m, 20 lbf.ft)

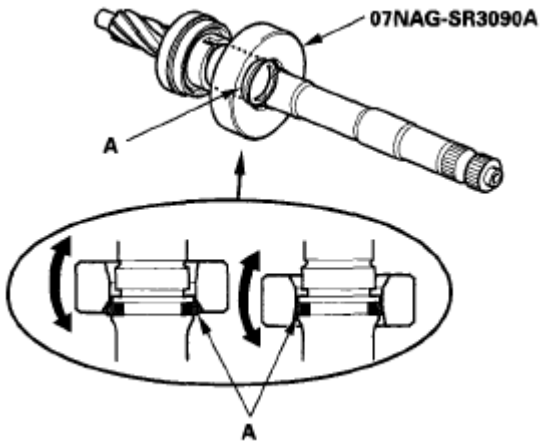


Fig. 180: Tightening Flange Bolts w/Torque Spec. In Crisscross Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Clean any dirt or oil from the change lever assembly sealing surface.
17. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the charge lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**

- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**
- **Allow it to cure at least 30 minutes after assembly before filling the transmission with MTF.**

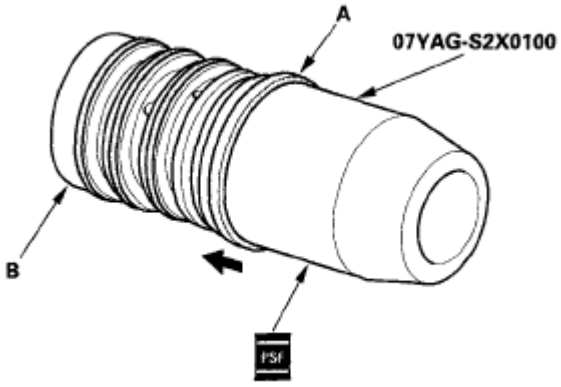


Fig. 181: Applying Liquid Gasket To Mating Surface Of Charge Lever Assembly And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the 8 x 14 mm dowel pins (B), change lever assembly (C), and harness bracket A.

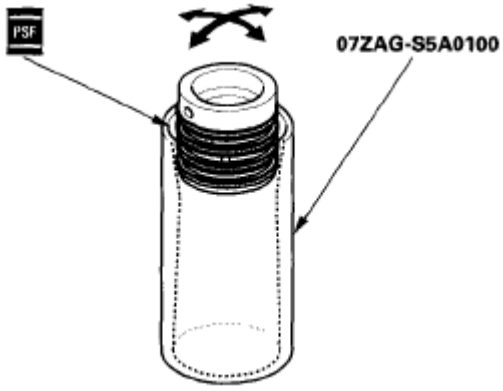


Fig. 182: Identifying Dowel Pins, Change Lever Assembly & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the threads of the inter lock bolt (D) and transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

20. Install the drain plug (A) and 10 mm flange bolt (B) with new sealing washers (C). Install the filler

plug (D) finger-tight.

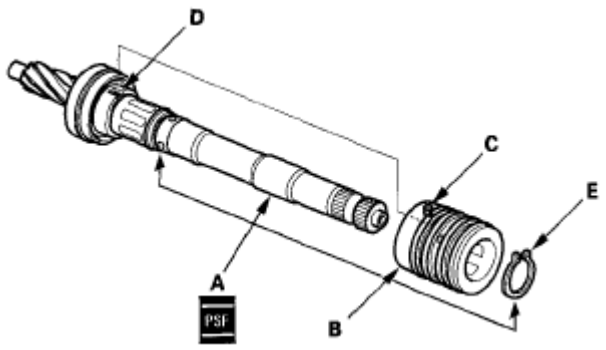


Fig. 183: Identifying Drain Plug, Flange Bolt, Sealing Washers & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Apply MTF to the new O-ring (E). Then install the new O-ring, and output shaft (countershaft) speed sensor (F).
22. Install the detent bolts (A), the springs, and steel balls with new washers (B). Then install the transmission hanger (C).

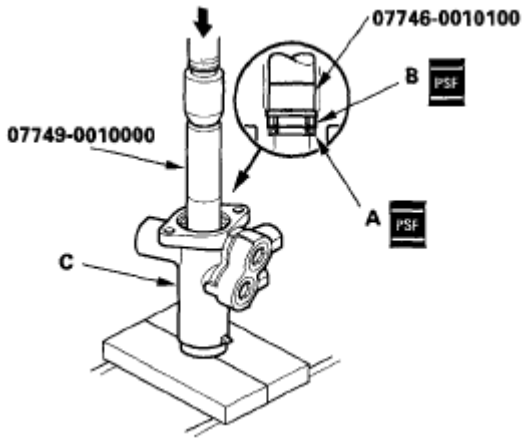


Fig. 184: Identifying Detent Bolts, Springs, Steel Balls, New Washers & Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (D) mating surface of the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.**

24. Install the 20 mm bolt (A) and new 20 mm washer (B).

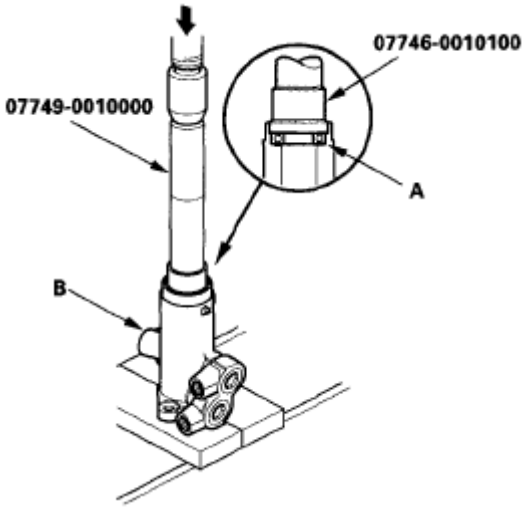


Fig. 185: Identifying Bolt, Washer & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GEARSHIFT MECHANISM REPLACEMENT

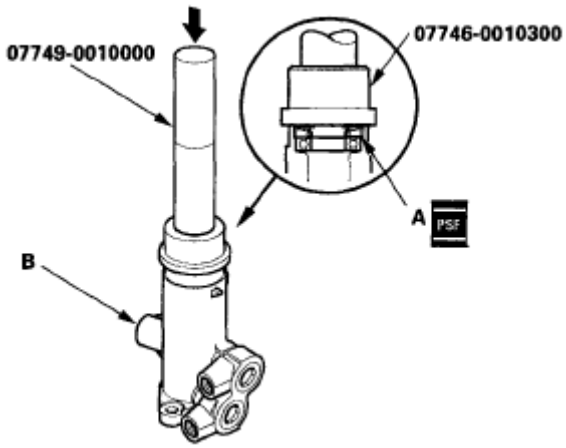


Fig. 186: Identifying Gearshift Mechanism Components w/Torque Specs.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

M/T DIFFERENTIAL

COMPONENT LOCATION INDEX

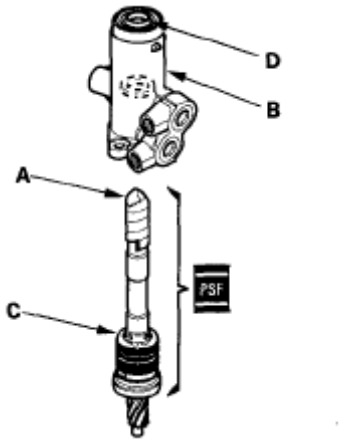


Fig. 187: Identifying M/T Differential Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR REPLACEMENT

1. Remove the bolts in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier (B).

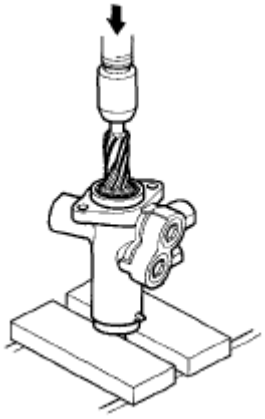


Fig. 188: Identifying Final Driven Gear, Differential Carrier & Torque Spec.
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

CARRIER BEARING REPLACEMENT

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

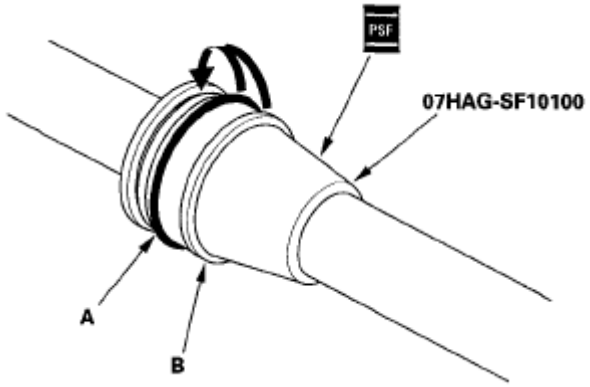


Fig. 189: Identifying Carrier Bearings And Bearing Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new bearings (A) with the 40 mm I.D. driver (B) and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

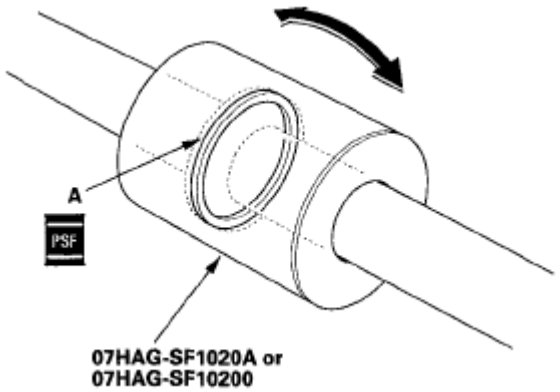


Fig. 190: Identifying Bearings, I.D. Driver And Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver attachment 07NAD-P20A100
- Driver 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).

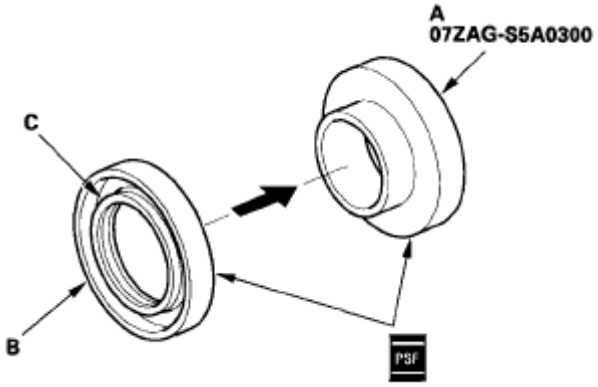


Fig. 191: Identifying Oil Seal And Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the clutch housing (B).

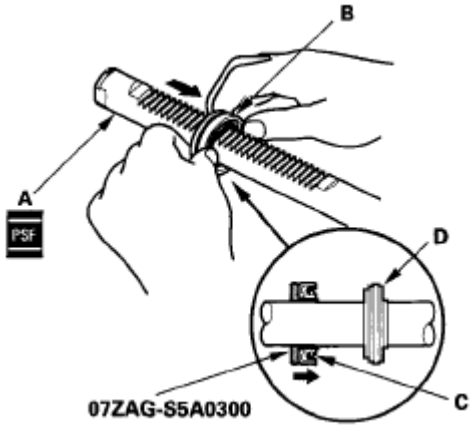


Fig. 192: Identifying Oil Seal And Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new oil seal in the transmission housing with the driver (A) and oil seal driver attachment (B).

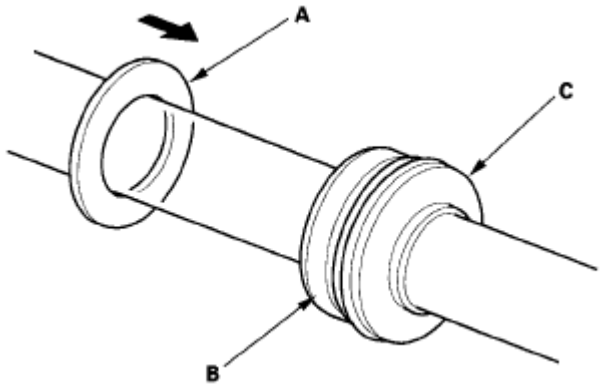


Fig. 193: Identifying Driver And Oil Seal Driver Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the new oil seal in the clutch housing with the driver (A) and oil seal driver attachment (B).

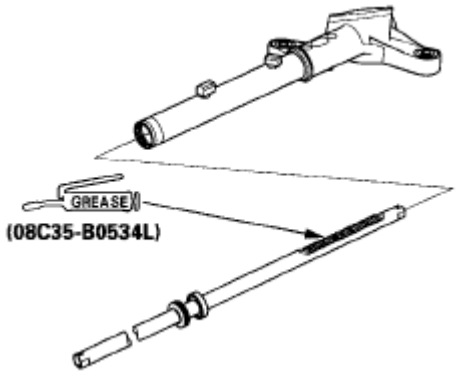


Fig. 194: Identifying Driver And Oil Seal Driver Attachment
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIFFERENTIAL THRUST CLEARANCE ADJUSTMENT

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. If you removed the 80 mm shim from the transmission housing, reinstall the same sized shim.

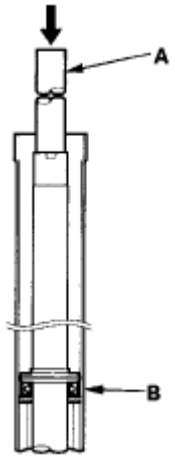


Fig. 195: Identifying Shim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the differential assembly into the clutch housing.

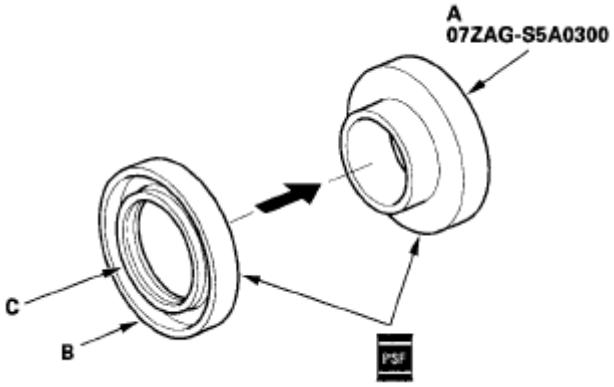


Fig. 196: Identifying Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 15).

   Specified Torque

   8 x 1.25 mm

   27 N.m (2.8 kgf.m, 20 lbf.ft)

4. Use the 40 mm I.D. driver (A) to bottom the differential assembly in the clutch housing.

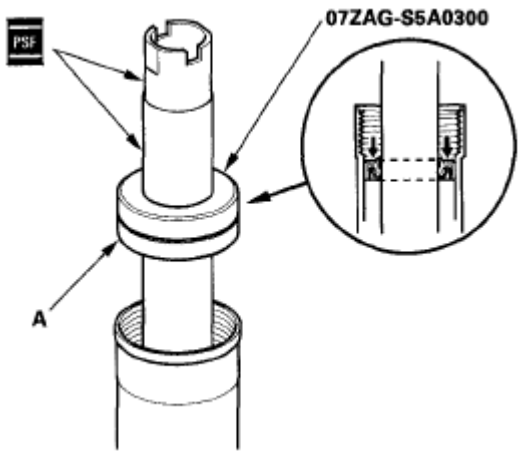


Fig. 197: Identifying I.D. Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure the clearance between the 80 mm shim and the bearing outer race in transmission housing.

   Standard: 0-0.10 mm (0-0.004 in.)

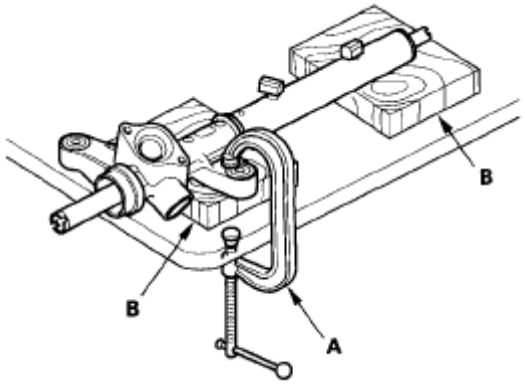


Fig. 198: Measuring Clearance Between Shim And Bearing Outer Race In Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the clearance is more than the standard, select a new 80 mm shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

80 mm Shim

PART THICKNESS CHART

	Part Number	Thickness
A	41441-PL3-B00	1.0 mm (0.0394 in.)
B	41442-PL3-B00	1.1 mm (0.0433 in.)
C	41443-PL3-B00	1.2 mm (0.0472 in.)
D	41444-PL3-B00	1.3 mm (0.0512 in.)
E	41445-PL3-B00	1.4 mm (0.0551 in.)
F	41446-PL3-B00	1.5 mm (0.0591 in.)
G	41447-PL3-B00	1.6 mm (0.0630 in.)
H	41448-PL3-B00	1.7 mm (0.0669 in.)
J	41449-PL3-B00	1.8 mm (0.0709 in.)
K	41450-PL3-B00	1.05 mm (0.0413 in.)
L	41451-PL3-B00	1.15 mm (0.0453 in.)
M	41452-PL3-B00	1.25 mm (0.0492 in.)
N	41453-PL3-B00	1.35 mm (0.0531 in.)
P	41454-PL3-B00	1.45 mm (0.0571 in.)
Q	41455-PL3-B00	1.55 mm (0.0610 in.)
R	41456-PL3-B00	1.65 mm (0.0650 in.)
S	41457-PL3-B00	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.
8. Replace the thrust shim selected in step 6, then recheck the clearance.
9. Reinstall the transmission housing.

2006-08 TRANSMISSION

Manual Transmission (SPFM) 5-Speed) - Civic

5-SPEED MANUAL TRANSMISSION

SPECIAL TOOLS

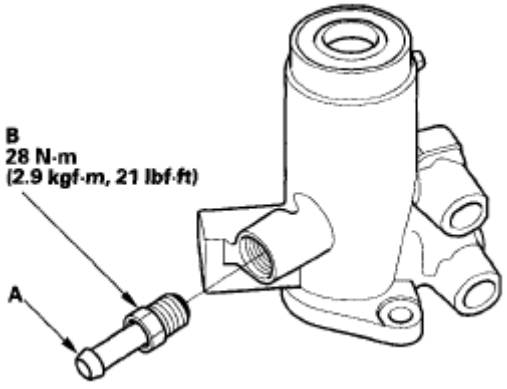


Fig. 1: Identifying 5-Speed Manual Transmission Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE LOCKOUT SYSTEM

SYSTEM DESCRIPTION

The reverse lockout system prevents mis-shifting from 5th gear to reverse.

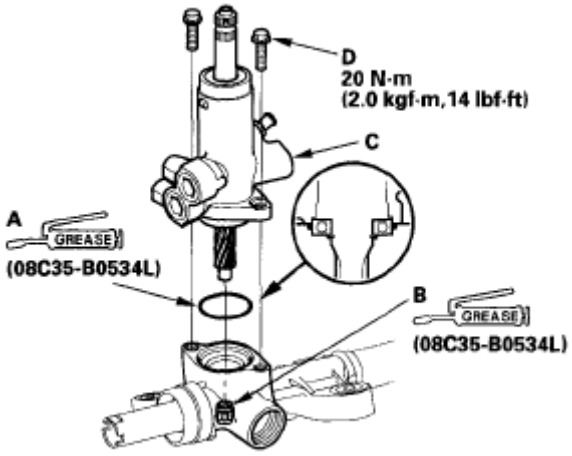


Fig. 2: Identifying Reverse Lockout System Prevents Mis-Shifting From 5Th Gear To Reverse
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shifting to 5th gear or reverse gear

When the shift lever is moved to the 5th gear-reverse plane, the shift piece pushes and turns the reverse lock cam. When the shift lever is shifted to 5th gear or reverse, the shift fork moves and completes the gear change. When the shift to 5th gear or reverse is completed, the reverse lock cam is turned back to a neutral

position by the return spring.

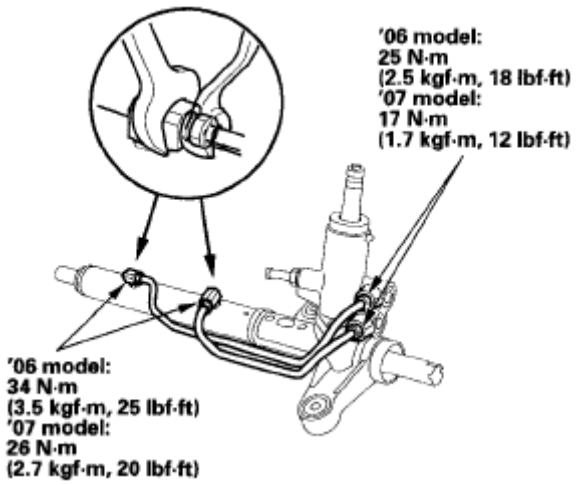


Fig. 3: Identifying 5th Gear Or Reverse Gear Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Shifting from 5th gear to reverse

When shifting out of 5th gear, the shift piece is stopped by the notch in the reverse lock cam, thus preventing a mis-shift from 5th gear to reverse.

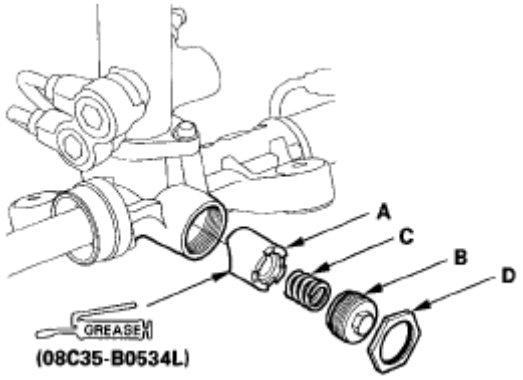


Fig. 4: Identifying Reverse Lock Cam
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MANUAL TRANSMISSION

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Probable cause(s)	Diagnostic procedure
Hard to shift into 1st gear	1. 1st synchro ring defective. 2. 1st/2nd synchro sleeve and hub defective.	• Check the 1st synchro ring (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check the 1st/2nd synchro sleeve and hub (see

		SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY).
	3. 1st gear defective.	• Check 1st gear (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	4. Change lever assembly defective.	• Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 2nd gear	1. 2nd synchro ring defective.	• Check the 2nd synchro ring (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	2. 1st/2nd synchro sleeve and hub defective.	• Check the 1st/2nd synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	3. 2nd gear defective.	• Check 2nd gear (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	4. Change lever assembly defective.	• Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 3rd gear	1. 3rd synchro ring defective.	• Check the 3rd synchro ring (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	2. 3rd/4th synchro sleeve and hub defective.	• Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	3. 3rd gear defective.	• Check 3rd gear (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	4. Change lever assembly defective.	• Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into 4th gear	1. 4th synchro ring defective.	• Check the 4th synchro ring (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	2. 3rd/4th synchro sleeve and hub defective.	• Check the 3rd/4th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	3. 4th gear defective.	• Check 4th gear (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**).
	4. Change lever assembly defective.	• Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift	1. 5th synchro ring defective.	• Check the 5th synchro ring (see **SYNCHRO**

into 5th gear	2. 5th synchro sleeve defective. 3. 5th gear defective. 4. Change lever assembly defective.	**SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check the 5th synchro sleeve and hub (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check 5th gear (see **SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY**). • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**).
Hard to shift into reverse	1. Reverse shift fork defective. 2. Reverse idler gear defective. 3. Reverse gear defective. 4. Change lever assembly defective. 5. Reverse lockout system defective.	• Check the reverse shift fork (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check the reverse idler gear (see **REVERSE SHIFT FORK CLEARANCE INSPECTION**). • Check reverse gear. • Check the change lever assembly (see **CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY**). • Check the reverse lockout system.
Noise from the transmission	1. Low transmission fluid level. 2. Worn or damaged transmission gears. 3. Worn or damaged transmission bearings.	• Check the transmission fluid level (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**). • Check the transmission gears. • Check the transmission bearings.
Shift lever does not operate smoothly	1. Shift cable defective. 2. Joint in shift cable and transmission or body.	• Check the change wires. • Check joint in the change wires (see **GEARSHIFT MECHANISM REPLACEMENT**).
Transmission jumps out of gear	1. Detent ball springs defective. 2. Worn synchro teeth.	• Check the detent ball springs. • Check the synchro teeth.

TRANSMISSION FLUID INSPECTION AND REPLACEMENT

1. Raise the vehicle on the lift.
2. Remove the filler plug (A) and washer (B), check the condition of the fluid, and make sure it is at the proper level (C).

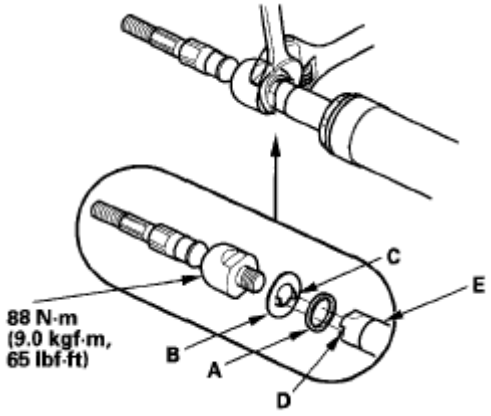


Fig. 5: Identifying Filler Plug And Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the fluid is dirty, remove the drain plug (A), and drain it.

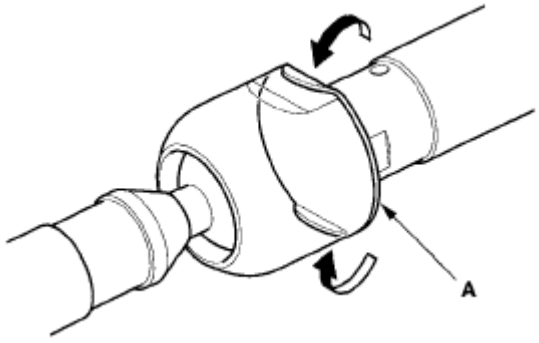


Fig. 6: Identifying Drain Plug (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the drain plug with a new washer, and refill the transmission fluid to the proper level.

   Fluid Capacity

   1.4 L (1.5 US qt) at fluid change

   1.6 L (1.7 US qt) at overhaul

   Always use Honda Manual Transmission Fluid (MTF). Using engine oil can cause stiffer shifting because it does not contain the proper additives.

5. Install the filler plug (B) with a new washer.
6. If the maintenance minder required to replace the fluid, reset the maintenance minder (see **MAINTENANCE MINDER**). If it did not, select BODY ELECTRICAL, GAUGES, ADJUSTMENT, MAINTENANCE MINDER, RESET, MAINTENANCE SUB ITEM 3 with the HDS.

BACK-UP LIGHT SWITCH TEST

1. Disconnect the back-up light switch connector (A).

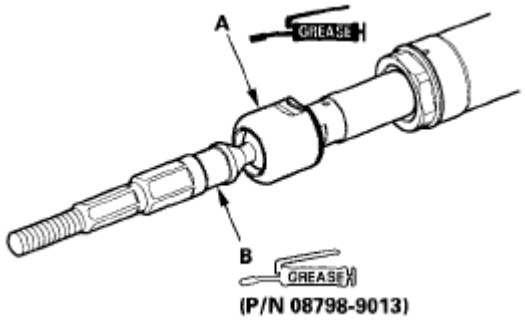


Fig. 7: Identifying Back-Up Light Switch Connector (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check for continuity between the back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the change lever is only in reverse.
3. If necessary, replace the back-up light switch. Install the new washer and back-up light switch on the transmission housing.

TRANSMISSION REMOVAL

Special Tools Required

- 1.8 Support eyelet 07AAK-SNAA400
- 1.8 Support bolt 07AAK-SNAA500
- Engine support hanger, A & Reds AAR-T-12566 *
- Subframe adapter VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *

* These special tools are available through the Honda Tool and Equipment program.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Make sure you have the anti-theft code for the audio unit and or the navigation system, then write down the audio presets.
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery.
4. Remove the cowl cover and under-cowl panel (see **FRONT GRILLE COVER REPLACEMENT**).
5. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
6. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

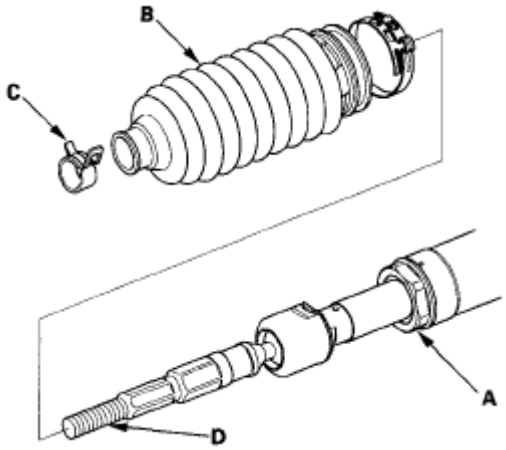


Fig. 8: Identifying Harness Clips And Intake Air Duct
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the clutch line bracket (A), then carefully remove the slave cylinder (B) to avoid bending the clutch line.

NOTE: Do not press the clutch pedal after the slave cylinder has been removed.

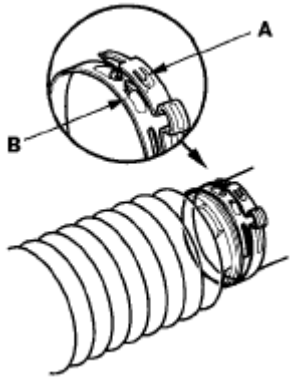


Fig. 9: Identifying Clutch Line Bracket And Slave Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Disconnect the back-up light switch connector (A), then remove the engine harness cover (B) and the harness clips (C).

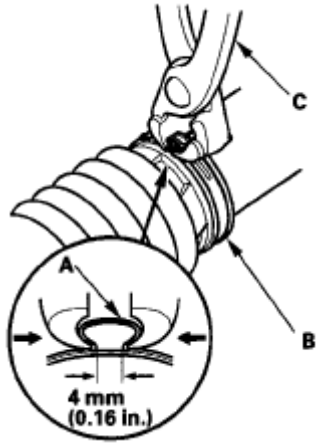


Fig. 10: Identifying Back-Up Light Switch Connector And Engine Harness Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the cable bracket (A), then disconnect the cables (B) from the top of the transmission housing. Carefully remove both cables and the bracket together to avoid bending the cables.

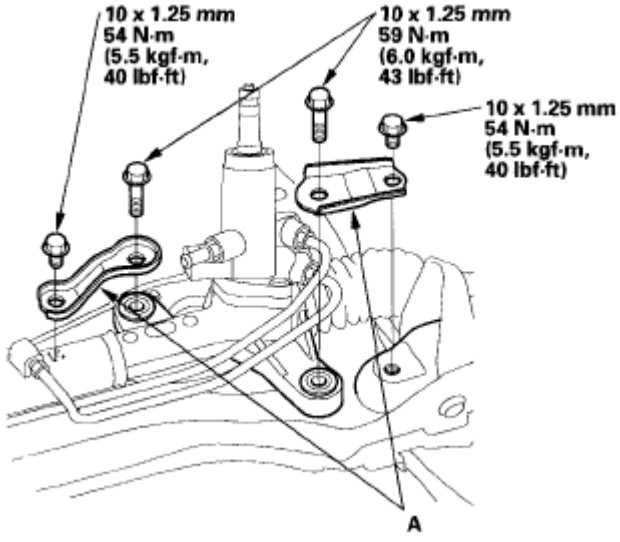


Fig. 11: Identifying Cable Bracket And Cables
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the output shaft (countershaft) speed sensor connector (A).

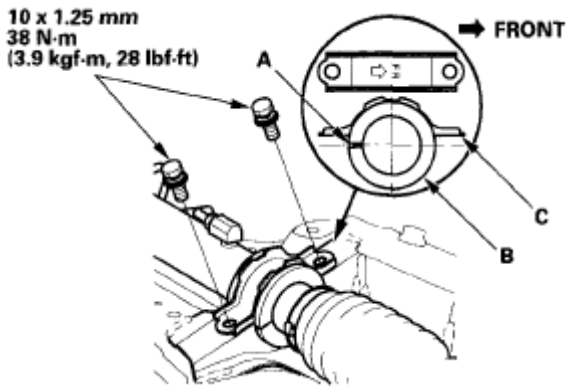


Fig. 12: Identifying Output Shaft (Countershaft) Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the air cleaner housing bracket (A), and install support eyelet (B) behind the breather pipe (C) and down to the threaded hole (D) on the cylinder head.

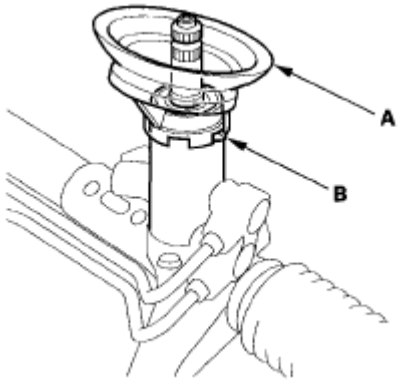


Fig. 13: Identifying Air Cleaner Housing Bracket And Support Eyelet
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Attach the support eyelet (A) to the cylinder head with the support bolt (B). Tighten the bolt by hand.

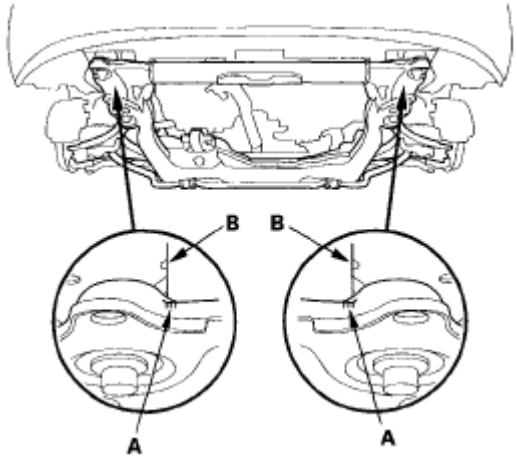


Fig. 14: Identifying Support Eyelet To Cylinder Head
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the front leg assembly (A), hook (B), and wingnut (C) from an A and Reds engine support hanger (AAR-T-12566) onto the engine hanger. Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

NOTE: Use care when working around the windshield.

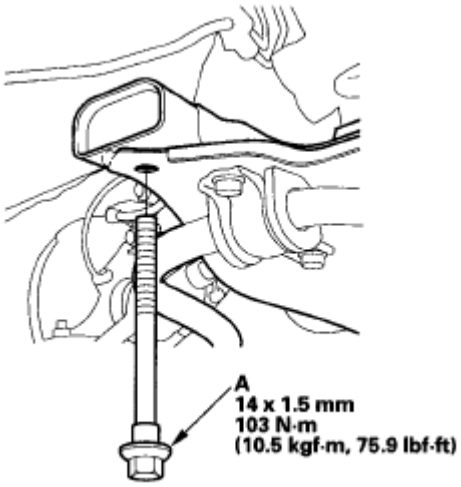


Fig. 15: Identifying Front Leg Assembly Hook And Wingnut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the upper transmission mounting bolt.

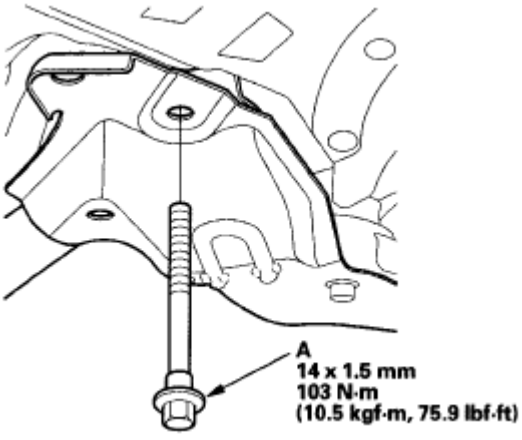


Fig. 16: Identifying Upper Transmission Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the transmission mounting bolt (A) and nuts (B), then remove the ground cable (C). Remove the transmission mounting bracket base bolts (D).

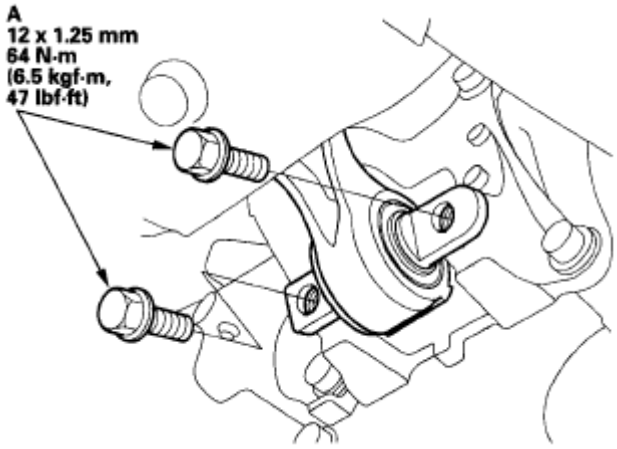


Fig. 17: Identifying Transmission Mounting Bolt And Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the stud bolts (A) and the transmission mounting bracket base (B).

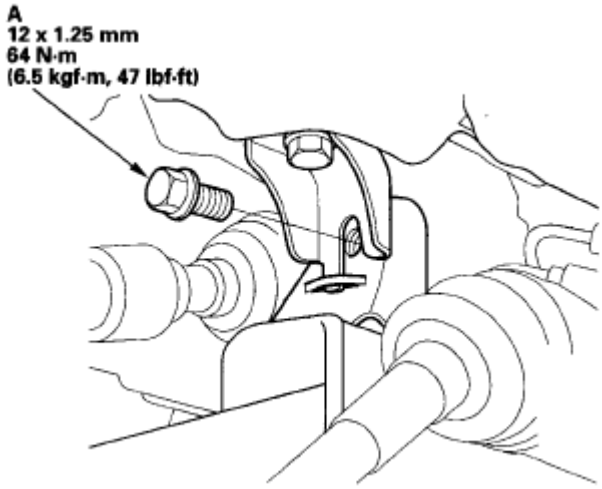


Fig. 18: Identifying Stud Bolts And Transmission Mounting Bracket Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Raise the vehicle, on the lift.
18. Remove the splash shield.

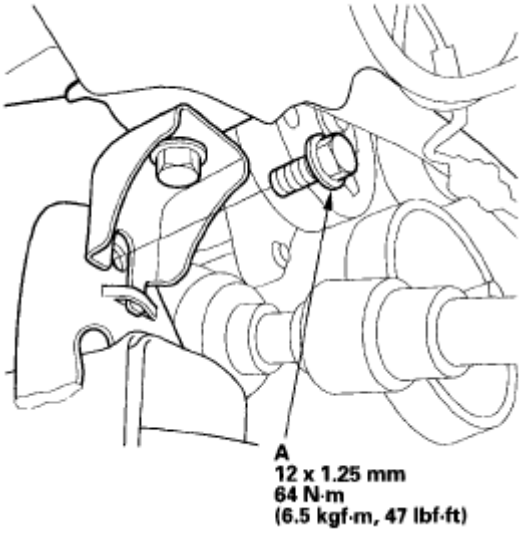


Fig. 19: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Drain the transmission fluid. Reinstall the drain plug with a new washer (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).
20. Separate the lower arm (see step 6 on **DRIVESHAFT REMOVAL**).
21. Remove the stiffner plates (A) and mounting bracket (B) from the steering gearbox.

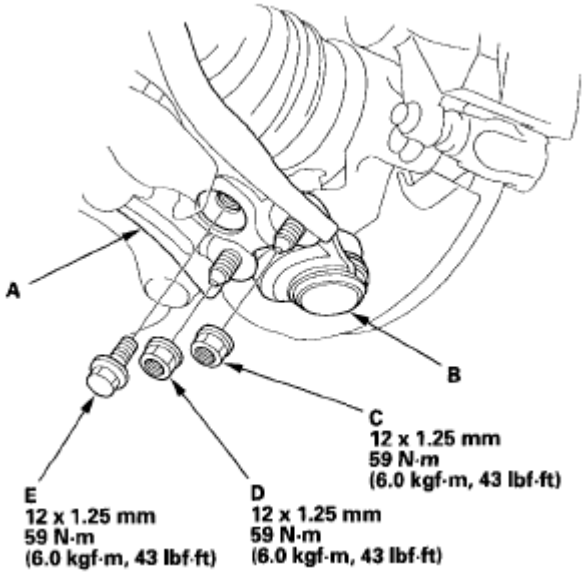


Fig. 20: Identifying Stiffner Plates And Mounting Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Remove the steering line brackets (A) and clip (B).

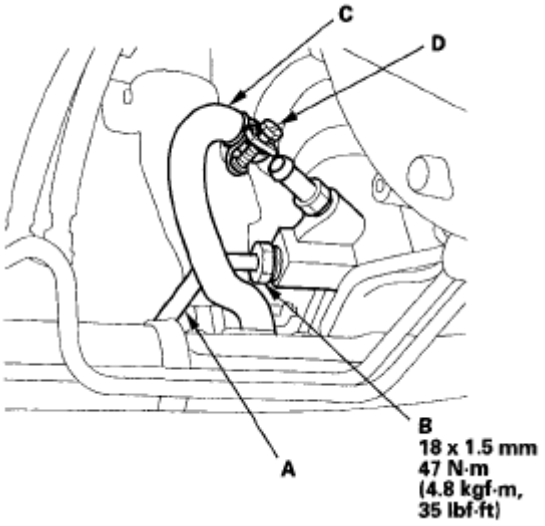


Fig. 21: Identifying Steering Line Brackets And Clip
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the middle subframe mounting bolts (A).

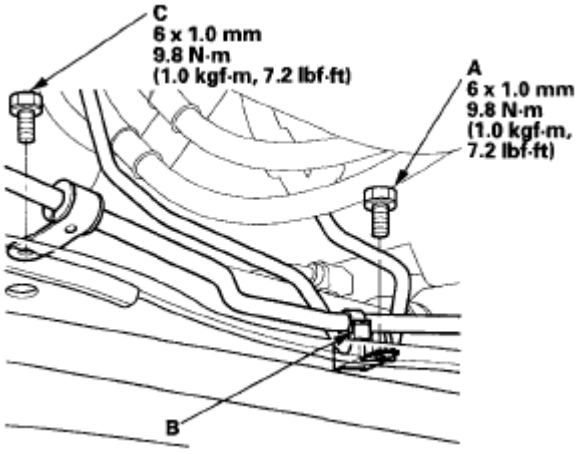


Fig. 22: Identifying Subframe Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Remove the lower torque rod mounting bolts.

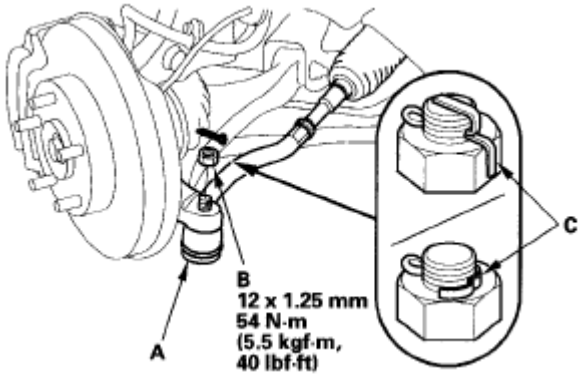


Fig. 23: Identifying Lower Torque Rod Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Note the reference marks (A) on both sides of the subframe that line up with the body (B).

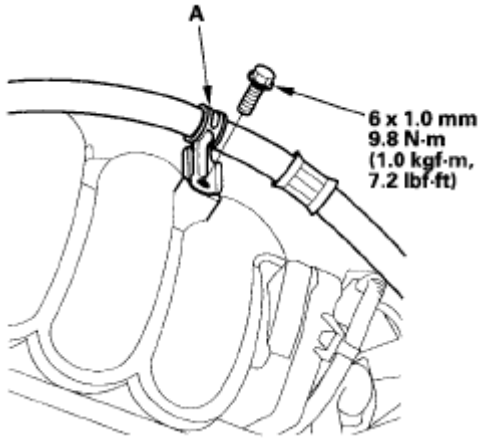


Fig. 24: Locating Subframe Marks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Attach the front subframe adapter to the front subframe by wrapping the band over the front subframe and attaching the end of the band to the front subframe adapter with the pin (A).

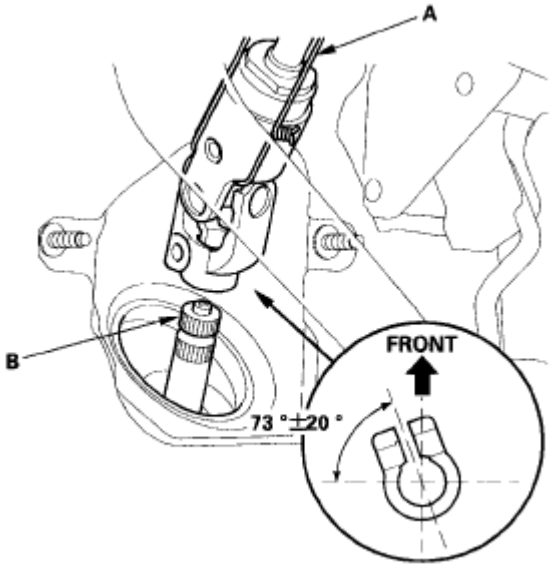


Fig. 25: Attaching Front Subframe Adapter To Front Subframe By Wrapping Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (B), then attach them securely.
28. Remove the front subframe mounting bolts (A) and front subframe (B).

NOTE: Suspend the steering gearbox with an appropriate size wire.

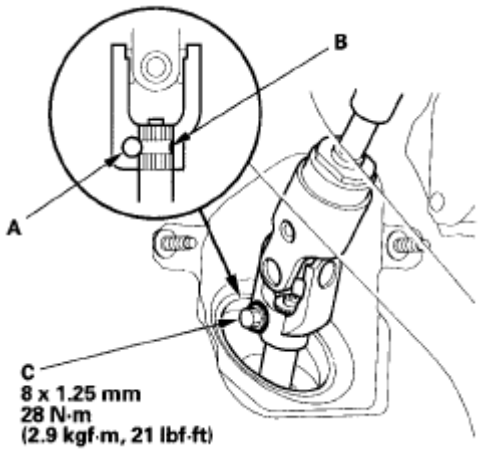


Fig. 26: Identifying Front Subframe Mounting Bolts And Front Subframe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Pry the driveshafts inboard joint (see step 8 on **DRIVESHAFT REMOVAL**).
30. Remove the intermediate shaft (see **INTERMEDIATE SHAFT REMOVAL**).
31. Remove the clutch cover (A).

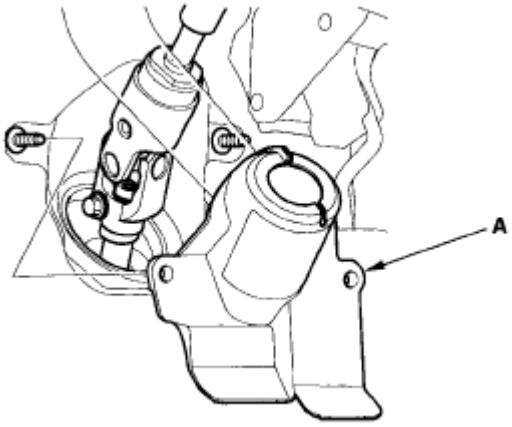


Fig. 27: Identifying Clutch Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Support the transmission with the transmission jack.
33. Remove the lower transmission mounting bolts.

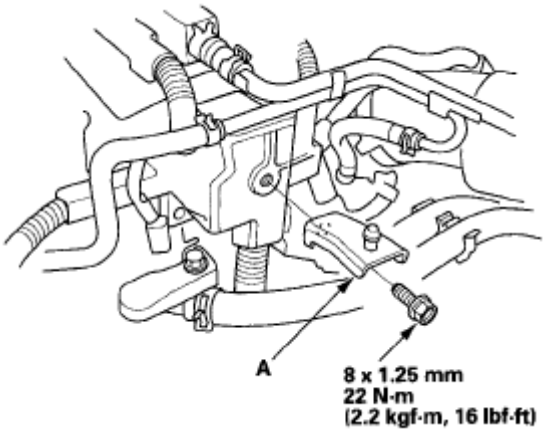


Fig. 28: Identifying Lower Transmission Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.
35. Slowly lower the transmission about 150 mm (6 in.) Check once again that all hoses and electrical wiring are disconnected and free from the transmission, then lower it all the way.
36. Remove the release fork boot (A) from the clutch housing (B).

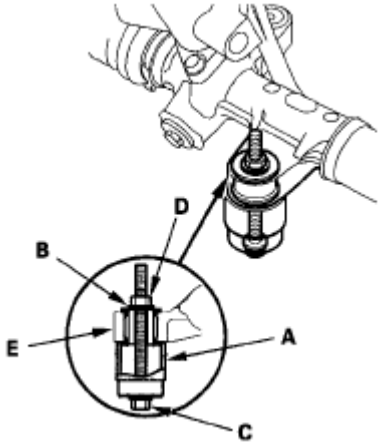


Fig. 29: Identifying Release Fork Boot From Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

TRANSMISSION INSTALLATION

Special Tools Required

- 1.8 Support eyelet 07AAK-SNAA400
- 1.8 Support bolt 07AAK-SNAA500
- Engine support hanger, A & Reds AAR-T-12566*
- Subframe adapter VSB02C000016 *

- 2006 Civic engine hanger *

* : These special tools are available through the Honda Tool and Equipment program.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).

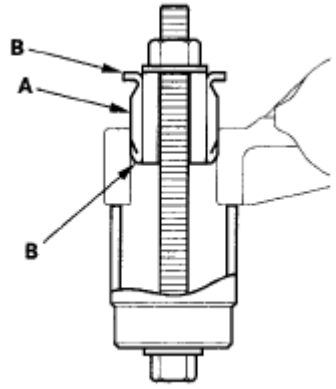


Fig. 30: Identifying Upper Torque Rod Mounting Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Make sure the two dowel pins (A) are installed in the clutch housing.

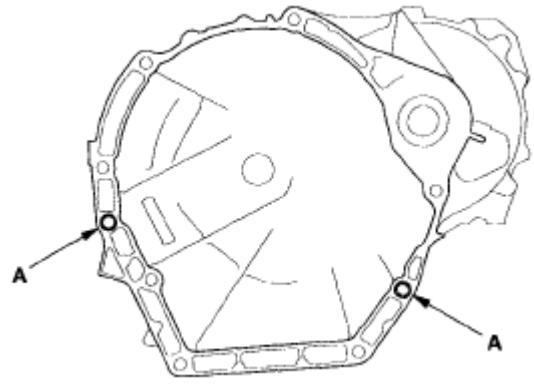


Fig. 31: Identifying Dowel Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the release fork, the release bearing, and the boot (see step 4 on **PRESSURE PLATE AND CLUTCH DISC REMOVAL (5-SPEED MODEL)**).
4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the lower transmission mounting bolts.

Ref. No.	Tool Number	Description	Qty
①	07AAK-SNAA400	1.8 Support Eyelet	1
②	07AAK-SNAA500	1.8 Support Bolt	1
③	07HAG-SF10100	Piston Seal Ring Guide	1
④	07HAG-SF1020A or 07HAG-SF10200	Piston Seal Ring Sizing Tool	1
⑤	07JAF-SH20330	Bushing Base	1
⑥	07MAA-SL00100 or 07916-SA50001	Locknut Wrench, 40 mm	1
⑦	07MAA-SL0020A	Locknut Wrench, 43 mm	1
⑧	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑨	07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑩	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑪	07RAK-S040111	P/S joint Adapter (Pump)	1
⑫	07RAK-S040122	P/S joint Adapter (Hose)	1
⑬	07YAG-S2X0100	Sleeve Seal Ring Guide	1
⑭	07ZAB-S5A0100	Pulley Holder	1
⑮	07ZAG-S5A0100	Sleeve Seal Ring Sizing Tool, 36 mm	1
⑯	07ZAG-S5A0300	Cylinder End Seal Slider	1
⑰	07406-0010001 or 07406-001000A	P/S Pressure Gauge	1
⑱	07746-0010100	Attachment, 32 x 35 mm	1
⑲	07746-0010300	Attachment, 42 x 47 mm	1
⑳	07749-0010000	Driver	1

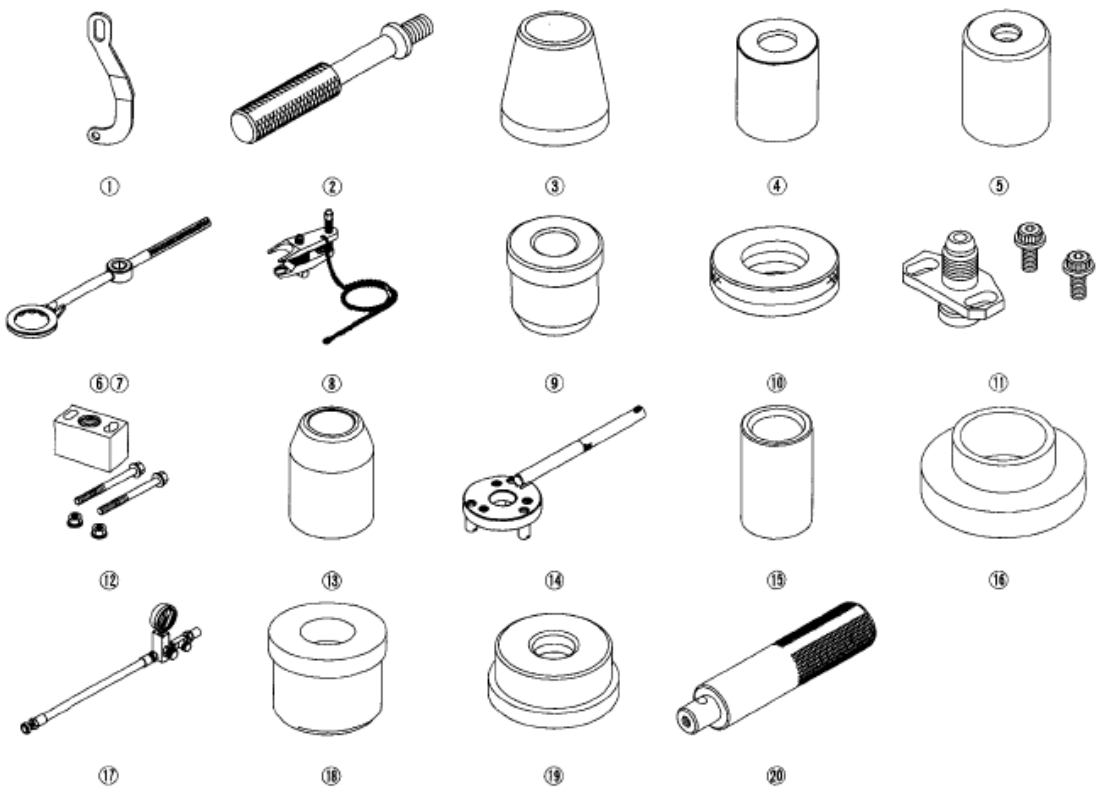


Fig. 32: Identifying Lower Transmission Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the clutch cover.

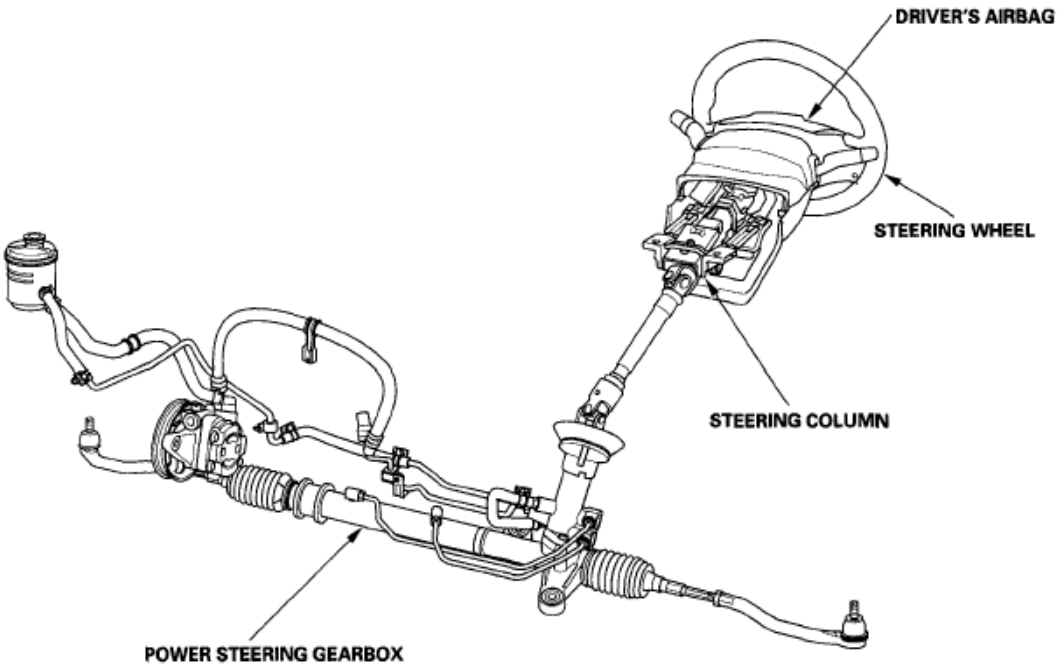


Fig. 33: Identifying Clutch Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the intermediate shaft (see **INTERMEDIATE SHAFT INSTALLATION**).
8. Install the driveshaft inboard joint (see **DRIVESHAFT INSTALLATION**).
9. Support the front subframe with the front subframe adapter and a jack.

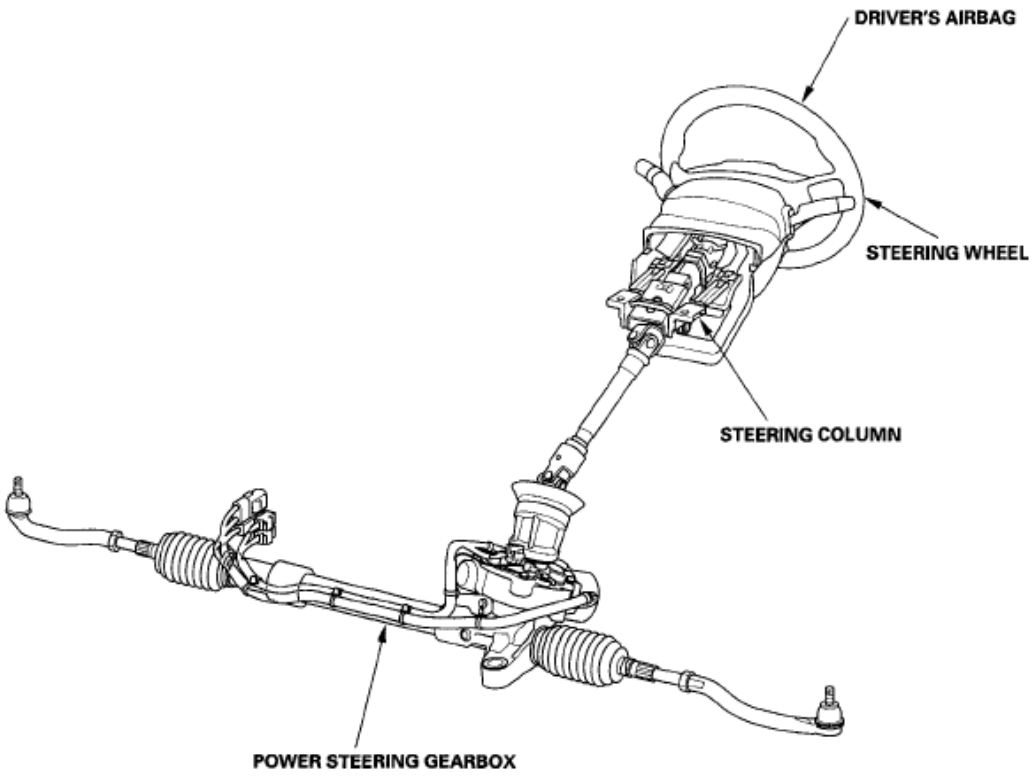


Fig. 34: Identifying Driveshaft Inboard Joint
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the front subframe (A). Loosely install the new subframe mounting bolts (B).

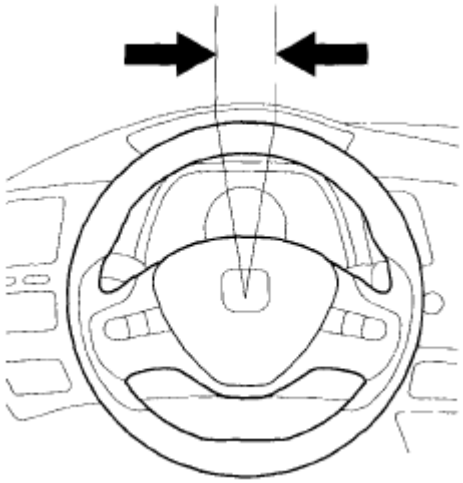


Fig. 35: Installing Front Subframe (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the subframe mounting bolts to the specified torque.

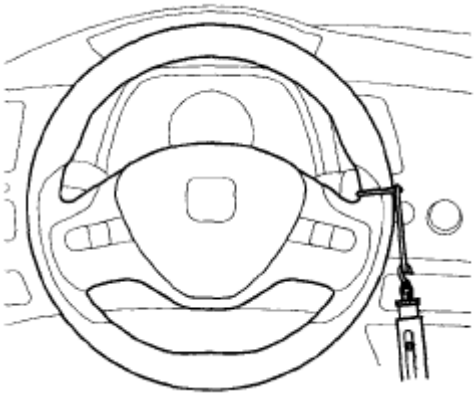


Fig. 36: Aligning Front Subframe Marks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install the lower torque rod mounting bolts.

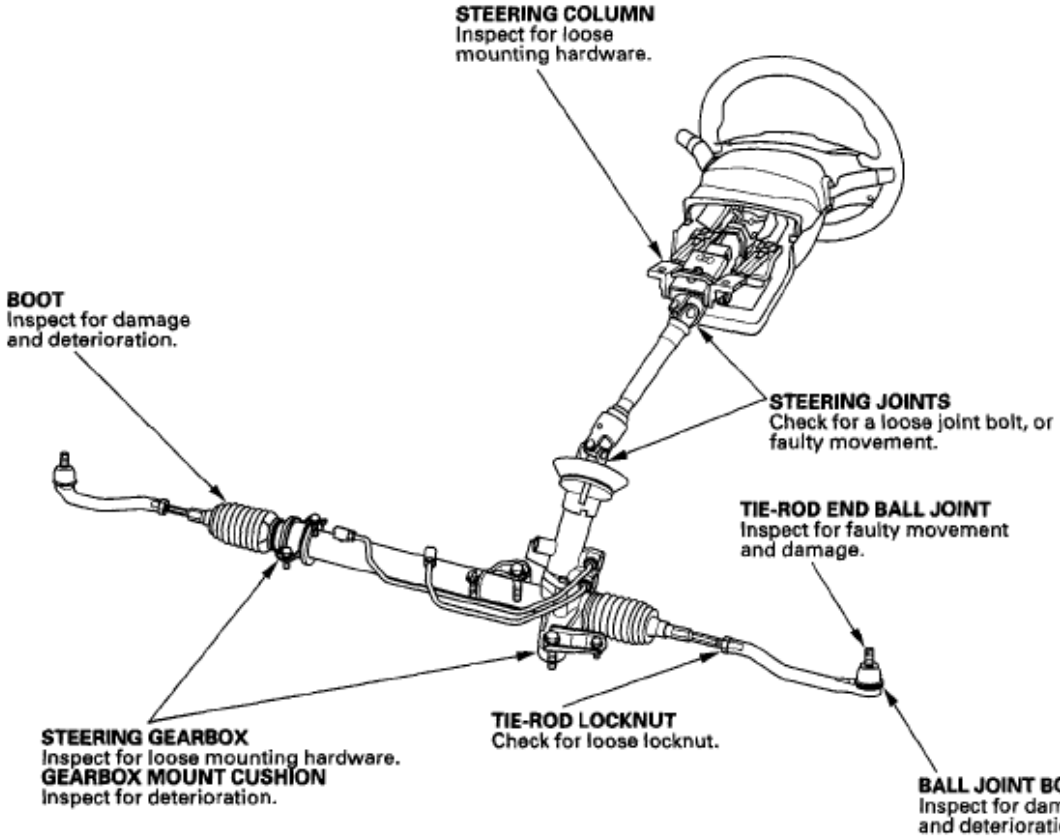


Fig. 37: Installing Lower Torque Rod Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the middle subframe mounting bolts.

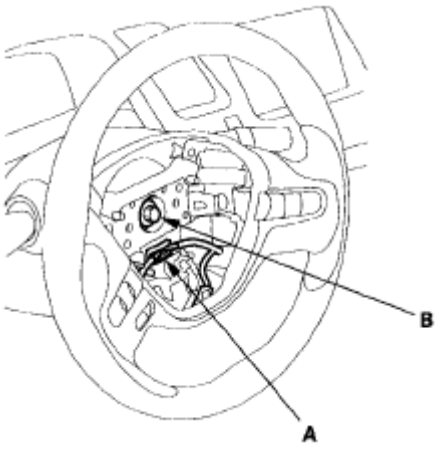


Fig. 38: Identifying Subframe Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the steering gearbox stiffner plates (A) and mounting bracket (B). Tighten the mounting bolts to the specified torque.

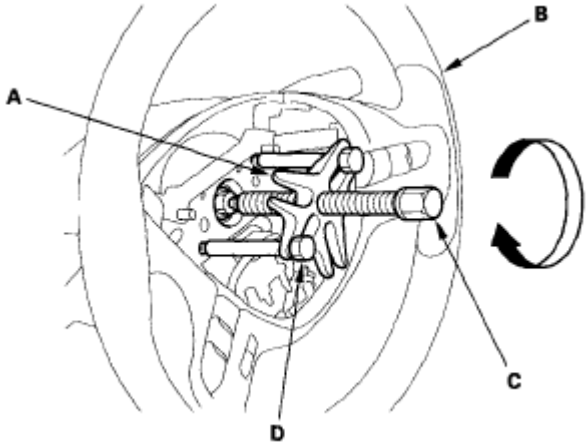


Fig. 39: Installing Steering Gearbox Stiffner Plates (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the steering line bracket (A) and the clip (B).

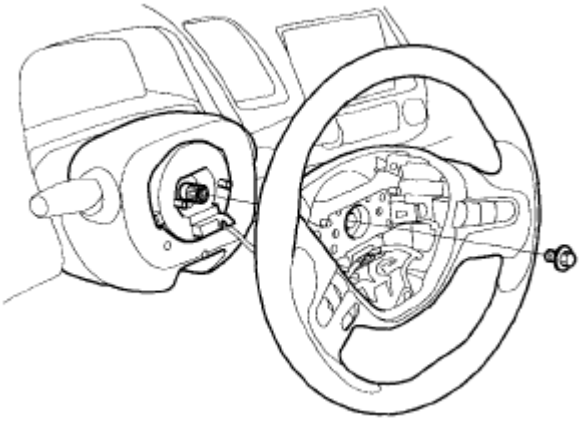


Fig. 40: Identifying Steering Line Bracket And Clip (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Connect the lower arm (see step 7 on **DRIVESHAFT INSTALLATION**).
17. Lower the vehicle on the lift.
18. Install the transmission mounting bracket base (A) and stud bolts (B).

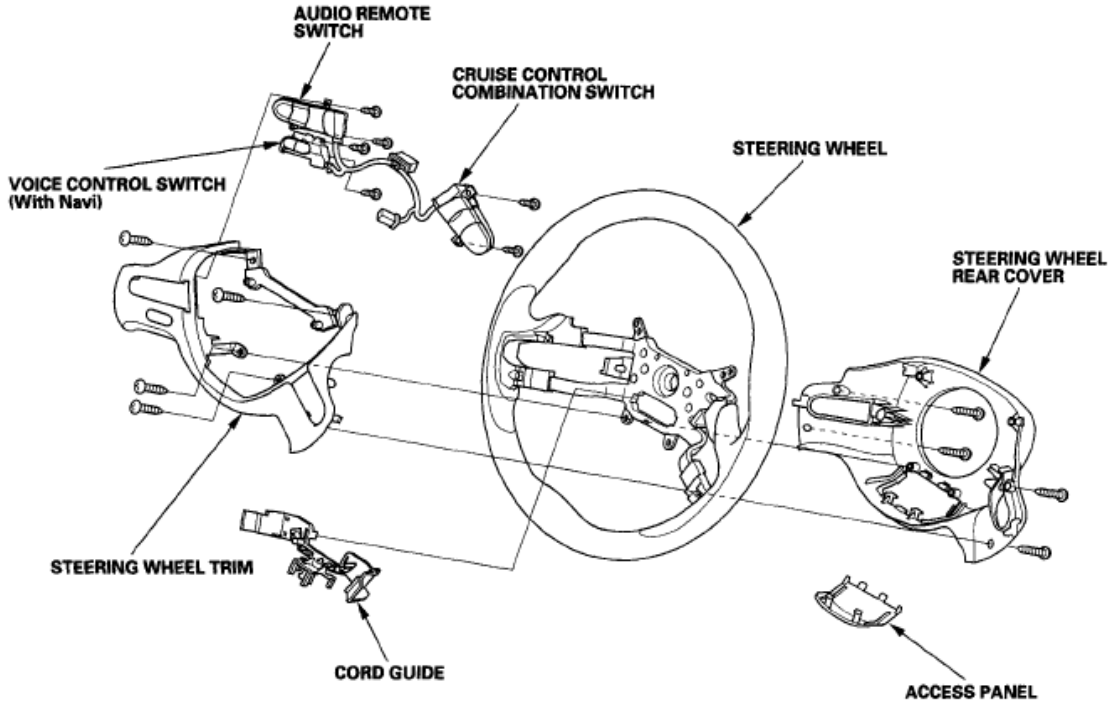


Fig. 41: Identifying Transmission Mounting Bracket Base And Stud Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the transmission mounting bracket bolts (A). Install the transmission mounting bolt (B) and nuts (C), then install the ground cable (D).

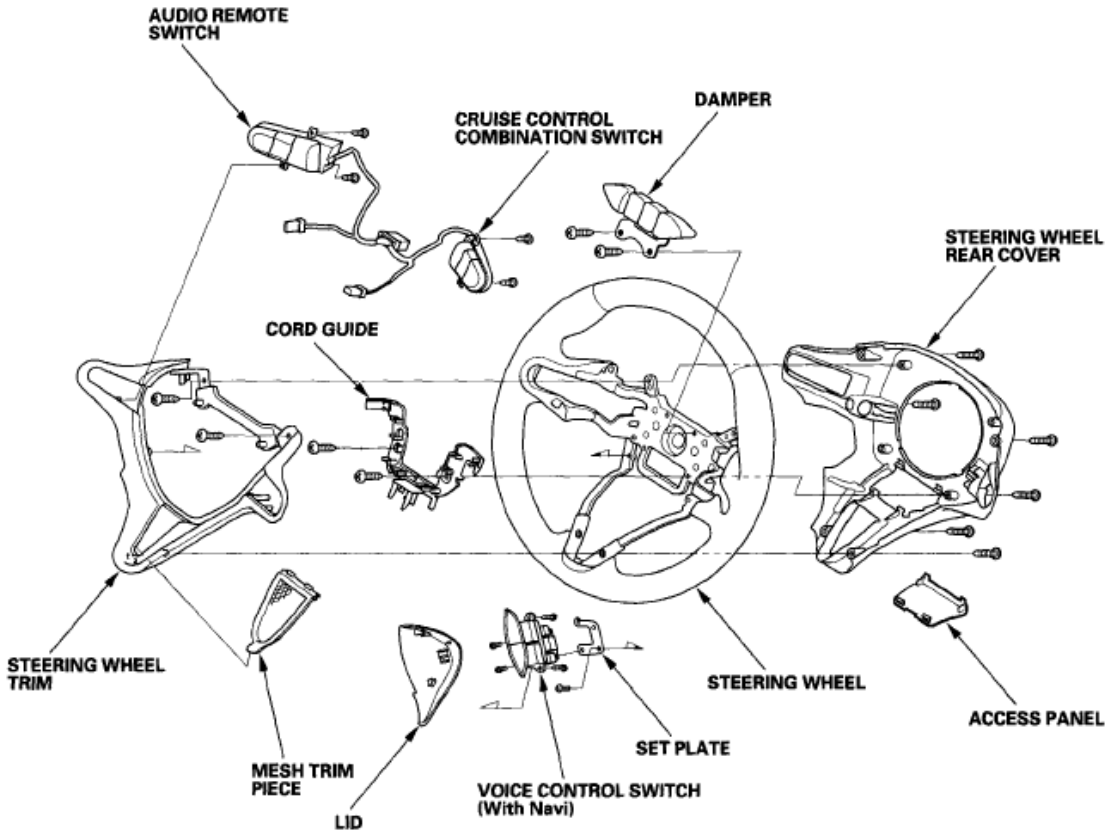


Fig. 42: Identifying Transmission Mounting Bracket Bolts And Nuts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Raise the vehicle on the lift.
21. Loosen and retighten the lower torque rod mounting bolt.

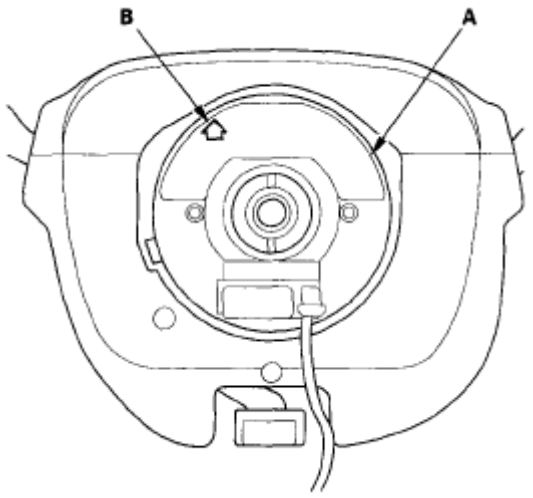


Fig. 43: Identifying Lower Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Refill the transmission with the recommended transmission fluid (see **TRANSMISSION FLUID INSPECTION AND REPLACEMENT**).

23. Install the splash shield.

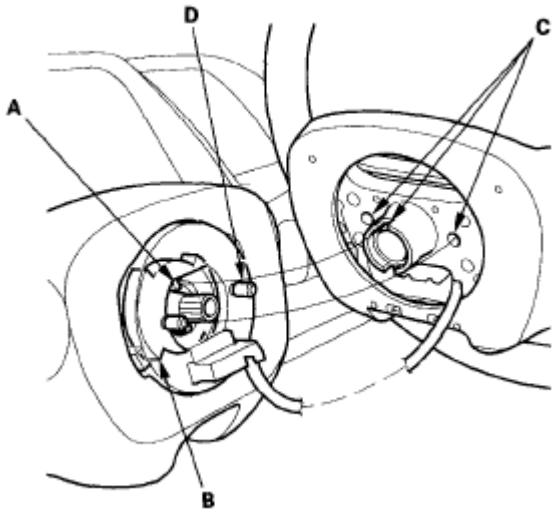


Fig. 44: Locating Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Lower the vehicle on the lift.
25. Tighten the upper torque rod mounting bolt.

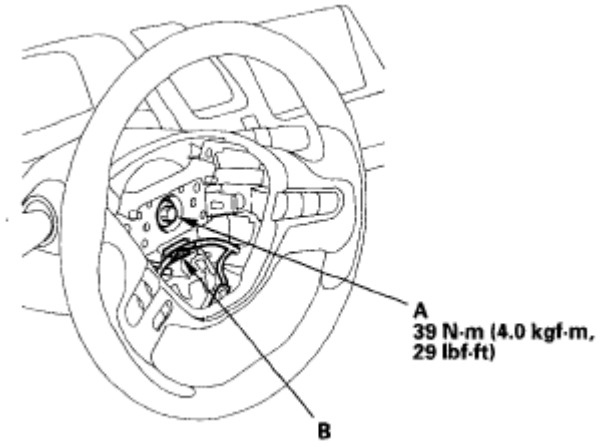


Fig. 45: Tightening Upper Torque Rod Mounting Bolt (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the upper transmission mounting bolts.

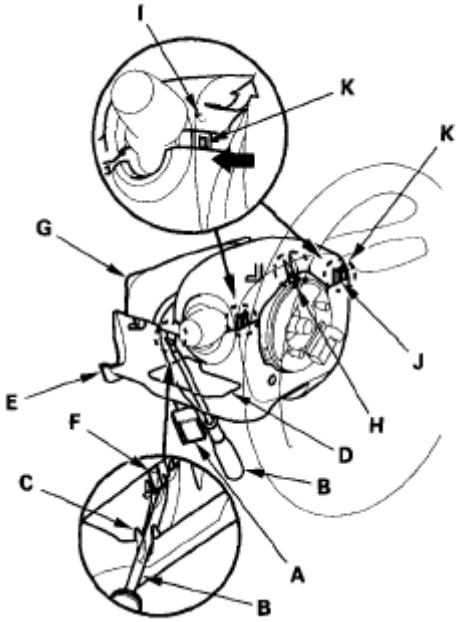


Fig. 46: Installing Upper Transmission Mounting Bolts (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the engine hanger and support eyelet (A) from the engine.

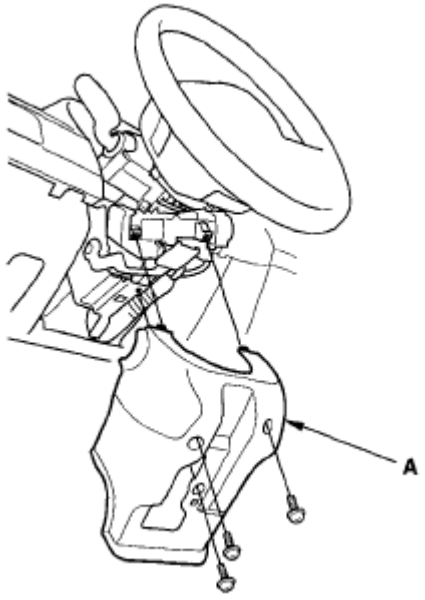


Fig. 47: Identifying Engine Hanger And Support Eyelet (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Install the air cleaner housing bracket (B) on the cylinder head.
29. Connect the output shaft (countershaft) speed sensor connector (A).

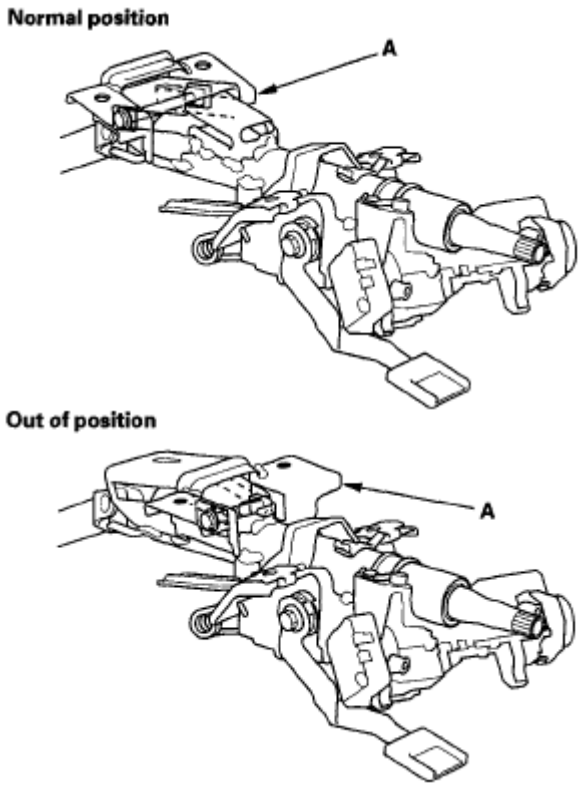


Fig. 48: Locating Output Shaft (Countershaft) Speed Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the cable ends (A), and the surface of the cable end rubber (B) with silicone grease.

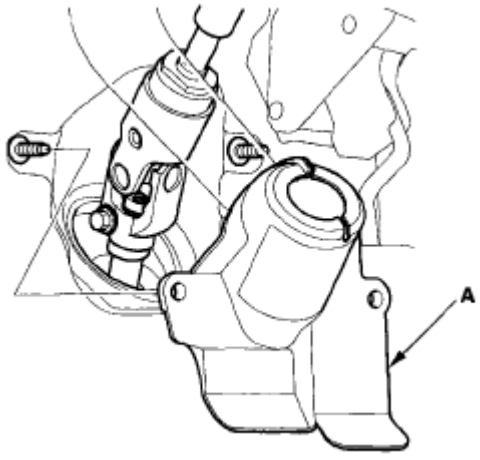


Fig. 49: Identifying Area For Applying Super High Temp Urea Grease (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Install the cable bracket (C) and the cables (D), then install the new cotter pins (E).
32. Connect the back-up light switch connector (A), then install the engine harness cover (B) and the harness clips (C).

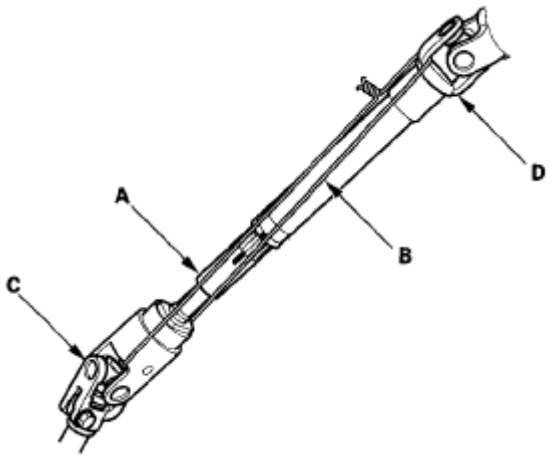


Fig. 50: Identifying Back-Up Light Switch Connector (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder rod. Install the slave cylinder (A) then install the clutch line bracket (B). Be careful not to bend the clutch line.

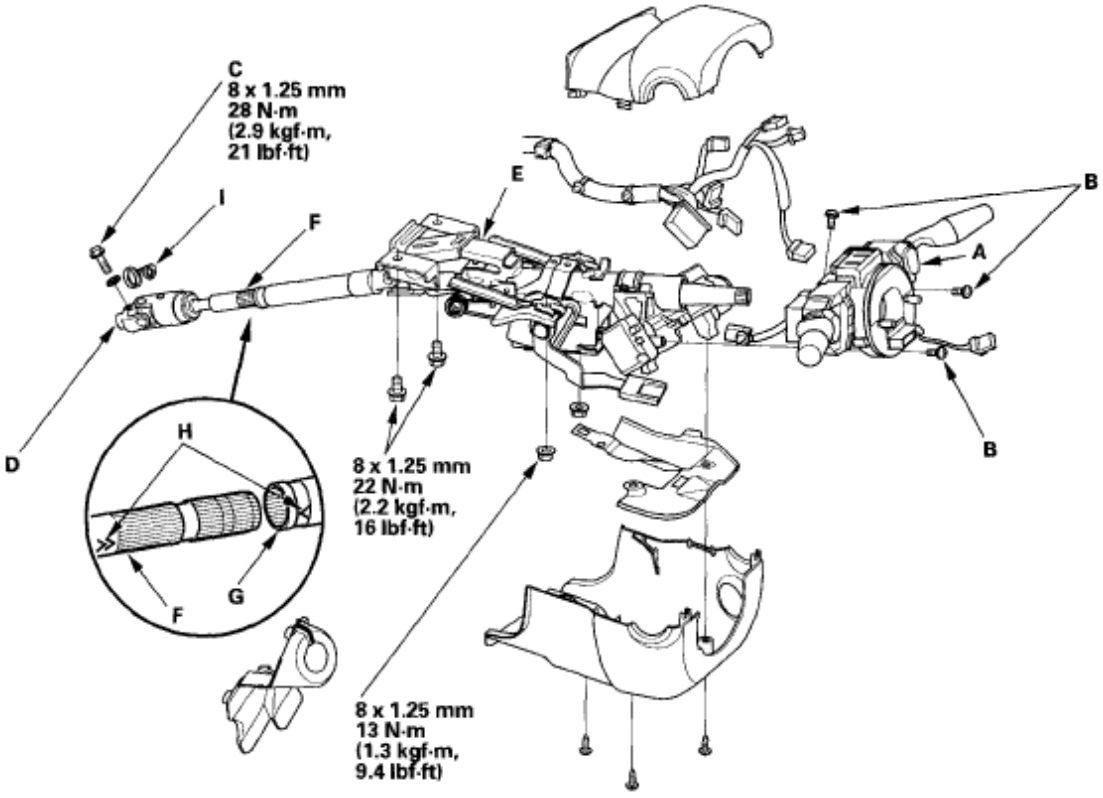


Fig. 51: Identifying Area For Applying Super High Temp Urea Grease (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Install the battery base (A) with the coolant reservoir (B).

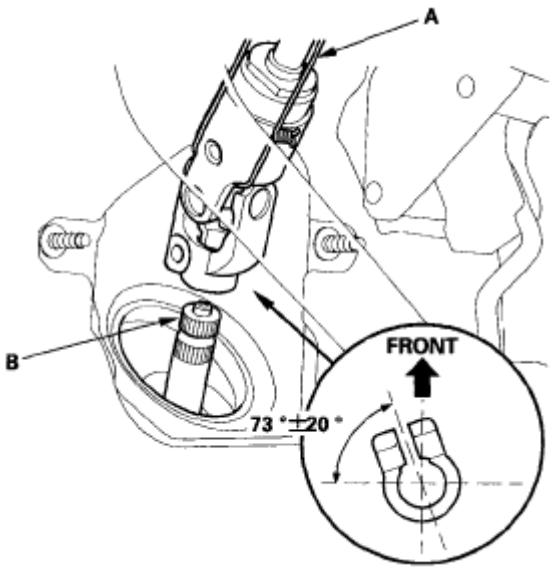


Fig. 52: Identifying Battery Base With Coolant Reservoir (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the harness clips (C) and the intake air duct (D).
36. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
37. Install the battery. Clean the battery posts and cable terminals. Connect the positive cable to the battery first, then connect the negative cable, and apply multipurpose grease to prevent corrosion.
38. Install the under-cowl panel and cowl cover (see **FRONT GRILLE COVER REPLACEMENT**).
39. Test-drive the vehicle.
40. Check the change lever and the clutch operation.
41. Check the front wheel alignment (see **WHEEL ALIGNMENT**).
42. Enter the anti-theft code for the audio unit or the navigation system, then enter the audio presets. Set the clock.
43. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).

TRANSMISSION DISASSEMBLY

Exploded View - Clutch Housing

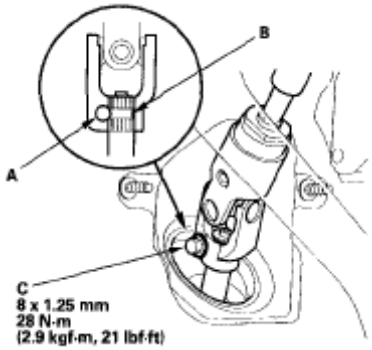


Fig. 53: Exploded View Of Clutch Housing (With Torque Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Exploded View - Transmission Housing

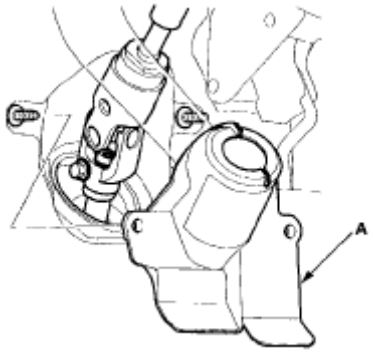


Fig. 54: Exploded View Of Transmission Housing (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the air cleaner housing bracket (A) and the harness bracket (B).

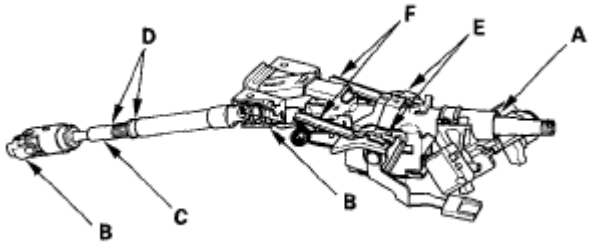


Fig. 55: Identifying Air Cleaner Housing Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the detent bolts (A), springs (B) and steel balls (C).

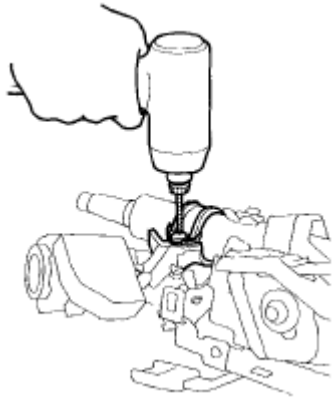


Fig. 56: Identifying Detent Bolts, Springs And Steel Balls
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the 20 mm bolt (D) and 20 mm washer (E).
4. Remove the change lever assembly (A) and the 8x10 mm dowel pins (B).

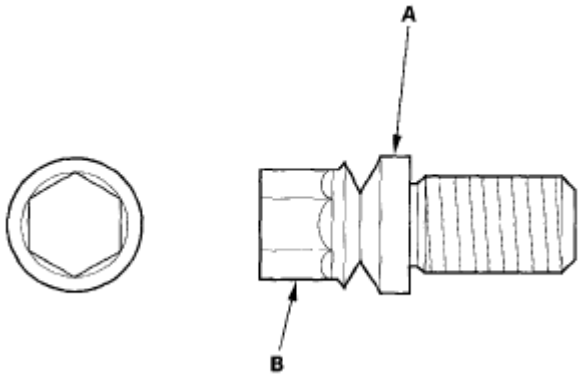


Fig. 57: Identifying Change Lever Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the transmission hanger (A) and back-up light switch (B).

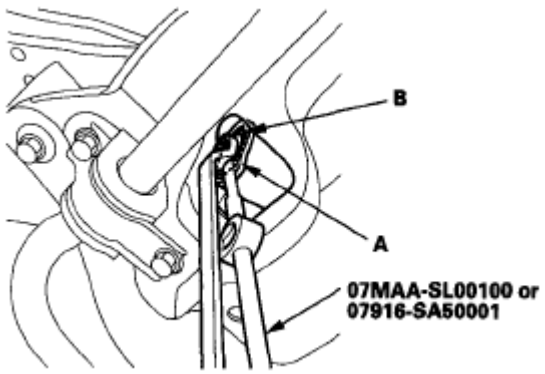


Fig. 58: Identifying Transmission Hanger And Back-Up Light Switch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the drain plug (A), filler plug (B) and the output shaft (countershaft) speed sensor (C), then remove the O-ring (D).

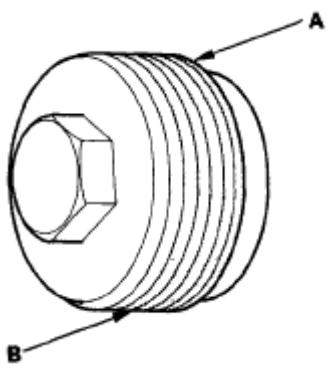


Fig. 59: Identifying Drain Plug And Filler Plug
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the 8 mm flange bolts in a crisscross pattern in several steps.

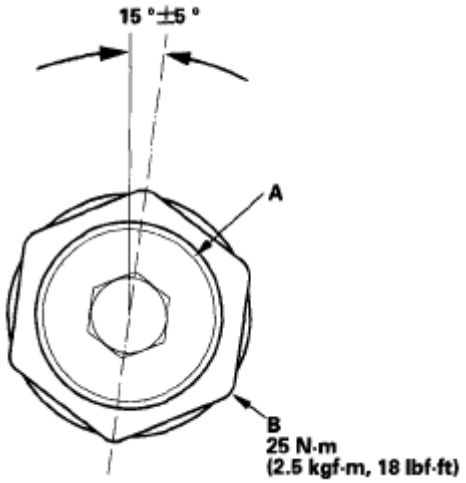


Fig. 60: Identifying Flange Bolts In Crisscross Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the 32 mm sealing cap (A). A,

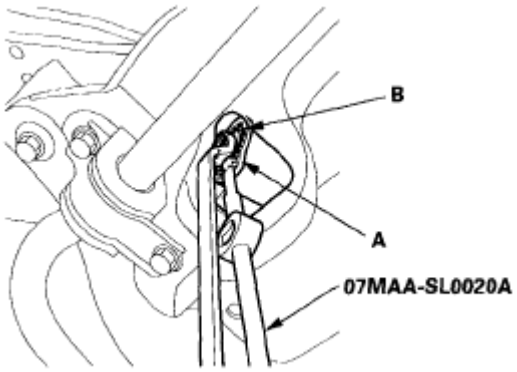


Fig. 61: Identifying Sealing Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Expand the 69 mm snap ring (B) on the countershaft ball bearing, and remove it from the groove using a pair of snap ring pliers.
10. Remove the transmission housing (C) and the two 14 x 20 mm dowel pins (D).
11. Remove the reverse shift fork.

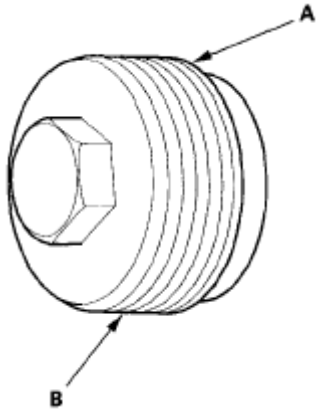


Fig. 62: Identifying Reverse Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the reverse idler gear (A) and reverse gear shaft (B).

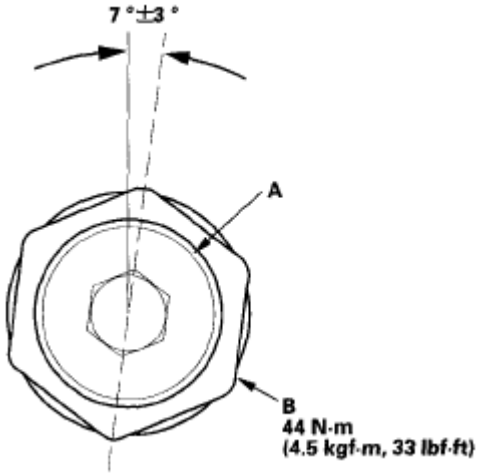


Fig. 63: Identifying Reverse Idler Gear And Reverse Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

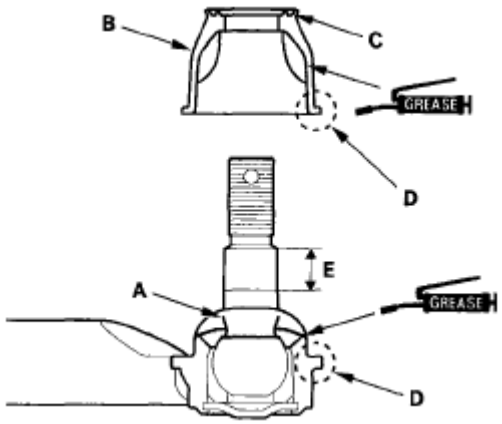


Fig. 64: Identifying Area For Applying Tape To Mainshaft Splines To Protect Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the 36 mm spring washer (E) and 26 mm washer (F).
15. Remove the differential assembly (A) and magnet (B).

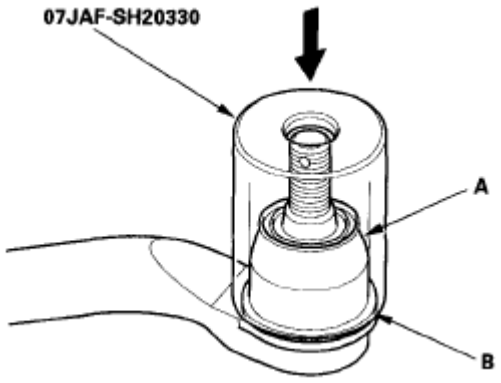


Fig. 65: Identifying Spring Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Remove the oil gutter plate (A), 52 x 62 mm shim (B), and oil guide plate M.

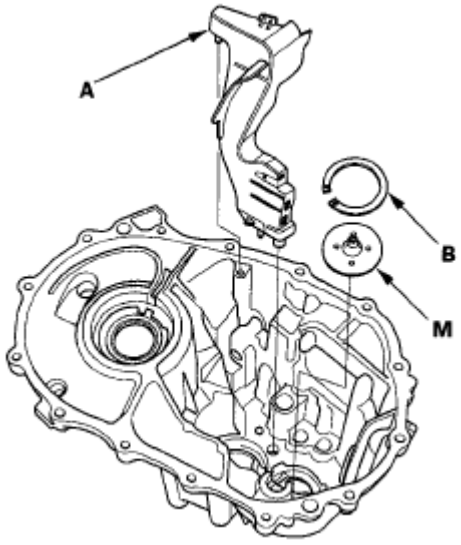


Fig. 66: Identifying Oil Gutter Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REVERSE SHIFT FORK CLEARANCE INSPECTION

1. Measure clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.20-0.60 mm (0.007-0.024 in.)

   Service Limit: 1.2 mm (0.047 in.)

Ref. No.	Tool Number	Description	Qty
①	07AAF-SDAA100	Ball Joint Thread Protector, 12 mm	1
②	07AAK-SNAA120	Universal Eyelet	1
③	07JAF-SH20330	Bushing Base	1
④	07MAA-SL0020A	Locknut Wrench, 43 mm	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1

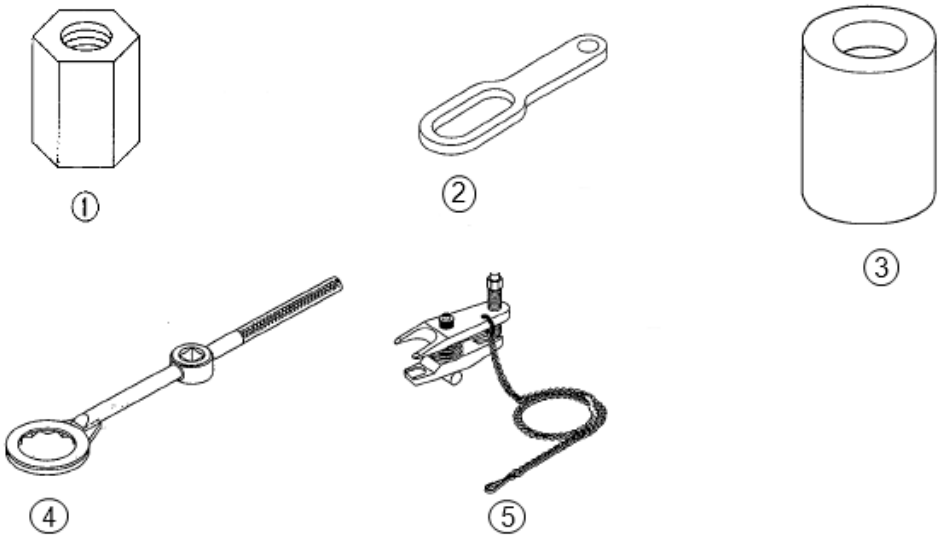


Fig. 67: Measuring Clearance Between Reverse Idler Gear And Reverse Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure width of the reverse shift fork.
   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace the reverse idler gear.

   Standard: 14.7-14.9 mm (0.579-0.587 in.)

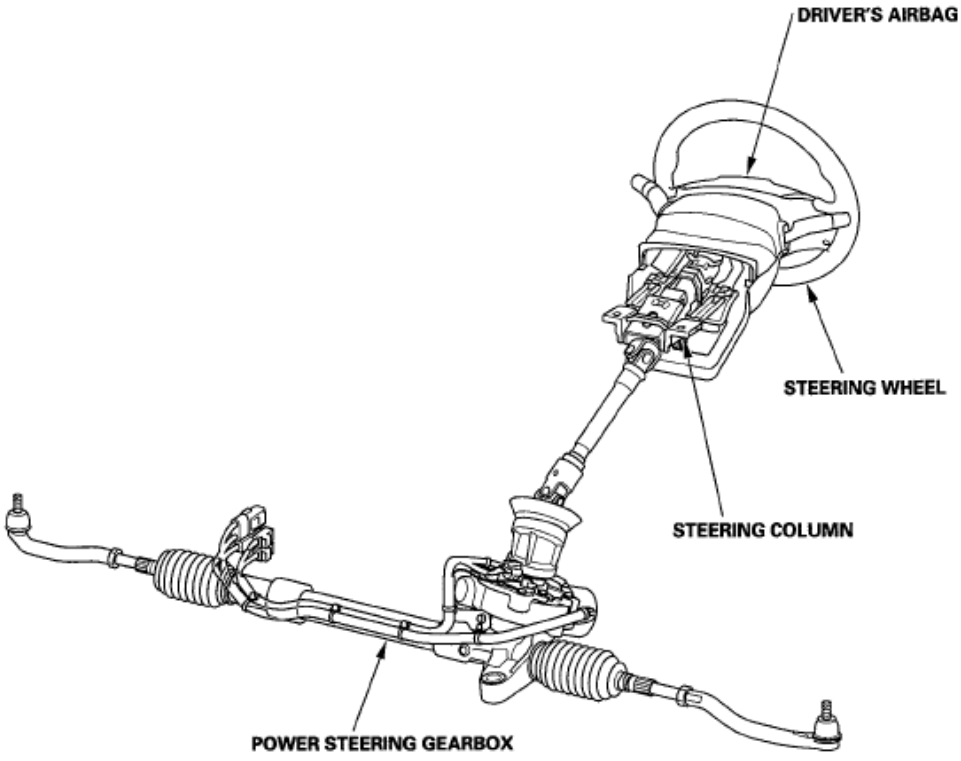


Fig. 68: Identifying Width Of Reverse Shift Fork
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHANGE LEVER ASSEMBLY DISASSEMBLY/REASSEMBLY

Exploded View

Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surface.

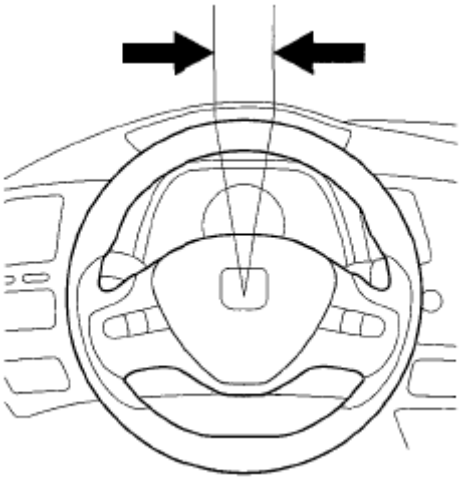


Fig. 69: Exploded View Of Change Lever Assembly (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Attachment, 24 x 26 mm 07746-0010700
- Driver 07749-0010000

1. Remove the breather cap (A), detent bolt (B), washer (C), spring (D), and steel ball (E). Remove the detent bolt (F).

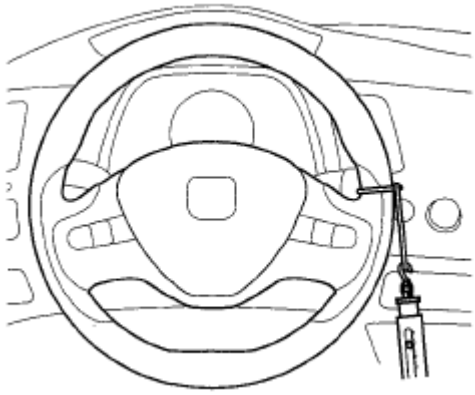


Fig. 70: Identifying Breather Cap, Detent Bolt And Washer (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the special bolt (A) and spring washer (B).

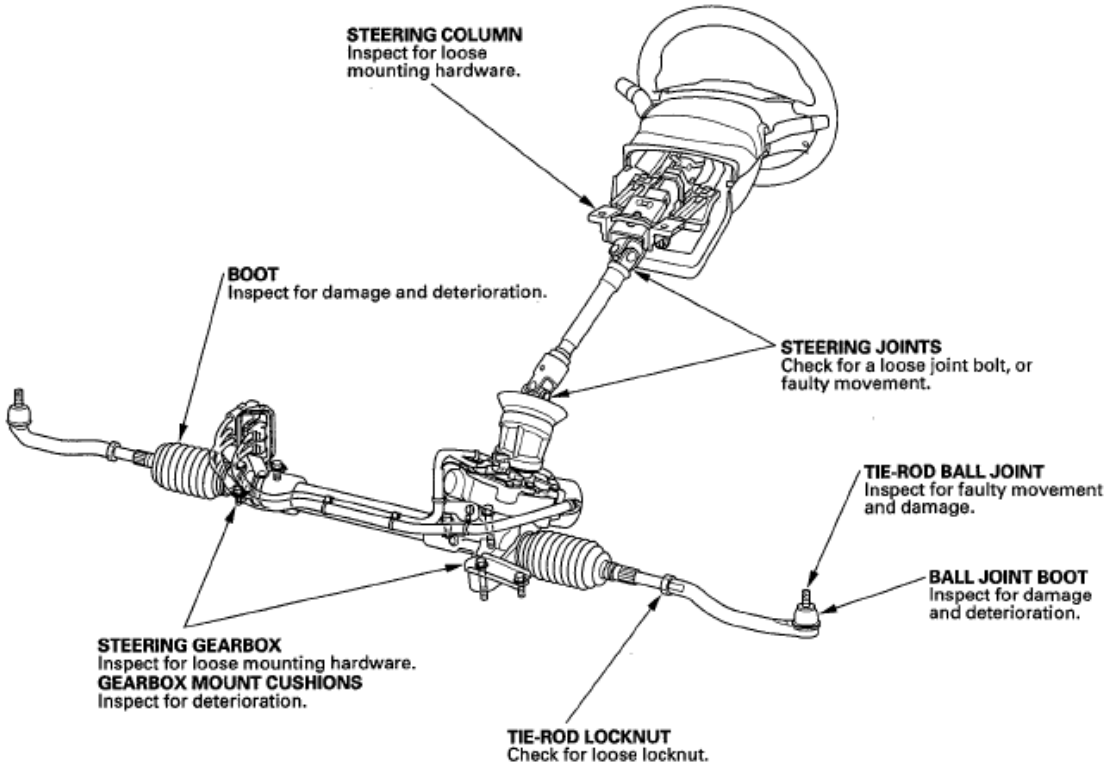


Fig. 71: Identifying Bolt And Spring Washer (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the shift lever (C) and shift arm (D) from the shift arm cover (E).
4. Remove the oil seal (F).

5. Remove the spring pin (A) from the select lever (B).

NOTE: Install the spring pin into the interlock with the groove of the spring pin at the angle shown.

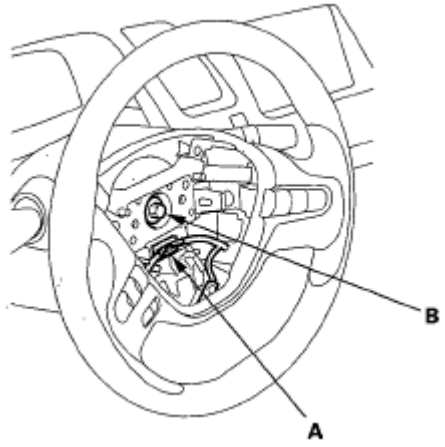


Fig. 72: Identifying Shift Lever And Shift Arm From Shift Arm Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the select lever from the shift arm cover (C), then remove the shift piece (D) and the interlock (E).
7. Remove the oil seal (F).
8. Remove the reverse lock cam (A).

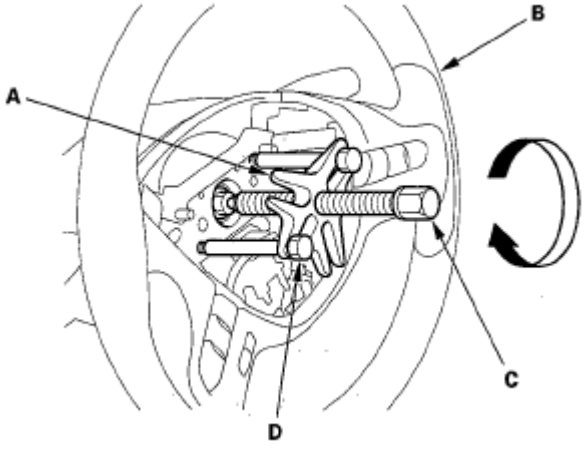


Fig. 73: Identifying Select Lever From Shift Arm Cover (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install in the reverse order of removal.

NOTE: Install the oil seal (A) using the attachment, 24 x 26 mm (B) and driver (C).

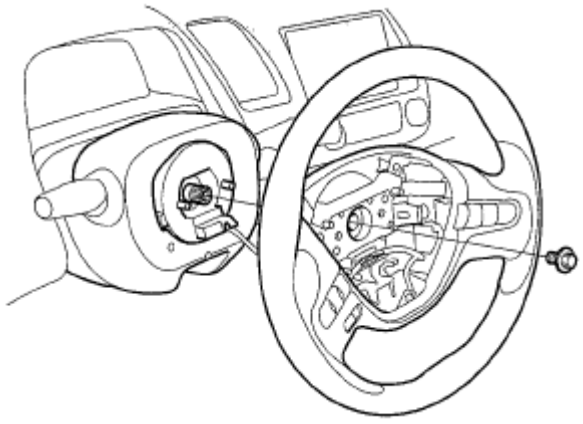


Fig. 74: Installing Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT ARM CLEARANCE INSPECTION

1. Measure clearance between the shift arm (A) and shift piece (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.20-0.61 mm (0.008-0.024 in.)

   Service Limit: 0.7 mm (0.028 in.)

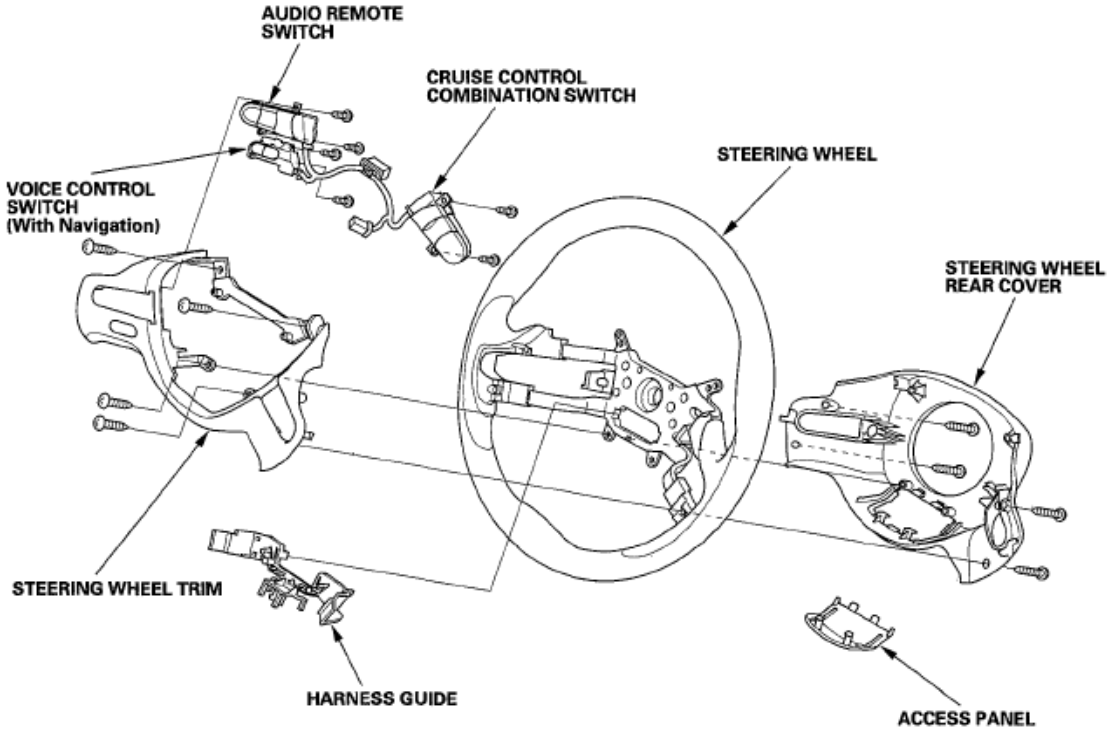


Fig. 75: Measuring Clearance Between Shift Arm And Shift Piece
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure groove of the shift piece.
   - If the groove is not within the standard, replace the shift piece.

- If the groove is within the standard, replace the shift arm.

Standard: 16.00-16.20 mm (0.630-0.638 in.)

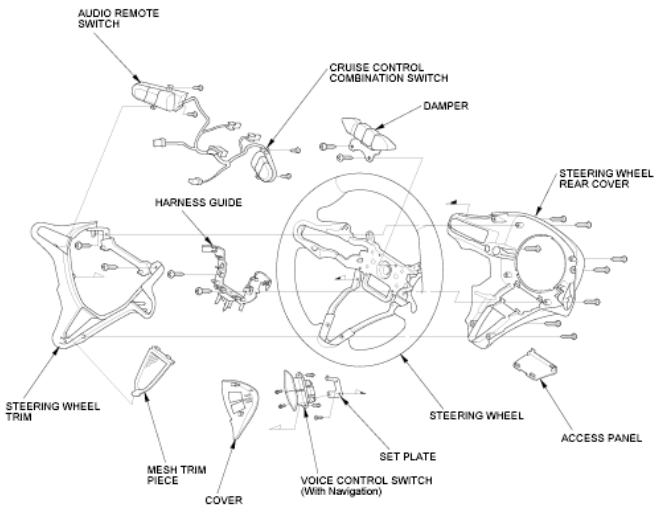


Fig. 76: Identifying Groove Of Shift Piece
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK CLEARANCE INSPECTION

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

1. Measure clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.35-0.65 mm (0.014-0.026 in.)

   Service Limit: 1.0 mm (0.039 in.)

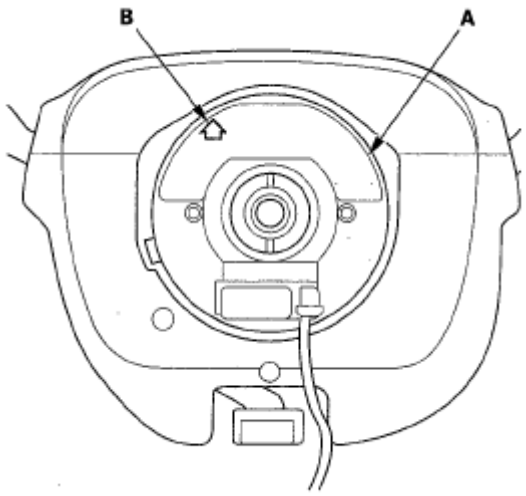


Fig. 77: Measuring Clearance Between Shift Fork And Matching Synchro Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure thickness of the shift fork fingers.
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and synchro hub as a set.

   Standard:

   1st/2nd shift fork: 6.7-6.9 mm (0.26-0.27 in.)

   3rd/4th, 5th shift fork: 7.4-7.6 mm (0.29-0.30 in.)

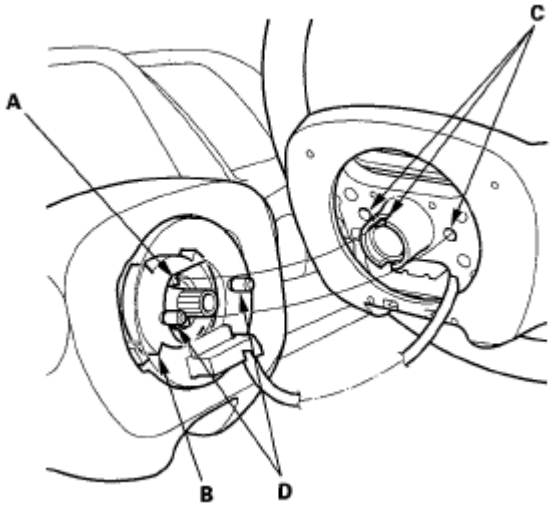


Fig. 78: Identifying Thickness Of Shift Fork Fingers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure clearance between the shift fork (A) and the shift piece (B). If the clearance exceeds the standard, go to step 4.

   Standard: 0.2-0.5 mm (0.008-0.020 in.)

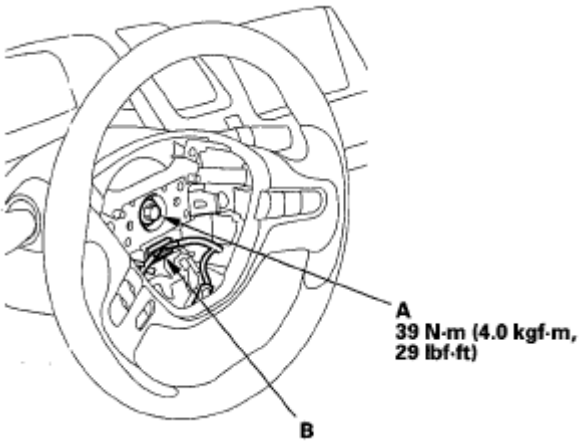


Fig. 79: Measuring Clearance Between Shift Fork And Shift Piece
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure width of the shift piece.
   - If the width is not within the standard, replace the shift piece.
   - If the width is within the standard, replace the shift fork.

   Standard: 15.9-16.0 mm (0.626-0.630 in.)

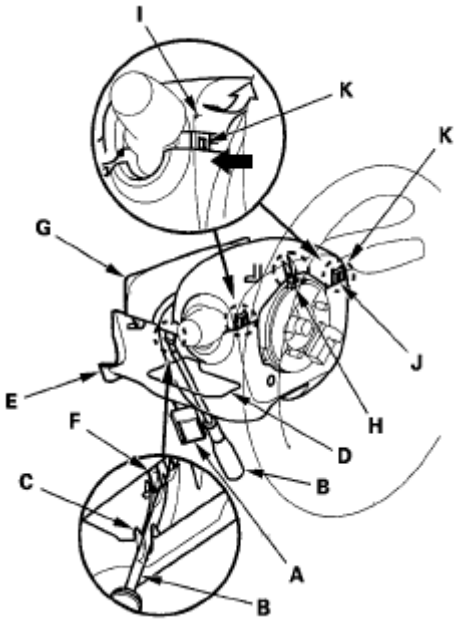


Fig. 80: Identifying Width Of Shift Piece
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHIFT FORK DISASSEMBLY/REASSEMBLY

Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.

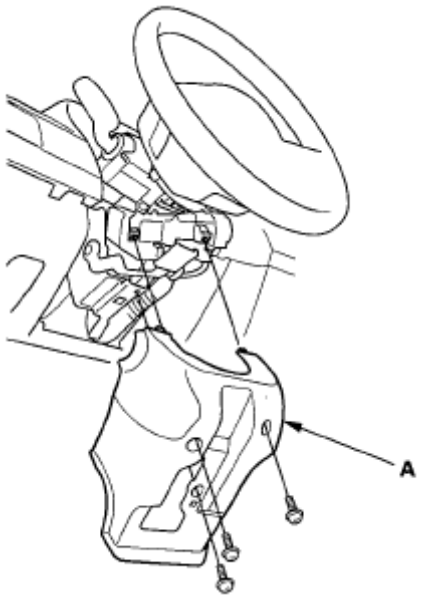
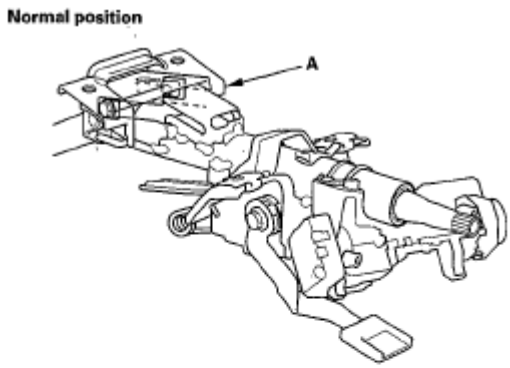


Fig. 81: Identifying Shift Fork Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT ASSEMBLY CLEARANCE INSPECTION

NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).



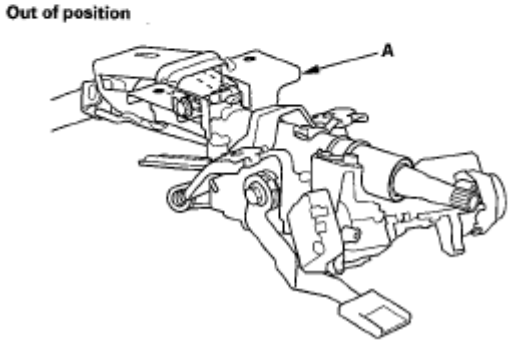


Fig. 82: Identifying Bearing Inner Race
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   Standard: 0.06-0.21 mm (0.002-0.008 in.)

   Service Limit: 0.30 mm (0.012 in.)

3. Measure thickness of 3rd gear.
   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro sleeve as a set.

   Standard: 27.02-27.07 mm (1.064-1.066 in.)

   Service Limit: 26.95 mm (1.061 in.)

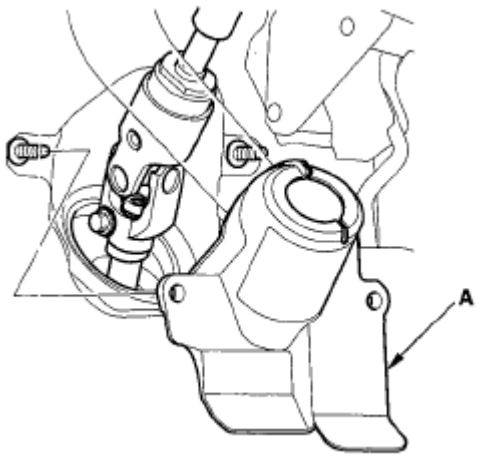


Fig. 83: Identifying Thickness Of 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure clearance between 4th gear (A) and the distance collar (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.19 mm (0.002-0.007 in.)

   Service Limit: 0.28 mm (0.011 in.)

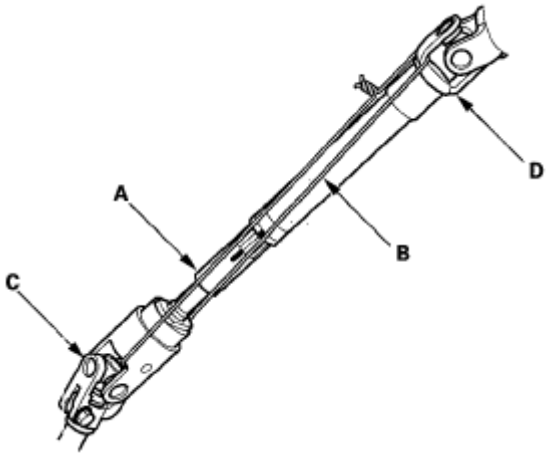


Fig. 84: Identifying Clearance Between 4th Gear And Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure length (1) of the distance collar as shown
   - If the length (1) is not within the standard, replace the distance collar.
   - If the length (1) is within the standard, go to step 6.

Standard: 22.53-22.56 mm (0.887-0.888 in.)

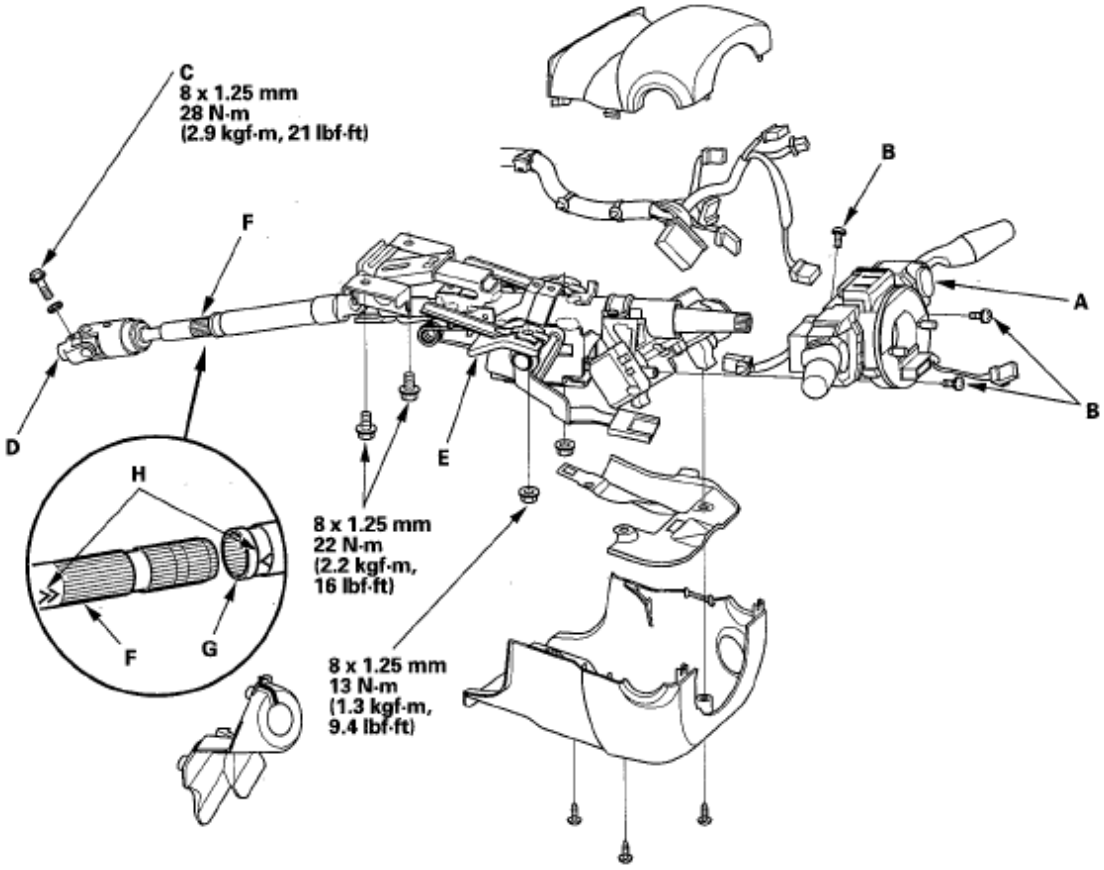


Fig. 85: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure thickness of 4th gear.
   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and 3rd/4th synchro sleeve as a set.

   Standard: 25.52-25.57 mm (1.005-1.007 in.)

   Service Limit: 25.45 mm (1.002 in.)

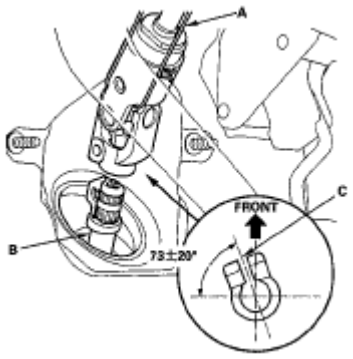


Fig. 86: Identifying Thickness Of 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure clearance between the distance collar (A) and 5th gear (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 8.

   Standard: 0.06-0.14 mm (0.002-0.006 in.)

   Service Limit: 0.23 mm (0.009 in.)

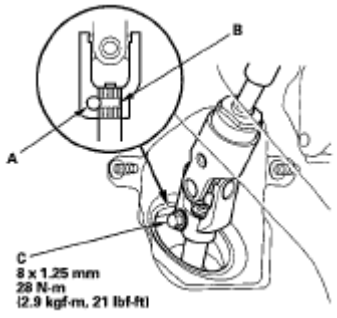


Fig. 87: Identifying Clearance Between Distance Collar And 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Measure length (1) of the distance collar as shown
   - If the length (1) is not within the standard, replace the distance collar.
   - If the length (2) is within the standard, go to step 9.

   Standard: 22.53-22.56 mm (0.887-0.888 in.)

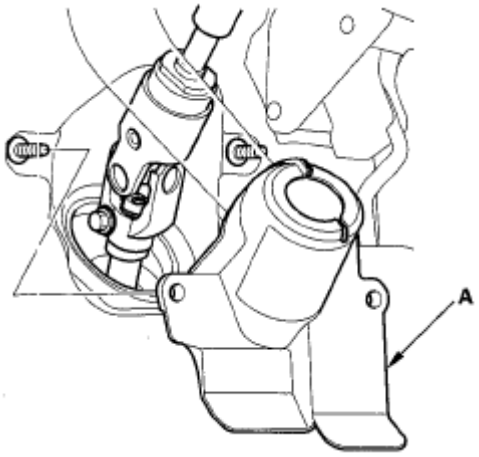


Fig. 88: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Measure thickness of 5th gear.
   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th synchro hub and 5th synchro sleeve as a set.

   Standard: 22.42-22.47 mm (0.883-0.885 in.)

   Service Limit: 22.35 mm (0.880 in.)

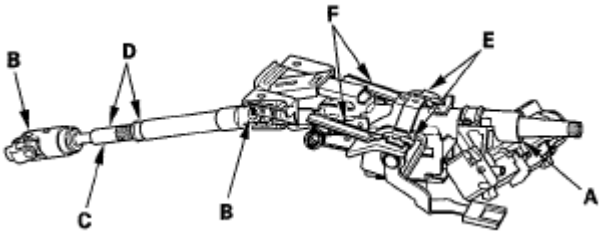


Fig. 89: Identifying Thickness Of 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Measure length of the MBS distance collar.

    If the length is not within the standard, replace the MBS distance collar.

    Standard: 24.03-24.08 mm (0.946-0.948 in)

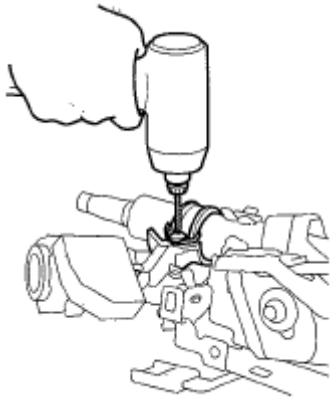


Fig. 90: Identifying Length Of MBS Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT DISASSEMBLY

1. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B) and ball bearing (C).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

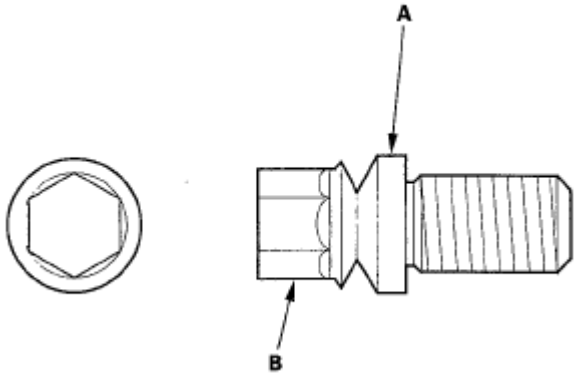


Fig. 91: Supporting 5th Gear On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B).

NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

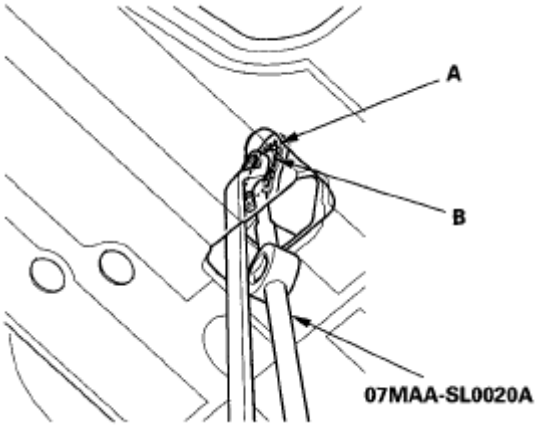


Fig. 92: Identifying 3rd Gear On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

   Standard:

   A. **Ball Bearing Contact Area (Transmission Housing Side): 24.987-25.000 mm (0.9837-0.9843 in.)**
   B. **Distance Collar Contact Area: 28.992-29.005 mm (1.1414-1.1419 in.)**
   C. **Needle Bearing Contact Area: 34.984-35.000 mm (1.3773-1.3780 in.)**
   D. **Ball Bearing Contact Area (Clutch Housing Side): 25.977-25.990 mm (1.0227-1.0232 in.)**
   E. **Bushing Contact Area: 18.800-18.850 mm (0.7402-0.7421 in.)**

   Service Limit:

   A. **24.93 mm (0.981 in.)**
   B. **28.93 mm (1.139 in.)**
   C. **34.93 mm (1.375 in.)**
   D. **25.92 mm (1.020 in.)**
   E. **18.75 mm (0.738 in.)**

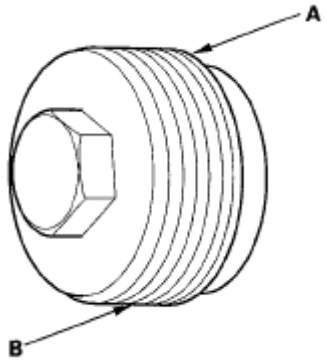


Fig. 93: Identifying Main Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the mainshaft. Rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the mainshaft.

   Standard: 0.02 mm (0.001 in.) max.

   Service Limit: 0.05 mm (0.002 in.)

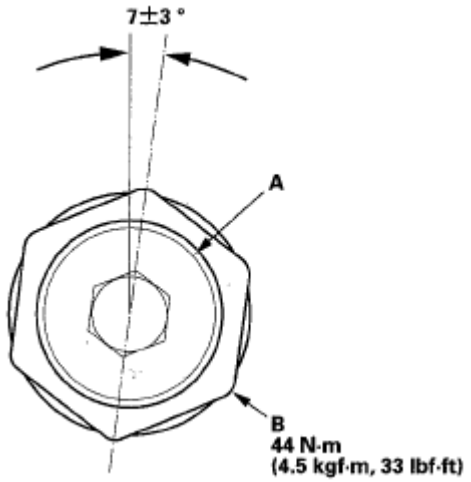
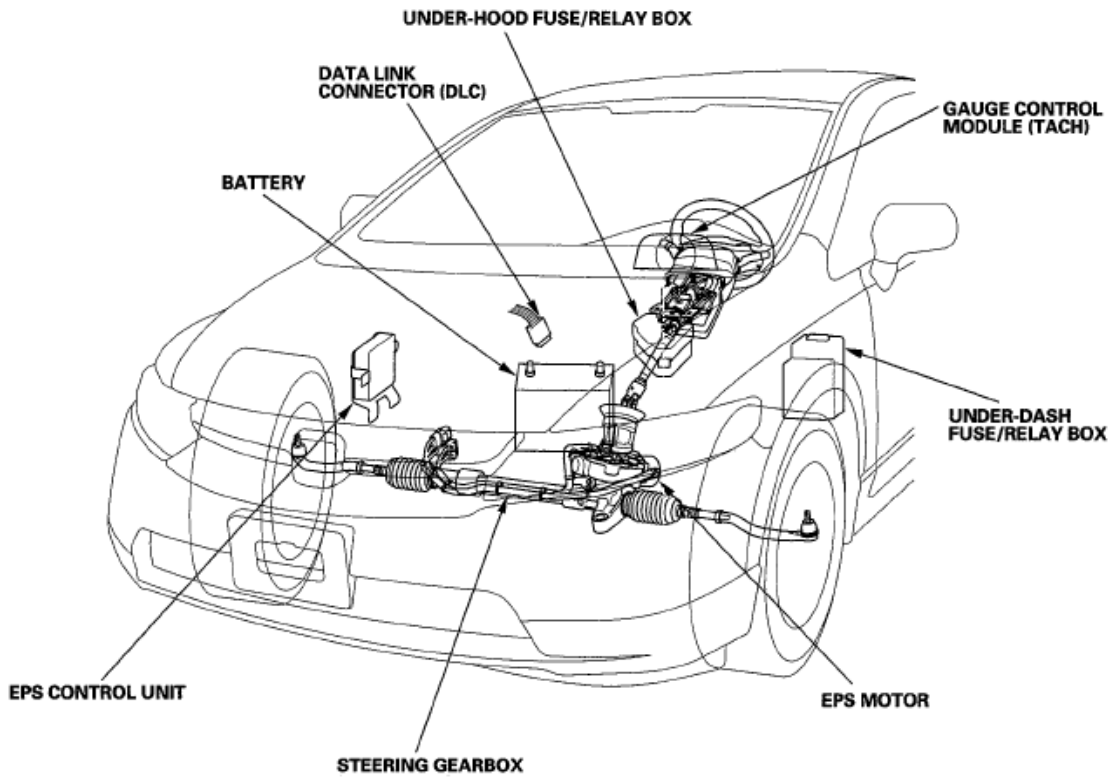


Fig. 94: Identifying Mainshaft Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT REASSEMBLY

Exploded View



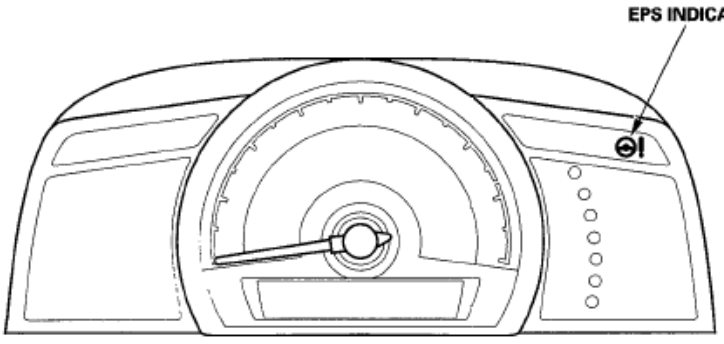


Fig. 95: Exploded View Of Mainshaft Reassembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all the parts in solvent, dry them, and apply MTF to all contact surfaces except the 3rd/4th and 5th synchro hubs.
2. Install the needle bearing and 3rd gear on the mainshaft.

3. Install the 3rd gear synchro ring and synchro spring on the shaft.

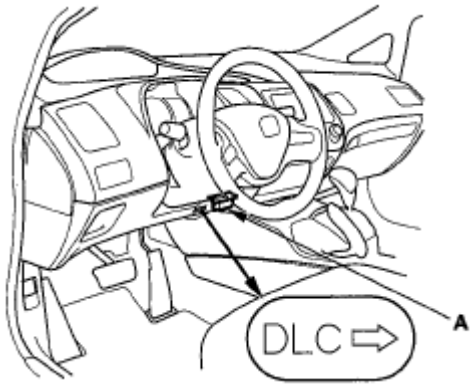


Fig. 96: Installing 3rd Gear Synchro Ring And Synchro Spring On Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves in the 3rd/4th synchro hub (C).
5. Install the 3rd/4th synchro hub using the 40 mm I.D. driver (D).
6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.

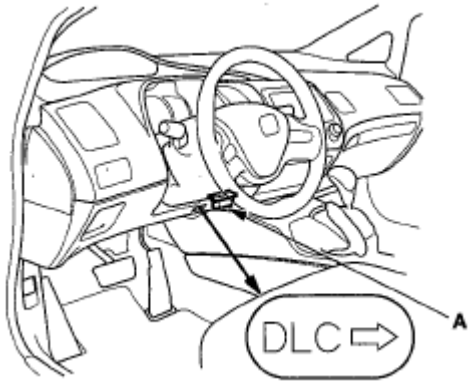


Fig. 97: Locating 3rd/4th Synchro Sleeve By Aligning Stops
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the 4th gear synchro spring and synchro ring, 4th gear and needle bearing, the 4th/5th gear distance collar, and 5th gear and its needle bearing on the shaft.
8. Install the 5th gear synchro ring and synchro spring on the shaft.
9. Install the 5th synchro hub (A) using the 40 mm I.D. driver (B).

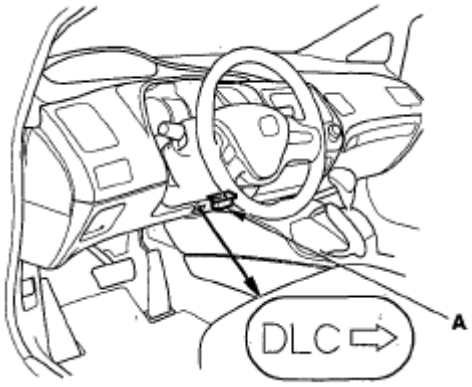
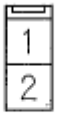


Fig. 98: Installing 5th Synchro Hub
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Install the 5th synchro sleeve.
11. Install the MBS distance collar and the tapered cone ring.
12. Install the new angular ball bearing (A) using 40 mm I.D. driver (B) and 30 mm I.D. attachment (C).



Wire side of female terminals

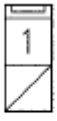
Fig. 99: Installing Angular Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT ASSEMBLY CLEARANCE INSPECTION

1. Measure clearance between 1st gear (A) and the distance collar (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

   Standard: 0.06-0.21 mm (0.002-0.008 in.)

   Service Limit: 0.25 mm (0.010 in.)

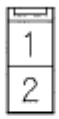


Wire side of female terminals

Fig. 100: Measuring Clearance Between 1st Gear And Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure length of the distance collar as shown.
   - If the length is not within than the standard, replace the distance collar.
   - If the length is within the standard, go to step 3.

Standard: 21.53-21.58 mm (0.843-0.849 in.)

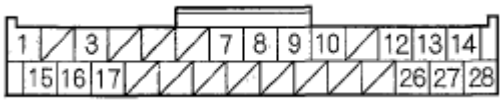


Wire side of female terminals

Fig. 101: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure thickness of 1st gear.
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

   Standard: 27.42-27.47 mm (1.080-1.081 in.)



Wire side of female terminals

Fig. 102: Identifying Thickness Of 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Measure clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 5.

   Standard: 0.06-0.14 mm (0.02-0.006 in.)

   Service Limit: 0.23 mm (0.009 in.)

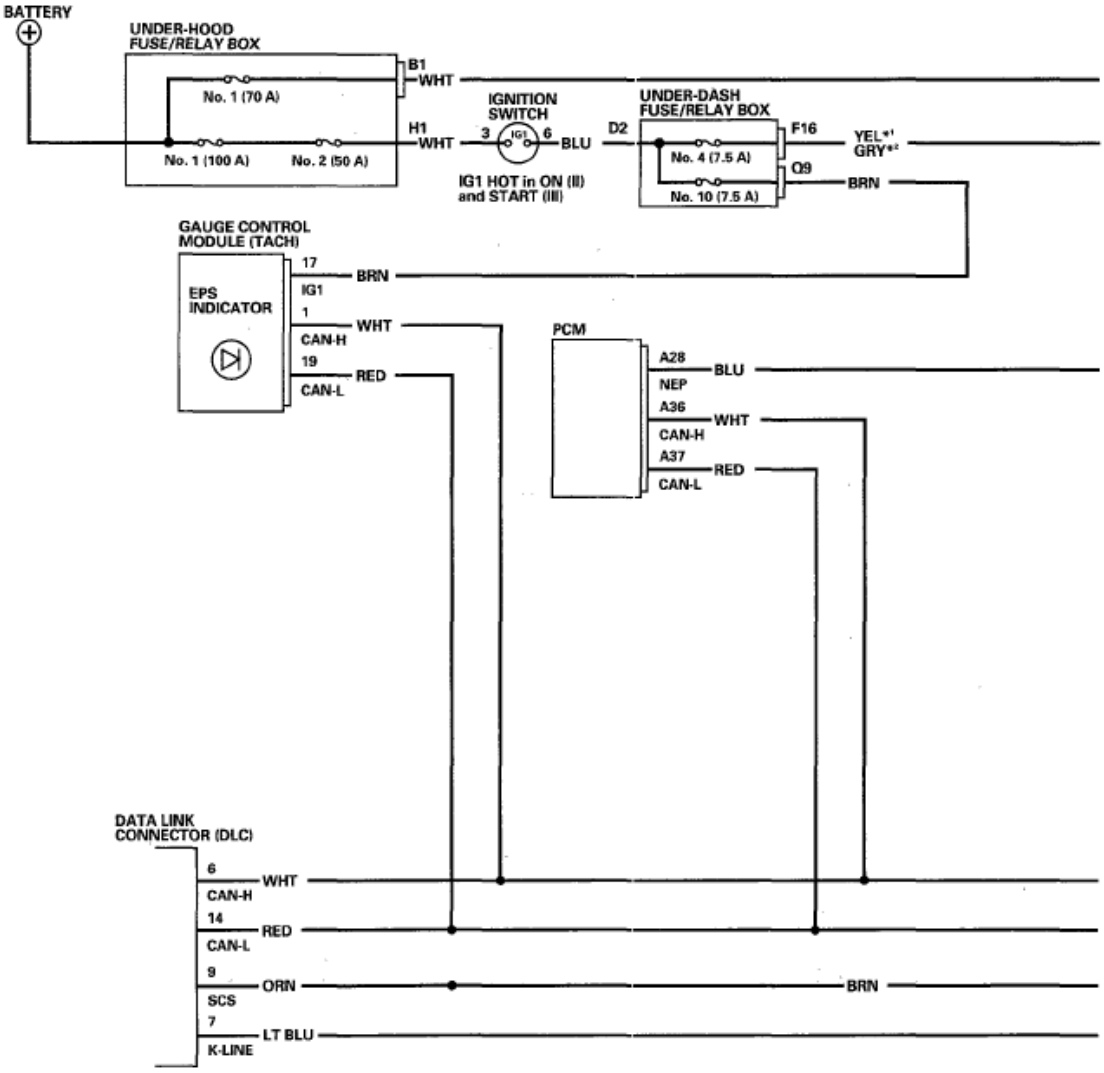


Fig. 103: Measuring Clearance Between 2nd Gear And 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure length of the distance collar.
   - If the length is not within the standard, replace the distance collar.
   - If the length is within the standard, go to step 6.

Standard: 26.53-26.56 mm (1.044-1.046 in.)

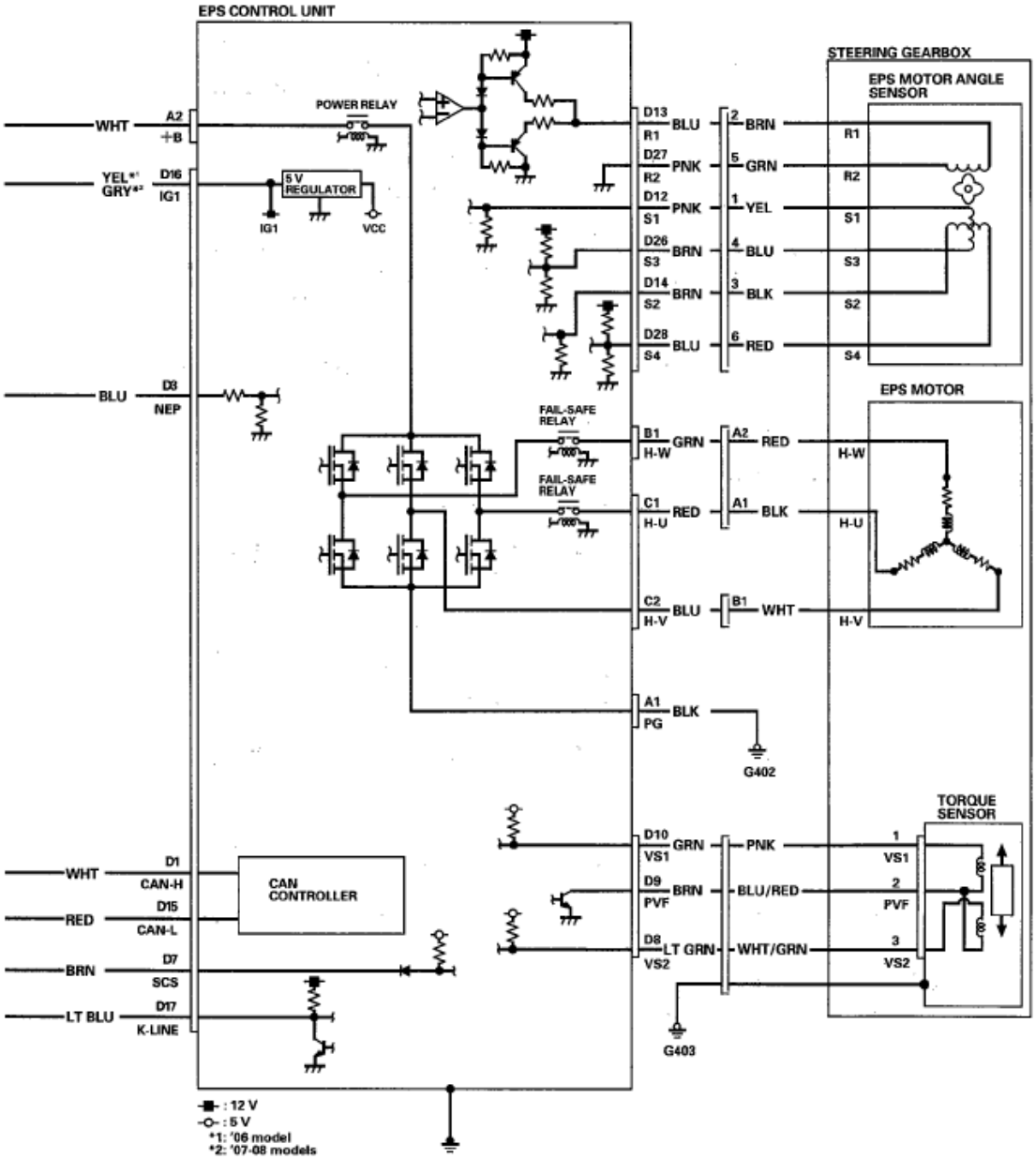


Fig. 104: Identifying Length Of Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Measure thickness 2nd gear.
   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and reverse gear as a set.

Standard: 26.42-26.47 mm (1.040-1.042 in.)

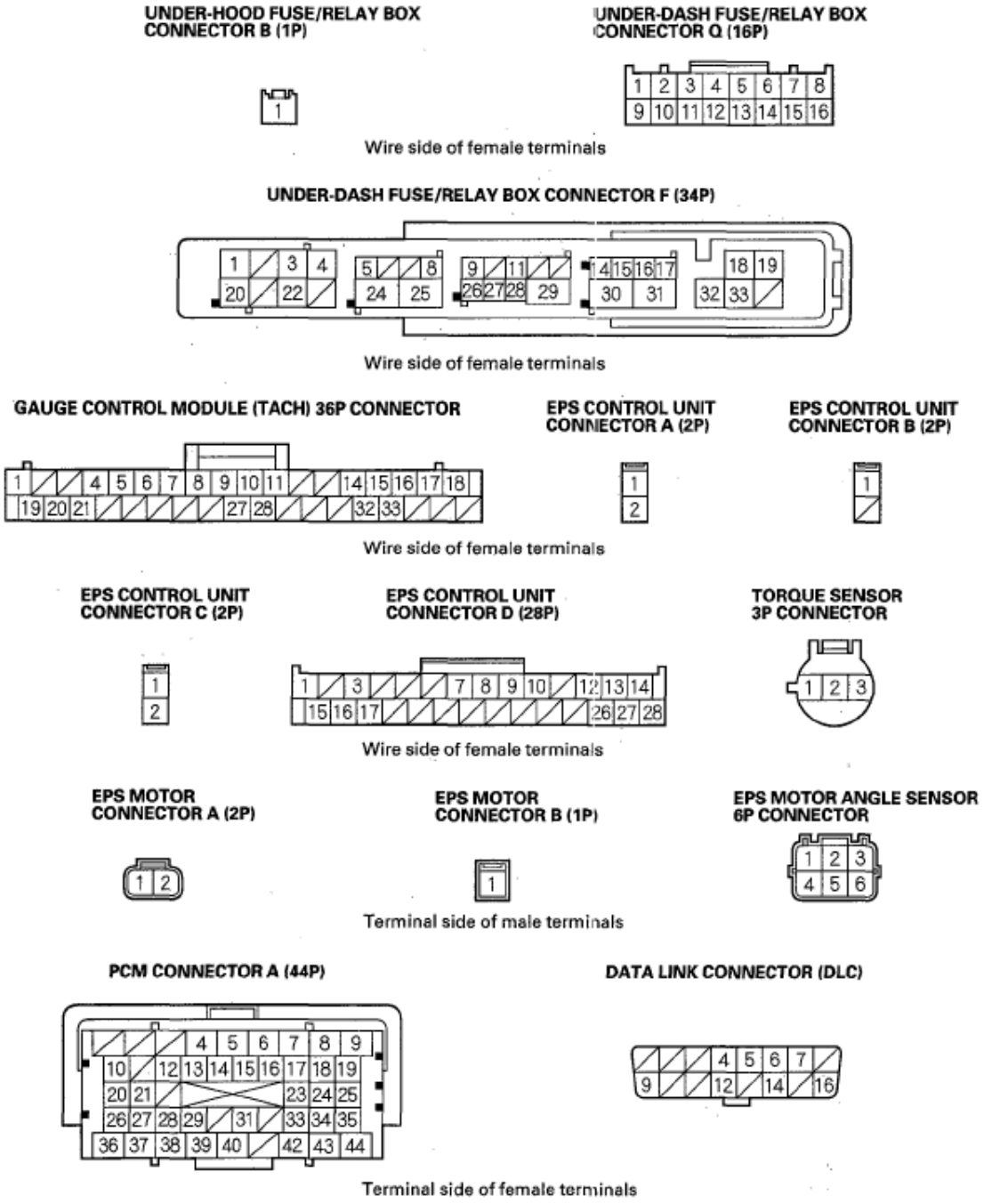


Fig. 105: Identifying Thickness 2nd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT DISASSEMBLY

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.

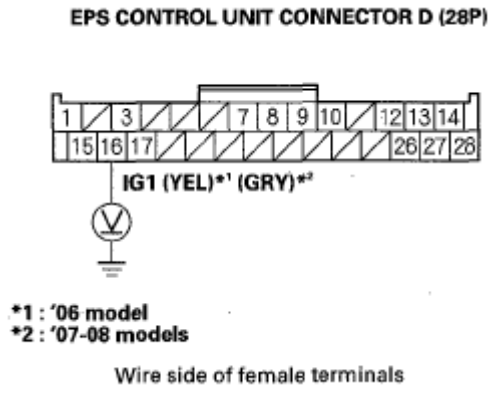


Fig. 106: Clamping Countershaft Assembly In Bench Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the special bolt (left-hand threads).
3. Support ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

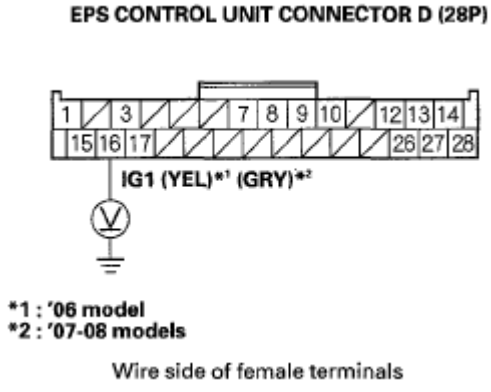


Fig. 107: Supporting Ball Bearing On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the 32 mm shim and distance collar.
5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 5th gear.

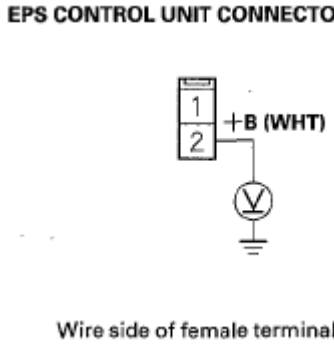


Fig. 108: Supporting 4th Gear On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 3rd gear.

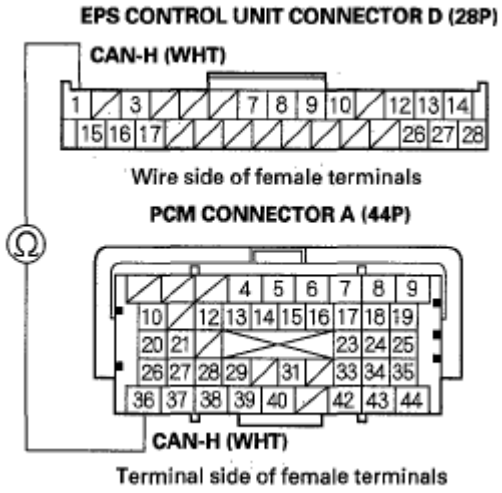


Fig. 109: Supporting 2nd Gear On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Support 1st gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 1st/2nd synchro hub.

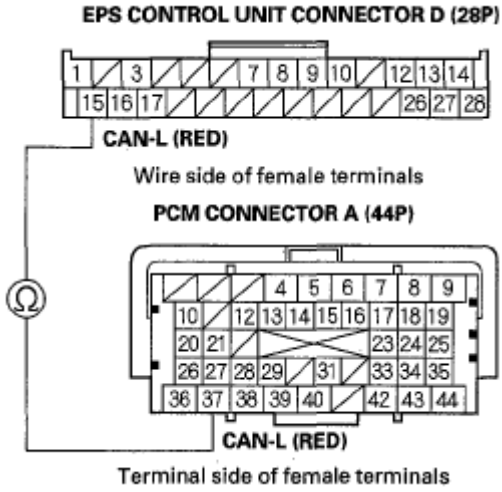


Fig. 110: Supporting 1st Gear On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT INSPECTION

1. Inspect the gear and bearing contact areas for wear and damage, then measure countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:

   A. **Ball Bearing Contact Area (Transmission Housing Side): 26.020-26.033 mm (1.0244-1.0249 in.)**

B. **Distance Collar Contact Area: 38.987-39.000 mm (1.5349-1.5354 in.)**
C. **Needle Bearing Contact Area (Clutch Housing Side): 34.000-34.015 mm (1.3386-1.3392 in.)**

Service Limit:

A. **25.97 mm (1.022 in.)**
B. **38.94 mm (1.533 in.)**
C. **33.95 mm (1.337 in.)**

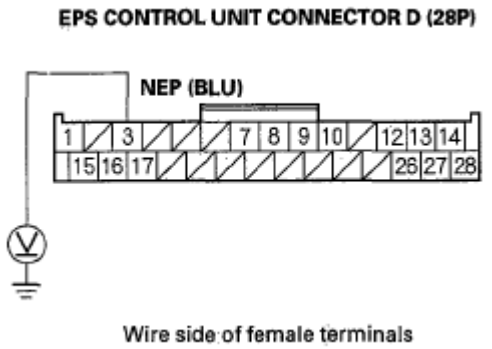


Fig. 111: Identifying Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the runout by supporting both ends of the countershaft. Rotate the countershaft two complete turns while measuring with a dial gauge. If the runout is more than the service limit, replace the countershaft.

Standard: 0.02 mm (0.001 in.). max

Service Limit: 0.05 mm (0.002 in.)

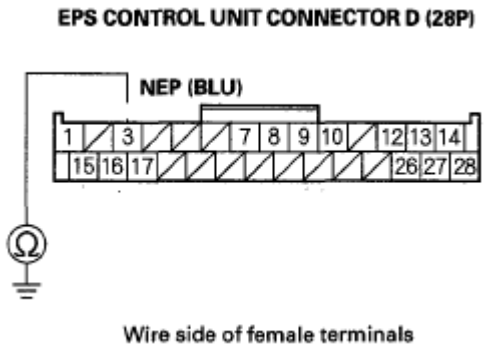


Fig. 112: Checking Countershaft Runout
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT REASSEMBLY

Exploded View

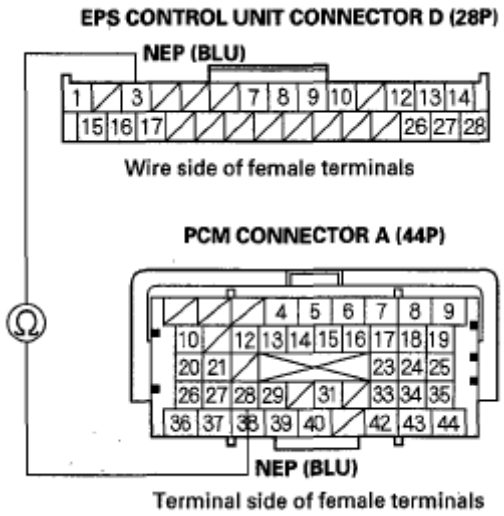


Fig. 113: Exploded View Of Countershaft Assembly (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.
2. Install the distance collar and the needle bearing onto the countershaft.
3. Install the 1st gear synchro ring (A), synchro spring (B) and the friction damper (C) on the 1st/2nd synchro hub (D).

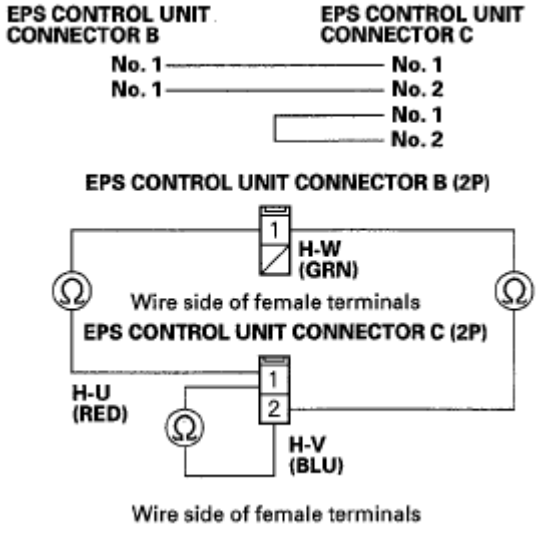


Fig. 114: Installing 1st Gear Synchro Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Align the fingers (E) on the friction damper with the grooves (F) on the 1st/2nd synchro hub, then

install the 1st gear (G) onto the 1st/2nd synchro hub.

5. Supporting by hand, turn the 1st/2nd synchro hub side upward, then install the 1st/2nd synchro hub with 1st gear on to the counter shaft.
6. Support the countershaft (A) on steel blocks, then install the 1st/2nd synchro hub (B) with 1st gear (C) using the 40 mm I.D. driver (D), 30 mm I.D. attachment (E), and a press (F).

NOTE: Do not exceed the maximum pressure.

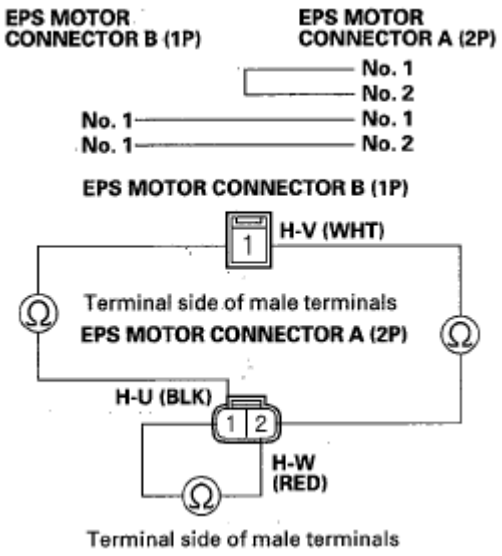


Fig. 115: Supporting Countershaft On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install reverse gear, the synchro spring, and the synchro ring on the shaft.
8. Install the distance collar (A) and friction damper (B), by aligning the friction damper fingers (C) with the 1st/2nd synchro hub grooves (D).

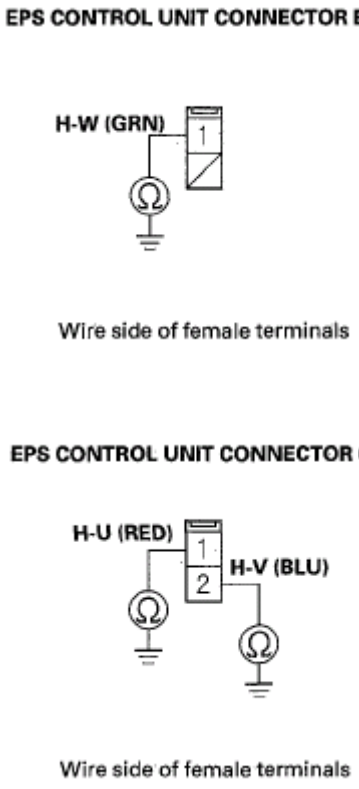


Fig. 116: Identifying Distance Collar And Friction Damper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the needle bearing and 2nd gear.
10. Support the countershaft (A) on steel blocks, then install 3rd gear (B) using the 40 mm I.D. driver (C) and a press (D).

NOTE: Do not exceed the maximum pressure.

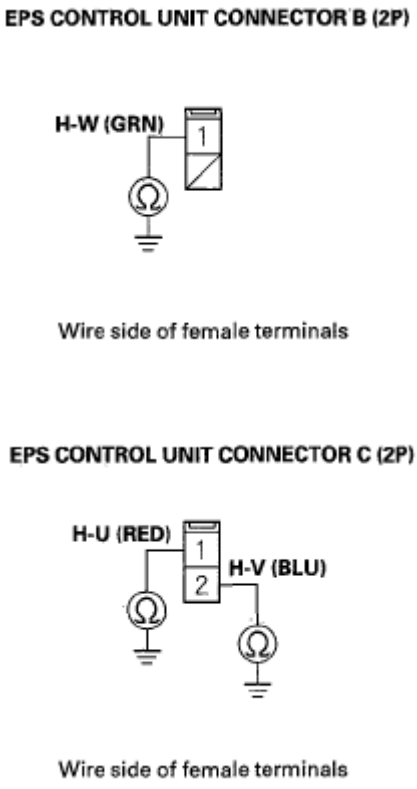


Fig. 117: Supporting Countershaft On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Install 4th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

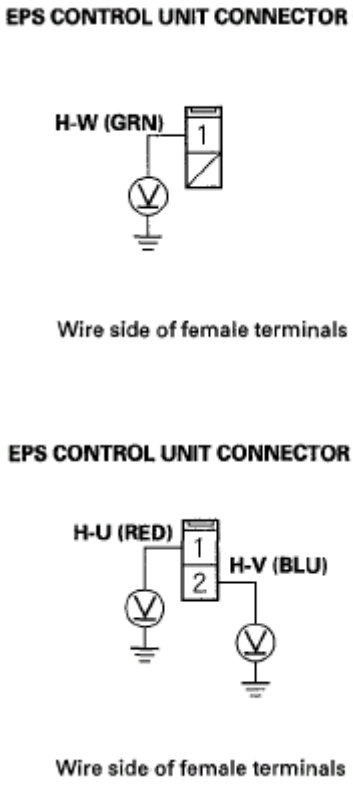


Fig. 118: Installing 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Install 5th gear (A) using the 40 mm I.D. driver (B) and a press (C).

NOTE: Do not exceed the maximum pressure.

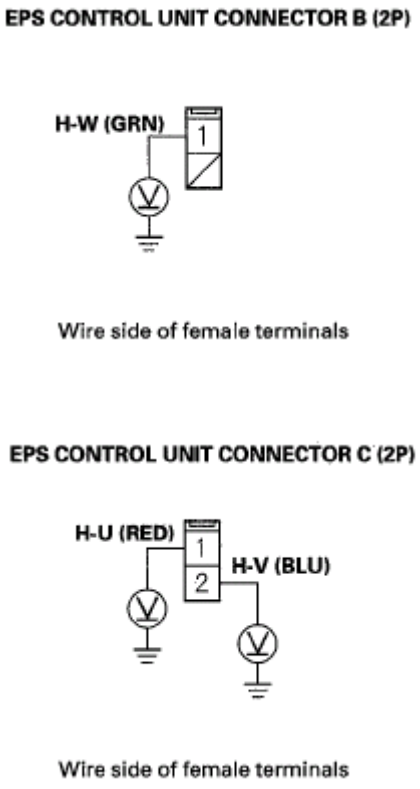


Fig. 119: Installing 5th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the distance collar.
14. Install the 32 mm shim and the old ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press.

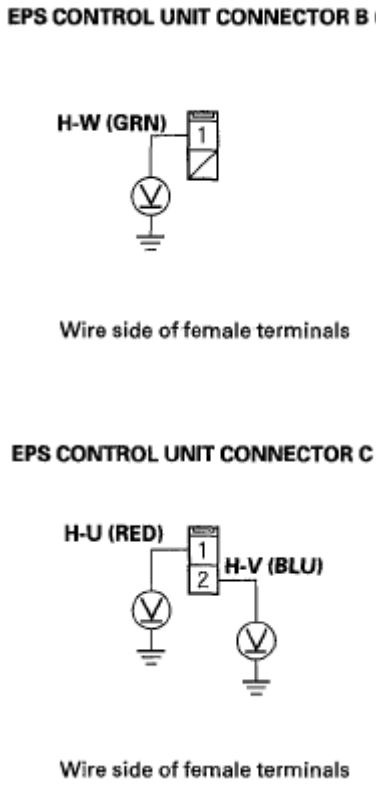


Fig. 120: Installing Distance Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Measure clearance between the old bearing (A) and the 32 mm shim (B) with a feeler gauge (C).

Standard: 0.04-0.10 mm (0.0016-0.0039 in.)

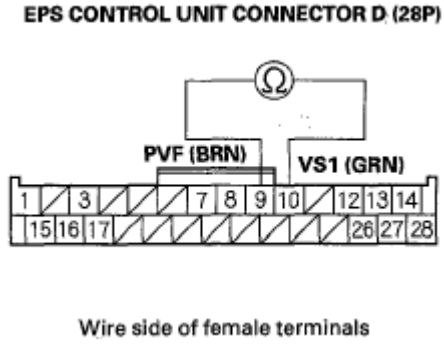


Fig. 121: Measuring Clearance Between Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 15 is within the standard, replace only the new ball bearing.

SHIM SPECIFICATION 32 MM

	Part Number	Thickness
A	23971-RPF-000	1.56 mm (0.061 in.)
B	23972-RPF-000	1.60 mm (0.063 in.)

C	23973-RPF-000	1.64 mm (0.065 in.)
D	23974-RPF-000	1.68 mm (0.066 in.)
E	23975-RPF-000	1.72 mm (0.068 in.)
F	23976-RPF-000	1.76 mm (0.069 in.)
G	23977-RPF-000	1.80 mm (0.071 in.)
H	23978-RPF-000	1.84 mm (0.072 in.)
J	23979-RPF-000	1.88 mm (0.074 in.)
K	23980-RPF-000	1.92 mm (0.076 in.)
L	23981 -RPF-000	1.96 mm (0.077 in.)
M	23982-RPF-000	2.00 mm (0.079 in.)
N	23983-RPF-000	2.04 mm (0.080 in.)
P	23984-RPF-000	2.08 mm (0.082 in.)
Q	23985-RPF-000	2.12 mm (0.083 in.)
R	23986-RPF-000	2.16 mm (0.085 in.)
S	23987-RPF-000	2.20 mm (0.087 in.)
T	23988-RPF-000	2.24 mm (0.088 in.)
U	23989-RPF-000	2.28 mm (0.090 in.)
V	23990-RPF-000	2.32 mm (0.091 in.)

17. Support ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

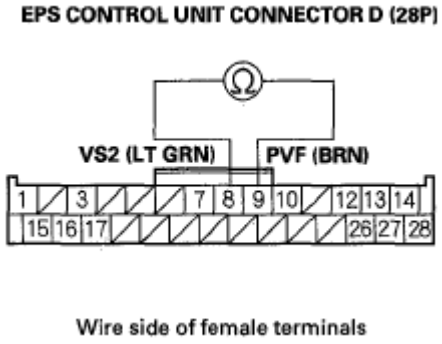


Fig. 122: Supporting Ball Bearing On Steel Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. If necessary, install the 32 mm shim selected in step 16.
19. Install the new ball bearing (A) using the 40 mm I.D. driver (B), 30 mm I.D. attachment (C), and a press, then recheck the clearance.

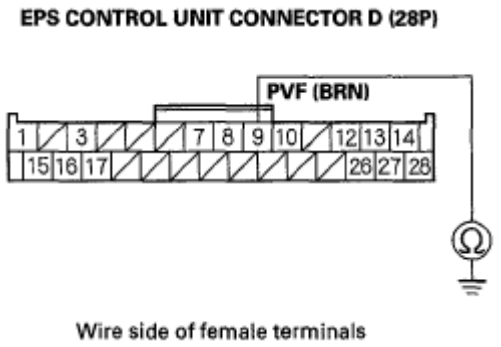


Fig. 123: Installing Ball Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).

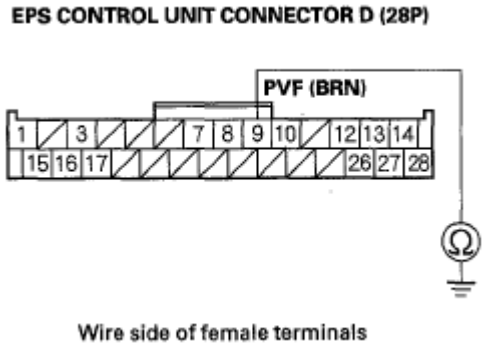


Fig. 124: Securing Clamp Countershaft Assembly In Bench Vise (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Tighten the new special bolt (B) (left-hand threads).

SYNCHRO SLEEVE AND HUB INSPECTION AND REASSEMBLY

1. Inspect gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.
2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

NOTE:

- **Do not install the synchro sleeve with its longer teeth in the synchro hub slots (E) because it will damage the spring ring.**
- **If replacement is required, always replace the synchro sleeve and synchro hub as a set.**

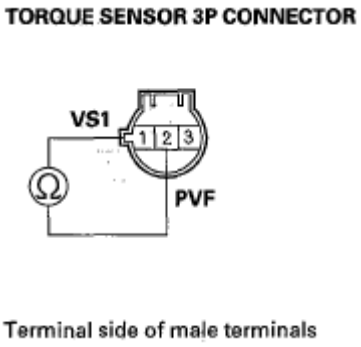


Fig. 125: Inspecting Gear Teeth On Synchro Hubs And Synchro Sleeves
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYNCHRO RING AND GEAR INSPECTION

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

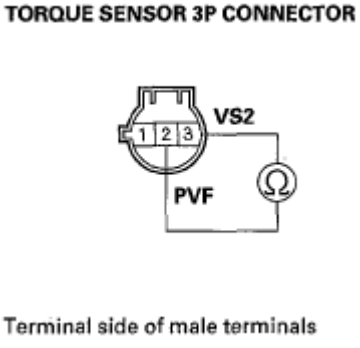


Fig. 126: Locating Synchro Ring Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).

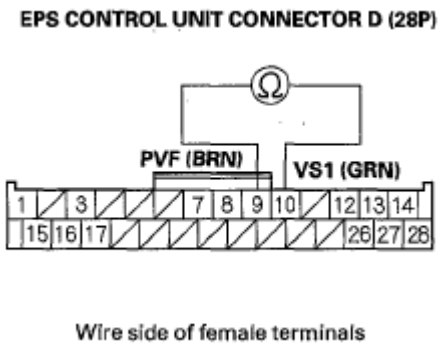


Fig. 127: Locating Synchro Sleeve And Matching Teeth
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect the thrust surface (A) on each gear hub for wear.

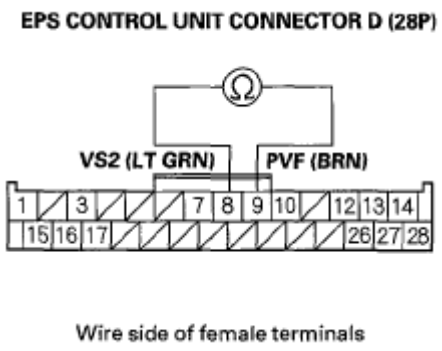


Fig. 128: Locating Thrust Surface On Gear Hub For Wear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect the cone surface (B) on each gear hub for wear and roughness.
5. Inspect the teeth on all gears (C) for uneven wear, scoring, and cracks.
6. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.
7. Measure clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

   Synchro Ring-to-Gear Clearance

   Standard: 0.655-1.334 mm (0.026-0.053 in.)

   Service Limit: 0.4 mm (0.016 in.)

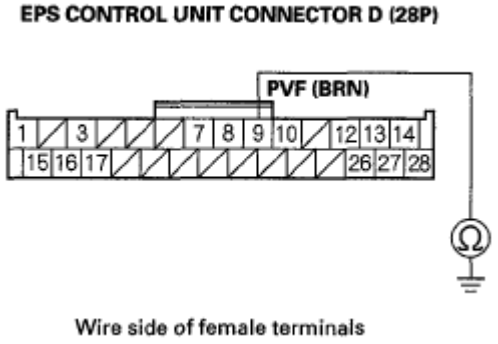


Fig. 129: Measuring Clearance Between Gear And Synchro Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAINSHAFT BEARING AND OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Attachment, 42x47 mm 07746-0010300
- Driver 07749-0010000

- Slide hammer, 3/8-16 UNF commercially available

1. Remove the ball bearing (A) from the clutch housing (B) using the 20-40 mm adjustable bearing puller (C) and a commercially available 3/8"-16 UNF slide hammer (D).

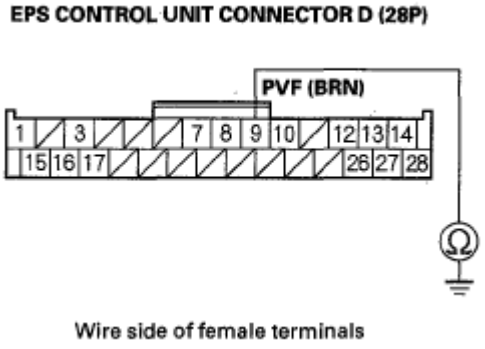


Fig. 130: Removing Ball Bearing From Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the clutch side. Be careful when removing the oil seal so the clutch housing is not damaged.

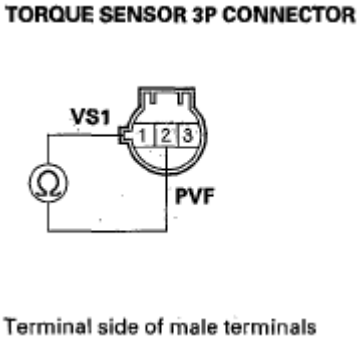


Fig. 131: Locating Oil Seal From Clutch Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Drive in the new oil seal from the transmission side using the drive (A) and 42 x 47 mm attachment (B).

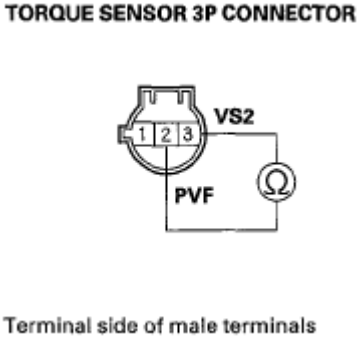


Fig. 132: Driving Oil Seal From Transmission Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Drive in the new ball bearing from the transmission side using the oil seal driver (A).

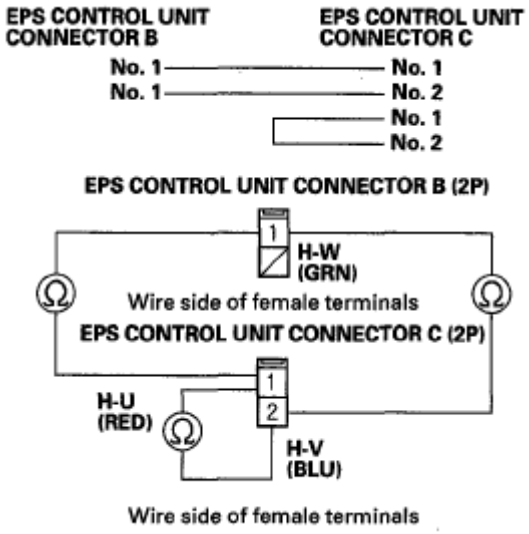


Fig. 133: Driving Ball Bearing From Transmission Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20-40 mm 07736-A01000B
- Slide hammer, 3/8"-16 UNF commercially available

1. Remove the needle bearing (A) using the 20-40 mm adjustable bearing puller (B) and a commercially available 3/8"-16 UNF slide hammer (D), then remove oil guide plate C.

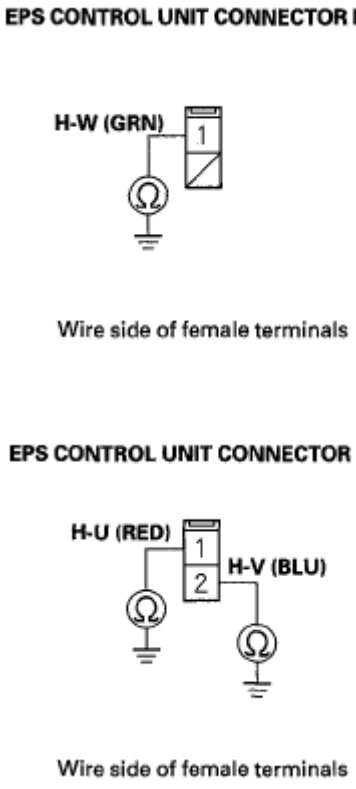


Fig. 134: Removing Needle Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).

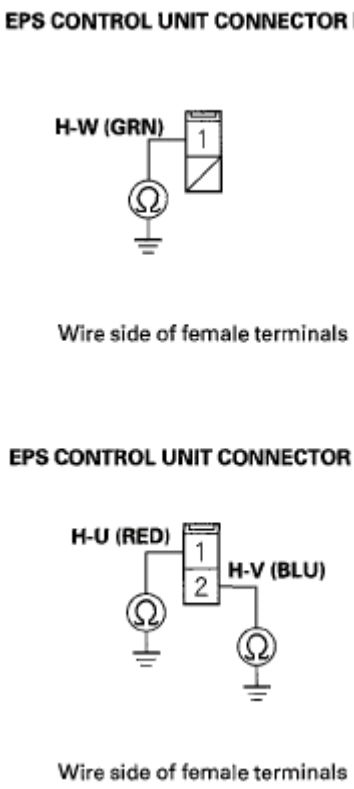


Fig. 135: Installing Needle Bearing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the needle bearing using the oil seal driver (D).

MAINSHAFT THRUST CLEARANCE ADJUSTMENT

Special Tools Required

- Mainshaft holder 07GAJ-PG20110
- Mainshaft base 07GAJ-PG20130

1. Remove the 52 x 62 mm shim (A) and oil guide plate M from the transmission housing (B).

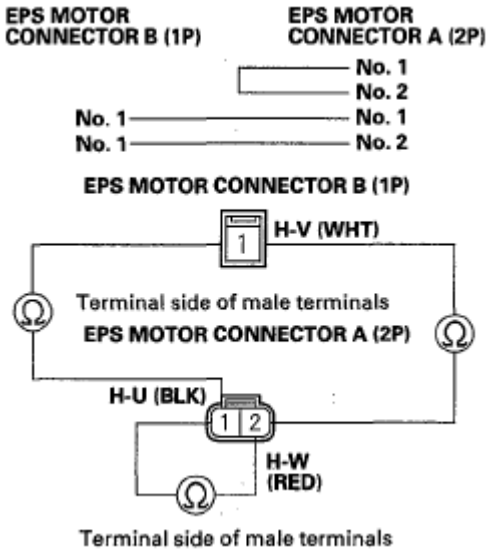


Fig. 136: Identifying Shim And Oil Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Thoroughly clean the 36 mm spring washer (A) and 26 mm washer (B) before installing them on the clutch housing side ball bearing (C). Note the installation direction of the spring washer.

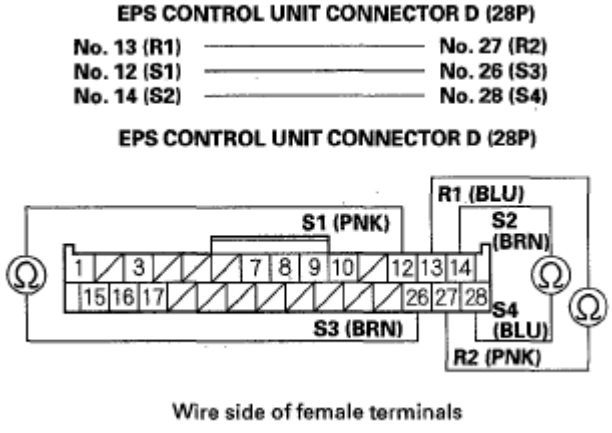


Fig. 137: Identifying Spring Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 3rd/4th synchro hub, the 4th/5th gear distance collar, the 5th synchro hub, the MBS distance collar, and angular ball bearing on the mainshaft.

NOTE: Refer to the MAINSHAFT REASSEMBLY EXPLODED VIEW .

4. Install the mainshaft in the clutch housing.
5. Place the transmission housing over the mainshaft and onto the clutch housing.
6. Tighten the clutch and transmission housings with several 8 mm bolts.

NOTE: It is not necessary to use sealing agent between the housings for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.
8. Attach the mainshaft holder (A) and mainshaft base (B) to the mainshaft as follows:
   - Backout the mainshaft holder bolt (C), and loosen the two hex bolts (D).
   - Fit the holder over the mainshaft so its lip is toward the transmission.
   - Align the mainshaft holder lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

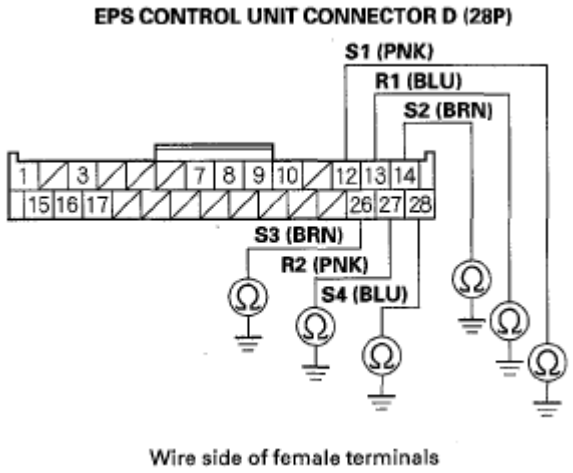


Fig. 138: Identifying Mainshaft Holder And Mainshaft Base
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fully seat the mainshaft by tapping its end with a plastic hammer.
10. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.
11. Zero a dial gauge (A) on the end of the mainshaft.

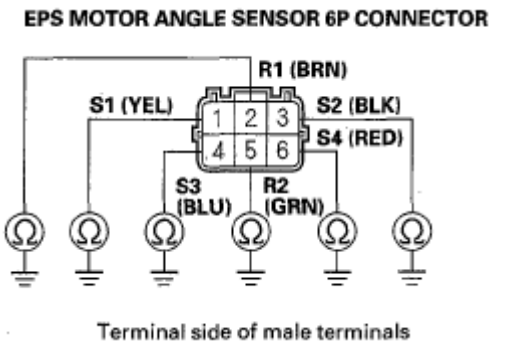


Fig. 139: Identifying Dial Gauge On End Of Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the mainshaft holder bolt could damage the transmission.

13. If the reading is with in the standard, the clearance is correct. If the reading is not within the standard, select the appropriate shim needed from the table, and recheck the thrust clearance.

Standard: 0.11-0.18 mm (0.004-0.007 in.)

(Example)

Measure reading: 1.93 mm (0.0759 in.)

Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0055 in.)

1.93 - 0.14 = 1.79 mm (0.0705 in.)

Select the shim closest to the amount calculated, for example the 1.78 mm (0.0701 in.) shim.

14. With oil guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to verify the clearance is within the standard.

SHIM SPECIFICATION 52 X 62 MM

	Part Number	Thickness
A	23931-PZ9-000	0.85 mm (0.0335 in.)
B	23932-PZ9-000	0.88 mm (0.0346 in.)
C	23933-PZ9-000	0.91 mm (0.0358 in.)
D	23934-PZ9-000	0.94 mm (0.0370 in.)
E	23935-PZ9-000	0.97 mm (0.0382 in.)
F	23936-PZ9-000	1.00 mm (0.0394 in.)
G	23937-PZ9-000	1.03 mm (0.0406 in.)

H	23938-PZ9-000	1.06 mm (0.0417 in.)
I	23939-PZ9-000	1.09 mm (0.0429 in.)
J	23940-PZ9-000	1.12 mm (0.0441 in.)
K	23941-PZ9-000	1.15 mm (0.0453 in.)
L	23942-PZ9-000	1.18 mm (0.0465 in.)
M	23943-PZ9-000	1.21 mm (0.0476 in.)
N	23944-PZ9-000	1.24 mm (0.0488 in.)
O	23945-PZ9-000	1.27 mm (0.0500 in.)
P	23946-PZ9-000	1.30 mm (0.0512 in.)
Q	23947-PZ9-000	1.33 mm (0.0524 in.)
R	23948-PZ9-000	1.36 mm (0.0535 in.)
S	23949-PZ9-000	1.39 mm (0.0547 in.)
T	23950-PZ9-000	1.42 mm (0.0559 in.)
U	23951-PZ9-000	1.45 mm (0.0571 in.)
V	23952-PZ9-000	1.48 mm (0.0583 in.)
W	23953-PZ9-000	1.51 mm (0.0594 in.)
X	23954-PZ9-000	1.54 mm (0.0606 in.)
Y	23955-PZ9-000	1.57 mm (0.0618 in.)
Z	23956-PZ9-000	1.60 mm (0.0630 in.)
AA	23957-PZ9-000	1.63 mm (0.0642 in.)
AB	23958-PZ9-000	1.66 mm (0.0654 in.)
AC	23959-PZ9-000	1.69 mm (0.0665 in.)
AD	23960-PZ9-000	1.72 mm (0.0677 in.)
AE	23987-PZ9-000	1.75 mm (0.0689 in.)
AF	23988-PZ9-000	1.78 mm (0.0701 in.)
AG	23989-PZ9-000	1.81 mm (0.0713 in.)
AH	23990-PZ9-000	1.84 mm (0.0724 in.)
AI	23991-PZ9-000	1.87 mm (0.0736 in.)
AJ	23992-PZ9-000	1.90 mm (0.0748 in.)
AK	23993-PZ9-000	1.93 mm (0.0760 in.)
AL	23994-PZ9-000	1.96 mm (0.0772 in.)
AM	23995-PZ9-000	1.99 mm (0.0783 in.)
AN	23996-PZ9-000	2.02 mm (0.0795 in.)
AO	23997-PZ9-000	2.05 mm (0.0807 in.)
AP	23998-PZ9-000	2.08 mm (0.0819 in.)
AQ	23999-PZ9-000	2.11 mm (0.0831 in.)

TRANSMISSION REASSEMBLY

NOTE:

- **Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.**
- **Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.**

1. Install the magnet (A) and differential assembly (B).

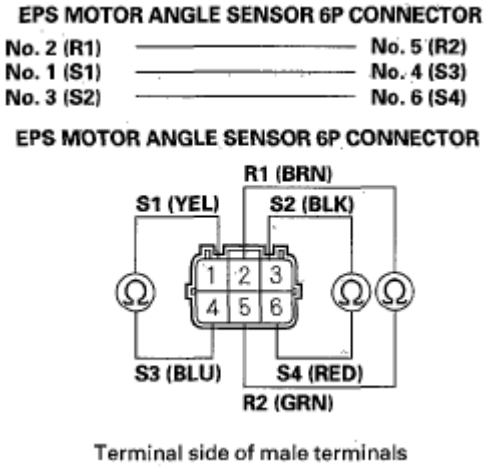


Fig. 140: Identifying Magnet And Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 36 mm spring washer (A) and 26 mm washer (B) over the ball bearing (C). Note the installation direction of the spring washer.

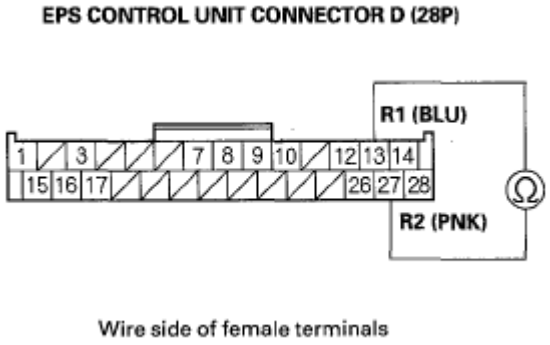


Fig. 141: Identifying Spring Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Apply tape on the mainshaft (D) spline to protect the seal. Install the mainshaft assembly and countershaft assembly (E) into the shift forks (F), and install them as an assembly.
4. Install the reverse idler gear (A) and the reverse gear shaft (B).

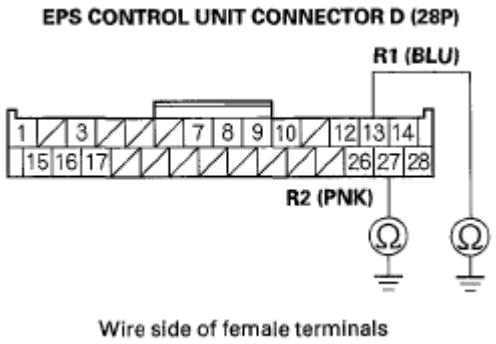


Fig. 142: Identifying Reverse Idler Gear And Reverse Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the reverse shift fork.

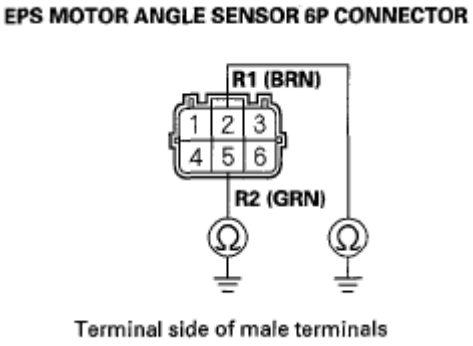


Fig. 143: Identifying Reverse Shift Fork (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Select the proper size 52 x 62 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see **MAINSHAFT THRUST CLEARANCE ADJUSTMENT**). Install the oil gutter plate (B), oil guide plate M, and the 52 x 62 mm shim into the transmission housing (C).

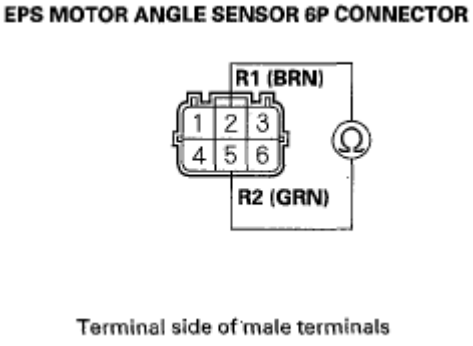


Fig. 144: Identifying Oil Gutter Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Clean any dirt or oil from the transmission housing sealing surface.
8. Apply liquid gasket (P/IM 08718-0002) evenly to the mating surface of the transmission housing and clutch housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket residue, then reapply new liquid gasket.**

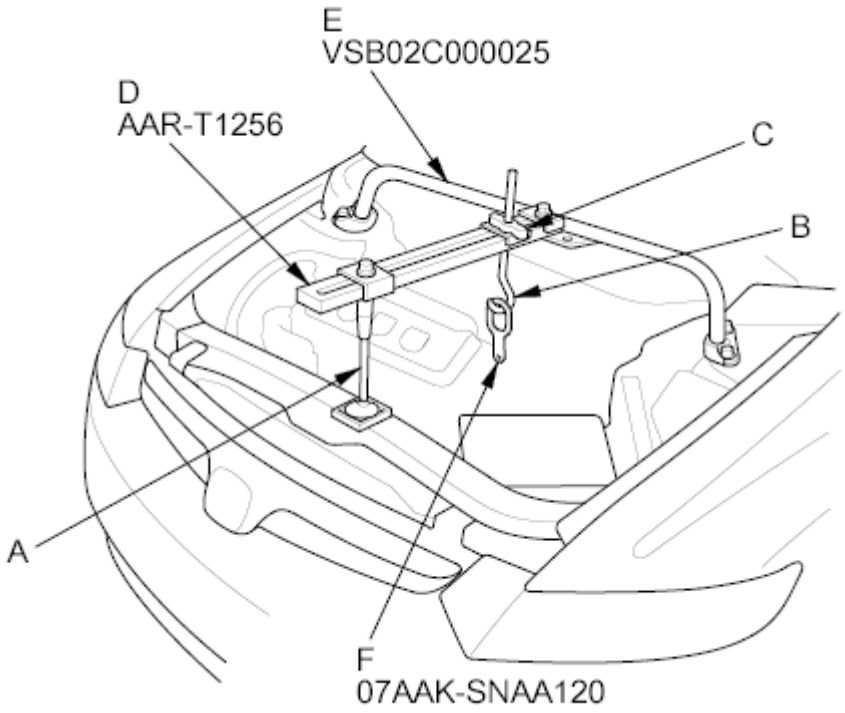


Fig. 145: Identifying Liquid Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the two 14 x 20 mm dowel pins (A).

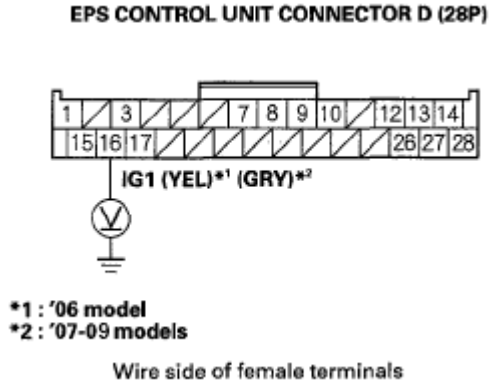


Fig. 146: Identifying Dowel Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

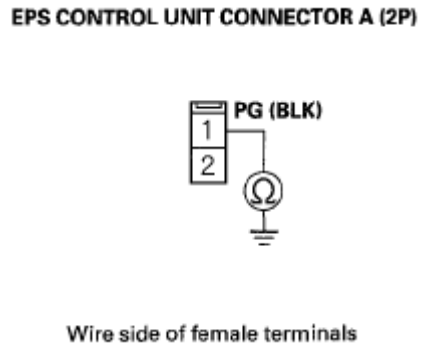


Fig. 147: Identifying Snap Ring Groove Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Set the tapered cone ring (B) as shown. Place the transmission housing over the clutch housing, being careful to line up the shafts.
11. Lower the transmission housing the rest of the way as you expand the 69 mm snap ring (C). Release the snap ring so it seats in the groove of the countershaft bearing.
12. Make sure the 69 mm snap ring is securely seated in the groove of the countershaft bearing.

Dimension (1) as installed: 3.3-6.5 mm (0.13-0.25 in.)

13. Apply liquid gasket (P/N 08718-0002) evenly to the threads of the 32 mm sealing cap (D), and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket residue, then reapply new liquid gasket.**

14. Install the 8 mm flange bolts finger-tight.

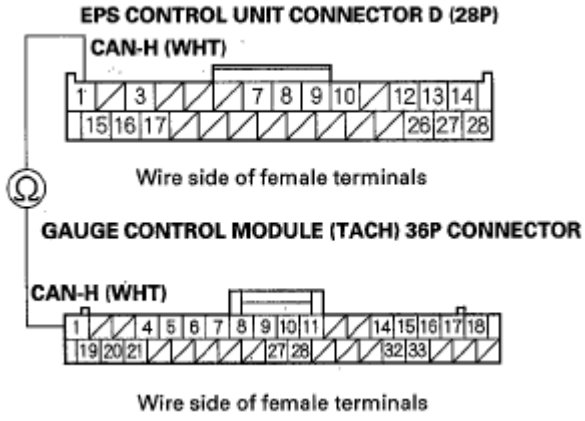


Fig. 148: Identifying Flange Bolts Finger-Tight
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

Specified Torque:

8x1.25 mm

27 N.m (2.8 kgf.m, 20 lbf.ft)

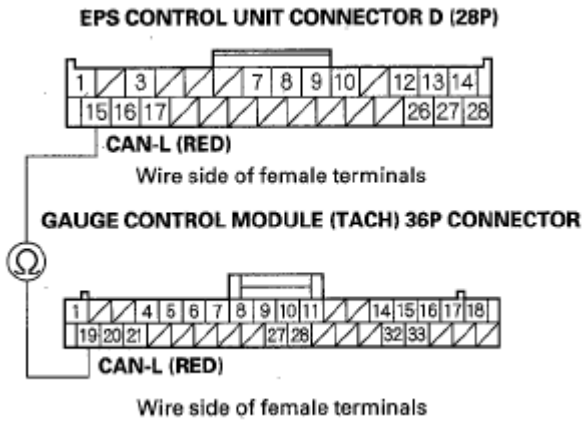


Fig. 149: Identifying Tightening Flange Bolts In Crisscross Pattern
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Clean any dirt or oil from the change lever assembly sealing surface.
17. Apply liquid gasket (P/N 08718-0002) evenly to the mating surface of the change lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- **If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.**
- **If too much time has passed after applying the liquid gasket, remove the old liquid gasket residue, then reapply new liquid gasket.**
- **Allow it to cure at least 30 minutes after assembly before filling the transmission with MRF.**

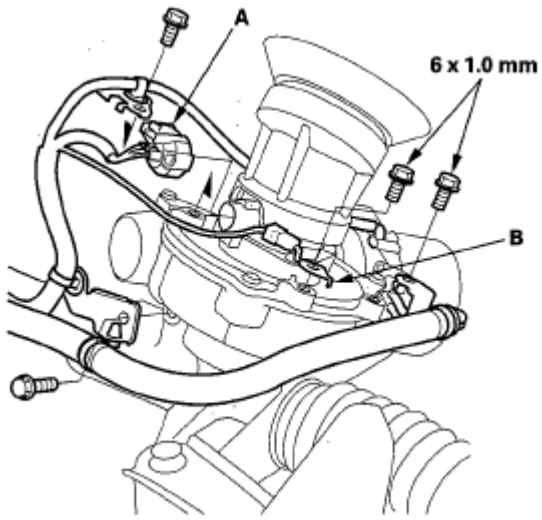


Fig. 150: Identifying Liquid Gasket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the 8x14 mm dowel pins (A) and change lever assembly (B).

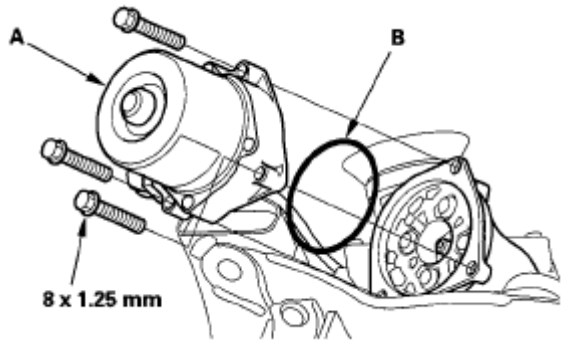


Fig. 151: Identifying Dowel Pins And Change Lever Assembly (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the drain plug (A), output shaft (countershaft) speed sensor (B), and new O-ring (C). Install the filler plug (D) finger-tight.

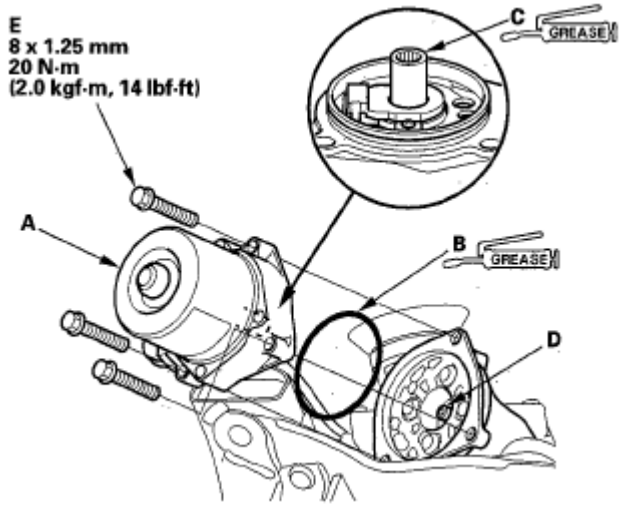


Fig. 152: Identifying Drain Plug And Output Shaft (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the steel balls, the springs, and the detent bolts (A) with new washers (B).

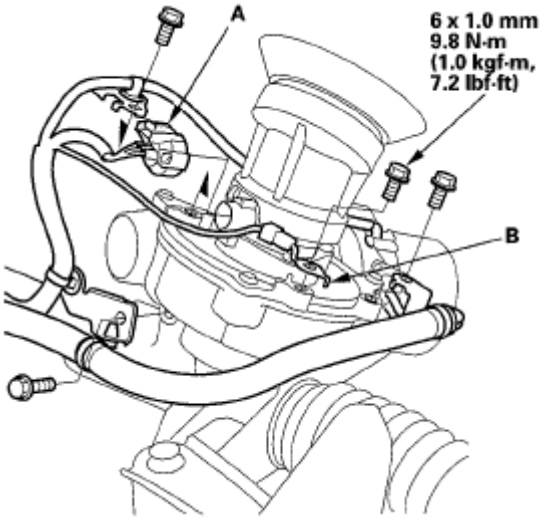


Fig. 153: Identifying Detent Bolts Springs And Steel Balls (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the 20 mm bolt (C) and new 20 mm washer (D).
22. Install the new 18 mm washer (A), the back-up light switch (B), and the transmission hanger (C).

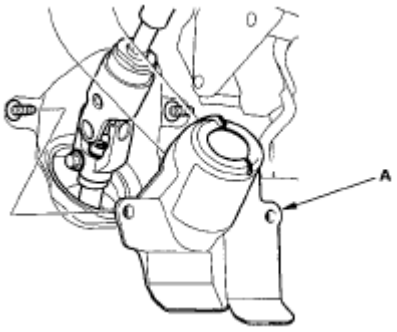


Fig. 154: Identifying Washer And Back-Up Light Switch (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the air cleaner housing bracket (A) and the harness bracket (B).

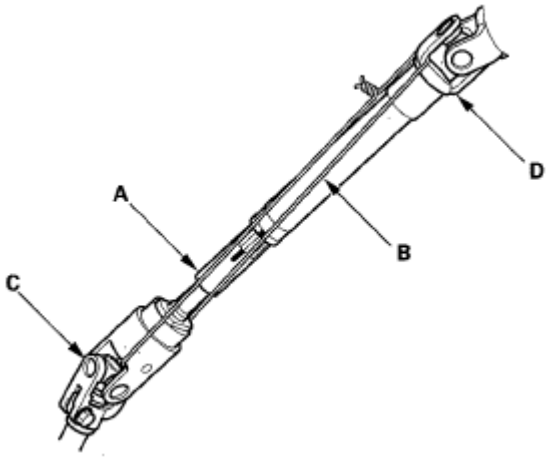


Fig. 155: Identifying Air Cleaner Housing Bracket (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GEARSHIFT MECHANISM REPLACEMENT

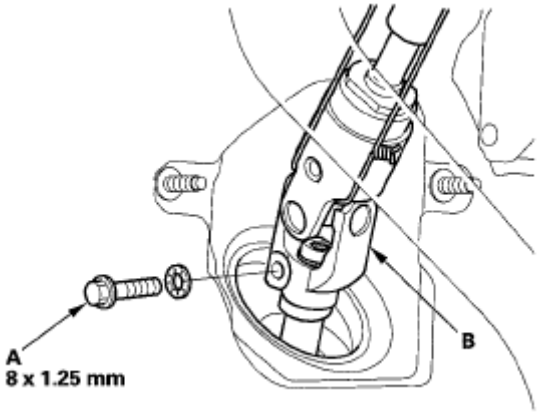


Fig. 156: Identifying Gearshift Mechanism (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

M/T DIFFERENTIAL

COMPONENT LOCATION INDEX

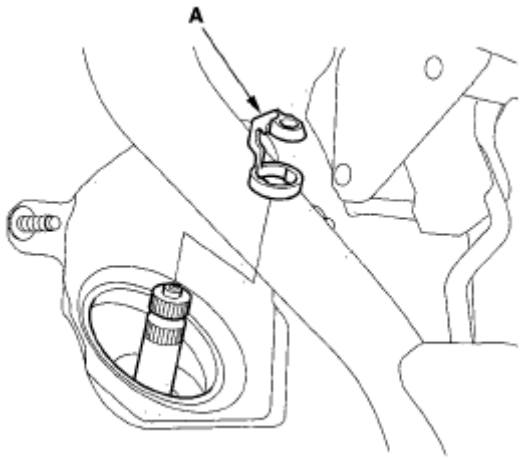


Fig. 157: Identifying M/T Differential Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BACKLASH INSPECTION

1. Place the differential assembly on V-blocks (A), and install the intermediate shaft (B) and the left driveshaft (C).

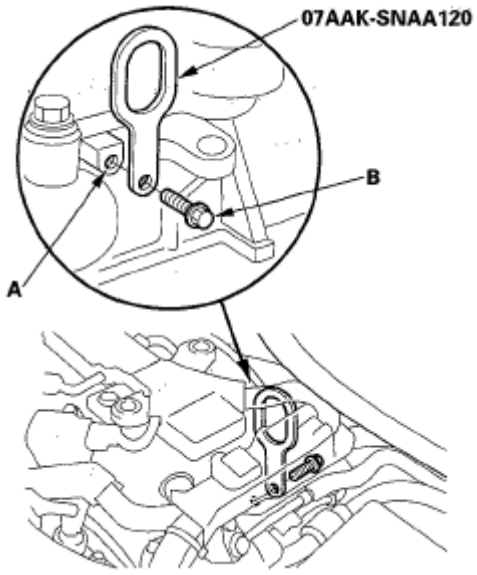


Fig. 158: Placing Differential Assembly On V-Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure backlash of both pinion gears (D) with a dial indicator (E). If the backlash is not within the standard, replace the differential carrier.

   Standard (New): 0.05-0.15 mm (0.002-0.006 in.)

DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR REPLACEMENT

1. Remove the bolts (left-hand threads) in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier (B).

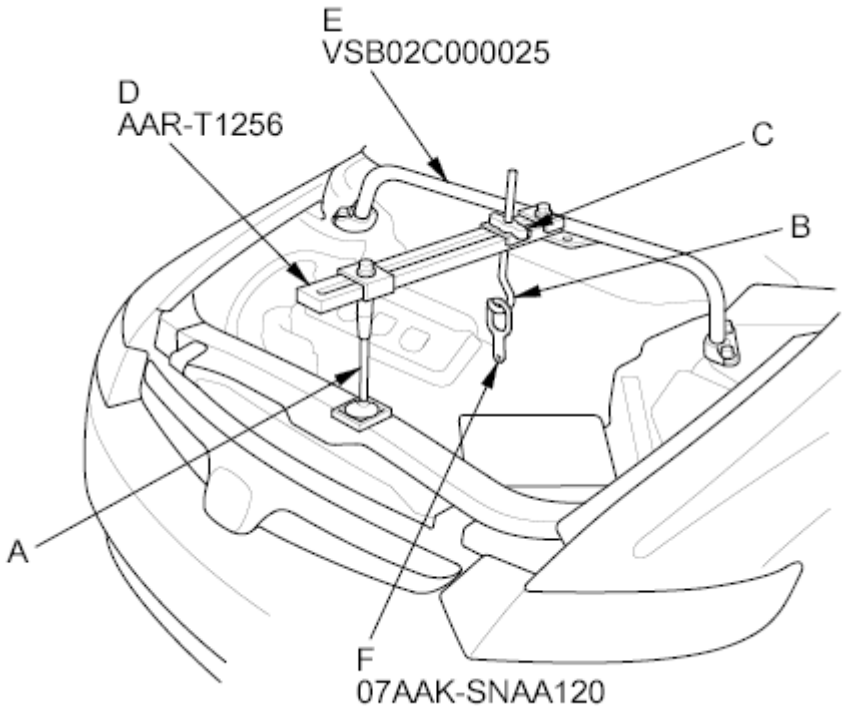


Fig. 159: Identifying Driven Gear From Differential Carrier (With Torque Specifications) Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

CARRIER BEARING REPLACEMENT

Special Tool Required

Driver, 40 mm I.D. 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

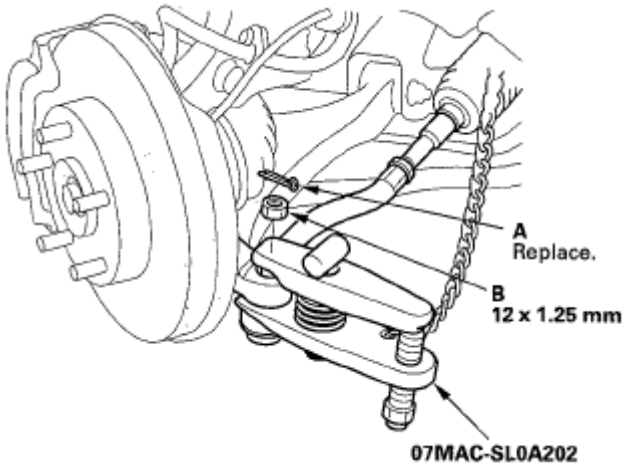


Fig. 160: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new bearings (A) with the 40 mm I.D. driver (B) and a press. Press on each bearing until it bottoms. There should be no clearance between the bearings and the carrier.

NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

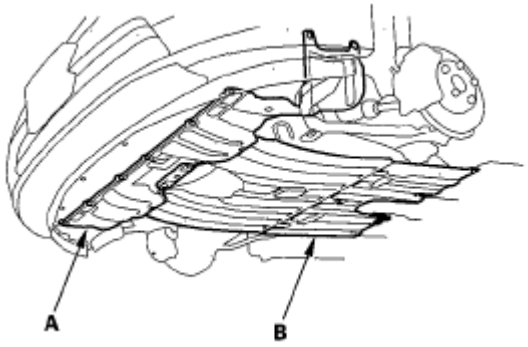


Fig. 161: Identifying Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL SEAL REPLACEMENT

Special Tools Required

- Oil seal driver 07JAD-PL90100
- Oil seal driver attachment 07NAD-P20A100
- Driver 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).

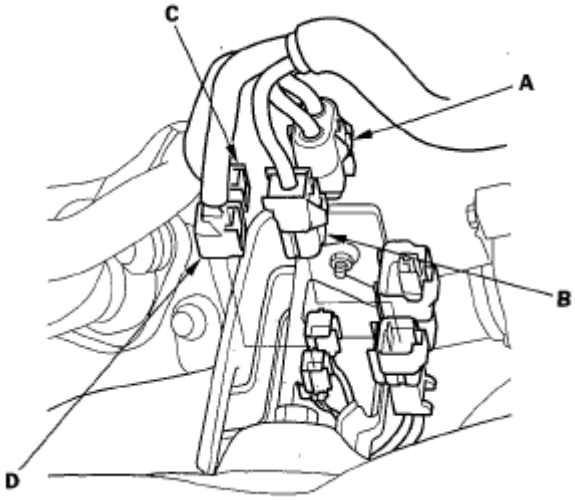


Fig. 162: Identifying Oil Seal From Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the oil seal (A) from the clutch housing (B).

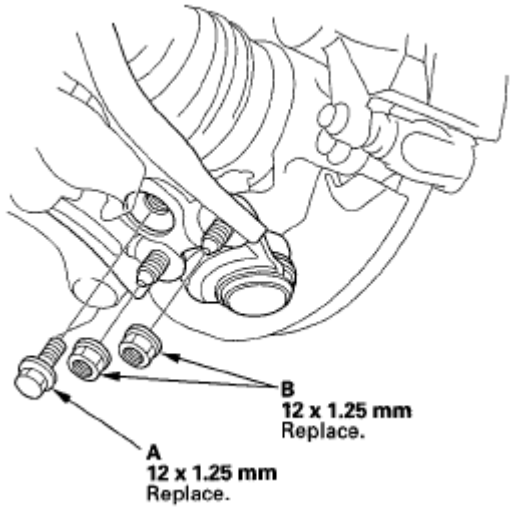


Fig. 163: Identifying Oil Seal From Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new oil seal in the transmission housing with the driver (A) and oil seal driver attachment (B).

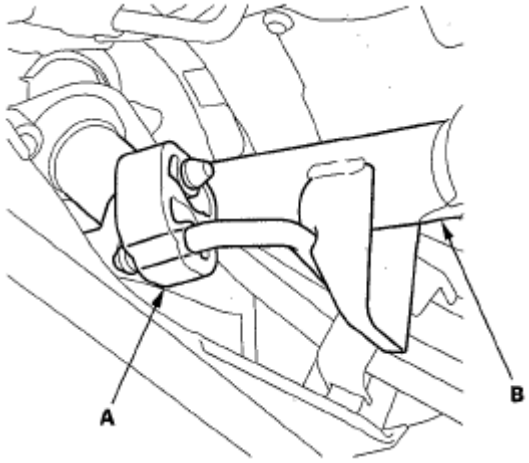


Fig. 164: Identifying Oil Seal In Transmission Housing With Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the new oil seal in the clutch housing with the oil seal driver (A).

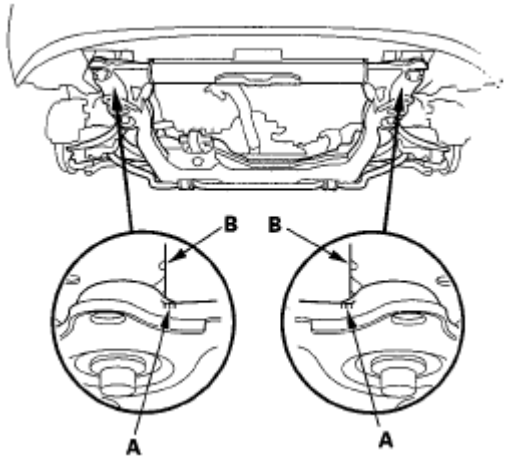


Fig. 165: Installing Oil Seal In Clutch Housing With Oil Seal Driver
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DIFFERENTIAL THRUST CLEARANCE ADJUSTMENT

Special Tool Required

Driver, 40 mm I.D. 07746-0030100

1. If you removed the 80 mm shim from the transmission housing, reinstall the same size shim.

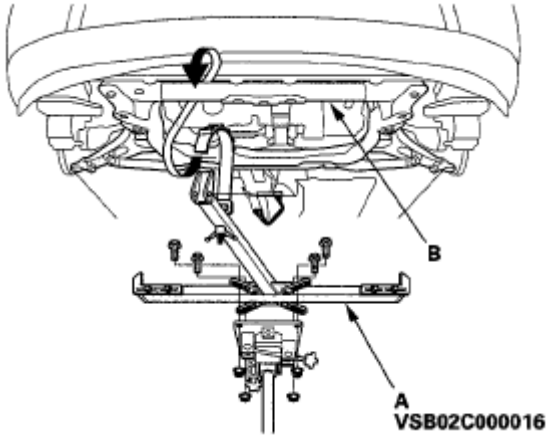


Fig. 166: Identifying Transmission Housing Shim
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the differential assembly into the clutch housing.

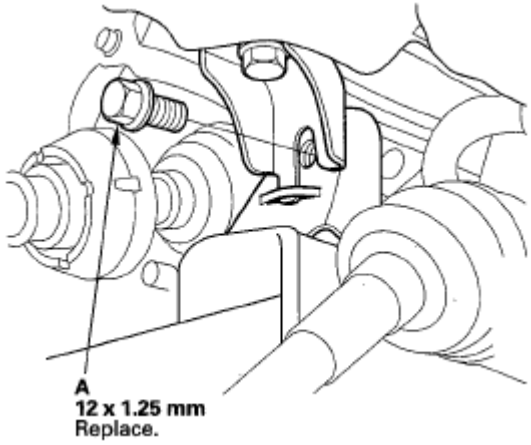


Fig. 167: Identifying Differential Assembly Into Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 15).

   Specified Torque

   8x1.25 mm

   27 N.m (2.8 kgf.m, 20 lbf.ft)

4. Use the 40 mm I.D. driver (A) to bottom the differential assembly in the clutch housing.

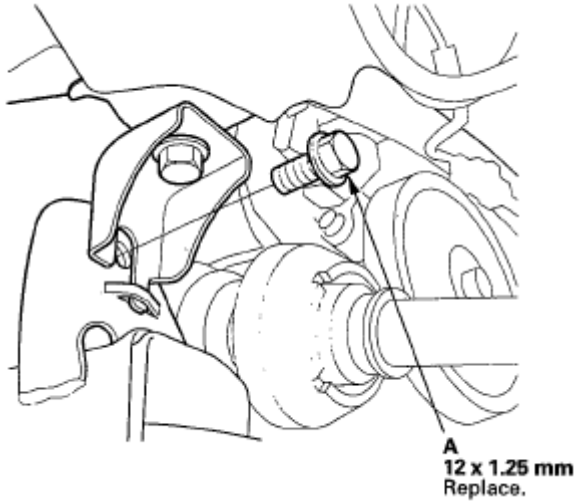


Fig. 168: Installing Differential Assembly In Clutch Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Measure clearance between 80 mm shim and bearing outer race in transmission housing.

   Standard: 0-0.10 mm (0-0.0039 in.)

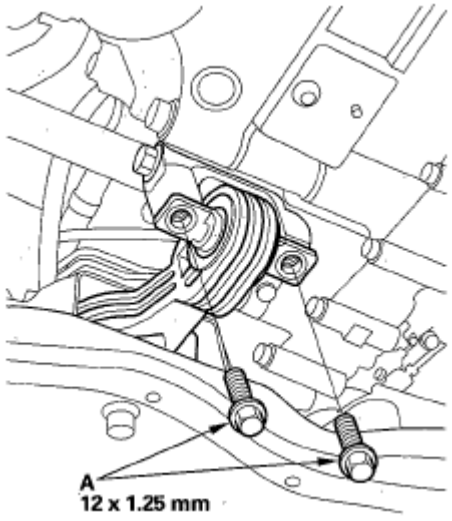


Fig. 169: Measuring Clearance Between Shim And Bearing Outer Race In Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the clearance is more than the standard, select a new 80 mm shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

SHIM SPECIFICATION 80 MM

	Part Number	Thickness
A	41441-PL3-B00	1.0 mm (0.039 in.)
B	41442-PL3-B00	1.1 mm (0.043 in.)
C	41443-PL3-B00	1.2 mm (0.047 in.)

D	41444-PL3-B00	1.3 mm (0.051 in.)
E	41445-PL3-B00	1.4 mm (0.055 in.)
F	41446-PL3-B00	1.5 mm (0.059 in.)
G	41447-PL3-B00	1.6 mm (0.063 in.)
H	41448-PL3-B00	1.7 mm (0.067 in.)
J	41449-PL3-B00	1.8 mm (0.071 in.)
K	41450-PL3-B00	1.05 mm (0.041 in.)
L	41451-PL3-B00	1.15 mm (0.045 in.)
M	41452-PL3-B00	1.25 mm (0.049 in.)
N	41453-PL3-B00	1.35 mm (0.053 in.)
P	41454-PL3-B00	1.45 mm (0.057 in.)
Q	41455-PL3-B00	1.55 mm (0.061 in.)
R	41456-PL3-B00	1.65 mm (0.065 in.)
S	41457-PL3-B00	1.75 mm (0.069 in.)

7. Remove the bolts and transmission housing.
8. Replace the thrust shim selected in step 6, then recheck the clearance.
9. Reinstall the transmission housing.